The Planning Inspectorate

Manston Airport

(TR020002)

Correspondence received after the close of the Examination at 23:59 on 9 July 2019

1. Correspondence received by the Planning Inspectorate during the Recommendation stage (10 July 2019 to 18 October 2019)

Ref.	Name	Organisation	Date
001	Malcolm Kirkaldie		10 July 2019
002	TR Fennell	Commuters Against the Cargo Hub	10 July 2019
003	Councillor Karen Costantine		10 July 2019
004	Seymour Milton		10 July 2019
005	Jezz Etheridge		10 July 2019
006	John Pritchard		11 July 2019
007		Southern Gas Networks plc	12 July 2019
008	Ian Scott	Nethercourt Action Group	14 July 2019
009	James Chappell		19 July 2019
010	Alan Welcome		19 July 2019
011	Peter Binding		24 July 2019
012	Peter Binding		25 July 2019
013	John Davison		2 August 2019
014	Ken Rice		15 October 2019
015		Five10Twelve Ltd	17 October 2019

2. Correspondence received by the Department for Transport during the Decision stage (19 October 2019 to 9 July 2020)

Ref.	Name	Organisation	Date
016	Samara and Jason Jones-Hall	Five10 Twelve Ltd	27 October 2019
017	Adem Mehmet		28 October 2019
018	Ken Rice		29 October 2019
019	Christabel Smith		30 October 2019
020	Andrew Hodder		30 October 2019
021	Rita Burns		30 October 2019

022	Janice Best		30 October 2019
023	Daniela Flowerdew		31 October 2019
024	Catherine Gardiner		31 October 2019
025	Jane and Steve Roberts		31 October 2019
026	Samara and Jason Jones-Hall	Five10 Twelve Ltd	1 November 2019
027	John Walker	The Ramsgate Society	1 November 2019
028	Laura Marks		4 November 2019
029	Laura Marks		4 November 2019
030	Richard Oliver		4 November 2019
031	Trevor Bartlett	Dover District Council	5 November 2019
032	Michael and Tracey McEvoy		11 November 2019
033	Ronald Blay		12 November 2019
034	Andrew Hodder		12 November 2019
035	Dr Hilary Newport	Campaign for Rural England Kent	12 November 2019
036	Ronald Blay		18 November 2019
037	Samara and Jason Jones-Hall	Five10 Twelve Ltd	19 December 2019
038	Samara and Jason Jones-Hall	Five10 Twelve Ltd	22 December 2019
039	Samara and Jason Jones-Hall	Five10 Twelve Ltd	23 December 2019
040	Samantha Holmans		31 December 2019
041	Chris Lowe		6 January 2020
042	Samara and Jason Jones-Hall	Five10 Twelve Ltd	8 January 2020
043	Sir Roger Gale MP		3 February 2020
044	Richard Styles	Ramsgate Town Council	4 February 2020
045	Paul Brunton		4 February 2020
046	Paul Roberts	Historic England	7 February 2020
047	Ella Robey		9 February 2020
048	Samara and Jason Jones-Hall	Five10Twelve Ltd	13 February 2020
049	Peter Binding		18 February 2020

050		No Night Flights	20 February 2020
051	Samara and Jason Jones-Hall	Five10Twelve Ltd	21 February 2020
052	Mick Saunders		27 February 2020
053	John Jeapes		27 February 2020
054	Robert Clarke		27 February 2020
055	Captain Christopher Woodman		27 February 2020
056	Sir Roger Gale MP and Craig Mackinlay MP		28 February 2020
057	Mrs Jill Hogben		28 February 2020
058	Paul Turner		28 February 2020
059	Lee Sellman		28 February 2020
060	Ron Lane		28 February 2020
061	Gordon Henderson MP on behalf of Mrs P Hayden		2 March 2020
062	Wesley Baker	ANCON Medical Inc	4 March 2020
063	Samara and Jason Jones-Hall	Five10Twelve Ltd	11 March 2020
064	Jessica Graham	BDP Pitman (on behalf of the Applicant)	19 March 2020
065	Stephen Mannion		4 April 2020
066	Chris Lowe		23 April 2020
067	Samara and Jason Jones-Hall	Five10Twelve Ltd	5 May 2020
068	Gerry Abrahams		9 May 2020
069	Samara and Jason Jones-Hall	Five10Twelve Ltd	11 May 2020
070	Samara and Jason Jones-Hall	Five10Twelve Ltd	11 May 2020
071	Emma Montlake	Environmental Law Foundation	15 May 2020
072	James Hose		19 May 2020
073	Laura Marks		19 May 2020
074	Laura Marks		20 May 2020
075	Kenneth Wraight		20 May 2020
076	Christabel Bradley		20 May 2020

077	Adem Mehmet		20 May 2020
078	Alison Wilby		21 May 2020
079	Michael Child		21 May 2020
080	Frank McNamara		21 May 2020
081	Michael Child		21 May 2020
082	Malcolm Langton		22 May 2020
083	Kenneth Wraight		22 May 2020
084		The Save Manston Airport association committee	24 May 2020
085	Ros McIntyre	No Night Flights	24 May 2020
086	Phil Rose		24 May 2020
087	Craig Mackinley MP on behalf of Mr Green		27 May 2020
088	Samara and Jason Jones-Hall	Five10Twelve Ltd	4 June 2020
089	Mike Jackson		4 June 2020
090	Mr M Savage		8 June 2020
091		Nethercourt Action Group	9 June 2020
092	Stan Vines	I4c Ltd	10 June 2020
093	Chris Lowe		14 June 2020
094	Angus Walker	BDP Pitman (on behalf of the Applicant)	17 June 2020
095	Emma Montlake	Environmental Law Foundation	19 June 2020
096	Norman Thomas	South Thanet Constituency Labour Party	21 June 2020
097	Adem Mehmet		24 June 2020
098	Chris Lowe		25 June 2020
099	Stan Vines	I4c Ltd	29 June 2020
100	Adem Mehmet		3 July 2020
101	Various*		N/a

*The Secretary of State received 1104 proforma style postcards providing a duplicate statement of objection to the Proposed Development. An example of the postcard has been provided here.

This record does not include correspondence associated with the Secretary of State's consultation dated 17 January 2020. The documents associated with this consultation are available on the project webpage, here: https://infrastructure.planninginspectorate.gov.uk/projects/south-east/manston-airport/?ipcsection=docs&stage=6&filter1=Secretary+of+State+Consultation

From:	[redacted]
To:	James Bunten
Cc:	[redacted]
Subject:	Manston DCO
Date:	10 July 2019 00:00:54

Dear Planning Inspectorate,

I note that pINS has not responded to my questions that PINS stated I must put to the Inspectors?

I am also writing as a deeply worried local resident about the Manston Airport DCO.

I refer to the Applicant's Answers to Fourth Written Questions dated 29/06/19 (TR020002/D9/FWQ Examination Document).

At Ns 4.10, under the heading *Quota Count Night Time,* the Applicant says:

*" The applicant is therefore willing to reduce the quota count to 2000 (365*5 being 1825), but this would be on the basis that late-arriving, emergency and humanitarian flights would be excluded from that total. If they are to be included as at present, then the Applicant would wish to keep the original figure of 3028."*

Applicant's Response: The NMP (at TR020002/D9/2.4) has been amended to reflect this, at paragraph 1.8.

If the Examining Authority allows this, it will be exposing the local residents to the threat of an unlimited number of night flights.

There would be nothing to stop the Applicant from allowing "late" arrivals to land at any time, at any noise level, between 2300 and 0600. This has never been consulted on, nor has it been modelled by the Applicant and presented for examination to the Examining Authority.

This has the potential to be extremely damaging to residents' health, well-being and the local economy. It is completely and utterly unacceptable.

I therefore wish object to the Examining Authority allowing the Applicant's suggestion at Ns.4.10 to remain in the Noise Mitigation Plan for the Manston Airport DCO.

The Applicant has consistently said to the public that it does not need night flights and that there will be no night flights. Let us hold the Applicant to that in the clearest possible terms in the Noise Mitigation Plan and in the draft DCO: no flights, scheduled, chartered, or otherwise labelled, late or on time, between 2300 and 0700.

You have been given evidence that there is an issue with enforcing and dealing with late and flights that are not on established routes/times in and out of Manston.

That TDC has significantly failed the residents of Ramsgate by not dealing with Noise and Pollution and the ExA should give cause for some concern if that was politically motivated

Given that the leader gave his support for the reopening of the Airport.

Regards

MK

From: [redacted]
To: PINS manston; Richard Price
Subject: Manston DCO
Date: 10 July 2019 00:01:12
Attachments: Commuters Against Cargo Hub Sub 11a.pdf

Dear ExA,

I submit on behalf of Commuters Against The Cargo Hub

Please find attached a pdf submission supplement for our Submissoin 11 plus evidence attachments.

Many thanks

TR Fennell

TO: THE EXAMINING AUTHORITY, MANSTON AIRPORT DCO
FROM: COMMUTERS AGAINST THE CARGO HUB SUB 11a
DATE: 9th July 2019 deadline 12

I write on behalf of Commuters Against The Cargo hub.

I refer to our last submission (Commuters Against The Cargo Hub sub 11, dated 05/07/19 Deadline 11)

In that submission we outlined the Royal Harbour in Ramsgate as a heritage asset of high significance. With the ExA's permission we wish to add an extra piece of evidence to further substantiate that claim.

I attach a letter from local Conservative MP Craig Mackinlay in which he identifies the Royal Harbour as "a unique asset" and outlines his support for "heritage-led regeneration" of Ramsgate. [attachment 5).

To re-iterate, there is only one Royal Harbour in the country. An airport will cause substantial harm to an asset of high significance, not just locally, but nationally.

For this, and many other reasons stated in evidenced submissions to this inspection, you should not grant the DCO.

Sincerely

TR Fennell
On Behalf Of Commuters Against The Cargo Hub.

Craig Mackinlay MP

[redacted]

HOUSE OF COMMONS
LONDON SW1A 0AA
Constituency Tel: 01843 603242
Westminster Tel: 0207 219 4442

19 June 2019

Dear Resident,

I note that you have recently appeared on the electoral roll. It may be that you have moved locally or are indeed new to the area.

As your local Member of Parliament I wanted to offer you my contact details as a point of contact to help you through difficulties that you may face locally or when dealing with national authorities.

Many local issues that are properly within the remit of the local authority may be best addressed by contacting your local Councillor, a full list of who represents you locally across the town council, the district council and Kent County Council can be found by entering your postcode at www.writetothem.com. The website gives you details of all local representatives, and an easy means by which you can contact them.

My main short-to-medium term aims for Ramsgate are to ensure that the town receives its fair share of government regeneration funding, combined with private, heritage-led regeneration. The Royal Harbour, the only "Royal" harbour in the country, is a unique asset that we need to do more with. As part of Brexit preparedness planning, Ramsgate has made national news of late. Whilst the right type of ferry operator would bring revenue to the council, I have long felt that it in the longer term it is time to turn the page on commercial operations at Ramsgate Port; I am working hard to find a long term solution that will create jobs, investment and tourism.

I have been trying to get a change in the law to stop the use of their port for live animal exports for slaughter abroad. A measure that I hope you would support, as Ramsgate is the only port in the country used for this trade. You may be aware of the legal case against the council resulting in a £4 million compensation claim following the Council's closure of the port to such trade following a truly dreadful event in September 2012. The Government has been listening, with the Secretary of State for the Environment, Food & Rural Affairs actively considering a change in the law, now possible post-Brexit.

Do feel free to get in touch on any issue of concern. You can keep in touch by sending me your details via my website at www.craigmackinlay.com and I will add you to my regular e-newsletter distribution list.

[redacted]

Craig Mackinlay
Member of Parliament for South Thanet

From: [redacted]
To: manstonairport@pins.gsi.gov.uk
Cc: Richard Price
Subject: Concerns
Date: 10 July 2019 09:34:59

STATEMENT OF CONCERN

Dear Planning Inspectorate,

I write as a deeply worried local resident about the Manston Airport DCO.

I refer to the Applicant's Answers to Fourth Written Questions dated 29/06/19 (TR020002/D9/FWQ Examination Document).

At Ns 4.10, under the heading *Quota Count Night Time*, the Applicant says:

*" The applicant is therefore willing to reduce the quota count to 2000 (365*5 being 1825), but this would be on the basis that late-arriving, emergency and humanitarian flights would be excluded from that total. If they are to be included as at present, then the Applicant would wish to keep the original figure of 3028."*

Applicant's Response: The NMP (at TR020002/D9/2.4) has been amended to reflect this, at paragraph 1.8.

If the Examining Authority allows this, it will be exposing the local residents to the threat of an unlimited number of night flights.

There would be nothing to stop the Applicant from allowing "late" arrivals to land at any time, at any noise level, between 2300 and 0600. This has never been consulted on, nor has it been modelled by the Applicant and presented for examination to the Examining Authority.

This has the potential to be extremely damaging to residents' health, well-being and the local economy. It is completely and utterly unacceptable.

I therefore wish to object to the Examining Authority allowing the Applicant's suggestion at Ns.4.10 to remain in the Noise Mitigation Plan for the Manston Airport DCO.

The Applicant has consistently said to the public that it does not need night flights and that there will be no night flights. Let us hold the Applicant to that in the clearest possible terms in the Noise Mitigation Plan and in the draft DCO: no flights, scheduled, chartered, or otherwise labelled, late or on time, between 2300 and 0700.

Yours sincerely

Cllr Karen Constantine.

Sent from my iPhone

From: [redacted]
To: manstonairport@pins.gsi.gov.uk
Cc: Richard Price
Subject: Manston DCO Deadline 12
Date: 10 July 2019 10:14:48

Dear Planning Inspectorate,

I write as a deeply worried local resident about the Manston Airport DCO.
I refer to the Applicant's Answers to Fourth Written Questions dated 29/06/19 (TR020002/D9/FWQ Examination Document).

At Ns 4.10, under the heading Quota Count Night Time, the Applicant says:
" The applicant is therefore willing to reduce the quota count to 2000 (365*5 being 1825), but this would be on the basis that late-arriving, emergency and humanitarian flights would be excluded from that total. If they are to be included as at present, then the Applicant would wish to keep the original figure of 3028."

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The Applicant has consistently said to the public that it does not need night flights and that there will be no night flights. Let us hold the Applicant to that in the clearest possible terms in the Noise Mitigation Plan and in the draft DCO: no flights, scheduled, chartered, or otherwise labelled, late or on time, between 2300 and 0700.

Yours sincerely,

Seymour Milton

[redacted]

From: [redacted]
To: manstonairport@pins.gsi.gov.uk
Cc: Richard Price
Subject: STATEMENT OF CONCERN
Date: 10 July 2019 12:22:46

Dear Planning Inspectorate,

I write as a deeply worried local resident about the Manston Airport DCO.

I refer to the Applicant's Answers to Fourth Written Questions dated 29/06/19 (TR020002/D9/FWQ Examination Document).

At Ns 4.10, under the heading Quota Count Night Time, the Applicant says:

" The applicant is therefore willing to reduce the quota count to 2000 (365*5 being 1825), but this would be on the basis that late-arriving, emergency and humanitarian flights would be excluded from that total. If they are to be included as at present, then the Applicant would wish to keep the original figure of 3028."

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Yours very concerned, etc

Jezz Etheridge

[redacted]

From: [redacted]
To: ManstonAirport Support Team
Subject: Re: Written Submission by Dr R John Pritchard on Noise & Listed Buildings
Date: 11 July 2019 14:56:13

FAO Richard Price

Dear Richard,

Further to my phone calls today, noting that my last submission, sent at 22:21 on the 9th, has yet to appear:

As this still hasn't gone up, perhaps you could also be good enough to spare my embarrassment at the fact that the two maps shown show the same thing. The correct map from central Ramsgate towards the airport is this one:

Thank You,

John

On Tue, 9 Jul 2019 at 22:21, John Pritchard [redacted] wrote:

>

MANSTON ROAD
A256
B2014
B2030
A299
HENGIST WAY
CHALK HILL
CLIFFS END ROAD
SANDWICH ROAD
MEVERALL AVENUE
St Lawrence
KENDAL CLOSE
RYDAL AVENUE
A255
SANDS ROAD
DOWNS ROAD
MARK AVENUE
WARWICK DRIVE
PEGWELL CLOSE

C/M/S/
Law.Tax

CMS Cameron McKenna Nabarro Olswang LLP

Cannon Place
78 Cannon Street
London EC4N 6AF

DX 135316 London Cannon Place

T +44 20 7367 3000
F +44 20 7367 2000

cms.law

[redacted]
E robert.garden@cms-cmno.com

12 July 2019

manstonairport@planninginspectorate.gov.uk
BY EMAIL ONLY

Our ref ROGN/SCO030.00091

Dear Sir or Madam,

Manston Airport (the Project)

Application by Riveroak Strategic Partners Limited for an order granting development consent for the Project (the Application)

We are writing on behalf of our client, Southern Gas Networks plc (**SGN**). SGN was an interested party in the examination of the Application.

Further to our previous correspondence, SGN hereby withdraw all representations and objections which they have made in respect of the Application. Please treat this letter as formal withdrawal of all representations made by SGN in respect of the Application and update your records accordingly.

We should be grateful if you would confirm receipt.

Yours faithfully

[redacted]

CMS Cameron McKenna Nabarro Olswang LLP

From: [redacted]
To: Manston Airport; Richard Price
Subject: Manston DCO
Date: 14 July 2019 12:25:22

Dear Richard

We would like to bring to the attention of PINS and the examiners that this week Thanet District Council unanimously passed a climate emergency motion. We appreciate that the examination period for the Manston DCO finished on Tuesday 9th July. As airports are recognised as being big polluters such a declaration is inconsistent with a cargo hub of the size proposed by RSP being based at Manston and we would hope that this historic vote would still be considered as part of the DCO process especially as this could have implications should the DCO be passed.

We would also like draw attention to the fact that since the sale by SHP to RSP has been an item on national news we have had people approach No Night Flights who had no idea whatsoever of RSPs proposals. This is further evidence of RSP's lack of consultation with the people most affected by the proposed cargo hub. This is an issue that has been pointed out to the examiners many times.

Yours sincerely

Ian Scott on Behalf of Nethercourt Action Group REF: 20013745 representing 250 residents of Nethercourt area

From: [redacted]
To: Manston Airport
Subject: Manston Airport DCO
Date: 19 July 2019 10:42:53

MANSTON AIRPORT DCO APPLICATION

I'm writing to you to express my bewilderment and dismay over recent submissions by the Applicant (Riveroak Strategic Partners RSP)

On 18th July 2019 a suite of documents was posted by the ExA onto the Project's website. Amongst those documents were several from RSP. One of these , "MANSTON AIRPORT DCO APPLICATION REVISED NOISE MITIGATION PLAN FOR DEADLINE 12TR020002/D12/2.4T" is dated as 9th July, 2019 – the date on which the Examination came to a close.

A cursory examination of this particular document shows that on page 4, there are two occurrences of the phrase "**(Paragraph Error! Reference source not found.)**" [Original emphasis]

Some observations:

First, if there are two (obvious) errors on just one page, what confidence can the ExA have in the accuracy and/or completeness of the rest of this (or, indeed, any of RSP's) document(s)?

Secondly, this Noise Mitigation Plan, of crucial importance to the residents of Ramsgate and Herne Bay, living under the flight path, was not submitted to the ExA until the final day of the Examination, and was not published on the Project's website until more than a week later. It clearly is not possible for IPs to respond, via the ExA and the project web site, to RSP's last minute proposals. Given that RSP's proposals refer to the most contentious issue of Night Flights (and I note that despite the protestations of hundreds of IPs, RSP are still asking for what is effectively unrestricted night flights between 23:00 and 06:00), I find it most alarming that there is absolutely no opportunity whatsoever for IPs to make any further representation to the ExA.

I understand that it is the intention of the Applicant to make subsequent submissions directly to the SoST.

Will these submissions be published on the Project website in a timely manner?

Will IPs be able to respond to and comment on any submissions so made by the Applicant directly to the SoST? If so, how? If not, what?

Regards

James Chappell

IP Ref 20012627

From: [redacted]
[redacted] Manston Airport
Subject: Re: final submissions
Date: 19 July 2019 11:57:02

Dear Richard - thanks very much.

I'd be very grateful if you'd read the following and respond insofar as you are able.

What can those opposed to RSP's stated aims do now?

Like many others I am wondering where the end of the examination leaves those of us opposed to a return to aviation at Manston.

I was very surprised that this DCO application was ever deemed to be worthy of consideration, and I think RSP's performance over the past six months has supported that view.

I think that PINS and the examining panel have performed well given the process's parameters, although the frantic pace of the final stages was hard to follow and made the production of meaningful responses very difficult.

It seems that RSP now intends to deal directly with the SoS, and it also seems likely that there may well be a new SoS very shortly.

Up till now, the process appears to have been more or less transparent, as were promised it would be, though I am aware that some very reasonable FOI requests from people opposed to the DCO have so far met with no success.

Can you could explain to me what happens now and how we can continue to have a say in what happens to our quality of life in Thanet and the surrounding areas.

Could you also answer these questions.

Will RSP's interactions with the SoS be transparent?
If not why not?
Can people opposed to RSP's cargo hub plans comment on RSP's submissions to the SoS and/or lobby the SoS?
If so, will the SoS take any notice - will we get replies?

Misuse of DCO process

I am not alone in taking the view that RSP has been able to take advantage of the DCO system in a way that was not anticipated by those who drew up the rules. I hope that PINS takes a similar view and will do what is necessary to avoid anything similar happening again.

At face value it appears that - whatever the outcome - Thanet has lost out as a result of the DCO process.

It is nigh on impossible to know whether SHP was ever serious about its plans for Manston. But just supposing it was, Thanet has probably lost out on the best chance it had for reasonable mixed development on the Manston site as a result of the DCO process. After-all, SHP's plans for the site didn't seek to milk it for all its worth. It appeared to be

able to present these relatively benign plans because it hadn't paid a great deal for the site.

So now we may get a cargo-hub - viewed by me and many others as the worst possible outcome.
Or we get housing and other developments from RSP, which are unlikely to come close to matching the quality of SHP's proposals.

I take some small comfort from the notion that SHP and Mrs Gloag seem to be a lot sharper and more successful than RSP in all its forms, and there just may be yet more to come!

With kind regards

Alan Welcome

On Thu, 18 Jul 2019 at 16:52, Manston Airport <ManstonAirport@planninginspectorate.gov.uk> wrote:

> Hi Alan
>
> We received your email (attached).
>
> All ‘Additional Submissions’ received in the period after Deadline 11 and before the close of the Examination have now been published.
>
> Kind regards
>
> Richard Price
>
> Case Manager
>
> **From:** Alan Welcome [redacted]
> **Sent:** 11 July 2019 16:55
> **To:** Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
> **Subject:** final submissions
>
> Good afternoon

A quick line to ask whether you intend to acknowledge and publish final submissions sent on the 9th July.

Mine (and quite likely some others) was erroneously identified as 'Deadline 12'. I hope you will overlook this mistake.

With thanks and best wishes

Alan Welcome

From: [redacted]
To: Manston Airport
Subject: Capacity for making an unbiased decision
Date: 24 July 2019 21:32:46

Dear sir/madam,

I understand that Grant Shapps has taken over as Transport Secretary from Chris Grayling, so it will be he who makes the final decision on the DCO. Can you explain how this is going to work when Mr. Shapps has such a long and public track-record of communicating with members of the pro-Manston campaign group and is on record as supporting the campaign to reopen the airport. He's hardly in a position to make an unbiased decision, is he?

https://www.kentonline.co.uk/kent-business/county-news/minister-manston-key-part-of-23674/

Kind Regards,

Mr. Peter Binding

From: [redacted]
To: Manston Airport
Subject: Whether Grant Shapps has predetermined the application
Date: 25 July 2019 17:32:00
Attachments: Birchall.png

Dear sir/madam,

Yesterday, I wrote to you suggesting that the new Transport Secretary, Grant Shapps, might not be an appropriate person to be making a decision about the Manston Airport DCO as he has already pre-determined his position. The screenshot below was taken from Facebook today, It shows that even the people who have been campaigning to have the airport reopened do not think he is unbiased.

This DCO is a completes shambles isn't it?

Kind Regards,

Mr. Peter Binding

Grahame Birchall The DCO is a foregone conclusion. Shapp's organisation (APPGA) is dedicated to protecting our dwindling airfields and aviation skills against nasty opportunistic developers. It will cost Shapps nothing to grant the DCO, keeping Manston as a reserved resource for at least another 10 years, whether it ever succeeds or not. With the inherent problems of building new airports and runways nationally, Manston is a politician's dream. The existing runway is big enough for Super Jumbo's and the local residents are at best clammering for it and at worst totally benign (except a few hundred newcomers to Ramsgate). The only hope for anti's is a short lived Johnson government.

Like · Reply · 11m

MAN-038

PINS REC

02 AUG

1st August 2019.

Dear Sir,

I write regarding the Inspectorates apparent decision to re-open Manston Airport as a freight hub, as reported in "The Thanet Times", despite your own website indicating that no decision will be made until after the inspectorates report has been written and then considered by The Secretary of State for Transport.

Please find enclosed several newspaper cuttings from various newspapers across the political spectrum highlighting the danger of air pollution to public health.

I accept that these reports refer to air pollution from cars but may I make the point that cars are tested for emission levels, Aircraft, on the other hand, are not regulated for their emissions and are therefore an even greater risk to public health.

I realise that the Inspectorates consultation ended on 9th July 2019 and will hand its written report to The Secretary of State in three months time, but I do feel that the growing public awareness of the dangers of air pollution cannot be understated.

Yours faithfully,

[redacted]

(MR. JOHN DAWSON)

Birmingham's toxic air 'cuts half a year off children's lives'

Sandra Laville

Primary schoolchildren who grow up in Birmingham could lose half a year of their lives due to illegal levels of air pollution in the city, a new report says.

The study examined levels of nitrogen dioxide (NO_2) and particulate pollution (PM2.5) in the city and calculated that an eight-year-old child could die up to seven months early if exposed over their lifetimes to toxic air. The loss of life expectancy is worse in Birmingham than some other major cities in the UK including Manchester, researchers found.

Birmingham is one of five cities required by the government to set up a clean air zone to reduce toxic air, as part of plans to tackle the illegal levels of pollution in 38 out of 43 areas of the country.

But in Birmingham and Leeds, the start date of January next year has been postponed because of government delays in providing vehicle-checking software.

Today, research commissioned by UK100 - a network of local government leaders across the country - for the first time examines the burden air pollution places on mortality in major cities.

Carried out by King's College London, the report says the health cost of the city's toxic air is £470m every year.

The study examined NO_2 and PM2.5, two of the leading causes of poor health from air pollution, in the city's 10 constituencies. It found that air pollution had the greatest impact in the most deprived areas, and that men were more likely to be affected than women.

More than half of children in Birmingham live in the top 10% of the most deprived areas of the country, and about 8,000 children in the city are growing up in the most disadvantaged neighbourhoods in the UK, according to a report by the Children's Society.

Waseem Zaffar, the cabinet member for transport and environment on the city council, said the results were shocking.

"One life cut short by poor air quality is one too many, so this is exactly why the city is taking forward measures such as the clean air zone but we also need strong leadership on this issue at a national government level," he said.

Sue Huyton, the coordinator of the Clean Air Parents' network, said action was needed now.

"It's awful that children living in the UK are breathing air that may shorten their lives. As a parent, you want to do everything you can for your children, but when it comes to air pollution you can feel helpless - that's why those in power must step up."

Air pollution has been identified by Public Health England as the largest environmental risk to public health in the UK. Evidence shows it can cause or worsen a range of lung and heart conditions including asthma, chronic bronchitis, chronic heart disease and stroke. Research suggests air pollution caused by NO_2 and PM2.5 could cause 36,000 deaths per year.

The government has been forced by the courts to improve its plans to clean up the air, after losing legal action taken by the environmental lawyers charity ClientEarth.

A government spokesperson said: "We are aware of concerns over delays and are carrying out work to develop key components of the system to support the charging clean air zones for January 2020."

ENVIRONMENT

Air pollution 'cuts children's lives short'

By Tom Bawden
ENVIRONMENT CORRESPONDENT

Air pollution could shorten the life of a child living in a city by seven months on average, a comprehensive study has suggested.

A detailed analysis of the effects of air pollution on the health of residents in Birmingham has estimated that an average eight-year-old child, born in 2011, will die between two and seven months early if exposed over their lifetime to projected future levels of pollution in the city.

Asthma, lung cancer, heart disease, strokes and diabetes are among the most serious illnesses that are caused or exacerbated by air pollution – at an estimated cost of up to £470m a year to the Birmingham health service, the research found. "I would expect that these figures would broadly apply to other major cities," said Heather Walton, of King's College London, which carried out the research.

Although pollution is high in Birmingham there are numerous areas where it is worse – with the city coming in at number 33 in the World Health Organisation's league table of the UK's most polluted towns and cities last year.

Polly Billington, director of the UK100 group of councils, which commissioned the new study, said: "This report should be a wake-up call to politicians across the country.

"We need to tackle this invisible killer," she added.

The new study is the first to use new Whitehall guidance on "mortality burdens" of air pollution.

Areeba Hamid, senior campaigner for Greenpeace UK, said: "Air pollution is shortening the lives of our children, and cars running on fossil fuels are causing a climate emergency, yet the Government is still failing to act quickly enough."

Jenny Bates, Friends of the Earth campaigner, said: "It is essential that clean air zones are introduced as quickly as possible to restrict the dirtiest vehicles from the most polluted places."

The UK has consistently breached EU air pollution limits in recent years and the High Court has ruled three times that the Government must do more to curb nitrogen dioxide levels – much of which comes from traffic, diesel in particular.

A spokesman for the Environment Department said: "We are already investing £3.5bn to clean up our air, while our clean air strategy has been commended by the World Health Organisation."

UK's most polluted

The UK's most polluted towns and cities, according to the World Health Organisation (as micrograms of fine particles in the air per cubic metre).

15 Scunthorpe
13 Manchester, Swansea, Gillingham
12 Carlisle, Chepstow, Leeds, Leicester, Liverpool, Grays, Eccles, Nottingham, Plymouth, York, Prestonpans, Royal Leamington Spa, Sandy, Sheffield, Stoke-on-Trent
11 London, Coventry, Hull, Londonderry, Middlesbrough, Norwich, Southend-on-Sea, Stockton-on-Tees, Storrington, Wigan
10 Armagh, Birmingham, Brighton, Bristol, Cardiff, Eastbourne, Harlington, Newcastle, Newport, Oxford, Portsmouth, Preston, Salford, Saltash, Southampton, Stanford-Le-Hope, Port Talbot

HEALTH

Air pollution prematurely ages lungs by four years

By Tom Bawden
SCIENCE CORRESPONDENT

Air pollution will prematurely age the lungs of the average Briton by more than four years during their lifetime, thereby raising the risks of chronic lung disease, a study suggests.

As people get older, their lungs function less effectively, in some cases leading to chronic obstructive pulmonary disease (COPD) – a group of lung conditions that cause breathing difficulties, such as bronchitis and emphysema.

Researchers have discovered that air pollution can accelerate the onset of COPD by ageing the lungs considerably over a period of decades. They estimate that long-term exposure to air containing five micrograms of tiny particulate pollution per cubic metre ages the lungs by two years.

With two-thirds of the UK population living in areas containing 10 micrograms per cubic metre or more, the analysis indicates that the average set of lungs will age by four extra years during a person's lifetime.

"This study shows that exposure to polluted air seriously harms human health by reducing life expectancy and making people more prone to developing chronic lung disease," said Professor Tobias Welte, of Hannover University in Germany. "Access to clean air is a fundamental need and right for all citizens in Europe."

Dr Penny Woods, the chief executive of the British Lung Foundation, said: "Living with a lung condition can leave you less capable of work and at a greater risk of an early death.

"We need politicians to step up and protect their constituents from toxic air. It's time our country's air quality health crisis was taken seriously with the introduction of clean-air zones in the most polluted cities."

The UK has consistently breached EU air pollution limits in recent years and the High Court has ruled three times that the Government must do more to curb nitrogen dioxide levels - much of which comes from traffic.

A spokesman for the Department for Environment, Food and Rural Affairs said: "We are already investing £3.5bn to clean up our air, while our clean air strategy has been commended by the World Health Organisation."

The research also included academics from the University of Leicester and was published in the *European Respiratory Journal*.

{i} Asthma, lung cancer, heart disease, strokes and diabetes are among the **most serious illnesses** that are caused or exacerbated by air pollution.

Air pollution map of the UK

SOURCE: EXETER UNIVERSITY/WORLD HEALTH ORGANISATION

Air pollution will knock 7 months off children's lives

lington, director of the UK100 network, which commissioned the research, said: 'This report should be a wake-up call to policymakers, not just in Birmingham but across the country.

'We need to tackle this invisible killer, which is cutting the lives of

'Tackle dirty air and let us breathe'

children and causing health misery for thousands of adults.'

She added: 'By working together, local councils and central government can put in place ambitious and inclusive clean air zones to tackle the most polluting sources of dirty air and let us breathe freely.' Sue Huyton, of the Clean Air Parents' Network, said: 'It's awful that children living in the UK are breathing air that may shorten their lives.

'As a parent, you want to do everything you can for your children, but when it comes to air pollution you can feel helpless – that's why those in power must step up.'

Simon Stevens, chief executive of NHS England said: '2.6million children in England are breathing in toxic fumes everyday – and now there is clear and frightening evidence that this could also shorten their lives.

'The NHS is taking practical steps to reduce our effect on the environment – as well as treating those suffering the consequences of air pollution – yet we cannot win this fight alone, and the growing consensus on the need for wider action across society is welcome.'

Air pollution in many towns and cities is at illegal levels. To reduce these figures, Birmingham City Council – among others – plans to introduce a 'clean air zone' in 2020 to tackle pollution from transport vehicles and particulate matter.

Legal action is also being taken over air pollution. The High Court ruled in May that a new inquest should be held into the death of Ella Kissi-Debrah, 9, who suffered a fatal asthma attack thought to have been triggered by illegally high levels of air pollution near her home in Lewisham, south-east London. The inquest will investigate whether air pollution should be listed as a cause of death.

(14)

From: Ken [redacted]
Sent: 15 October 2019 16:59
To: NI Enquiries <NIEnquiries@planninginspectorate.gov.uk>
Subject: DCO Manston Airport on behalf of RiverOak Stretegic Partnership
Importance: High

Good Morning,

Whilst I realise I may be a little late in putting forward the following argument regarding the re-opening of Manston Airport I feel I am justified in pointing out that whilst currently the flight path into the airport is, in general, across open fields Canterbury City Council are currently about to determine a planning application for 1300 houses, school and commercial development that falls directly on the flight path. (planning Reference; 17/01866).I have attached a document sent today to CCC Planning Department that highlights my concern and would welcome your input. On the positive side I would be very pleased to see the airport open. However, houses, not so keen!

regards,
Mr.K.Rice

[redacted]

15

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk
ManstonAirport@planninginspectorate.gov.uk

17 October 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
Compulsory Purchase Order ("CPO")
Rebuttal to the Applicant's Overall Summary of Need Case

We write to provide the Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Need Case[1].

Rebuttal to the Applicant's Overall Summary of Need Case

(For ease of reference we follow the Applicant's numbering. We have added bold and underlined in places for emphasis only).

1. Introduction

1.1. The Applicant's need case is purely speculative. It is not supported by the evidence base, which does not show (a) a need for an additional dedicated airfreight airport

[1] [REP1-013] UK Planning Inspectorate TR020002 Manston Airport Examination Library

in the South East over and above developments already in the pipeline (planned or consented); and (b) even if there is a need that Manston would be an effective solution. This has been confirmed by evidence provided by York Aviation LLP (**"York Aviation"**), Altitude Aviation Advisory Limited (**"Altitude Aviation"**) and many others during the Examination[2].

This is the first (and to date only) time that York Aviation has worked against an airport and/or airline operator in the UK.

The Applicant at Appendix 1[3] (a supplementary submission attached to its Summary of Need Case) attempts to rebut and exclude from consideration arguments and evidence put forward by York Aviation[4].

The Applicant's attempts to exclude and discount this evidence is of specific note given York Aviation's standing in the aviation industry and its work for the Department for Transport, including but not limited to the proposed Heathrow Expansion.

The Department for Transport commissioned its technical advisor, York Aviation, to provide assurances on Heathrow Expansion scheme capacities and to undertake an independent review of the Airports Commission analysis. This independent review - Heathrow expansion: independent analysis on runway capacity - was published by the Department for Transport on 5 June 2018.

Further, it is of note that in Heathrow Hub Ltd & Anor, R (On the Application Of) v The Secretary of State for Transport [2019] EWHC 1069 (Admin) (01 May 2019) the DfT relied on York Aviation as its commissioned experts to provide advice on amongst other things, the capacity of the Heathrow expansion scheme.

In addition, York Aviation is the author of The Economic Value of General Aviation in the UK, amongst other reports for the DfT. York Aviation's clients include London

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[2] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004852-AS_Five10Twelve_Resubmission%20of%20Evidence.pdf **and Appendix 4 of** https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf

[3] [REP11-013] **UK Planning Inspectorate TR020002 Manston Airport Examination Library**

[4] [AS-368] **UK Planning Inspectorate TR020002 Manston Airport Examination Library**

Stansted Airport, London Luton Airport Limited, Birmingham Airport, Manchester Airport, Ryanair, London City Airport, Belfast City Airport as well as the Department for Transport.

It is clear that York Aviation is a categorically important, trusted and greatly esteemed aviation technical expert of and to the Department for Transport.

We respectfully remind the Secretary of State that York Aviation made clear to the UK Planning Inspectorate days before the close of the Examination:"*Due in part to the recent development in the case and the lack of time available, Stone Hill Park have necessarily not instructed [York Aviation] to prepare a commentary on the responses to the Examining Authority's Fourth Written Questions received at Deadline 9. However, [York Aviation] wish to put on record that* ***[York Aviation] strongly refute the criticism*** *of [its] work made by the Applicant in its written answers. [York Aviation] consider that [it has]* ***provided substantial and well evidenced responses*** *throughout the process*[5]".

1.2. As you will be aware Aviation 2050: A Consultation (**"Aviation 2050 Green Paper"**) is currently a draft consultation document, which outlines proposals for the new Aviation Strategy. The Aviation Strategy White Paper will replace the Government's 2013 Aviation Policy Framework (**"APF"**) once finalised.

The Applicant seeks to rely on paragraph 1.19 of the Aviation 2050 Green Paper and specifically the IATA (2018) Annual Review.

However, the IATA (2019) Annual Review[6] has since been published and it confirms that airfreight demand growth eased in 2018. In fact, globally airfreight tonnage has continued to plummet since 2017

[5] [REP11-070] UK Planning Inspectorate TR020002 Manston Airport Examination Library
[6] IATA (2019) Annual Review

with no sign of picking up[7]. Market-data firm WorldWide Air Cargo reports that airfreight volumes declined by a further -7.1% in 2019[8].

The Wall Street Journal reported in October that global airfreight volumes had been falling for 10 consecutive months year over year, the longest losing streak since the 2008 financial crisis[9]. It, also, reported that faltering demand had not stopped expansion in freight capacity, which rose 1.9% this year through August this year. This continued the trend reported in the IATA April 2019 press release that annual capacity growth has continued to outpace demand since at least April 2018.

1.3. There are significant objections from nationally strategic bodies and government bodies. For example the Ministry of Defence has objected to the proposed Manston DCO stating in its submission of 9 July that:

"insufficient information has been submitted to provide any positive indication that ***potential harm to safeguard operational defence assets*** *can be overcome or readily mitigated*[10].

Network Rail has stated that:

"the compulsory acquisition powers sought by [the Applicant] would ***create a serious detriment to the continued safe, efficient and economic operation*** *of the railway*[11].

In the short/medium-term, the land (runway) at the closed Manston Airport is set-aside as a lorry park in accordance with the Town & Country Planning (Manston Airport) Special Development Order 2019, which inter alia, grants planning permission until 31 December 2020, subject to limitations and conditions, for development consisting of use of land at Manston Airport for the stationing of goods vehicles and associated uses. It has also been confirmed that HMRC intends to use Manston to conduct customs checks on lorries diverted there. This is part of

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[7] Airports Council International Press Release Montreal, 25 June 2019
https://aci.aero/news/2019/06/25/air-freight-decline-continues-as-international-market-weakens/

[8] Air Cargo hits the ground with a bump in August

[9] Jon Sindreu, *Wall Street Journal 14 October 2019*: Cargo Weight is Dragging Down Aviation

[10] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004714-AS%20DL0%20Planning%20Inspectorate%20-%209.7.19.pdf

[11] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004571-Network_Rail_-_Response_to_Fourth_Written_Question.pdf

Operation Brock planning and is of nationally strategic and significant importance in place for transport resilience purposes.

There is an option to extend this arrangement past 2021 and engage Sections 59 and 60 of the Town and Country Planning Act 1990 to extend the current Town & Country Planning (Manston Airport) Special Development Order as has been done on 3 separate occasions since 2015.

In the medium/long-term, the Applicant does not have any airspace and/or flight paths to actually fly planes (if it had any). The CAA has confirmed that the Applicant "*will require a **number of separate approvals from the CAA**, including those for aerodrome and air traffic management safety and airspace change. These processes are at an **early stage** and at present only the airspace change process has been formally initiated*[12]. As you will be aware the airspace change process (if successful) will take at least 110 weeks under CAP1616. It is also of note that the Civil Aviation Authority ("**CAA**") can refuse an airspace change proposal[13] or it can be delayed.

In fact, the CAA portal states that the Applicant has already after the close of the DCO Examination formally requested a revision to timelines "*more in line with the FASI-S programme*[14] and *"to allow more time to fully prepare for the engagement events planned for Step 1B*[15]. The new Applicant's proposed target AIRAC date is 08/2022[16].

2. Policy

2.1. As stated in York Aviation's comments on the Applicant's Written Answers (ND.1.2 and ND.1.4)[17], the Government makes clear that the principal means envisaged to ensure that the UK has sufficient air freight capacity is through the provision of a 3rd runway at Heathrow delivering, mainly, more bellyhold capacity. Specifically, the Government sees the 3rd runway at Heathrow as: "*expected to lead to more long*

[12] [AS-117] UK Planning Inspectorate TR020002 Manston Airport Examination Library
[13] [AS-537] UK Planning Inspectorate TR020002 Manston Airport Examination Library
[14] Indicative Timeline found at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112
[15] Indicative Timeline found at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112
[16] Indicative Timeline found at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112
[17] Page 14
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

haul flights and connections to fast-growing economies, helping to secure the UK's status as a global aviation hub, and enabling it to play a crucial role in the global economy" (Airports NPS, para. 3.18). It is these flights that will enable Heathrow to double its freight handling capability. Growth at Stansted and East Midlands is also anticipated. **The Government does not go onto identify any further anticipated shortfall in capacity for airfreight that needs to be addressed before 2050.**

2.2. Aviation Policy Framework

The Government's 2013 Aviation Policy Framework ("**APF**") provided policy support for airports outside the South East of England to make best use of airport capacity. Airports within the South East of England such as the former Manston Airport were to be considered by the newly established Airports Commission ("**AC**")[18].

Airports Commission

The AC report was the basis for the Airports National Policy Statement ("**Airports NPS**") which concluded that airport capacity in the South East of England should be increased and that increase should be provided by constructing a third runway at Heathrow Airport[19].

The approach of the AC was evidence-based: its assessment objective and its conclusions objectively reached and justified[20].

The AC reviewed the case for Manston as one of the 52 proposals received in its shortlisting proposed and dismissed it as an option for further consideration in the AC Final Report since "*it **did not fit with Commission's** remit or offer a solution to the key question **of providing additional long-term capacity** and connectivity to the UK*[21].

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[18] Para 1.1 Beyond the horizon, The future of UK aviation, Making best use of existing runways
[19] Para. 1 of Heathrow Hub Ltd & Anor, R (On the Application Of) v The Secretary of State for Transport [2019] EWHC 1069 (Admin) (01 May 2019)
[20] *Ibid*
[21] Airports Commission, Interim Report 2013, Appendix 2: Assessment of Longterm Options, Page 16, please also see [REP5-125] UK Planning Inspectorate TR020002 Manston Airport Examination Library

Of particular note, is that Manston was rejected for any further consideration after being considered by the AC in context as a dedicated air freight airport in the AC Interim Report: The Air Freight Industry in the UK (PwC 2013) which formed part of the AC's suite of Economics Analysis Consultants Report[22]. The AC only mentioned Manston as a possible reliever airport for General Aviation[23].

2.3. Aviation Strategy

The Aviation 2050: A Consultation (**"Aviation 2050 Green Paper"**) is currently a draft consultation document which outlines proposals for the new Aviation Strategy. The Aviation Strategy White Paper will replace the APF once finalised.

At para. 4.47, the Aviation 2050 Green Paper makes **specific mention of East Midlands and Stansted alongside Heathrow as the principal freight gateways.**

Further, at para. 4.49 of the Aviation 2050 Green Paper: *"The government supports continued growth of the air freight sector particularly **making best use of existing capacity at airports**, to continue to facilitate global trade for UK businesses and consumers. It has already taken action by supporting the Northwest Runway scheme at Heathrow, which has been estimated to nearly double the capacity for freight at the airport to 3 million tonnes per year.*

It is important to note that the reference here is to "**existing** [airport] **capacity**" rather than existing runways as the means by which the growth of air freight is to be supported.

The Applicant confirmed during the DCO examination that ***"the current capability of (Manston) airport to provide air cargo transport services is zero[24]"***.

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[22] [REP6-039] [REP7-008] UK Planning Inspectorate TR020002 Manston Airport Examination Library
[23] [REP5-125] UK Planning Inspectorate TR020002 Manston Airport Examination Library and Airports Commission, Interim Report, November 2014, paras. 5.96 to 5.100
[24] Page 8, A2 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003770-D5%20Cover%20Letter.pdf

2.4. The Applicant has provided absolutely no evidence of its assertion that Manston could play a "vital role". Over the past twenty-six years, successive governments, policy documents and statements have actively considered the case for development of Manston Airport, both for passenger and cargo services, and consistently rejected such a possibility[25].

Primary reasons for rejection of Manston Airport as a viable option to address capacity issues was summarised in the Future Development of Air Transport in the UK - South East report for the DfT, (2002), which concluded that *"key constraints are its geographic position in relation to the major sources of demand and noise impacts over the nearby town of Ramsgate"*. Needless to say, the geography has not changed since 2002 and will not do so in the period to 2050.

More recently, the Airports Commission Report of 2015, considered the case for Manston and did not deem it worthy of a single mention in the final report or in the resultant Airports National Policy Statement, ("**Airports NPS**") of 2018.

2.5. Airports NPS

Manston is not referred to or relied upon in any national aviation policy document. As there is no NPS and no need there is no policy presumption that a need exists. The requirement for any such application to be treated on its merits is clearly stated both at paragraph 1.39 of the Airports NPS and at paragraph 1.29 of Beyond the Horizon[26].

The Airports NPS requires the case to be made for each specific airport[27]. As York Aviation made clear in its 2019 Update Report[28] (paras 2.16, 2.17) this requires a realistic assessment to be made of the usage of each runway and the benefits

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[25] See summary submitted to UK Planning Inspectorate ExA at https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003979-Five10Twelve%20Ltd%20-%20DL6%20Comments%20on%20WS%20_Need%20and%20Ops.pdf

[26] Beyond the horizon The future of UK Aviation Making best use of existing runways ("Beyond the Horizon")

[27] Para 1.42 Airports NPS

[28] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004852-AS_Five10Twelve_Resubmission%20of%20Evidence.pdf and Appendix 4 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf

deriving from that usage which can be balanced with any environmental harm that might arise. The policy cannot be taken in isolation without considering the extent to which there are net benefits from the level of usage proposed. The policy does not support safeguarding runways in perpetuity against some prospect of future use.

The Applicant has not made the case that a need exists for a new dedicated freight airport to be based at Manston near Ramsgate, Thanet, in the far South East corner of Kent. The evidence contained in the York Aviation, Altitude Aviation reports and many others submitted in the Examination[29] demonstrates and evidences the opposite.

At the oral evidence given by the Applicant/Azimuth at the Need and Operations Issue Specific Hearing of 21 March 2019 confirmed that the Azimuth Report upon which the entirety of the Need Case for Manston relies has no realistic foundation as a basis for predicting the extent to which Manston might actually be used[30].

Whilst the Airports NPS does not directly have an effect; it is important to note that paragraph 4.36 of the Airports NPS places a requirement on an Applicant to demonstrate that a scheme is cost-efficient and sustainable, and seeks to minimise costs to airlines, passengers and freight owners over its lifetime. Paragraph 4.5 of the Airports NPS confirms that viability is an important factor in that *"The Secretary of State will have regard to the manner in which benefits are secured and the level of confidence in their delivery"*.

This is just plain good common sense. It speaks to whether Manston is/will be viable and the alleged benefits (10,000+ air cargo transport services per year and jobs) are in fact achievable and deliverable.

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29 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004852-AS_Five10Twelve_Resubmission%20of%20Evidence.pdf

30 Dr Sally Dixon/Azimuth, UK Planning Inspectorate, Recording of ISH2 - Part 3, Need and Operations, [TR020002-003870] at timecode 1:17:28 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004197-Manston%20Tuesday%20Session%203.mp2

The Applicant has not demonstrated that Manston is/will be cost-efficient, sustainable and deliverable. Again, the evidence contained in the York Aviation and Altitude Aviation reports and many others submitted in the Examination[31] demonstrates the opposite and the Applicant's own evidence shows that airlines and freight owners would be charged costs materially ahead of other airports. For example: the Applicant plans to charge airlines around four times the equivalent cost at East Midlands Airport and without any countervailing incentives[32].

The first Judicial Review of the London Heathrow North West Runway ("NWR") Scheme, ("LHR-JR")[33], found that *"[Airports NPS] made clear that an increase in carbon emissions that would have a material impact on the ability of Government to meet its carbon reduction targets would be a reason to refuse development consent".*

The LHR-JR dismissed the Claimant's case on climate change grounds partly on the basis that *"The AC (Airports Commission) considered that the NWR Scheme (and the two other schemes) could be delivered within the UK's obligations on either basis; a conclusion which, after further analysis and updating of passenger demand forecasts, the [Airports NPS] agreed".*

Since the Applicant's proposals for development of Manston were not considered or even mentioned in the AC Final Report or the Airports NPS, there has been no Governmental consideration or detailed analysis of Manston's proposed impact on the UK's ability to meet its GHG emissions or on the carbon budget for aviation in light of NetZero commitments. The Government's carbon emissions forecasts for aviation did not and does not include the proposed Manston airport[34].

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31 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004852-AS_Five10Twelve_Resubmission%20of%20Evidence.pdf

32 Para 4.10 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003851-Annex%202%20-%20Summary%20of%20Oral%20Submissions%20to%20Need%20and%20Operations.pdf and https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003643-Stone%20Hill%20Park%20-%20Annex%201%20-%20Appendix%201%20-%20York%20Aviation%20Commentary%20on%20Applicant's%20Responses%20to%20WQ's_Redacted.pdf

33 The Heathrow Third Runway Litigation (2019) EWHC (Admin) 1069 and 1070 https://www.judiciary.uk/wpcontent/uploads/2019/05/Heathrowmainjudgment1.5.19.pdf

34 https://www.whatdotheyknow.com/request/578960/response/1386569/attach/html/6/Making%20best%20use%20FOI%20data.xlsx.html

The UK has a carbon budget for carbon emissions which is based on the UK Aviation Forecasts 2017[35]. The UK Aviation Forecasts 2017 did not include a passenger ATM forecast for Manston Airport and did not include a cargo aircraft ATM forecast for Manston Airport[36].

The UK Aviation Forecasts 2017, also, did not include an increase in freighter (cargo aircraft) ATMs. In fact, it confirmed that (a) dedicated freight aircraft (freighters/ cargo aircraft) do produce a material amount of carbon emission; and (b) it is assumed that the number of freighter ATMs did not change over the forecast period [37].

The UK Aviation Forecasts 2017 was produced prior to the UK Government setting a net zero emissions target for 2050, thereby amending S1(1) of the Climate Change Act (2008).

The Applicant's proposal to use at least 1.9% of the total UK aviation emissions target[38] has not been accounted for and any development at Manston would have a material impact on the ability of Government to meet its carbon reduction targets. Further, it would put at risk the Airports NPS and/or expansion elsewhere.

2.6. Use of Existing Airport Capacity

Government policy on airport capacity, save for developing a Northwest Runway at Heathrow Airport, has been set out in the APF. The Airports NPS does not affect Government policy on wider aviation issues, for which the APF statements still

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35 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/781281/uk-aviation-forecasts-2017.pdf

36 https://www.whatdotheyknow.com/request/578960/response/1386569/attach/html/6/Making%20best%20use%20FOI%20data.xlsx.html

37 Para 3.32 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/781281/uk-aviation-forecasts-2017.pdf

38 Chapter 16 of APP-034 UK Planning Inspectorate website Manston TR020002

apply. This includes the UK Airspace policy: a framework for balanced decisions on the design and use of airspace[39] which specifically states at Page 4:
*"This is why [the Government] back the proposed construction of a new north-west runway at Heathrow and why [Government is] supporting other **airports in making the best use of their existing capacity**"*. The Government's policy on this issue will be considered in the context of developing a new Aviation Strategy[40].

It is important to note that within the Aviation 2050 Green Paper the means by which the growth of air freight is to be supported is to ***make best use*** of "***existing [airport] capacity***" (para. 4.49 of the Aviation 2050 Green Paper) rather than making best use of existing runways .

2.7. Manston Use of Existing Airport Capacity

The Airports Council International (ACI) Europe position paper on **Airport Capacity** (ACI Europe, 2015), defines capacity as ***"the practical maximum number of operations that a system can serve within a given period of time"*** and as a combination of: runway capacity, airport geometry, terminal capacity, apron/stand capacity, airspace capacity and surface access capacity[41].

The Applicant confirmed during the DCO examination that ***"the current capability of (Manston) airport to provide air cargo transport services is zero[42]"*** .

It is therefore unreasonable and not supported by policy or emerging policy to prioritise the re-opening of Manston with no airport capacity and which is solely reliant on road surface access for air cargo, workers and fuel with a very poor logistics infrastructure (see map below), particularly given both the number of

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39 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/653801/consultation-response-on-uk-airspace-policy-web-version.pdf

40 Para 1.42 Airports NPS

41 International Transport Forum, *Capacity Building Through Efficient Use of Existing Airport Infrastructure*, OECD, Discussion Paper 2017: 27 Jagoda Egeland Internasport Forum, Paris and Paul Smale Department for Transport, United Kingdom https://www.itf-oecd.org/sites/default/files/docs/capacity-building-efficient-use-existing-airport-infrastructure.pdf

42 Page 8, A2 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003770-D5%20Cover%20Letter.pdf

existing airports in the South East and the numerous airport expansion plans currently being developed and proposed at existing and currently operational airports in other regions, including the more under-served Northern Powerhouse.

The map below highlights the presence of third party logistics companies in South East England, with a clustering around Heathrow

Map Showing the Presence of Third Party Logistics Companies in South East England with a Clustering around Heathrow

Source : AC Interim Report: The Air Freight Industry in the UK (PwC 2013). It is of note that Manston airport was open and operating as a cargo airport at the time of this report. Manston closed in 2014. Note well London Biggin Hill (Bromley) and Lydd Airport (Ashford, Kent) amongst others are missing from this map.

3. Capacity Constraints

3.1. The CEBR 2016 report referred to by the Applicant is a document that was put together with the aim of persuading the *"Government must make a final decision quickly and back the Airport's Commission recommendation to build a new runway*[43]*"*. The Government has now made a decision. The AC report was the basis for the Airports National Policy Statement 2018 which concluded that airport capacity in the South East of England should be increased and that increase should be provided by constructing a third runway at Heathrow Airport.

[43] https://www.londonfirst.co.uk/sites/default/files/documents/2018-05/LBF-Importance-of-air-freight.pdf

York Aviation's report rebuts the Applicant's reliance on this general reference and addresses the issue of whether there is or will (not) be a shortage of airport capacity for dedicated freighter aircraft at Section 5 of its February 2019 Report[44].

3.2. Paragraph 6.48 of Beyond the Horizon refers to airport capacity generally - ie passenger, belly and cargo airfreight not specifically to dedicated freighter.

It is simply not possible for the Applicant to state with any certainty that it will be ready for business by 2025. Notwithstanding funding/financing/significant Objections from local authorities and bodies/ Construction works/ Highways England works/ Operation Brock etc there are other known factors that are very much out of its control.

For example, it is not possible for the Secretary of State to predetermine whether the Applicant will be granted or refused airspace by the CAA some time and by the very earliest in mid/late 2022[45]. Further, York Aviation show that, because of the complex interactions between flightpaths serving all of the airports (16 in total) in the South East, consultation on flight path options across the full range of airports is planned to be concurrent to ensure that all of the interfaces are correctly identified. This is planned for 2022, with implementation of the new airspace arrangements in the period 2024-2026. It is entirely possible that new flightpaths for Manston could not be in place (if granted) until this later date[46].

For example, it is also not possible for the Secretary of State to predetermine whether or not the Ministry of Defence will at any point agree to the relocation of the High Resolution Direction Finder[47] ("**HRDF**") operational defence assets of national strategic importance. The Defence Infrastructure Organisation has categorically stated that no timescales can be imposed on the Ministry of Defence in

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[44] Page 432
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf

[45] Indicative Timeline found at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112

[46]
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003643-Stone%20Hill%20Park%20-%20Annex%201%20-%20Appendix%201%20-%20York%20Aviation%20Commentary%20on%20Applicant's%20Responses%20to%20WQ's_Redacted.pdf

[47]
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004579-Defence%20Infrastructure%20Organisation%20-%20Deadline%209.pdf

the dDCO regarding this process[48]. In the event that the re-provision of the HRDF equipment on an alternative site proves unsuccessful then the existing equipment will have to remain in its current location and this will prevent Manston from operating.

3.3. The Applicant misconstrues the freight report. A lot of freight doesn't originate in the South East, so in many ways it's moving freight to where it originated from all over the UK. They're going in and out of South East airports because of London Heathrow. It's not that 76% of demand originates in the South East - it's a direct function of London Heathrow and its hub role. If you took all regional freight out of London Heathrow you'd have ample capacity but that won't happen because it's London Heathrow where much of the total UK air freight is consolidated into economic loads. York Aviation sets out in Figures 4.4 and 4.5 of its 2019 Update Report[49], which show how widely dispersed across the UK the market for air freight is. Its analysis suggests that only around half of UK air freight is destined for or originates in London and the South East but, despite this, regional airports handle only 23% of freight tonnage. This analysis would point to at least 1/3 of freight using London airports as having an origin or destination elsewhere in the country.

3.4. York Aviation and Altitude Aviation provided to the Examination detailed analyses on the demand and supply outlook for South East and wider UK airports, with a clear explanation of <u>how planned increases in capacity at existing airports will satisfy future demand</u>[50]:

3.4.1. HEATHROW

At the Need and Operations Issue Specific Hearing held on 21 March 2019. Mr Rhodes from Quod confirmed that he acted as a planning adviser for the

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48 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004579-Defence%20Infrastructure%20Organisation%20-%20Deadline%209.pdf

49 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

50 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf

third runway DCO proposals. He confirmed that (a) Heathrow Airport Limited (Heathrow) is committed to the new runway opening in 2026; (b) that Heathrow is committed to expanding its cargo as well as its passenger operation; (c) the forecast set out in the Airports NPS and referred to at para. 4.49 of the Aviation 2050 Green Paper that Heathrow's expansion will achieve capacity for 3 million tonnes of freight was informed by Heathrow's Blueprint for Freight. Mr Rhodes explained that in the early years post 2026 runway opening, there will be significant spare capacity for freight as well as passenger growth. Further, it is not new goods that are being shipped by e-commerce. It is just the same goods in a different form of sale.

3.4.2. STANSTED

York Aviation covered at length in answers to questions that Stansted is looking to grow cargo and has capacity[51].

In 2018, Stansted successfully abolished the sub-categories annual limited. This means there is now no specific limit to the number of cargo or passenger flights that can be operated in the future (within the overall cap).

The latest CAA data for August 2019[52] clearly show that Stansted is running cargo both as bellyhold and as dedicated cargo.

Emirates is handling cargo at Stansted and has doubled the bellyhold cargo capacity offered as of 1 July 2019 capitalising on its success[53].

Despite this fact, the Applicant makes the extraordinary claim at 3.2 of Appendix 4 of REP5-024 that: "...2017 and 2018 Stansted is recorded as

[51] Page 37
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003640-Stone%20Hill%20Park%20-%20Annex%201%20-%20SHP%20Comments%20on%20RSP%20Answers%20to%20WQs.pdf

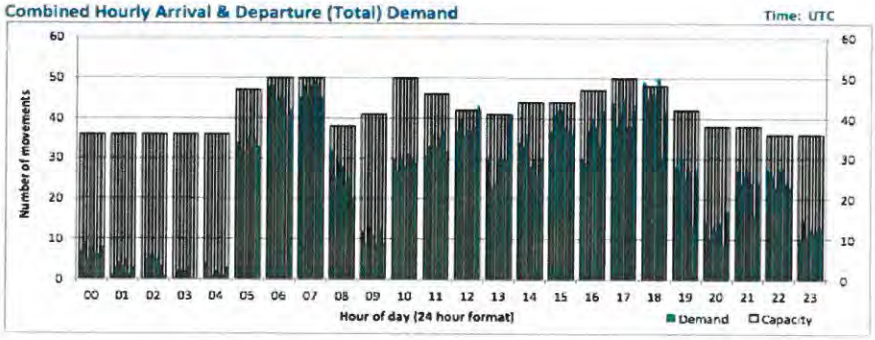
[52] https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Airport_stats/Airport_data_2019_08/Table_14_International_and_Domestic_Freight.pd

[53] https://mediacentre.stanstedairport.com/emirates-to-launch-second-daily-flight-to-london-stansted/

handling no bellyhold freight at all (and none was recorded in the first two months of 2019"

After contact was made to the CAA it transpired this was a data error point and the handling agents at Stansted had not been providing the data properly. CAA reports from July[54] and August 2019 clearly show that bellyhold freight is being handled by Stansted.

Clearly there is capacity available as demonstrated by the grey areas on the graph below. The graph below taken from Page 11 of the Stansted Airport Summer 2018 report shows the actual spare runway capacity to



accommodate additional freighter movements at Stansted at the start of the summer season in 2018[55].

3.4.3. GATWICK

Gatwick has continued to grow cargo volumes, linked to the development of long-haul passenger services using widebody aircraft. Cargo tonnes grew by 16.1% in 2018[56], following growth of +24.4% in 2017 . This is linked to its development of long-haul passenger services and using widebody aircraft.

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54 https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Airport_stats/Airport_data_2019_07/Table_15_Freight_by_Aircraft_Configuration.pdf

55 https://www.acl-uk.org/wp-content/uploads/2018/03/STN_S18_SOS.pdf

56 Gatwick Airport,(2019)

Gatwick is progressing its own DCO and who is to say that the Traffic Distribution Rule will not be lifted? It currently handles 113,000 metric tonnes of cargo[57].

3.4.4. LUTON

Luton is progressing its own DCO. Luton Cargo Centre provides freighter operations, handling approximately 28,000 tonnes of cargo each year[58].

3.4.5. EAST MIDLANDS AIRPORT

Comments extracted from York Aviation note:

"The repeated assertion that East Midlands is facing capacity constraints is not borne out by the facts, including evidence that the Airport is constructing additional aircraft stands as demand grows alongside facility developments by other parties such as UPS and Amazon (see York Aviation Comments on Applicant's Deadline 3 Responses to Questions from the Examining Authority submitted at Deadline 4 – ND.1.15 [REP4-065[59]]"

and

https://mediacentre.eastmidlandsairport.com/new-facilities-for-eastmidlands-airport-passengers/

Further, York Aviation submitted a lengthy rebuttal of the Northpoint report to the Examination[60].

3.5. The Applicant appears to assume that, to the extent there is overspill seeking freighter capacity as an alternative, that Manston would be the only solution. The

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[57] https://www.gatwickairport.com/business-community/about-gatwick/company-information/gatwick-key-facts/

[58] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020001/TR020001-000048-LUTN%20-%20Scoping%20Report%20(Volume%201%20-%20Main%20Report).pdf

[59] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003643-Stone%20Hill%20Park%20-%20Annex%201%20-%20Appendix%201%20-%20York%20Aviation%20Commentary%20on%20Applicant's%20Responses%20to%20WQ's_Redacted.pdf

[60] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

Applicant has acknowledged that this is not the case given available capacity for freighters at airports such as East Midlands (particularly well placed for the distribution of goods across the UK), and Doncaster Sheffield.

But appears to have overlooked/forgotten Stansted airport.

All these airports are already established and operational and, therefore, well placed to deal with any such requirements in the short to medium term using their existing infrastructure and existing airport capacity.

Location of Manston

3.6. Manston's runway length, which is no longer than several other airports in the UK. It currently has no airspace. Manston in particular has a poor location within the UK. It is on a peninsula, with no catchment to the East or North and isolated from much of the South East due to the need to circumnavigate London. Manston catchment is essentially a sub-set of the Stansted catchment. Within a 3-hour drive, only the South East & East of England, and a small part of the Midlands, are accessible. In comparison, most of England and Wales can be accessed within 3 hours of East Midlands Airport. **90% of England and Wales are within a 4 hour drive of East Midlands Airport**[61]. In addition to Manston's poor geographic location, it is also relatively far from important surface access infrastructure. The motorway network is not especially close (the airport is about 22 miles from the M2 and 38 miles from the M20). Successful freight airports in the UK and Europe have been shown to be extremely close to the national motorway network, helping to minimise the shipper/consignee to airport transport time. For example East Midlands Airport includes direct road access to M1, A(M) 42, A453, A50, the train is 10 minutes away and work is underway on the East Midlands Strategic Rail Freight Interchange. As you will be aware there is no Strategic Rail Freight Interchange in Kent with the most recent proposal rejected in May 2019.

3.7. East Midlands Airport's catchment area that the Applicant refers to proves the point that East Midlands Airport serves customers all over the UK. This does not help the Applicant's case at all.

[61] https://www.magproperty.co.uk/cms/wp-content/uploads/2018/10/EMA_2018_Brochure_FinalProof2.pdf

3.8. The Applicant negates to mention that access to the Port of Tilbury is through the Dartford Tunnel. Further, it takes at least 90/120 minutes to drive to Central London by car let alone by HGV.

3.9. The Applicant is suggesting here that Manston is so far from the motorways you can use cross routes. It is unclear if these cross routes have been taken into account and/or modelled by Highways England and/or are accessible by HGVs.

3.10. The biomedical industry and technology companies in Cambridge, the M11 Growth Corridor and prospectively to the planned Varsity Corridor are better suited to use Stansted. The Lower Thames Crossing will extend the catchment area for East Midlands airport, Stansted etc.

3.11. The Applicant **has accepted that Stansted is better placed to serve the South East freighter market. It was shown and evidenced on numerous occasions by York Aviation that Stansted does have the capacity to accommodate additional freight demand (if any) without affecting its passenger market**[62].

4. Trucking

4.1. At the Need hearing held on 21 March 2019 York Aviation clearly explained and evidenced that the Applicant was incorrect it is assumption that the prevalence of trucking goods produced in or destined for the UK to European airports was largely a result of capacity constraints rather than market preference[63].

A large amount of evidence from both York Aviation and Altitude Aviation was submitted[64] to evidence that truck movements would not be divertible and the commercial reasons why trucking is common place and an integral part of the

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62 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004669-Applicant's%20Overall%20Summary%20of%20Need%20Case.pdf

63 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003977-Stone%20Hill%20Park%20-%20Comments%20on%20Applicant's%20Wriiten%20Summary%20-%20Need%20&%20Ops%20Hearing.pdf

64 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

general and integrator sectors, rather than something to be remedied with freighter aircraft.

According to York Aviation, it is simply cheaper in overall terms to truck to an alternative airport offering cost effective bellyhold capacity than it is to seek out dedicated freighter capacity. This applies to the vast majority of general air cargo[65].

4.2. York Aviation's November 2017 and February 2019 reports repeatedly make clear that the Applicant has incorrectly interpreted the earlier work of York Aviation for the Freight Transport Association and Transport for London. It transpired that despite York Aviation itself providing detailed rebuttals of the interpretation of the York Aviation a multitude of times the Applicant simply has continued to misrepresent its conclusions as here.

Extraction from York Aviation February 2019 at para 2.37:

"Trucking of air freight is not a new phenomenon. The work by Steer Davies Gleave for the Department for Transport (DfT) in 2010 estimated that over 50% of air freight leaving the UK for Europe was trucked rather than using the bellyhold of passenger aircraft. In other words, airlines are using trucks rather than aircraft to distribute freight arriving on and connecting to their global passenger (bellyhold) and freighter operations. At the time of this analysis, Manston was still operational. If it was more economical to use a pure freighter service from Manston rather than trucking over the Channel, this would have been happening in 2010 but it was not. Other than the potential additional border checks as a consequence of Brexit, the Applicant/Azimuth advance no reasons why freight would switch from the cheaper trucking/bellyhold model to expensive pure freighter operations. We believe that the economics of air freight will continue to favour the use of bellyhold freight, other than for a minority of consignments, to and from the UK even if there is a lengthy trucking leg".

65 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

4.3. The cited Steer Report of October 2018 with the exception of one case study, speaks of a bellyhold freight shortage not pure freight. Manston is not proposing to offer any bellyhold freight.

5. Dedicated freighters

5.1. East Midland airport is a largely dedicated freighter airport.

Extract from York Aviation:

"The advantages of dedicated freighter operations cited by the Applicant come at a cost which few shippers of general cargo are willing to pay. There is always an economic trade-off between time and cost so, for most air freight, the hub and spoke system works well as it does for passengers. Whilst Azimuth quotes Boeing 2016 World Air Cargo Forecast as saying 80% of cargo between Asia and Europe used dedicated freighters, the latest Boeing 2018 report (referred to earlier) shows this proportion has fallen to 75%. Hence, it is completely wrong for the Applicant to claim that there is not a general trend to a reducing share of cargo carried on dedicated freighter aircraft. The trend is clear and relates to the overall cost effectiveness of transporting goods. Boeing, in its 2018 report, stresses that dedicated freighters tend to concentrate on the main trade routes whilst bellyhold and hubbing provides the global reach. This contrasts with the view of the Applicant that somehow dedicated freighters offer more flexibility to get goods from A to B. The response appears to cling to the belief that decline in freighter use is due to the lack of a dedicated freight airport, citing Leipzig and Liege as having few passengers and seeking to dismiss East Midlands and Stansted as freight airports because they handle more passengers than Leipzig and Liege. At 4.9 mppa, East Midlands is still a relatively small airport in passenger terms and remains able to focus largely on freight[66]".

Further evidence can be found at Paragraph 3.2 of the Altitude Aviation report concluding that *"the established trend towards bellyhold freight has continued in both*

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66 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004669-Applicant's%20Overall%20Summary%20of%20Need%20Case.pdf

2017 and 2018. The allcargo segment that a reopened Manston would be targeting has become less important within the UK market[67]*."*

5.2. The Applicant has again misrepresented York Aviation's work. Page 19 of its York Aviation 2015 report makes clear that York Aviation was referring to constraints biting on bellyhold capacity at London not on capacity available for dedicated freighter operations.

The Applicant cites a quote from Boeing whom are trying to sell freight aircraft. Boeing 737 Max were grounded in March after an onboard automatic safety feature was tied to two fatal crashes that killed 346 people. The discovery of cracks in structural support on an earlier version of the 737 has forced the grounding of at least 38 of the jets[68].

5.3. There isn't a market for dedicated freighters; there has been a consolidation trend of cargo-only operations at main airports with 2017 and 2018 seeing this trend continue. Altitude Aviation at paragraph 84 state " The three largest airports for freight carried on cargo only aircraft (Heathrow, East Midlands, Stansted) accounted for 87.6% of this mainland UK market (by tonnage) in 2018E. This is up from 44% in 1990 and 86.7% in 2016" but the number of freighter AMs fell[69]. The is because these airports can be flexible to demand offering passenger aircraft bellyhold capacity and increasing average loads per freight aircraft.

Extract from York Aviation[70]:

"The relative share of freight carried in dedicated freighter aircraft is in inverse proportion to the amount of bellyhold capacity available at each of the airports. An important feature of these hub airports [Frankfurt] is that they have <u>well developed freight forwarding infrastructure concentrated around them</u> given the global connectivity offered by the hubs and the national airlines based there. This consolidation is driven in the first instance by the hub connectivity offered in the

[67] Page 17 http://www.stonehillpark.co.uk/images/uploads/documents/Altitude_report_update_Feb2019.pdf
[68] https://edition.cnn.com/2019/10/18/business/boeing-737-max-financial-impact/index.html
[69] http://www.stonehillpark.co.uk/images/uploads/documents/Altitude_report_update_Feb2019.pdf
[70] Page 15
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

bellyhold of passenger aircraft but the existence of the freight forwarding and consolidation centres makes these airports the first choice for dedicated freighters to operate to the extent required to supplement any gaps in the network of bellyhold services available. These conditions are not replicable at other non-hub airports, other than for express freight/integrator operations for which Germany like the UK has specialist airports where such operations are based. Leipzig and Cologne serve as hubs for such operations in the same way as East Midlands serves as the UK main integrator hub. It is notable that, despite handling 44 million passengers a year with major global connections, Munich Airport only handled 3,807 freighters in 2018, despite Bavaria being a major manufacturing economy. This only serves to highlight the special circumstances which make Frankfurt attractive for dedicated freighter operations, notwithstanding its night closure period, and so long as it has available slots. Just as with Heathrow, the attraction of Frankfurt for freighter handling is simply not replicable elsewhere in Germany. There are also important scale factors that apply to the position of Germany in terms of the total air freight market: • the economy is around 30% larger than the UK; • of which manufacturing's share is over 20% compared to 9% in the UK; • the population is around 25% higher than the UK driving imports. Hence, it is unsurprising that the need for air freight capacity is greater to and from Germany than to and from the UK. Furthermore, Germany's central location within Europe means as it acts as a distribution hub for much of Central Europe, well beyond its borders, in a manner that the UK could not hope to replicate. Hence, given the more limited bellyhold capacity available at Frankfurt, the need for more dedicated freighter operations is hardly surprising. The fact that they choose to operate to Frankfurt despite the night closure period is a sign of the power of the hub. When the economic factors are properly considered, alongside recognition of the special characteristics that give rise to demand for cargo services to major national hub airports, the relative performance of Frankfurt and Heathrow is easily explained. The UK is currently adequately served by the existing combination of bellyhold capacity and freighter capacity available at Heathrow, East Midlands, Stansted and other existing airports, as shown in Figure 4.7 of our 2019 Update Report. The situation at Frankfurt is simply not a relevant comparator with the key requirement being increased global connectivity at Heathrow, that the 3rd runway will provide,

rather than an increase in capacity for dedicated freighter aircraft at a remote location".

These trucks are part of hub and spoke network. The hub isn't going to be at Manston - it's going to continue to be at East Midlands Airport. You're not going to fly from East Midlands Airport to Manston - those trucking movements are not looking for an airport, they're looking for a hub where they can be put on 16 different aircraft all over the world. East Midlands Airport already do this very well and presumably it is the national interests for it to keep doing it well.

6. Modern airport (e-commerce)

6.1. This very well may be the case and perhaps supports investment in freight facilities at **existing** airports with **existing airport capacity**. It does not follow that investment should be at or will be forthcoming at any location. As the old adage says location, location, location is what counts and Manston's location has not and simply cannot change. The summary in the Future Development of Air Transport in the UK - South East report for the DfT, (2002), which concluded that *"key constraints are its geographic position in relation to the major sources of demand and noise impacts over the nearby town of Ramsgate"* holds true now as it did then and will continue to do so.

6.2. It has been amply demonstrated throughout this letter and in the Examination that other South East and other better placed UK airports either currently have capacity, are planning to increase capacity or are in the matter of Heathrow subject to Airports NPS.

6.3. Previous operators at Manston included Ann Gloag who is the 12th richest person in Scotland with a combined net worth of £875 million[71] and has a huge amount of transport knowledge and experience and Infratil, the New Zealand-listed infrastructure fund which had experience in airports- Wellington Airport, New Zealand. Both owners lost substantial amounts in money invested in Manston Airport (see Background section).

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71 https://www.eveningtelegraph.co.uk/fp/revealed-scotland-rich-list-2019-includes-eight-in-tayside-with-wealth-of-5-2bn/

The Applicant has provided no evidence whatsoever of its assertion about British Airways operations. What we do know is in the ensuing months the **airport made revenue losses of £100,000 per week plus significant capital losses** before its closure in May 2014.

Even if we leave aside all the hurdles, issues and problems as outlined above and within the more than **thirteen times the average number of questions raised by the ExA** during the process[72] for one moment. The Applicant has provided no evidence whatsoever as to whom will actually use Manston.

6.4. Again the Applicant makes assertion after assertion and has provided no evidence to back it up.

6.5. E-Commerce model of how they ship freight is exactly the same as the integrator model - ie they bring in goods in the morning, some to fulfilment centre, some straight to customer, so if you can't fly at night you can't serve that e-commerce market. They argue ecommerce is over and above existing air freight, but it isn't - it's the same goods. Instead of buying from high street we're buying online, but pattern by which they come in is exactly the same as integrator model. Amazon are not going to set up a fulfilment centre near Manston - it's the wrong place. E-commerce providers are using DHL or they're going straight to the customer. All of that needs night flying which is not available to the Applicant. Even if only half of the product is going to customer, it still needs to come in in the morning to meet that fulfilment proposition.

The Applicant fails to point out that Amazon Air operate 50 aircraft in the United States. The United States is about 40 times bigger than the United Kingdom with great distances between towns, cities and people.

6.6. The chart the Applicant has put in to support its argument is of course a chart for the American e-commerce airfreight market and it can be found here

[72] Manston DCO Submission to Deadline 11, (paragraphs 3 - 3.4.4)
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004701-Five10Twelve_IJH_Corrected.pdf

https://www.axios.com/amazon-shipping-chart-fedex-ups-usps-0dc6bab1-2169-42a8-9e56-0e85c590eb89.html

There is no evidence they will come to Europe, much less Manston. Move in US for Amazon to do their own shipments, but that's US only, not Europe. DHL isn't even on there - which shows it's US.

7. Summary

7.1.

A. Assumption made by the Applicant: "Azimuth Report...opportunity to focus on the air freight market"

"At the Need and Operations Issue Specific Hearing of 21 March 2019, Dr Dixon/Azimuth for the Applicant confirmed that the Applicant did not consider costs when preparing freight forecasts. When asked to explain how the numerous categories of "costs of switching airports have been taken into account" (as stated in paragraph 2.2.10 of Volume III of the Azimuth Report), Dr Dixon suggested she had made an assessment that it was a neutral factor, but could give no explanation of what costs were considered and how it was determined to be cost neutral. Dr Dixon also accepted under cross-examination that she/Azimuth has no relevant experience of air cargo forecasting.

The facts that emerged at the Hearing that **freight forecasts and business plan were not integrated, is a critical shortfall, as one cannot be done without the other.** Air traffic movement and freight tonnage forecasts are completely meaningless unless linked to a pricing strategy, especially for such a price sensitive market as air freight"[73]. This will of course impact investors confidence.

B. Assumption made by the Applicant: "Strategic Location"

There is no existing or historic policy support for the development of Manston Airport as proposed by RSP. Indeed, approval of this DCO would require overturning

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73 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003977-Stone%20Hill%20Park%20-%20Comments%20on%20Applicant's%20Wriiten%20Summary%20-%20Need%20&%20Ops%20Hearing.pdf

26 years of aviation policy and reports that has consistently found that Manston is not a viable option to service the UK airport capacity needs, either for passenger or air freight services. The DCO Applicant has confirmed that Manston currently has zero capacity for air freight operations. Primary reasons for rejection of Manston as a viable option to address capacity issues was summarised in the Future Development of Air Transport in the UK - South East report for the DfT, (2002), which concluded that *"key constraints are its geographic position in relation to the major sources of demand and noise impacts over the nearby town of Ramsgate"*. Needless to say, the geography has not changed since 2002 and will not do so in the period to 2050.

More recently, the Airports Commission Report of 2015, considered the case for Manston and did not deem it worthy of a single mention in the final report or in the resultant Airports National Policy Statement of 2018.

C. Assumption made by the Applicant: "Local Backing"

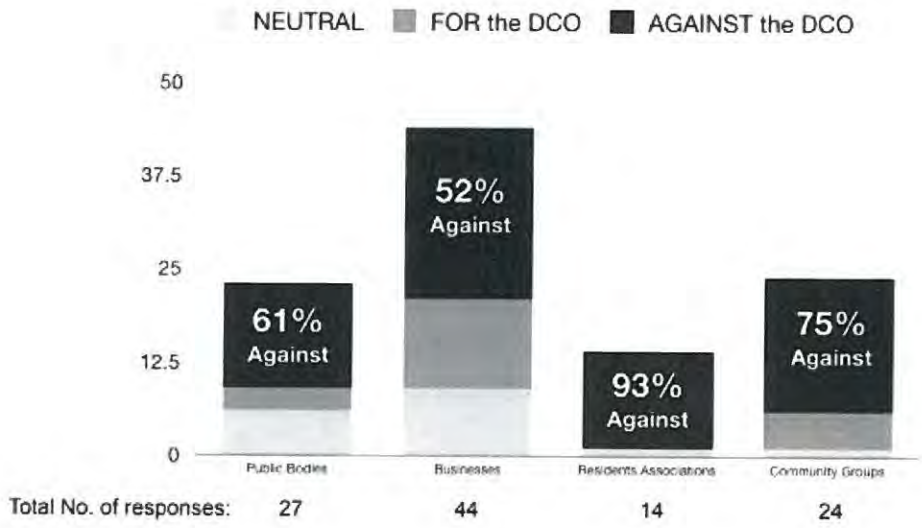
Unlike any other DCO application engaged evidenced submissions from local residents strongly opposing the Application continued throughout the Examination; right up to the very close of play in large volumes and at every deadline. This was incredible given the sheer volume of questions asked by the ExA of the Applicant.

Ramsgate Town Council, Ramsgate Town Team, Ramsgate Society, Ramsgate Neighbourhood Plan, Ramsgate Heritage and Design Team amongst many other community groups all put in *multiple* evidenced submissions **strongly objecting** to Manston.

We submitted more than 130 comprehensively evidenced written representations to the UK Planning Inspectorate Examining Authority, covering a wide range of issues including noise, air quality, environment and climate change, visual impact, impact on local economy, tourism impact, education, heritage, due diligence, financials, wildlife, 25+ years of aviation policy etc.

We know other campaigners' submissions objecting to Manston were over 600+.

Data analysis of more than 2,000 relevant representations submitted to the UK Planning Inspectorate at the start of the DCO process - more than 10x the national average for any DCO and 3x as many public representations as those received for the Hinckley C DC. The majority objecting to Manston and with a phenomenal 93% of Residents' Associations also objecting to Manston.



We and a local resident campaign group commissioned our own independent noise contours through the CAA to challenge those produced by the Applicant. This lead to an invitation from the Examining Authority, (ExA), to present these noise contours at an Issue-Specific Hearing and the ExA referencing of our CAA noise contours in the Report on the Implications for European Sites, (RIES).

We created and shared online, searchable Google Maps of the CAA noise contours allowing the local community to search any property by postcode and see where, exactly, they sit within each noise contour. So far this tool since 31 May 2019 has had over 6000 views.

We started and have led a private fundraising campaign for Judicial Review costs, in the unlikely event that the DCO is granted by the Secretary of State. Strong local resident and business backing means we will be able to go to JR if we have to do so.

This is a real sign of the level of committed opposition to Manston in a coastal town of 40,000 people.

What backing there is, seems to come from individuals not living under or near the flight swathes and/or those involved in the aviation lobby and has mostly been drummed up by constraining the argument. This was amply evidenced at Thanet District Council's Adequacy of Consultation Representation[74] in relation to the First Statutory Consultation, Second Statutory Consultation and at Appendix A .

This behaviour continues with the founding director of the Applicant at a recent Save Manston Airport association AGM starting at timecode from 13:45[75]:

"...for those people in Ramsgate in particular who are genuinely interested in the impact of the airport as opposed to it not happening at all there will be a further opportunity for them to have a dialogue here"

Local elections for the town of Ramsgate were held during the Examination period and the make-up of the Council changed to a 75% membership of Councillors who had run on an opposition to Manston ticket[76]

Since the close of the Examination Thanet District Council (situs of Manston) declared a climate emergency.

D. Assumption made by the Applicant: "Provide almost immediate relief"

We have provided evidence above at paragraphs 1.3 and 3.2 that prove this assertion is simply not true.

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74 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002527-AoCR_Thanet%20District%20Council.pdf

75 https://www.youtube.com/watch?v=EvepzwIh3OI&t=843s

76 https://www.ramsgatetown.org/town-council/town-councillors

E. Assumption made by the Applicant:"...to the pressing situation that is causing considerable loss of potential trade to the South East each year the UK remains without additional runway capacity"

The AC report was the basis for the Airports NPS which concluded that airport capacity in the South East of England should be increased and that increase should be provided by constructing a third runway at Heathrow Airport[77].

The Applicant has accepted that Stansted is better placed to serve the South East freighter market. It was shown and evidenced on numerous occasions by York Aviation that Stansted does have the capacity to accommodate additional demand (if any) without affecting its passenger market[78]. At para. 4.47, the Aviation 2050 Green Paper makes **specific mention of East Midlands and Stansted alongside Heathrow as the principal freight gateways.** There is no mention of Manston.

7.2. Any new or proposed airport expansion or development must be consistent with the Aviation Policy Framework 2013 with regards to making best use of existing airport capacity. It is important to note that within the Aviation 2050 Green Paper the means by which the growth of air freight is to be supported is to ***make best use*** of "***existing [airport] capacity***" (para. 4.49 of the Aviation 2050 Green Paper) rather than making best use of existing runways . The Aviation Strategy White Paper will replace the Government's 2013 Aviation Policy Framework once finalised. The Applicant confirmed during the DCO examination that ***"the current capability of (Manston) airport to provide air cargo transport services is zero".***

7.3. The Applicant has not demonstrated that there is (a) a need for an additional dedicated airfreight airport in the South East over and above developments already in the pipeline (planned or consented); and (b) even if this incorrect, Manston would not be an effective solution. Further, it has not demonstrated that Manston is/will be

[77] Para. 1 of Heathrow Hub Ltd & Anor, R (On the Application Of) v The Secretary of State for Transport [2019] EWHC 1069 (Admin) (01 May 2019)

[78] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004669-Applicant's%20Overall%20Summary%20of%20Need%20Case.pdf

cost-efficient, sustainable and deliverable. Therefore any alleged benefits are not in its reach.

7.4. Without prejudice, York Aviation and amongst others provided overwhelming evidence that showed that the Applicant's job forecasts were wildly inaccurate and over inflated[79].

The Applicant ignores policy and what is happening commercially and tries to set out their view of the world. It's high risk for us locals and will pause or retrograde the positive inward investment and a real upward trajectory of employment that has happened here in Ramsgate and the wider Thanet since the airport closed. The DCO should be refused.

8. Appendix 1: Rebuttal of the Applicant's Rebuttal of SHP Need Argument

All of the evidence materials that were submitted by Stone Hill Park are (a) in the Examination Library with reference numbers as of today's date; (b) were resubmitted by a number of Interested Parties; (c) were cited by a number of Interested Parties; (d) still stands as good evidence and evidence must be at the heart of any DCO Recommendation and Decision; (e) York Aviation strongly re-iterated and reconfirmed its submitted evidence[80] on or around the last day of the Examination with York Aviation's Managing Partner, Louise Condon, confirming to the ExA that *"we wish to put on record that we strongly refute the criticism of our work made by the Applicant"* and *"we consider that we have provided substantial and well evidenced responses throughout the process"*; and (f) due

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79 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004486-Stone%20Hill%20Park%20Ltd%20-%201.%20Comments%20on%20CA%20Hearing_27.06.2019.pdf
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004455-Stone%20Hill%20Park%20Ltd%20-%20Manston%20-%20urgent%20submission.pdf
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004295-Stone%20Hill%20Park%20Limited%20-%20Socio-Economics%20Hearing_JM%20Comments%20Appendix.pdf

80 Letter from York Aviation to UK Planning Inspectorate, 5/7/19
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004642-York%20Aviation%20LLP%20-%20It%20Manston%20ExA.pdf

to the timing of the sale completion after the close of the Examination all of Stone Hill Park's submissions were (and are) an integral part of the ExA questions and the Applicant's own answers.

York Aviation submitted a rebuttal to Northpoint Aviation which can be viewed here https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004853-AS_Five10Twelve_York_Altitude.pdf

The Applicant's points 2-4 have been covered above and for the sake of brevity we will not re-address them here.

Rebuttal: Summarising the Key Issues

5.1 (1)

History has shown that Airbus and Boeing forecasts tend to be optimistic[81] as they are in the business of trying to get airlines and operators to buy freighters. Boeing and Airbus data actually show a declining proportion of pure freight traffic[82]. The Applicant makes an assertion that e-commerce is an additional/on top of freight volumes. It is not; it is the same goods re-classfied.

5.1(2)

Stone Hill Park did not ignore evidence. York Aviation and Altitude Aviation Advisory Limited provided evidence of what is really going on. Both of these companies are renowned experts. We evidence at paragraph 1.1 above that York Aviation is a categorically important, trusted and greatly esteemed aviation technical expert of and to the Department for Transport. The Applicant throughout the Examination sought to misrepresent York Aviation's work for TFL and FTA despite York Aviation's numerous oral and written submissions stating that the Applicant was simply incorrect. The Applicant has attempted to rebut the respected expert evidence of York Aviation, Altitude Aviation, Avia Solutions and others by pitting this against the work of freelance contractors such as Dr Sally Dixon, author of the Azimuth Report, who - by her own admission - is inexperienced in air freight forecasting, and Northpoint Aviation, whose experience is arguably less relevant at this level.

[81] http://www.stonehillpark.co.uk/images/uploads/documents/Altitude_report_update_Feb2019.pdf
[82] http://www.stonehillpark.co.uk/images/uploads/documents/Altitude_report_update_Feb2019.pdf

5.1(3)

The Applicant ignores policy and what is happening commercially and tries to set out their view of the world. Policy on aviation has to be (and is) delivered through the commercial sector. Investors invest in a business plan and the prospect of a return on investment.

The Applicant has not shown (a) a need for an additional dedicated airfreight airport in the South East over and above developments already in the pipeline (planned or consented); and (b) even if there is a need, Manston would not be an effective solution.

It is therefore unreasonable and not supported by policy or emerging policy to prioritise the re-opening of Manston with no airport capacity and which is solely reliant on road surface access for air cargo, workers and fuel with a very poor logistics infrastructure, particularly given both the number of existing airports in the South East and the numerous airport expansion plans currently being developed and proposed at existing and currently operational airports in other regions, including the Midlands engine and the more under-served Northern Powerhouse.

6. Conclusions

6.1

The Applicant ignores policy and what is happening commercially and tries to set out their view of the world. It's high risk for us locals and will pause or retrograde the positive inward investment and the upward trajectory of employment that has happened here in Thanet since the airport closed. The DCO should be refused.

6.2

The Applicant seems to be arguing that it should just be 'given a go'. This must not be right.

Firstly, the Applicant must meet the criteria for a NSIP. The Applicant has made an application for a DCO pursuant to paragraphs 14(1)(i) and 23(1)(b) and 23(5)(b) of the Planning Act 2008[83] specifically that the ***effect*** of the alteration of the airport is to increase by at least 10,000 per year

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83 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002870-Deadline%201%20-%20APP008%202.3%20NSIP%20Justification.pdf

the number of air transport movements of cargo aircraft for which the airport is capable of providing air cargo transport services.

At the time of the Examination the Applicant did not have airspace. The number of air transport movements of cargo aircraft for which the airport was capable of providing air cargo transport services was zero. In fact, the Applicant confirmed during the DCO Examination that *"the current capability of (Manston) airport to provide air cargo transport services is zero*[84]*"*.

In order to increase by at least 10,000 per year the number of air transport movements of cargo aircraft the Applicant must attract cargo aircraft users. Implicit to this is a commercial case or a business plan with supporting infrastructure and third party logistics provision, none of which exists anywhere near the proposed development site.

Secondly, Manston must be viable otherwise it will not secure investors and provide the (alleged) benefits to seek to minimize in some small way the significant adverse impacts it will have on Ramsgate and the wider Thanet. If the DCO is granted and even if the Applicant does or cannot do anything the threat of low flying cargo planes of 400-600 feet over our shopping town centre, schools, houses, parks, beaches will exist in the minds of inward investors. It will also come up in house/ property searches. With much of our heritage at risk[85] including the whole of the Conservation Area (which is the largest in Kent) the mere threat of such a development will have far reaching, long lasting and perhaps irreversible consequences, irrespective of whether or not it ever materialises.

Since the airport closed in 2014 there has been a remarkable amount of private inward investment in Ramsgate, a real upward trajectory of employment across Thanet - which now shows the characteristics of being in recovery - and things have improved which has been detailed with evidence in many of the Submissions to the Examination.

Thirdly, there is no existing or historic policy support for the development of Manston. The Airports NPS requires the case to be made for each specific airport[86]. As York Aviation made clear in its 2019

[84] Page 8, A2 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003770-D5%20Cover%20Letter.pdf

[85] https://historicengland.org.uk/images-books/publications/har-2018-registers/se-har-register2018/

[86] Para 1.42 Airports NPS

Update Report[87] (paras 2.16, 2.17) this requires a realistic assessment to be made of the usage of each runway and the benefits deriving from that usage which can be balanced with any environmental harm that might arise. The policy cannot be taken in isolation without considering the extent to which there are net benefits from the level of usage proposed. The policy does not support safeguarding runways in perpetuity against some prospect of future use.

6.3

Background

Formerly a military airport, RAF Manston in Thanet, Kent in the South East, was sold by the MoD in 1998. Since then, three different owners, Wiggins/Planestation, Infratil and Lothian Shelf, have tried unsuccessfully to operate commercial passenger and air freight services from Manston until its closure in 2014, having made losses of £40m - £50m during the preceding nine year period[88].

Past failures include the collapse of Planestation, with the Applicant's founding Director Tony Freudmann acting as Senior Vice President, and its budget airline subsidiary, EUJet, in 2005. Commenting on the collapse at the time, the Financial Times reported that "*marketing a new airline operation from Manston, which had no recent history of passenger operations, had been difficult*" and the Planestation Group ***"had also failed to develop its cargo business at Manston"***. This led to questions in the House of Commons and a CAA briefing paper for the Department of Transport Select Committee on 04/02/06[89] after more than 5,400 British passengers were left stranded in similar circumstances to the recent Thomas Cook collapse. The briefing paper notes that Planestation PLC had filed misleading information about EU Jet with the CAA which left the regulator *"unaware of the actual financial position of that carrier"*.

Lothian Shelf (417) Limited, a company owned by Stagecoach founder, Ann Gloag, bought Manston for £1 in November 2013. In the ensuing months the **airport made revenue losses of £100,000 per week plus significant capital losses** before its closure in May 2014.

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87 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004852-AS_Five10Twelve_Resubmission%20of%20Evidence.pdf and Appendix 4 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf

88 Manston Airport under private ownership, Kent County Council 2015 https://www.kent.gov.uk/__data/assets/pdf_file/0003/29541/Manston-Airport-position-statement.pdf

89 Memorandum submitted by the CAA: Briefings on EUJET Ops Ltd https://publications.parliament.uk/pa/cm200506/cmselect/cmtran/636/5110212.htm

Kent County Council's March 2015 Position Statement[90] on Manston Airport (which was submitted to the Examination by Kent County Council to confirm its position had not changed) confirms that ***"the airport has never made a profit and has never delivered on its promise of jobs for the area."***

Thanet District Council commissioned an external aviation consultant's report, via Avia Solutions, (a GE-owned company), to investigate the viability of commercial operations at Manston Airport[91]. The report concluded that "***there is little prospect of a financially viable airport on the site***".

Avia Solutions's analysis of the Applicant's business case and forecasts for its DCO Application and NSIP justification - known as the Azimuth Report - concluded that the forecasts ***"represent a highly ambitious outlook for air freight volume at Manston Airport and the likelihood of the forecasts being realised is very low[92]"***.

US-based Real Estate firm, Riveroak, with ex-Wiggins and Planestation Senior Vice President, Tony Freudmann, attempted to enter into an agreement to purchase the site for airport use via a CPO agreement with Thanet District Council, (TDC) as proposed indemnity partner. This was twice refused by TDC as Riveroak was unable to provide evidence of secured funds[93].

Mr Freudmann submitted an application for a DCO to develop the site as a Nationally Significant Infrastructure Project, (NSIP), in July 2018 under a new corporate structure, Riveroak Strategic Partners Ltd, ("the Applicant"). This application was accepted for Examination by the then Secretary of State for Transport, (SoSFT), Rt Hon Chris Grayling MP, on 14 August 2018.

Concerns regarding the opaque corporate structure of the Applicant were largely ignored when the DCO Application was accepted for Examination by the then Secretary of State for Transport, (SoSFT), Rt Hon Chris Grayling MP, on 14 August 2018. The Applicant responded to concerns regarding its Belize-based majority shareholder by restructuring mid-way through the

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[90] Manston Airport under private ownership, Kent County Council 2015
https://www.kent.gov.uk/__data/assets/pdf_file/0003/29541/Manston-Airport-position-statement.pdf

[91] Commercial viability of Manston Airport, Avia Solutions 2016
https://www.thanet.gov.uk//wp-content/uploads/2018/03/Final-Report-for-TDC-Manston-Airport-Viability-2016_2.pdf

[92] Review of Azimuth and Northpoint Forecast for Manston Airport prepared for Thanet District Council, 2017
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004609-RiverOak%20Strategic%20Partners%20-%20Manston%20Airport%20DCO%20-%20Project%20Reference%20TR020002.pdf

[93] Thanet District Council Review of CPO Indemnity Partner for Manston Airport, 29/1/15
https://democracy.thanet.gov.uk/documents/s48429/Manston%20Report%20SP%20amends%2026%2010%2015.html?CT=2

Examination. The majority shareholder is now a BVI based company although the Ultimate Beneficial Owner(s) ("UBOs"), is still unknown, with the Applicant refusing to provide details to the ExA during the Examination[94].

The Applicant is owned by two companies. 90% owned by RiverOak Investments Limited[95] (40% shares held by 3 Swiss residents and 60% held by HLX Nominees Ltd (a BVI company named in the Panama papers[96] whose shareholders identities have never been revealed despite being asked a number of times during the Examination); and 10% owned by RiverOak Manston Limited[97] (shares held by 1 UK resident, 1 US resident[98] and a US company GY Manston LLC (Delaware).

The Applicant makes reference to the following airports - Blackpool, Carlisle, Doncaster Finningley now Doncaster Sheffield, Southend, Cardiff and Newquay - saying that *"with these precedents in mind"* that the Applicant is *"confident that it can make a success of Manston"*.

We respectfully remind the Secretary for State that none of the airports referenced by the Applicant is operating profitably:

Blackpool - closed to commercial traffic, reopened for a limited range of business, General Aviation and helicopter flights in Irish sea[99];

Carlisle - Welsh government bought in and is subsidising[100];

Southend - is loss making for Stobart Group[101];

[94] Paragraph 48 of Applicant's Overall Summary of Case
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004668-Applicant's%20Overall%20Summary%20of%20Case.pdf

[95] https://beta.companieshouse.gov.uk/company/11959684

[96] https://offshoreleaks.icij.org/nodes/12108499?e=true

[97] https://beta.companieshouse.gov.uk/company/10286975/filing-history

[98] Notice of Person with Significant Control Niall Lawlor
https://beta.companieshouse.gov.uk/company/10286975/filing-history

[99] https://www.express.co.uk/news/uk/854231/blackpool-airport-reopens-13-years-after-being-sold-off

[100] https://www.newsandstar.co.uk/news/17670329.carlisle-airport-owner-stobart-group-plunges-to-4Z6m-loss/

[101] https://www.ft.com/content/c54f4a88-d756-11e8-ab8e-6be0dcf18713

Doncaster Sheffield - converted military airport to commercial, so never really closed or re-opened. Heavily loss making[102];

Cardiff[103] - Welsh govt bought it and subsidising;
Newquay[104] - county council subsidies.

6.4

The Applicant has purchased a plot of land which has space for 4000 houses in Kent, South East for £16.5m. Once adopted the Local Plan has provision for the land to be used for mixed use development. This is hardly money going into the project. This land will significantly appreciate over time even if the Applicant just land banks it.

The airport that the Applicant has referred to in Appendix A is Liege airport in the East of Belgium. As you will be aware TNT (to become FedEx) had an **existing** market and the airport was built **for that market.** Liege is also ideally located in the centre of the golden triangle Paris-Amsterdam-Frankfurt that handles 66% of European freight, and 75% when taken together with London.

The Applicant failed to show any evidence of secured investors. The Applicant failed to provide sufficient evidence that funding is in place for its development plans despite repeated requests from the ExA to clarify the situation.

Accounts and returns filed at Companies House show the Applicant's complicated corporate structure involves a labyrinthe of nested companies connected by a series of private loans, with terms unknown. There is little or no evidence of available funds or source of funds. The Applicant is connected to RiverOak Investments Limited, RiverOak Manston Limited, RiverOak MSE Limited, RiverOak Fuels Limited, RiverOak Al Limited, RiverOak Operations Limited. It has links to Freudmann Tipple International Limited which held funds in trust for RiverOak Operations LImited to use Freudmann Tipple International Limited's bank account. All of these companies are separate

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https://www.yorkshirepost.co.uk/news/people/flybe-is-pulling-out-of-doncaster-sheffield-airport-with-the-loss-of-10-flights-1-10006548

103 https://www.bbc.co.uk/news/uk-wales-43498365

104 https://www.cornwallairportnewquay.com/about-us/management-of-can

legal entities. Several are loaded with debt without any discernible assets or means of servicing the debt.

The failure of the Applicant to settle its account in a timely manner with UK Planning Inspectorate for the Examination, follows a number of other occasions during the process when the Applicant has failed and/or delayed settlement of accounts with numerous other parties, including but not limited to Kent County Council[105] and Stonehill Park.

The Applicant's ignores policy and what is happening commercially and tries to set out their view of the world. It's high risk for us locals and will pause or retrograde the positive inward investment and upward trajectory of employment that has happened here in Ramsgate and in the wider Thanet since the airport closed. The DCO should be refused.

[105] Email from Invicta Law to BDB Pitmans, 3/7/19 at 16:31hrs
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004609-RiverOak%20Strategic%20Partners%20-%20Manston%20Airport%20DCO%20-%20Project%20Reference%20TR020002.pdf

17

Rob Pridham

From:	Samara Jones-Hall <slmjh@fivetentwelve.com>
Sent:	31 October 2019 11:47
To:	TRANSPORTINFRASTRUCTURE; Rob Pridham
Cc:	Manston Airport; Manston Airport; Jason Jones-Hall
Subject:	Fwd: Manston DCO: Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement
Attachments:	Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case_ Environmental Statement .pdf

Dear Sirs

Could you please be so kind as to acknowledge receipt of and escalation of the attached letter to the Secretary of State.

Cheers

Samara and Jason

Samara Jones-Hall
Five10Twelve Limited
[redacted]

---------- Forwarded message ---------
From: **Samara Jones-Hall** <slmjh@fivetentwelve.com>
Date: Sun, Oct 27, 2019 at 3:24 PM
Subject: Manston DCO: Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement
To: <transportandworksact@dft.gov.uk>, Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
Cc: <Rob.Pridham@dft.gov.uk>, Jason Jones-Hall <jjh@fivetentwelve.com>

Dear Sirs

Please find attached our Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara Jones-Hall
Five10Twelve Limited
[redacted]

17

Rob Pridham

From:	Samara Jones-Hall <slmjh@fivetentwelve.com>
Sent:	27 October 2019 11:25
To:	TRANSPORTINFRASTRUCTURE; Manston Airport
Cc:	Rob Pridham; Jason Jones-Hall
Subject:	Manston DCO: Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement
Attachments:	Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case_ Environmental Statement .pdf

Dear Sirs

Please find attached our Letter to Secretary of State with an evidenced Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

[redacted]

Five10Twelve Limited
Marlowe Innovation Centre, Marlowe Way
Ramsgate, Kent, CT12 6FA
slmjh@fivetentwelve.com
jjh@fivetentwelve.com

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.uk
ManstonAirport@planninginspectorate.gov.uk
Cc: Rob.Pridham@dft.gov.uk

27 October 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement

Rebuttal to the Applicant's Overall Summary of Case: Environmental Statement

1. **Environmental Statement: Flight Paths And Civil Aviation Authority and Public Safety Zones**

   1.1. The Applicant's Overall Summary of Case[1] stated that its Environmental Statement assessed ***'likely significant effects'***; however, in the Applicant's **CAA** Interface

[1] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004668-Applicant's%20Overall%20Summary%20of%20Case.pdf

Document[2] it states that at workshops with the CAA and within its Executive Summary that "***the DCO submission will be based on 'worst credible'*** scenarios (in terms of environmental impact)". Clearly these are two conflicting baselines.

1.2. In any event, the Applicant's Environmental Statement **did not assess the likely significant effect and it did not base its DCO submission on the worst credible scenario**. Instead the Applicant presented the Environmental Statement using the best case scenario.

1.2.1. The Applicant's Environmental Statement was based on a substantially fewer number of cargo Air Traffic Movements (ATMs) than the Applicant has forecast to deliver in its DCO application. The Environmental Statement is based on only 12,860 Jet (turbofan) ATMs of cargo aircraft per year[3], (approximately 70% of its forecast), and 5,840 General Aviation movements, (13% of forecast). [4] Further if you take into account the associated works the Environmental Statement was based on a paltry 14% of the c.83,000 cargo aircraft movements than its actual DCO application.

1.2.2. The Applicant did not (and has not) adjusted its job forecasts to these actual ATM levels and without prejudice, York Aviation and amongst others provided overwhelming evidence that showed that the Applicant's job forecasts were wildly inaccurate and over inflated[5].

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2 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002460-7.5%20-%20CAA%20Interface%20Document.pdf

3 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004568-Five10Twelve_Deadline%209%20-%20Comment%20on%20Requirement%2019a-%20Airport%20Operations%20-WITH%20APPENDICES.pdf

4 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004488-Five10Twelve%20-%20Comment%20on%20Examining%20Authoritys%20Second%20Draft%20Development%20Consent%20Order%20published%2014%20June%202019.pdf

5 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004486-Stone%20Hill%20Park%20Ltd%20-%201.%20Comments%20on%20CA%20Hearing_27.06.2019.pdf
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004455-Stone%20Hill%20Park%20Ltd%20-%20Manston%20-%20urgent%20submission.pdf
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004295-Stone%20Hill%20Park%20Limited%20-%20Socio-Economics%20Hearing_IM%20Comments%20Appendix.pdf

1.3. The Applicant used the outdated and superseded ECAC Doc.29, 3rd Edition, 2005 for producing its noise contours rather than the 4th Edition of ECAC Doc.29, endorsed and published in December 2016[6].

1.4. Further, the Applicant used the outdated and superseded CAP1520[7] to inform its noise contours rather than CAP1616a which outlines the relevant methodologies for use in environmental assessments relation to airspace change[8].

1.5. The Applicant submitted noise contour caps to the Examination[9] not consistent with the regulatory requirements of CAA CAP1129 Noise Envelopes[10].

1.6. Natural England confirmed in its comments on the Report of the Implications for European Sites[11] that it has relied upon the Applicant's demonstration that "*the proposed flightpath is similar to that used by the previous Manston Airport*[12]".

1.7. Five10Twelve commissioned and produced noise contours by the Environmental Research and Consultancy Department of the Civil Aviation Authority ("ERCD/CAA") with the same fleet mix and number of ATMs as the Applicant[13] - comparing apples with apples - based on the flightpath used by the previous Manston Airport[14]. Historical flight paths were confirmed in its brief to the ERCD/CAA to be a credible option under CAP1616 and FASI-S and confirmed by RSP in the agreement reached with Natural England.

1.8. Based on the 63 dB LAeq 16 hr (Significant Observed Affect Effect Level) the Applicant's Environmental Statement identified 115 properties versus 200 from

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6 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004581-Five10Twelve%20to%20RSP%20re%20Noise%20Contours_WITH_APPENDICES.pdf

7 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004253-REAC%20(Clean).pdf

8 https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=8128

9 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004253-REAC%20(Clean).pdf

10 https://publicapps.caa.co.uk/docs/33/CAP%201129%20Noise%20Envelopes.pdf

11 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004583-Natural%20England%20comments%20on%20RIES_1Jul19.pdf

12 *Ibid*

13 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004151-AS-%20Five10%20Twelve%2031052019.pdf

14 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004163-AS%20-%20Five10Twelve%20-%20CAA%20(ERCD)%20NOISE%20CONTOURS_Redacted%20Final.pdf

ERCD/CAA[15]. This increase is (a) a ***'likely significant effects'***; (b) is an increase of **174% more properties** affected; (c) is a material and significant difference; and (d) clearly shows the Environmental Statement is inaccurate.

1.9. The Environmental Statement failed to take into account the need for Public Safety Zones (**"PSZs"**) at all despite the 2017 regulations. Throughout the Examination, the Applicant continued to fail to take into account PSZs despite evidence submitted from many Interested Parties[16]. In the Applicant's Overall Case Summary, the Applicant misconstrues the DfT PSZ Order. PSZs are required by looking at forecasts **not** as the Applicant proposes on reaching a target. This is not only policy but good common sense - you cannot build a house and/or occupy a house only to find that in a few years you would need to tear it down and/or for the occupants to move. Further, the Applicant fails to demonstrate the true picture of the PSZs in that it would cover the whole of Ramsgate town centre as well as many 1000's of houses. In addition, the Applicant fails to appreciate that a cargo airport due to the type of craft used (older planes[17]) has bigger PSZs not smaller.

Conclusion

The inaccurate Environmental Statement would materially and significantly affect all Interested Parties' Statement of Common Grounds including but not limited to Public Health England, Natural England and Historic England as well as **all Local Impact Reports submitted** to the ExA pursuant to Sections 60 Planning Act 2008[18].

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15 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004443-Applicant's%20Responses%20to%20the%20Fourth%20Written%20Questions.pdf

16 For example at [REP1-019] [REP2-013] [REP2-014] [REP2-015] [REP4-035] [REP4-037] [REP4-041] [REP4-043] [REP4-049] [REP5-124] [REP5-074] [REP6-033] [REP6-038] [REP8-061] of the Examination Library

17 For example at [REP5-074] [REP6-038] of the Examination Library

18 This further impacts sections 104 and 105 of the Planning Act 2008.

(12)

Colin Dunn

From: TransportSecretary
Sent: 28 October 2019 09:19
To: POCorrespondence
Subject: FW: Manston DCO

TO

Holly Knight | Diary Manager, Secretary of State for Transport, Department for Transport
5/13 | [redacted]
Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: SHAPPS, Grant [mailto:grant.shapps.mp@parliament.uk]
Sent: 21 October 2019 16:28
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: FW: Manston DCO

From: [redacted]
Sent: 15 October 2019 17:18
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Cc: WILLIAMSON, Gavin <gavin.williamson.mp@parliament.uk>; JENRICK, Robert <jenrickr@parliament.uk>
Subject: Manston DCO

Dear Grant, I am writing regarding the DCO application which has been submitted by Riveroak Strategic Partners ("RSP") with respect to opening a large cargo hub at Manston in Kent and which you will be asked to consider in due course.

I have copied this email to both Gavin Williamson, Education Minister and Robert Genrick, Housing Minister as your decision will directly affect and undermine the objectives those two ministers are seeking to achieve as I detail below.

The DCO Process and RSP - Grant Shaaps

No doubt the planning inspectors will brief you on the process which RSP, a company owned and controlled from The British Virgin Islands, undertook during the application and examination period and will highlight their obfuscation in answering questions from both the examiners and others, their lack of any funding statement or financial commitment for their project and their general disrespect of the entire planning process. They have attempted to downplay the effect the cargo hub will have on the 40,000 residents of Ramsgate, a town very close to the end of the runway and directly under a very low flightpath, by using noise contours prepared by an inexperienced person and which are completely at odds with those produce independently by the Civil Aviation Authority. I hope you will have access to the very thorough documents submitted by a variety of interested parties which clearly show that there is no economic business case for a cargo hub at Manston and detail the serious detrimental consequences in terms of pollution, noise, education and local business activity that would result should the project be approved.

Detrimental Education Outcome - Gavin Williamson

I also want to highlight the serious affect this project would have on the educational achievement of the children of Ramsgate. Thanet is already a deprived area of the country and education provides a methodology for reducing deprivation. There are a large number of schools, primary and secondary, and nurseries which are directly under the flightpath from Manston. The inspector received clear unequivocal evidence from teachers both for and against this project that demonstrated that when planes fly over these schools teaching is interrupted each and every time. It is

not possible to mitigate against this noise when planes are so low over these buildings which probably explains why RSP initially planned not to bother providing any. Gavin, as education minister I hope you will put pressure on Grant not to approve RSP plans.

Affordable Housing Provision - Robert Jenrick

There is a clear need for affordable housing in the country and particularly in the South East. We have seen today in reports that it's very difficult to provide affordable housing particularly on green belt sites. Manston is a brownfield site of around 700 acres which was acquired by the new owners RSP for around £15m. This low acquisition cost should mean that affordable homes are quite easy to provide. In addition given the size of the site it is possible to provide public facilities like GP Surgery's, leisure facilities, schools etc which are difficult to provide when development is small scale on small sites. Robert, I ask that you put pressure on Grant to refuse the DCO and instead utilise the site for much needed affordable hoysing and infrastructure.

Adem Mehmet

19

Rob Pridham

From: TRANSPORTINFRASTRUCTURE
Sent: 30 October 2019 09:10
To: Rob Pridham
Subject: FW: DCO Manston Airport on behalf of RiverOak Stretegic Partnership
Attachments: Hillborough-Manston Planning Letter.pdf

Importance: High

For you. Have acknowledged!

Miss Caroline O'Neill | Planning Casework Manager, Transport Infrastruture Planning Unit, Department for Transport
Albany House, 94-98 Petty France, Westminster, London SW1H 9EA | 07971 145878
Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: Ken[redacted]
Sent: 29 October 2019 16:23
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Subject: Fw: DCO Manston Airport on behalf of RiverOak Stretegic Partnership
Importance: High

Good Afternoon,

please find omitted attachment for your attention as per e-mail detailed below from Manston Airport Case Team,

best regards,

Mr.Kenneth Rice

From: Manston Airport
Sent: Tuesday, October 29, 2019 3:29 PM
To:[redacted]
Subject: RE: DCO Manston Airport on behalf of RiverOak Stretegic Partnership

Dear Mr Rice

Thank you for your email.

It, along with all the other submissions received after the Examination closed on 9 July 2019, was passed to the Secretary of State with the Examining Authority's Recommendation Report.

If you have any questions about the Secretary of State's handing of the case at the Decision stage, please contact the Department for Transport directly: transportandworksact@dft.gov.uk.

Please note that your original email did not include any attachments despite it noting a document. If you wish for the omitted document to be considered along with your email, please ensure it's passed to the Department for Transport via the email address provided above.

Kind regards

Manston Airport Case team

National Infrastructure Planning
The Planning Inspectorate, Temple Quay House, Temple Quay, Bristol BS1 6PN

Helpline: 0303 444 5000
Email: manstonairport@planninginspectorate.gov.uk

Web: https://infrastructure.planninginspectorate.gov.uk/ (National Infrastructure Planning)
Web: www.gov.uk/government/organisations/planning-inspectorate (The Planning Inspectorate)
Twitter: @PINSgov

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Please view our Privacy Notice before sending information to the Planning Inspectorate.

-----Original Message-----
From: Ken [redacted]
Sent: 15 October 2019 16:59
To: NI Enquiries <NIEnquiries@planninginspectorate.gov.uk>
Subject: DCO Manston Airport on behalf of RiverOak Stretegic Partnership
Importance: High

Good Morning,

Whilst I realise I may be a little late in putting forward the following argument regarding the re-opening of Manston Airport I feel I am justified in pointing out that whilst currently the flight path into the airport is, in general, across open fields Canterbury City Council are currently about to determine a planning application for 1300 houses, school and commercial development that falls directly on the flight path. (planning Reference; 17/01866).I have attached a document sent today to CCC Planning Department that highlights my concern and would welcome your input. On the positive side I would be very pleased to see the airport open. However, houses, not so keen!

regards,
Mr.K.Rice
[redacted]

I would be pleased if you could consider the following salient points in relation to the re-opening of Manston Airport and its effect on the proposed Hillborough Housing Allocation and, in particular, The Taylor Wimpey Development .

I note that calculations submitted on behalf of Taylor Wimpey by Waterman Infrastructure and Environment Ltd. (Waterman) are actually a reproduction of those produced by Amec Foster Wheeler (AFW) in support of the 'Development Consent Order' being applied for by RiverOak Strategic Partners Ltd.
Whilst these cannot be judged as incorrect they are nevertheless aimed at securing a DCO for RiverOak and are balanced towards achieving that aim. They were never produced to ascertain the effects of aircraft flight paths over the Hillborough Housing Allocation.

The system of measurement used by AFW was the Federal Aviation Authority Integrated Noise Model (INM) rather than that supported by The Environmental Research and Consultancy Department (ERCD) of our Civil Aviation Authority (ANCON).
ERCD developed the UK Aircraft Noise Contour Model – ANCON [1,2]. There are significant similarities between the FAA's Integrated Noise Model and ANCON, having both been created from the same guidance material produced by SAE [3], ECAC [4] and ICAO [5]. Both can be classed as deterministic models where the noise source is related to the flight trajectory.
INM synthesises its flight profiles based on 'assumptions' regarding aircraft takeoff weight, engine power settings and airline operating procedures.
In contrast, ANCON uses observed flight profiles gathered from aircraft operating at Heathrow, Gatwick and Stansted and estimates engine power setting and airline procedure from this data. This model is therefore superior in the data it is able to produce.
ANCON is fully compliant with the latest European guidance on noise modelling, ECAC.CEAC Doc 29 (3rd edition), published in December 2005 (**Ref 5**). This guidance document represents internationally agreed best practice as implemented in modern aircraft noise models.
In their submitted document Waterman refer to night time noise contours LAmax and LAsmax as one and the same, which they are not. However, the drawing produced further on in the document (figure 12.9) does clarify the noise contour as being LAsmax. It is shown on this particular noise contour assimilation that a noise level of 80dB would be attained at the edge of the Hillborough Development but, conveniently, does not show what that decibel rating would be beyond (i.e. across the development itself!).
In order to make my point a little clearer I will refer to the passage over the Hillborough allocation on the basis of a Boeing747-400 on a normal 3 deg landing trajectory.

1. A Boeing 747-400 requires a runway length of 7500 ft in order to secure a

safe landing. RiverOak have said that late evening flights would have restrictions placed on reverse thrust in order to reduce sound levels in the direct vicinity of the airport. However this puts a greater load on the braking systems, etc. of the aircraft therefore adequate runway length is a priority.

2. A Boeing 747-400 landing trajectory is such that as a rule of thumb it drops 300ft/nautical mile.

3. Aviation calculations are based on nautical miles and not kilometres or statute (land measured) miles. A **nautical mile** is based on the circumference of the earth, and is equal to one minute of latitude. It is slightly more than a statute **mile** (1 **nautical mile** = 1.1508 statute **miles**). **Nautical miles** are **used** for charting and navigating.

4. The edge of the Hillborough Development is approx. 5.94 nautical miles from the start of the runway at Manston. When previously in operation the flight path would have been over the open fields now allocated for development. Any alternative flight paths would cause further issues with other existing developments.

5. It has been suggested by RiverOak that as Manston has one of the longest runways in the UK then there would be no requirement to use the full extent of the runway for landing.

6. Manston runway is 9016ft long. By deducting the 7500 ft required to land, a Boeing 747 could land a further 1516ft onto the runway.

7. The benefit of utilising this additional 1516ft would mean that the Hillborough Development would be a further 0.25 nautical miles from the point of touch down. Giving a maximum available distance between the two points of 6.19 nautical miles.

8. Based on the assumption of a landing trajectory of 300ft/ nautical mile as previously described then at 6.19 nautical miles the airplane would be 1857 ft above ground.

9. NATS Chart (National Air Traffic Services) shows that the LAmax rating for a Boeing 747-400 at 1000ft - 2000ft is between 77 and 86dB reducing gradually to 71dB at 3000ft above ground.

As the air traffic growth at Manston is set to increase following the re-commencement of flights in 2022 of around 680,000 passengers and 174,000 tonnes freight to double that figure over the following two decades and, with the only determined landing trajectory being over the Hillborough Development then, I feel its effect should be considered in greater depth than that being put forward by Taylor Wimpey.

Whilst I understand night flights are not being envisaged it is clear that the airport will be fully operational between the hours of 6.00 am and 11.00 pm. In most cases these would constitute flight times when children and the elderly are attempting to sleep. Sleep that would undoubtedly be disturbed.

Waterman do admit that 'given the location of the land at the Hillborough, Herne Bay development, to the north of the A299 and the fact that it is bisected by a busy rail line, the development is exposed to relatively high noise levels.' This prior to the opening of Manston and the additional road and rail traffic that is set to serve it.

Finally, I note that our planning department, in their request for the noise and air quality assessment, do say 'I *understand that there are conditions proposed for the DCO that would restrict night flights and so I would expect the impact of the flights on your development in terms of noise would be minimal and already mitigated by the proposed building insulation (double glazing).'*

I fail to see how any sound insulation measures to the new houses would reduce the effect on those out in the school playground, gardens or other outdoor areas. Nor, in an area which experiences long dry summers and warm summer evenings, how double glazing systems can alleviate external noises when they are in the open position. Or are they all to be nailed shut?

Research conducted by Napier University for Defra said that issues that consistently occur with secondary glazing, is that if a window is opened, the benefits of the additional insulation are lost. This is sometimes cited as a reason not to rely on noise insulation to address noise exposure, particularly in the case of airport expansion. There are, however, solutions to the windows open issue in the form of forced ventilation. This, however, adds significant additional cost and also incurs on-going running and maintenance costs
Historically, population density in the south east of England has been considered too high for the removal of property to be considered a viable prospect. However, despite similarly high population densities, in the Netherlands, Amsterdam Schiphol airport has implemented a dwelling removal zone based on the 71 dB Lden noise contour. Residents are relocated to dwellings with a lower noise exposure, thereby protecting people from the very highest noise exposures.

Consequently if the Netherlands implement removal of zones experiencing 71dB noise levels then why are we actually building homes in these areas? I realise that this is an average sound level taken over a 24 hour period but with the additional noise over and above air traffic of road and rail has an actual independent calculation ever been taken to show what that average level at Hillborough will be. If it has, it is not very evident.

Regards,

Mr.K.Rice

20

Rob Pridham

From: Christabel Smith [redacted]
Sent: 30 October 2019 09:14
To: TRANSPORTINFRASTRUCTURE
Subject: Manston DCO

Dear Madam/Sir,

In advance of 'purdah', I am emailing regarding the DCO under current consideration by the Secretary of State for Transport.

I live in Ramsgate, am part of the No Night Flights Over Ramsgate group and made many submissions to PINS during the consultation process.

I will not repeat the detail of my submissions, but would like to reiterate at this stage that the Manston issue is hugely controversial locally and there is (and will continue to be) strong opposition to a huge-capacity cargo hub with night flights and a flight path so close to a historic harbour town. The environmental impact would be devastating. As we are living in a declared climate emergency, giving the go-ahead to this would be impossible.

Yours sincerely,

Christabel Bradley

Sent from my iPhone

21

Rob Pridham

From: Andy Hodder [redacted]
Sent: 30 October 2019 10:03
To: TRANSPORTINFRASTRUCTURE
Subject: Manston Airport

Dear Whom it may concern,

Now we have had another General Election announced I wish to raise further concerns about a development in my constituency which I am sure you are already fully aware of and will undoubtedly be used as a pawn in the political arena in the upcoming election campaigns.

My own MP Craig McKinlay has been very vocal in his support of the reopening of the former airfield. He has also stood up in the House to apologise for failing to declare his own personal interest in the development, namely MaMa Airlines. (MaMa being abbreviated of course from Manston to Malaga). The same Honourable Gentleman has also been filmed speaking at a BBQ hosted by the local Manston activist group, in which he declared a long term friendship with a director of RSP, the company behind the DCO which currently sits on your desk. In this same video, widely shared on YouTube he was heard to mock those who are against this development, who are also the constituents he represents.

However, Mr McKinlay has done nothing to reassure his constituents on any concerns regarding pollution, both air and noise, or the decline of an area strongly supported by tourism and the "staycation" boom, which will be impacted which the development of an airfreight hub operating 24/7 only 3 Miles up the road. He has not explained how this project falls within the Government's zero emissions targets.

Last night, the local council (Thanet District) met at full council where the Local Plan was discussed and the point was raised that Manston could indeed eventually be used for housing anyway, if the DCO is granted but the operation fails through financial failure, as has happened numerous times before on this site. Therefore why grant a DCO which already has a "plan B" for failure?

Additionally, Sky News ran an article on 16th October on their website which names 21 "major airport expansion plans". Manston was not listed amongst this 21. Therefore I ask, how can the first aviation DCO, which claims by its very principles, to be a Nationally Significant Infrastructure Project not be listed at all amongst 21 "major" airports? The reason being of course is that Manston Airport cannot be considered Nationally Significant and as such does not meet the criteria of the DCO.

I thank you for taking the time to consider my points and hope you can make the correct, informed decision for the people of Ramsgate, South Thanet and East Kent.

Kind regards

Andrew Hodder

22

Rob Pridham

From: Rita Burns [redacted]
Sent: 30 October 2019 13:11
To: TRANSPORTINFRASTRUCTURE
Subject: Manston DCO

I am deeply concerned that our local MP Craig Mackinlay is suggesting that the local area support this 100% - this DCO cannot possibly be classed as a NSIP, firstly the previous versions of this airport being open have failed numerous times, Craig Mackinlay owes a dormant airline so maybe that is where his interest lies. He had to apologise in the House for failing to declare his personal interest in this development. There is also a video showing him to admit to having a long term friendship with a director of RSP. The same director whose previous attempts to run airports from this site have failed many many times.
I have lived under the flight path for the past 32 years and previous versions were nothing like what is being proposed, the flight path contours do not make sense when it shows that one side of a minor road is affected by the noise and the other is not. We have a Climate Emergency which is yet another reason for declining this proposed DCO.
Another point is that the site is in the totally wrong place to have an airport - for locals apart from the noise, pollution, health affects etc the roads would be grid locked with HGV's transporting any cargo, along with the daily fuel tankers that would be needed.
The area is strongly supported by tourism and since the closure of the airport the number of tourists has greatly increased, this will obviously decline rapidly if a 24/7 Cargo Hub is only a few miles up the road.

None of the forecasts provided make any sense for example :

Deep analysis of the freight forecast provided by Dr. Dixon shows that in year six the airport will reach 10144 atms carrying 181436 tonnes of cargo however it is interesting when you examine where she obtains her forecast.
In year 3 freight ATMs leap by 10% with Freight increasing by 12% and then in year 4 ATM's increase by 67% and freight by 54% whereas before and after the increases are in single figures.

At the consultations in front of the Inspectors is was shown that locals are most certainly against this being a NSIP and certainly not 100% supported by locals.

Hopefully you will consider your decision with thought for whether this is NSIP, also the impact it will have on our area.

Kind Regards

Rita Burns

23

Rob Pridham

From: [redacted]
Sent: 30 October 2019 17:15
To: TRANSPORTINFRASTRUCTURE
Subject: Manston reopening

Dear Sirs,
I have the honour of living in Ramsgate. It's a bit rundown in some areas but generally it's a lovely place to live. It's peaceful, quite and most of all has clean air.
I am being told by my MP Mr Craig McKinley that I want Manston Airport to reopen.
Let me make this most clear. I AND MANY OTHER THAT LIVE IN THE NEATHERCOURT ESTATE DO NOT AND NEVER HAVE WANTED MANSTON AIRPORT TO REOPEN!!!!!!!!!!!!!!!!!!!!!

We like living here but the airport will make our lives a misery. We are right under the flight path (which we didn't know when we moved in).
Our flight is not only about noise pollution but most of all about air pollution!
This government with the backing of Labour and other parties in parliament said NO to air pollution. That it was time to take control of the pollution we were pumping into the air destroying our planet. This has to stop now before any more damage is done.
There are other airports around with far better, faster links to London than MANSTON, we are stuck out on a thumb with abominable road links, ask anyone that has to get off the Isle of Thanet.
Please,please,please before you make any decision that will affect many lives now and in the future, come down to Ramsgate, walk round NEATHERCOURT ESTATE, not just the far end that is all that has happened until now. See for yourself how near the estate is to MANSTON. Then ask yourself one question, WOULD I LIKE/WANT TO LIVE THAT NEAR TO AN AIRPORT THAT IS GOING TO SHIP IN CARGO PLANES FROM GOODNESS KNOWS WHERE, WITH THE AIRCRAFT BEING GOODNESS KNOWS HOW OLD, OR IN WHAT KIND OF AIR WORTHINESS.

THANK YOU FOR READING MY EMAIL
Regards
Janice Best
[redacted]

24

Rob Pridham

From: Dani Flowerde[redacted]
Sent: 31 October 2019 10:14
To: TRANSPORTINFRASTRUCTURE
Subject: Manston Airport - Lack of representation by Thanet MPs

To whom it may concern

I write to bring your attention to the very strong opposition to the re-opening of Manston as an airport. The runway means that planes will be flying very low over a densely populated area including 5 schools. The current MPs for our area Roger Gale and Craig Mckinley have absolutely failed to represent the views of the majority of the people, largely due to the fact that most of the people who will suffer the worst have been given little or inaccurate information.

The strength of feeling is reflected in the local elections, where every Ramsgate candidate was anti airport, but despite this, our current MPs keep pushing the project forward and absolutely refusing to deal with local peoples very serious concerns.

At a time when the world is realising that problems with constant airport expansion and pollution, Thanet MPs continue to support a project that will adversely affect the health and wellbeing of sizeable population and are encouraging regulations on noise and night flights that are lower than those for other populations affected by airports, while denying compensation or money for home alterations made necessary by the airport re-opening.

How can this be seen as representing the needs of their constituents?

Best regards

Daniela Flowerdew

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Rob Pridham

From: [redacted]
Sent: 31 October 2019 10:55
To: TRANSPORTINFRASTRUCTURE
Subject: Opposition to Manston Airport development

I understand you are currently considering the proposal to change Manston airport in to an air cargo hub. The organisation behind this proposal and, I'm sorry to say local Conservative and UKIP councillors, are wrongly claiming this proposal has huge local support. This is not the case, indeed the vast majority of inhabitants are terrified that this development will destroy the main source of income to this part of the Kent coast, that being tourism. Ramsgate in particular is directly beneath the flight path, although according to the submitted plans, Margate, Broadstairs and Herne Bay beaches will also be negatively affected. Currently we have many awards for our beaches which are packed with tourists during warmer months; this will not be the case once planes start flying over and roads are blocked by the inevitable increase in traffic.

River Oak, who are behind this proposal, have never actually proved it to be financially viable and there is a great deal of concern and scepticism locally about their honesty and commercial standing. Please do not allow another dead duck development in Kent to embarrass your department, the government and the good folks of Thanet. This proposal will inevitably turn in to another Seaborne Freight story and will once again leave your department and minister with egg on your faces

Kind regards,
Catherine Gardiner
Proud Thanet Resident

Sent from my Samsung Galaxy smartphone.

26

Rob Pridham

From: Jane Roberts [redacted]
Sent: 31 October 2019 23:01
To: TRANSPORTINFRASTRUCTURE
Subject: Proposed reopening of Manston Airport, Ramsgate

Dear Sirs

I understand that the proposed DCO at Manston Airport may now be on hold until after the General Election.

I hope whichever Secretary of State decides on the future of this thrice-failed airport, takes into account the huge number of objectors there are in Ramsgate, and not believe the view of our current MP, Craig Mackinlay, that the "whole of Thanet" is desperate to get an airport up and running again. This is the same MP who owns "Mama Airlines", by the way.

Not only are there comparatively poor links from the site to London, let alone the rest of the country, the runway itself ends a mere 200 metres from the edge of Ramsgate. Planes would be travelling over the middle of Ramsgate at around a height of 250 metres.

The site is perfect for the large number of houses that are required to be built on Thanet in the next few years.

There are already five airports around London. Stansted, Gatwick and Southend all say they are ready to expand if necessary, and are not going to be happy to have another rival on the scene, let alone East Midlands Airport, which is a major player in cargo transportation.

Although the new owners of the site RSP, state they do not intend to have night flights, this would be the only way they could ever hope to make money, by having flights day and night. They have applied for 83,000 p.a., I believe. That is, 227 a day - difficult to fit in unless permission is granted to operate 24/7. 227 flights day and night, just 250 metres above our heads.

Please ensure the new Secretary of State has all the facts when he or she makes the final decision.

Yours sincerely

Jane and Steve Roberts
Ramsgate residents

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Rob Pridham

From:	Samara Jones-Hall <slmjh@fivetentwelve.com>
Sent:	01 November 2019 15:35
To:	TRANSPORTINFRASTRUCTURE; Manston Airport
Cc:	Rob Pridham; Jason Jones-Hall
Subject:	Manston DCO: Letter to Secretary of State with New Evidence since the Close of the Examination: Sources Historic England and Thanet District Council
Attachments:	Letter to Secretary of State with New Evidence (Source Historic England and Thanet District Council) (4).pdf

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence since the Close of the Examination. Source: Historic England and Thanet District Council.
Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

[redacted]

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk
ManstonAirport@planninginspectorate.gov.uk
Cc: Rob.Pridham@dft.gov.uk

1 November 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination: Sources Historic England and Thanet District Council

A) New Evidence since the Close of the Examination: Source Historic England

1. On 27 October 2019, Historic England revealed the historic sites most at risk of being lost forever as a result of neglect, decay or inappropriate development by publishing the annual Heritage at Risk Register 2019[1]. The Register gives an annual snapshot of the critical

[1] https://historicengland.org.uk/whats-new/news/heritage-at-risk-2019/

condition of some of the country's most important historic buildings, sites, monuments and places[2].

2. As you will be aware Ramsgate (the town directly under the proposed flight swathes at altitudes of 300-600 feet) **had the following sites added to the At Risk Register** in October 2019:

   - **The Conservation Area[3]**
   - **The Clock House, Royal Harbour[4]**

3. The Conservation Area added to the At Risk Register is the **largest conservation area in Kent**[5] and is directly under the proposed flight swathe at altitudes of 300-600 feet.

4. The Clock House, Royal Harbour added to the At Risk Register is also directly under the proposed flight swathe at altitudes of 300-600 feet. Ramsgate's Royal Harbour is the only Royal Harbour in the UK and the HE Colliers Report of October 2018 describes as "***the defining visual and historical architectural feature of the town***".

5. The Ramsgate Royal Harbour is Grade II* listed[6] and many of the buildings, arches and monuments surrounding and part of the Royal harbour are Grade I, II and II* listed[7].

B) New Evidence since the Close of the Examination: Source Thanet District Council

6. On 24 October 2019, the contract for a feasibility study for Ramsgate port and Royal harbour[8] was awarded to consultant WSP UK Limited by Thanet District Council. Part of the feasibility study is a residential plan to look at waterfront homes, and leisure uses such as

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[2] https://historicengland.org.uk/whats-new/news/heritage-at-risk-2019/

[3] https://historicengland.org.uk/advice/heritage-at-risk/search-register/list-entry/6973

[4] https://historicengland.org.uk/advice/heritage-at-risk/search-register/list-entry/278146

[5] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003578-Five10Twelve%20-%20Comments%20on%20Responses%20to%20ExA's%20WQ%20-%20Appendix%20Section%20G-AA.pdf

[6] https://britishlistedbuildings.co.uk/england/ramsgate-thanet-kent#.XbxKoGgvOow

[7] https://historicengland.org.uk/whats-new/news/nine-of-ramsgates-historic-gems-listed/ and https://britishlistedbuildings.co.uk/england/ramsgate-thanet-kent#.XbxKoGgvOow

[8] https://www.kentbusinessportal.org.uk/

space for larger yachts than can presently be accommodated in Ramsgate, hotel and conference facilities, berthing for small cruise ships and shops. Ideas for a maritime village development at Ramsgate port and Royal harbour will look at mixed use development with waterfront homes, shops, restaurants and cafes and commercial units.

7. The Ramsgate Royal Harbour is Grade II* listed[9] and many of the buildings, military arches (currently occupied by retailers and restaurants) and monuments surrounding and part of the Royal harbour are Grade I, II and II* listed[10].

8. The Ramsgate port and Royal harbour is also directly under the proposed flight swathe at altitudes of 300-600 feet.

Conclusion

These two pieces of new evidence from Historic England and Thanet District Council would materially and significantly affect Historic England's Statement of Common Ground as well as **the Local Impact Reports submitted** to the ExA by Thanet District Council and Kent County Council pursuant to Sections 60 Planning Act 2008[11].

Further, the statutory obligation on decision-makers to have special regard to the desirability of preserving listed buildings and their settings, and the policy objectives in the National Planning Policy Framework and the Planning Policy Guide coupled with Section 72 of the Planning (Listed Buildings and Conservation Areas) Act 1990 and Section 66(1) of the 1990 Act as well as relevant case law Barnwell Manor Wind Energy Ltd v East Northamptonshire District Council and Others CA Feb 11 would be materially and significantly engaged.

[9] https://britishlistedbuildings.co.uk/england/ramsgate-thanet-kent#.XbxKoGgvOow
[10] https://historicengland.org.uk/whats-new/news/nine-of-ramsgates-historic-gems-listed/ and https://britishlistedbuildings.co.uk/england/ramsgate-thanet-kent#.XbxKoGgvOow
[11] This further impacts sections 104 and 105 of the Planning Act 2008.

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Rob Pridham

From: John Walke[redacted]
Sent: 01 November 2019 13:09
To: TRANSPORTINFRASTRUCTURE
Cc: ManstonAirport@planninginspectorate.gov.uk
Subject: Manston Airport DCO Letter to Secretary of State for Transport 1st Nov 2019
Attachments: Draft letter to Secretary of State for Transport v5.pdf

[redacted] has attached the following document:

Draft letter to Secretary of State for Transport v5

Dear Sir

I attach letter dated 1st November 2019 from The Ramsgate Society addressed to The Secretary of State for Transport in respect of the Manston Airport DCO Application by Riveroak Strategic Partners (RSP)

The Ramsgate Society is the civic society for the town of Ramsgate. Founded in 1964 it is a registered charity with some 700 members.

I would be grateful if you would acknowledge receipt of this letter to the email address above.

John Walker
Chairman
The Ramsgate Society

The Secretary of State for Transport

Department for Transport

Zone 1/18, Great Minster House

33 Horseferry Road

London SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.uk

ManstonAirport@planninginspectorate.gov.uk

1 November 2019

Dear Sir

Application by RiverOak Strategic Partners (RSP) for a Development Consent Order (DCO) to reopen Manston Airport and its development as an international hub for air freight

I write to you as Chair of The Ramsgate Society to urge you to oppose this DCO application which is now before you for decision.

Since the closure of the airport some five and a half years ago we have become increasingly concerned and alarmed at the plans and ambitions of RSP for the use and development of the site. Contrary to all the evidence from failed operators in the past and the informed views of independent aviation experts, RSP has continued with its attempt to press for its re-opening and development as a major international hub for air freight. During the Examination Stage it became very clear to us and others with an interest and concern for the quality of life of Ramsgate's 40,000 or so residents that these plans would be a disaster for the local visitor economy and for local residents.

Ramsgate lies directly on the eastern flight path that would align with the runway. Seventy percent of landings would be from the east. The worldwide fleet of dedicated air freighters is dominated by variants of the ageing Boeing 747. A landing approach to Manston would typically align directly with the runway at least 10km out, with a glide path descent of 3 degrees. Landfall would be directly over the unique Royal Harbour at an altitude of a mere 300m and at 4.15km from touchdown. The flight path would therefore overfly a continuously built up urban area for a distance of 3km at an altitude of 300m down to only 85m.

First order impact on residents and visitors would be from noise and air pollution, however, subsequent impacts would be on the blighting of the urban fabric, heritage assets of national importance, and devastation of the healthy and growing tourist and visitor economy..

Noise is by far the most significant factor in any assessment of aviation effects on the quality of life of those residing, working and visiting towns and cities close to an airport. Past use of the airport, which at its peak in 2009/10 amounted to less than a third of that planned by RSP, still gave rise to severe disruption and annoyance. Evidence from monitoring data shows that Ramsgate residents were regularly exposed to noise impacts in excess of 85dB SEL.

In the modelling undertaken by the applicants' consultants, their conclusions make for disturbing reading, viz:

*4.1.46 Again, in year 20, significant adverse effects have been identified as being likely as a result of an increase in noise in the following communities which are in the vicinity of the airport and flight paths: **Ramsgate;** Manston; St Nicholas at Wade; West Stourmouth; and Pegwell Bay*

*4.1.47 In these communities, aircraft noise would increase to the point where there would be a **perceived change in quality of life for occupants of buildings in these communities** or a perceived change in the acoustic character of shared open spaces within these communities*[1]

Like many coastal towns Ramsgate's future and prosperity depends critically on its tourist and leisure economy. Its rich heritage serves as a major attraction to visitors and new residents alike. It has over 450 listed buildings and four Conservation Areas. Unique to the town is the Royal Harbour, a unique designation bestowed by George 1V in 1821. The East Pier of the harbour is Listed Grade 2 and The Clock House is Listed Grade 2* and is a defining characteristic of the town along with the regency terraces on East and West Cliff which are Listed Grade 2.

Since Manston's closure we have witnessed a growing confidence and investment in the town's future. Over £4.5m has been invested by Wetherspoon's in the restoration of the Grade II* Royal Victoria Pavilion in the harbour, completed and opened in 2017. In that same year Historic England awarded Ramsgate Heritage Action Zone (HAZ) status in recognition of the exceptional quality of its historic built environment and its potential as a very valuable asset by which to boost the local economy.

Through the HAZ Historic England is looking to unlock the potential in Ramsgate's historic environment to create economic growth and improve the quality of life for local residents. Since the designation was awarded Thanet District Council, Historic England, Ramsgate Town Council, The Ramsgate Society and other community organisations have been working on a number of initiates which are currently awaiting grant funding decisions. These include amongst others:

1. A grant of £1.9m from the HLF Parks for People Fund to restore this much used park to its former glory after years of neglect which was approved in 2018.
2. The High Street Heritage Action Zone Fund. An application for £1M for improvements to Ramsgate's ailing High Street approved in 2019.
3. The Heritage Horizon Awards Scheme. An application for £15.2m for major improvements to the Royal Harbour Estate which is at the heart of the Ramsgate Conservation Area and crucial to the success of the visitor economy.

If this DCO were approved the adverse environmental impacts of the RSP proposals would seriously undermine the efforts of the local community to regenerate the local economy by maximizing the use of its valuable heritage assets.

In summary the town's future stands to be determined by your decision on this DCO application. Refusal would provide a major boost to confidence and support for the future wellbeing and economic growth of the town. Approval would lead to a spiral of declining investment, a loss of jobs

[1] RSP Volume 5 Non-Technical Summary TR020002/APP/5.1

in the visitor economy, environmental and noise pollution and an unacceptable reduction in the quality of life for residents.

John Walker

Chair

The Ramsgate Society

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Rob Pridham

From: Laura Marks [redacted]
Sent: 04 November 2019 08:32
To: Airspace.UserResponse@caa.co.uk; Manston Airport; shappsg@parliament.uk
Subject: FW: Right to attend consultation

Dear CAA, PINS and Grant Shapps

Re; Manston Cargo Hub, Thanet, Kent

I am writing to complain yet again, about the lack of consultation from RSP in respect of the latest aspect of their cargo hub application.

Despite enormous local objections and thousands of registered interested parties, it would appear only select groups have been invited to the supposed airspace design principle meetings scheduled for Ramsgate this week.

I wish you to note for the record my ongoing, significant concern in respect of this application to open a giant cargo hub with a flight path directly and very low over a town of 40,000 people. It appears to me this remains the pet project of a small vocal minority in Thanet, but in particular our aviation obsessed MP for Thanet North, and our MP for Thanet South who managed to forget he owned an airline and was forced to apologise in the House.

I will save you from my further frustrations, but I wish you to note that this latest consultation from RSP is yet again failing to consult properly. Most of Ramsgate has yet again been excluded, including Ramsgate Town Council. The only actual Councils invited do not even include Thanet District Council.

I am also cc'ing the planning inspectorate and the Secretary of State for Transport who also, with respect, is an aviation champion and please don't get me wrong, I am not actually anti aviation but I AM horrified that this DCO could even get off the ground. When Manston was last open, the noise was horrific, the health and environmental damage was huge, and it kept going bust and why? It isn't a sensible place to put an airport, simple. It was ideal for the Battle of Britain and the Cold War but now? Seventy miles from London, no fuel pipeline, no customers, no need, no viable business plan?

Yet again, RSP insults Ramsgate by failing to consult. Who will help us? Are we a soft target down here in Thanet for planning applications nobody else in the UK would put up with? It seems so. Thanet deserves so much better.

Grant, please support Gatwick runway 2, East Midlands cargo expansion and Stansted, all existing airports with expansion capacity if it is needed. These are the absolutely sensible options and none of those plans involve a town of 40,000 people at the end of the runway. Save Ramsgate from these cynical plots. It simply doesn't add up.

Nethercourt Estate (and estate of mainly retired people) is some hundred metres from the runway. Thousands of residents are scared and the economic regeneration of Ramsgate is stalling because of this development threat and for what? Freeze dried fish and some race horses according to RSP at the last public hearings. This is an insult.

I only hope and pray that the report PINS has sent you has the right outcome in it, for all our sake.

Manston is not a political issue, objectors are from every flavour including traditional Conservative voters.

Best wishes

Laura Marks

[redacted]

From: Laura Marks
Sent: 03 November 2019 15:32
To: manston@communityrelations.co.uk <manston@communityrelations.co.uk>
Subject: Right to attend consultation

Dear RSP

RE; CAA Design Principles

Noting your intention to consult with a select number of groups in Ramsgate this week in respect of flight paths I am writing to express my concern that yet again, you are appear to be failing to consult correctly or with authenticity in respect of the residents and groups of Ramsgate.

Specifically, you have failed to invite Ramsgate Town Council, No Night Flights, Commuters Against the Cargo Hub, and Nethercourt Action Group in particular, but there are others. I am writing to ask for you to provide me with a list of those you have invited.

Perhaps you would further comment on this failure to invite those groups who represent the significant majority of Ramsgate residents who persistently object to your cargo hub application on the grounds there is zero need, viability nor national requirement for a gigantic cargo hub to fly low over 40,000 residents day and night. Why are you excluding those who should form your priority groups? Why are you excluding those who are registered interested parties in the cargo hub application?

I would like you to note my intention to attend the evening consultation meeting at the Royal Oak. I am a registered interested party and would like my comments noted at your consultation event as I understand consultation comments will be taken into account during the design phase.

Yours, with repeated concern

Laura Marks
[redacted] (right under the flight path at 200 metres, and opposite a school)
Ramsgate

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Rob Pridham

From: Laura Marks [redacted]
Sent: 04 November 2019 17:56
To: TRANSPORTINFRASTRUCTURE
Subject: Additional Evidence; re Manston Airport DCO
Attachments: Manston.L Marks.04.11.docx

Dear Sir or Madam

Please find attached further evidence, and my ongoing feedback in respect of the RSP application to open a cargo hub in Ramsgate.

I do sincerely hope this will be taken into account.

With thanks

Laura Marks
Concerned Ramsgate Resident

I implore you, please focus on the lack of evidence in this application. It is the first aviation plan to use the DCO vehicle and clearly a misuse of what this legislation was originally intended for.

Save us from these cargo plane spotting obsessives who ran Manston into the ground three times previously. There is simply no need for a cargo hub at Manston. Even if there was a need (which all of the evidence suggests there is not) there is no evidence to suggest there is a viable business plan for Manston.

If there is a need, why not use the capacity which already exists at East Midlands?

I find it distressing and disturbing that an application to fly a cargo plane 200 metres over Ramsgate town centre and heritage zone and right over my house and thousands of others every ten minutes even exists. No other airport in the UK warrants a flight path over a town so low that 'the schoolchildren can wave at the pilots' and we routinely have aviation fuel on our washing and our windows. How attractive is our royal harbour with a plane coming in every 10 minutes? This application is wanton and destructive, and RSP has found a routinely soft target in Thanet District Council, backed up by plane spotting and aviation owning MPs to the north and south. It's not on.

This application needs to be stopped. SAVE RAMSGATE.

Yours, with increasing distress

Laura Marks

[redacted]

SAVE MANSTON AIRPORT

£300 M ! RSP want to invest £300 Million in Manston. Predict yr 20: 9,500 local jobs. Draft S106 agreement = apprenticeships and training for this deprived area. RSP would prefer local recruits !

MANSTON AIRPORT LATEST NEWS : link

Save Manston Airport association
www.savemanstonairport.org.uk

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Rob Pridham

From: Richard Oliver <[redacted]
Sent: 04 November 2019 09:13
To: TRANSPORTINFRASTRUCTURE
Cc: national@theguardian.com; strobes@private-eye.co.uk
Subject: Manston Airport DCO

Hello

I'm sure you are aware of the strong opposition within the local area to the proposed cargo hub development at Manston, not least because of the environmental problems it will cause to the towns of Ramsgate and Herne Bay.

I'm sure you are carrying out your own due diligence on this issue but I just want to make sure you are aware of the track record of Anthony Freudmann, Director of RSP (the party submitting the DCO application https://rsp.co.uk/). I'm sure you do not want another Seabourne Ferries debacle.

https://www.facebook.com/manstonpickle/posts/tony-freudmann-director-of-riveroak-and-their-front-man-here-in-the-uk-for-the-m/1326653150691909/

http://hbm2015.com/nnf/library/law/tony-freudmann-struck-off-solicitors-roll-for-27-counts-of-misappropriation-of-client-funds/

Kind regards

Richard

Sent from Mail for Windows 10

No Night Flights

No flights between 11pm and 7am into or out of Manston*

***except AHEM flights: Aid, Humanitarian, Emergency, Military.**

TONY FREUDMANN STRUCK OFF SOLICITORS' ROLL FOR 27 COUNTS OF MISAPPROPRIATION OF CLIENT FUNDS

Anthony "Tony" Freudmann was a solicitor with the firm of Wace Morgan in Shrewsbury, Shropshire. In 1991, the other partners at Wace Morgan discovered that over a period of years, Mr Freudmann had been helping himself to money held in various client accounts and immediately fired him.

In 1992 he was brought in front of the Solicitors' Disciplinary Tribunal facing allegations (from the partners in his own firm) that ***"he had used clients' funds for his own purposes"***.

Mr Freudmann had been given the trusted position of managing partner, which gave him the access to the client accounts. Wace Morgan stated that Mr Freudmann ***"had undertaken a misappropriation of client funds over a long period of time. The number of payments had been on a large scale and had been taken clandestinely"***, and that he ***"had indulged in a deliberate and deceitful course of conduct over a long period of time"***.

Mr Freudmann's submission to the Tribunal is a cringe-making stream of "poor me" excuses – paragraphs 27 to 64 in the document. Poor Tony was working SO hard, and had difficult clients, and the other partners didn't work as hard as he did (which made him resentful), and he was only "borrowing" the money, and it was only a little bit at a time, and so on. As a result of this, ***"he behaved in a way which he found difficult to understand"***... FOR YEAR AFTER YEAR.

His partners were cross with him, very cross.

- They let down the tyres of his leased car and took his car keys (presumably to safeguard the car) and frog-marched him out of the building.
- They cancelled his petrol account at the local garage, cancelled his life insurance and cancelled his wife's car insurance.
- They grassed him up to the Lord Chancellor's Department, who suspended him as a Deputy District Judge.

- They grassed him up to the Chief Executive and Chairman of the County Council, and the County solicitor, which cost him his position as Leader of the County Council.
- They grassed him up to the Crown Prosecution Service, so he was no longer able to work as an Agent for the CPS.
- They grassed him up to the local press.
- They grassed him up to potential clients.

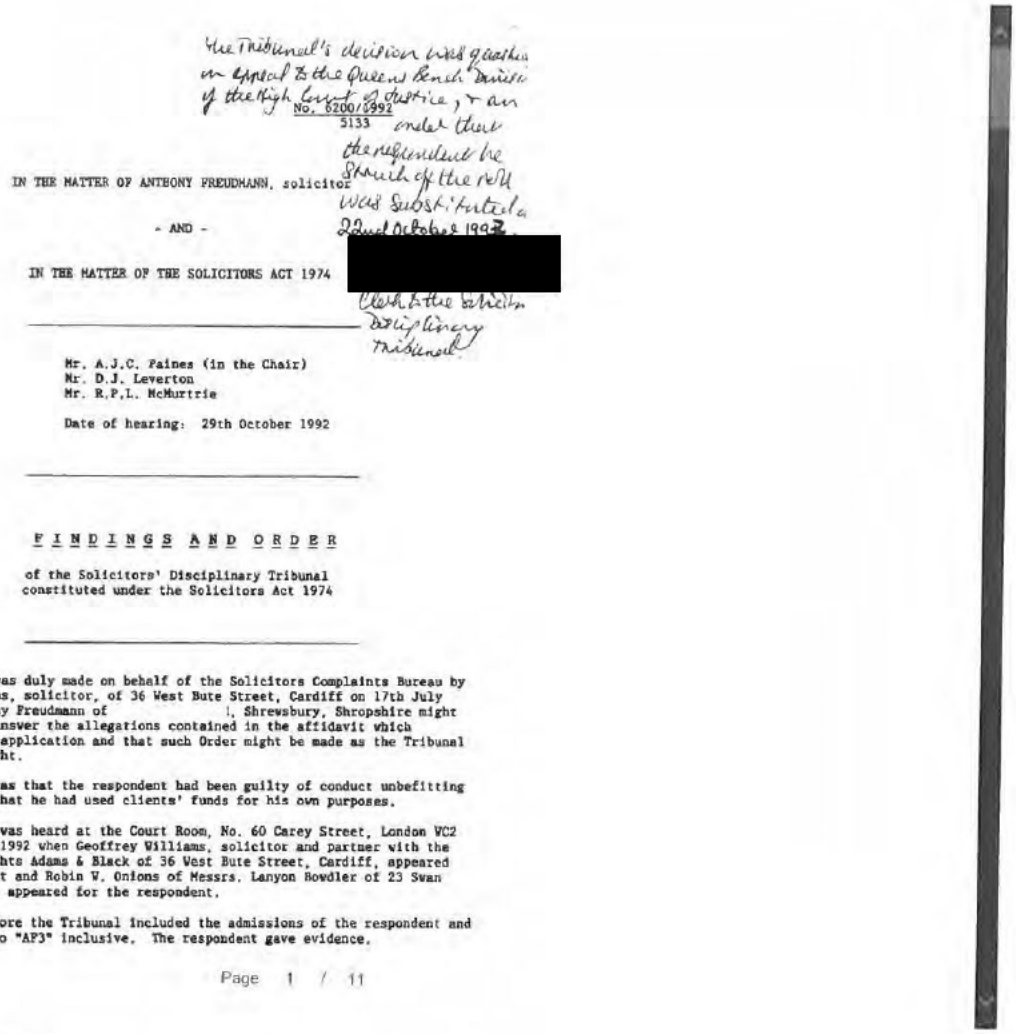
All of this caused Tony ***"considerable embarrassment, alarm and distress"***. I think that may have been the point.

The Tribunal found ***"the allegation to have been substantiated"*** – bang to rights, in English. Even though they described Tony as ***"ambitious, dominating and aggressive"***, they fell for his sob story, saying ***"the Tribunal has in these exceptional circumstances decided to treat him with an unusual degree of leniency"***, and fined him £5,000. Not everyone thought this was the correct judgement, but it wasn't any of his victims or even his ex-partners who appealed against the decision, because the (then) Solicitors Complaints Bureau beat them to it. Well done, SCB.

As you can see in the hand-written addition to the front page of the document: ***"The Tribunal's decision was quashed on appeal to the Queen's Bench Division of the High Court of Justice, and an order that the respondent be struck off the roll was substituted on 22nd October 1993."***

So, a happy ending.

Shortcut to this page is: **bit.ly/FREUDMANN**



The Tribunal's decision was quashed on Appeal to the Queen's Bench Division of the High Court of Justice, & an order that the respondent be struck off the roll was substituted on 22nd October 1993.

No. 5200/5992
5133

IN THE MATTER OF ANTHONY FREUDMANN, solicitor

- AND -

IN THE MATTER OF THE SOLICITORS ACT 1974

[redacted]
Clerk to the Solicitors Disciplinary Tribunal

Mr. A.J.C. Faines (in the Chair)
Mr. D.J. Leverton
Mr. R.P.L. McMurtrie

Date of hearing: 29th October 1992

F I N D I N G S A N D O R D E R

of the Solicitors' Disciplinary Tribunal
constituted under the Solicitors Act 1974

An application was duly made on behalf of the Solicitors Complaints Bureau by Geoffrey Williams, solicitor, of 36 West Bute Street, Cardiff on 17th July 1992 that Anthony Freudmann of , Shrewsbury, Shropshire might be required to answer the allegations contained in the affidavit which accompanied the application and that such Order might be made as the Tribunal should think right.

The allegation was that the respondent had been guilty of conduct unbefitting a solicitor in that he had used clients' funds for his own purposes.

The application was heard at the Court Room, No. 60 Carey Street, London WC2 on 29th October 1992 when Geoffrey Williams, solicitor and partner with the firm of Cartwrights Adams & Black of 36 West Bute Street, Cardiff, appeared for the applicant and Robin W. Onions of Messrs. Lanyon Bowdler of 23 Swan Hill, Shrewsbury appeared for the respondent.

The evidence before the Tribunal included the admissions of the respondent and exhibits "AF1" to "AF3" inclusive. The respondent gave evidence.

Page 1 / 11

Download (PDF, 10.65MB)

By the way, if you search for "Tony Freudmann" on Google, you will find that he is one of those people who has taken advantage of Google's "unremembering" service – there's a footnote to the search results explaining that some results have been removed. This episode in Mr Freudmann's life was meant to have been air-brushed from history.

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DOVER DISTRICT COUNCIL

Leader's Office
White Cliffs Business Park
Dover
Kent CT16 3PJ

Telephone: (01304) 821199
Fax: (01304) 872452
e-mail: cllr-trevor.bartlett@dover.gov.uk
Website: www.dover.gov.uk

The Rt Hon Grant Shapps MP
Secretary of State for Transport
Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR

Councillor Trevor Bartlett
Leader of the Council

[redacted]

Our Ref: TT/TB/DJD
Your Ref:
Date: 5 November 2019

RECEIVED
08 NOV 2019
PRIVATE OFFICE

Dear Secretary of State

Manston Airport and Associated Issues

Having been elected last week as the new Leader of Dover District Council, following the resignation of my predecessor, Councillor Morris, I have been familiarising myself with a number of key matters and thought it would be helpful if I wrote to you on the above.

Dover District Council has consistently supported the retention of Manston Airport for aviation purposes. Consequently, I am pleased to note that the report from the Planning Inspectorate to the Development Consent Order has been passed to The Department for Transport for your consideration. While I can clearly pass no further comment at this stage, the Council would welcome an early determination in accordance with statutory process.

In so far as the background to the District Council's support for Manston, we are very conscious of the opportunities that Manston presents in terms of future jobs and skills development in an area which has faced consistent employment and skills challenges. While the site sits in Thanet Council's Administrative area, we are mindful of how major investment and employment can transcend boundaries. The former Pfizer Pharmaceutical site which emerged as Discovery Park illustrates this point as it provides much needed employment for both Dover and Thanet Districts and is due to grow further (we welcome the currently embargoed news that it being designated as a Life Sciences Opportunity Zone). The Council therefore believes that a fully functioning Manston will provide much added value to the locality.

While writing to you, there are two further related points.

The Council fully appreciates the considerable work that has been undertaken for No Deal Brexit and the need to undertake contingency planning as part of Operation Brock which could see Manston used as an HGV parking facility leading to the Port of Dover. The prospect of HGVs being routed to Manston and then to Dover via the A256 and A2 has

caused considerable concern to both Thanet and Dover Councils alike. Consequently, while we very much hope that this situation will not materialise, it has highlighted the need for further strategic infrastructure in the locality.

The Traffic Access Protocol (TAP) on the A20 has provided reasonable assurance when operated efficiently and has highlighted the need for similar arrangements on the A2. Such arrangements would clearly warrant long overdue improvements to the A2. Although such improvements are unlikely to be enabled in the short term, the Council is delighted to understand that Highways England is to be allocated resources to prepare options for the dualling of the A2 from Lydden to the Port of Dover. This, while providing future strategic resilience, will support some of the changes that will occur from development of The Lower Thames Crossing along with housing growth in areas adjacent to the A2 and M2 routes. It is also hoped that a strategy for a network of lorry parks on both the M20/A20 and M2/A2 routes is brought forward in short order.

I hope the above comments are helpful and would be happy to discuss any aspects in more detail with you or your Officials if this would be of use.

Yours sincerely

[redacted]

Trevor Bartlett
Leader of the Council

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Rob Pridham

From: Tracey McEvoy <[redacted]
Sent: 11 November 2019 16:13
To: Rob Pridham
Cc: Michael J McEvoy (mobile)
Subject: Manston Airport DCO - objection to proposal for cargo airport

Dear Mr Pridham,

I'm not sure if you are the correct person to send our objections to regarding the proposed cargo airport at Manston in Kent. If not, would you be kind enough to forward this on, or let me know who we should send this to. Many thanks in advance,

Michael and Tracey McEvoy
[redacted]

Dear Sir/Madam,

We are writing as residents and home owners in Ramsgate. We would like to **register our wholehearted opposition to the plans for a cargo airport at Manston**. I have set out below the reasons for our objections.

Lack of transparency/potential corruption by the Riveroak Strategic Partners who wish to run the airport
Riveroak Strategic Partners (RSP) who have applied to run the cargo airport lack credibility and integrity. Their advisor, Sally Dixon, author of the Azimuth report, appears to have no direct experience in airfreight and was unable to show any evidence of future viability for the airport in her forecasts. Surely an experienced airport board would have chosen a tried and trusted expert to pull together such critical information for them, information on which their entire future business will be based.

The only UK resident among the directors, Tony Freudmann, was struck off as a solicitor in 1993 for 27 counts of misappropriation of client funds, and is listed as a director of 26 dissolved companies which includes several failed airport operations – including at Odense in 2005, where the town of Odense was left with a £2m bill following the failure, and Lahr, where it closed after 9 months in 2013 with employees not being paid for 3 months. Given that Manston has already proved a failure as an airport, it seems absurd that anyone would countenance this man's involvement in such a large scale infrastructure project. One must also ask why anyone would want to take on a business that is so likely to fail, unless it provides a good vehicle for say reducing tax, money laundering or similar. Another director, Niall Lawlor, was employed for several years by Ranieri in the US. This is a major trader of the mortgage backed securities that played a huge part in the subprime property crash that caused a global economic catastrophe.

I am also concerned that there is a worrying connection with members of parliament. RSP seems to be heavily supported by Sir Roger Gale, MP for North Thanet who has hosted briefing sessions on their behalf at the House of Commons. This seems highly inappropriate to give RSP a platform at parliamentary briefings given they are presently under examination. Also Craig Mackinlay, MP for South Thanet is a strong supporter of RSP. He was found In June 2018 to have twice breached Parliament's rules due to a potential financial interest according to a decision by its standards watchdog. Mackinlay used his position to press for the reopening of Manston from which his company had planned to run low-cost flights to Spain several times during Commons debates. (As you may remember, Mackinlay was acquitted over election expenses earlier this year with one of his junior teamgiven a nine month suspended prison sentence for falsifying receipts which Mackinlay 'unwittingly signed').

Negative impact on Health and wellbeing:

There is significant evidence that **residents who live under a flight path suffer a raft of medical diseases and ailments due to pollution** from increased rates of cardiovascular disease (British Medical Journal 2013), to strokes (around 10-20% more than most people in Heathrow residents). The Civil Aviation Authority admit that aircraft engines emit pollutants including nitrogen dioxide and nitric oxide which are specially hazardous for those who suffer from respiratory illnesses.

According to the Aviation Environment Federation there is a **detrimental impact on people's mental health and development in children**. If a cargo airport was introduced, people would suffer from **debilitating insomnia** from being constantly awakened by **noisy night flights** and loss of quality of life.

Negative impact on nature and the environment:

The impact on health and well-being is not the only by-product of living close or under a flight path. As I'm sure you are aware, Ramsgate is very close to a RAMSAR site, NNR and SSSI site 'Thanet Coast & Sandwich Bay' a Special Area for Conservation and Special Protection Area. Thanet is a special place precisely because of the **peace and quiet** it enjoys from not having aeroplanes constantly passing through the area. We are very blessed in this area to live in a **peaceful, green and healthy environment**. We have enviable countryside, wildlife and birds, and productive farmland that all thrive and in turn keep us healthy and well. There are a number of internationally protected nature sites in the vicinity and **the impact on nature will be detrimental,** potentially destroying legally protected wildlife and the local flora and fauna. We cannot allow this to happen!

Those lobbying for the airport will say that a housing development at Manston would increase traffic - however this is nowhere near the level of **disruption and congestion** that would be caused by having a cargo airport on our doorstop. A cargo airport would need to be accessed by many HGVs lorries on our local roads causing yet more noise, pollution and congestion.

Negative Impact on home owners:

Residents of Thanet would very likely see a d**rop of around 25% in the value of their homes** should the airport be reopened. At the same time, houses under a flight path often suffer from **structural issues** due to the vibrations caused by powerful jets. People who might choose to buy property in Ramsgate are very likely to avoid purchasing in this area due to noisy night flights and pollution.

Negative impact on flourishing tourism industry:

Thanet is an area that is **rapidly improving, overcoming years of neglect** and provides a pleasant place to live for its residents. In recent years, Ramsgate has worked hard to **reclaim its status as a popular tourist resort**. You only need to visit the Harbour or Addington Street to see how **the area is changing for the better**, new shops are opening, Wetherspoons has done an excellent job in making over the Royal Victoria Pavilion and all of these are just a glimmer of the opportunities to come through a **clearly considered regeneration of the area**. The growing tourist industry will be driven away by **noisy and polluting cargo planes and ferries over the** beaches and hotels and outdoor activity. The burgeoning tourist industry is bringing employment and money into the local economy, and having a renaissance **without an airport or ferry service.** The argument that a cargo airport would provide jobs does not withstand scrutiny, as it's apparent that the creation of **roles in Manston would be minimal**.

We would like to see **a thorough review of the potential of Ramsgate as a tourist destination** undertaken by a leading company in the field. Like many others in Ramsgate, we are distressed to read of the alleged **corruption, financial waste and ineffectiveness of the council** we pay our taxes for and would like to see **far greater transparency, intelligent planning** and **consideration to the people living in the area**.

If you need further information from us, please don't hesitate to get in touch.

Kind regards,

Tracey and Michael McEvoy

34

Rob Pridham

From: [redacted]
Sent: 12 November 2019 10:22
To: Rob Pridham
Subject: Reopening the redundant Manston airport as a freight terminal.

Dear Sir,
I am Ronald Blay and represent OAPs against a 24/7 freight hub, at 84 years old I find that I am battling with computers to bring to light the fears of all the residents who's lives will be blighted by a busy 24/7 freight hub on our doorstep, I have uncovered so much evidence from qualified medical experts of the threat to our health from particulates that aircraft emit in huge quantities that I felt I must point out to you a freight terminal so close to our homes and schools will be a serious health risk. The right to sleep at night is a right no officials MPs or councillors can take from us, our homes will be devalued, the noise will cause strokes and heart problems, all proven by medical experts. Now the light is dawning on the global warming problem and how much aircraft contribute to this carbon contamination I hope I can trust the government will come to the right decision bearing in mind the future of mankind hangs on the right one.
Ronald Blay.

Sent from Mail for Windows 10

35

Rob Pridham

From: Andy Hodder [redacted]
Sent: 12 November 2019 15:44
To: Rob Pridham
Subject: Re: Manston Airport

Hi Rob,

Thanks for the response.

In addition to the points I have already highlighted, I wish to raise a new point that has come to light in recent days.

With regards to the Manston Airport development, and RSP, the company that have applied for the DCO.

There is an accusation that a director of RSP is in a personal relationship with a local conservative cllr. This Cllr has voted on local planning issues including Manston Airport and the Local Plan. This is surely a conflict of interest and very questionable in its morality.

Also, the local MP Sir Roger Gale who admits to being friendly with RSP directors is proudly advertising a reopened Manston on his constituency office, again I would question the conflict of interest and whether this breaches the ministerial code of practice?

Again, thanks for your time

Andrew Hodder

On Fri, 8 Nov 2019 at 10:37, Rob Pridham <Rob.Pridham@dft.gov.uk> wrote:

Dear Mr Hodder,

I am writing to confirm receipt of your representation below, which will be taken into account in the Secretary of State's decision on the Manston Airport Development Consent Order application in due course.

Yours sincerely,

Department for Transport

Rob Pridham
Senior Planning Manager, Transport Infrastructure Planning Unit

East Wing, Albany House
94-98 Petty France
Westminster, London, SW1H 9EA

[redacted]

Follow us on twitter @transportgovuk

Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: Andy Hodder [mailto[redacted]
Sent: 30 October 2019 10:03
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Subject: Manston Airport

Dear Whom it may concern,

Now we have had another General Election announced I wish to raise further concerns about a development in my constituency which I am sure you are already fully aware of and will undoubtedly be used as a pawn in the political arena in the upcoming election campaigns.

My own MP Craig McKinlay has been very vocal in his support of the reopening of the former airfield. He has also stood up in the House to apologise for failing to declare his own personal interest in the development, namely MaMa Airlines. (MaMa being abbreviated of course from Manston to Malaga). The same Honourable Gentleman has also been filmed speaking at a BBQ hosted by the local Manston activist group, in which he declared a long term friendship with a director of RSP, the company behind the DCO which currently sits on your desk. In this same video, widely shared on YouTube he was heard to mock those who are against this development, who are also the constituents he represents.

However, Mr McKinlay has done nothing to reassure his constituents on any concerns regarding pollution, both air and noise, or the decline of an area strongly supported by tourism and the "staycation" boom, which will be impacted which the development of an airfreight hub operating 24/7 only 3 Miles up the road. He has not explained how this project falls within the Government's zero emissions targets.

Last night, the local council (Thanet District) met at full council where the Local Plan was discussed and the point was raised that Manston could indeed eventually be used for housing anyway, if the DCO is granted but the operation fails through financial failure, as has happened numerous times before on this site. Therefore why grant a DCO which already has a "plan B" for failure?

Additionally, Sky News ran an article on 16th October on their website which names 21 "major airport expansion plans". Manston was not listed amongst this 21. Therefore I ask, how can the first aviation DCO, which claims by its very principles, to be a Nationally Significant Infrastructure Project not be listed at all amongst 21 "major"

airports? The reason being of course is that Manston Airport cannot be considered Nationally Significant and as such does not meet the criteria of the DCO.

I thank you for taking the time to consider my points and hope you can make the correct, informed decision for the people of Ramsgate, South Thanet and East Kent.

Kind regards

Andrew Hodder

This email has originated from external sources and has been scanned by DfT's email scanning service.

36

The countryside charity
CPRE Kent

The Office of the Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

12th November 2019

Manston Airport: DCO application by RiverOak Strategic Partners Ltd

Dear Secretary of State,

We write with regard to the Examination of RiverOak Strategic Partners Ltd's DCO application to re-open Manston Airport in Kent as a freight hub, in which CPRE Kent participated as an Interested Party. We understand that the Inspectors' recommendations were submitted to you on October 18th. Since the closure of the Examination a considerable body of additional evidence has been published, reinforcing our submissions that this proposal is totally unacceptable.

1 Need

1.1 Air Freight Traffic

Despite the Applicant's claims of the need for more air freight capability, the reality is that cargo air traffic movements (CATMs) are decreasing, as we describe below.

There has been a general downturn in freight this year at all UK airports. The 2019 figures are likely to be 10% down on tonnage and 5% down on Cargo Air Transport Movements (CATMs) compared to last year.

However, the longer-term trend is probably more important. In 1998, UK airports handled 2.1m tonnes of freight, 70% of which was belly-hold, leaving 634,000 tonnes carried in 108,000 CATMs (i.e. 5.9 tonnes per CATM).

By 2018, freight had increased to 2.6m tonnes, 71% of which was belly-hold. The remaining 772,000 tonnes were carried in fewer than half the ATMs, totalling 40,000 ATMs. This demonstrates that the average load per CATM had quadrupled to 19.3 tonnes[1].

1 https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-airport-data/

Although the Department for Transport forecasts in the 2003 Air Transport White Paper (Table 13.1) suggested that freight tonnage at UK airports would reach 5.4m tonnes by 2010, and 9.5m tonnes by 2020, these predictions show that the forecasters did not know that high value electronic goods, such as computers and mobile phones which often use air freight would become ever smaller, and some products such as music, videos, software, books, documents etc., could be delivered electronically rather than physically shipped.

Over the past 20 years there has therefore been an *increase* of just 1% per annum in freight tonnage and a *decline* of 5% a year in the number of CATM.

It is this dramatic change in capacity per CATM which shows that there is no need for Manston. See Tables 6, 13.2 and 15, on CAA datasets website)

1.2 UK Airport Expansion Plans

Existing UK Airports have plans to increase the number of flights using them[2]. This expansion is supported by your Department in its current policies, albeit at a smaller scale. These plans propose to increase passenger numbers by 65% long before 2050, which is well above your Department's own assumption of 50% increase by 2050.

All these plans would mean an increase in Air Transport Movements, and so an increase in freight capacity, whether as bellyhold or dedicated Cargo Aircraft. Again these proposals for *existing* airports reinforce the lack of need for an airport at Manston.

2 Climate Change

2.1 Committee on Climate Change

In his letter to you of 24 September 2019[4], (*Net-zero and the approach to international aviation and shipping emissions*), the CCC Chairman, Lord Deben, emphasised the importance of reducing emissions from aviation:

"Addressing international aviation and shipping (IAS) emissions is strategically important. The planning assumption for international aviation and shipping should be to achieve net-zero emissions by 2050. This should be reflected in the Government's forthcoming Aviation Strategy".

It means reducing actual emissions in these sectors.

Aviation is likely to be the largest emitting sector in the UK by 2050, even with strong progress on technology and limiting demand. Aviation also has climate warming effects beyond CO_2, which it will be important to monitor and consider within future policies.

He also said:

"The planning assumption for IAS should be to achieve net-zero emissions by 2050 and limiting demand growth to at most 25% above current levels."

This is likely to be cost-saving. There is potential to reduce emissions further with lower levels of demand."

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[2] https://news.sky.com/story/how-much-is-your-nearest-airport-planning-to-expand-11833090

4 https://www.theccc.org.uk/publication/letter-international-aviation-and-shipping/

For Manston, his statement that: "*...investments will need to be demonstrated to make economic sense in a net-zero world and the transition towards it*" is especially important because there is no need for the Applicant's proposals, and submissions to the Examination provided extensive evidence that the proposals do not make economic sense. Therefore the significant potential emissions caused by an airport at Manston cannot be permitted.

2.2 International Aviation Emissions

The need to *reduce* aviation emissions is enhanced by a new report showing that the current estimates of aviation emissions under-estimate emissions growth.

Although ICAO and the International Air Transport Association publish annual summary statistics of aircraft operations and economics, respectively, relatively little data is available about fuel burn, fuel efficiency, and carbon emissions at the regional and national levels. Policymakers cannot determine the precise amount of carbon emissions associated with flights departing from individual countries, nor can they distinguish the proportion of emissions from passenger-and-freight and all-freight operations, or from domestic and international flights.

The International Council for Clean Transportation therefore analysed some 39 million flights from 2018, and 38 million of these were flown by passenger aircraft[6]. The CO_2 emissions from all commercial operations were calculated, including passenger movement, belly freight, and dedicated freight, and they totalled 918 million metric tonnes (MT) in 2018. That represents 2.4% of global emissions from fossil fuel use and a 32% increase over the past five years. Furthermore this rate of growth in emissions is **70% higher** than assumed under current ICAO projections.

The implications of this are that emissions will have to be reduced even more than has been allowed for by the ICAO and its constituent membership, which includes the UK.

As a major source of air traffic, the UK must make even greater reductions in emissions, destroying any possibility of an airport at Manston being able to operate within UK emissions limits.

2.3 Existing Airport Expansion Emissions

The data referred to in 1.2 above show that existing airports plan to increase passenger numbers by 65% long before 2050, which is well above your Department's own assumption of 50% increase by 2050, and the CCC *maximum* increase of 25%.

The airports listed do not include Manston, so it would not be possible for Manston to add its emissions without cutting back the activity and emissions from existing airports even more drastically, which would be politically and economically unacceptable.

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[6] CO_2 emissions from commercial aviation, 2018,Brandon Graver, Ph.D., Kevin Zhang, Dan Rutherford, Ph.D., September 2019 www.indiaenvironmentportal.org.in/files/file/ICCT_CO2-commercl-aviation-2018.pdf

3 Air Pollution

Further research providing evidence of the pollutant, black carbon, penetrating inside the unborn foetus has now been published[7]. This is additional compelling evidence of the need to drastically reduce the pollution from existing air and road transport.

Any increase in such polluting traffic must therefore be avoided, which reinforces the reasons to refuse permission for the proposed Manston Airport, which would be a new and significant source of pollution in an area already adversely affected by such pollution.

4 Noise

As the site has not had an airport for five years, local residents have become accustomed to the lack of aircraft noise, so the prospect of many noisy freighters flying overhead is a huge concern.The concerns from the Independent Commissioner for Civil Aviation Noise (ICCAN) expressed in their response to the Heathrow Consultation are very relevant to Manston[11], [12]

Unfortunately ICCAN was unable to help the Manston Examination, but if the Secretary of State has any doubts about the potential major noise impacts of the proposed airport at Manston then we would strongly support obtaining ICCAN's views before making a decision.

Of particular relevance, we note ICCAN's views on the initial airspace consultation for Heathrow, which said:
"we would want to see:
- what specific activities the airport will undertake to achieve the (noise) objective
- more measurable and specific details on how the airport can be held to account on its noise objective by the community
- activities associated with achieving that objective prioritising a reduction in the effects of noise on health and quality of life, rather than simply limiting it."

Also in the subsequent, main Heathrow consultation ICCAN said:
"we expect the airport to set out how the details of future operations and different use of existing runways:
- can aim to reduce overall noise
- will impact on different communities
- will be shared with different communities in meaningful ways
- will reduce out of hours flights – permitted and not permitted – including exceptions." "

All of these views show the need for airports to be much more proactive on noise and to actually *reduce* noise. Again this demonstrates that RiverOak's proposals for a new and significant source of noise are totally unacceptable for the Isle of Thanet.

We would be pleased to clarify any queries on this response or to enlarge on any aspect.

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[77] www.qmul.ac.uk/media/news/2018/smd/first-evidence-that-soot-from-polluted-air-may-be-reaching-placenta.html
[11] https://iccan.gov.uk/iccan-response-heathrow-airport-expansion-consultation-sept-2019/
[12] https://iccan.gov.uk/response-iccan-heathrow-airspace-future-operations-consultation-mar-2019/

Yours Sincerely,

[redacted]

Dr Hilary Newport
Director, CPRE Kent

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Rob Pridham

From: [redacted]
Sent: 18 November 2019 12:16
To: Rob Pridham
Subject: More on our fears on Manston freight terminal.

Dear Sir, I am writing today as I represent many pensioners from our lovely town of Ramsgate which has the misfortune to be placed directly under the proposed Manston freight terminal flight path; many already suffer breathing problems and are annoyed by unusual loud noise from aircraft. Many moved here to enjoy the autumn of their lives and others have lived here since childhood, among these OAPs are veterans of the last war hoping to live out their twilight years in peaceful surroundings and breathe the fresh air that they deserve. Ramsgate is a beautiful town enjoyed by locals and visitors alike with a fine harbour well used by visiting yachtsmen from many countries and all walks of life.
Sadly many of my old friends have been put in fear of their lives being disrupted by proposals to open the three times failed Manston and turn it into a 24/7 freight terminal this means aircraft mainly old passenger planes converted for freight, skimming over our rooftops filling the air with particulates, noise ,and vibration , day and night. This is an outrage against us residents. The airport has now been closed for five years and it has never been missed, our town is a far better place without it.
I will say this, NO COUNCILOR. MP GOVERNMENT OFICIAL OR AIRPORT OPERATOR, HAS THE RIGHT TO DEPRIVE US OF THE RIGHT TO SLEEP {HRA} RUIN OUR QUALITY OF LIFE, DEVALUE OUR HOMES , POISON THE AIR WE BREATH, INTERUPT SCHOOL LESSONS , AND CHOKE OUR ROADS WITH LORRIES. The previous owners had very fine plans for the site that would have done the town a great deal of good with jobs and leisure facilities, without harming the residents. Anyone with any compassion can see this was a far better option that would not have harmed our health.
Sir Roger Gale and Craig Mackinlay our two MPs elected by the people for the people have been sneaking off to Parliament having meetings with RSP regarding Manston but have never come to the people that elected them to discuss Manston all we get is fake news from Roger Gale saying 85% of the people want a freight hub on their door-step not true as there has never been a proper independent survey that asks do you want a freight hub on your door-step, the one they get their figures from was done by airport supporters so is highly suspect.

Now we come to much publicised health threat from exhaust emissions, in London congestion charges have been introduced to try and reduce the health threat and cut down on motor vehicles, but nothing has yet been done to curtail the huge amount of pollution from aircraft. I will draw your attention items from the internet on particulates here we go.
Particles emitted from internal combustion engines are extremely dangerous to human health due to their very small size. Attempts to reduce particles emissions from motor vehicles, result in the installation of additional filters to purify the exhaust gases. In the case of aircraft, any interference in the exhaust system of the jet engine is unacceptable. For this reason, aircraft are an important source of particles emission in the regional aspect, so that airports can be considered as particles emission sources. The article evaluates the impact of aircraft take-off and landing operations on the concentration of particles in the ambient air. The measurements were carried out at the civilian airport area near the runway. Based on the measurements carried out, it was found that airport operations cause relevant changes in the concentration and size distribution of particles in the ambient air
2. Odors
Air pollution is another major problem associated with airports. The toxic emissions released by aircrafts contain volatile organic compounds or VOC's and nitrogen oxides which pose a serious threat to human health. These pollutants are very smelly and constant exposure to them can cause severe headache as well as respiratory problems. Aviation emissions are transmitted in the form of sprays which even our lungs cannot filter out.
3.Ozone
The emissions that come out of the aircrafts contain a large variety of chemical elements including ozone. Ozone is a very powerful oxidant which affects the tissues of the respiratory tract. It leads to throat irritation, tightness in the chest and cough. The inflammation in the lung increases the chances of asthma attacks. Ozone exposure can make it very difficult for people to breathe deeply. It can also induce emphysema and chronic bronchitis. In extreme cases it leads to chronic obstructive pulmonary disease.
4. Soot
Emission from aircraft also contains impure carbon particles called soot. These are released as a result of incomplete combustion of hydrocarbons. This carcinogenic substance is present in the form of a powder which easily mixes with the air. When human beings breathe such polluted air constantly, it can lead to problems like chronic lung disease,

asthma, lung cancer and influenza.
5. Ultra-fine particulates

The air around an airport contains ultrafine particulates. They are extremely small in size which is why they affect a larger surface area of the lung tissue. Ultrafine particulate matter lead to serious respiratory diseases which are connected to cardiovascular problems. The ultra-fine particles pass quickly into the circulatory system and cause cellular damage as well. Problems like cancer, asphyxiation, drowsiness, mutations, pulmonary irritation, wheezing, mental depression and distorted perceptions are all results of exposure to such ultra-fine particulate matter.
There are hundreds of medical reports regarding the dangers I have mentioned all from well qualified doctors and professors of health get on the internet and check for yourselves
this rock solid medical evidence.
Ronald Blay

Sent from Mail for Windows 10

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Rob Pridham

From: Samara Jones-Hall [redacted]
Sent: 19 December 2019 17:52
To: TRANSPORTINFRASTRUCTURE
Cc: Rob Pridham; Jason Jones-Hall
Subject: Manston DCO: Letter to Secretary of State with New Evidence: Correspondence received from the Civil Aviation Authority (" the CAA")
Attachments: FCS 1521 form submission Submission id 422205 Manston Airport_Redacted.pdf; Letter to Secretary of State with New Evidence_ Correspondence received from the CAA.pdf

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence: Correspondence received from the Civil Aviation Authority (" the CAA"). Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited
[redacted]

From: **Airspace User Response** Airspace.UserResponse@caa.co.uk
Subject: FCS 1521 form submission - Submission id: 422205 - Manston Airport
Date: 22 November 2019 10:39
To [redacted]

Dear Ms Jones-Hall,

Thank you for CC sight of your email dated 15th November 2019 concerning the possible re-activation of Manston Airport (ACP 2018-75). Your email has been transposed onto our system and has been given reference **422205 dated 18/11/2019**. **To facilitate traceability and good governance please quote this reference in any subsequent communication with us on this topic**. If you wish to contact us again in the future on a different matter, please use our on-line enquiry form FCS 1521: www.caa.co.uk/fcs1521 . Use of this form will mean that your submission is automatically issued an appropriate reference number and recorded in our systems. **If you raise this matter on social media, please do not include our email address but refer to the provided link instead.** For the reason given above, this will have the benefit of significantly reducing any delay to a response from us.

Firstly we would like to make clear that an aerodrome operator's engagement with its local community is solely the responsibility of that operator and that the CAA plays no part in that process, hence we cannot comment on their focus group/questionnaire. Consequently we respectfully suggest that you seek an answer to your question from the Manston themselves or from River Oak Strategic Partnership (RSP) who we believe are the sponsors of the proposal. For the avoidance of any doubt we in the AREE team do not believe that RSP is an aerodrome operator but there is nothing to prevent them from progressing a proposal at this time. Our regulation activity associated with this proposal will be conducted under the CAP1616 process and detailed information on that process can be found here: https://www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Permanent-airspace-change-proposals-under-CAP1616/ .

Once Manston has submitted their airspace change proposal to the CAA (and we in the AREE team understand that is expected to be in May 2021), it is our responsibility to undertake a detailed "consultation assessment" during Stage 5 (Regulatory Decision) of the airspace change process. At this stage we formally assess whether the content of the consultation meets our requirements and review the way in which the consultation has been conducted in order to determine whether or not the required standards were met. We will assess the consultation material and the methodology applied by Manston and review their management of correspondence received from stakeholders during the consultation period to ensure that its contents have been properly captured and, where appropriate, responded to. We will look closely at the key issues and concerns raised by all stakeholders, how they have been taken into account by the sponsor and consider any revisions that may have been made to the original proposal. We will also take into account any representations that have been made directly to us.

The detailed analysis that we complete is recorded in a "consultation assessment" which, alongside the operational and environmental assessments, underpins our final regulatory decision whether or not to approve the change to airspace design requested. We publish these assessments on the airspace change pages of the CAA website. We would encourage you to keep abreast of further developments by monitoring the updates and associated documentation that will eventually be made available on our website.

Whilst the content of your submission is noted, we hope that you will understand that it would not be appropriate for us to comment further at this moment in time as to do so could risk prejudicing the outcome of our regulatory assessment of Manston's formal airspace change proposal **if and when we receive one**. In the meantime may we again respectfully

suggest that you contact Manston/RSP with regard to their community engagement process.

Finally, as the CAA is tasked by the Government to provide a focal point for Aviation Related Environmental Enquiries and Complaints, the details of your email have been logged onto our complaints and enquiries database for future reference as may be required.

Thank you again for contacting the CAA.

Yours sincerely,

Aviation Related Environmental Enquiry (AREE)
Airspace Regulator (Co-ordination)
Airspace, ATM and Aerodromes
Safety and Airspace Regulation Group
Civil Aviation Authority

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.uk

Cc: Rob.Pridham@dft.gov.uk

19 December 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence: Correspondence received from the Civil Aviation Authority (" the CAA")

There is a material and significant risk that the Applicant will not be granted an aerodrome and/or airspace.

NO AERODROME

1. We respectfully draw your attention to correspondence received from the CAA as of 22 November 2019 (enclosed).
2. The CAA has confirmed that it does not believe that the Applicant is an aerodrome operator.
3. The CAA correspondence states at paragraph 2, line 6 (bold added for emphasis):

*"**For the avoidance of any doubt we** in the AREE team **do not believe that [the Applicant] is an aerodrome operator**...".*

4. As you will be aware, an aerodrome is a regulatory requirement of an airport.

NO AIRSPACE

5. The CAA correspondence further states at paragraph 3, line 1 (bold added for emphasis):

*"**Once** Manston **has submitted their airspace change proposal to the CAA** (and we in the AREE team understand that is **expected to be in May 2021**)..."*

6. As you will be aware planes need airspace to fly in.
7. The Applicant does not have any airspace.
8. The Applicant has not shown any evidence of a single air cargo operator wishing to relocate and move and/or locate its operations to Manston (if reopened).
9. As you will be aware the regulatory application process for airspace under CAP 1616, once a formal application is received, is over 2 years long with no guarantee of the CAA granting the Applicant airspace.
10. Without any airspace at Manston for at least 3 years, it is significantly likely that Manston (if reopened) will not attract air cargo operators; it cannot even offer the hope of reliable and certain airspace.
11. Air cargo operators will continue to invest in and use other airports which *are operational* with airspace, an aerodrome, a logistics infrastructure, a large catchment area and a resilient surface access throughout the South East, South West, the Midlands engine and the Northern powerhouse.
12. The Applicant simply cannot offer speed, reliability, resilience and certainty to an air cargo operator or to a potential investor.
13. It is of note to recall that when Manston was open and when it did have airspace, commercial operations repeatedly failed under three different owners. Kent County

Council's March 2015 Position Statement[1] on Manston Airport confirms that *"the airport has never made a profit and has never delivered on its promise of jobs for the area"*.

14. Past failures include the collapse of Planestation, with the Applicant's founding Director Tony Freudmann acting as Senior Vice President, and its budget airline subsidiary, EUJet, in 2005. Commenting on the collapse at the time, the Financial Times reported that *"marketing a new airline operation from Manston, which had no recent history of passenger operations, had been difficult"* and the Planestation Group *"had also **failed to develop its cargo business** at Manston"*.
15. This led to questions in the House of Commons and a CAA briefing paper for the Department of Transport Select Committee on 04/02/06[2] after more than 5,400 British passengers were left stranded in similar circumstances to the recent Thomas Cook collapse. The briefing paper notes that Planestation PLC had filed misleading information about EU Jet with the CAA which left the regulator *"unaware of the actual financial position of that carrier"*.
16. Lothian Shelf (417) Limited, a company owned by Stagecoach founder, Ann Gloag, bought Manston for £1 in November 2013. In the ensuing months the airport made revenue losses of £100,000 per week plus significant capital losses before its closure in May 2014.

REFUSED AIRSPACE APPLICATION (if and when received)

17. The CAA also make clear (bold added by the CAA) that it is not actually sure that it will receive a formal application stating at paragraph 5:

> *"...Manston's formal airspace change proposal **if and when we receive one**"*.

18. The CAA also make clear at paragraph 4 that the Applicant will undergo (bold added for emphasis):

> *"[A] detailed analysis that [CAA] complete is recorded in a "**consultation assessment**" which, alongside the **operational and environmental assessments**, underpins [CAA] **final regulatory decision** whether or **not to approve** the change to airspace design requested"*.

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[1] Manston Airport under private ownership, Kent County Council 2015
https://www.kent.gov.uk/__data/assets/pdf_file/0003/29541/Manston-Airport-position-statement.pdf
[2] Memorandum submitted by the CAA: Briefings on EUJET Ops Ltd
https://publications.parliament.uk/pa/cm200506/cmselect/cmtran/636/5110212.htm

REFUSED AIRSPACE APPLICATION (if and when received) : OPERATIONAL AND ENVIRONMENTAL GROUNDS

19. Five10Twelve and many others, including but not limited to independent aviation consultants Altitude Aviation and York Aviation, provided evidence throughout and after the Examination to the Secretary of State which demonstrated that the operational and environmental statements of the Applicant are severely wanting.
20. Further, as you will be aware, the Applicant's Overall Summary of Case stated that its Environmental Statement assessed '*likely significant effects*'; however, in the Applicant's CAA Interface Document it states that at workshops with the CAA and within its Executive Summary that "*the DCO submission will be based on 'worst credible'* scenarios (in terms of environmental impact)".
21. In fact, the Applicant presented the Environmental Statement using the best case scenario.
22. We have already provided the Secretary of State with a letter of 27 October 2019 rebutting the Applicant's Overall Summary of Case: Environmental Statement and demonstrating that the Applicant's Environmental Statement is materially and significantly inaccurate.
23. Under separate cover we will be writing again to the Secretary of State with further new evidence to further demonstrate that the Applicant's Environmental Statement to the DCO is materially and significantly inaccurate.
24. There is a significant risk that the Applicant will be refused airspace on operational and/or environmental grounds.

REFUSED AIRSPACE APPLICATION (if and when received) : CONSULTATION

25. As you will be aware Manston sits within Thanet District Council; it is the local council (the 'Council').
26. The Council submitted to the UK Planning Inspectorate its response to the Adequacy of the Consultation Representation ("**AoC-005**").
27. As you will be aware under Section 47 of the Planning Act 2008 there is a Duty to Consult the Local Community.
28. The Council clearly state within AoC-005 that:

a. *"The first statutory consultation is not considered to comply with Section 47(5) of the Planning Act 2008".*

b. Further with regard to the second statutory consultation, *"...It is unclear whether the Applicant has complied with Section 47(5) of the Planning Act 2008 and whether sufficient regard has been had to the Council's comments".*

c. *"...The Council are unable to confirm that the Applicant has complied with Section 47(7) of the Planning Act 2008 from the evidence before the Council at this time".*

29. Therefore as stated and evidenced by the Council there has been an inadequate consultation and engagement with the Local Community. As such the Applicant cannot rely on the consultations of the DCO for the Airspace Change Process in any regard.

30. Further, a detailed Section 42 consultation response from the Council (the Council's Stage 3 response) was not taken into account by the Applicant.

31. It is of particular note that the Applicant has evidenced that it will continue with the same approach of constraining consultation with and to only those in favour of the airport reopening in relation to future CAA applications.

32. The founding director of the Applicant can be heard on record at a recent AGM[3] stating that the approach the Applicant will take for the Airspace Change Proposal CAA consultation will be as follows (bold added for emphasis):

"...for those people in Ramsgate [the area to the East of Manston that planes will overfly at altitudes of 200-700 feet] in particular who are genuinely interested in the impact of the airport ***as opposed to it not happening at all*** *there will be a further opportunity for them to have a dialogue here".*

33. This approach is contra to the CAP 1616 regulatory consultation process for airspace change.

34. There is a significant risk that the Applicant will be refused airspace on flawed/ inadequate consultation grounds.

CONCLUSION

[3] https://www.youtube.com/watch?v=Fvepzwlh3QI (starting at time code from 13:45)

A development without an aerodrome and airspace it not an airport. This will deter, curtail or prevent any potential investment in Manston and there is a significant risk that the development (if granted) and the benefits (if any) will not be realised. If the DCO is granted and not realised, this is also a high risk for us locals and will pause or retrograde the positive inward investment and a real upward trajectory of employment that has happened here in Ramsgate and the wider Thanet since the airport closed as the very threat of low flying cargo planes of 200-600 feet over our shopping town centre, gardens, schools, houses, parks, beaches will exist in the minds of inward investors. It will also come up in house/ property searches. With much of our heritage at risk including the whole of the Conservation Area (which is the largest in Kent) the mere threat of such a development will have far reaching, long lasting and perhaps irreversible consequences, irrespective of whether or not it ever materialises. The DCO should be refused.

Further, the Applicant must meet the criteria for a NSIP. The Applicant has made an application for a DCO pursuant to paragraphs 14(1)(i) and 23(1)(b) and 23(5)(b) of the Planning Act 2008 specifically that the effect of the alteration of the airport is to increase by at least 10,000 per year the number of air transport movements of cargo aircraft for which the airport is capable of providing air cargo transport services.

At the time of the DCO application, the number of air transport movements of cargo aircraft for which the airport was capable of providing air cargo transport services was zero. In fact, the Applicant confirmed during the DCO Examination that *"the current capability of (Manston) airport to provide air cargo transport services is zero"*[4].

Without airspace, the number of air transport movements of cargo aircraft for which the airport will be capable of providing air cargo transport services **will continue to be zero** and will not meet the requirements of the Planning Act 2008. The DCO should be refused.

Enclosure:

Correspondence received from the CAA as of 22 November 2019

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[4] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003770-D5%20Cover%20Letter.pdf

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Rob Pridham

From: Samara Jones-Hall <[redacted]
Sent: 22 December 2019 13:59
To: Rob Pridham; TRANSPORTINFRASTRUCTURE
Cc: Jason Jones-Hall
Subject: Manston DCO: INCONSISTENCIES IN DCO APPLICATION IN TERMS OF SCALE, SIGNIFICANCE AND ALLEGED BENEFITS OF PROPOSED DEVELOPMENT AND OPERATIONS AT MANSTON AIRPORT
Attachments: Letter to Secretary of State_ INCONSISTENCIES IN DCO APPLICATION IN TERMS OF SCALE, SIGNIFICANCE AND ALLEGED BENEFITS OF PROPOSED DEVELOPMENT AND OPERATIONS AT MANSTON AIRPORT.pdf; Aviation Focus Group Meeting Minutes (3).pdf; Non-Aviation Focus Group Meetings Minutes (5).pdf

Dear Sirs

Please find attached our Letter to Secretary of State evidencing Inconsistencies In DCO Application In Terms of Scale, Significance and Alleged Benefits of Proposed Development and Operations at Manston Airport. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited
[redacted]

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Five10Twelve Limited

[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.uk
Cc: Rob.Pridham@dft.gov.uk

20 December 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")

RE: INCONSISTENCIES IN DCO APPLICATION IN TERMS OF SCALE, SIGNIFICANCE AND ALLEGED BENEFITS OF PROPOSED DEVELOPMENT AND OPERATIONS AT MANSTON AIRPORT

During recent CAA focus group meetings, the Applicant has positioned itself with small airports and a gliding club rather than as a nationally strategic airport (aspirational or otherwise). This is inconsistent with the DCO application. The Applicant is engaging with a cargo airline (with a fleet of only 4 aircraft) that had formerly used the airport during its small-scale operations and whose fleet consists of older and noisier planes than used for the DCO Environmental Statement. The post DCO Examination new changes will impact Nitrogen Dioxide, Particulate Matter and Sulphur Dioxide

concentration levels in the AQMA and therefore the development is not consistent with the local quality action plan (AQAP).

Further, the Applicant's failure to assess the credible worst case scenario will result in substantial delays.

THE APPLICANT IS POSITIONING ITS PROPOSED DEVELOPMENT WITH SMALL AIRPORTS

1. As you are aware, the Applicant has applied for a Development Consent Order on the basis of its claims that the proposed development will qualify as a Nationally Significant Infrastructure Project (NSIP).
2. We respectfully draw your attention to the recent Aviation Focus Group meeting held in Margate on 4 November 2019 by the Applicant and posted on the CAA website on 6 December 2019 (enclosed).
3. As you will be aware the Applicant has not formally submitted its airspace change proposal and is said to do so in May 2021. This will start the 110 week CAP 1616 process.
4. The Applicant invited the following small airports and a gliding club to this Aviation Focus Group meeting: Maypole Airfield, Biggin Hill Airport, Rochester Airport and Kent Gliding Club[1].
5. These are all very small airports devoted to general aviation, specialist aviation and gliding rather than the type of business the Applicant aspires to undertake in dedicated freight operations.
6. Due to the former airport's location, the IFP (routes into and out of the airport) should align with Future Airspace Strategy Implementation - South (FASI(S)) and the London Airspace Management Programme (LAMP).
7. There are 17 other airports subject to South (FASI(S)) and many of these are airports that the Applicant made a number of inaccurate statements about in the DCO Examination.
8. The Applicant did not invite these would-be competitor airports - for example Gatwick , Heathrow, Stansted - to this Aviation Focus Group despite these airports also being subject to South (FASI(S)).

[1] CAA: Aviation Focus Group Meeting Minutes

EVIDENCE SUGGESTS THE APPLICANT'S BUSINESS MIX IS INCONSISTENT WITH ITS DCO APPLICATION AND OPERATIONS OF A NSIP AIR CARGO HB

9. Throughout the DCO examination, the Applicant made numerous claims of interest from major international airlines, operators and e-commerce businesses. No evidence was provided at any stage to support the Applicant's claims of interest from these major carriers or operators.
10. The **only** airline that the **Applicant invited** to the Aviation Focus Group and for whom any evidence of interest exists was Magma Aviation[2], with a total of four aircraft in its fleet.
11. Magma Aviation's average age fleet is 25.8 Years[3].
12. These aircraft are therefore old aircraft.
13. Aircraft are certified to comply with the agreed international noise standard in force at the time it was manufactured. So older aircraft have less stringent standards than aircraft manufactured today.
14. Page 48, Table 3.1 of the Updated Register of Environmental Actions and Commitments[4] specifically states that the Applicant will *"ban older, dirtier aircraft"*.
15. The Applicant's Environmental Statement was predicated on this total ban.
16. The Applicant has not shown any evidence of any cargo airline relocation or locating itself at Manston Airport (if reopened).
17. Outside of the DCO Examination process the Applicant is inviting and engaging with an airline operator - Magma Aviation - whose fleet is entirely made up of older aircraft.
18. It is therefore reasonably foreseeable that airline operators with older aircraft are most likely to use Manston Airport (if reopened).
19. The Applicant clearly has not assessed *"likely significant effects"* as it stated in the Applicant; Overall Summary of Case to the UK Planning Inspectorate[5] or a *"worst credible"* scenario in terms of Environmental impacted as stated to the CAA in the Applicant's CAA Interface DCO

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[2] CAA: Aviation Focus Group Meeting Minutes

[3] https://www.planespotters.net/airline/Magma-Aviation

[4] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004663-Updated%20Register%20of%20Environmental%20Actions%20and%20Commitments.pdf

[5] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004668-Applicant's%20Overall%20Summary%20of%20Case.pdf

Document[6] and or even the "*worse case scenario for the current DCO application*[7]" as the Applicant stated at the recent CAA Focus Group meeting.

20. Instead the Applicant presented the Environmental Statement using the best case scenario.
21. The loudest planes are the oldest[8].
22. Further, Natural England confirmed in its comments on the Report of the Implications for European Sites[9] that as "*the noisiest planes that used to fly from Manston would not be allowed at the new airport*" it can partly "*resolve its uncertainty over noise disturbance impacts on turnstones in Pegwell Bay*".
23. It is of note that Magma Aviation used to fly from Manston and would fall within the category of '*noisiest planes that used to fly from Manston*'. As such Natural England's comment during the DCO Examination was based on inaccurate and/or misleading information.

OPERATIONAL LIMITATIONS OF PROPOSED DEVELOPMENT

24. Two of the planes in Magma Aviation's fleet of four aircraft, (737-400F), have a runway requirement of 2,300 metres[10].
25. The other two planes (747-400BCF) have a runway requirement of 3,200 metres[11].
26. Manston Airport (when open) had only the 29th longest runway in the UK (18th if looking at currently active runways only)[12].
27. Perhaps more crucially Manston Airport's runway is 2,752 metres (9,030 feet) long. This means that as "*most of the freight booked with Magma Aviation will fly on [Magma Aviation] exclusively operated B747-400BCF...*"[13], Magma Aviation will not be able to use Manston

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[6] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002460-7.5%20-%20CAA%20Interface%20Document.pdf

[7] CAA:Non-Aviation Focus Group Meeting Minutes

[8] http://www.airportwatch.org.uk/2013/07/musicians-look-to-clean-up-their-acts/

[9] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004583-Natural%20England%20comments%20on%20RIES_1Jul19.pdf

[10] https://magma-aviation.com/aircraft-specifications/

[11] https://magma-aviation.com/aircraft-specifications/

[12] http://www.ukairfields.org.uk/runway-lengths.html

[13] https://magma-aviation.com/aircraft-specifications/

Airport for 50% of its services (if relocated to Manston) and it will not be able to use it for the aircraft used for the largest proportion of its services.

28. Magma Aviation is currently located at Gatwick Airport which has the 4th longest runway and a runway which at 3,256 metres (10,683 feet) accommodates all of Magma's Aviation fleet mix.

LOCATION	COUNTY (Historic)	RUNWAY	LENGTH (ft)	LENGTH (miles)	STATUS	ICAO	IATA
Heathrow	Middlesex	09L / 27R	12,799 ft	2.42 miles	Active	EGLL	LHR
Heathrow	Middlesex	09R / 27L	12,804 ft	2.33 miles	Active	EGLL	LHR
Manchester	Cheshire	05R / 23L	10,754 ft	2.04 miles	Active	EGCC	MAN
Gatwick	Sussex	08R / 26L	10,685 ft	2.02 miles	Active	EGKK	LGW
Bedford (Thurleigh)	Bedfordshire	09 / 27	10,484 ft	1.99 miles	Disused	EGVW	---
Boscombe Down	Wiltshire	05 / 23	10,529 ft	1.99 miles	Active	EGDM	---
Shannon	County Clare	06 / 24	10,499 ft	1.99 miles	Active	EINN	SNN
Elvington	Yorkshire	08 / 26	10,426 ft	1.92 miles	Disused	----	---
Birmingham	Warwickshire	15 / 33	10,010 ft	1.90 miles	Active	EGBB	BHX
Brize Norton	Oxfordshire	08 / 26	10,033 ft	1.90 miles	Active	EGVN	BZZ
Bruntingthorpe	Leicestershire	06 / 24	10,032 ft	1.90 miles	Disused	----	---
Chelveston	Northamptonshire	04 / 22	10,022 ft	1.90 miles	Disused	----	---
Greenham Common	Berkshire	10 / 28	10,054 ft	1.90 miles	Disused	----	---
Stansted	Essex	04 / 22	10,016 ft	1.90 miles	Active	EGSS	STN
Fairford	Gloucestershire	09 / 27	10,005 ft	1.89 miles	Active	EGVA	FFD
Machrihanish	Argyll	11 / 29	10,002 ft	1.89 miles	Active	EGEC	CAL
Manchester	Cheshire	05L / 23R	9,998 ft	1.89 miles	Active	EGCC	MAN
Upper Heyford	Oxfordshire	09 / 27	9,588 ft	1.87 miles	Disused	EGUA	---
Prestwick	Ayrshire	12 / 30	9,799 ft	1.86 miles	Active	EGPK	PIK
Doncaster (Finningley)	Yorkshire	02 / 20	9,485 ft	1.80 miles	Active	EGCN	DSA
East Midlands	Leicestershire	09 / 27	9,480 ft	1.80 miles	Active	EGNX	EMA
Mildenhall	Suffolk	11 / 29	9,271 ft	1.74 miles	Active	EGUN	MHZ
Belfast (Aldergrove)	Antrim	07 / 25	9,141 ft	1.73 miles	Active	EGAA	BFS
Marham	Norfolk	06 / 24	9,135 ft	1.73 miles	Active	EGYM	MRH
Wethersfield	Essex	10 / 28	9,091 ft	1.72 miles	Disused	----	---
Alconbury	Huntingdonshire	12 / 30	9,003 ft	1.71 miles	Disused	----	---
Cottesmore	Rutland	04 / 22	9,008 ft	1.71 miles	Disused	EGXJ	---
Gaydon	Warwickshire	05 / 23	9,053 ft	1.71 miles	Disused	----	---
Manston	Kent	10 / 28	9,040 ft	1.71 miles	Disused	EGMH	MSE

ENVIRONMENTAL STATEMENT AND AIR QUALITY

29. The Applicant stated at the CAA Aviation Focus Group meeting that it:

"is looking at between 4-8 movements per hour, and states that there will be a degree of bunching. There is a possibility of concentration in the morning 8 o'clock period".

30. As you will be aware the Environmental Statement and impact on Air Quality was modelled on the basis of:

a. 2 flights in a half hour period ((4 flights an hour))[14],

b. No bunching; and

c. No concentration around a particular hour.

31. However, the Applicant **post the DCO Examination** is stating that there will be:

a. Up to 8 flights per hour[15],

b. Bunching[16]; and

c. Concentrated around a particular hour[17].

32. Consequently the potential impacts **will be worse** than as modelled.

33. These post DCO Examination new changes to flight frequency, landing and take-offs will impact the Transport Assessment and traffic generation methodology which was assessed on misleading and//or inaccurate information supplied by the Applicant. These new changes will impact air quality. The potential impacts **will be worse** than as modelled. We do not know if the impact will be minor, moderate or major.

34. In relation to air quality, there are 3 relevant parts of government policy - National Air Quality Plan, National Air Quality Strategy 2019, Local Air Quality ((AQMAs) and Local Planning System.

35. In relation to air quality, EU Ambient Air Quality Directive 2008/50/EC implemented in the UK through Air Quality Standards Regulation 2010 imposes duties upon the Secretary of State to achieve compliance. Compliance was required by 2010 and the UK is currently in breach of the Directive.

36. As you will be aware, local authorities have a duty under Part IV Environment Act 1995 to assess whether air quality objectives are being achieved or likely to be achieved.

37. Where objective is **not being achieved** or likely to be achieved the Local authority must designate an Air Quality Management Area (AQMA).

38. One of Thanet District Council's AQMA is High St, St Lawrence[18] which is directly under the proposed flight path with over flying planes at an altitude of some 200-300 feet. This is now known as the Thanet Urban AQMA[19].

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[14] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004562-Thanet%20District%20Council%20-%20response%20to%20ExQ4%20-%20Manston%20Airport.pdf

[15] CAA: Aviation Focus Group Meeting Minutes

[16] CAA: Aviation Focus Group Meeting Minutes

[17] CAA: Aviation Focus Group Meeting Minutes

[18] https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=280

[19] https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=280

39. As you will be aware under the National Planning Policy Framework paragraph 124

"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

40. The post DCO Examination new changes will impact Nitrogen Dioxide, Particulate Matter and Sulphur Dioxide concentration levels in the AQMA and therefore the development is not consistent with the local quality action plan (AQAP).

ENVIRONMENTAL STATEMENT and REFUSED AIRSPACE

41. As you will be aware, we and many others raised concerns throughout the Examination and in representations after the Examination that the noise contours and information circulated and used by the Applicant in the DCO Examination was inaccurate.
42. It is of note that one of the invitees to the non-Aviation Focus Group held by the Applicant on 5 November 2019 states:

"He has been worried about the nature of the support for the regeneration of Manston airport, as there are many people who are in favour of it, but [he] thinks the ***map showing the routes out of Manston*** *will create backlash because* ***it is not what they thought they were getting. We never had the noise issue before and this will upset local people.*** *He stated that he understands that you are managing the air traffic levels but this is a significant expansion and if public support is important then [he] believes that Manston has* ***started off in the wrong manner.***"

43. The Applicant responds to this concern by stating to the CAA event that the "*worst case had to be assessed in the DCO application...*[20]".

[20] CAA: Non-Aviation Focus Group Meeting Minutes

44. This is at best misleading and at worst an outright lie, the Applicant has stated in its Overall Summary of Case to the UK Planning Inspectorate[21] at paragraph 11:

*"There have been suggestions that the Applicant should have assessed a worst case scenario, but that is not correct - an **Environmental Statement assesses 'likely significant effects'**."*

45. We and many others evidenced throughout the Examination and in late representations that the noise contours provided to the Examining Authority were inaccurate and were based on a best case scenario using incorrect fleet mixes, new modern planes, incorrect numbers of Air Traffic Movements, preferred routes etc.
46. As you will be aware, this approach taken by the Applicant means the Environmental Statement is inaccurate.
47. The Applicant's CAA Interface Document[22] confirmed that the CAA agreed that the Environmental Statement for the DCO could be used for the CAA Airspace Change process because the Applicant's Environmental Statement **will be based on a credible worst case scenario.**
48. The Applicant's actions of assessing the (alleged) likely significant effects means that it is significantly likely that airspace will be refused or, at best, delayed until an Environmental Statement based on a credible worst case scenario is provided to the CAA.
49. This will have far reaching implications as to deliverability of the proposed development, implications to the Report of the Implications for European Sites and the further financial implications to mitigation costs. Five10Twelve's commissioned noise contours by the Environmental Research and Consultancy Department of the Civil Aviation Authority demonstrated an increase of 174% more properties affected based on the 63 dB LAeq (Significant Observed Affect Effect Level).
50. It is also of note that Thanet District Councillors opposed to the proposed cargo airport were not invited[23] to the non-Aviation Focus Group or to engage in the design process.

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[21] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004668-Applicant's%20Overall%20Summary%20of%20Case.pdf

[22] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002460-7.5%20-%20CAA%20Interface%20Document.pdf

[23] Written evidence of Thanet District Councillors not invited to the non-Aviation Focus group will be supplied to the CAA. We know of at least 6 Thanet District Councillors who complained directly to the CAA of their exclusion from this focus group.

CONCLUSION

The inaccurate Environmental Statement would materially and significantly affect all Interested Parties' Statement of Common Grounds including but not limited to Public Health England, Natural England and Historic England as well as all Local Impact Reports submitted to the ExA pursuant to Sections 60 Planning Act 2008[24]. The post DCO Examination new changes will impact Nitrogen Dioxide, Particulate Matter and Sulphur Dioxide concentration levels in the AQMA and therefore the development is not consistent with the local quality action plan (AQAP). The Applicant's actions of assessing only the (alleged) likely significant effects means that it is significantly likely that airspace will be refused or, at best, delayed until an Environmental Statement based on a credible worst case scenario is provided to the CAA. This will have far reaching implications to the development and its deliverability and viability.

Enclosures:

CAA Aviation Focus Group Meeting Minutes

CAA Non-Aviation Focus Group Meeting Minutes

[24] This further impacts sections 104 and 105 of the Planning Act 2008.

Manston Airport - Aviation Focus Group Meeting Minutes

Date	4th November 2019
Location	The Sands Hotel, Margate
Project/Client	RiverOak Strategic Partners
Purpose	RiverOak Strategic Partners and aviation specialist, Osprey Consulting Services held a focus group with aviation stakeholders in order to: 1. explain the process for developing proposals for Airspace Design and Procedures for Manston Airport 2. discuss and gather feedback from stakeholders on constraints that will be taken into account in producing Airspace Design Principles that will shape future proposals for airspace operations at Manston Airport 3. initiate a discussion and answer any questions from stakeholders regarding completing the questionnaire that was sent in advance to the focus group meeting.
Attendees	[redacted] - Maypole Airfield [redacted] - Maypole Airfield [redacted] NATS [redacted] - Biggin Hill Airport [redacted] - Magma Aviation [redacted] - Magma Aviation [redacted] - Rochester Airport [redacted] - Kent Gliding Club [redacted] - Kent Gliding Club [redacted] - Kent Gliding Club [redacted] – River Oak Strategic Partners [redacted] – Osprey Consulting Services [redacted] – Osprey Consulting Services [redacted] - Copper Consultancy

Agenda Item	Summary	Speaker
Night Flights	Not germane to design principles but would Manston Airport aspire to night flights. [redacted] confirmed that at the moment this wasn't the case as explained in the current Development Consent Order (DCO) application.	[redacted]
Legacy Failings	Were there were any legacy failings; the biggest complaint Magma Aviation had when they indirectly operated at Manston previously was Aerodrome noise. [redacted] confirmed that there were only generic problems with legacy, nothing specific to the area.	[redacted]
Aircraft choice	What planes would be in use [redacted] stated that Manston would operate modern airplanes, but there might be some legacy aircraft and that Manston procedures would be designed to provide safe flexibility.	[redacted]
Westerly Wind	Were any plans to do something like San Francisco airport using a westerly wind. [redacted] stated that when the runway direction wind component was below 10 knots Manston would operate noise preferential runway system whereby commercial operators would be encouraged to take-off to, and land from, the west. Therefore, over an extended period 70-80% of commercial landings and take-offs would avoid flying over Ramsgate. Departure and arrival tracks will be guided by the "swathes" outlined in the current DCO application.	[redacted]
Maypole Airfield	Maypole airfield and Manston airports extended centre lines intersect, what plans are in place to harmonise activities? [redacted] explained that there no plans as of yet and would like to hear from Maypole in regard to what Maypole procedures should be considered, perhaps in a design principle or in any future agreements. A design principle should be one that considers and mitigates how each aerodrome interacts with each other and that departures and arrivals from west at Manston should take into account operations at Maypole airfield.	[redacted]
General Aviation	Not germane to design principles but is Manston is planning to operate General Aviation? [redacted] explained that it shouldn't be discounted, but it's not a core part of what is being considered now.	[redacted]
Freight Industry	A longer arrival/departure time to decrease noise would be off-putting to the freight industry. He points out that even small margins in regard to fuel-use equate to a lot of money over time and can be a deciding factor for many airline operators.	[redacted]
IFP approaches	Instrument Flight Procedures (IFP) approaches gave certainty about where big aircraft were going to be and that if Manston is going to have a spread of possible routes, there will be some conflict here.	[redacted]

Agenda Item	Summary	Speaker
	[redacted] stated that this is something that needs to be captured in a design principle.	
General Aviation	Airspace has been lost at Rochester airport, and that Southend has taken a lot. The Isle of Sheppey has previously being a great training area but is now quite hard to work in. Previous Manston airport engagement, prior to closure, was very aggressive, in regards to sports & recreation General Aviation ((GA ((S&R)), and that a new culture would be an opportunity for GA and Manston to work together. He would like Manston to introduce a GA runway.	[redacted]
Engine out case	Is a lot of consideration is given to the engine-out case? [redacted] [redacted] confirmed that there's is consideration given in terms of pure design. Type A ((commercial engine-out) surfaces will be defined considered in the operational safeguarding of the airport and its safe operation.	[redacted]
Concentration of movements	He assumes Manston airport will have a vast concentration of movements in the morning due to the nature of the businesses that will operate in and out of it. [redacted] confirmed that Manston is looking at between 4-8 movements per hour, and states that there will be a degree of bunching. There is a possibility of concentration in the morning 8 o'clock period.	[redacted]
Number of movements	How many movements Manston is looking at? [redacted] confirm that it will be around 25,000 per annum as proposed in the DCO movement count.	[redacted]
Maintenance Possibilities	Not germane to design principles but what are the maintenance possibilities? Is Manston looking to take any of the load from City, Gatwick and larger hubs on the ground? [redacted] confirmed that this was considered in the DCO.	[redacted]
Extra Airspace	Will any extra airspace be needed other than an Aerodrome Traffic Zone (ATZ). [redacted] confirmed that the requirement for Controlled Airspace s not part of this CAP1616 application. The Statement of Need refers to IFPs and the ATZ.	[redacted]
Physical Infrastructure	Not germane to design principles but will there be any changes to the physical infrastructure in regard to changes in length *sic ((of runway))*. [redacted] confirmed that there will be no change in runway length, just some resurfacing. [redacted] stated that the biggest single change will be the building of 19 parking stands.	[redacted]

Manston Airport: Non-Aviation Focus Group Meeting Minutes

Date	5th November 2019
Location	The Oak Hotel, Ramsgate
Project/Client	Manston Airport/ RiverOak Strategic Partners
Purpose	RiverOak Strategic Partners and aviation specialist, Osprey Consulting Services held focus groups with non-aviation stakeholders in order to: 1. explain the process for developing proposals for Airspace Design and Procedures for Manston Airport 2. discuss and gather feedback from stakeholders on constraints that will be taken into account in producing Airspace Design Principles that will shape future proposals for airspace operations at Manston Airport 3. initiate a discussion and answer any questions from stakeholders regarding completing the questionnaire that was sent in advance to the focus group meeting.

Afternoon Session 2 pm - 4pm

Attendees	
	- Canterbury City Council
	- Kent County Council
	- Minster Parish Council
	- Canterbury City Council
	- Sutton by Dover Parish Council
	- Langdon Parish Council
	- St Margaret's at Cliffe Parish Council
	- Manston Parish Council
	- Ash Parish Council
	Thanet District Council
	- Thanet District Council
	- Thanet District Council
	- Clerk representing Chestfield, Barham, Westbere Parish Councils
	River Oak Strategic Partners
	- Osprey Consulting Services
	- Osprey Consulting Services
	- Copper Consultancy
	- Copper Consultancy
	Copper Consultancy

Agenda	Summary	Speaker
Westerly departures	Why only westerly departures to the North to reduce noise issues haven't been considered. [redacted] stated that no designs have been finalised and this is all open to the future consultation. He reminded the group that different options for which direction to go on departure have been explored. These were the worst case scenarios for the current Development Consent Order (DCO) application.	[redacted]
Noise	A school in Ramsgate that has a noise monitor that recorded any noise over 90 decibels from planes that came into land at Manston. He stated that he finds it hard to believe that the noise levels won't be this high again. [redacted] points out that the noise assessment was covered in the DCO and reminds the group that these probably would've been older planes that were considerably noisier.	[redacted]
General Aviation	Not germane to design principles but at this stage in the process would you (RSP) discuss accommodating General Aviation (GA). [redacted] confirms that GA (Sports & Recreation) will be taken into account to an extent, but flight procedures will be purely for commercial aviation.	[redacted]
Noise	Is take-off noisier than landing. [redacted] stated that take-off is considerably noisier, as more power is needed to take	[redacted]

Agenda	Summary	Speaker
	off, whereas during landing an aircraft will have a much lower power setting.	
Process	Not germane to design principles but why are there so many stages in the process and why isn't it easier to return Manston to a working airport. [redacted] explained the airspace modernisation strategy has had an impact on the process, meaning that there are now more procedures to be followed and other elements that have to be taken into account. [redacted] also explained that the movement from beacons to GPS/GNSS mean that all airports are going through some sort of airspace change process. [redacted] reminded the group that if Manston had carried on operating as an airport it would still be going through some formal change process to modernise the airport operations at a similar time to now.	[redacted]
	[redacted] discussed the Level 1 airspace change assessment from the CAA and asked if the group agreed with this assessment. There was no disagreement to this CAA provisional assessment.	
GPS Issues	The Cllr questions the reliability of GPS, stating that his experience as a navigator had made him aware of the issues that occur when multiple GPS systems interact. [redacted] confirmed that Manston's procedures will be designed with great attention to detail incorporating ICAO compliant design requirements for GNSS guidance. Flight management systems will be able to integrate with these designs in a safe and expeditious manner.	[redacted]
Issues with engagement	All the issues are trade-offs, but nobody knows the best combination. [redacted] stated they're working on multiple airport projects and that they understand that each one is unique. There is no right answer and this is why they initially engage, as required by CAP1616, the specific communities to find their views.	[redacted]
Issues with engagement	How are members of the community qualified to make such a big decision about flight paths [redacted] responded by stating that Manston wants to build schemes that are for the community. The communities should shape the design principles as long as their desires are realistic. The design is a balance, as previously discussed, between practicality and the community requirements; some might be contradictory, but that dynamic allows a degree of measurement in satisfaction of each design principle.	[redacted]

Agenda	Summary	Speaker
3 Options	Are only three options, urban, rural and over the sea? [redacted] confirmed this and stated that all three offer a fair and valid design principle but are not mutually exclusive.	[redacted]
Emissions	Flying the most direct route will help reduce emissions which is central to the current political climate. [redacted] agreed, stating that it is a highly valid point but it is one of a range of factors that will influence a decision.	[redacted]
Issues with engagement	Is the process is interested in her as an individual or a member of her parish council [redacted] stated that the CAA is interested in people on the ground; you as a democratic representative of a parish. The public will be able to make comments in the future and during consultation on the CAA portal. The consultation at the end of next year will ensure that everyone has the opportunity to provide their thoughts.	[redacted]
Consultation	[redacted] asks [redacted] to provide detail on what form the public consultation will take and what information will be provided to the public. [redacted] stated that all of the focus group principles will be available in the consultation. All of the info, designs, environmental and economic assessments will be available on the website and CAA portal during consultation. There will be events and access through the CAA airspace change portal for the public to be involved. There will be plenty of chances to provide feedback.	[redacted]
Consultation	Is the consultation for individuals or the council [redacted] responded by stating it is for both and that consultation next year will provide everyone with the opportunity to give their view on the airspace project. [redacted] goes on to ask if the questionnaires are for the council. [redacted] confirms that today's questionnaire is for the council to provide feedback, but that they do encourage you to get input from your colleagues and the local community. We have identified the best point of contact for communities is the democratic representative councils. [redacted] agrees with this point about delegated powers and states that he will be having a Parish Council meeting to discuss where we go with this project.	[redacted]
Community Support	Whilst not germane to design principles he has been worried about the nature of the support for the regeneration of Manston airport, as there are many people who are in favour of it but I think that the map showing the routes out of Manston will create backlash because it is not what they thought they were	[redacted]

Agenda	Summary	Speaker
	getting. We never had the noise issue before and this will upset local people. He stated that he understands that you are managing the air traffic levels but this is a significant expansion and if public support is important then I believe that Manston has started off in the wrong manner. [redacted] reminded the group that it is important to remember that nothing has been finalised yet and this is a CAA process; this should be reiterated to communities. The worst case had to be assessed in the DCO application, but there may be better options, that satisfy local design principles.	
Consultation process	He is wary of the consultation process as they're only as good as the questions they ask. He said that he's concerned about that if you are answering the questionnaire in your own voice or on behalf of your community. The consultation could be distorted. It is difficult to get people to read the information and give their feedback. [redacted] stated that this is true and the CAA and DfT are aware of that. This is why we have this time for engagement before our larger consultation period. The Cllr further stated that as we ((Councillors) represent their community and in his parishes case they took a majority vote that they were supporting the reopening of the airport. We can't speak to everyone, but this is how democracy works.	[redacted]
Questionnaire distribution	Is the questionnaire restricted or can it be distributed? [redacted] stated that questionnaires can be distributed within your council but it cannot be passed to other councils even if you are a member of both.	[redacted]
Thames Wreck	Whilst not germane to design principles this is a remote objection but there is an explosive wreck in the Thames, if anyone uses this as an argument against Manston, they should remember it's much closer to Southend airport.	[redacted]

Evening Session 7 pm - 9 pm

Attendees	[redacted] - Woodnesborough Parish Council [redacted] - Ramsgate Town Council [redacted] - Ash Parish Council [redacted] - Eastry Parish Council [redacted] - River Oak Strategic Partners [redacted] - Osprey Consulting Services [redacted] - Osprey Consulting Services [redacted] - Copper Consultancy [redacted] - Copper Consultancy [redacted] Copper Consultancy

Agenda	Summary	Speaker
Airfreight/ Passenger travel	Whilst not germane to design principles the Cllr questioned Osprey's mention of passenger travel. [redacted] responded by stating if there's a demand later on then passenger travel may be an option. At the moment it's being developed purely as an air freight hub. Similarly, with executive travel, it will be driven by the market and the airlines themselves in consideration of such items as fuel prices and infrastructure links. He reminded the group that the current Development Consent Order ((DCO) is based purely on an operational air freight hub.	[redacted]
Amount of flights	How many flights will be running daily. [redacted] stated that to start, around only one flight per day will be running, building up to four to eight movements per hour much further down the project timeline. The Cllr then asked if this is mirrored at Southend airport. [redacted] responds by stating Southend's a bit different as they have a short runway, so there's no freight there. People questioned why EasyJet went there, and the answer is because if you run an EasyJet or Ryanair, you need to get your planes in the air by 7 am. There are no more slots at the main London airports at those times, so they went to Southend to get the planes in the air. Assuming Ryanair sort out the problems with the 737 max, they will have additional aircraft in the next few years. We are pretty confident we will get two, three or four. I think they will fly to Southern Europe mostly, plus places like Edinburgh, Dublin and Stockholm. They quite like these short sectors to Scandinavian countries because you can turn the flight around quickly.	[redacted]
Movements cap	Is 25,000 movements the cap? [redacted] responds by saying there's a total cap of 25,000 which divides to 18,000 cargo movements and about 7,000 passenger movements. If we ever wanted to go beyond that, we would have to go back to the Secretary of State and have another DCO. As a comparator, Heathrow is 400-500,000. We're keen to have a passenger service if we can, but don't want another Heathrow.	Unconfirmed
General Aviation	The Cllr stated that historically there were some small planes included, such as two-seaters and asks if this is still a likelihood. [redacted] responded by stating that it is and that they've promised TG Aviation that they can return, and we'd like them to come back. He goes onto say most international airports don't like General Aviation	[redacted]

Agenda	Summary	Speaker
	(GA) Sports & Recreation (S&R) because they get in the way. But we'll only have six or eight movements an hour, which gives you plenty of scope for GA(S&R). If you've got 40 movements an hour you just can't fit in GA. An unconfirmed speaker asked if this would eat into the cap, to which [redacted] responded by stating that this isn't the case as the cap is only for commercial aircraft.	
ATZ vs controlled airspace	Asks Osprey to explain the difference between Aerodrome Traffic Zones (ATZ) and Controlled Airspace (CAS). [redacted] stated that the ATZ is an area where the air traffic service provider has a measure of control over the aircraft that enter that zone. Also, an obligation of the aircraft operator is that before they enter that zone, they must call the air traffic services. CAS is different, in that there are more full, rigid regulations on how aircraft operate in, and how they are allowed into that airspace. This is in terms of the equipment they carry, the types of radio and the interactions they have with the airspace. So it can have a restriction on how some operators use the airspace. Some operators, especially the GA(S&R), see it as a brick wall.	[redacted]
Runways	The Cllr Rowley asked if there are one or two runways. Richie Hinchcliffe confirmed that Manston has one runway strip that has two ends, thus two directions of use, the westerly runway is known as 28, and runway 10 is the easterly runway.	[redacted]
Westerly departures/ landings	The Cllr asked about take-off and landing [redacted] confirmed that they would see 76-78% of movements leaving to and arring from the wester, but that's weather and traffic density dependent at the time. This will be operationally managed by air traffic control at the time.	[redacted]
Westerly departures/ landings	The Cllr asked if in low winds, the landing would be from the west and the take-off would be to the west? [redacted] confirms this and states that in low wind, gentle breeze conditions the airport would prioritise arrival from, and departure to,the west. The Cllr asked if this is able to be done due to the number of movements, which [redacted] confirmed and	[redacted]

Agenda	Summary	Speaker
	stated that the amount of airport movements would provide time and space to manage this process.	
Wind speed	The Cllr asked what is considered a low wind speed which [redacted] confirmed as a 10 Knots component along the runway (which is roughly 12mph).	[redacted]
TMA	The Cllr asked what the TMA is? [redacted] stated that it stands for Terminal Manoeuvring Area. The London Terminal Manoeuvring Area will be reconfigured to the demands of the UK's Airspace Modernisation Strategy. At the moment it is a capacity constraint for London's airports and is inefficient, and the technology we have available is not fully utilised. We will take advantage from these changes that the previous airport couldn't because in the vpast it didn't have the technology available.	[redacted]
Worst/best-case scenarios	The Cllr asked what the difference is between a worst and best-case scenario. [redacted] stated that it depends on the options we have available. We may have options on how you distribute the aircraft once they're off the runway, and when they are landing.	[redacted]
Herne Bay	The Cllr pointed out that Herne Bay is an issue and asks if you can avoid overflying Herne Bay. [redacted] stated that the height of the aircraft in that area, take-off and landing will be around 3,000-4,000 feet. But it's an option to look at how you feed aircraft in at that point. He reminded the group that that was a worst-case scenario for the DCO process.	[redacted]
Runway	The Cllr questioned as to why planes can't turn-in nearer the end of the runway. [redacted] stated we might be able to when we get down further into detailed design. We have got nothing down on paper about these procedures at the moment. This was a worst-case assessment that had to be done for the DCO process, and we there might be option changes when in the final designs.	[redacted]
Reporting Points	The Cllr questioned what [redacted] meant when he previously mentioned points. [redacted] explained that a point, or 'reporting point', is like a road junction in the airspace. There are motorways, side roads and streets in the sky, and we call the junctions 'reporting points'. It's a map of interlinking navigation points, and it's how the air traffic manager and flight management system route or fly the plane. In terms of systemisation, those points are flexing as we modernise the airspace. When we start to	[redacted]

Agenda	Summary	Speaker
	design the procedures for the airport, we'll have to meld into these three-dimensional points in space. They may define how we take departures from, and arrivals into, the airport – it's not simply the airport's own demand.	
Herne Bay	[redacted] went back to a previous point about Herne Bay, stating the aircraft have to be lined up. They need a long run in, as 3 to 4 miles is just too short for the pilot of a large commercial aircraft to get it configured for landing. The way you offset that is to set them higher, and Herne Bay is about 8 miles from the end of the airport's runway – which is about the standard approach length. That impacts where the planes will be, as the further out they are, the higher they can start. If they start west of Herne Bay, they could be at 4000 feet and have a gentle descent with low engine power in the descent to the runway due to the pull of gravity. These considerations will inform the options we take forward. The Cllr questioned this, and asked if Manston previously had this 8-mile lead-in. [redacted] stated this is a normal length, it has a longer lead-in, as a worst-case for the DCO assessment. For departures, there's still constraints but a lot more flexibility. The landing could have more of an impact on Herne Bay,but the aircraft will be more stable in the descent, and therefore will have lower power settings.	[redacted]
Turning	If you're taking off at an easterly direction, you can't turn before you get to Ramsgate? [redacted] confirmed that this is correct and stated that this is why taking off to and landing from, the west (in noise preferential runway direction) becomes more desirable as an operational consideration.	Unconfirmed
Aircraft use	[redacted] asked what sort of vehicles might be in use. [redacted] stated that in terms of freighters, we will be looking at 777 and 747 size aircraft. The Cllr provided reasoning for his question, stating that he used to live in Herne Bay when KLM operated from the airport, and he never noticed it, he also lived in Herne Bay when they were running the 747s and he did notice them.	[redacted]

Agenda	Summary	Speaker
	[redacted] states that there will be big freighters, but not the 747 200s. And reminded the group even if old airframes are used they would possibly have more modern engines which are quieter. The Cllr asked if this is an attempt to dispel the fear of the great black lines behind the planes. [redacted] said that might be the case for engine manufacturers as aeroplanes leaving behind fumes doesn't present a good image of environmental care. The Cllr went onto say that the last time we had 747s they trail of smoke. If that happens again, that would be a fairly considerable failure from everyone involved. [redacted] reminded the group that Manston would be perating more modern aircraft, so I can only say that it is unlikely to happen. The CAA and manufacturers are looking into how engines operate and emmissions can be reduced.	
Decision making	The Cllr asked about how the decisions of height, angle of approach and how turns are made. [redacted] responded by stating that you can provide us with ideas on design principles that would address some of the issues you're concerned about, and then design options will be considered. The Cllr then asked who makes the final decision on procedures; to which [redacted] responded stating that the decision lies with the CAA.	[redacted]
Turning after take off	The Cllr asked if there is a turn after take-off [redacted] confirmed that there is a principle discussion on aircraft turning, where and potential airspace reporting point constraints with regard to the immediate and subsequent direction of travel.	[redacted]
Gateway questions	The Cllr questioned the term gateway. [redacted] confirmed that this is project management term and is defined in the CAP1616 process and is a formal decision event made by the CAA in relation to the Manston airspace change.	[redacted]
Gateway questions	[redacted] asked what the CAA will be looking at to get to the gateway. [redacted] confirmed the CAA (in this Stage of the process) will be looking at the design principles that have been pulled out of the stakeholder	[redacted]

Agenda	Summary	Speaker
	engagement, the questionnaire responses and how the design principles have been justified. [redacted] then asked what would make the gateway fail. To which [redacted] responded if we haven't listed or reflected your thoughts in the design principles.	
Gateway questions	The Cllr asked if each gateway is effectively a CAA audit of the programme which [redacted] confirmed.	[redacted]
Gateway questions	The Cllr asked why the process takes so long. To which [redacted] stated that the CAA suffers resource constraints similar to government department, this question might be directed at the CAA or DfT.	
Airspace Change Assessment	[redacted] discussed the Level 1 airspace change assessment from the CAA and asked if the group agreed with this assessment. [redacted] states that he agreed with it because the impact is high, particularly on some of the take-off trajectories.	[redacted]
Council attendees	The Cllr asked if the other councils attended the focus group meetings; to which [redacted] confirmed there were 13 attendees in the afternoon sessions including councillors.	[redacted]
FMS	The Cllr asked what the technical name for the autopilot to which [redacted] answered that it is called the FMS (Flight Management System).	[redacted]
Overflying Ramsgate	The Cllr stated that it's fairly obvious that Ramsgate would want as little overflying as it can and asks how he can express this. [redacted] stated that it comes down to safety. With a firm westerly wind (blowing from the west) and aircraft using runway 28, it's very difficult to mitigate that element, approach, of the aircraft flightpath. In a strong wind from the east you'd still have to have departure path to the east. That's an operational aspect that will be influenced by weather conditions at the time [redacted] explained. In not providing procedures to, or from, the east it would mean that an aircraft coming in with those wind conditions would have to divert to another airport. The Cllr stated that he accepts this but that aircraft wouldn't have to take off under those conditions to which [redacted] responds that then you have aircraft grounded, missing their slots, with passengers sat on board waiting for the wind directions to change. The same with	[redacted]

Agenda	Summary	Speaker
	cargo. There's an economic and business model issue [redacted] explained the point is you couldn't have that as a design principle, as there are so many related operational variables/requirements.. However, you can put that in as part of your consultation response. The Cllr stated that his main point is that the ideal situation for Ramsgate would be no overflying at all and it looks like that could be achieved around 78% of the time depending on weather conditions, which leaves 22% of the time. What he is suggesting was that aircraft don't have to fly during that 22% when weather conditions aren't favourable and asks what is the best way to suggest this in our feedback?" [redacted] responds by stating that in design principle terms, it would be "I don't want a procedure design that goes over Ramsgate". [redacted] responded by stating that this could mean you could have several 747s waiting for the wind to change to take off. And you can't run a commercial operation like that, and no one would fly to the airport. However, it could be suggested that the airport to have high levels of operating technology and process to ensure every aircraft that can safely land from the west and take off to the west does so. The problem in the past was that some captains opted to take-off and land from the east when they didn't have to. We are all for overriding and forbidding that. [redacted] then stated that the airport would obviously look to introduce procedures that minimise air traffic over Ramsgate. There may be design options to partially avoid it, but the designs and procedures for both ends of the runway have to be there. "We will need compensating measures to the west, as if 78% of flights are going towards Herne Bay, we will need to make sure they can achieve greater heights and bank sooner." The Cllr said the equal and opposite point to the previous speaker, who doesn't want flights going over Ramsgate, so all those flights will go west and south and come over our areas. He says that as much as he hears him, he doesn't agree with him.	Unconfirmed speaker [redacted]

Agenda	Summary	Speaker
	[redacted] explained that design principles give us a measure to evaluate our designs. It is rare, given competing demands of routing and environmental impact that a potential design satisfies all principles. We may not be able to satisfy every principle but can try. A Cllr stated that there needs to be a middle ground.	Osprey
Flying over Ramsgate	The Cllr asked if it is possible to stop pilots flying over Ramsgate when it's not necessary? [redacted] explained that you can bring in airport sanctions, preferential runway systems and airlines will be cooperative because they thrive on reputation. So anyone not applying the correct procedures could have sanctions imposed.	[redacted]
Turbulence	The Cllr asked if turbulence is not such a problem anymore to which [redacted] explain that it isn't.	[redacted]
Height	The Cllr asked what height will the planes come in over Ramsgate to which [redacted] replied it will be between 700 and 500 feet, depending on which part of Ramsgate. The Cllr asked about Herne Bay to which [redacted] replied that it would be 3,000 to 4,000 feet and on departures more than that. The Cllr also asked about Woodnesborough to which [redacted] inform him it will be between 7,000 to 10,000 feet. A Cllr asked if these heights can be 'nailed'; to which [redacted] replied that it can't be specified at the moment as there's no procedure designed. That's why we go back to the principles. The heights are intuitive from experience, and can't be known precisely until procedure design commences after the engagement and through the CAP1616 process.	
	The Cllr asked if there will be a big impact on Ramsgate through noise and disturbance to which [redacted] stated that they want aircraft to be up and away safely, and as soon as possible to minimise disturbance.	[redacted]
Kent County Council	The Cllr asked if Kent County Council (KCC) have been involved to which [redacted] said that KCC sent a representative to the afternoon session. The Cllr stated that Thanet, Canterbury and Dover should also be at all of these and that they can apply upward pressure in regard to this.	[redacted]

Agenda	Summary	Speaker
	[redacted] explained that we can now define flight procedure flightpaths more accurately because of satellite navigation and the aircraft onboard equipment, you can have a route and say as a design principle do I want that route to be concentrated or be spread.	Osprey
Ramsgate	The Cllr pointed out that dispersion might be preferable as where houses are more separate so you might hear one flight a day but that you won't have much of a say if you live in Ramsgate, as you're so close to the runway.	[redacted]
Lining out at Ramsgate	The Cllr stated that in Ramsgate, we'd like the aircraft to be lined up further out to sea than they were previously. It used to come along the beach and then turn into the airport. As a design principle, we want the planes lined up further out to sea.	[redacted]
	The Cllr asked if there is a difference in the sound profile between urban and rural which [redacted] explained that weather, land topography and the built environment does affect the way in which sound propagates.	[redacted]
Landing at Minster end	The Cllr asked if everything is coming in from the west ((the Minster end of the runway) what's the noise impact when hitting the ground. [redacted] explained why a landing aeroplane is a lot quieter than one taking off due to engine power setting and operational processes ((management) can be used safely by the airport to manage the effects of thrust-reverse (speed retard) on landing.	[redacted]
Not using the whole runway	The Cllr asked what scope there is for not using the whole length of the runway ((furthest away from Ramsgate) and [redacted] explained that not landing close to the threshold on the runway introduces risk to the aircraft as the runway available to stop along is reduced introducing safety reasons why this can't be done consistently.	[redacted]
Climbing quickly	The Cllr stated that he understands that it's possible for aircraft to climb quickly after take-off, in terms of proximity to Ramsgate can they climb quicker?	[redacted]
	[redacted] explained that this is possible but there are limits, and you have to take into account that this increases fuel burn which increases cost and is environmentally damaging. Steeper climbs also require greater power which produces greater engine noise. There is a balance between noise and fuel. [redacted] then highlighted that this could be a design principle, that when	

Agenda	Summary	Speaker
	possible aircraft should get away from Ramsgate as soon as possible.	
Principle	The Cllr "seconded the motion" put by the previous speaker about turning out to sea as soon as possible and states that this is a good idea and should be a design principle.	[redacted]
Wheels down	The Cllr asked usually where do wheels come down to which [redacted] informed him that it is around the 5-nautical mile range.	[redacted]
Previous experience	The Cllr stated that his previous experience of aircraft arriving from the east made it seem like wheels came down over the harbour to which [redacted] responded that this is surprising and would be quite late to put down the landing gear, but it may have happened once or twice (military aircraft) but is unlikely to have happened regularly.	[redacted]
Ground Traffic	The Cllr stated that nothing has been mentioned in regard to ground traffic to which [redacted] explained that this isn't a subject for discussion at this focus group as the group is considering airspace procedure design principles and ground traffic (and associated noise) was assessed previously in the current DCO application.	[redacted]
Consultation evidence	The Cllr asked if all the evidence from the DCO consultation is available to which [redacted] explained it is all available on the Planning Inspectorate (PINS) Website.	[redacted]
Consultation process	The Cllr stated that examination and consultations were not communicated to his parish council to which [redacted] explains that it was a very large, well-advertised consultation process.	[redacted]
Other requirements	The Cllr asked what are other consultations or requirements to get permits for Manston, other than DCO and CAP1616 to which [redacted] explained that the other one is the Aerodrome certification piece, about how the airport operates, its operational licenses, but that isn't a consultation.	[redacted]
Questionnaires	The Cllr asked if all questionnaires go to CAA to which [redacted] confirmed they are reviewed by the CAA.	[redacted]
CAA	The Cllr asked if Manston presents a preferred route to the CAA. [redacted] stated a number of preferred options are presented, with rationales, the CAA then assess which is the best option to meet environmental and design principles.	

Agenda	Summary	Speaker
North/South	The Cllr asked if the airport knows where these proposed flight paths are going head, do you have an idea what goes north or south or is it down to the other factors? [redacted] explained that this would be dependent on the defined en-route reporting points.	[redacted]
	[redacted] pointed out that the only givens are the runway which exists and nothing can change this as well as the infrastructure in the sky. We've not come here with preconceived ideas in our head as this would go against the whole point of the consultation.	[redacted]
Operation size	The Cllr asked if the airport operation be larger than before. [redacted] responded that it will be, but not as large as Heathrow, Gatwick or Stansted and there will be more seasonal flights and it will be modern. The aim is to transform it into a modern cargo hub with a maximum of 25,000 commercial movements per annum.	[redacted]
New Infrastructure	The Cllr asked if the runway is the only thing that stays from the previous infrastructure or will everything be new. [redacted] confirmed there will be new buildings, new parking etc and stated that this is all on the PINS website as part of the current DCO application.	[redacted]
Q//A's	The Cllr asked what will be done with the answers given in the questionnaire to which [redacted] responded that these will be recorded to define the design principles which then inform the procedure designs which are then available for full consultation with the wider community later next year in the consultation phase. This engagement element is fed back to CAA and will inform consultations, this is only to frame the initial ideas//principles.	[redacted]
Airport cancellation	The Cllr asked if there is any scenario that leads to this simply not happening? [redacted] replies stating no, only if the aviation industry is curtailed but that's highly unlikely. There's a chronic capacity shortage in the area and this is why the airport is needed. The Cllr then asked if the consultation is anything more than nuance and if he's wasting his time filling these questionnaires. He stated that he needs to understand the scope of consultation and if the DCO goes ahead then anything after that is just a nuance? [redacted] stated that it's not and there are definite things you can change using the principles. You can't	[redacted]

Agenda	Summary	Speaker
	change the operational aspects; this was the subject of the very long two-year DCO process.	
DCO decision	The Cllr asked if the DCO decision is simply yes or no decision or can it be nuanced? [redacted] explained that this is pure speculation and that the PINS inspectors have written the report and it's on the Secretary of State's (SoS) desk. The advice he's had is that the SoS can make small changes, but can't make major changes without reopening the DCO process. He stated that he thinks the likeliest outcome is that the SoS will give consent. The Cllr then asked if the SoS can give consent but with 20% fewer movements for example to which [redacted] replied "no", and explained any major changes like this would require further planning consultation. He confirmed that the SoS can ask further questions.	[redacted]

END

40

Rob Pridham

From: Samara Jones-Hall [redacted]
Sent: 23 December 2019 06:39
To: TRANSPORTINFRASTRUCTURE; Rob Pridham
Cc: Jason Jones-Hall
Subject: Manston DCO: Letter to Secretary of State with details of the Public Cost and Reputational Risk of Manston Airport reopening
Attachments: Letter to Secretary of State_ PUBLIC COST AND REPUTATIONAL AND RISK.pdf

Dear Sirs

Please find attached our Letter to Secretary of State with details of the Public Cost and Reputational Risk of Manston Airport reopening. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

We wish you a very Merry Christmas!

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

[redacted]

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.uk
Cc: Rob.Pridham@dft.gov.uk

23 December 2019

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")

PUBLIC COST AND REPUTATIONAL RISK

The Applicant is a start-up company with no track record, majority owned offshore with anonymous shareholders. The Applicant's founding director has a 26 year history of high profile failure - often at great public and reputational cost, including previous airport and airline operations that resulted in questions raised in the House of Commons[1].

[1] Select Committee on Transport Minutes of Evidence: Supplementary memorandum submitted by the Civil Aviation Authority, Briefings on EUJet Ops Ltd, 24 November 2005
https://publications.parliament.uk/pa/cm200506/cmselect/cmtran/636/5110212.htm

Further, the Applicant confirmed during the Examination that its forecasts and business case was produced without[2] any regard as to viability whilst York Aviation and others provided an overwhelming body of evidence to show that the Applicant's plans were in fact not viable.

The Applicant claimed repeatedly – and wrongly – during the Examination that since the aspiration was for the development to be funded privately there would be no public cost. Further, responding to the lack of evidence of any finance or viability, the Applicant claimed in its own Overall Summary of Case that:

> *"if the project does not succeed, the adverse impacts of which objectors have complained ...will not materialise".*

We reject and refute these claims. Respectfully, we are also deeply concerned of the risk that if the hidden – yet significant – public costs, national risks and reputational risks to the government inherent in this application are not fully taken into account, the Secretary of State may be minded to give this startup operator "a shot", in much the same way as the Minister's predecessor took a risk on Seaborne Freight – and potentially with similar results.

In fact, whilst the lack of evidence of any viability or funding certainly points to a significant risk that none of the alleged benefits of the development will materialise, a significant cost will still be sharply felt regardless, both locally and nationally, as detailed below.

OPERATION STACK/ BROCK MANSTON

1. As you will recall, the immediate costs to the nation of the impact of Operation Stack in 2015 were around £2 million per day[3].
2. From 4 August 2015 arrangements for Operation Stack were amended to include the use of the former Manston Airport site, in the district of Thanet, as an interim lorry park for Dover-bound traffic[4].

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[2] At the oral evidence given by the Applicant//Azimuth at the Need and Operations Issue Specific Hearing of 21 March 2019 confirmed that the Azimuth Report upon which the entirety of the Need Case for Manston relies has no realistic foundation as a basis for predicting the extent to which Manston might actually be used.
[3] https://publications.parliament.uk/pa/cm201617/cmselect/cmtrans/65/6506.htm
[4] https://publications.parliament.uk/pa/cm201617/cmselect/cmtrans/65/6505.htm#_idTextAnchor012

3. This was extended by the Town & Country Planning (Manston Airport) Special Development Order 2019 as a solution for holding goods vehicles post-Brexit (Operation Brock).
4. If Brock Manston is active, non-compliant HGVs wishing to exit the UK will be diverted to a holding area at Manston Airfield and if Phase 2 (M20) becomes full, lorries heading for Port of Dover will be directed to Manston Airfield[5]. At Phase 2, compliancy checks will be undertaken.
5. Operation Brock Manston has the support of the Road Haulage Association with Richard Burnett stating:

> *"It's clear that Transport Secretary, Grant Shapps and his team have* ***grasped the importance of a contingency plan to tackle congestion in Kent, post-Brexit,***
>
> ***"The plans for Manston Airport and the implementation of border readiness checks to ensure drivers comply with Operation Brock are of course encouraging***[6]*."*

6. Operation Brock Manston has the support of Highways England with project director John Kerner stating that:

> *"****Operation Brock strengthens this resilience*** *even further and offers a safe, scalable response to disruption that can be used to* ***queue up to 11,000 lorries heading for mainland Europe, while keeping other traffic flowing for people living, working and travelling in and around Kent***[7]*."*

7. In addition to the Town & Country Planning (Manston Airport) Special Development Order 2019 several other pieces of legislation associated with Operation Brock Manston were passed in preparation for the 31 October 2019 exit from the EU for example the Heavy Commercial Vehicles in Kent (No. 1), the Heavy Commercial Vehicles in Kent (No.2) and the Heavy Commercial Vehicles in Kent (No. 3) Order 2019.
8. As you will be aware, we did not leave the EU on 31 October 2019 and are set to do so on 31 January 2020. The transition period will expire at the end of December 2020.

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[5] https://highwaysengland.co.uk/OperationBrock/
[6] https://www.itv.com/news/meridian/2019-09-04/extra-20m-for-kent-to-prepare-roads-ports-for-brexit/
[7] https://www.kentlive.news/news/kent-news/what-operation-brock-7-questions-3473722

9. Operation Brock Manston will either need to be extended post-Brexit, during and post-transition, in line with leaving the EU and in line new trade deals// World Trade Organization terms; or Operation Brock Manston will need to be disbanded with no alternative.
10. In the event of disbanding Operation Brock Manston pre-Brexit and pre-transition the cost to the public is in monies spent by the public purse and the cost of congestion in Kent, post-Brexit, during and post-transition.
11. As you will recall, the immediate costs to the public of the impact of Operation Stack in 2015 were around £2 million per day[8] and there is no evidence to indicate that the cost to public without Operation Brock Manston will be any less.
12. In any event, this is a cost to the public purse and reputational risk to the Government.

PUBLIC SAFETY ZONES

13. As of 28 January 2019, Thanet District Council was under a Local Plan Intervention by the Secretary of State for Housing, Communities and Local Government.
14. The Secretary of State for Housing, Communities and Local Government states in the penultimate paragraph of his letter that (bold added for emphasis) :

> *"[He is] also, for the avoidance of doubt, now putting on public record my concerns about the* ***low level of housing supply and delivery in Thanet.*** *[He] expect[s] planning decision-takers to have regard to these concerns as* ***a material consideration*** *when deciding local planning applications[9]".*

15. As you will be aware Public Safety Zones fall under the DfT Circular 01/2010 in which it clearly states that Public Safety Zones are based upon risk contours modelled looking fifteen years ahead.
16. As Manston Airport is closed and has been for over 5 years then it must look to 15 years ahead and the number of proposed/forecast ATMs.
17. The ATMs proposed by the Applicant are of the number that are caught by the Public Safety Zone requirement.

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[8] https://publications.parliament.uk/pa/cm201617/cmselect/cmtrans/65/6506.htm

[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/776028/Local_Plan_intervention_-_Secretary_of_State_letter_to_Thanet_District_Council.pdf

18. According to Thanet District Council,

> *"Public Safety Zones [in relation to the reopening of Manston Airport], would have* ***significant implications for planning policy in the district****, and would need to be addressed in the proposed review of the Local Plan, in the event that the DCO is granted. On the basis of the submitted information, 2 sites allocated for housing development in Ramsgate in the Draft Local Plan would be affected. One of these sites has current planning permission and has been substantial built out (Lorne Road), whilst the other site has planning permission for 6 dwellings and an additional 16 allocated but not covered by a planning permission (Seafield Road/Southwood Road). As well as these specific allocations, the draft plan makes provision for windfall sites (within the urban confines)* ***to come forward with approximately 2,500 homes by 2031 across the whole district****. TDC would need to consider whether a precautionary policy linked to potential future PSZ designation would be appropriate, to identify an exclusion zone for new housing or housing conversions through such a policy, to be effected in the event that a PSZ is designated. In addition, the Council would have to consider whether an Article 4 Direction to restrict permitted development rights allowing conversion to residential use in the identified area might be appropriate in due course*[10]*".*

19. The impact of Manston Airport reopening on the low level of housing supply and delivery in Thanet is a public cost.

LEGAL CHALLENGES: EUROTUNNEL LE SHUTTLE FREIGHT

20. The Government paid out Eurotunnel £33m in an agreement to settle a lawsuit over extra ferry freight services in the event of a no-deal Brexit[11] (Seaborne Freight).
21. Eurotunnel Le Shuttle Freight is the most convenient and cost-effective way to transport freight between the UK and continental Europe[12].
22. Eurotunnel Le Shuttle Freight provides the quickest way to cross the Channel with a truck.
23. Electric locomotives that generate a low level of atmospheric pollution and only marginal greenhouse gas emissions.

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[10] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR02000 2/TR020002-004125-Thanet%20District%20Council%20-%20response%20to%20ExQ3.pdf
[11] https://www.bbc.co.uk/news/business-47414699
[12] https://www.eurotunnelfreight.com/uk/about/

24. In December 2018, Eurotunnel Le Shuttle Freight transported 130,510 trucks in December 2018, 2% more than in December 2017.

25. Eurotunnel Le Shuttle Freight recorded a new all-time record for the year 2018 with almost 1.7 million trucks transported. Le Shuttle Passenger traffic increased by 1% compared to December 2017 with 235,588 passenger vehicles transported. Since the start of January, more than 2.7 million passenger vehicles have crossed the Channel with Le Shuttle[13].

26. In November 2019, Eurotunnel Le Shuttle Freight carried 130,952 trucks, a decrease of 13% compared to November 2018, due both to the effect of stock piling in October in preparation for Brexit and to an unfavourable calendar. Since the beginning of the year, almost 1.5 million trucks have crossed with Eurotunnel Le Shuttle Freight, a decrease of 6% compared to the same period in 2018. In November 2019, Passenger Shuttles carried 142,106 passenger vehicles, down 13% compared to November 2018, due to uncertainty in the United Kingdom caused by the elections. Since 1 January 2019, 2,418,827 million passenger vehicles have crossed the Channel with Le Shuttle, a decrease of 2% compared to 2018[14].

27. The impact of Manston Airport reopening on Eurotunnel Le Shuttle Freight (nor the impact of Eurotunnel Le Shuttle Freight on Manston Airport forecasts[15]) was not considered by the Applicant and/or during the DCO Examination.

28. In the event the DCO is granted, a legal challenge by Eurotunnel is a reasonably foreseeable public cost.

NATIONALLY STRATEGIC BODIES AND GOVERNMENT BODIES

29. The Ministry of Defence has objected to the proposed Manston DCO stating in its submission of 9 July that:

> *"**insufficient information** has been submitted to provide any **positive indication that potential harm to safeguard operational defence assets can be overcome or readily mitigated**[16]"*.

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[13] https://www.eurotunnelfreight.com/uk/2019/01/shuttle-traffic-for-december-2018-new-all-time-record-for-le-shuttle-freight/

[14] https://www.eurotunnelfreight.com/uk/2019/12/shuttle-traffic-for-november-2019/

[15] At the oral evidence given by the Applicant/Azimuth at the Need and Operations Issue Specific Hearing of 21 March 2019 confirmed that the Azimuth Report upon which the entirety of the Need Case for Manston relies has no realistic foundation as a basis for predicting the extent to which Manston might actually be used

[16] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004714-AS%20DIO%20Planning%20Inspectorate%20-%209.7.19.pdf

30. Network Rail has stated that:

"the compulsory acquisition powers sought by [the Applicant] would ***create a serious detriment to the continued safe, efficient and economic operation of the railway***[17]*"*..

31. In the event the DCO is granted, a legal challenge by Network Rail is a reasonably foreseeable public cost.
32. In the event the DCO is granted, the impact to national strategic defence assets is a public cost, risk to the nation's security and reputational risk to the Government.

HIGHWAYS ENGLAND

33. It is of note that the Transport Strategy for the South East as of October 2019 vision is that:

"By 2050, the South East of England will be a leading global region for net-zero carbon, sustainable economic growth where integrated transport, digital and energy networks have delivered a step-change in connectivity and environmental quality".

34. Transport Strategy for the South East as of October 2019 makes no mention of Manston Airport.
35. The DCO Examination did not assess the cost of and impact on the impact of Manston Airport reopening on the national Highways England/ road surface access.
36. You will recall that Manston Airport if reopened would be solely reliant on road surface access for HGVs, fuel tankers, workers and passengers.

INWARD INVESTMENT

37. We and many other organisations and community groups all provided evidenced submissions detailing the negative impact of Manston Airport reopening on Ramsgate, the wider Thanet and Kent throughout the DCO Examination.
38. These groups include but are not limited to Ramsgate Town Council, Ramsgate Town Team, Ramsgate Neighbourhood Plan Steering Group, Ramsgate Society, Kent County Council[18],

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[17] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004571-Network Rail - Response to Fourth Written Question.pdf

[18] https://www.kent.gov.uk/__data/assets/pdf_file/0003/29541/Manston-Airport-position-statement.pdf

Thanet District Council[19] and other businesses[20] and campaigners and community groups. Details and evidence of submissions made to the Examining Authority can be viewed in the Examination Library[21].

39. All of the above local groups, councillors and organisations have expressed reasonable concerns, based on direct experience and knowledge of the local area, that the recent upsurge in inward investment, individuals and businesses relocating and investing in the area since the former airport was closed in 2015 is highly likely to be reversed in the event that the airport is re-opened. These concerns are based around the reasonable and rational conclusion that businesses and individuals are unlikely to want to buy or invest in property or businesses in the area in the event that development is granted that results in cargo planes overflying properties at altitudes of 200-600 feet.
40. This is a high cost to Ramsgate if the DCO is granted, even in the event that the Applicant does not build an airport for whatever reason - for example failure to find funding. The loss of confidence in the area and the risk of air cargo operations commencing at some point in the future will continue to hang over the town regardless, which will have a continued negative impact on inward investment.
41. The Applicant is a start up company with no track record. The founding director of the Applicant, Tony Freudmann, only has a record of significant and costly failure - often at great public cost - over a period of more than 26 years. As you will be aware, even in the case of established companies 6 out of 10 DCOs granted are not developed.

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19 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003135-Thanet%20Disctrict%20Council%20-%20Local%20Impact%20Report%20Manston%20Airport.pdf

20 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004730-AS%20-%20Five10Twelve%20Ltd%20REGISTER%20OF%20ENVIRONMENTAL%20ACTIONS%20REP8-018%20SOCIO-%20ECONOMIC%20(2) .pdf

21 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004730-AS%20-%20Five10Twelve%20Ltd%20REGISTER%20OF%20ENVIRONMENTAL%20ACTIONS%20REP8-018%20SOCIO-%20ECONOMIC%20(2) .pdf

42. Historically the airport has repeatedly failed, the question must be asked what happens if the DCO is granted and history repeats itself[22]? Extant evidence commissioned by TDC Officers and submitted to the DCO Examination namely the Avia Solutions report, stated that:

*"... airport operations at Manston are **very unlikely to be financially viable in the longer term**, and almost certainly not within the period to 2031[23]"*.

43. The development is a black cloud hanging over us. We are losing and we will continue to lose inward investment opportunities because of this proposal.
44. If the DCO is granted it will halt or contract the private inward investment to Ramsgate. This is a cost to the public.

DRAFT LOCAL PLAN

45. Thanet District Council's draft Local Plan Policy SP02 – Economic Growth[24] states (bold added for emphasis):

"Policy SP02 - Economic Growth

A minimum of 5,000 additional jobs is planned for in Thanet to 2031. The aim is to accommodate inward investment in job creating development, the establishment of new businesses and expansion and diversification of existing firms. Sufficient sites and premises suited to the needs of business are identified and safeguarded for such uses. Manston Business Park is the key location for advanced manufacturing and large scale job creating development. Land is identified and allocated to accommodate up to 53.5ha of employment space over the period to 2031. Land and premises considered suitable for continued and future employment use will be identified and protected for such purpose. Within the urban area, and the confines of villages as defined on the

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[22] Formerly a military airport, RAF Manston in Thanet, Kent in the South East, was sold by the MoD in 1998. Since then, three different owners, Wiggins/Planestation Infratil and Lothian Shelf, have tried unsuccessfully to operate commercial passenger and air freight services from Manston until its closure in 2014, having made losses of £40m - £50m during the preceding nine year period. Source - Manston Airport under private ownership, Kent County Council 2015
https://www.kent.gov.uk/__data/assets/pdf_file/0003/29541/Manston-Airport-position-statement.pdf

[23] https://www.thanet.gov.uk//wp-content/uploads/2018/03/Final-Report-for-TDC-Manston-Airport-Viability-2016_2.pdf

[24] https://consult.thanet.gov.uk/consult.ti/TLPMODS/view?objectId=11186100#11186100

policies map, proposals for employment generating development on non-allocated sites will be supported in principle, subject to meeting the requirements of other policies in the Plan.

Thanet's town centres are priority areas for regeneration and employment generating development, including ***tourism and the cultural and creative industries*** *which will be supported.*

The growth of the Port of Ramsgate *is supported as a source of employment and as an attractor of inward investment.*

New tourism development, which would extend or upgrade the range of tourist facilities particularly those that ***attract the staying visitor, increase the attraction of tourists to the area and extend the season,*** *will be supported.*

Development is supported that enhances the rural economy subject to protecting the character, quality and function of Thanet's rural settlements and natural environments".

46. There is evidence to confirm that these growth sectors identified in the Thanet Local Plan will - at best - be negatively impacted in the event that the air cargo hub DCO is granted, or indeed, that the air cargo hub is entirely inconsistent with these growth development plans.
47. It is of note that the draft Local Plan does not mention Manston Airport reopening in the SP02 Economic Growth.

Tourism

Five10Twelve and tourism businesses[25] and Thanet District Council[26] provided evidence to the DCO Examination which clearly demonstrated that the Applicant's proposed cargo development would **adversely affect** Ramsgate's and the wider Thanet's Tourism Economy.

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25 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004649-Five10Twelve%20Ltd%20-%20REGISTER%20OF%20ENVIRONMENTAL%20ACTIONS%20REP8-018%20SOCIO-%20ECONOMIC%20(3)-%20Tourism .pdf

26

Cultural and Creative Industries

48. As of 4 July 2019, Kent and Medway's inward investment agency, Locate in Kent, partnered with Arts Council England and Heritage Lab CIC for a major research project to support the growth of Ramsgate as a creative business hub.
49. The digital and creative industries have been highlighted by the Government as a priority for growth with the aim for the UK to become a world leader in this area. **Thanet district is already putting down a marker with businesses in this sector growing by an impressive 84% in the four years to 2017.**
50. Creative Industries in Historic Buildings and Environments, Colliers, October 2018, report has confirmed that ambience is the key driver for creative businesses to relocate. Severe impact on ambience in the area is likely in the event that the DCO is granted, resulting in cargo planes overhead at altitudes of 200ft - 600ft.
51. Ramsgate is one of the only Heritage Action Zones (HAZ) in the UK and is home to over 450 listed buildings. Many of these buildings are in poor condition, underused or remain empty but once restored will provide increased footfall and spend to support further regeneration.
52. Gavin Cleary, CEO, Locate in Kent, said:

> *"We know that many creative industries and start ups are concentrated in areas with a high heritage density. With over 450 listed buildings, and only 63 minutes to London by train,* ***Ramsgate is ideally placed for continued growth in the creative sector and is a prime location for those wanting to invest or relocate in Kent.***"

Port of Ramsgate and Royal Harbour (owned by Thanet District Council)

53. As you will be aware on 24 October 2019, the contract for a feasibility study for Ramsgate port and Royal harbour was awarded to consultant WSP UK Limited by Thanet District Council. Part of the feasibility study is a residential plan to look at waterfront homes, and leisure uses such as space for larger yachts than can presently be accommodated in Ramsgate, hotel and conference facilities, berthing for small cruise ships and shops. Ideas for a maritime village development at Ramsgate port and Royal harbour will look at mixed use development with waterfront homes, shops, restaurants and cafes and commercial units. The Ramsgate port and Royal harbour is also directly under the proposed flight swathe at altitudes of 300-600 feet, which would serve as a significant deterrent to any potential development of Ramsgate's port and Royal Harbour.

FIRST AVIATION DCO

54. As you will be aware this is the first aviation DCO.
55. In the coming year DCO applications will be examined for Heathrow, Gatwick, Luton and - possibly - Stansted, pending the result of its judicial review.
56. Airport expansion is highly controversial and decisions to support airport expansion are increasingly very much in the public eye and tracked in national media. With increasing understanding by the public as to the rising climate crisis, environmental consumer choices and flight shaming, it is therefore perhaps of even greater importance that the DCO examination process is shown to be transparent, robust, anchored in law and - above all - fair.
57. This is especially true of this first airport DCO. Given the Applicant's lack of track record, the founding director's career history, the lack of evidence of viability and substantive other material and significant deficiencies in the application, it is not unreasonable to suggest that granting of a DCO in this case would be likely to raise levels of distrust, suspicion and incredulity on a par with the recent public and media storm surrounding the awarding of ferry contracts to Seaborne Freight.

CONCLUSION

We have shown above that whilst the Applicant has repeatedly claimed that this is a private venture that comes at no cost or risk to the public, there is in fact a very significant cost - both reputationally and financially - that may result from granting the DCO, irrespective of whether or not the development is delivered as planned or proves to be unviable, as expected.

There is a significant risk that such costs may be felt nationally and they will most certainly be felt locally. Whilst we are confident that common sense will prevail and the DCO will be refused, given the significant deficiencies in the application, local campaign groups and organisations have nevertheless been fundraising and preparing for a Judicial Review in the event that the DCO is granted.

41

Rob Pridham

From: general-enquiries@forms.dft.gov.uk on behalf of General Enquiries - Department for Transport <general-enquiries@forms.dft.gov.uk>
Sent: 31 December 2019 08:36
To: Contactdft
Subject: New submission from Contact Department for Transport

I would like my enquiry sent to the following organisation:

Department for Transport

Name

Samantha Holmans Thompson

Address:

[redacted]

Email

[redacted]

Subject

RSP Development of Manston Airport

Enquiry details

Hello,
I would like to know if it is possible to contact Mr Grant Shapps directly in his capacity as SoS for transport regarding his decision making on the development of Manston as a cargo hub. My family and I would like the opportunity to make it clear to him how egregiously our and our fellow towns people's lives, health, wellbeing immediate environment and investment in the town of Ramsgate will be affected if RSP are granted permission to operate a 24/7 cargo hub from Manston. I would be very grateful if you could let me know how I can input to the process at this stage. With kind regards, Samantha Holmans

From:	Rob Pridham
To:	Manston Airport
Subject:	No. 41 Chris Lowe Late Rep 060120
Date:	29 June 2020 16:43:29

From: [redacted]
Sent: 06 January 2020 10:10
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Subject: FILED: NSIP: TR2020002 Proposed Manston Airport

The Rt. Hon. Grant Shapps,
The Secretary of State for Transport,
Department for Transport,
Zone 1/18, Great Minster House,
33 Horseferry Road,
London SW1P 4DR

6th January 2020

NSIP: TR2020002 Proposed Manston Airport
From: Chris Lowe. Interested party: 20014275

Dear Secretary of State,

I understand that you will be announcing your decision on the proposed Manston airport in due course.
I therefore ask that you will consider the following further new evidence which has been published recently after the closure of the Examination, adding to the evidence that this proposal is totally unacceptable.

1 Airports are a major source of Ultrafine particles (UFP)

The report previously referred to by CPRE Kent (CO2 emissions from commercial aviation, 2018,Brandon Graver, Ph.D., Kevin Zhang, Dan Rutherford, Ph.D., September 2019 www.indiaenvironmentportal.org.in/files/file/ICCT_CO2-commercl-aviation-2018.pdf) showed that aviation emissions have been under-estimated.

Now new evidence ("Source apportionment of particle number size distribution in urban background and traffic stations in four European cities", www.sciencedirect.com/science/article/pii/S016041201931832X) from researchers at King's College London have measured ultrafine particles (UFP) in European cities and detected emissions from airports. Many studies have examined and quantified the levels of larger particles (e.g.PM2.5 – <2.5µm or PM10 – <10µm), but very few have studied UFP (< 0.1 µm). The researchers identified, characterised and quantified the sources UFPs in Barcelona, Helsinki, London, and Zurich between 2007 and 2017. They measured particle and gaseous pollutants at different sites and used a statistical model to identify and quantify the contribution of the different sources of ultrafine particles. They found that London had the highest concentration of UFP compared to other cities. The greatest concentrations of the smallest particles (called nucleation particles) occurred when the wind was blowing from the airport in all cities. This indicates that airports are a major UFP source and that these small particles can travel many kilometres.
So this confirms that airport pollution – with very negative health impacts – spreads out from the source airport.

The researchers also state that: "*Airport emissions contributed to nucleation particles in urban background areas.*"

So this study is very important because it is the first study to definitely state that airports are a major source of UFPs, which are harmful to health. And of course UFPs are more concentrated in a downwind arc from the airport which is clearly shown by the high (red) concentrations in the maps. Whilst the study finds that road traffic emissions contributed the most, it is axiomatic that as an airport expands, so will the local traffic as a consequence. These two sources of health harms are a cumulative adverse environmental impact from airports.

This research confirms research published by the US Mobile ObserVations of Ultrafine Particles (MOV-UP), (https://deohs.washington.edu/mov-up) which found that communities underneath and downwind of jets landing at Sea-Tac Airport are exposed to a type of ultrafine particle pollution that is distinctly associated with aircraft. The study is the first to identify the unique "signature" of aircraft emissions in Washington.

In the case of the proposed Manston Airport, the wind is from the west most of the time, around 70% over a year, and therefore the urban areas of Thanet would be very badly affected.

2 Air pollution and Noise affect Birth outcomes

New research, “Impacts of air pollution and noise on risk of preterm birth and stillbirth in London” published in Environment International, Volume 134, January 2020, 105290, (www.sciencedirect.com/science/article/pii/S0160412019314734), is the first study of long-term road traffic noise in relation to stillbirth, and the largest study to date of air and noise pollution in relation to birth outcomes. It shows that ambient ozone linked to increased risk of preterm birth and stillbirth, and that traffic non-exhaust $PM_{2.5,}$ is linked to increased risk of preterm birth and stillbirth, also that traffic noise is linked to risk of preterm birth.

Hence this is additional evidence against allowing increased noise and air pollution from the proposed airport and its associated road traffic.

3 Independent Commissioner for Civil Aviation Noise (ICCAN)

As you are no doubt aware, the Independent Commissioner for Civil Aviation Noise (ICCAN), has just published “Review of the Survey of Noise Attitudes 2014 ” and this highlights important issues for the proposed Manston Airport.

ICCAN highlight issues with current assumptions about “acceptable” aircraft noise levels, and as well as concerns about actual values of the LOAEL. It also emphasises concerns about the impact of changes in noise levels caused by changes in aircraft activities.

On Page 11 of the Review, for example, it states: “a community who experiences an increase in aviation noise will report higher levels of high annoyance than a community who have lived at the higher exposure level for a long period of time. In fact, it has been found that even an announcement of a change can affect community sensitivity towards noise18.”

Furthermore, regarding your Department's impact assessment Tool, WebTag, ICCAN notes that: “As yet, WebTAG and WebTAG+ are not able to account for the change effect (see Issue 3 above). For example, if a community experiences a change that increases its exposure to aviation noise, WebTAG and WebTAG+ can anticipate the associated health costs and/or benefits by applying the health impacts of communities already under that level of exposure. However, it does not calculate the additional impacts that are associated with the change represented by an increase in exposure.”

Hence use of the current WebTag tool would greatly underestimate the impacts of the proposals.

The latter is particularly relevant to the proposals because the proposed Manston Airport Site site has not had an airport for more than five years, so that everyone has become used to the lack of aircraft noise.

Hence the proposed 10,000 Air Transport Movements by heavy and noisy freight aircraft would be very intrusive.

All of the evidence therefore shows that the Applicant's proposals, for a new, very polluting and noisy, airport, are totally unacceptable for the Isle of Thanet.

I would be pleased to clarify any queries on this response or to enlarge any aspect.

Yours faithfully,

Chris Lowe

[redacted]

43

43

Rob Pridham

From: Samara Jones-Hall <[redacted]
Sent: 08 January 2020 10:34
To: Rob Pridham; TRANSPORTINFRASTRUCTURE
Cc: Jason Jones-Hall
Subject: Manston DCO: Proximity to Ramsgate take off and landing and fatal plane crashes

Dear Sirs

Eight days into 2020 there has been another plane crash resulting in the loss of 176 lives https://www.theguardian.com/world/2020/jan/08/iran-plane-crash-ukraine-boeing-180-tehran .

There were over a great number of plane crashes just after take off or just before landing since 2018 resulting in a loss of over 800 lives https://www.bbc.co.uk/news/world-10785301

A plane crash just after take off or just before landing at Manston would be over Ramsgate at a height of 200-600 feet and would result in thousands of resident's lost lives - including children attending schools and elderly in care homes.

Could you please escalate this email to the Secretary of State's department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited
[redacted]

AP

The Rt Hon Sir Roger Gale M.P.

House of Commons
London, SW1A 0AA
[redacted]
website: www.rogergale.com
email: galerj@parliament.uk
[redacted]

18/01/2020

The Rt Hon Grant Shapps
Secretary of State for Transport
House of Commons
London
SW1A 0AA

[redacted]

RECEIVED ON
03 FEB 2020
PRIVATE OFFICE

Manston Airport DCO

I was, as you will appreciate, devastated to learn on Thursday that the Department has sought to extend the decision process for the Manston Airport DCO by a further four months. This process has been the subject of a protracted public inquiry and the PINS report has, I understand, already been with your Department for three months.

I appreciate that the General Election has intervened and that there has, additionally, been a Christmas recess and I know that decisions on other DCOs have also as a result been delayed but this does rather make a nonsense of a facility that is designed to take the pain out of major infrastructure planning and to inspire multi-million-pound investor confidence.

I appreciate that because of your aviation interests you have had the recuse yourself from taking the decision and that you are therefore not directly involved in this application. I also know that your policy to promote the development of and investment in ports and airports remains commendably intact and I applaud the Department`s support for Flybe in the teeth of competitor and environmental opposition.

Nevertheless, it is a fact that if the UK is to survive and prosper post-Brexit then we are going to need Manston and the few alternative sites for freight and passenger traffic. It is a fine irony that on Thursday morning, while officials were clearly preparing to announce the further delay, the RiverOak Strategic Partnership team were on site at Manston meeting with investors intending to plough in excess of £300 million into the development. Those are sums that Thanet has not dreamed of since the Doomsday Book!

As you may imagine, the implied lack of political support has dented investor confidence and we are now having to reassure instead of to forge ahead with the anticipated progress.

What makes this still more unacceptable is that such requests for further information as were made by the Planning Inspectorate received swift and comprehensive responses and that at no time since the report was deposited with the Department have any further requests for information or clarification - which is normal practice -been made. Indeed, as RSP have acquired the site, which might have been one of the stumbling blocks, and as Manston is designated in the Local Plan as an airfield, it is hard to see what possible objections to the proposal could legitimately be made.

RSP hope and intend to reopen Manston as a state-of-the-art net zero-carbon (Helsinki style) freight and passenger facility in the national and local interest and wish to do so as swiftly as possible. An enormous amount of work, faith and millions of pounds worth of investment has already been put into this project and I would hope and expect that the DfT will still give the

green light to the matter in the immediate future so that contracts can be let and the real infrastructure work can begin.

With my personal best wishes [redacted]

[redacted]

From:	Rob Pridham
To:	Manston Airport
Subject:	Number 43 Richard Styles Ramsgate Town Council Late Rep 040220
Date:	29 June 2020 14:43:49
Attachments:	RTC response to the SOS -4th Feb 2020.docx

From: Richard Styles [mailto:richard.styles@ramsgatetc.org.uk]
Sent: 04 February 2020 15:32
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Cc: Eileen Richford <eileen.richford@ramsgatetc.org.uk>; Dean Williams <dean.williams@ramsgatetc.org.uk>
Subject: FILED: Additional response to the call from the Secretary of State at the MHCLG regarding Manston Airport, Thanet ,Kent

Dear MHCLG,

I note the deadline ended a few days ago, but the period for additional responses was very short.
I therefore attach the response from RTC in the hope that it may included within the evidence base for the final decision on the DCO application by RSP in May.

Regards,

Richard Styles
Town clerk

Ramsgate Town Council

[redacted]

Response to the Secretary of State – Ministry of Housing, Communities and Local Govt

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Introduction

The Secretary of State has asked for responses to various outstanding questions and comments regarding RSP's DCO application.

This submission is intended as comment on:

1. Climate change and carbon emissions
2. Five10Twelve Submission of 27th October 2019 which points to the inadequacies and inaccuracies in the Applicant's Environmental Statement.
3. Five10Twelve Late Submission 17th October 2019 Rebuttal to the Applicant's Overall Summary of Need Case
4. Five10Twelve Submission of 23rd December entitled Public Cost and Reputational Risk.

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1. The UK carbon emission targets – is there room for Manston?

The Committee on Climate Change **(**CCC) provides independent advice to Government on building a low carbon economy and preparing for climate change.

It has recommended that the government plans for international aviation and shipping to achieve net-zero emissions by 2050 and that this should be reflected in the Government's forthcoming Aviation Strategy. The CCC states that it will be necessary to reduce actual emissions from the aviation sector. Until now, there has been a natural cap on aviation emissions due to runway capacity, if greater capacity is supported, there will be unwanted growth in Carbon emissions.

In the CCC's view, because of progress in other sectors, the aviation sector is likely to be the largest emitting sector by 2050 even with strong progress on technology and limiting demand. The committee states we must limit passenger growth to no more than 25% above today's level. The CCC also calls on the Government to assess its airport capacity strategy in the light of the issues around reducing emissions.

The planned additional airport capacity at London airports (including the third runway at Heathrow) is likely to leave very limited or no room for growth at non-London airports. Several UK airports, including Gatwick and Southampton Airports are currently pursuing plans for growth beyond the limits set by the CCC. The AEF has shown that the Gatwick plans alone will produce increases in carbon emissions from 0.77MtCO2 in 2017 to 0.95MtCO2 in 2028.

The Development Control Order (DCO) examination regarding Manston examined the applicant's business plan that justified the application as being of national significance. It is obvious that an operation described as nationally significant will result in air movements that will compete for resources with other airports and air movements. The examination established that the size of the operation would account for a 1.5% to 1.75% increase in the national aviation carbon emissions.

The preliminary consultations by the applicant to prepare for the CAA's examination of its flight path proposals came to similar conclusions in terms of competing with other well-established operators for the limited airspace.

In brief, approving the Manston DCO in the current and future environment of Climate Change and the future of the UK aviation sector is a zero-sum game.

Whatever the recommendation of the Planning Inspectorate (PINS) of the viability of the applicant's proposals, the Secretary of State needs to consider whether to allow the application

The Manston DCO application is for providing a facility for the dedicated air freight market. As such it competes with well-established fright hubs, such as East Midlands, not only for market share, but also for 1.5 to 1.75% of the aviation carbon emission limits. Dedicated air freight is in turn competing with Belly Hold freight in passenger aircraft, a much larger part of the market that requires hub airports such as Heathrow so that loads can be broken down and reassembled for onward transmission. Finally, is the competition of passenger flights. We are aware of the ever-increasing pressure for long haul passenger movements through hub airports. The Heathrow debate illustrates this. There is also pressure for a network of regional airports to link the regions together for economic advantage.

All of these aviation uses compete for increasingly limited resources, both for airspace and carbon emissions.* **The SOS may feel that carrying fruit and veg and other specialised airfreight is not best use of those resources, especially as this market is already well served by existing providers.**

**The very recent rejection of Stansted Airport expansion by Uttlesford District Council largely on Climate Change grounds, (a decision that will probably end up on the SOS's desk), illustrates the pressure that the UK's carbon production figures are under.*

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2. The EU 2008 Ambient Air Quality Directive – will the health impact on Ramsgate be too great?

The EU sets legally binding limits for air quality and limits for air pollutants that affect public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). It remains to be seen if the Government will adopt these limits post Brexit. The problem at airports is compounded by the road traffic that airports attract as well as aircraft take-off and landing.

There is no doubt that air pollution causes health problems, ranging from heart attacks to Alzheimer's disease, there is some debate about how much is produced by aircraft and at what height it ceases to be a problem. In the case of Manston, the 40,000 inhabitants of Ramsgate live between 0.85 and 3 nautical miles from the runway, together with the prevailing wind direction, these arguments are superfluous. **Air pollution from the airport will depress even further the already poor health outcomes for the area with consequential cost burdens on the NHS.**

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3. Public Safety Zones (PSZ's) and the impact on Ramsgate

According to Thanet District Council (TDC), "Public Safety Zones [in relation to the reopening of Manston Airport], would have significant implications for planning policy in the district, and would need to be addressed in the proposed review of the Local Plan, in the event that the DCO is granted. On the basis of the submitted information, 2 sites allocated for housing development in Ramsgate in the Draft Local Plan would be affected. One of these sites has current planning permission and has been substantial built out (Lorne Road), whilst the other site has planning permission for 6 dwellings and an additional 16 allocated but not covered by a planning permission (Seafield Road/Southwood Road). As well as these specific allocations, the draft plan makes provision for windfall sites (within the urban confines) to come forward with approximately 2,500 homes by 2031 across the whole district. TDC would need to consider whether a precautionary policy linked to potential future PSZ designation would be appropriate, to identify an exclusion zone for new housing or housing conversions through such a policy, to be affected in the event that a PSZ is designated. In addition, the Council would have to consider whether an Article 4 Direction to restrict permitted development rights allowing conversion to residential use in the identified area might be appropriate in due course."

The impact of overflying Ramsgate, so near to the runway and flight path will go far beyond the technical comments by TDC. Ramsgate has a thriving visitor economy developed over the past 5 years since the previous airport closed.

In their submissions to the DCO examination, Thanet District Council, Ramsgate Town Council and other businesses and campaigners and community groups have expressed reasonable concerns, based on direct experience and knowledge of the local area, that the recent upsurge in inward investment, individuals and businesses relocating and investing in the area since the former airport was closed in 2015 is highly likely to be reversed in the event that the airport is re-opened. **These concerns are based around the reasonable and rational conclusion that businesses and individuals are unlikely to want to buy or invest in property or businesses in the area in the event that development is granted that results in cargo planes overflying properties at altitudes of 200-600 feet.** This is a high cost to Ramsgate if the DCO is granted, even in the event that the Applicant does not build an airport for whatever reason - for example failure to find funding. The loss of confidence in the area and the risk of air cargo operations commencing at some point in the future will continue to hang over the town regardless, which will have a continued negative impact on inward investment

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4. Reputational Risk to the decision maker

The previous Secretary of State (SOS) suffered reputational damage due the quality of information provided to him regarding the competence of the operators he was asked to support (Brexit ferry service from Ramsgate).

The impact of Manston reopening as a dedicated freight hub would ensure considerable industry interest and media coverage. The quality of any decision is bound to be closely examined.

The SOS should be aware of the history of the applicant and Manston.

Manston itself has failed as a passenger and freight airfield under at least three managements; Wiggins, Planestation, and Infratil. Losses have been considerable. This is despite considerable public sector financial support from Kent County Council.

Following the latest closure, 5 years ago, Thanet District Council was approached by a group led by the previous managing director of the airport during the airport's difficult history.

It is easily verifiable that Mr Freudman has a controversial past history in the legal profession, and failed aviation projects both in the UK and elsewhere. A market examination found no other credible interest in the project.

The group at this stage claimed backing of Riveroak Inc an American finance company. In its examination of the request to CPO the Manston site, Thanet attempted to examine the source of the claimed financial backing and commissioned expert advice on the business plan. Financial information was withheld, despite Thanet being asked to underwrite the CPO process. Aviation experts were highly critical of the business plan. The Council concluded that it could not risk public money on the venture.

A change of administration at the Council occurred with the incoming administration promising to re-examine the possible reopening of the airport. Market testing showed only Riveroak showing any interest. This time the group had lost the backing of Riveroak Inc. The Council again commissioned expert opinion, and again failed to determine the source of any funding. The new administration finally refused the request to CPO.

It's at that point that the applicant opened its request for a Development Consent Order. **There are considerable flaws in the DCO process that make it difficult for the SOS to make a robust decision.** The process is designed to examine applications from public utilities or other well establish companies and to balance National and local interests. Faced with essentially a **start-up company, consisting of a few individuals, registered in an offshore tax haven, and only one having any experience of the aviation industry**, the process was protracted and frustrating. The application attracted an unprecedented number of adverse submissions from public bodies, local councils, private sector, groups and individuals.

The examination was hampered from the start by the inspectors saying that the process did not allow them to commission their own expert opinion or to examine the applicant's business plan or to consider the source of funding including money laundering regulations.

This meant that concerned individuals had to commission their own research. Many did, including a re-examination of the applicant's claims regarding flight paths and noise contours.

We hope the DCO inspectors have made the SOS aware of the flaws in the process they were asked to conduct, and the precedents set for future possible applications if it is not reviewed.

In the meantime, RTC believes any decision to approve this application would place the SOS at considerable reputational risk. An applicant with no experience in running a major freight hub, based in an offshore tax haven, with no identifiable funding, no airlines or freight handlers on board.

If the Secretary of State believes this is a site of importance as a part of the national infrastructure, it is entirely appropriate that a full investigation be undertaken to assure the Secretary of State and the general public that adequate funds exist to carry out this project and that the source of these funds are fully in compliance with all lawful requirements in terms of 'money laundering'.

Should the scheme fail to get approval or receive sufficient financial and business support, the Secretary of State is asked to ensure that valuable land resources are not locked away, that could be used to meet the ministry's own housing planning targets for Thanet.

Richard Styles

Town Clerk

From:	Rob Pridham
To:	Manston Airport
Subject:	No.44 Paul Brunton Late Rep 040220
Date:	29 June 2020 14:46:10

From: Paul Brunton [redacted]>
Sent: 04 February 2020 16:58
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Help

Dear sir
I am one of many who has lived in Kent since 1953 and also like many have always supported anything about flying, I lived in Rochester and of course the airport there is still thankfully open for business and teaching people to fly an aeroplane let alone other flying business, but my main point of sending this email to your office is that I would say that Heathrow expansion is a very bad idea not only for pollution but also mainly for safety reasons, the skies above London are now crowded with very large aircraft and hundreds of passengers but God forbid one to make a mistake over London, would common sense say stop the expansion and think of taking the heavy cargo flights from Heathrow and Gatwick and use Manston airport in Kent and old RAF Lynham for cargo flights to reduce the number of flights over London and Gatwick because the distance from London for Manston is very small and smaller business flights would be much better for ATControl, so NO expansion of Heathrow and NO expansion to Gatwick and bring Manston airport in Kent back and create hundreds of new jobs, because you need flying to transport all over the world, which you sensibly cannot do with an articulated lorries, please help get Manston airport open if you can, it's a perfect approach for aircraft from the east coast away from London and the heavily populated city it is already.

From: Roberts, Paul
To: [redacted]
Cc: [redacted]; Manston Airport
Subject: Manston Airport - socio-economic effects on heritage assets
Date: 07 February 2020 16:21:26
Attachments: Letter to Mr&Mrs Jones-Hall 07Feb2020.pdf

Dear Samara,

Please find attached a letter from Historic England in response to your letter of the 21st January in which you said that the development of an airport would deter investment in Ramsgate, which would in turn undermine efforts to preserve heritage assets on Historic England's Heritage at Risk register.

I have copied it to the Planning Inspectorate as it might help explain our position and therefore could be of assistance to them and the Secretary of State.

Yours sincerely,

Paul D Roberts MCIfA
Team Leader - Development Advice (East Sussex, West Sussex, Surrey and Kent)

London & South East | Regions Group

Historic England | Floor 4, The Atrium | Cannon Bridge House | 25 Dowgate Hill | London | EC4R 2YA
[redacted] 0207 973 3636

Follow us on Twitter @HE_SouthEast

From: Samara Jones-Hall [redacted]
Sent: 21 January 2020 15:20
To: Gee, Emily; Brinton, Marion
Cc: Jason Jones-Hall; Roberts, Paul
Subject: Letter to Historic England: Manston DCO

Dear Madam

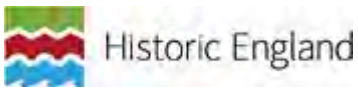
Please find attached a letter for your kind attention.

Kind regards

Samara Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

Five10Twelve is a private limited company incorporated in England & Wales under the name Five10Twelve Limited, Company No 8412137



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Historic England

Samara & Jason Jones-Hall
Five10Twelve Limited
[redacted]

07 February 2020

By email:
[redacted]

Dear Mr and Mrs Jones-Hall

Proposed Manston Airport Development – Development Consent Order

Thank you for your letter of the 21st January. We appreciate your point that the climate for investment in Ramsgate might have a bearing on whether solutions for securing the future of at-risk heritage assets would come forward, and we have acknowledged in previous advice to the Examining Authority the possibility that this risk might be realised (e.g. on page 5 of our Additional Written Representations of the 8th March 2019); however we must also acknowledge that the socio-economic effects of an airport would likely be varied and complex in nature, perhaps with some positive effects as well as negative ones. Furthermore, while any socio-economic effects would not be unique to the historic environment, Historic England must focus on any specific effects on the heritage significance of heritage assets.

In order to assess the impact of socio-economic effects we think it would be necessary to first have a good baseline evidence of the likely effects on the built environment on the town, and second, to have good baseline evidence of the impact of such effects on the heritage significance of heritage assets e.g. evidence of the likelihood of a general deterrent to investment in the built environment as well as the effect of this on the ability to address the conservation deficit and secure a sustainable use for the Clock House. We haven't seen such evidence and we do not have the expertise ourselves to properly assess socio-economic effects so we have refrained from expressing an opinion about this matter.

While Historic England must not speculate about the socio-economic effects of the airport we have described, in our response to the Secretary of State's recent letter, some of the circumstances that led us to add the Clock House and the Conservation

Area to our Heritage at Risk register so if evidence of socio-economic effects on Ramsgate has been submitted, the Secretary of State can draw his own conclusions about whether they would exacerbate the problems faced by the heritage assets that are at risk. I hope you will agree that this was a reasonable approach for us to take. Please let me know if I can be of any further assistance.

Yours sincerely

[redacted]

Paul D Roberts MCIfA
Team Leader - Development Advice

cc Manston Airport Case team, The Planning Inspectorate
(manstonairport@planninginspectorate.gov.uk)

F om Rob sham
To Manston Ai po t
Subject No 46 Ella Robey a e Rep 090220
Date 29 June 2020 14 49 39

Original Message
From Ella[redacted] >
Sent 09 February 2020 22 10
To Public Enquiries (CD) <Publ c Enquiries@homeoffice go uk>
Subject Manston Airport

Dear Rt Hon Priti Patel

I hope you are well and don t mind me contacting you I wanted to make a case about the airport at Manston

To be transparent I was planning to buy a property and set up a small business in Ramsgate but ha e put that on hold and started look ng elsewhere until I know the decision about the airport I wouldn t want to li e and work direc ly under a flight path as he proposed site is only 1 m le from Ramsgate so the planes would be flying extremely low across the whole town

Some people think it would bring jobs to the area but the negati es could be far worse One small airport will only genera e a small number of jobs but could put off hundreds of upwardly mobile people from mo ing there (those pr ced out of London and the home counties who are heading further out) Hundreds of new residents w th money to spend and who would encourage businesses to locate there and small businesses to start up which would generate far greater numbers of jobs and a far greater di ers ty of employment to match different skill sets

Plus wi h growing numbers of people many of whom wi l still need to commu e to other places and London which would enable the current fast train ser ice to Ramsga e and Marga e to expand

The same people also say the airport could encourage tourism (although I think the pitch is to make it a predom nantly freight airport) but why would tourists want to come to a seaside town if there are massi e planes flying low and nosily directly o er the historic town cen re and beach? If any hing it could render he area more lifeless because the only people who would li e there would be those who ha e no choice to li e or buy elsewhere (which wouldn t bring any more money into the area)

Also opening small airports at a t me when there s a need o cut carbon emiss ons seems counterproducti e More fast trains and ut lising the harbour would seem to make more sense

I m sure you know all of this and ha e many other things o consider but wanted o put my two penn es worth in

Yours faithfully
E Robey

From:	Rob Pridham
To:	Manston Airport
Subject:	No.47 Five10Twelve Ltd Late Rep 130220 POSTNOTE February 2020 Climate Change and Aviation
Date:	29 June 2020 14:51:49
Attachments:	Letter to Secretary of State- POSTNOTE Feb 2020 Climate Change and Aviation.pdf

From: Samara Jones-Hall [redacted]
Sent: 13 February 2020 18:35
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>
[redacted]; Susan Anderson <Susan.Anderson@dft.gov.uk>
Subject: Manston DCO: Letter to Secretary of State POSTNOTE February 2020 Climate Change and Aviation

Dear Sirs

Please find attached our Letter to Secretary of State with POSTNOTE February 2020 Climate Change and Aviation. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
United Kingdom

BY EMAIL:
transportandworksact@dft.gov.uk
Rob.Pridham@dft.gov.uk
Susan.Anderson@dft.gov.uk

13 February 2020

Dear Sir

Climate Change and Aviation

As you will be aware on 11 February 2020 the Parliamentary Office of Science and Technology (POST) published its report on Climate Change and Aviation.

This POSTnote examines options for mitigating greenhouse gases (GHG) emissions from aviation, including new technologies, demand reduction and emissions offsetting. It also outlines UK and global policy frameworks for implementing measures to do so.

The key points of this POSTnote are:

1. Aviation is responsible for 7% of the UK's greenhouse gas (GHG) emissions. Aviation is likely to be the largest contributor to UK emissions in 2050. Aviation is the most difficult transport mode to reduce emissions from[1].

[1] UK Parliament POSTNOTE Number 615 February 2020 Climate Change and Aviation

2. Reducing aviation emissions is difficult, because of the long lifetime of aircraft and a lack of zero-carbon alternatives[2]. Most cargo is transported on passenger aircraft; however, the Applicant's proposal is for cargo to be transported solely with the use of dedicated freighters. As you will be aware dedicated freighter are usually either conversions of older passenger aircraft or the last aircraft from a given aircraft production line. This means that the rates of technology implementation for dedicated freighter airlines are among the lowest in the industry[3]. Popular aircraft types for these airlines continue to include the McDonnell Douglas DC-10 (first flight 1970) and Airbus A300 (1974)[4].
3. Technologies which could reduce emissions include new aircraft and engines, electric aircraft and alternative (low-carbon) fuels. They will not bring emissions to zero, and further mitigation will be required.
4. Low-carbon aviation fuels are perceived as promising solutions by the industry. However they are not price competitive with jet fuel and some will produce indirect GHG emissions across their lifetime[5].
5. Reducing demand for flying faces social and political acceptance challenges.
6. Emissions offsetting is a key but highly debated approach to mitigating emissions[6].
7. Aviation policy is agreed globally, but the UK can reduce its own emissions through domestic policy.

Yours faithfully

Enclosure: UK Parliament POSTNOTE Number 615 February 2020 Climate Change and Aviation

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[2] *Ibid*

[3] http://www.theitc.org.uk/wp-content/uploads/2016/03/ITC-Aviation-Sustainability-March-2016-complete.pdf (Accessed 13 February 2020)

[4] *Ibid*

[5] *Ibid*

[6] *Ibid*

UK Parliament POST

POSTNOTE

Number 615 February 2020

Climate Change and Aviation

Aviation has a growing impact on climate change, as demand for air travel increases globally. This POSTnote examines options for mitigating greenhouse gas (GHG) emissions from aviation, including new technologies, demand reduction and emissions offsetting. It also outlines UK and global policy frameworks for implementing measures to do so.

Overview

- Aviation is responsible for 7% of the UK's greenhouse gas (GHG) emissions.
- Reducing aviation emissions is difficult because of the long lifetime of aircraft and a lack of zero-carbon alternatives.
- Technologies that could reduce emissions include new aircraft and engines, electric aircraft, and alternative (low-carbon) fuels. They will not bring emissions to zero, and further mitigation will be required.
- Low-carbon aviation fuels are perceived as promising solutions by the industry.
- Reducing demand for flying faces social and political acceptance challenges.
- Emissions offsetting is a key, but highly debated approach, to mitigating emissions.
- Aviation policy is primarily agreed globally, but UK policy can also reduce emissions.

Background

Commercial flights departing from the UK account for 7% of national GHG emissions.[1] Burning jet fuel releases carbon dioxide (CO_2) and non-CO_2 emissions (Box 1).[2] In the UK, 96% of these emissions come from international, mainly long-haul, flights.[1] Passenger numbers in the UK have tripled since 1990 and are forecast to grow by 49% between 2018 and 2050.[3] Due to this growth, and the expected decrease in emissions in other sectors, aviation is likely to be the largest contributor to UK emissions in 2050.[1]

Assessments of air travel have demonstrated its economic and social benefits, but also its wider challenges, such as air pollution and noise.[4–7] The UK has a large aviation sector, comprising airlines, aerospace manufacturers, fuel producers and navigation service providers.[7] The sector is mature but constantly in search of cost reductions and opportunities to improve efficiency; particularly airlines, which are sensitive to costs.[8]

Under current projections, global air passenger numbers are expected to quadruple and aviation emissions to triple by 2050, relative to 2015.[9] As aviation is the most difficult transport mode to reduce emissions from, it has featured widely in recent discussions on climate change. There are a wide range of technologies that help reduce emissions, but they are unlikely to bring them to zero by 2050. Some technologies can be installed on existing aircraft, while others can only be installed when new aircraft are designed.[10,11] Many technologies lack the required investment under current policies. Most international emissions mitigation activities rely on fuel efficiency improvements and emissions offsetting (see *Emissions Offsetting*).

The coordination of reducing aviation emissions occurs mainly at the global level. It is managed by the International Civil Aviation Organization (ICAO), a specialised UN agency.[12] ICAO operates the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a global carbon offsetting scheme for airlines.[13] It also sets a CO_2 standard for new aircraft that defines a maximum allowable fuel burn per kilometre of flight.[14] Other emissions reduction measures are implemented by the EU.[15]

Under the UK's 'net zero' emissions legislation, net UK GHG emissions (emitted GHGs minus GHGs removed from the atmosphere) must be zero by 2050.[16,17] Emissions from international air travel are currently excluded from the legislation, and the UK Government has yet to clarify how they will be accounted for. The Committee on Climate Change (CCC, an independent body that advises the UK government on climate issues) and others have suggested that aviation

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Box 1: Effects of Air Travel Emissions in the Atmosphere

Aircraft in motion release two main types of emissions:

- Carbon dioxide (CO_2) emissions that directly cause warming, and
- Non-CO_2 emissions that cause overall warming by affecting atmospheric composition and cloudiness.

Most of the non-CO_2 global warming impact is due to:

- The net warming effect caused by the production of ozone through emissions of nitrous oxides (NOx) and
- The formation of condensation trails and cirrus clouds through emissions of water vapour and soot in cold, humid regions of the atmosphere.[1,20,21] These reflect sunlight and trap heat radiated by the Earth, with the overall effect being to warm the atmosphere.[22]

CO_2 emissions are well understood and directly related to the amount of fuel burned. Non-CO_2 emissions are less well understood, but evidence suggests that they may roughly double the historical warming impact caused by aircraft CO_2 emissions.[22] The Department for Transport (DfT) has identified CO_2 as a priority for mitigation and recommends further research into non-CO_2 effects. Short flights emit more per kilometre than long-haul, as they cruise a shorter distance, while still burning similar amounts of fuel during ascent and descent.[23]

emissions should be explicitly included in the UK's net zero target.[18,19] In September 2019, the CCC also recommended that the UK increase efforts to mitigate emissions from aviation.[19] There are several approaches to doing so, including new technologies, more efficient operations, demand reduction and emissions offsetting.

Technologies for Reducing Emissions

The aviation sector has been making technical improvements to aircraft and engines for several decades.[21] These have sought to improve the efficiency of fuel consumption, reducing the fuel costs that make up 20%–25% of airlines' operating expenses.[24,25] The CCC estimates that by 2050, technologies could reduce emissions per aircraft by 40% relative to the year 2000 (excluding low-carbon aviation fuels) in the UK.[1,18] Some stakeholders suggest that this figure is optimistic.[26,27] Fuel efficiency improved by about 21% between 2000 and 2017, but further improvements may be smaller given the mature nature of the technologies involved.[28–30] Low-carbon aviation fuels could generate further emissions reductions.

In the UK, several established and emerging government-industry partnerships aim to help develop emissions reduction technologies in the UK.[31–33] To date, these partnerships have focused on improving fuel efficiency and, more recently, electric aircraft. Industrial stakeholders highlight that technological development should be based on a long-term vision with clear targets from government. Some suggest that this vision should promote multiple solutions that can work together.[34]

Low-carbon Aviation Fuels

Jet fuel can be replaced by alternative fuels to reduce GHG emissions from existing aircraft.[35] Most of these fuels are in early stages of development, and there are differing views on the extent to which they could replace jet fuel. They are considered in more detail in POSTnote 616. The main types of low-carbon aviation fuels are:

- **Biofuels**, converted from energy crops or organic waste by burning or other chemical processes;
- **Electro-chemical fuels**, made by reacting hydrogen (produced using low-carbon electricity) with CO_2;
- **Hydrogen**, which can power aircraft engines either in liquid form or by being converted to electricity.

The aviation industry refers to biofuels and electro-chemical fuels as 'sustainable aviation fuels'. Biofuels could reduce UK aviation CO_2 emissions by 5%–32% by 2050, and electro-chemical fuels could generate further emissions reductions.[3,28,35–37] If blended with at least 50% jet fuel, these fuels are 'drop-in', requiring minimal changes to current aircraft. They can be used in long-haul flights, which cannot be feasibly electrified (see below). Many stakeholders believe that drop-in low-carbon aviation fuels have significant potential for reducing emissions in the near and medium-terms.[38–40] However, they are not price competitive with jet fuel and some will produce indirect GHG emissions across their lifetime.[41,42]

Aircraft and Engine Improvements

Incremental changes to engines, aircraft structures and materials have significantly increased the fuel efficiency of newer aircraft. These changes include progressive improvements to the efficiency of engines and wings, and the use of lighter materials, such as carbon composite materials, to build aircraft. There is scope for further improvements in the efficiency of wings and the further use of lighter aircraft materials. These incremental changes could improve fuel efficiency by another 10–17%.[37,43]

More fundamental changes, such as radical aircraft designs and new generations of engines, could enable greater fuel efficiency improvements.[43] An example of radical designs are blended wing bodies (tailless aircraft with no division between the wings and aircraft body).[44] They are lighter and more efficient than traditional aircraft and can operate on electricity or hydrogen instead of jet fuel.[45] In addition, new ultra-efficient engines will increase the proportion of air flowing through the engine fan, improving fuel efficiency.[43,46]

Developers are currently designing new ultra-efficient engines,[47] but no radical aircraft designs have progressed past concept stage. This is because new designs incur high costs and take a long time to complete.[48,49] In the interim, manufacturers often fit new engines onto existing aircraft, rather than design a completely new aeroplane.[50] Radical designs may also be incompatible with existing infrastructure such as airport runways.[51,52] As a result, fuel efficiency has tended to improve incrementally, rather than fundamentally, over the past 30–40 years.[48]

Fully Electric and Hybrid Electric Aircraft

Electric aircraft use batteries or fuel cells to power electric motors. They can be hybrid (using a mix of electric motors and jet engines) or fully electric (using only electric motors). Jet fuel savings range from 19% in hybrid aircraft to 100% in fully electric aircraft.[53,54] These savings depend on aircraft batteries being charged with zero-carbon electricity. Electric aircraft are the subject of substantial research and investment in the UK.[33,55,56]

The main challenge for electrification is the weight of the batteries needed to power the aircraft.[39,57] This makes full electrification unlikely for large aircraft and flights longer than 300–500 km without a breakthrough in battery technology.[40,58] Industry estimates suggest that small (150–200-seat) hybrid electric aircraft will become available on short-haul routes around 2040,[39] and fully electric after 2050. Smaller fully electric aircraft (20–130 seats) may be used by 2040 on domestic routes, particularly in remote or island areas.[35] There is potential for very small fully electric aircraft to be used for intra-urban transport by 2025.[59–61] These aircraft would likely replace ground transport, rather than short-haul air travel.[39] Airspace congestion over urban areas could present significant regulatory challenges. These early electric aircraft could assist the development of larger designs in later decades.

Early-stage research is ongoing on 'structural power materials', which can act both as an aircraft structure and a battery. For example, an aircraft wing made from this material could store electricity and deliver it to the motors when needed. Using these materials would eliminate the need for a standalone battery and reduce the weight of electric aircraft.[62,63] The technology is unlikely to be commercially available before 2040.[64]

Operations and Airspace Management

Flight operations can be changed to conserve fuel and emit less. Small changes, such as lighter internal fittings, lead to fuel efficiency improvements of 2%–5%. Larger changes include flying in direct paths and avoiding aircraft being held before landing due to airport congestion ('stacking'). In the UK, these changes could save around 5% in fuel consumption per aircraft.[43,65] The UK's airspace management system is relatively old, and a programme is underway to improve its efficiency and allow for larger-scale operational changes.[7,66,67] The positive impact of these changes may be reduced by airlines' cost-saving practices. Some airlines transport more fuel than necessary for financial reasons, thus burning more fuel.[68]

Operational changes could also help avoid the formation of condensation trails, by re-routing the aircraft to avoid areas where trails are most likely to form.[69] In many conditions this could lead to extra fuel use and more CO_2 emissions, but it is unclear whether there would be an overall net climate benefit.[22] More research on these operational changes would be needed to determine their potential impact.

Managing Demand for Air Travel

The projected growth in passenger numbers, and plans to expand airport capacity (Box 2), have prompted discussions on managing demand for air travel.[70] Broadly, this could be done by curtailing demand for flying and/or providing alternative means of transport. No explicit demand management policies for aviation are currently planned in the UK. They would require robust data on passenger behaviour and decision-making. There is also an opportunity to connect demand management for passenger and cargo aviation. While most cargo is transported on passenger aircraft,[71] the two sectors may be able to reduce their impact by sharing knowledge and methods for emissions reduction.

Box 2: Airport Expansion and Emissions Reduction

There are currently plans to expand airport capacity in many UK airports to accommodate expected demand growth. Airport capacity expansion can increase demand for air travel, though the relationships between capacity expansion and demand growth are complex, creating challenges for demand management.[72] In 2018, the UK Government set out its National Policy Statement for expanding airport capacity in the south-east of England, outlining plans to build a third runway at Heathrow Airport.[73] The resulting growth in air travel may put pressure on other sectors to reduce their emissions more quickly to compensate for the increase in aviation emissions.[74] Increased air travel can also cause a growth in emissions in other sectors, such as road transport, due to increased traffic to and from airports.[75,76] In 2019 the CCC stated that the UK Government should re-assess its airport capacity strategy in light of the net zero target.[18]

Demand Curtailment

Demand curtailment involves discouraging flying through fiscal measures such as emissions taxes, or non-economic approaches such as information campaigns. Many academics and non-governmental stakeholders suggest that demand curtailment should be implemented alongside technological solutions to meet climate targets.[27,54,77–80] The CCC has advised that in order to meet the net zero target, passenger demand should not grow more than 25% between 2019 and 2050.[1]

Fiscal measures can help incorporate the cost of emissions in airline ticket prices, for example by taxing jet fuel, which is directly related to aircraft CO_2 emissions. Increasing jet fuel prices could incentivise the development of alternative fuels and fuel-saving technologies. However, jet fuel used in international flights is tax exempt under the 1944 Chicago Convention on International Civil Aviation and bilateral air service agreements.[81–84] Many countries do apply taxes to airline tickets, such as the UK's Air Passenger Duty that charges passengers depending on flight distance and class of travel.[85] Recently, Sweden and France have used airline ticket taxation systems to set additional climate levies aimed at curbing demand.[86–88]

In 2013, 15% of the UK population took 70% of international flights and a flat rate of emissions tax on all air passengers would disproportionately affect less well-off travellers.[89,90] A "frequent flyer levy" (a tax that goes up the more flights a passenger takes in a year) has been proposed to reduce demand while addressing this equity concern.[91] Some researchers have suggested discontinuing frequent flyer reward programmes.[78] Emerging evidence also indicates a change in public attitude towards flying in the UK, accelerated by social cues from high-profile figures.[92–96] This attitude change has not yet led to a measurable reduction in demand for air travel in the UK, but it has elsewhere.[97] These trends, plus an increase in climate-related concern from airline shareholders, could lead to a reduction in the forecast growth in demand for flying.[98,99]

Demand curtailment faces many challenges. The industry argues that if other countries do not also introduce demand curtailment measures, then UK industry could face competitive disadvantage and risk carbon leakage.[100–103] Carbon leakage occurs where companies move their operations abroad and

increase emissions in other countries.[104] Some analysts argue that carbon leakage may occur if, for example, airlines respond to policies by swapping their fleets to use the most fuel-efficient aircraft on routes that tax fuel.[105] However, recent research commissioned by the Department for Transport (DfT) suggests that discouraging passengers from flying would not risk carbon leakage or competitive disadvantage.[105]

Transport Modal Shift

Some analysts and campaigners have argued that short-haul aviation could be reduced, if not eliminated, by providing feasible alternative means of transport. Short-haul flights make up a relatively low proportion of all air travel emissions but emit nearly twice as much CO_2 per kilometre travelled as the average flight (Box 1).[23] Some airlines advise their customers to use different transport modes, but this is relatively rare.[106]

Implementing modal shift relies on 'inter-modal' transport systems, which comprise many transport modes that travellers can easily switch between. These systems require a holistic view of the transport system and have been attempted in several countries.[107] For example, French and German national rail operators are designated as airlines by the International Air Transport Association (IATA), to increase the ease of connecting transport modes.[108]

Emissions Offsetting

Given the projected growth in demand for aviation, emissions offsetting (Box 3) is a major part of mitigation plans for global and UK aviation.[37,109] The main offsetting scheme for international airlines is ICAO's CORSIA, a global scheme starting in 2021 (on a voluntary basis until 2027).[110] Critics view it as lacking ambitious targets and being susceptible to political interests. Some supporters see it as a stop-gap while technologies for direct emissions reduction are developed.[1,79,111–114] CORSIA will operate until 2035, after which it is intended that direct emissions reductions will replace it, but offsets may still be required in the long term.[35]

There are concerns around the quality of some offsets. In one of the most established offsetting schemes, the Clean Development Mechanism (CDM) (POSTnote 290), many purchased offsets were shown to be ineffective at mitigating CO_2.[115,116] Concerns around the CDM's potential inclusion in CORSIA have been raised.[117] Newer, accredited voluntary offsetting schemes assess offsets more rigorously before accepting them. Another concern is that offsetting allows aviation to grow, increasing pressure on other sectors to reduce emissions quicker. UK aviation is likely to require offsetting in order to reach net zero emissions. Some stakeholders argue that future emissions offsetting should be done through domestic Greenhouse Gas Removals (GGR), rather than being made in other sectors or countries (Box 3).[1]

Box 3: Emissions Offsetting

Offsetting happens when a business compensates for its emissions by paying for emissions reductions (offsets) to occur elsewhere. Many schemes, such as the Clean Development Mechanism (CDM), currently use conventional offsets, such as afforestation projects, primarily in developing countries. For example, an airline or a passenger can offset their CO_2 emissions by funding renewable energy projects or the protection of rainforests that absorb CO_2 from the atmosphere.[118] Offsetting schemes can be either voluntary (POSTnote 290) or regulated (e.g. the CDM).[116]

There are challenges associated with some conventional offsets, such as a lack of additionality (where the offset reduces emissions that would have been reduced anyway). Afforestation and other traditional offsets are limited in scope and constrained by land availability. The CCC advises that aviation should use appropriate GGR offsets, rather than traditional offsets, to reach net zero emissions. These will mostly be based on carbon capture and storage (CCS), will need to be scalable, and will likely be costlier than traditional offsets.[18]

Policy Context

Policy development will play a key role in accelerating the reduction of emissions from air travel.[1,36] In the UK, DfT is responsible for most policy on air travel, while the Department for Business, Energy and Industrial Strategy (BEIS) is responsible for energy and climate change mitigation policy and the major funding of research and development in aviation. Fiscal policy affecting aviation is overseen by the Treasury.

Global and Regional Regulation

ICAO has overarching responsibility for global policy on reducing international aviation emissions. The CORSIA scheme is based on industry targets set by IATA.[119] IATA has also committed to a goal of reducing global aviation CO_2 emissions by 50% by 2050, relative to 2005 levels.

The EU has set a more ambitious target to reduce CO_2 emissions per kilometre flown by 75% by 2050, relative to 2000 levels.[15] It also operates the EU Emissions Trading Scheme (EU ETS, a form of emissions offsetting scheme) (POSTnote 354) that has applied to all flights within the European Economic Area since 2012.[120,121] There are challenges aligning the EU ETS and CORSIA.[122] ICAO is concerned about potential double-counting between the two schemes, while the EU is critical of CORSIA's level of ambition. The EU ETS requires airlines to offset emissions above 2004–2006 levels, while CORSIA requires offsetting above 2020 emissions levels, which will be higher.[113,122]

UK Policy on Aviation Emissions

The UK has significant innovation and industrial capability in the aviation sector. Many stakeholders suggest that the UK can help shape international agreements, but can also take independent action to reduce its own aviation emissions. The CCC estimates that by implementing technologies and low-carbon fuels and capping demand growth at 25% above current levels, aviation emissions could be reduced by 20% by 2050, relative to today.[123] Existing transport policies can support emissions reduction. The Renewable Transport Fuel Obligation (RTFO), which provides incentives for the production and use of alternative transport fuels, was recently updated to include aviation fuels.[124,125] The UK is also a leader in aerospace manufacturing and an authority on the certification of aviation fuels.[126] Some UK-based international airlines have set themselves more ambitious mitigation goals, outside of regulatory requirements.[127]

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126. Shell Aviation [online]. Civil Jet Fuel: Grades and Specifications. Accessed 11/02/20.
127. Topham, G. (2019). BA to offset domestic flight emissions from next year. *The Guardian*.

From: [redacted]
To: Manston Airport
Subject: Response to the request for further submissions
Date: 18 February 2020 21:39:55

Dear Mr. Shapps,

I would like to respond to the Secretary of State's invitation to make further comments on this application.

The campaign to reopen Manston airport has dragged on for years and the DCO has already taken more than its allotted time. Vast reams of information have been submitted but guess what? The people likely to be affected by this development have no clarity whatsoever about what is planned and what its impacts might be. The developer has contradicted themselves left, right and centre and if you want to know how noisy it's going to be you can pick a number that fits your pre-conceived opinion. The hearings managed to clarify little.

So, you really have little of substance on which to base your decision. I can help you. I lived in the centre of Ramsgate for more than 20 years. I lived right under the approach flight path and was there both when the airport was run by the RAF and when it was transferred to civilian ownership.

When this DCO was announced I wrote to the Planning Inspectorate and told them to include all of the minutes of the statutory Airport Consultative Committee in their bundle of evidence. These minutes include official noise readings which were made when the airport was open. At the Western end of the runway the readings are of limited value because the airport operators had cunningly positioned the monitor miles away from the approach route. However, the readings from the Western end of the runway are damning. The monitor was located on a school just round the corner from my house.

These noise readings show that we (local people) were regularly being bombarded with noise levels in excess of 100db(A) as planes came in to land at Manston, flying at heights of less than 1000ft. above the rooftops. Noise levels were excruciating. They would drown out conversation, wake you up and would drive you back indoors on a Summer day. The minutes of the Consultative Committee show that local people did complain in their hundreds. However, other than "noting" these complaints no action was ever taken. Anecdotally, some people who used to work at the airport say that complaints were routinely filed in the bin.

I have no idea why the Planning Inspectorate did not include the Consultative Committee minutes in the bundle of evidence presented to the hearings. It's the one piece of concrete evidence we have showing what kind of impact this development would have. In the absence of this concrete data you were left with "experts" presenting contradictory opinions.

You need to reject this application out of hand. There is no evidence that this proposal constitutes a project of national significance, the public consultations were a joke and the application paperwork is a contradictory mess. The one thing you can rely on is the published evidence showing that it would have a devastating effect on the town of Ramsgate. Why would you do that to a constituency which has voted Conservative in the last three elections?

The extension to the DCO is irregular and unnecessary. The DCO is a process with

supposedly statutory timelines. Having been given six months to make a decision it is an abuse of power to extend the process further. It was someone's decision to accept late submissions and, having made that decision, it can't reasonably be reversed. But it's now time to stop inviting more and more evidence. All you are doing is increasing the volume of meaningless, contradictory information and this can't help you.

You know that Manston isn't viable because it lost over £100 million for successive owners. You know it's in the wrong place; like most coastal airports it doesn't have the catchment to succeed as a passenger airport. You know that a freight-only airport isn't a viable proposition because so much freight comes in the belly-hold compartments of large passenger jets. You know that the Western approach passes directly over a sizeable town and you know exactly how this affects people in a similar situation around Heathrow. You have all the information you need to reject this ridiculous plan, which should never have even been accepted for examination. However much you might like aeroplanes it's too much of a stretch to think that fellow plane-spotters can create a silk purse out of this lemon,

Kind Regards,

Peter Binding

From:	[redacted]
To:	Manston Airport; grant.shapps@dft.gov.uk; kelly.tolhurst@dft.gov.uk; info@andymcdonaldmp.org
Subject:	A submission by No Night Flights to the DfT re. the DCO Application for Manston Airport
Date:	20 February 2020 13:33:37
Attachments:	NNF30.pdf

Please find attached a submission by No Night Flights to the Department for Transport re. the "Stansted expansion" judgement handed down by Dove J and the subsequent conclusion that the development proposal by RiverOak Strategic Partners **does not meet the criteria** required for a Nationally Significant Infrastructure Project – NNF30.

No Night Flights

Application by RiverOak Strategic Partners Limited for an Order granting Development Consent for the reopening and development of Manston Airport in Kent

Submission by No Night Flights to the Department for Transport re. the "Stansted expansion" judgement handed down by Dove J and the conclusion that the development proposal by RiverOak Strategic Partners does not meet the criteria required for a Nationally Significant Infrastructure Project – NNF30

The relevance of the "Stansted expansion" judgement

1. On 7th February 2020 Dove J handed down his judgement following the hearing before him in the High Court in the matter of Ross and Anor v Secretary of State for Transport. In his judgement Dove J determines the correct construction of the Planning Act 2008, S.23 (5)(a). As such, his judgement is immediately relevant to the Secretary of State's pending decision of the DCO application for the development of a cargo airport at Manston as that application relies on the correct construction of the Planning Act 2008 (PA 2008), S.23 (5)(b). PA 2008 S.23 (5)(a) and PA 2008 S.23 (5)(b) are directly analogous in construction and in explanatory context.

2. The judgement postdates the Examination period for the Manston DCO. It also postdates the deadline for Interested Parties to respond to the Secretary of State's post-Examination questions as set out in the letter of 17th January 2020. The judgement goes to the heart of whether or not the development proposed at Manston Airport can properly be classed as an NSIP. Given that, we submit that it is entirely proper for an Interested Party to comment on the relevance of this judgement to the application submitted by RSP for the UK's first aviation DCO.

The meaning of *"is capable"* in S.23 (5)(b)

3. RSP's proposal is for an "alteration" of an airport. PA 2008 S.23(5) stipulates that the alteration applied for should have a specific effect. S.23 (5)(b) provides that the effect for a cargo-based airport DCO is: "*to increase by at least 10,000 per year the number of air transport movements of cargo aircraft for which the airport is capable of providing air cargo transport services.*" In his judgement, at paragraph 101, Dove J determined what the words *"is capable"* mean in this context. He said:

4. *"The first point to resolve is the correct construction of section 23(5)(a). I am satisfied that the submissions of the Defendant [the Secretary of State for Transport] in this respect are undoubtedly correct. The language of the statute in relation to whether the alteration will "increase by at least 10 million per year the number of passengers for whom the airport is capable of providing air passenger transport services" requires the Defendant to form a judgment in relation to that question. In my view that judgment is to be formed by asking* ***what increase in capacity could realistically be achieved****, not what might technically or arithmetically be possible.* ***It requires an analysis based on how the infrastructure is likely to perform, not a hypothetical approach assuming speculative figures in relation to each aspect of the calculation of capacity to show what might be possible rather than what is likely to occur in***

> ***practice.*** *I do not consider that the use of the wording "is capable" endorses the Claimants' contentions: it is important that these words are to be read in the context of the language of section 23(4) which speaks of the alteration being "expected to have the effect specified in subsection (5)".* ***The use of the word "expected" is an important qualification which imports the requirement for an assessment which is grounded in the reality of the capacity which might be achieved,*** *rather than one which takes a speculative arithmetical approach to all of the inputs to the calculation. It is clear on this basis that the Defendant's interpretation of the statutory test was one which was sound and a reliable basis for taking the decision as to whether or not the proposal was an NSIP."* [our emphasis]

Is RSP's forecast of the number of cargo ATMs that its proposal might achieve *"grounded in the reality of the capacity which might be achieved"*?

5. In our response to the Secretary of State's (SoS) questions of 17th January 2020, we explained that RSP relied on an independent consultant, Dr Sally Dixon, to produce RSP's forecast of the number of cargo ATMs that a re-opened Manston Airport might attract. During the Examination, in the Issue Specific Hearing on 21st March 2019, Dr Dixon told the Examining Authority (ExA) that she has no prior experience in forecasting air freight movements in SE England. Dr Dixon also admitted that:

- she did not consider pricing in her assessment of how many cargo ATMs a redeveloped airport at Manston might attract. She *"assumed that the airport would adopt the right level of pricing"*. This failure is particularly significant given that air cargo is a low margin, highly competitive sector. Price is a key determinant of demand. Without an assessment of pricing in its forecasts of cargo ATM demand, RSP has not assessed whether, **in reality**, it can attract cargo operators to use Manston instead of them using other airports or other options for transporting cargo such as road, rail and sea

- she arrived at her forecast by undertaking *"a macro analysis of air freight products."* She then *"established drivers and opportunities for Manston"*. She then *"guessed a percentage"* of business that might be persuaded to move to Manston. At no time did she undertake a quantitative assessment of the current UK market for dedicated air freight and translate this into a realistic assessment of the extent to which a re-opened Manston could attract business from other UK airports. She did not approach leading air cargo operators and ask them whether they would transfer business to Manston

- there was nothing in and of the material before the ExA that would tell it whether her ATM forecasts could deliver an airport that would be commercially viable.

6. Under questioning, it also was clear that Dr Dixon had assumed an average tonnage per ATM of under 20 tonnes.[1] This is less than a third of the average tonnage per ATM previously achieved at Manston. This means that the number of cargo ATMs p.a. that Dr Dixon forecast has been artificially inflated and cannot be relied on. If the total tonnage she predicted were to be handled with the same efficiency of previous operations at Manston, the number of cargo ATMs p.a. would be just 5,409 by Year 20. Even this number takes no account of whether a new airport at Manston could offer a dedicated cargo service at a price

1 Azimuth volume III, page 1

that would attract this level of business to the airport. In addition, as we set out below, 5,409 cargo ATMs p.a. is significantly more annual cargo ATMs than has ever been achieved at the old airport and is not a realistic forecast.

7. It is clear that Dr Dixon's forecast of cargo ATMs that might be attracted to Manston is not grounded in reality. It includes no analysis of how the new infrastructure to be developed would be *"likely to perform"*. Instead, it does what Dove J says should be avoided. It *"takes a speculative arithmetical approach to all of the inputs to the calculation"*. As such, it does not tell the SoS *"what increase in capacity could realistically be achieved"* were RSP to be awarded this DCO.

8. During the Examination, we submitted a series of evidence-based critiques of Dr Dixon's work. In four of our submissions to the Examination – NNF06, NNF07, NNF08 and NNF11[2] – we undertook a paragraph by paragraph critique of Dr Dixon's submissions, relating our submissions back to the reality of the UK dedicated air cargo market as recorded by the Civil Aviation Authority (CAA) and the Department for Transport (DfT). In another submission, NNF13,[3] we set out a brief summary of the multiple flaws in the approach that Dr Dixon took to her work for RSP, criticising her qualitative rather than quantitative approach; her shunning of historical performance figures; and her unrepresentative and tiny sample of interviewees. We also pointed out basic errors of arithmetic.

9. Dr Dixon describes her methodology as *"qualitative"* and much of the reasoning behind her assumptions is missing. Her work comprehensively fails to meet the test as set out by Dove J, which is that: *"It requires an analysis based on how the infrastructure is likely to perform, not a hypothetical approach assuming speculative figures in relation to each aspect of the calculation of capacity to show what might be possible rather than what is likely to occur in practice."* Given the lack of grounded reality in Dr Dixon's work, we submit that it would be unsafe for the SoS to award a DCO to RSP on the back of it.

The historical reality of dedicated cargo operations at Manston

10. In our submission NNF02 *"No Room for Late Arrivals"* [4] we included a summary of the history of commercial failure at Manston Airport and the reasons for that failure. We pointed out that Manston began its life as a dedicated cargo airport at a time when the UK handled twice as many dedicated cargo ATMs as it handles today. Manston had substantial unused runway capacity, handling just one or two cargo ATMs a day on average. It still failed in the hands of three separate owners.

11. In its 15 years of operation as a commercial airport, Manston:

- reached peak cargo tonnage of 43,000 tonnes in 2003. Cargo tonnage fell thereafter. By contrast, in a flat market today, Dr Dixon is forecasting cargo tonnage for Manston of 340,000 tonnes
- reached peak cargo ATMs of 1,081 in 2003. Cargo ATMs fell thereafter. By contrast, in a flat market today, Dr Dixon is forecasting cargo ATMs for Manston of 17,100

2 NNF06 is TR020002-003497-NNF, NNF07 is TR020002-003498-NNF, NNF08 is TR020002-003499-NNF, NNF11 is TR020002-003502-NNF
3 NNF13 is TR020002-003575-NNF
4 NNF02 is TR020002-003493-NNF

- handled just 547 cargo ATMs on average p.a. – fewer than two per day.

12. We have already submitted evidence that the DfT is forecasting next to no increase in UK cargo ATMs between now and 2050. The DfT expects total UK cargo ATMs to be 60,000 in 2050. Dr Dixon is therefore forecasting that a re-opened Manston will take 28.5% of the entire UK market for dedicated cargo ATMs. This is against Manston's best performing year in which it handled a little under 2% of the UK's dedicated cargo ATMs. This is neither credible nor based on a realistic assessment.

13. Dr Dixon's forecasts take no account of the historical reality of Manston and therefore do not tell the SoS *"what increase in capacity could realistically be achieved"* were RSP to be awarded this DCO.

How many cargo ATMS might *"realistically"* be achieved at Manston Airport should this DCO be awarded?

14. A number of Interested Parties submitted well-evidenced material on this question to the Examination. In brief:

- In our submission to the Examining Authority NNF03[5] we summarised the conclusions reached by Falcon Consultants Ltd in 2014 about potential viability of Manston Airport. Falcon concluded that:

  > *"The climate for cargo-only aircraft operations could not be much worse."*
  >
  > *"Note that, even with an associated business park, the airport is unlikely to succeed and, in our opinion, will generate substantial operating losses."*

  Falcon was not asked to predict how many cargo ATMs a re-opened Manston Airport might attract, but the consultancy did say that the airport had a poor reputation; was poorly located; and that it would need to focus on niche opportunities

- In our submission to the Examining Authority NNF05[6] we summarised the conclusions reached by Avia Solutions in 2016 about potential viability of Manston Airport. Avia said that it took a consistently generous view in its financial models of the numbers that Manston could achieve. However, even taking this rose-tinted approach to its assessment of viability, Avia concluded that an airport on the Manston site would not be viable. Avia made the point that UK air cargo demand has stagnated since 2000, but **not** because there isn't enough airport capacity to cope with the demand. In the period when cargo volumes have been flat, Stanstead has had spare capacity (and yet Stansted's freight ATMs decreased) and Manston had lots of capacity (and yet Manston closed).

  Avia concluded:

  > *"… there is virtually no incentive for operators to move operations to Manston, there are alternative UK airports that offer competitive services on reasonable terms. The UK doesn't need another airport for freight that has no USP."*
  >
  > *"There is no compelling reason to believe that the airport would be able to generate appreciably more freight activity than previously,"*

5 NNF03 is TR020002-003494-NNF
6 NNF05 is TR020002-003496-NNF

"While we consider that a re-opened Manston Airport would attract some passenger services and regain freighter operations at a level similar to its historic performance, our financial assessment is that this would be insufficient to support financially viable operations of the airport."

- During the DCO Examination, York Aviation considered three scenarios for future cargo operations at a re-opened Manston:[7]
    - Scenario 1 was considered by York Aviation to be *"highly optimistic and very unlikely"*. York Aviation considered this to be the upper bound to what might be achieved in cargo ATMs at a re-opened Manston. In this highly optimistic scenario in which Manston would translate unmet demand for cheap bellyhold cargo at Heathrow into more costly dedicated cargo at Manston, cargo ATMs *might* reach 4,468 in 2040. York Aviation made it clear that this number was also very optimistic because it assumed an unrealistically low tonnage per ATM
    - Scenario 2 was considered to be the most likely of the three scenarios. Even so, York Aviation said that it still had optimistic elements. Under that scenario, Manston would perform pretty much as it had before and might achieve 2,014 cargo ATMs by 2040
    - Scenario 3 was considered more realistic than Scenario 1, but still with some highly optimistic elements. Under that scenario a re-opened Manston might attract 745 aircraft movements p.a. by 2040
- During the DCO Examination, Altitude Aviation Advisory also reviewed Dr Dixon's cargo ATM forecasts.[8] Altitude said that:
    - Dr Dixon was forecasting a very low tonnage per ATM – 17 to 20 tonnes against an average of 63 tonnes per ATM recorded at Manston over its last five years of operation. Altitude noted that, if Dr Dixon's forecast for year 20 of 340,000 tonnes were actually to be achieved, and if the average load were consistent with real historic performance, the cargo tonnage that she was forecasting could be handled by **5,400 ATMs**
    - By year 20, Dr Dixon's projected cargo ATMs for Manston would be higher than the cargo ATMs achieved by all but six EU airports in 2016. This was unrealistic
    - RSP's proposals and Dr Dixon's forecasts were *"deeply flawed"* and did *"not reflect market realities"*.
    - *"We see no realistic prospect that Manston could ever develop to reach the required threshold of a Nationally Significant Infrastructure Project"*
    - *"We consider the forecasts to be extremely optimistic and not credible, with negligible supporting evidence."*
    - Dr Dixon's forecast for over 17,000 cargo ATMs in Year 20 *"represents one-third of the current UK freighter flights, in a market where the number of freighter*

7 REP3-025 – paragraphs 3.38 to 3.49
8 REP3-025 – TR020002-003137

ATMs has been contracting. This trend has been recognised by the Department for Transport"

- *"We would expect freight tonnage and freight ATM outturn at a re-opened Manston to be considerably below [Dr Dixon's forecasts]"*

In summary

15. Dove J made it clear that, for an aviation DCO application, what is required is *"an assessment which is grounded in the reality of the capacity which might be achieved"*. **Dr Dixon's forecasts for RSP clearly fall far short of this standard.**

16. The past reality of the airport is that it handled 547 dedicated cargo ATMs p.a. on average over a 15 year period from 1999 to 2014. Since 2000, the UK market for dedicated cargo ATMs has more than halved, from 110,000 ATMs to around 52,000 currently. The DfT is forecasting 60,000 ATMs p.a. in 2050. Against this smaller market, Dr Dixon is forecasting that Manston will take 28.5% of the entire UK market for dedicated cargo ATMs. **This is not realistic.**

17. Forecasts in 2014, 2016 and 2019 from reputable and experienced aviation consultants have been that a re-opened Manston Airport will operate at a substantial loss. The most optimistic forecast that York Aviation considered would mean 4,468 cargo ATMs at Manston by 2040. This is less than half of the 10,000 additional ATMs required by the PA 2008 for an NSIP. York Aviation said that more realistic scenarios were that a re-opened Manston could deliver 745 to 2,014 cargo ATMs. Altitude Aviation said that there was no realistic prospect that a re-opened Manston could ever develop to deliver the number of cargo ATMs required for it to meet the NSIP criteria.

18. It is clear from this that a realistic assessment of the capacity that might be achieved by RSP's proposals falls substantially short of the minimum of 10,000 cargo ATMs required for an NSIP. A number of experienced aviation consultants have provided assessments that are **grounded in reality** that assess what is **likely in practice to be achieved.** These assessments demonstrate that the more likely outcome is that a re-opened Manston would operate at much the same level that it operated at previously, with the most optimistic assessment being that it might deliver around 4,500 cargo ATMs p.a. This is well below the **minimum 10,000 cargo ATMs per year** that the PA2008 specifies that the "alteration" should deliver.

19. Put simply, the evidence is that RSP's proposal is **not** an NSIP and therefore should **not** be awarded the DCO applied for.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.50 Five10Twelve Ltd 220220 : Manston DCO: Letter to the Secretary of State with New Evidence
Date:	29 June 2020 14:54:51
Attachments:	Letter to Secretary of State with New Evidence.pdf

From: Samara Jones-Hall [redacted]
Sent: 21 February 2020 23:58
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>
Cc: [redacted]
Subject: Manston DCO: Letter to the Secretary of State with New Evidence

Dear Sirs

Please find attached our Letter to the Secretary of State with New Evidence. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk
Cc: Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

15 February 2020

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination

We respectfully submit the case of *Ross & Anor (Acting on behalf of Stop Airport Expansion) v Secretary of State for Transport*[1] [2020] EWHC 226 (Admin) before the Secretary of State for Transport so that it can form part of his decision-making process.

The Applicant has relied upon a technical and arithmetical formula to conclude that its Proposed Development (as defined in [APP-008]) is a national strategic infrastructure project (an "**NSIP**"). This technical and arithmetic formula is set out quite precisely and explicitly in the NSIP Justification document (APP-008) of its DCO application as follows:

> "*22. …Our aviation expert advice is that on a conservative basis a single cargo stand can turn around an aircraft every 2.5 hours, i.e. six aircraft or 12 movements between 0700 and 2300 per day[2]." (emphasis added)*
>
> *"23. [Our] plans for Manston are to reconstruct it with 19 cargo stands (and some passenger stands, which we assume will not handle cargo aircraft). Using the figure of six arriving and departing aircraft per stand per day (i.e. between 0700 and 2300 – only limited night flights are contemplated), one arrives at a theoretical maximum capability figure of **(19x12x365=) 83,220 movements per year**, and therefore the capability of the airport will be at that level, noting that this is theoretical capability rather than predicted operation[3]." (emphasis added)*
>
> *"34. [Our] case is that we are applying for the alteration of an existing airport whose current capability is zero air transport movements of cargo per year. By our experts' calculations the introduction of 19 new cargo stands as proposed will be capable of handling 83,220 air cargo movements per year, more than eight times the threshold in the Planning Act 2008[4]".*

In the claim for judicial review of the decision of the Secretary of State for Transport, proposing development a planning application made by Stansted Airport Limited to Uttlesford District Council as being a nationally significant infrastructure project ("an NSIP") in terms of sections 23 and 35 of the Planning Act 2008, and therefore subject to the approval processes required by the 2008 Act, including determination at the national level, *Ross & Anor (Acting on behalf of Stop Airport Expansion) v Secretary of State for Transport*[5] [2020] EWHC 226 (Admin) (the "**SSE JR**") Mr Justice Dove concluded:

"*The first point to resolve is the correct construction of section 23(5)(a) [Planning Act 2008]. I am satisfied that the submissions of the Defendant in this respect are undoubtedly correct. The language*

*of the statute in relation to whether the alteration will "increase by at least 10 million per year the number of passengers for whom the airport is capable of providing air passenger transport services" requires the Defendant to form a judgment in relation to that question**. In my view that judgment is to be formed by asking what increase in capacity could realistically be achieved, not what might technically or arithmetically be possible. It requires an analysis based on how the infrastructure is likely to perform, not a hypothetical approach assuming speculative figures in relation to each aspect of the calculation of capacity to show what might be possible rather than what is likely to occur in practice**. I do not consider that the use of the wording "is capable" endorses the Claimants' contentions: it is important that these words are to be read in the context of the language of section 23(4) which speaks of the alteration being "expected to have the effect specified in subsection (5)". **The use of the word "expected" is an important qualification which imports the requirement for an assessment which is grounded in the reality of the capacity which might be achieved, rather than one which takes a speculative arithmetical approach to all of the inputs to the calculation**. It is clear on this basis that the Defendant's interpretation of the statutory test was one which was sound and a reliable basis for taking the decision as to whether or not the proposal was an NSIP"* (emphasis added).

We appreciate that at the time of accepting the Applicant's DCO application the UK Planning Inspectorate did not have the SSE JR before it.

The SSE JR has now set a precedent in advance of the Secretary of State decision on this DCO. Therefore, the Applicant's reliance on a technical and arithmetic formula for its NSIP Justification can, and respectfully should, constitute a reason for development consent refusal.

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[1] http://www.bailii.org/ew/cases/EWHC/Admin/2020/226.html

[2] Para 22 Applicant's NSIP Justification [APP-008]

[3] Para 23 Applicant's NSIP Justification [APP-008]

[4] Para 34 Applicant's NSIP Justification [APP-008]

[5] http://www.bailii.org/ew/cases/EWHC/Admin/2020/226.html

From: Rob Pridham
To: Manston Airport
Subject: No.51 Mick Saunders Late Rep 270220
Date: 29 June 2020 14:57:35

-----Original Message-----
From: noreply@number10.gov.uk [mailto:noreply@number10.gov.uk]
Sent: 06 March 2020 10:57
To: TOtransfers <TOtransfers@dft.gov.uk>
Subject: Forwarding - Third Runway Heathrow

Please find below a Treat Official e-mail received via the 10 Downing Street website for your department to respond to.

From: "Mick Saunders" [redacted]

Address: [redacted]

Date Sent: 27 Feb 20 11:48

Subject: Third Runway Heathrow

Sir, Can I point out that there is a third Runway in the Southeast not to far away as the Crow flies from Heathrow. Already built and until a few years ago fully operational.
I am talking about Manston in Thanet Kent.
To free up capacity at Heathrow just stop all freight flights and give the slots to Passenger flights. I know Airliners also carry freight. I am talking about the freight only flights. Make Manston a Duty Free Bonded area. Make all freight flights use it. Most of the Locals want Manston Reopened. There is a fairly new dual carriage way road that was completed a couple of years back. The HS1 rail route is not to far away. The east of Dartford Crossing of the Thames hopefully will be built by 2025. Manston has a lot to go for it and would not Breach Heathrow's third runway or this Governments environmental commitment
Margaret Thatcher 13-10-25 08-04-13 RIP
her only mistake "The Right To Buy"

From: Rob Pridham
To: Manston Airport
Subject: No.52 John Jeapes Late Rep 27020
Date: 29 June 2020 14:59:32

-----Original Message-----
From: noreply@number10.gov.uk [mailto:noreply@number10.gov.uk]
Sent: 06 March 2020 11:27
To: TOtransfers <TOtransfers@dft.gov.uk>
Subject: Forwarding - Heathrow Expansion

Please find below a Treat Official e-mail received via the 10 Downing Street website for your department to respond to.

From: "John Jeapes" [redacted]

Address: [redacted]

Date Sent: 27 Feb 20 14:16

Subject: Heathrow Expansion

This morning, the Court of Appeal ruled that the government's decision to approve the airport expansion was unlawful on the grounds that planning policy had not been properly followed in light of UK commitments to the Paris Agreement on climate change. Judges noted that the government was aware of its decision before it was made public and were yet to seek permission to appeal. A spokesperson for the prime minister confirmed the government's position was to accept the ruling. We have a viable runway at Manston capable of taking the largest cargo aeroplanes. It doesn't make sense to have an asset we are not using. Would this be a good time to look again at the feasibility of Manston, especially when we have a company looking to inject finance into this very airport

---

From: Rob Pridham
To: Manston Airport
Subject: No.53 Robert Clarke Late Rep 270220.
Date: 29 June 2020 15:02:09

-----Original Message-----
From: noreply@number10.gov.uk [mailto:noreply@number10.gov.uk]
Sent: 06 March 2020 12:17
To: TOtransfers <TOtransfers@dft.gov.uk>
Subject: Forwarding - Just a thought.

Please find below a Treat Official e-mail received via the 10 Downing Street website for your department to respond to.

From: "Robert Clarke" [redacted]>
Address: [redacted]
Subject: Just a thought.

Dear Prime Minister (RT. HON. BORIS JOHNSON MP),

As the high courts have ruled against the Heathrow 3rd expansion run away.

I ask; If Ramsgate airport has not been built on yet, why not reopen it and expand it to equal Heathrow, whilst bringing greatly needed jobs to the area?

Respectively Yours,
Robert Clarke. ESQ.
(Party Member number: - 427754960)

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Captain Christopher Woodman Late Rep
Date: 29 June 2020 17:10:02

-----Original Message-----
From: noreply@number10.gov.uk <noreply@number10.gov.uk>
Sent: 06 March 2020 12:12
To: TOtransfers <TOtransfers@dft.gov.uk>
Subject: Forwarding - Manston Airport

Please find below a Treat Official e-mail received via the 10 Downing Street website for your department to respond to.

From: "Captain Christopher Woodman" [redacted]
Address: [redacted]
Subject: Manston Airport

Dear Boris
I am a retired airline Captain-Virgin Atlantic and Dan-Air.Now that Heathrow's extension has hopefully been hit on the head,may I suggest that Manston Airport be reopened.While it is not your proposed Thames airport it is an excellent airfield with a high speed rail link,an adjacent motorway and new Cargo sheds.The runway is long and in an area that is not very noise sensitive, being near the sea.
If one could move all of Heathrow's cargo movements to Manston there would be many slots released for further passenger aircraft. There is still a considerable amount of cargo carried in passenger aircraft holds,but at least the purely cargo aircraft would be removed.It might also be worth considering removing pure Cargo flights from Gatwick.
I will be in London from the 10th to the 12th March for my 70th Birthday,and would be very happy to discuss my views with anyone available,as I have 47 years experience in the industry.
Yours sincerely
Chris Woodman
[redacted]

[redacted]

HOUSE OF COMMONS
LONDON SW1A 0AA

28/02/2020

The Rt Hon Grant Shapps MP
Department of Transport
33 Horseferry Rd,
Westminster,
London, SW1P 4DR

RECEIVED ON
04 MAR 2020
PRIVATE OFFICE

[redacted]

Manston Airport

We write in the light of the judgement on the third runway at Heathrow to ask that the determination of the DCO application for Manston Airport be expedited.

We believe that all of the questions arising from the application - some of them posed long after the deadline for submissions and the public inquiry - have been satisfactorily answered. Manston has been an airfield for more than a hundred years and is designated as such in the current local plan.

In the light of the Heathrow decision it is clear that there will not be a third runway at that airport for some time to come, if at all. There will though, post Brexit on 31st December, be a considerable demand for additional airfreight capacity if we are to prosper outside Europe as a trading nation. Manston airport is a 'shovel ready' project that can help the UK to meet that demand and that has attracted the necessary many millions of pounds in potential investment.

We regard it as vital in the national interest that a positive determination is made in the immediate future so that work can commence to enable the airport to reopen. We would therefore be grateful if you could give an indication of the timescale within which this decision, already delayed, will be taken.

[redacted]

With best wishes.

[redacted]

Sir Roger Gale MP – North Thanet

[redacted]

Craig Mackinlay MP – South Thanet

Department for Transport

From the Minister of State
Andrew Stephenson MP

Great Minster House
33 Horseferry Road
London
SW1P 4DR

Tel: 0300 330 3000
E-Mail: andrew.stephenson@dft.gov.uk

Web site: www.gov.uk/dft

Our Ref: MC/281730

Sir Roger Gale MP and Craig Mackinlay MP
House of Commons
London
SW1A 0AA

2 April 2020

Dear Sir Roger and Craig,

Thank you for your letter of 18 January and your joint letter of 28 February to Grant Shapps about the Manston Airport Development Consent Order planning application. Apologies for the delay in responding to you.

Whilst I am unable to comment further on the specifics of this live planning application, I can confirm that a Written Ministerial Statement was made by Nusrat Ghani on 16 January 2020 that extended the statutory deadline for determining the application until 18 May 2020. This was considered necessary to allow for further consultation on the application. I understand that the extension to the deadline for determination of the Manston Airport planning application must be frustrating and whilst decisions to extend statutory deadlines for such transport planning applications are not taken lightly it is important that the representations received during the consultation are carefully considered before the application is determined and therefore an extension was considered necessary on this occasion.

With regards to the other points raised in your letter, I hope you will appreciate that I am unable to comment on what is a live planning application. However, I can assure you that your representation will be taken into account in the decision on the application in due course.

ANDREW STEPHENSON MP

MINISTER FOR STATE FOR TRANSPORT

F om Rob idham
To
Subject [redacted] J ll Hogben ate Rep
Date 29 June 2020 16 53 31

Or ginal Message
From SHAPPS G ant [l g pp p@p l]
Sent 28 February 2020 17
To TransportSecretary <TransportSecretary@dft go uk>
Subject FW Manston A rport

From J l [redacted] >
Sent 28 February 2020 10 11
To SHAPPS G ant <grant shapps mp@parliament uk>
Subject Manston Ai port

Dear Mr Schapps

The De elopment Consent Order o return this h stor c aerodrome to a working freight airport is coming up this month There s a great swathe of support for this to happen Mans on played a i al part in winning WWII w th the RAF fl ghts out of the 'drome

Manston has the longest runway n England and is just near the mouth of the Thames so fre ght can be brought down hopefu ly to a new railway station on the Ramsga e to London l ne off loaded to the airport and flown straight out o er he sea lessening fre ght po lu ion on our roads to Do er

The re opening of Mans on Airport would create o er 8 000 obs for the local communi y there are not many job opportunit es n Thanet Ri er Oak Strategic Partne s ha e bri liant plans for the a rport which may well include flying people n he future

Please gi e the re opening of this Kent Airport your support our MP Sir Roger Gale is ery much in fa our as is Cra g McK nley for Ramsgate

Thank you for lis ening

Mrs Jill Hogben

Sent from <h tps /gbr01 safelinks protect on outlook com/?url=https%3A%2F%2Fgo microsof com%2Ffw ink%2F%3FL nkId%3D550986&amp data=02%7C01%7CManstonAirpor % 0planning nspectorate go uk%7Cd231fcc3 609 fbe0 5808d81c 9156%7C5878df986f88 8ab9322998ce557088d%7C1%7C0%7C637290 28102688093&amp sdata=hZqkVdWLi82gEo6 B6 1CIKqn%2Bs26zq2f8hC%2Fu%2BadM %3D&amp reser ed=0> Ma l for W ndows 10

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Paul Turner Late Rep 280220
Date: 29 June 2020 16:59:57

-----Original Message-----
From: SHAPPS, Grant [mailto:grant.shapps.mp@parliament.uk]
Sent: 28 February 2020 17:43
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: FW: Manston Airport / London

From: [redacted]
Sent: 28 February 2020 13:25
To: SHAPPS, Grant <grant.shapps mp@parliament.uk>
Cc: GALE, Roger <GALERJ@parliament.uk>
Subject: Manston Airport / London

Dear Secretary of State for Transport,

I wanted to reach out to you, to see if the department for transport have considered the former Royal Air Force Manston base, briefly Kent International and closed in 2014 as a possibility for reopening as London Manston Airport, following the courts ruling against LHR third runway.

At 2,748 m (9,016 ft) long, it has the 11th-longest civilian runway in the United Kingdom. The runway was originally built with three "lanes" during the war to handle emergencies, and is among the widest in Europe & was an emergency diversion runway for LHR and Concorde.

* RAF Manston is currently home to the MOD, Defence Fire Training and Development Centre (DFTDC) & HQ for the 3rd battalion Princess of Wales Royal Regiment (PWRR).

* The airfield is currently closed and prime to be redeveloped into a prime London Airport.

* Manston is 70 miles from the center of London and is approximately 30 minutes by train

* There is an improved road network to east Kent and Manston Airport and the Thanet Way A299 and A28 passes close by the former Airport.

* There is land attached to the airport that could be developed into Terminal building, train station etc

* There is already provision for parking, that could be easily be expanded.

* There is an improved rail network to Birchington-on-Sea & Ramsgate - a possible spur into Manston could be explored?

* It would bring much needed jobs and investment into Thanet and Kent.

Yours faithfully

Paul Turner

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Lee Sellman Late Rep 280220
Date: 29 June 2020 17:01:38

-----Original Message-----
From: SHAPPS, Grant [mailto:grant.shapps.mp@parliament.uk]
Sent: 28 February 2020 17:43
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: FW: Manston airport

From: Lee Sellman [redacted]>
Sent: 28 February 2020 14:21
To: SHAPPS, Grant <grant.shapps mp@parliament.uk>
Subject: Manston airport

Mr Shapps
The recent decision to deny the 3rd runway at Heathrow airport from being constructed because of unacceptable levels of noise and pollution, as well as adding to the UK's carbon emissions is the right decision. I hope you will also deny the re-opening of the Manston airport in Thanet on the same grounds to comply with the government's 2050 carbon neutral strategy Thanks Lee Sellman

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Ron Lane Late Rep 280220
Date: 29 June 2020 17:08:46

-----Original Message-----
From: noreply@number10.gov.uk [mailto:noreply@number10.gov.uk]
Sent: 06 March 2020 13:26
To: TOtransfers <TOtransfers@dft.gov.uk>
Subject: Forwarding - HEATHROW

Please find below a Treat Official e-mail received via the 10 Downing Street website for your department to respond to.

From: "Ron Lane" [redacted]

Address: [redacted]

Date Sent: 28 Feb 20 8:32

Subject: HEATHROW

May I suggest a possible resolution of the 3rd runway situation. It seems that this extra runway is wanted to increase capacity. I heard yesterday that a considerable amount of import/exports comes through Heathrow via freight flights. Why not open up somewhere like Manston for freight flights and stop these at Heathrow. Would that surely not release sufficient extra passenger capacity, and provide new jobs at the freight airport.

From:	Rob Pridham
To:	Manston Airport
Subject:	[redacted] Gordon Henderson MP (Mrs P Hayden) Late Rep 020320 and Minister Reply
Date:	29 June 2020 17:14:38
Attachments:	Gordon Henderson MP Reply.pdf

From: oliver.merrony@parliament.uk [mailto:oliver.merrony@parliament.uk]
Sent: 02 March 2020 10:33
To: DFT Ministers <DFT.Ministers@dft.gov.uk>
Subject: FW: manston (Case Ref: GH4156)

Dear Sir/Madam

Please see the below email I have received from Mrs Hayden regarding Mantson Airport's use to solve the Heathrow 3rd runway issue.

I would be grateful if you would look into her suggestion.

Regards

Oliver Merrony

Caseworker to Gordon Henderson MP
Member of Parliament for Sittingbourne & Sheppey

Constituency Office
Top Floor, Unit 10, Periwinkle Court Business Centre
Church Street, Milton Regis
Sittingbourne, Kent, ME10 2JZ
Telephone: 01795 423199
Email: oliver.merrony@parliament.uk
Website: www.gordonhendersonmp.org.uk
Facebook: www.facebook.com/groups/gordonhendersonm

From: David & Pauline Hayden
Sent: 29 February 2020 07:55
To: HENDERSON, Gordon
Subject: Re: manston

Mrs P Hayden, [redacted]

On Fri, Feb 28, 2020 at 2:22 PM David & Pauline Hayden wrote:
It occurs to me, and I expect to countless others, that there is no need for a third runway at Heathrow, or a second one at Gatwick. All the problems could be solved by expanding Manston to enable it to become the hub for refueling and freight flights only. Nearby motorways could be extended, adapted as required. Far less interruption and thousands of new jobs.
PLEASE SUBMIT THIS AT PARLIAMENT

Department for Transport

From the Parliamentary
Under Secretary of State
Kelly Tolhurst MP

Great Minster House
33 Horseferry Road
London
SW1P 4DR

Tel: 0300 330 3000
E-Mail: kelly.tolhurst@dft.gov.uk

Web site: www.gov.uk/dft

Our Ref: MC/281502
Your Ref: GH4156

Gordon Henderson MP
House of Commons
London
SW1A 0AA

18 MAR 2020

Dear Gordon,

Thank you for your email of 2 March, enclosing correspondence from your constituent, Mrs Pauline Hayden [redacted] about the Manston Airport Development Consent Order planning application.

As you may be aware, the Secretary of State is currently considering the Examining Authority's Report and recommendation on the application. In the circumstances, you will appreciate that Transport Ministers are unable to comment on this live planning application. However, I can assure you that your constituent's representation will be taken into account in the decision on the application in due course.

Please extend my gratitude to Mrs Hayden for taking the time to write in with her suggestion.

[redacted]

KELLY TOLHURST MP [redacted]

MINISTER FOR AVIATION, MARITIME AND SECURITY

ANCON

The Rt Hon Priti Patel MP
Secretary of State for the Home
Department
Home Office
2 Marsham Street
London

28 February 2020

Dear Rt Hon Priti Patel MP,

MANSTON AIRPORT – KENT

I want to offer our company support towards the opening of Manston Airport in Kent. I gather that it is currently undergoing a DCO and I feel that it is essential as Secretary of State that you are aware that businesses and industry need the opening of this regional airport as soon as possible for the growth opportunities it provides, to enable better transportation and opportunities for expansion in the region providing jobs and successful economic benefits.

ANCON is set to expand rapidly within Kent in the coming years. Manston Airport is seen as an essential part of this growth. Primarily due to the access for both export shipments and travel. We will most likely leave the area or even the country if we do not see significant improvements in the infrastructure of air travel for Kent.

We have a subsidiary operation in the USA and have witnessed first-hand how commercial airports smaller than Manston do well with Cargo and with Passenger traffic. I request that you support the case for Manston Airport to be awarded all its regulatory requirements as soon as possible to support the current national position regarding Brexit making sure the infrastructure is robust for the future of business and tourism in the region.

Sincerely,

[redacted]

Wesley Baker
CEO of ANCON Medical Inc.
Director of ANCON Technologies Ltd.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.62 Five10Twelve Ltd Late Rep 100320
Date:	29 June 2020 17:16:19
Attachments:	Letter to Secretary of State with New Evidence_March 2020.pdf

From: Samara Jones-Hall [redacted]
Sent: 11 March 2020 00:05
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; [redacted]
Subject: Manston DCO: Letter to Secretary of State with New Evidence_March

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence_March. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

***** Email confidentiality notice *****

This message is private and confidential. If you have received this message in error, please notify us and remove it from your system.

Five10Twelve is a private limited company incorporated in England & Wales under the name Five10Twelve Limited, Company No 8412137

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk
Cc: Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

10 March 2020

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination

As you will be aware the Transport Secretary Right Hon Grant Shapps announced the plan to leave the European Aviation Safety Agency (EASA) after December 31 when EU law will cease to apply to the UK[1].

[1] https://www.bbc.co.uk/news/business-51783580

In the Applicant's Updated Register of Environmental Actions and Commitments (REAC) submitted at Deadline 11[2], the Applicant commits to "*Bans on older, dirtier aircraft*" 3 times in relation to mitigating: Potential GHG emissions; Damage to habitats and / or species as a result of emissions from aircraft movements on the ground and during the Landing and Take Off cycle; and Effects upon human health and ecological resources from aircraft movements on the ground and during the land and take-off (LTO) cycle.

The ExA's Second Written Questions at AQ.2.6[3] asked the following of the Applicant:

"The Applicant Register of Environmental Actions and Commitments (REAC) The Updated REAC references 'Bans on older dirtier aircraft'.

- *i. Confirm what aircraft would be banned and how this ban would be applied.*
- *ii. Show where this is secured in the draft DCO".*

In the Applicant's Response, the Applicant is silent as to which aircraft would be banned and states the following:

"The Internal (sic) Civil Aviation Organisation (ICAO) have developed a CO2 standard for aircraft with the support of the Committee on Aviation Environmental Protection (CAEP). This Standard is one of a number of elements aimed at tackling the impact of international aviation on climate change. ***Compliance with these requirements will become a pre-requisite for the issuance of an aircraft or aircraft engine EASA Type Certificate, which is required to operate aircraft.*** *The standard will be applicable as of 2020. ii. Given that compliance will be a pre-requisite for certification this does not need to be secured in the DCO[4]"* (bold added for emphasis).

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2 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004663-Updated%20Register%20of%20Environmental%20Actions%20and%20Commitments.pdf

3 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003954-Answers%20to%20SWQs.pdf

4 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003954-Answers%20to%20SWQs.pdf

Without prejudice to the appropriateness and/or robustness - or otherwise - of the Applicant's proposed method of securing its alleged commitment to banning "*older dirtier aircraft*", it is clear that the Applicant can no longer rely on EASA certification.

This will significantly and materially impact:

- The submissions of statutory bodies in relation to the Manston DCO, not least the Report on the Implications for European Sites and Natural England's comments on the Report on the Implications for European Sites[5]; and

- The Applicant's alleged calculation as to the amount of potential GHG emissions[6] and therefore the Applicant has, further, failed to satisfactorily demonstrate that the scheme would not have a material impact on the Government's ability to meet the Net Zero target and its commitments under the Paris Agreement; and

- Effects on human health and ecological resources from aircraft movements on the ground and during the land and take-off (LTO) cycle.

Therefore, the Applicant's reliance on the EASA certification can, and respectfully should, constitute a reason for development consent refusal.

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5 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004583-Natural%20England%20comments%20on%20RIES_1Jul19.pdf

6 Page 90 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004663-Updated%20Register%20of%20Environmental%20Actions%20and%20Commitments.pdf

From:	Rob Pridham
To:	Manston Airport
Subject:	No.63 BDP Pitman (Applicant) Late Rep 190320 - Applicant"s comments on submissions to Secretary of State"s consultation [BDB-BDB1.FID9947610]
Date:	29 June 2020 17:25:03
Attachments:	Applicant_s comments on responses to SoS January consultation.PDF

From: GRAHAM Jessica [mailto:JessicaGRAHAM@bdbpitmans.com]
Sent: 19 March 2020 13:07
To: Rob Pridham <Rob.Pridham@dft.gov.uk>
Cc: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; WALKER Angus <AngusWALKER@bdbpitmans.com>
Subject: Manston Airport DCO - Applicant's comments on submissions to Secretary of State's consultation [BDB-BDB1.FID9947610]

Dear Rob,

Please find attached the Applicant's comments on submissions made in response to the Secretary of State's consultation of 17 January 2020.

Kind regards
Jess

BDB PITMANS

Jessica Graham **Solicitor**
T +44 (0)20 7783 3982
[redacted]
W www.bdbpitmans.com

For and on behalf of BDB Pitmans LLP
50 Broadway London SW1H 0BL

BDB PITMANS

Rob Pridham
Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR

Your Ref

Our Ref
JNG/ADW/166055.0003

Date
19 March 2020

By Email Rob.Pridham@dft.gov.uk

Dear Sir

Proposed Manston Airport Development Consent Order
PINS Application ref: TR020002
Applicant's comments on responses to the Secretary of State's consultation of 17 January 2020

Please find enclosed with this letter the Applicant's comments on submissions following the Secretary of State's request for comments and further information on 17 January 2020. The Applicant has not commented on every submission made by parties in response to the Secretary of State's consultation, but has responded only to specific points where it was thought helpful to provide clarification. The Applicant's comments are set out at enclosures 1 and 2.

The Applicant has also made comment on the Court of Appeal Airports National Policy Statement judgment at enclosure 3.

The Applicant is mindful that the Government is currently dealing with the situation unfolding around the spread of coronavirus and is sympathetic to the new pressures that this puts upon it, although is nevertheless hopeful that a decision can still be made soon, noting that the effects of this outbreak underline the need for trade resilience in the UK.

Yours faithfully

[redacted]

BDB Pitmans LLP
T +44 (0)20 7783 3441
[redacted]
E anguswalker@bdbpitmans.com

enc

BDB PITMANS

Enclosure 1

The Applicant's comments on responses to the Secretary of State's consultation of 17 January 2020

Responder	Paragraph reference	Responder's comments	Applicant's response
Historic England	2.1-2.3	1) Historic England's position regarding Article 6(3) and requirement 3 was initially set out in their Deadline 11 submission, where they proposed alternative wording to address points that were not agreed. The current proposed wording of Article 6(3) adds the phrase "as defined in the further assessment required in requirement 3(3)(a)" which Historic England consider results in ambiguity regarding the potential for harm from deviations and the worthiness of heritage assets for conservation. Historic England allege that it is unclear who out of the relevant planning authority, KCC, Historic England or RSP would make these decisions as part of the further	1) The Applicant notes that Historic England makes two points in relation to the proposed amendment to Article 6(3): *"The authorised development may not deviate within the limits of deviation in this article to such as an extent as would harm heritage assets of national importance and their settings as defined in the development masterplan that are considered worthy of conservation by the relevant planning authority, Kent County Council and Historic England as defined in the further assessment required in requirement 3(3)(a)"* Firstly, that decisions should be made by the relevant planning authority, KCC and Historic England. The Applicant would

		heritage assessment. Historic England is of the view such decisions should be made by the relevant planning authority, KCC and Historic England and suggest "defined" is changed to "informed" to remove ambiguity.	suggest this is the position as already reflected in the proposed wording for Article 6(3), which states that it is "the relevant planning authority, Kent County Council and Historic England" who will consider the worthiness of heritage assets for conservation. Secondly, Historic England also requests that the word "defined" is changed to "informed" in order to remove ambiguity. The Applicant would suggest that this amendment should be "informed *by*". The Applicant disagrees that this amendment is needed to remove ambiguity but is content to accept the amendment.
	2.4	2) Regarding requirement 3, Historic England agree with the wording set out in 3(a), 3(b) and 3(c).	2) Noted.
Kent County Council	3	KCC does not know how the education contributions were calculated nor how the schools listed were identified. KCC says it provided an estimate of £300,000 in relation to how much it would cost to insulate and ventilate a primary school in response to the ExA's Second Written Questions but the exact amount will depend on the matters listed in their response.	The ES, [APP-034] presented screening criteria for schools as LAeq, 16hr. Schools lying within the 60dBLAeq, 16 hr precautionary contour automatically qualify for noise insulation. No schools lie within this. Nonetheless, the importance of schools was acknowledged by the Applicant who has made a further provision for schools affected by aircraft noise exceeding 50dBLAeq to be assessed and if necessary compensated. At the request of the ExA, the Applicant considered an indicative distorted timetable (refer to Ns2.16) which identified 7 further schools which may be affected by the scheme.

			However, as noted in the Applicants written summary of oral submission put at ISH6 [REP8-015], all schools should be assessed on a case-by-case basis in order that the needs of individual schools can be taken into account rather than offering a one-size-fits-all solution. The sum of £139,000 per annum for affected schools for 20 years has been arrived at by applying per pupil funding under the National Funding Formula to each of the schools in question. The formula can be found at: https://www.gov.uk/government/publications/national-funding-formula-tables-for-schools-and-high-needs-2019-to-2020.
	5	KCC says it is not aware any methodology has been set out by RSP, especially in respect of the revised Noise Mitigation Plan. In summary, KCC's position is described as follows: • The evidence base to support the contributions offered is either unclear, or is not supported by any evidence;	The Applicant would refer to its response to the SoS' request for further information No.5, in which it has set out the work undertaken to identify the mitigation scheme.

		• The mitigation offered has not been properly costed and projects identified are not deliverable on the basis of the contribution proposed; • The mitigation offered is not acceptable, as it does not appropriately mitigate the impact of the development; and • The triggers for payment are not supported by robust highway modelling about when unacceptable impacts will arise at the respective junctions and when payment should therefore be due.	
	18	KCC alleges that the proposed requirement within the DCO would assist in managing future PM peak hour traffic movements, in line with forecasts identified within the applicant's Transport Assessment. Therefore, KCC supports the proposed requirements	The Applicant would refer to its response to the SoS' request for further information No. 18, in which it has proposed alternative wording to ensure that any potential change or impact would be monitored and, in the event that impacts over and above those reported in the ES arise, additional restrictions or surface infrastructure improvements would be introduced to ensure that those effects are limited to those reported.
Natural England		Natural England say that its comments on the RIES [REP10-007] were based on the noise contour maps produced by the Applicant [REP4-018]) and on the assessment contained in the Appendices to the Applicant's Answers to the 4th Written Questions, Appendix Ec.4.2: North Pegwell Bay: Noise and Turnstone [REP9-010]. As noted in Five10Twelve's letter	The Applicant would refer to its response to the SoS' request for further information No. 21 [R21], in which it sets out why it does not consider that the effects reported in the ES [APP-034] are inaccurate. The RIES is based on the same assessments and assumptions as the rest of the DCO application documents are based on and

		(27 October 2019), Natural England say that its conclusions regarding noise impacts on the features of the Thanet Coast and Sandwich Bay SPA/Ramsar were based on the Applicant's assertion (in [REP9-010]) that the flightpaths would be similar to those used by the previous Manston Airport, and at least no closer to Pegwell Bay than previously. Five10Twelve's letter (27 October 2019) implies that a different set of assumptions has been used to calculate impacts on human receptors. Natural England's principal concern is that the Report on the Implications for European Sites (RIES) is based on the same assessments and assumptions that the rest of the DCO application documents are based on, and that these represent the most realistic 'worst case' development scenario (i.e. following the precautionary approach required by the Habitats Regulations). We note that the letter submitted by Five10Twelve, dated 27 October 2019, calls this into question.	represent the most realistic 'worst-case' development scenario. The Applicant would like to refer to its response to Ns4.12 and Appendix ISH6 - 27.
Network Rail		Protection from Compulsory Acquisition – Network Rail does not object in principle to the Order, however Network Rail does object to the Order conferring on the Promoter the unfettered power to compulsorily acquire rights over land or subsoil which forms part of Network Rail's operational railway and which Network Rail rely upon for the carrying out of its statutory undertaking.	The Applicant is not proposing any works to the pipeline that runs under the railway but is simply seeking to regularise the situation where no party accepts that it owns the pipeline or any maintenance obligation. Owning the pipeline for all of its length except where it ran under the railway, where it would be accessed via an easement would be anomalous and the proposal is not accepted by the Applicant.

		Network Rail does recognise that the DCO Scheme requires the use of subsoil under and use of other rights over Network Rail's operational railway. However, Network Rail would expect the necessary subsoil rights or other rights to be acquired through an agreed easement rather than through the exercise of compulsory acquisition powers. This approach must be adopted to ensure that Network Rail can comply with its statutory duties to maintain the safe, efficient and economic operation of the railway and to ensure such rights do not affect the continued use of the railway by passenger and freight operators.	
Thanet District Council	14	Thanet District Council say that it agreed the following wording with the Applicant after the final hearing on the Draft Development Consent Order for requirement 19: *'Buildings comprised in Works Nos. 15, 16 and 17 must not be occupied before:* *a) the aerodrome is granted EASA certification; and* *b) the commencement of operation of Work No.1 (or any part thereof).'* TDC say that the requirement is to ensure that the Airport use on the site to the south of Manston Road has come into operation prior to the occupation of any units on the	The Applicant does not consider that this requirement is necessary or appropriate if its rationale is to ensure that the development on the northern grass is airport-related, as it is already bound by such an obligation, and inserting a timing restriction would not make development any more airport-related. The Applicant may well wish to construct and occupy airport-related development in preparation for the reopening of the airport.

	15	'northern grass site', meaning there is a clear connection between "airport-related" development and the authorised development (also supported by the definition of "airport-related"). The proposed wording of Requirement 19 would not require any works to have begun under Works 1 to 11 and 13, whereas the previous wording included a clear identification that the commencement of work on the airport site must occur prior to the occupation of any of the airport-related development on the "northern grass" area. TDC respectfully requests that the Secretary of State revises the wording of the proposed requirement to include this restriction. The new definition narrows the airport-related development approved to be "directly related to and required to support operations" at Manston Airport, however Thanet District Council reiterates the need for the definition to state that the development in question also be "required to be located at Manston Airport to support those operations".	The Applicant does not agree to this amendment, since it would add an unnecessary burdensome condition on development on the 'northern grass' of having to show that it could not be situated elsewhere. The DCO should grant permission for the development of this area and has been thoroughly examined on the issue – this would effectively introduce a further consent requirement.
Defence Infrastructure Organisation			See Applicant's response at Enclosure 2 below.

BDB PITMANS

Enclosure 2

The Applicant's comments on submissions made on behalf of the Ministry of Defence

Consent under s135 for land acquisition

In response to the submission from the Defence Infrastructure Organisation (DIO), the Applicant is grateful for the first indication of its attitude towards compulsory acquisition of land in which it has an interest, the Applicant having attempted to obtain this information for over two years.

However, having acquired the airport from its owner Stone Hill Park Ltd by agreement towards the end of the examination, the Applicant no longer needs consent for much of the land and can develop the airport without the remainder despite some inconvenience.

The land concerned can be divided into nine categories, as follows:

Plots	Response
018, 018a, 018b, 025, 042a, 044, 045, 045a, 014, 024, 050a, 054, 102, 103, 114, 114a	The DIO has given consent to the compulsory acquisition of these plots
026	Consent not given, no reason given. This is the aerial farm, which has not been used for over ten years and is believed no longer to be supplied with services. It is clearly redundant and the DIO have allegedly been seeking confirmation of this internally throughout the examination, unsuccessfully. However as this land is at the edge of the airport site the Applicant can work round it until the issue is resolved.
038	Consent not given, no reason given. This is the motor transport unit that serves the nearby Defence Fire Training and Development Centre. On 18 July 2019 Earl Howe announced in Parliament that this site would close and move to Moreton-in-Marsh in the Cotswolds. As this land is at the edge of the airport site the Applicant can work round it until the issue is resolved.
041	Consent not given. This is the HRDF, an active piece of apparatus that the Applicant has gone to great lengths to relocate. See separate response below on the issues surrounding this.
045b	Consent not given, with no reason given, for the temporary occupation of eight square metres of highway verge for which the

	Applicant was intending to occupy for highway works. Although inconvenient, the Applicant can avoid this very small plot when it implements its highway works
015, 015a, 026a, 027, 028, 036, 037, 039, 041a, 043, 043a, 046, 047, 047a, 048a, 049, 049a, 049b, 050, 050a, 050b, 050c, 050d, 050e, 051b, 053a, 053b, 055, 058, 068, 069, 070, 070a	Consent not given with no reason given. This is the main airport site and all these plots are now owned by the Applicant, which therefore no longer needs compulsory acquisition powers.
016a	Consent not given with no reason given for the acquisition of 50sqm of highway verge at the south-west corner of the airport site. The Applicant can avoid this small plot despite the inconvenience.
048, 048b	Consent not given with no reason given for the acquisition of two plots belonging to the museums. The Applicant withdrew these from the scope of compulsory acquisition powers during the examination and are no longer shown as coloured on the land plans and are indicated as not subject to acquisition in the Book of Reference.
017, 019b, 020, 020a, 023, 040, 040a	Consent not given for various small strips of land around the perimeter of the airport, with the reason that the MoD would lose a clawback provision, which lasts until 2025. The Applicant would be happy to acquire these plots while preserving the clawback provision.

The HRDF

The Applicant disagrees with the characterisation of what has happened during the examination. Through the unexplained hostility to the project by one individual on this single issue, the MoD remains the only significant barrier to the implementation of the project and the benefits it will bring. Nevertheless the Applicant has accepted that those parts of the development that would penetrate the area intended to be safeguarded around the HRDF cannot be carried out without the consent of the MoD, which clearly amounts to sufficient protection to allow the application to be granted.

The Applicant engaged with the MoD's own contractor Aquila (at its suggestion) to examine the feasibility of relocating the HRDF, and Aquila recommended three locations. To say that the Applicant has submitted no evidence about relocation is simply untrue – the MoD considers this in its own submission on the last day of the examination. The Applicant would be pleased to engage with the MoD further and has made many attempts to do so.

Furthermore, the MoD alleges that the HRDF is safeguarded, but upon inquiry of the local authority Thanet District Council, it has not received anything to that effect from the MoD and does not consider the site to be safeguarded. The MoD may have issued a safeguarding order but it has failed to implement it and planning applications intruding into the zone that would have been protected by the safeguarding direction are allowed to go ahead.

Proposed amendments to the Secretary of State's suggested requirement 24

The Applicant accepts the amendment to requirement 24(1) suggested by the MoD. The Applicant does not agree that the additional sentence suggested for requirement 24(3) is necessary – the MoD already has to consent to development within the safeguarded zone, which should be sufficient. The drafting is also too restrictive as other solutions may be satisfactory – and indeed the safeguarding direction is ineffective in any case.

BDB PITMANS

Enclosure 3

The Applicant's comment on the Court of Appeal Airports National Policy Statement judgment

The essence of the judgment is that the Airports National Policy Statement did not take the Paris agreement into account when fulfilling the obligation to set out how climate change mitigation policy has been taken into account; the agreement became policy at or shortly after its ratification and did not need to wait to be enshrined in UK law.

The enactment of 'net zero' in June 2019 did effectively enshrine the Paris agreement in UK law (except, according to the judgment, non CO2 emissions and post-2050 considerations). This was just before the end of the examination into the application. The Examining Authority asked about it in its fourth round of questions issued on 21 June 2019 (question G.4.1(iv), asked here [PD-020] and answered here [REP9-006]), and the Secretary of State asked about it in his supplementary questions in January 2020 (Request No. 22). The issue has therefore been taken into account in the examination, recommendation, and decision stages of this project and is not affected by the same error as the Airports National Policy Statement.

The declaration that the ANPS has no effect does not affect the basis for decision-making in relation to this application. As paragraph 1.41 of the ANPS said,

"*The Airports NPS does not have effect in relation to an application for development consent for an airport development not comprised in an application relating to the Heathrow Northwest Runway, and proposals for new terminal capacity located between the Northwest Runway at Heathrow Airport and the existing Northern Runway and reconfiguration of terminal facilities between the two existing runways at Heathrow Airport. Nevertheless, the Secretary of State considers that the contents of the Airports NPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the South East of England. Among the considerations that will be important and relevant are the findings in the Airports NPS as to the need for new airport capacity and that the preferred scheme is the most appropriate means of meeting that need*."

The decision was therefore already to be taken under s105 of the Planning Act 2008 rather than s104, and still is. The only effect that the declaration has on the decision is therefore that wherever the ANPS was considered to be important and relevant when the Examining Authority made their recommendation, this should be ignored or re-expressed in light of other policy. The Applicant's strong case that for the project remains unaffected.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.65 Stephen John Late Rep 040420
Date:	29 June 2020 17:28:10

From: [redacted]
Sent: 04 April 2020 18:49
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Manston Airport Decision

Dear Mr. Shapps
With reference to next months decision on Manston airport I would be most grateful if you could take into consideration the infringement in peoples sleeping patterns, (as night flight were allowed), the disruption and pollution including bits of aircraft falling onto property in Ramsgate, and consequently turn down the application to reopen the airport. Being in the top north east corner of Kent it only therefore has a 25% catchment area, and that was one of the reasons why the other 3 airport owners failed. Please let the land be used for housing.
Yours sincerely
Stephen Mannion

From:	[redacted]
To:	Manston Airport; transportandworksact@dft.gov.uk; Rob.Pridham@dft.gov.uk
Subject:	Representation relating to: NSIP: TR2020002 Proposed Manston Airport
Date:	23 April 2020 11:38:33
Attachments:	Response on new evidence April 2020 FINAL.odt Only way to Zero is stop flying FT.rtf Absolute-Zero-digital-280120-v2.pdf Excess mortality due to air pollution cvaa025.pdf Pollution cofactor for Covid19 deaths.doc Pollution co-factor in Covid19 deaths 1-s2.0-S0269749120320601-main.pdf 1-s2.0-S0048969720321215-main.pdf Loss of life expectancy from air pollution cvaa025-1.pdf carbon-leakage-report.pdf

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From: Chris Lowe. Interested party: 20014275

For the Attention of :

The Rt. Hon. Grant Shapps, The Secretary of State for Transport,Department for Transport,Zone 1/18, Great Minster House, 33 Horseferry Road, London SW1P 4DR

Planning Inspectorate, Nationally Significant Infrastructure Projects

Rob Pridham, Senior Planning Manager, Transport Infrastructure Planning Unit, East Wing, Albany House, 94-98 Petty France, Westminster, London, SW1H 9EA

Dear Sirs,

I attach my representations on relevant new information that has been published recently and further information to assist you in refusing of this Application.

I hope that this is helpful to you.

Chris Lowe

[redacted]

Attachments:

1: Representation

2: REFERENCES

REF: 1
REF: 2
REF: 3
REF: 4
REF: 5

REF: 6
REF: 7
REF: 8

NSIP: TR2020002 Proposed Manston Airport

Representation From: Chris Lowe. Interested party: 20014275

The following is relevant new and additional evidence for refusing the Application by RSP for a DCO for Manston.

1 The Stansted Judgement

Clearly the judgement of Dove J in the Stansted Judicial Review (*R (Ross and Saunders (acting on behalf of Stop Stansted Expansion)) v. Secretary of State for Transport* [2020] EWHC 226 (Admin)) supported your department's view that the Stansted Application to increase passenger numbers by 10 million per year should fall to the Local Authority as it is "*unlikely that such an increase*" would occur.

Likewise Manston is even less likely than Stansted to achieve the theoretical target of 10,000 cargo Air Transport Movements per annum.

The local Uttlesford District Council refused Stansted Airport's proposals because of the adverse impacts of noise, air quality and climate change, all of which are relevant to Manston Airport proposals.

2 The Heathrow Judgement

Your attention has been drawn by others to the "the Heathrow JR"*(on the application of Spurrier & others) v Secretary of State for Transport* [2019] EWHC 1070 (Admin) which the Government has agreed not to appeal. The Court decided that the Heathrow expansion proposals cannot go ahead because the National Policy Statement for Airports has not taken account of the UK's current commitments to reduce climate emissions.

Hence the Manston proposals cannot go ahead because it has not been shown to be compliant with all of these commitments.

It is also relevant to note that the Parliamentary Under Secretary of State for Transport (Kelly Tolhurst) confirmed in the House of Commons on 5 March, 2020, that " ..any expansion at at any regional airport at Luton or anywhere else must meet stringent environmental criteria on climate change, pollution and the rest".
So this will also apply to Manston.

Professor Julian M Attwood FREng, of the University of Cambridge, has written in the Financial Times that "The only way to hit net zero by 2050 is to stop flying; Dreaming of electric planes and planting trees will not save our planet" (see: **REF: 1**), because of the need for air transport activity to dramatically decrease to meet Zero Carbon by 2050, and not to rely on potential technology improvements which are uncertain in effect and timescale.

This is elaborated in the report from UK Fires ((**REF: 2** https://ukfires.org/absolute-zero/) of which he was the lead author, in the detailed Aviation section.

Hence with decreasing number of flights to meet climate targets, the industry would be forced to maximise efficiency by the use of fully loaded aircraft and thus make Manston totally uneconomic because their proposed relatively small load per flight would be very inefficient.

3 Webtag

For transport schemes the Department for Transport requires use of Webtag to estimate the potential impacts of proposals.
However, as with the Heathrow Judgement, Webtag has not been updated to comply with the UK's climate emissions requirements.
Hence any costings made using Webtag will be out of date, as the impact of Zero Carbon will be to increase costs and make carbon-generating proposals such as Manston Airport, even less viable

4 Air Pollution and COVID-19

Evidence has now been found that people who suffer from air pollution are more likely to suffer greater harm or death from the current COVID-19 pandemic, from which many people are dying in the UK.
Evidence for this has come from USA and from Italy, and now also from Europe, and these results indicate that this long-term exposure to pollution may be one of the most important contributors to fatality caused by the COVID-19 virus - see attached documents (**REF: 3, 4, 5, 6**).

The publication "Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective" (Cardiovascular Research doi:10.1093/cvr/cvaa025 **REF: 7**), shows the Excess mortality attributable to ambient air pollution. Excess mortality expresses the number of deaths over a given period that would not occur in the absence of exposure.
For Europe, the figures are: 790,00 deaths per annum, which is 133 deaths per 100,000 people, or 1.7 years avoidable loss of life expectancy (LLE)
What this means for Manston Airport is that for 100,000 people in Thanet there are likely to be 133 avoidable deaths a year from air pollution but if the airport were to go ahead, then this number would increase to an even higher number, which is unacceptable.
It is striking that Australia, with the strictest air quality standards worldwide has only 47 deaths per 100,000 people or 0.2 LLE.
So if Thanet achieved Australian standards that would save 1.5 years of longer life expectancy, so it is essential to prohibit any proposal, such as Manston Airport, which could not avoid increasing air pollution.

5 Noise

Evidence is already becoming available of how the lack of air and road traffic is improving the environment, and in particular reducing noise significantly.
For example, Noise bulletin April 2020, Issue 141 reports that in southern Paris around Paris-Orly airport the decreases in the second week of lock down averaged 17 dBa Lden and 37 dbA for Lnight, corresponding to a 94% drop in overflights, as an example. See: www.bruitparif.fr/les-effets-du-confinement-sur-le-bruit-en-ile-de-france/

Bearing in mind that decibel levels are non-linear and a 10 dB change is a doubling or halving in loudness, these are large changes and show the importance for reducing noise – and not allowing new or additional sources such as Manston Airport.

6 Conclusion

Hence all these considerations add further strong evidence to refuse permission for the DCO.

Finally any concerns that cancelling Manston Airport might risk carbon leakage or competitive disadvantage are shown to be unfounded by: "The Carbon Leakage and Competitiveness Impacts of Carbon Abatement Policy in Aviation" (attached, **REF: 8**) report from "Air Transportation Analytics Ltd and Clarity Ltd" commissioned by the department.

The only way to hit net zero by 2050 is to stop flying

Dreaming of electric planes and planting trees will not save our planet

(Financial Times)

By Professor Julian Allwood (Cambridge University)

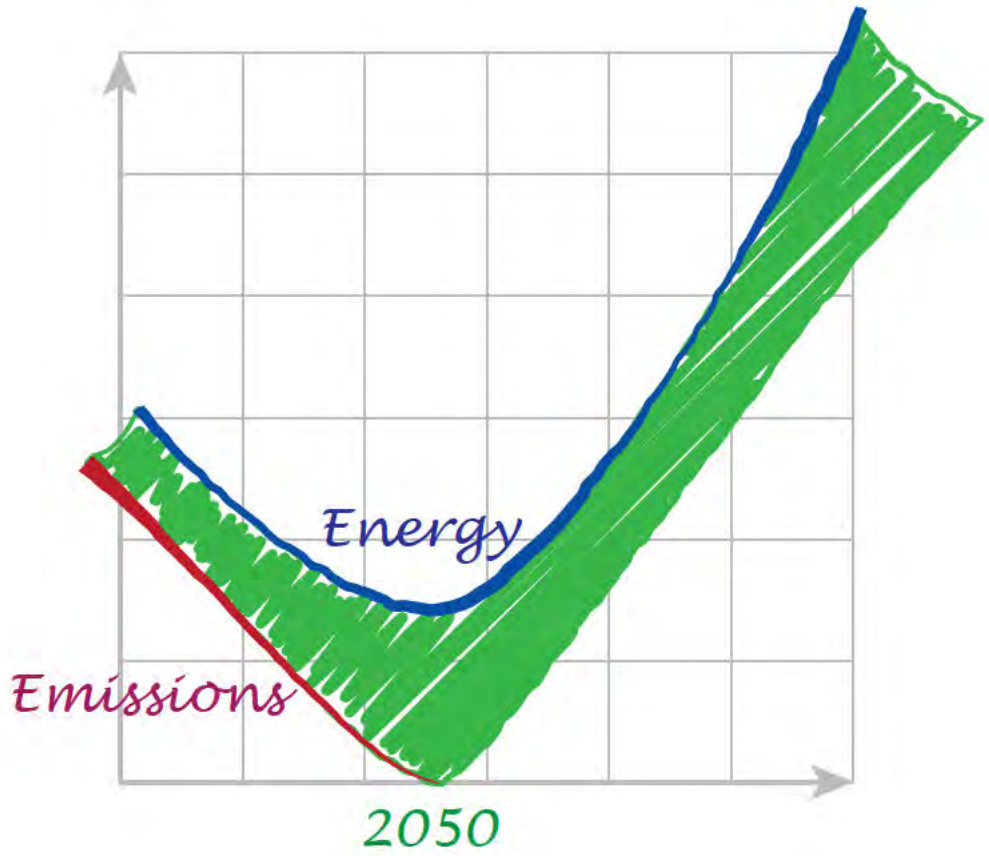
The writer is professor of engineering and the environment at Cambridge university

The UK aviation industry this week promised to bring its net carbon emissions down to zero by 2050 while growing by 70 per cent, and Prime Minister Boris Johnson boldly predicted that "viable electric planes" would be available in just a few years.

But past experience with innovation in aviation suggests that **such ambitious targets are unrealistic and distracting. The only way the UK can get to net zero emission aviation by 2050 is by having a substantial period of no aviation at all. Let's stop placing impossible hopes on breakthrough technologies, and try to hit emissions targets with today's technologies.**

Our recent report https://www.repository.cam.ac.uk/bitstream/handle/1810/299414/Absolute-Zero-digital-280120-v2.pdf?sequence=6&isAllowed=y**宴廣bsolute Zero宴□** draws on work at six British universities to explain how.

Absolute Zero



Delivering the UK's climate change commitment with incremental changes to today's technologies

UK FIRES

Absolute Zero

UK demand for energy-intensive materials is growing, driving increased emissions in the UK and abroad. UK FIRES is a research programme sponsored by the UK Government, aiming to support a 20% cut in the UK's true emissions by 2050 by placing Resource Efficiency at the heart of the UK's Future Industrial Strategy.

Industry is the most challenging sector for climate mitigation – it's energy efficient and there are no substitutes available at scale for the energy-intensive bulk materials - steel, cement, plastic, paper and aluminium. UK FIRES is therefore working towards an industrial renaissance in the UK, with high-value climate-safe UK businesses delivering goods and services compatible with the UK's legal commitment to zero emissions and with much less new material production.

Authors: Allwood, J.M.[a], Dunant, C.F.[a], Lupton, R.C.[b], Cleaver, C.J.[a], Serrenho, A.C.H.[a], Azevedo, J.M.C.[a], Horton, P.M.[a], Clare, C.[c], Low, H.[e], Horrocks, I.[e], Murray, J. [c], Lin, J.[f], Cullen, J.M.[a], Ward, M. [d], Salamati, M.[d], Felin, T.[e], Ibell, T. [b], Zhou, W.[f], Hawkins, W [b].

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DOI: 10.17863/CAM.46075

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Contact details: UK FIRES is led by Professor Julian M Allwood FREng who can be contacted via info@ukfires.org. We welcome comment or contributions to future editions of "Absolute Zero" .

Executive Summary

We can't wait for breakthrough technologies to deliver net-zero emissions by 2050. Instead, we can plan to respond to climate change using today's technologies with incremental change. This will reveal many opportunities for growth but requires a public discussion about future lifestyles.

We have to cut our greenhouse gas emissions to zero by 2050: that's what climate scientists tell us, it's what social protesters are asking for and it's now the law in the UK. But we aren't on track. For twenty years we've been trying to solve the problem with new or **breakthrough** technologies that supply energy and allow industry to keep growing, so we don't have to change our lifestyles. But although some exciting new technology options are being developed, it will take a long time to deploy them, and they won't be operating at scale within thirty years.

Meanwhile, our cars are getting heavier, we're flying more each year and we heat our homes to higher temperatures. We all know that this makes no sense, but it's difficult to start discussing how we really want to address climate change while we keep hoping that new technologies will take the problem away.

In response, this report starts from **today's technologies**: if we really want to reach zero emissions in thirty years time, what does that involve? Most of what we most enjoy - spending time together as families or communities, leisure, sport, creativity - can continue and grow unhindered. We need to switch to using electricity as our only form of energy and if we continue today's impressive rates of growth in non-emitting generation, we'll only have to cut our use of energy to 60% of today's levels. We can achieve this with **incremental** changes to the way we use energy: we can drive smaller cars and take the train when possible, use efficient electric heat-pumps to keep warm and buy buildings, vehicles and equipment that are better designed and last much longer.

The two big challenges we face with an all electric future are **flying** and **shipping**. Although there are lots of new ideas about electric planes, they won't be operating at commercial scales within 30 years, so zero emissions means that for some period, we'll all stop using aeroplanes. Shipping is more challenging: although there are a few military ships run by nuclear reactors, we currently don't have any large electric merchant ships, but we depend strongly on shipping for imported food and goods.

In addition, obeying the law of our Climate Change Act requires that we stop doing anything that causes emissions regardless of its energy source. This requires that we stop eating **beef and lamb** - ruminants who release methane as they digest grass - and already many people have started to switch to more vegetarian diets. However the most difficult problem is **cement:** making cement releases emissions regardless of how it's powered, there are currently no alternative options available at scale, and we don't know how to install new renewables or make new energy efficient buildings without it.

We need to discuss these challenges as a society. Making progress on climate change requires that the three key groups of players - government, businesses and individuals - work together, rather than waiting for the other two to act first. But until we face up to the fact that breakthrough technologies won't arrive fast enough, we can't even begin having the right discussion.

Committing to zero emissions creates tremendous **opportunities**: there will be huge growth in the use and conversion of electricity for travel, warmth and in industry; growth in new zero emissions diets; growth in materials production, manufacturing and construction compatible with zero emissions; growth in leisure and domestic travel; growth in businesses that help us to use energy efficiently and to conserve the value in materials.

Bringing about this change, and exploring the opportunities it creates requires three things to happen together: as individuals we need to be part of the process, exploring the changes in lifestyle we prefer in order to make zero emission a reality. **Protest is no longer enough** - we must together discuss the way we want the solution to develop; the government needs to treat this as **a delivery challenge** - just like we did with the London Olympics, on-time and on-budget; the emitting businesses that must close cannot be allowed to delay action, but meanwhile the authors of this report are funded by the government to work across industry to support the **transition to growth compatible with zero emissions.**

Breakthrough technologies will be important in the future but we cannot depend on them to reach our zero emissions target in 2050. Instead this report sets an agenda for a long-overdue public conversation across the whole of UK society about how we really want to achieve Absolute Zero within thirty years.

Key messages for industrial sectors

Key Message: Absolute Zero creates a driver for tremendous growth in industries related to electrification, from material supply, through generation and storage to end-use. The fossil fuel, cement, shipping and aviation industries face rapid contraction, while construction and many manufacturing sectors can continue at today's scales, with appropriate transformations.

Leisure, sports, creative arts and voluntary work: These sectors can expand greatly and should have a central position in national definitions of welfare targets.

Electricity sector and infrastructure: Absolute Zero requires a 3x expansion in non-emitting electricity generation, storage, distribution and load-balancing.

Construction sector: All new builds should be to zero-energy standards of use. The impacts of construction are primarily about the use of materials: primarily steel and cement. By 2050, we will have only very limited cementitious material and will use only recycled steel, but there are myriad opportunities for radical reductions in the amount of material used in each construction.

Steel sector: All exsiting forms of blast furnace production, which are already under great pressure due to global over-capacity, are not compatible with zero-emissions. However, recycling powered by renewables, has tremedous opportunities for growth exploiting the fact that steel scrap supply will treble in the next 30 years. There are short term innovation opportunities related to delivering the highest quality of steel from recycling, and longer-term opportunities for technologies for zero-carbon steel making from ore that could be deployed after 2050.

Cement sector: All existing forms of cement production are incompatible with zero emissions. However, there are some opportunities for expanded use of clay and urgent need to develop alternative processes and materials. Using microwaves processes to recycle used cement appears promising.

Mining and material supply: Zero emissions will drive a rapid transition in material requirements. Significant reduction in demand for some ores and minerals, particularly those associated with steel and cement, are likely along with a rapid expansion of demand for materials associated with electrification. It seems likely that there will be opportunities for conslidation in the currently diffuse businesses of secondary material collection, processing, inventory and supply.

Rail: The great efficiency of electric rail travel suggests a significant expansion in this area, domestically and internationally, is likely and would see high demand. The most efficient electric trains are aerodynamically efficient, like those designed for the highest speed operation today, but travelling at lower speeds.

Road vehicles: The transition to electric cars is already well under-way, and with increasing demand, costs will presumably fall. We already have targets for phasing out non electric vehicles, but by 2050 will have only 60% of the electricity required to power a fleet equivalent to that in use today. Therefore we will either use 40% fewer cars or they will be 60% the size. Development of auto-grade steels from recycling is a priority, and the need to control recycled metal quality may require changed models of ownership. The rapid expansion of lithium battery production may hit short-term supply constraints and create environmental concerns at end-of-life unless efficient recycling can be developed.

International freight: We currently have no non-emitting freight ships, so there is an urgent need for exploration of means to electrify ship power, and options to transfer to electric rail. This would require an enormous expansion in international rail capacity.

Aviation: There are no options for zero-emissions flight in the time available for action, so the industry faces a rapid contraction. Developments in electric flight may be relevant beyond 2050.

Fossil fuel industries: All coal, gas, and oil-fuel supply from extraction through the supply chain to retail must close within 30 years, although carbon capture and storage may allow some activity later.

Travel and tourism: Without flying, there will be growth in domestic and train-reach tourism and leisure.

Food and agriculture: Beef and lamb phased out by 2050 and replaced by greatly expanded demand for vegetarian food. Electricity supply for food processing and storage will be cut by 50%.

Building maintenance and retrofit: Rapid growth in demand for conversion to electric heat-pump based heating matched to improvements in insulation and air-tightness for building envelopes.

Key messages for individuals

Key Message: The big actions are: travel less distance, travel by train or in small (or full) electric cars and stop flying; use the heating less and electrify the boiler when next upgrading; lobby for construction with half the material for twice as long; stop eating beef and lamb. Each action we take to reduce emissions, at home or at work, creates a positive ripple effect.

As individuals we can all work towards Absolute Zero through our purchasing and our influence. Each positive action we take has a double effect: it reduces emissions directly and it encourages governments and businesses to be bolder in response. Where we cause emissions directly we can have a big effect by purchasing differently. Where they are released by organisations rather than individuals, we can lobby for change.

The actions stated as absolutes below are those which will be illegal in 2050 due to the Climate Change Act.

Living well

The activities we most enjoy, according to the UK's comprehensive time-use survey, are sports, social-life, eating, hobbies, games, computing, reading, tv, music, radio, volunteering (and sleeping!) We can all do more of these without any impact on emissions.

Travelling

The impact of our travelling depends on how far we travel and how we do it. The most efficient way to travel is with a large number of people travelling in a vehicle with a small front, and we can all reduce our total annual mileage.

1. Stop using aeroplanes
2. Take the train not the car when possible.
3. Use all the seats in the car or get a smaller one
4. Choose an electric car next time, if possible, which will become easier as prices fall and charging infrastructure expands.
5. Lobby for more trains, no new roads, airport closure and more renewable electricity.

Heating and appliances:

Our energy bills are mainly driven by our heating and hot water.

1. Use the boiler for less time, if possible, staying warm by only heating rooms if people are sitting in them, sealing up air gaps and adding insulation.
2. Wear warmer clothes in winter.
3. Next time you replace the boiler, choose an electric air or ground-source heat pump if possible
4. Buy smaller more efficient appliances that last longer
5. Lobby for zero-carbon building standards, means-tested support for housing retrofit and more renewable electricity

Purchasing:

Most industrial emissions relate to producing materials, which are made efficiently but used wastefully so we need to reduce the weight of material made. The highest volumes of material are used not by households, but to make commercial and public buildings and infrastructure, industrial equipment and vehicles.

1. Lobby businesses and the government to make buildings and infrastructure with half the material guaranteed to last for twice as long.
2. When extending or modifying your home, try to choose recycled or re-used materials and avoid cement.
3. Aim to reduce the total weight of material you purchase each year.
4. Lobby for border controls on emissions in materials (like we have with food standards) to allow businesses fit for Absolute Zero to grow and prosper in the UK

Eating:

Small changes in diet can have a big effect.

1. Reduce consumption of beef and lamb as these have far higher emissions than any other common food.
2. Choose more locally sourced food if possible, to reduce food miles, particularly aiming to cut out air-freighted foods.
3. Aim to use less frozen and processed meals as these dominate the energy use of food manufacturers.
4. Lobby supermarkets to support farmers in using less fertiliser - it has a high impact, but much of it is wasted as it's spread too far away from the plants.

Why this report matters

Key Message: We are legally committed to reducing the UK's emissions to zero by 2050, and there isn't time to do this by deploying technologies that don't yet operate at scale. We need a public discussion about the changes required and how to convert them into a great Industrial Strategy.

Timelines:

In her last significant act as Prime Minister, Theresa May changed the UK's Climate Change Act to commit us to eliminating all greenhouse gas emissions in the UK by 2050. This decision is based on good climate-science, was a response to a great wave of social protest and has been replicated in 60 other countries already.

However, 30 years is a short time for such a big change. Politicians in the UK and internationally talk about climate change as if it can be solved by new energy technologies alone, and UK government reports are over-confident about how much progress has been achieved; in reality most UK cuts in emissions have been as a result of Mrs Thatcher's decision to switch from coal to gas fired electricity and to allow UK heavy industry to close. The UK has been successul in reducing methane emissions - by separating our organic waste and using it in anaerobic digesters to make gas for energy, but new energy technologies are developing slowly.

There are no invisible solutions to climate change so we urgently need to engage everyone in the process of delivering the changes that will lead to zero emissions.

Confusion about technologies

In this report we're using three different descriptions of the technologies which cause emissions:

- **Today's technologies** are the mass-market products of today - such as typical petrol or diesel cars.
- **Incremental technologies** could be delivered today if customers asked for them - for example smaller cars.
- **Breakthrough technologies** such as cars powered by hydrogen fuel cells, may already exist, but haven't yet captured even 5% of the world market.

Incremental technologies can be deployed rapidly, but breakthrough technologies can't. We're concerned that most plans for dealing with climate change depend on breakthrough technologies - so won't deliver in time.

Why we've written this report now

The authors of this report are funded by the UK government to support businesses and governments (national and regional) to develop a future Industrial Strategy that's compatible with Zero Emissions. To do that, we have to anticipate how we'll make future goods and buildings, and also think about what performance we want from them.

What we mean by "Absolute Zero"

The UK's Climate Change Act contains two "escape" words: it discusses "net" emissions and targets on those that occur on our "territory." However, in reality, apart from planting more trees, we don't have any short-term options to remove emissions from the atmosphere, and even a massive expansion in forestry would have only a small effect compared to today's emissions. Furthermore, shutting factories in the UK doesn't make any change to global emissions, and may make them worse if we import goods from countries with less efficient processes.

Public concern about the Climate is too well informed to be side-lined by political trickery on definitions. In writing this report, we have therefore assumed that:

- the target of zero emissions is absolute - there are no negative emissions options or meaningful "carbon offsets." Absolute Zero means zero emissions;
- the UK is responsible for all emissions caused by its purchasing, including imported goods, international flights and shipping.

Invitation to participate

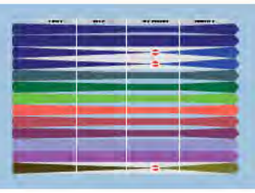
This report presents our best estimate of Absolute Zero, based on publicly reported data and peer-reviewed evidence. Undoubtedly there are more opportunities that we don't know of, and if this report proves useful, there will be other aspects of the journey to Absolute Zero that we can help to inform. We welcome contributions and comment and will provide an edited summary of any discussion on www.ukfires.org. If there is demand, we will update and re-issue the report in response.

Please contact us via info@ukfires.org and if you found this report useful, please share it through your networks.

Guide to the report

Opening material

What actions can we take - as individuals and in the key sectors to reduce emissions now and to develop future choices to deliver Absolute Zero?

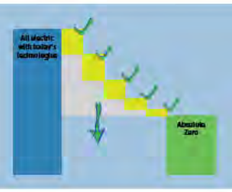


1. Absolute Zero with today's technologies

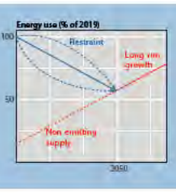
The UK Climate Change Act commits us to zero emissions in 30 years time - based on good climate science. The lowest risk way to get there is to change the way we use today's technologies.

2. Options for incremental and breakthrough innovations

The goods we buy will of course change over the next 30 years, but it takes decades for breakthrough technologies to reach full scale, so we focus on likely incremental innovations.



3. The process of change towards Absolute Zero

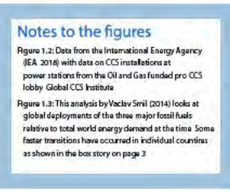


Reaching Absolute Zero requires a collaboration between individuals, government and businesses. None of them can act unilaterally, so reaching the target will be a process.

4. Opportunities created by Absolute Zero

One of the benefits of considering Absolute Zero is that it allows us to recognise how many opportunities are created by pursuing the strict emissions target.

Notes to the figures



Notes to the figures

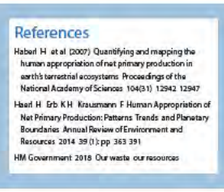
Figure 1.2: Data from the International Energy Agency (IEA 2018) with data on CCS installations at power stations from the Oil and Gas funded pro CCS lobby Global CCS Institute

Figure 1.3: This analysis by Vaclav Smil (2014) looks at global deployments of the three major fossil fuels relative to total world energy demand at the time. Some faster transitions have occurred in individual countries as shown in the box story on page 3

We've tried to make this report as easy to read as possible, but all our analysis is firmly rooted in data. These notes show how we've sourced and used the evidence

References

These references point to the sources we used for data or other evidence.



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Haberl H et al (2007) Quantifying and mapping the human appropriation of net primary production in earth's terrestrial ecosystems Proceedings of the National Academy of Sciences 104(31) 12942 12947

Haarl H Erb K H Krausmann F Human Appropriation of Net Primary Production: Patterns Trends and Planetary Boundaries Annual Review of Environment and Resources 2014 39 (1): pp. 363 391

HM Government 2018 Our waste our resources

	2020-2029	2030-2049	2050 Absolute Zero	Beyond 2050
Road vehicles	Development of petrol/diesel engines ends; Any new vehicle introduced from now on must be compatible with Absolute Zero	All new vehicles electric, average size of cars reduces to ~1000kg.	Road use at 60% of 2020 levels - through reducing distance travelled or reducing vehicle weight	New options for energy storage linked to expanding non-emitting electricity may allow demand growth
Rail	Growth in domenstic and international rail as substitute for flights and low-occupancy car travel	Further growth with expanded network and all electric trains; rail becomes dominant mode for freight as shipping declines	Electric trains the preferred mode of travel for people and freight over all significant distances,	Train speeds increase with increasing availability of zero emissions electricity
Flying	All airports except Heathrow, Glasgow and Belfast close with transfers by rail	All remaining airports close		Electric planes may fly with synthetic fuel once there are excess non-emitting electricity supplies
Shipping	There are currently no freight ships operating without emissions, so shipping must contract	All shipping declines to zero.		Some naval ships operate with onboard nuclear power and new storage options may allow electric power
Heating	Electric heat pumps replace gas boilers. and building retrofits (air tightness, insulation and external shading) expand rapidly	Programme to provide all interior heat with heat pumps and energy retroifts for all buildings	Heating powered on for 60% of today's use.	Option to increase use of heating and cooling as supply of non-emitting electricity expands
Appliances	Gas cookers phased out rapidly in favour of electric hobs and ovens. Fridges, freezers and washing machines become smaller.	Electrification of all appliances and reduction in size to cut power requirement.	All appliances meet stringent efficiency standards, to use 60% of today's energy.	Use , number and size of appliances may increase with increasing zero-emnissions electricity supply
Food	National consumption of beef and lamb drops by 50%, along with reduction in frozen ready meals and air-freighted food imports	Beef and lamb phased out, along with all imports not transported by train; fertiliser use greatly reduced	Total energy required to cook or transport food reduced to 60%.	Energy available for fertilising, transporting and cooking increases with zero-emissions electricity
Mining material sourcing	Reduced demand for iron ore and limestone as blast furnace iron and cement reduces. Increased demand for materials for electrification	Iron ore and Limestone phased out while metal scrap supply chain expands greatly and develops with very high precision sorting	Demand for scrap steel and ores for electrification much higher, no iron ore or limestone.	Demand for iron ore and limestone may develop again if CCS applied to cement and iron production
Materials production	Steel recycling grows while cement and blast furnace iron reduce; some plastics with process emissions reduce.	Cement and new steel phased out along with emitting plastics . Steel recycling grows. Aluminium, paper reduced with energy supply.	All materials production electric with total 60% power availability compared to 2020	Material production may expand with electricity and CCS, CCU, hydrogen may enable new cement and steel.
Construction	Reduced cement supply compensated by improved material efficiency, new steel replaced by recycled steel	All conventional mortar and concrete phased out, all steel recycled. Focus on retrofit and adaption of existing buildings.	Any cement must be produced in closed-loop, new builds highly optimised for material saving.	Growth in cement replacements to allow more architectural freedom; new steel may become available.
Manufacturing	Material efficiency becomes promiment as material supply contracts	Most goods made with 50% as much material, many now used for twice as long	Manufacturing inputs reduced by 50% compensated by new designs and manufacturing practices. No necessary reduction output.	Restoration of reduced material supplies allows expansion in output, although some goods will in future be smaller and used for longer than previously.
Electricity	Wind and solar supplies grow as rapidly as possible, with associated storage and distribution. Rapid expansion in electrifiication of end-uses.	Four-fold increase in renewable generation from 2020, all non-electrical motors and heaters phased out.	All energy supply is now non-emitting electricity.	Demand for non-emitting electricity drives ongoing expansion in supply.
Fossil fuels	Rapid reduction in supply and use of all fossil fuels, except for oil for plastic production	Fossil fuels completed phased out		Development of Carbon Capture and Storage (CCS) may allow resumption of use of gas and coal for electricity

1. Zero emissions in 2050 with today's technologies

Key Message: Apart from flying and shipping, all of our current uses of energy could be electrified. With tremendous commitment the UK could generate enough non-emitting electricity to deliver about 60% of our current final energy-demand, but we could make better use of that through incremental changes in the technologies that convert energy into transport, heating and products.

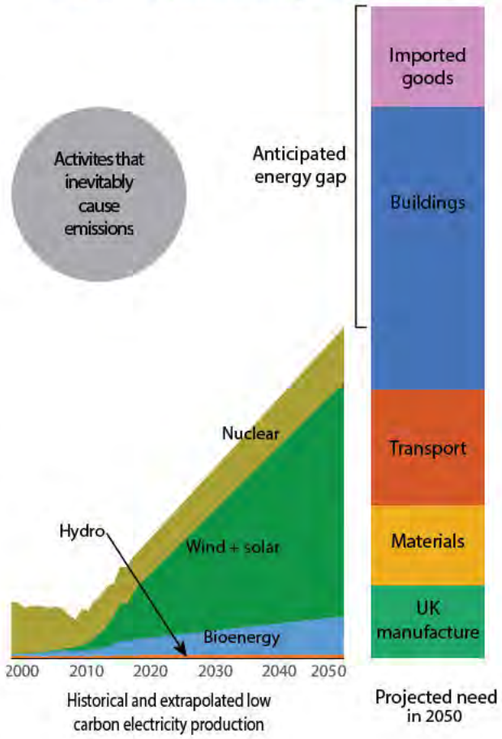
About three quarters of the greenhouse gas emissions caused by humans are emitted when we burn the fossil fuels - coal, gas and oil - and the rest arise from our agriculture (particularly cows and sheep), our conversion of land from forestry to pasture, the way we allow organic waste to decompose, and our industrial processes. Using today's technologies, all of these sources unrelated to energy have no alternative, so reducing our emissions to zero means phasing out these activities.

Our emissions related to energy come from our use of oil (as diesel, petrol or kerosene) for transport, our use of gas for heating our homes and industrial processes, and our use of coal and gas to generate electricity. Some of our electricity is also generated without burning fossil fuels - for instance by nuclear power stations, wind turbines or solar cells - and in a zero emissions future these will be our only source of energy. Most of our current uses of energy could be electrified - as is becoming familiar with electric cars - but there are currently no options for electric flying or shipping. With today's technologies, these modes of transport must therefore be phased out also.

Over the past 10 years in the UK, we have made a significant change to the way we generate electricity and about half of our generation is now from non-emitting sources. If we continue developing the generation system at the same rate, then by 2050 we will have around 50% more electric power than we have today. Data on the efficiencies of today's motors and heaters allows us to estimate that this will be enough to power about 60% of today's energy-using activities (apart from flying and shipping). However, because energy has been so cheap and abundant in the past 100 years, in many cases we could make small changes to existing technologies to make much better use of less energy.

Fig. 1.1 summarises this overview of Absolute Zero with today's technologies: the left side of the figure shows the recent history of the UK's non-emitting electricity generaton extrapolated forwards to 2050. The right side shows the amount of electricity we'd need if we electrified everything we do today, apart from those activities that inevitably cause emissions, which we'll have to phase out.

Figure 1.1: Gap between today and Absolute Zero



1.1 Energy Supply Today

The science is clear: we must stop adding to the stock of greenhouse gases in the atmosphere to control global warming. In response, the best estimates of science today predict that annual global emissions from human activities must be reduced rapidly and should be eliminated by 2050 – in thirty years' time. This target, which requires extraordinarily rapid change, is now law in the UK, and several other countries. However, despite the science and the laws, global emissions are still rising.

The critical choice in planning to cut emissions is about the balance between technology innovation and social choice. Is it possible to develop a new technology that will cut emissions while allowing people in developed economies to continue to live as we do today and to allow developing economies to develop the same behaviours? Or should we first modify our behaviour to reach the emissions target, with different aspirations for development, and then take the benefits of technology innovation when they become available later? To date, as illustrated in Fig. 1.2, every national and international every national and international government plan for responding to climate change has chosen to prioritise technology innovation, yet global emissions are still rising.

For twenty years, two technologies have dominated policy discussions about mitigating climate change: renewable energy generation and carbon capture and storage (CCS). The two renewable technologies now being deployed widely are wind-turbines and solar-cells. These critical forms of electricity generation are essential, and should be deployed as fast as possible, but Fig. 1.3 shows that, they combined with nuclear power and hydro-electricity, still contribute only a small fraction of total global energy demand. Meanwhile, although CCS has been used to increase rates of oil extraction, its total contribution to reducing global emissions is too small to be seen. The technological elements of CCS have all been proven at some scale, but until a first fleet of full-scale power-plants are operating, the risks and costs of further expansion will remain high and uncertain. To illustrate the current importance of CCS in global power generation, the total

Figure 1.2: Acting now or waiting for new technologies

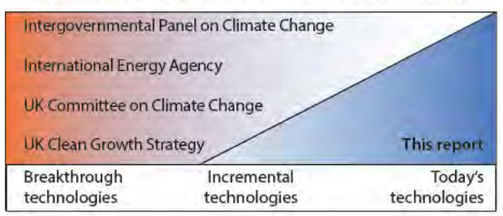
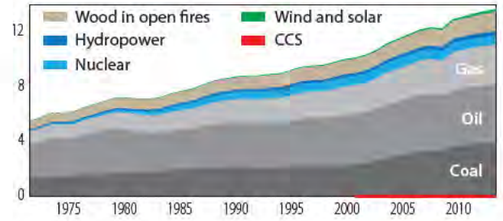


Figure 1.3: World primary energy supply ('000 Mtoe)

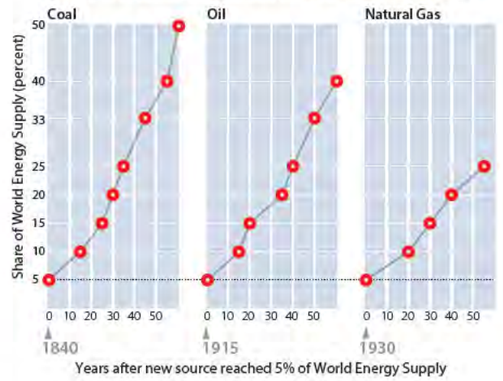


output of all CCS enabled power-generation is shown on Fig. 1.3 - still very definitely on top of the y-axis.

All previous transitions in the energy system, for example in Fig. 1.4, have occurred relatively slowly. Early installations experience problems due to human error, and the installation of large generation requires lengthy public consultation on land-rights, environmental protection, safety and financing. Despite this, CCS looks very attractive to policy makers. Twenty years ago, the International Energy Agency stated that "within 10 years we need 10 demonstrators of CCS power stations" but none are operating at full-scale today. Yet in 2019 the UK's Climate Change Committee published its plans to deliver zero emissions, requiring deployment of CCS in six of thirteen sectors within thirty years. However, the UK has no current plans for even a first installation and although CCS may be important in future, it is not yet operating at meaningful scale, but meanwhile global emissions are still rising.

The hope of an invisible, technology-led, solution to climate change is obviously attractive to politicians and incumbent businesses. However, a result of their focus on this approach has been to inhibit examination of our patterns of energy demand. Fig. 1.6a shows that the UK's demand for energy is only falling in industry. This is because in the absence of a meaningful industrial strategy, we have closed our own industry in favour of increased imports. As a result, this apparent reduction in energy

Figure 1.4: Major transitions in global energy supply



Technology Transitions in the Energy System

New computers, clothes and magazines can be put on sale soon after the are invented. However new energy technologies have typically required much longer time to reach full scale: even if the technology is well-established, building a power station requires public consultation about finance, safety, land-rights, connectivity and other environmental impacts all of which take time. For new technologies, it takes much longer, as investors, operators and regulators all need to build confidence in the safety and perfomance of the system. Figure 1.5 summarises the rates of introduction of various new energy technologies in the countries where they grew most rapidly. The green arrow corresponds to the start points of the linear periods of growth shown in Fig. 1.4.

Figure 1.5: Years to deploy energy technologies

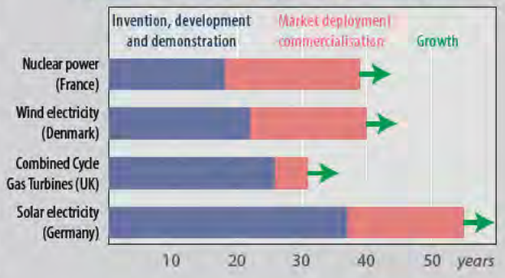
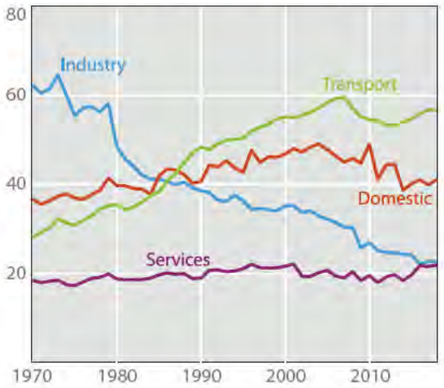
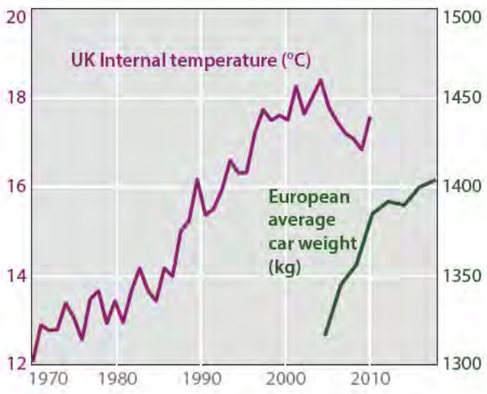


Figure 1.6: Energy demand (a) by sector (Mtoe) influenced by (b) car weight & internal temperature





use is compensated by an increase in other countries. Meanwhile, demand in other sectors is rising, driven, for example, by an increase in the weight of our cars and increased use of heating to raise internal temperatures in winter (Fig. 1.6b). With thirty years remaining to deliver zero emissions and global emissions still rising, we cannot risk waiting for a different energy system, so must have an inclusive public discussion about how we use energy.

2019 has seen a great rise in public concern about climate change, driven by science and growing evidence of changes occurring. So far, social protesters have called for dramatically increased awareness, while engaging in discussion about specific solutions has had less emphasis. However the only solutions available in the time remaining require some change of lifestyle. This report therefore aims to trigger that critical discussion. The report starts with a plan to reach zero emissions by 2050 using only technologies that are already mature today, to minimise the risk that we continue emitting beyond 2050. This is possible but requires some specific restraint in our lifestyles. Innovation can relieve this restraint so the report then presents an overview of the range of options for innovation in the way we use energy as well as how we generate it.

Global emissions are still rising and the need for action is urgent. This report aims to allow us to start an informed discussion about the options that really will deliver zero emissions by 2050.

Key Message: Global demand for energy is rising. In the UK our demand has fallen, but only because we have closed industry and now import goods elsewhere. Policy discussions have prioritised breakthrough technologies in the energy system, particularly carbon capture and storage, but it is at such an early stage of development that it won't reduce emissions significantly by 2050.

1.2 UK Energy System now and in 2050

Climate change is driven by greenhouse gas **E**missions. Most emissions arise from burning fossil fuels to create **E**nergy; some of our energy use is in the form of **E**lectricity. These three words beginning with "E" are often confused in public dialogue, but Fig. 1.7 separates them. Three quarters of global emissions (slightly more in the UK because we import 50% of our food) arise from the combustion of fossil-fuels (coal, gas and oil). Most coal and one third of gas is used in power stations to generate electricity. However, we also generate electricity by nuclear power and from renewable sources. The third column of the figure shows that nearly a half of the UK's current electricity supply is from non-emitting sources, of which nuclear power and the use of imported bio-energy pellets are most important.

Fig. 1.8 shows how the UK's energy supply has developed over the past twenty years. Total demand has fallen, due to the loss of industry shown in Fig. 1.6, but our use of oil and nuclear power has been relatively constant. (The data in both figures disguise the fact that over this period the UK's population has grown by 16% so we have improved the efficiency of our energy use by around 0.5% per year.) The other major change in the figure is the switch from coal to gas powered electricity generation which has reduced UK emissions significantly.

Fig. 1.9 extracts from Fig. 1.8 our generation of electricity – the numbers in this figure for 2018 correspond to those shown in Fig 1.7c – and divides them into emitting and non-emitting sources. This figure shows the UK making good progress in de-carbonising its current levels of electricity supply, and if the linear-trends in the figure continue, then

Figure 1.7: Emissions, Energy and Electricity in the UK

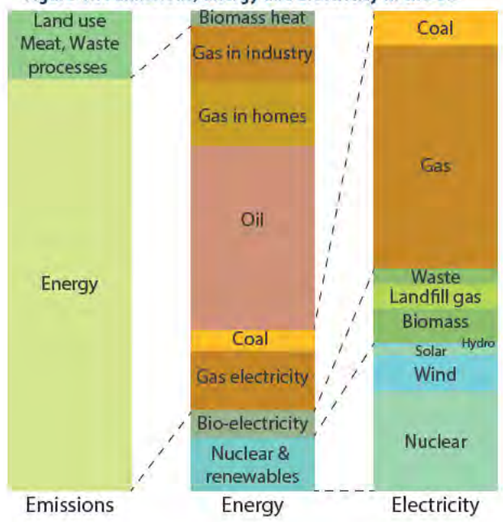
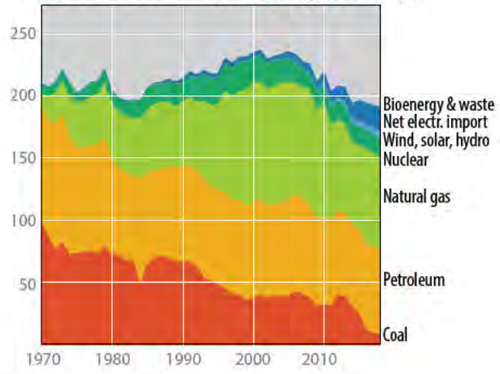


Figure 1.8: UK Primary Energy supply (Mtoe/yr)



by 2050, the UK can be expected to generate around 580 TWh of electricity without emissions. This is the figure shown on Fig 1.1 at the beginning of this chapter.

If we can manage our electricity distribution system and find ways to store electricity from windy/sunny times to be available at still/dull times this suggests that by 2050 we will have around 60% more electricity available than today, all from non-emitting sources. Physically, although the Hinckley C Nuclear Plant will probably by completed by 2030, delivering this increase will largely come from increasing wind-generation. To meet this growth from offshore wind would require an addition of around 4.5 GW of generation capacity each year of the next 2 decades (allowing time for them to be fully operational by 2050). By comparison, the Crown Estate have just launched a process to award 7-8.5 GW of new seabed leases over the next 2 years, but the Offshore Wind Sector Deal expects Government support for the delivery of only 2 GW/year through the 2020s.

Figure 1.9: UK Electricity generation (TWh/year)

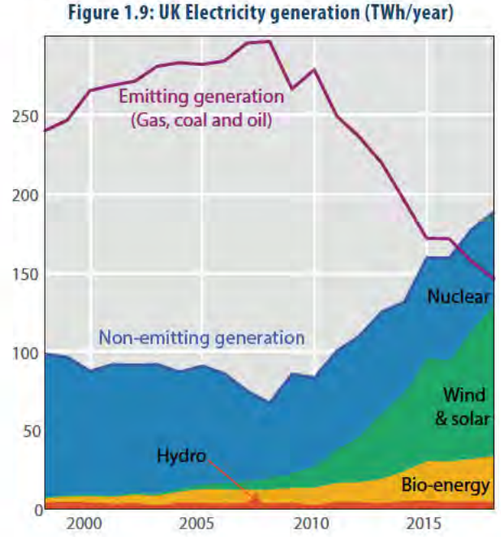
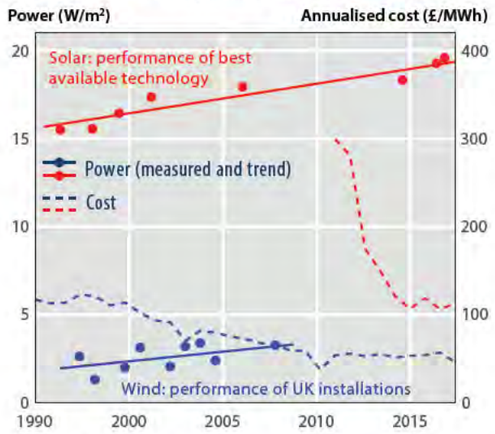


Figure 1.10: Development of wind and solar power



Meanwhile Fig 1.10 shows how the two options for on-shore generation, wind-turbines and solar power, are developing. Both technologies are becoming cheaper, although the amount of power generated from each unit of land is increasing only slowly. Replacing existing on-shore wind turbines with much taller models could increase total generation by 50%. Increasing solar generation depends on the commitment of area, but is plausible: if every south-facing roof in the UK were entirely covered in high-grade solar cells, this would contribute around 80TWh per year

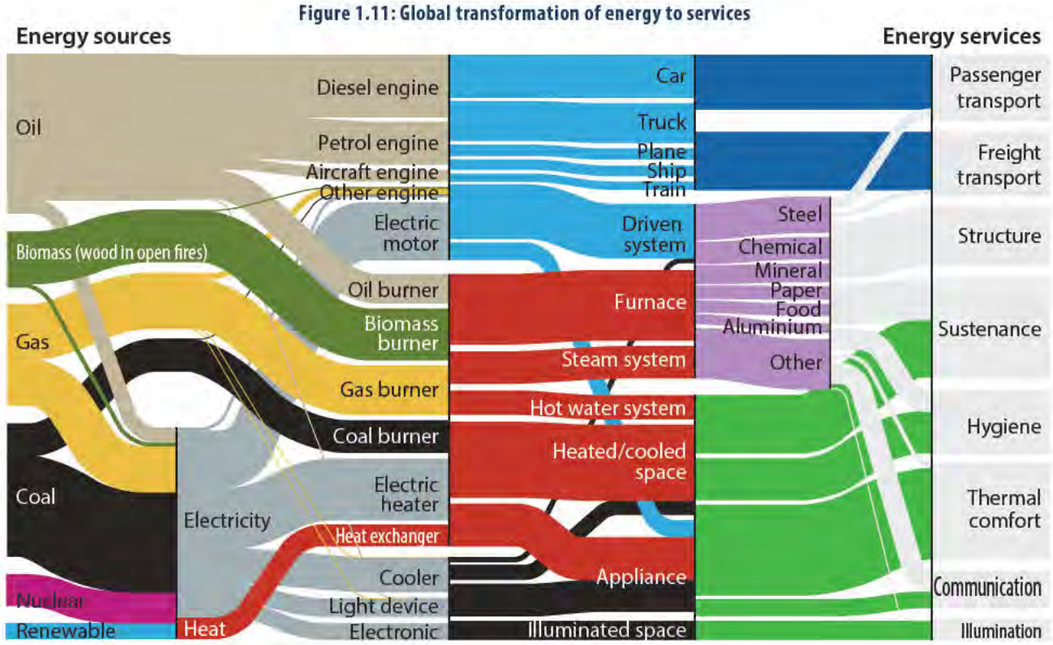
Fig. 1.7 also shows a range of bio-energy sources contributing to the UK's energy supply. All these supplies are combusted, leading to the release of CO_2, but because the fuel derives from plants, these releases form part of the normal cycle so do not accelerate climate change. Waste policy has been a success in UK mitigation since 1990, with organic waste separated and largely processed in anaerobic digestors to produce methane for electricity. However, this source is unlikely to increase further. Meanwhile, bio-energy derived directly from new plant growth is in competition with the use of biomass for food so unlikely to increase (see box story on p13).

This discussion suggests that, using today's technologies and with plausible rates of expansion, the UK will in a zero-emissions 2050 have an energy supply entirely comprising electricity with about 60% more than generated than we have today.

How much of the benefit of all of today's use of energy will we be able to enjoy without any fossil fuels, but with 60% more electricity? At first sight, this sounds like a significant reduction - Fig. 1.7 showed that today, electricity provides only about one third of our total energy needs, so apparently we would need a 200% increase in electricity output? In fact this isn't the case, because the final conversion of electricity into heat or rotation is very efficient compared to the fossil fuel equivalents.

If the UK is to run entirely on electricity, then all devices currently powered with fossil-fuels must be replaced by electrical equivalents. Fig. 1.11 presents a view of how energy is used globally. (We don't currently have an equivalent of this for the UK, but the UK is likely to

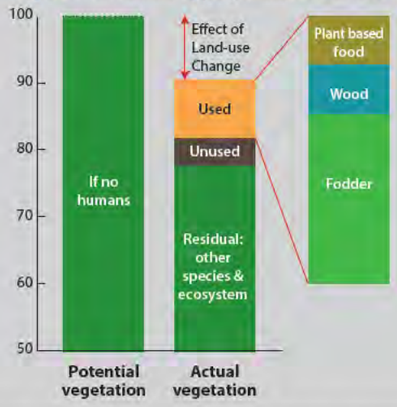
Figure 1.11: Global transformation of energy to services



What's the problem with bio-energy?

The world's poorest people stay warm and cook with wood burnt on open furnaces, and this energy source shows up significantly in the global energy supplies of Fig. 1.11. Could we use modern technology to harness even more biomass to make other fuels, such as biodiesel or kerosene? Fig 1.12 reveals that more than 20% of the world's total annual harvest of new biomass is already 'appropriated' by humans for wood, food and fodder. This annual harvest is the fundamental source of habitat and food for all non-aquatic species. Any further appropriation by humans is likely to be dangerously harmful to other species and the effect of deforestation rates is already a major contributor to the emissions in fig. 2.10. This evidence suggests that modern bio-fuels are incompatible with any wider sustainability of life on earth.

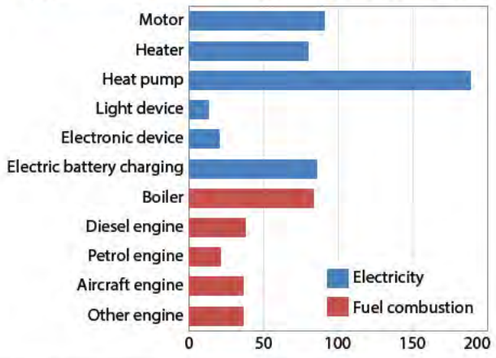
Figure 1.12: Human appropriation of biomass



be similar, although with less industrial use, due to our dependence on imports.) The widths of the lines in the figure are proportional to energy use, and any vertical cut through the diagram could be converted into a pie-chart of all the world's energy use. In effect Fig. 1.11 shows six connected pie-charts, each breaking out the statistics of all the world's energy use into different categories.

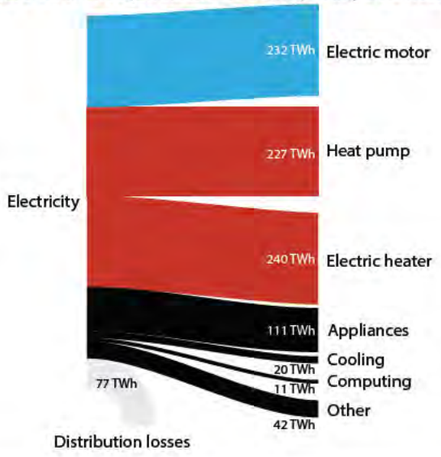
The figure shows that most energy is used in engines, motors, burners and heaters to create motion or heat. To estimate the electricity required if all of these devices are replaced, we use the average efficiencies presented in Fig. 1.13: for example, we know how much power is currently delivered in the UK's cars by petrol engines, so can use Fig. 1.13 to predict how much electricity would be required to provide the same power from electric motors. Combining this conversion with an estimated 11% population growth, leads to our prediction that we would need 960 TWh of electricity by 2050. (A terawatt hour, Twh, is a thousand million kilowatt hours - the unit normally used in UK energy bills.) The final requirement for electricity is split between motion, heating and appliances as shown in Fig 1.14.

Figure 1.13: Efficiency of enegy conversion devices (%)



If the UK is fully electrified by 2050, and we used the same final services as today, our demand for energy as electricity will be 960 TWh. However, based on a linear projection of the rate at which we have expanded our non-emitting electricity supply in the past 10 years, we estimate that we will have just 580 TWh available. Therefore, our commitment to Absolute Zero emissions in 2050 requires a restraint in our use of energy to around 60% of today's levels.

Figure 1.14: UK requirement to electrify today's services



Key Message: If we only used electricity, delivering all the transport, heat and goods we use in the UK would require 3x more electricity than we use today. If we expand renewables as fast as we can, we could deliver about 60% of this requirement with zero emissions in 2050. Therefore in 2050 we must plan to use 40% less energy than we use today, and all of it must be electric.

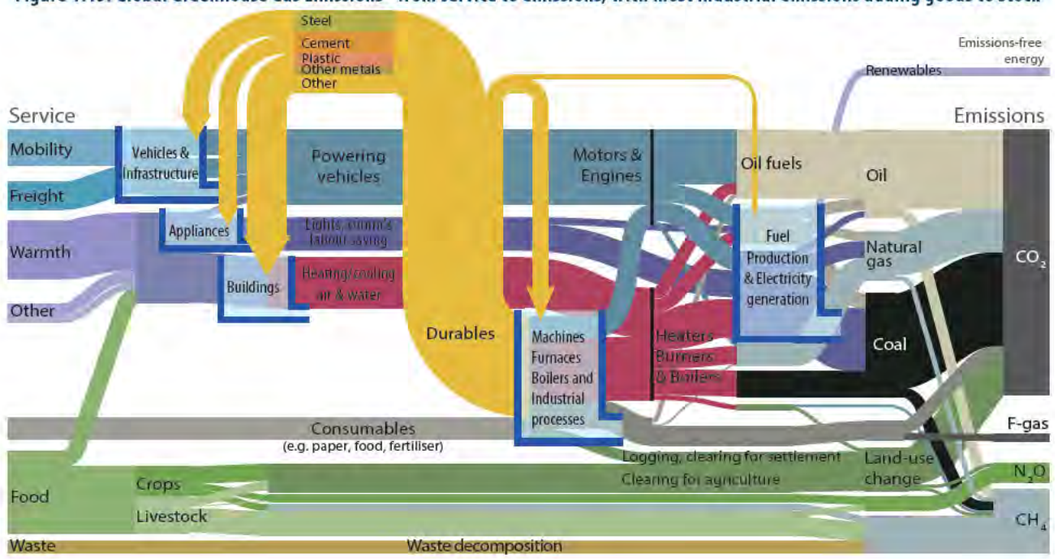
1.3 Zero emissions in the UK in 2050

In addition to restraining our energy demand to 60% of current levels, meeting our legal commitment to zero emissions will require that we phase out any energy using activities that cannot be electrified and any sources of emissions beyond fossil-fuel combustion. Planning for this requires that we make a collective decision about the scope of our responsibility. The UK's Climate Change Act was written to make commitments based solely on emissions that occur on UK territory. However, this excludes international aviation and shipping and our net imports of goods. As a result, it appears to be a success for UK climate policy when we shut UK industry and instead import goods – even though this will not reduce global emissions, and may often increase them if the closed UK processes were more efficient. Although these limitations were helpful in passing the Climate Change Act into law, they now look morally questionable, and they also fail to create the stimulus to innovation and growth in UK businesses and industries fit for a zero emissions future. This report therefore assumes that the UK should be responsible for the emissions of all its consumption.

Fig. 1.15 shows an analysis of all global greenhouse gas emissions, using a format similar to Fig. 1.11. In this case, the final services that drive the activities that cause emissions are shown at the left of the diagram, leading to the greenhouse gases on the right side of the diagram which cause global warming. The yellow-loop in the middle of the figure demonstrates that most industrial emissions are associated with producing the buildings, vehicles and other equipment which provide final services from energy, but which themselves require energy in production. This is important because most of this year's industrial output is to produce equipment (durables) that will last for several years. The services provided in one year therefore depend on the accumulation of a stock of goods made in previous years - and this long-lasting stock limits the rate at which change can be made to our total emissions. For example, if cars last on average for 15 years, then to ensure that all cars are electric in 2050, the last non-electric car must be sold no later than 2034. As with Fig. 1.11, Fig. 1.15 is based on global data - again to reflect the consequences of UK consumption, rather than its "territorial" emissions.

The top three quarters of this figure demonstrate the emissions consequences of our use of energy. The two critical forms of equipment that cannot be electrified with known technology are aeroplanes and ships. Although Solar-Impulse 2, a single-seater solar-powered electric aeroplane circumnavigated the Earth in 2016, it is difficult to scale up solar-powered aeroplanes due to the slow rates of improvement in of solar cell output put unit of area shown in Fig. 1.10. Meanwhile battery-powered flight is inhibited by the high weight of batteries, bio-fuel substitutes for Kerosene face the same competition for land with food as described in section 1.2 and there are no other ready and appropriate technologies for energy storage. As a result, under the constraint of planning for zero emissions with known technologies, all flying must be phased out by 2050 until new forms of energy storage can be created. At present we also have no electric merchant ships. There isn't space to have enough solar cells on a ship to generate enough energy to propel it, and as yet there has been no attempt to build a battery powered container

Figure 1.15: Global Greenhouse Gas Emissions - from service to emissions, with most industrial emissions adding goods to stock



ship. Nuclear powered naval ships operate, but without any experience of their use for freight, we cannot safely assume that nuclear shipping will operate at any scale in 2050. This is a serious challenge: with today's technologies, all ship-based trade must be phased out by 2050.

Fig 1.15 further reveals that the two key sources of non-energy related emissions are in agriculture and industrial processes. Agricultural emissions arise primarily from ruminant animals – in particular cows and sheep – which digest grass in the first of their two stomachs in a process that releases methane and from land-use change. Converting forestry to agricultural land leads to the release of the carbon stored in the forest and the loss of future carbon storage as the trees grow. In addition, ploughing the land releases carbon stored in the soil, and using Nitrogen based fertilisers to stimulate plant growth leads to further emissions. The motivation for this conversion of forestry land is to increase food production, but is greatly exacerbated by the demand for meat eating. Growing grain and other feed for cows, pigs and sheep is exceptionally inefficient, as up to 80 times more grain is required to create the same calories for a meal of meat as for a meal made from the original grain. As a result, our commitment to zero emissions in 2050 requires that we refrain from eating beef and lamb.

Three industrial processes contribute significant emissions beyond those related to energy. Blast furnaces making steel from iron ore and coke release carbon dioxide, and half of the emissions from current cement production come from the chemical reaction as limestone is calcined to become clinker. There are no alternative processes available to deliver these materials, and although old steel can be recycled efficiently in electric arc furnaces, there are no emissions-free alternatives to cement being produced at any scale. As a result, a zero-emissions economy in 2050 will have no cement-based mortar or concrete, and no new steel. The absence of cement is the greatest single challenge in delivering Absolute Zero, as it is currently essential to delivering infrastructure, buildings and new energy technologies.

The final source of direct industrial emissions is the group of "F-gases" which have diverse uses, including as refrigerants, solvents, sealants and in creating foams. It may be possible to continue some of these applications beyond 2050 if the gases are contained during use and at the end of product life.

Delivering Absolute Zero in thirty years with today's technologies is possible. Our energy supply will be 40% less than today, and solely in the form of electricity, but apart from flight and shipping, all other energy applications can be electrified. Socially motivated action is leading some change in both travel and diet. The most challenging restraint is on the bulk materials used in construction, in particular in the absence of cement, which will constrain the deployment of new energy supplies and economic development which depends on building.

However, despite these restraints, the most striking feature of this analysis is how many features of today's lifestyles are unaffected. Many of the leisure and social activities we most enjoy can continue with little change, many forms of work in service sectors will flourish, and the transition required will also lead to substantial opportunities for growth, for example in renewable electricity supply and distribution, in building retrofit, in electric power and heat, in domestic travel, material conservation, plant-based diets and electrified transport. Delivering Absolute Zero within thirty years with today's technologies requires restraint but not despair and of course any innovation that expands service delivery without emissions will relieve the required restraint. That's the theme of the second chapter of this report.

Key Message: In addition to reducing our energy demand, delivering zero emissions with today's technologies requires the phasing out of flying, shipping, lamb and beef, blast-furnace steel and cement. Of these, shipping is currently crucial to our well-being - we import 50% of our food - and we don't know how to build new buildings or install renewables without cement. The need for this restraint will be relieved as innovation is deployed but many of our most valued activities can continue and expand, and Absolute Zero creates opportunities for growth in many areas.

2. Innovations to make more use of less energy

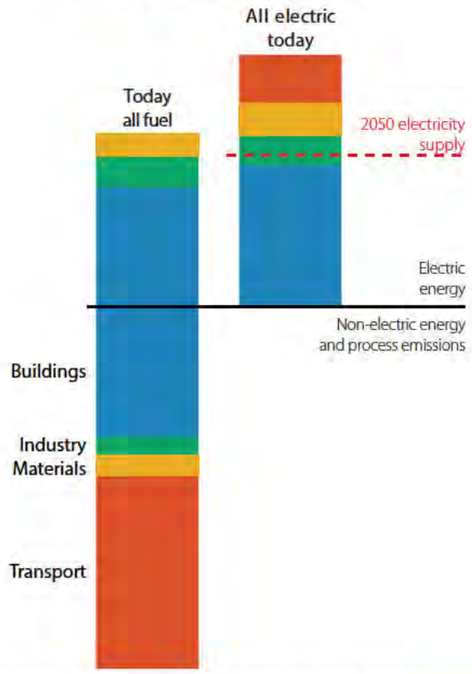
Key Message: With incremental changes to our habits and technologies, there are multiple options for living just as well as we do today, with 60% of the energy. With electric heat pumps and better insulation we can stay just as warm. With smaller electric cars we can keep moving, and by using materials better, we can make buildings and goods compatible with our zero emissions law.

This chapter starts from the analysis of electricification in chapter 1, summarised in Fig. 2.1: below the line, all of today's non-electric uses of energy must be electrified. Any activities that lead to emissions regardless of energy source or that cannot be electrified must be phased out. If we electrify all remaining activities with today's technologies, we require the amount of electricity shown in the second column - but we'll only have 60% of that amount available. For each of the sectors in Fig. 2.1, we therefore look at all the options for a more efficient future.

Section 2.1. focuses on the way we use energy directly - in buildings and vehicles - and on the way we source our food. Sections 2.2-2.4 explore how we make things - firstly looking at how we produce materials, which is what drives most of today's industrial emissions, and then in how we use them in construction and manufacturing. It turns out that we are already very efficient in our use of energy when making materials, but wasteful in the way we use the materials - so there are plenty of options for living well while using half as much material for twice as long.

For completeness, in section 2.5 we survey the "breakthrough technologies" that are unlikely to be significant by 2050, but could expand afterwards.

Figure 2.1: Absolute Zero overview



2.1 Products in-use and consumables

In the UK, the use of final products and consumables accounts for almost three quarters of current annual emissions. 12% of UK emissions come from domestic food production, waste disposal and land use changes, but two thirds are produced by our use of vehicles and buildings. These mostly come from road transport and heating in buildings, but to what extent can innovation help reduce these emissions to zero?

Using energy in buildings

Fig. 2.2 shows that most energy uses in buildings are for heating air (space) and water, mostly by combustion of gas in individual boilers in each building. Absolute Zero emissions requires a complete electrification of energy uses in buildings. Although appliances and lighting are already electric, space and water heating must change.

Heat pumps, based on principles similar to the familiar domestic fridge - but in reverse, offer a viable alternative to gas boilers. Since heat pumps are around four times more efficient than direct heat of combustion, complete deployment of best-practice heat pumps could save approximately 80% of current energy demand for heating. Heat pumps can be used in two forms: as a direct replacement for a gas-boiler they can provide hot water for a conventional radiator system. However, the best use of heat pumps is with ducted air heating - which requires a more intrusive modification of a building, but saves more energy. Deploying heat pumps would almost double the demand for electricity in buildings from current levels, so further interventions to reduce the demand for heating are also important.

New buildings are much more efficient than old Victorian houses still in use today — better insulation and design result in much smaller heating requirements. However, the turnover of the UK's building stock is very slow - we like old buildings - so refurbishment of old houses is important. Already, we have made substantial efforts to retrofit double glazed windows and to install high quality insulation in roofs and attics, and this could be completed to ever higher-standards to reduce national energy demand for heating.

For new build homes, Passive designs which only use the sun for heating, and need electricity only for ventilation, lighting and appliances are now well established. Until 2015, the UK's zero-carbon homes standards promoted this form of design, which is applied rigorously in Sweden, and at current rates of building, would affect 20% of the UK's housing if enforced now. The cost of houses built to the Passive standard is approximately 8-10% more than standard construction, and the thick walls required slightly reduce the available internal space, in return for zero energy bills.

Fig. 2.3 summarises the options for operating buildings under the conditions of Absolute Zero: whatever happens we must electrify all heating. We could then either use the heating for 60% of the time we use it today, or apply other incremental changes in building design to maintain today's comfort with 60% of the energy input.

Figure 2.2: Energy use in buildings

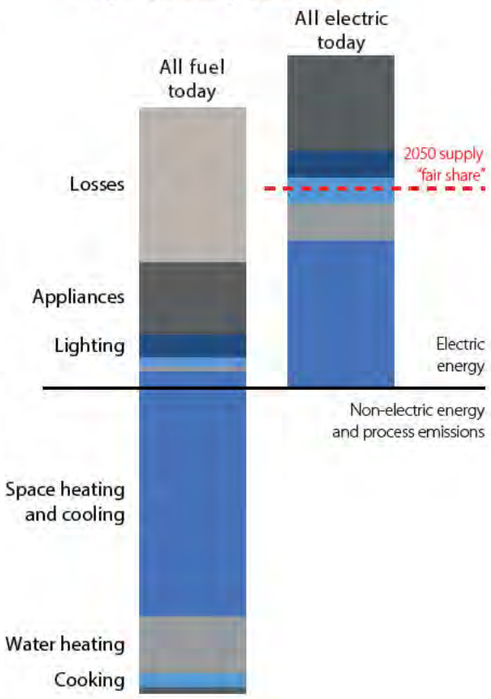
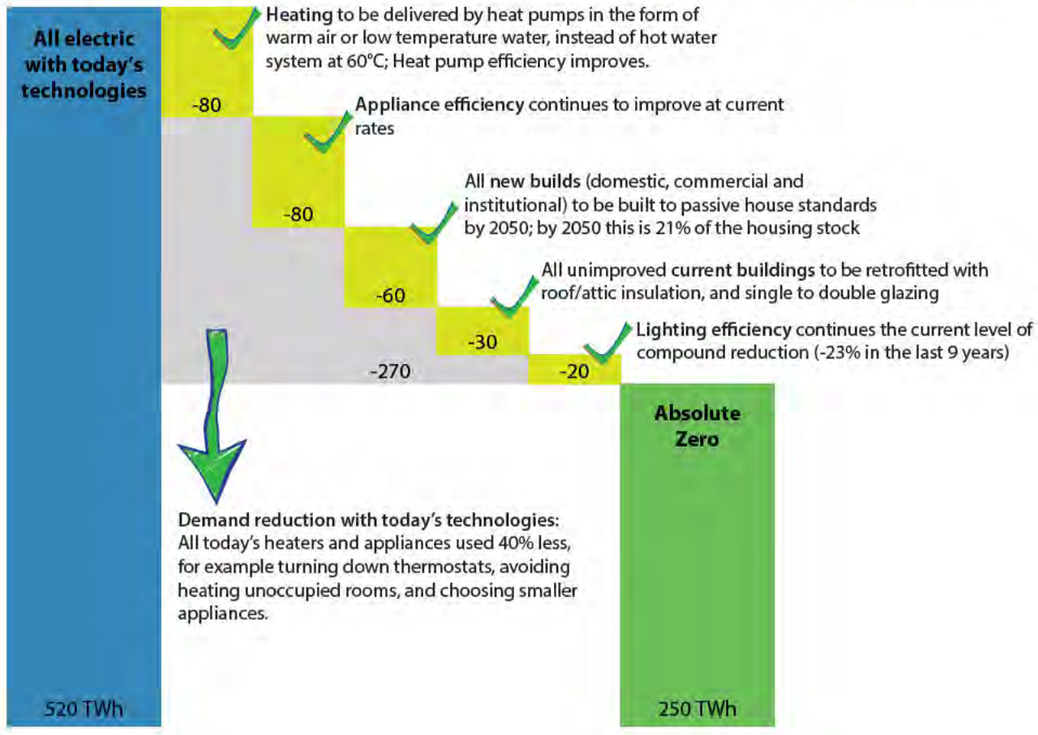


Figure 2.3: Reducing energy use in buildings with incremental technologies or reducing demand with today's technology



Using energy in transport

Fig. 2.4 shows that almost all of today's transport involves the direct combustion of fossil fuels in the vehicle, with only 1% of transport powered by electricity, in electric trains. Without technology options to replace aeroplanes and ships with electric equivalents, the second column of the figure assumes that these modes have been phased out in thirty years, so the electricity available for transport can be divided between rail and road vehicles.

Fig. 2.5 demonstrates the opportunity for energy saving through adjusting the way we travel. The figure shows both the energy and emissions consequences of a person travelling a kilometre by different modes: these two figures are closely correlated except for flight, where the emissions at high altitude cause additional warming effects. The figure underlines how important it is to stop flying - its' the most emitting form of transport and we use planes to travel the longest distances. A typical international plane travels at around 900km/hour, so flying in economy class equates to 180kgCO_{2e} per person per hour (double in business class, quadruple in first class, due to the floor area occupied.) Flying for ~30 hours per year is thus equal to a typical UK citizen's annual emissions.

The key strategies to reduce energy use in transport depend on the form of journey. Short distance travelling involves frequent stops and restarts, so a substantial

Figure 2.4: Energy use in transport

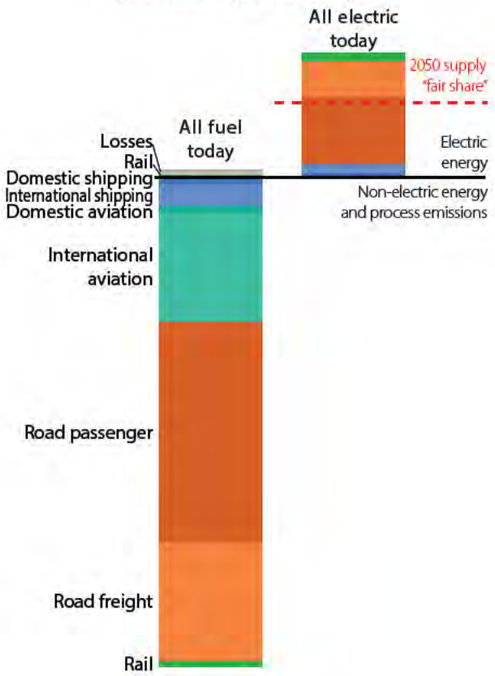
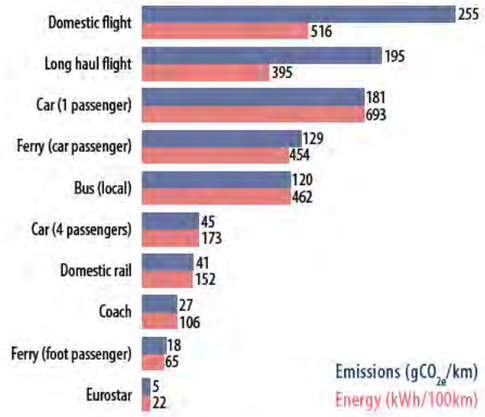


Figure 2.5: "Mode shift" for personal transport



share of energy is used to accelerate a vehicle and its contents. As a result, reducing the weight of the vehicle and travelling less become key strategies to reduce energy demand. At present UK cars are on average used with 1.8 people inside, but weigh around 1,400 kg, which is ~12 times more than the passengers, so almost all petrol is used to move the car not the people. Fig. 2.6 illustrates how reducing the ratio of the weight of the vehicle to the weight of the passengers trades off with distance travelled and energy used. Regenerative braking offers a technological opportunity to recapture some of the energy used in accelerating vehicles, and is under active development.

For long-distance travelling most energy is used to overcome air resistance, so the key to reducing energy demand is to reduce top speeds (aerodynamic forces increase with speed squared) and drag by using long and thin vehicles — trains. Rail transport is thus the most efficient transport mode for long-distance travelling, and if a higher share of trips is made by train rather than car,

Figure 2.6: Car travel - trading weight and distance

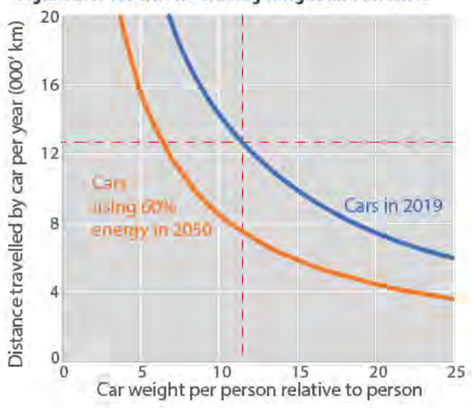
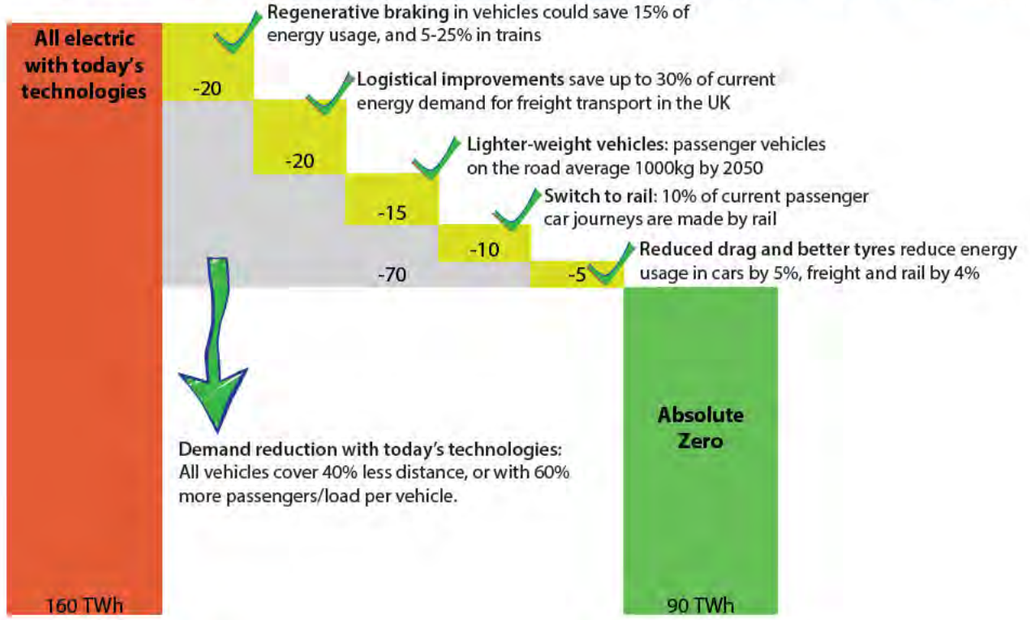


Figure 2.7: Reducing energy use in transport with incremental technologies or reducing demand with today's technology



substantial energy savings can be achieved without loss of mileage. A full electric train can move people using 40 times less energy per passenger than a single-user car.

Other modes of transport can also reduce energy demand in transport. For example, in the Netherlands, approximately 20% of all distance travelled is by bicycle, compared to only 1% in the UK.

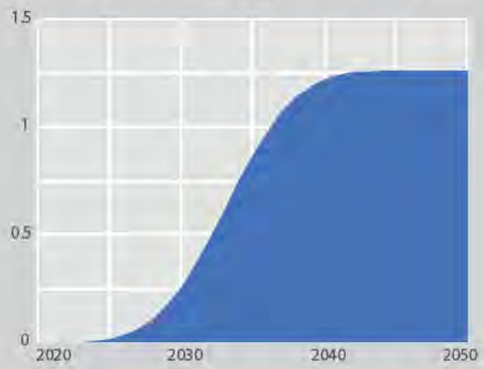
Although there are opportunities to reduce energy demand by mode shift in freight transport, substantial savings could also be achieved by logistical improvements. Up to 30% of energy demand in freight could be saved with an optimised location of distribution centres and with the creation of new collaborative networks to promote co-loading. Technology to facilitate the implementation of these logistical strategies already exists or is expected to become available over the next five years, although this also requires new corporate partnerships.

Fig. 2.7 summarises the options for electrifying UK transport and using 60% of the energy. Either vehicles are modified - with regenerative braking, reduced drag and rolling resistance (better tyres), and weight reductions, or we can choose to use them less - through ride-sharing, better freight management, or an overall reduction in distance travelled.

Can we make & recycle enough batteries?

Lithium battery manufacturing requires a wide range of metals, most of which only exist in nature at very low concentrations. Cobalt is one of the most valuable and is currently essential to the stability and lifetime of batteries. If new car sales are to be completely electric within 5 years, we will need to make 50 million batteries by 2050, just in the UK. Most cobalt production is obtained as a by-product of nickel and copper mining, so could only expand if demand for these materials expand in proportion. Batteries can be recycled, but separating the materials in them is difficult and mining new metals is tehrefore currently cheaper than recycling. There is no simple route to recycle lithium batteries at present, but the surge in old batteries shown in Figure 2.8 should trigger innovation to address this.

Figure 2.8: Estimated volumes of electric car batteries reaching their end-of-life in the UK (millions/yr)



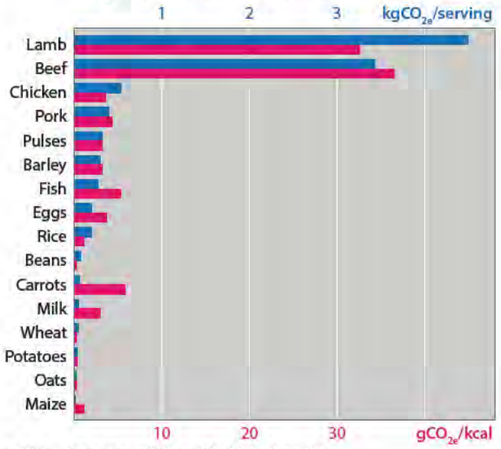
Land-use, food and waste

Fig. 1.15 demonstrated that around a quarter of global emissions arise from good production and the decomposition of organic wastes. The UK figures in Fig. 1.7 show this fraction being closer to one sixth, which reflects the fact that the UK imports around half of its food. Fig 2.10 provides more detail on these non-energy and non-industrial emissions.

As waste biomass breaks down to compost, it releases either carbon dioxide (if the biomass is in contact with air) or methane, which is a much more potent greenhouse gas and is the main driver of the emissions from waste decomposition. However, methane is the gas we use in cooking or in gas fired electricity generation, and the greatest success of recent UK climate policy has been to reduce these emissions significantly. Households across the UK now expect to discard organic wastes in their green bins, which are collected as the feedstock for anaerobic digesters which generate methane for energy production as shown in Fig. 1.7. As a result, UK landfill methane emissions have reduced by more than 50% since 1990 and will be close to zero by 2050.

The other major sources of emissions in Fig. 2.10 are largely related to ruminant animals – cows and sheep – grown for meat and dairy consumption. Ruminants digest grass in their first stomach, leading to methane emissions (enteric fermentation) while also releasing methane with their manure. In parallel, rising global demand for food is driving demand for increased biomass production, around half of which is to feed animals and in turn this drives forestry clearance. Trees are a substantial store of carbon, so clearance increases emissions either as CO_2 if the wood is burnt, or more damagingly, as methane if left to rot. The clear implication of Fig 2.10 is that eating lamb and beef will be incompatible with Absolute Zero.

Figure 2.9: Emissions intensities of food



This message is underlined in Fig. 2.9 which gives an estimate of the emissions associated with a meal with typical portions of different diets. The figure demonstrates that a vegetarian meal isn't emissions free, and a meat-based meal (with pork or chicken) may not have much more impact than one based on pulses. However, the ruminant meats stand out so are a priority action in moving towards Absolute Zero.

The market for vegetarian food is currently growing rapidly, as rising social concern about emissions has motivated many individuals to switch to a more plant-based diet. There is significant potential for innovation in extending and developing new manufactured meat substitutes. Research has also begun to examine whether alternative feeds could eliminate ruminant emissions, but this is not yet mature.

Figure 2.10: Global emissions from agriculture, and organic waste (total in 2010: 17 Gt CO_{2e})

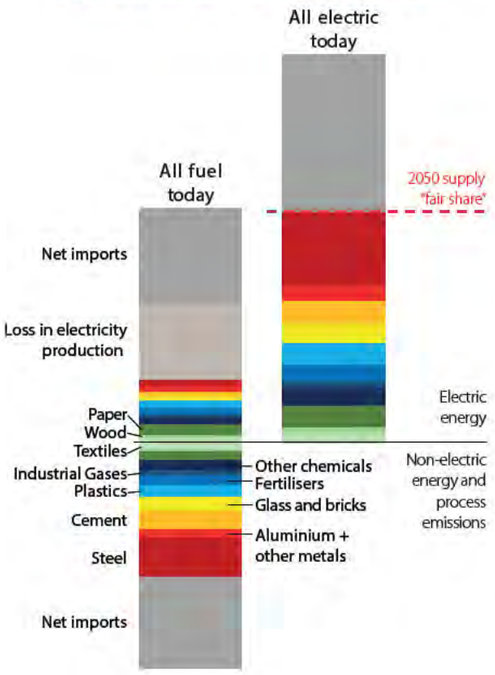
Key Message: Most of today's UK lifestyles can continue and grow within the target of Absolute Zero. Changing the way we travel (in particular not flying, and making better use of wheeled vehicles), stay warm (using electric heat pumps instead of gas boilers) and eat (cutting out lamb and beef) are the most important changes that we would notice. In parallel, small changes in the design of buildings and vehicles can make them more efficient. However the biggest challenge revealed in this section is the use of shipping for freight: at the moment we have no alternatives.

2.2 Materials and Resources

The implications of the analysis of chapter 1 for material production are summarised in Fig. 2.11. The UK imports much of our material requirement - either as materials, components or finished goods - so around half of the impact of our consumption today leads to the release of greenhouse gas emissions in other countries. Of the bulk materials that drive most industrial emissions, paper and aluminium production are the only two for which electricity is the dominant energy source. The processes that make materials can nearly all be electrified, but the challenge to Absolute Zero is to deal with the production processes that inevitably lead to emissions. Blast furnace steel can be replaced by steel recycled in electric furnaces, and this leads to the expansion of electricity for steel production shown in the figure. However, we currently have no means to avoid the emissions of cement production - even if the process were electrified - because the chemical reaction that converts limestone into cement inevitably releases carbon dioxide. Without innovation, we will be unable to use concrete or mortar - the two forms in which we generally use cement - but because this is so difficult to envisage, we have allowed some electric supply for the production of cement alternatives.

Starting from cement, this section explores the opportunity for innovation to expand the available supply of materials within Absolute Zero emissions.

Figure 2.11: Energy use in producing materials



Cement

Cement hardens when mixed with water because the solid products of the reaction (called hydrates) have a higher volume than the cement powder and thus form a solid skeleton. Only a few elements in the periodic table have this property and are also widely found in the Earth's crust. The elements available in the earth's continental crust with an abundance higher than 1% are silica (60.6%), alumina (16.9%), iron oxide (6.7%), lime (6.4%), magnesia (4.7%), sodium oxide (3.1%) and potassium oxide (1.10%). Of these, Portland cement mainly uses calcium and silica, with aluminium, iron, calcium and sulphur also playing a minor role. Calcium and aluminium together can form a heat-resistant cement used in refractory applications. Magnesium, sulphur and aluminate can also work together as a cement, but attempts at making a reliable product from them have proven unsatisfactory. Iron does not form hydrates with a high volume. Thus, the key ingredient to Portland cement is calcium, which is found mostly in the form of limestone (or calcium carbonate), as the fossilised remains of micro-organisms which have combined CO_2 and calcium to form shells for billions of years.

60% of emissions from cement production arise from the chemical reaction of calcination in which limestone is converted to clinker - the precursor of cement. The remaining emissions are due to the combustion of fossil fuels (and waste materials) in kilns. Although heating processes may be electrified in the future, process emissions from calcination would be unavoidable, unless alternative sources of calcium oxide are found to replace limestone in cement production. Currently it appears to be impossible to produce cement with Absolute Zero emissions. Technology innovation on the alternatives to calcination and reconfiguration of the cement industry could enable zero emissions in cement production. However, any innovation in these processes would probably require a substantial reduction in cement demand from current levels.

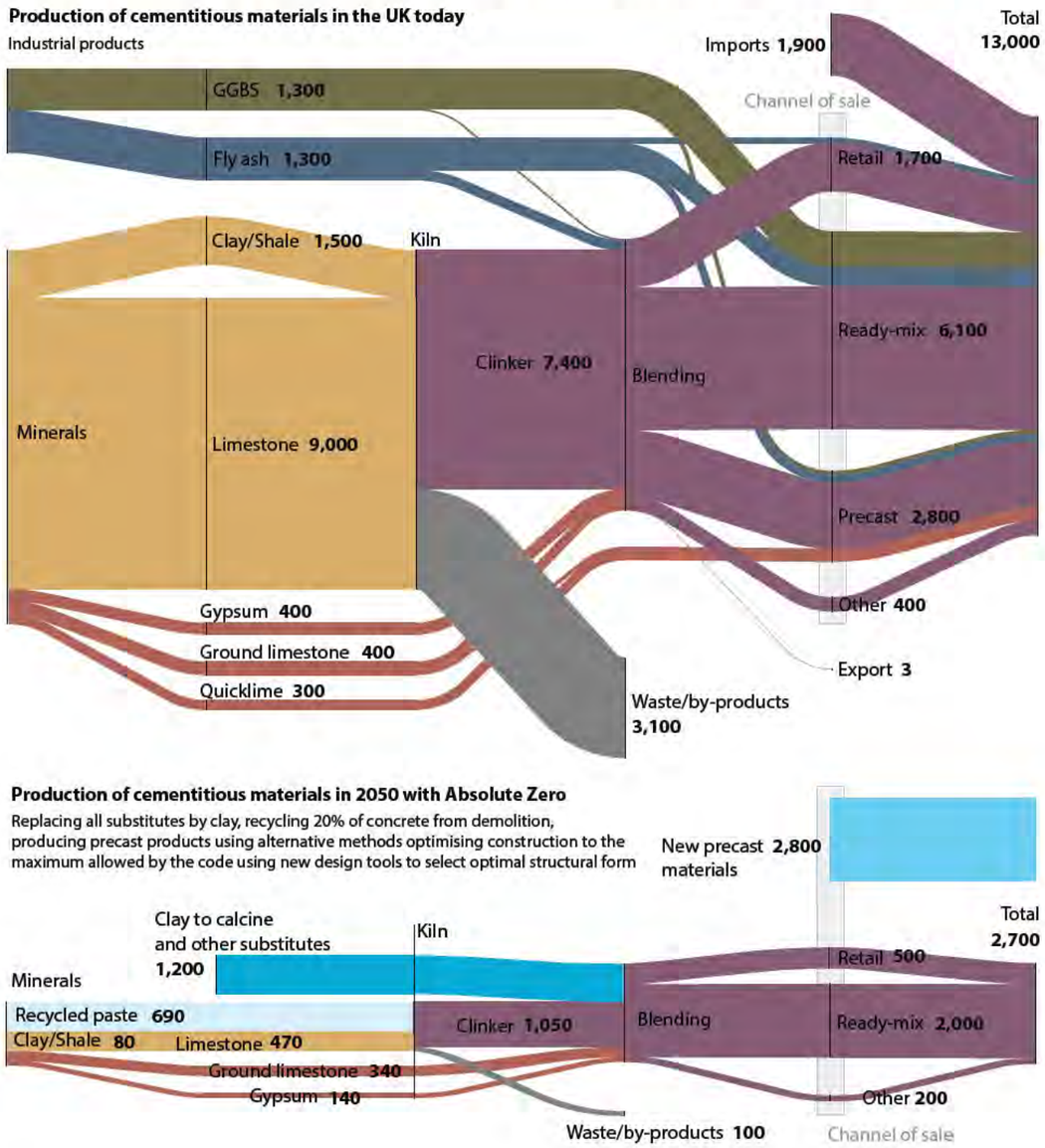
Currently, the construction industry makes use of many substitute materials to reduce the total demand for cement: both fly ash a by-product of burning coal, and ground granulated blast furnace slag, a by-product of the steel industry are used. Together, they reduce the need for pure Portland cement by about 20%. However, in a zero-carbon world, neither of these products would be available - as coal combustion and blast furnaces would not be possible - which leads to an increase in the need for new cement.

It is possible to produce pre-cast products (bricks, blocks, or slabs) with zero or even negative emissions, whether

using micro-organisms which transform CO_2 to calcite or through bubbling CO_2 through magnesium sulfo-aluminate cement-based mixes. These could satisfy some of the construction industry's needs, but we have no alternative binders to replace Portland cement on construction sites. It is often claimed that geopolymers (fly ash or slag which react to form hydrates in the presence of alkalis) could replace Portland cement. However, this is not an option in a zero-carbon world because the base materials for geopolymer come from highly emitting industrial processes (burning coal and coking steel) which will not continue.

Pre-cast products could replace at most 14% of current uses of cement, but without binders, they could not be used for foundations or repairs even of critical infrastructure. One of the most common structural elements in today's commercial buildings, the flat slab which is cast in place from liquid concrete brought to site in mixer trucks and used to build floors, would disappear: the only available option would be pre-cast elements, but these could not be finished, as they are now, with a thin layer of concrete (called a screed). A currently popular construction method, composite construction using thin concrete slabs poured over corrugated steel sheets and beams, would also be

Figure 2.12: Production of cementitious materials in the UK and with innovation for zero emissions in 2050 (kT/yr)



impossible, despite being more materially efficient than the reinforced concrete flat slab.

There are two complementary paths that might lead to reducing the emissions from cement production.

Firstly, there may be new sources of cement replacement, and new low-carbon feeds for the production. A promising source of cement replacement is kaolinite-rich clay. Kaolinite is an oxide of aluminium and silicium, which when calcined at 850 C transforms into metakaolin which is an amorphous, reactive product. Because of the lower calcination temperature, this material is about half as energy intensive as Portland cement. It has the interesting property that it can react with raw limestone to form hydrates, as well as substitute cement. Thus substitution levels of up to 65% can be achieved without lowering strength. In the UK, waste from kaolinite mining in Wales can provide a good source of clay to calcine. London clay is of a poorer quality but could still be used if the strength requirements of new construction were lowered.

The second path to producing zero-carbon cement is to eliminate limestone from the feed of cement. An abundant source of calcium which is not carbonated is concrete demolition waste. Current best practice suggests that approximately 30% of the limestone feed of a cement kiln can be replaced by concrete demolition waste. This limit is due to the presence of the concrete aggregates, but if a separation process was established, and only the cement paste from concrete demolition waste was used, then it could be possible to produce cement without chemical process emissions.

The amount of demolition waste available yearly in the UK could cover an important fraction of our yearly needs, provided heroic efforts were made to make good use of this available source of materials. 30 Mt of demolition waste is produced yearly (2007 value from the National Federation of Demolition Contractors), 59% of which is concrete of which 20% is cement paste. An 80% yield in separating aggregates from paste would then provide 3 Mt of low carbon feed for the kilns to produce new cement.

Fig. 2.12 illustrates a summary of this narrative, comparing today's UK requirements for cement (or more generally, "cementitious material") in the upper picture, and the maximum possible supply we can envisage within the constraints of Absolute Zero in the lower picture. Section 2.3 will consider the opportunities to deliver construction with the 75% reduction in cement production implied by this figure.

Finally, there are many possible options for structural elements not using concrete and steel, including rammed earth, straw-bale (ModCell), hemp-lime, engineered bamboo and timber (natural or engineered). Often, these materials claim superior carbon credentials, which may be exaggerated, but they also come with enhanced building-physics attributes, including insulation, hygrothermal and indoor air quality benefits. These could be used to substitute concrete in some applications, but would require different design processes and choices of architectural forms.

Steel

Recycling steel in electric arc furnaces powered by renewably generated electricity could supply most of our needs for steel, as it already does in the US. Almost all steel is recycled already (the exception is where steel is used underground, in foundations or pipework) and as Fig. 2.13 shows, the average life of steel-intensive goods is around 35-40 years. The amount of scrap steel available globally for recycling in 2050 will therefore be approximately equal to what was produced in 2010. Fig. 2.14 shows how the balance of global steel production can evolve in the next 30 years to be compatible with Absolute Zero: blast furnace steel making, which inevitably leads to the emissions of greenhouse gas due to the chemical reaction involved in extracting pure iron from iron ore using the carbon in coal, must reduce to zero. Meanwhile, recycling which happens in electric arc furnaces could be powered by renewable electricity to be (virtually) emissions free, and can expand with the growing availability of steel for recycling. Even without action on climate change, the amount of scrap steel available globally for recycling will treble by 2050. In order to meet the requirements of Absolute Zero, this valuable resource can be the only feedstock, as there is currently no alternative technology for producing steel from iron ore without emissions.

Figure 2.13: Life expectancy of steel by application

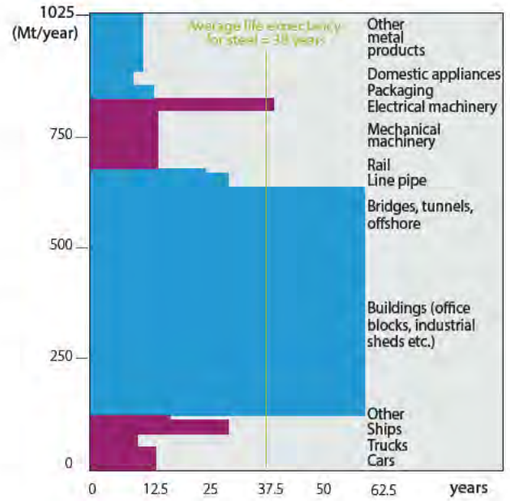
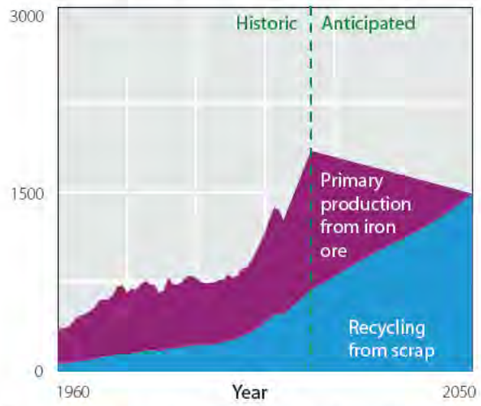


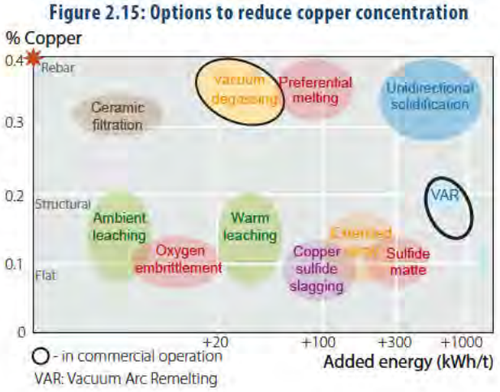
Figure 2.14: Global steel output in Absolute Zero (Mt/yr)



Recycled steel can have the same quality as blast furnace steel. In fact, some of the highest quality aerospace grades of steel used in the UK are made in Rotherham by recycling. However, the quality depends on the mix of metals supplied to the electric arc furnace, and is degraded in the presence of any significant quantity of tin or copper. Tin enters the steel recycling stream because of the use of tin-plate to make food cans, but this is relatively easily managed: these cans can be separated from other end-of-life steel and a mature process already operates at scale to separate the tin from the steel.

Copper is more of a problem in steel recycling, because current waste management involves shredding used cars and domestic appliances to separate metal from other materials, and these products contain many electric motors and associated wiring made from copper. There is a rich field of opportunity in responding to this problem, which could include: removing motors and wiring prior to shredding; improved separation of metals after shredding; metallurgical processes to remove copper from the liquid metal created by the electric arc furnace; developing new downstream processes to cope with copper contamination in the steel; eliminating copper for example by substituting it with aluminium. Fig. 2.15 presents a survey of metallurgical processes for reducing copper concentrations in liquid steel, from 0.4% (a typical value today for average UK steel scrap recycling) to around 0.1% (the threshold for higher quality applications such as car bodies) as a function of energy input. The high grade steels made in Rotherham are purified with vacuum arc remelting, with high energy (and therefore financial) cost, but the figure demonstrates how many other opportunities could be developed given the motivation provided by Absolute Zero.

Figure 2.15: Options to reduce copper concentration



Steel production is extraordinarily energy-efficient, and consequently steel is remarkably cheap. As a result, it is used wastefully, and in most applications we could deliver the same end-user service from half the amount of steel used for twice as long – i.e. requiring only 25% of annual steel production. This strategy of material efficiency depends on practices in construction and manufacturing so is discussed further in sections 2.3 and 2.4.

Non-ferrous metals

The production of non-ferrous metals is already almost completely electrified. The most notable example is aluminium production, which alone uses 3.5% of global electricity and the demand for this metal is currently growing rapidly. In theory, Aluminium recycling requires only 5% of the energy used to produce primary aluminium, although in reality with additional processing for cleaning scrap aluminium prior to melting it, diluting it with primary metal to control quality, and with inevitable downstream processing, a more accurate figure is around 30%. However, as demand for aluminium is growing rapidly, there is currently not enough scrap available to supply current demand, so within Absolute Zero future, primary production must continue - with output reduced in proportion to the supply of non-emitting electricity. Problems of contaminations which undermine the quality of recycled aluminium, could be a basis for innovation in improved processes to separate aluminium in end-of-life waste streams or modify composition in its liquid state.

Critical metals

Critical metals are so called, because of their growing demand and risks associated to their supply. There are no problems of scarcity for these metals, but their global availability is very unequal — most reserves are concentrated in very few locations, often in countries with volatile political environments, and several critical metals are produced as by-products of other larger-volume metals. Most of the production processes for critical metals are already electrified, but these are very energy-intensive due to the need to concentrate these metals from ores in which they naturally have very low concentrations. Unfortunately, recycling critical metals may require even more energy than primary production, because they are typically used as alloys and it is more difficult to separate them from the complex mix of metals in recycling than from the more controlled compositions in which they are found in nature. Absolute Zero, which requires a significant expansion of electrification, is likely to increase demand for critical metals which enhance the performance of motors, but this demand will come at the cost of an unavoidable growth in demand for electric power.

Ceramics

Ceramics and bricks are mostly produced from clays. These need to be vitrified at high temperatures in a kiln. Currently, heat is obtained from fossil fuel or waste combustions, but electric alternatives exist for all temperatures of kiln. Some colours in ceramics require reduction firing, which requires a stage in the kiln with a reducing atmosphere. This is currently obtained by fuel combustion, and thus alternatives to this practice will required. The 60% constraint on available electricity implies a 60% constraint on ceramics production in 2050.

Mining

Mining uses energy for two main purposes: shifting rocks and mined products in heavy "yellow" vehicles, and crushing them to allow the chemical processes of extraction. Both uses can be electrified but at present, yellow vehicles largely run on diesel while the power for crushing and grinding depends on local conditions. Potentially, there may be more energy efficient technologies for crushing and grinding, but already there is a competitive market looking for these, so breakthroughs are unlikely. However, within the constraints of Absolute Zero, the elimination of coal and iron ore mining will significantly reduce the total energy demand of the sector, providing "head-room" in the non-emitting electrical-energy budget for the expansion of mining associated with wide-scale electrification.

Glass

Most current glass production uses natural gas-fired furnaces. These could be electrified, but a reduction in production would be required in proportion with the available supply of emissions-free electricity.

Fertilisers

CO_2 from ammonia production is currently captured and used for urea production. Urea is then used as a fertiliser, delivering nitrogen to the roots of plants and crops, but as urea decomposes in the soil it releases the embedded CO_2 to the atmosphere. Overall, 2 tonnes of CO_2 are produced per tonne of urea used. Ammonium nitrate is an alternative fertiliser to urea, but it is produced from ammonia, thus leading to the same emissions, although all occurring in the chemical plant.

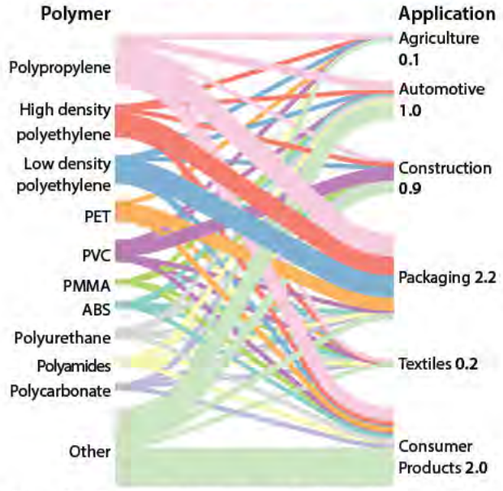
Carbon capture technologies could eventually be deployed, but this would only be compatible with a substantial reduction from current production. However, there are substantial opportunities to reduce energy use by reducing demand for fertilisers. Existing evidence suggests that more fertilisers are used than the nitrogen requirements to grow crops. For example, a study for the Netherlands shows that the use of fertilisers could be halved without loss in productivity, if used more efficiently.

Plastics

Approximately 1 tonne of CO_2 is emitted per tonne of plastic produced, but more than double this CO_2 is produced when plastic waste is incinerated. Plastics are made from oil - and they are therefore the most valuable component of existing waste streams, if the waste is burnt for energy. However, if plastic is combusted, it is in effect a fossil-fuel. As a result, plastic incineration is not compatible with the goal of Absolute Zero.

Plastic can be recycled, rather than incinerated, either by mechanical or chemical means. Mechanical recycling preserves the chemical structure and composition of polymers, and is normal practice within existing manufacturing processes: scrap at the exit of a plastic extrusion machine, for example, can be fed directly back into the machine for re-extrusion. However, this is possible only when the composition is known and under control. The great attraction of plastics is that they can be tailored to every application - with different colours, densities, textures, strengths and other characteristics according to each design specification. However, this tremendous variation is a curse for recycling: in current mechanical recycling of end-of-life plastics, the composition of the resulting product is uncontrolled and therefore of little

Figure 2.16: UK polymer applications (Mt/ year)



value. Furthermore, plastic waste is often mixed with other materials, hence the levels of purity of new plastics cannot be achieved by recycling, which therefore leads inevitably to down-cycling. A frequent example is packaging PET, which cannot be recycled back to food-grade standards and is thus used in lower-value applications.

In contrast, in chemical recycling, polymers are broken down into their constituent monomers which are then recovered to synthesise new plastics. At present, it is only economically attractive to recycle plastics mechanically, requiring less than half of the energy for new production. However, in future, chemical recycling by pyrolysis and gasification may allow plastic waste recovery for high-value applications. As yet, it has proved difficult to operate pyrolysis processes at scale, they require high temperatures, and have yield losses of up to 40%, partly due to use of part of the feedstock to generate heat.

Recyclability is also dependent on the type of polymers available in waste streams. Fig. 2.16 shows the annual flows of plastics in end-use products purchased in the UK by type of polymer and application. Although approximately 40% of annual plastics demand is used in packaging, these have short service lives and are quickly returned to waste streams. A great variety of polymers is used for each application, which hinders the identification and separation of polymers in waste streams, thus limiting the recyclability of plastics. Currently, land-filling plastics leads to almost no emissions. Plastics are stable when landfilled so do not generate methane. However, land-filling neither saves the production of new primary plastics, nor does it contribute to the future availability of material for recycling, unless it is cleaned and separated prior to landfill for storage.

Other chemicals

The chemicals industry produces a wide variety of products. Methanol, olefins and aromatics are produced in much smaller quantities than most plastics and fertilisers, but are important precursors to a variety of chemical products. Emissions arise from energy uses and chemical processes. Although most energy uses can be electrified, it may be very difficult to continue producing many of today's chemicals without releasing process emissions.

Paper

The paper industry globally uses a third of its energy from its own biomass feedstock. Yet, in Europe biomass accounts for half of its total energy requirements, suggesting a global potential for improvement. Absolute Zero emissions would require a conversion of existing fossil fuel-based combined heat and power systems to electrical power processes. Given the constraint on non-emitting electricity availability required by chapter 1, then after complete electrification, paper production would be reduced by approximately 80% of current volumes, to be consistent with UK targets.

Textiles

Most energy uses in the textile industry have already been electrified. However, leather production (which depends on cows) would not be compatible with Absolute Zero for the same reasons given for beef earlier. As washing, drying and ironing account for more than half of the energy uses for most clothing textiles, the industry could promote fabrics that need no ironing and support a reduction in the frequencies of washing and drying.

Engineering composites

Novel nano-materials offer promising properties, which could enable the substitution of some metals across different applications. However, the current total volume of these materials could probably fit into a water bottle. For this reason, it seems unlikely that these materials will have any value in reducing demand for the bulk materials by 2050.

Key Message: Because of the emissions associated with their production, cement and new steel cannot be produced with zero emissions. Steel can be recycled effectively, but we need urgent innovation to find a cement supply. Under the conditions of Absolute Zero, the availability of most other materials will be proportion to the amount of non-emitting electricity available to the sector.

2.3 Resource Efficiency in Construction

Most emissions associated with the construction arise due to the use of materials: the process of erecting buildings and infrastructure requires little energy compared with making the required materials, which are predominantly steel and cement. Under the conditions of Absolute Zero, all steel used in construction will be from recycling - which is largely the case already in the USA, and poses no significant challenge. However, as discussed in the previous section, the industry must learn to make use of considerably less cement. A parsimonious use will make the transition to Absolute Zero possible without putting the material industry under impossible strain. Furthermore, all efficiency gains in one material usually cause reduction in the use of the other, because lower loads always translate to lower structural needs. Fig. 2.17 shows the current uses of cement in the UK as a guide to the search for material efficiencies.

The causes of material *in*efficiency in construction are relatively well understood. The most common is over-specification. The amount of steel in a typical floor of a steel-framed building is about twice what the structural requirements would dictate. This is because the choice of steel beams or steel reinforcement in concrete slabs is not fully optimised and because the decking (the thickness and type of floor slab) is typically oversized.

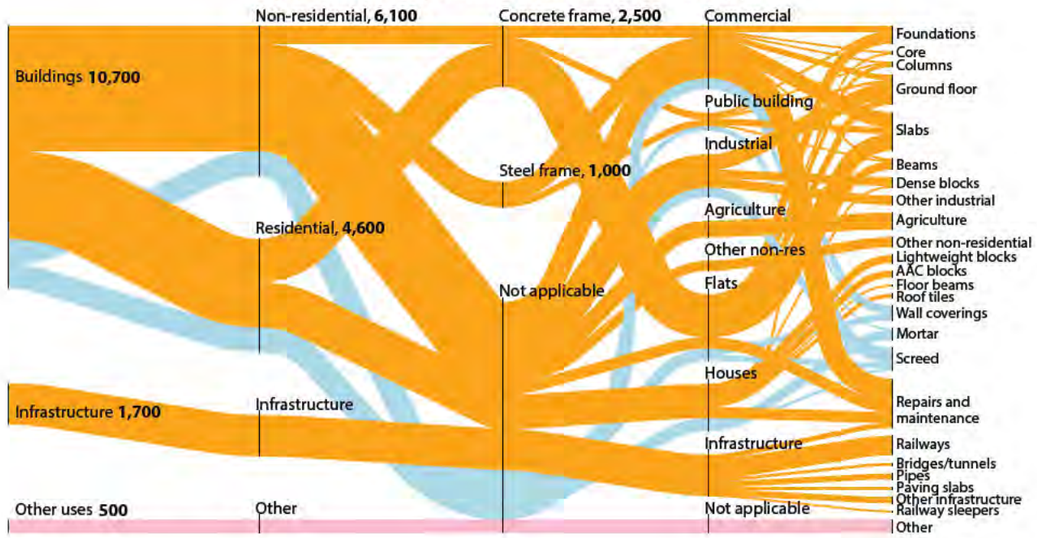
In current UK construction of steel-framed buildings, on average the steel is over-specified by a factor of two, even after accounting for our conservative safety factors. This does not mean that it would be possible to half the amount of steel, be we estimated that it was possible to save at least 15% of the mass of steel with no loss in service or safety. The deckings, are also oversized: the thickness of the concrete layer is larger than required, and the steel plate supporting the concrete in composite construction is frequently double the required thickness.

The building codes currently only specify the minimum amount of material to be used (including the margin of safety). But they could also enforce an upper limit, adding an "and no more" clause. There is also no existing benchmark to compare the embodied energy of the materials in a building per square metre of but this would help drive the efficiency of structural design.

In addition to these sources of over-specification, buildings are often designed for much higher loads than they will ever bear: gravity loading in buildings, predominantly from people, is specified to a far higher level than the physical proximity of groups of people could allow or that ventilation systems could sustain for life in the building. An overestimate of design loading leads directly to material being wasted in buildings. We do not routinely measure loading in buildings, and therefore a research effort is needed. Measuring loading in our buildings, would provide lessons from our existing buildings to transform structural design efficiency.

When specifying the vibration behaviour of buildings, which governs their "feel," engineers usually exceed the requirements of our building codes. However, in use this feel is usually governed by the choice of flooring and the location of partitions, but designers usually ignore those factors, which are not set when the structural frame is

Figure 2.17: Current patterns of cement use in the UK (kT/yr)



chosen. Therefore, a lot of effort goes into making stiff buildings, which require more material and which may be entirely wasted. Better methods of predicting the feel of buildings would help guide design towards more efficient outcomes.

A further driver of inefficiency in our use of materials in construction, independent of over-specification, is the choice of structural form. The choice of the grid (the spacing between columns) is the most important factor in the CO_2 intensity of construction, yet there is little awareness of its importance. The carbon intensity of a building could double if very long spans are specified in preference to shorter ones, even when the users of such buildings frequently install partitions to sub-divide over-large rooms.

Scheming tools, which help guide early design towards a suitable architectural form are being developed. Currently, a designer is faced with a staggering array of options, not obviously different from each other, and will be naturally inclined to choose one with which they have experience. This is probably the cause of the over-design of decking. As the number of options grows – for example with growing enthusiasm for timber construction – the number of options in design will keep expanding, and designers may not be able to realise the promise of new constructions methods New scheming tools to support their decisions can halve the material requirements in construction.

The regularity of structures is also a currently underestimated source of in-efficiency: regular grids can be up to 20% more efficient than more complicated layouts. Novel tools can help structural designer make the right choices early in their projects, and link the choice of architectural form to the best currently available technology, as well as giving a context which may support architects to choose more efficient forms.

Resource efficiency can also be improved by using optimised structural members (slabs, beams, columns). Prismatic structural members in either concrete or steel are highly wasteful, because maximum stress in such members will only occur at one location along the entire length. Modern manufacturing processes can be used to specify appropriate structural shapes (e.g. Fig. 2.18.) Even when designing flat concrete slabs, the pattern of reinforcement is rarely optimised, in part because a complex reinforcement pattern would increase the odds

Figure 2.18: Concrete beam made with fabric formwork

of errors on the construction site. New products such as reinforcement mats which have been tailored for specific site and can be simply unrolled have appeared, but they are not yet fully integrated in the design process of the structural design firms.

Finally using alternative construction material at scale will require considerable changes in design habits. Engineered timber, if it lives up to its promise, will probably take its place besides steel and concrete as a standard frame material. However, engineers are only now being trained to design with timber, and it will take time before it can be used broadly. The trade-off between building tall (probably using high-carbon materials) with low transport requirements, and building low-rise (using low-carbon materials) but with higher transport requirements in a more sprawling approach, needs to be explored.

Steel production, even using a fully recycled route is energy intensive. It would require less energy to re-use beams rather than recycling them by melting. Currently, steel reuse is only a marginal practice, mostly because steel fabrication is an efficient, streamlined process which relies on beams being standardised products. It would be possible to increase the rate of reuse if legislation was adapted to help the recertification of steel beams, but more importantly the construction value chain must develop to accommodate the collection and reconditioning of beams to make them ready for refabrication.

Together, these material efficiency techniques can considerably reduce the need for materials in construction. This is vital to reduce the requirement for cement production to manageable levels. Putting into place all of the material efficiency techniques described here would allow us to keep meeting the needs in Fig. 2.17 with the cement supply implied by the second of Fig. 2.12a and thus to meet the challenge of Absolute Zero.

Key Message: Construction uses half of all steel and all cement, but has developed to use them inefficiently. The requirements for materials in construction could be reduced to achieve Absolute Zero by avoiding over-specification and over-design, by structural optimisation and with reuse.

2.4 Resource efficiency in manufacturing

The manufacturing of basic materials into products and goods is a major source of greenhouse gas emissions. For most products, manufacturing processes themselves cause a relatively small fraction of a product's total embodied emissions, compared to the material input – see Fig 2.19. However, constraints caused by manufacturing practices strongly influence both the material input, and emissions caused by the product during its use. Therefore, under the conditions of Absolute Zero, major changes in manufacturing are needed; driven not just by changes up and downstream of the sector, but also by the need for greater resource efficiency within it.

These changes have some impact on all products, but a critical priority in planning the delivery of Absolute Zero is to focus effort on the sectors with most impact. Having recognised that material production drives most current industrial emissions, Fig. 2.20 allocates the energy use in the first column of Fig. 2.19 to applications to reveal the specific target sectors where material demand reduction is essential. Section 2.2 focused on construction, the single biggest user, and the strategies described there are relevant also to the non-cement components of infrastructure. But the figure clearly prioritises vehicles, industrial equipment and packaging for most attention.

Figure 2.19: Energy use in Manufacturing & Construction

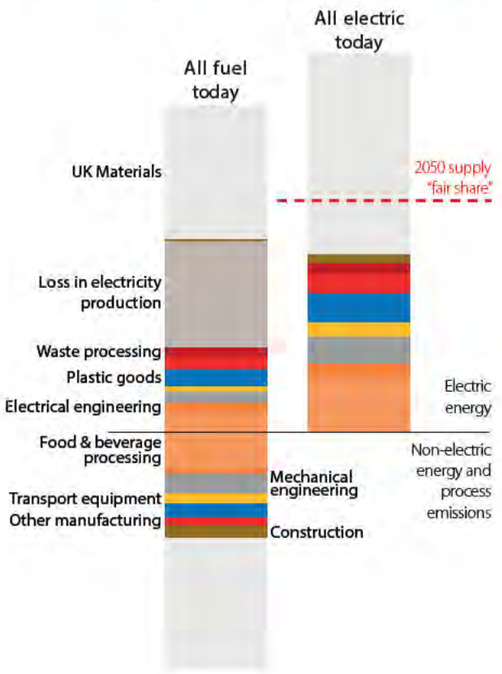
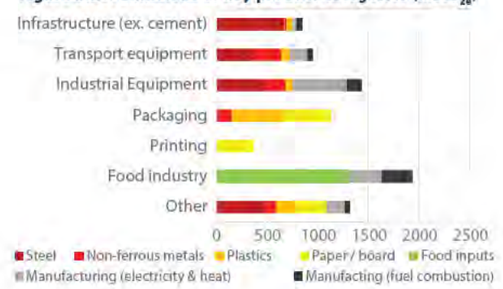


Figure 2.20: Emissions of key product categories ($MtCO_{2e}$)



Responding to changed material availability

In section 2.2 we saw that the availability of materials which today directly emit greenhouse gases in their production will be reduced by 2050. This includes major raw materials such as steel from iron ore and cement, and multiple products of the chemical industry including F-gases, solvents, lubricants, and certain types of plastics. The knock-on effects for manufacturing are huge:

Lubrication is critical for much of manufacturing; from metal forming, to motors, pumps and compressors; but almost all current commercial lubricants are derived from fossil fuels and directly emit greenhouse gases by oxidation either in production or use and so – by a strict definition of Absolute Zero – are ruled out.

Similarly, solvents which emit Volatile Organic Compounds cannot be used. Yet these play a significant role in many industries, including paper coating, degreasing, printing and textiles, but also in coating or painting manufactured goods. Alternatives will be prized and their use widely expanded by 2050. Currently most steel used in manufacturing derives from iron ore; recycled steel is used almost exclusively in construction. New methods will be needed to shape, certify and steel derived from recycled sources. Processes will need greater tolerance to input variation.

Whilst cement and concrete are not widely used in manufactured goods, they are of course ubiquitous in industrial floors, machine foundations and the like: placing a significant constraint on future factories at a time when flexibility and adaptability is key.

Meeting changed product requirements

By 2050 and beyond, the product and composition of many manufacturing industries will be significantly different. For example, Chapter 1 anticipated a 3-fold increase in non-

emitting electricity generation over the next 30 years which means that the need for energy storage will sky-rocket. Section 2.1 predicted major shifts in demand for transport equipment: large uptake in electric vehicles and an end to plane or ship building. Similarly, widespread electrification of domestic and industrial heating will require a massive increase associated equipment such as heat pumps. A shift to vegetarian diets would change the food industry significantly. Increased consumption of processed meat substitutes with lower emissions embodied in the food inputs, would require new processing capability and could need more energy in processing.

The scale of material and resource input to enable these changes is significant; looking at wind electricity generation alone, increasing capacity at the rate predicted creates the opportunity for a substantial increase UK industrial output. On the other hand, Section 2.1 anticipates that by 2050 consumers will require products that last longer and can be used more intensively. This will present manufacturers with the challenge of producing higher quality, higher value products. These may be individually more materially intensive but, with a reduction in total volume of sales, manufacturers will see a reduction in their total throughput.

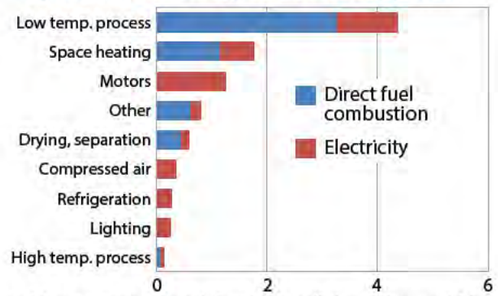
Improving resource efficiency

In a world with much-reduced primary energy availability manufacturers will need to make a step change in resource efficiency; both in material and energy input.

Material efficiency

Various material efficiency measures are technically possible in the manufacturing of goods, components and equipment, including the reduction of process scrap, optimised component design and re-use or re-purposing of components. Large emission savings are possible by reducing process scrap. In machining up to 90% of material can be wasted. For example, machining of aerospace fan blades from solid titanium can produce 90% waste in the form of machining chips. The paper industry produces pulp

Figure 2.21: Annual energy use (MToe) of key processes



residue as waste containing high cellulose fibre and high calcium oxide, both of which can be used in fired clay brick production. Other uses are for land-filling, incineration, use in cement plants and brickworks, agricultural use and compost, anaerobic treatment and recycling.

The automotive industry in the UK generated 0.5% of the total commercial and industrial waste in the UK, at 1.85 million tonnes, 41% of which is metallic, 28% is mixed ordinary waste, 8% chemical and medical waste, and the remainder mineral, paper, wood and plastic. Many nascent technologies have been proposed that could reduce process scrap such as additive manufacturing, precision casting or forging and so on. However, the significant variation in performance between companies illustrated in Fig. 2.22 suggests that the problem is just as much in the management of component and manufacturing design processes.

Shape optimisation of components could further reduce the material requirements of manufacturing. Whereas a given component - whether it is food or beverage can, drive shaft, or a structural beam – would often ideally have variable thickness along its length, or a hollow interior, current manufacturing process are not set up to produce such features. Material savings could be achieved by the development of new manufacturing processes: the economies of scale promote production of components with uniform cross-sections, but optimising material use would require a distribution, and new computer-controlled

Figure 2.22: Material utilisation rates for selected cars

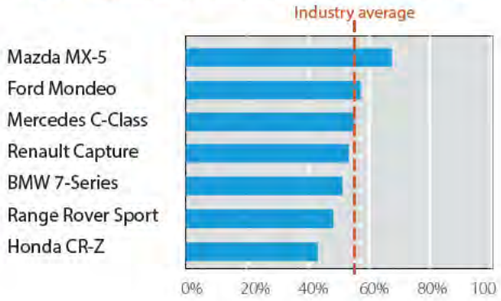
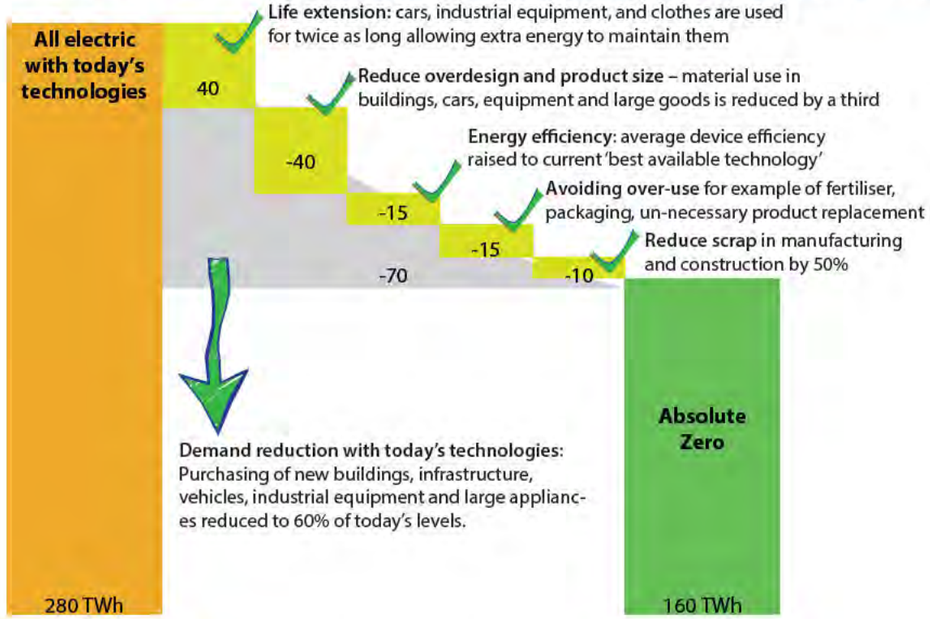


Figure 2.23: Reducing energy use in manufacturing and construction with incremental technologies or reducing demand



equipment can facilitate this change. Functional grading – generating different mechanical properties in different parts of the component - or using higher strength or lighter materials can also contribute.

Changes of the nature described have all been demonstrated at differing technical 'readiness' but their deployment requires large disruptive changes in management practices, skills and manufacturing processes.

Energy efficiency

Direct energy use in manufacturing will need to reduce if electricity supply is restricted to zero-carbon sources by 2050. Some of this reduction could be achieved by energy efficiency. In the UK, the use of energy in downstream industries is dominated by low temperature process heating, space heating and motors, with a long tail of other uses as shown in Fig 2.21. Recent estimates suggest that it may be possible to quarter electricity consumption over the next 10-15 years with the appropriate deployment of conventional technology such as motor drives, pump and compressed air efficiency measures, and the use of heat pumps.

Product standards

Many positive changes are already occurring and many others are both technically feasible and cost-saving in the long run. To deliver the rapid pace of improvement needed we propose that stretching, and imaginative embodied emissions standards are phased in for almost all manufactured product and imposed equally on UK manufacturers and imported goods. Such standards are already widely familiar within manufacturing, whether for safety, inter-operability or use-phase energy efficiency. These must now be extended to embodied emissions and – as matter of urgency - be attached to the major programmes of industrial product development delivering the widespread changes in energy, transport equipment, food infrastructure. If these are imposed fairly on traded goods, it would create a great incentive for UK manufacturers to develop and benefit from the novel products and processes compatible with Absolute Zero.

Fig. 2.23 summarises the analysis of this and the previous section: the energy required to power UK manufacturing and construction, once electrified, can be reduced by a combination of changes to product specification and design, product longevity and process efficiency.

Key Message: Driven by inventive new embodied emissions standards, manufacturing will adapt to three major changes: 1) reduced availability of current inputs, 2) radically different product composition and requirements, and 3) the existential need for improved resource efficiency.

2.5 Breakthrough Technologies

The purpose of this report is to focus attention on how we can really deliver zero emissions by 2050, using today's technologies and incremental changes in use. This is because breakthrough technologies take a long time to deploy - as shown in the box story on page 10 - and we don't have enough time left. However, beyond 2050, new technologies will emerge to transform the energy and industrial landscape, and some of them will be those under development today.

The options surveyed on this page are therefore post-mitigation technologies: after we have met Absolute Zero through complete electrification, a 40% cut in energy demand and the elimination of emitting activities without substitutes, these technologies may later grow to be significant.

Generation

Of the non-emitting technologies in current use, hydro-electricity is difficult to expand, due to geography, and as discussed earlier, the use of biomass for food will exclude its use at scale for energy generation. However, nuclear power could expand. Following the Fukushima disaster in 2011, Japan closed its nuclear reactors and Germany decided to move permanently away from them. However, France continues to generate much of its power from nuclear power, and in the UK, Hinckley Point C is under construction although this is a big, costly project with uncertain completion date. New "small" modular reactors are also under discussion. At present, none are operating world-wide, with two under construction, but potentially beyond 2050, these could make a significant addition to generation. More remotely, nuclear fusion which has been under development since the 1940's is still decades away from generating any energy even at laboratory scale, so cannot be included in planning.

Beyond wind and solar power, the other renewable generation technologies under development are geothermal, tidal and wave power. Geothermal generation which operates at scale in Iceland, New Zealand and Costa Rica is unlikely to be significant in the UK and is operated only at very small scale. Two large tidal power stations operate world-wide, in France and Korea, at a scale of about a quarter of a gigawatt, but although the Severn Estuary has been explored as an attractive site, the UK has no current plans for a first installation. World-wide there is no significant generation based on wave-power. As a result, while these are important areas for development, it is not possible to anticipate any significant new generation from these new renewable technologies.

Energy storage and transfer

Wind and solar power are intermittent, so create a challenge of matching the availability of electricity supply to demand for its use. This can be addressed by storage (for example by batteries or the pumped hydro-station at Dinorwig) or by controlling demand to match availability, for example by allowing network operators to decide when domestic appliances and industrial processes can operate. There are already many developments in this area in the UK, and we assume that they can operate at sufficient scale in 2050 to prevent the need for excess generation.

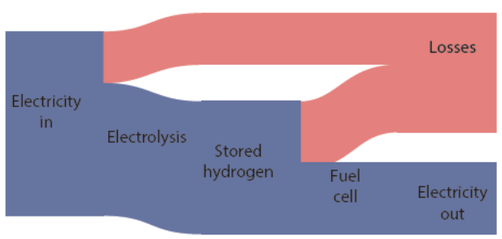
Batteries can operate at large scale, but remain heavy. For static applications this is not a problem but for transport it is constraining: the battery accounts for around one quarter of the weight of a two-tonne Tesla Model S. Technology developers have therefore looked for alternative forms of energy storage to use in transport, and found two important options: hydrogen and ammonia.

Hydrogen is currently produced mainly (95%) from fossil fuels by steam reforming methane, which leads to the release of a significant quantity of greenhouse gases offering no benefit as a form of energy storage. However, it can also be made from water by electrolysis, although as Fig. 2.24 shows, this involves losses which depend on the application, but may be higher than those in the figure depending on the form of storage used. If, in future, we have an excess supply of electricity from non-emitting sources, we could use it to make hydrogen, which could then be used to power vehicles.

Ammonia combustion for shipping may be available in the future, but it currently leads to the production of NOx, which is a powerful air pollutant. Additionally, ammonia is currently produced from fossil fuels, which results in emissions. Although it is possible to use fuel cells to produce ammonia using renewable electricity, there is currently no such process in commercial operation, and its implementation at scale would again be an additional burden to the decarbonisation of the power grid.

One further opportunity for energy storage and transfer is through heat networks which capture "waste heat" from industrial processes and use it, for example, for domestic heating. Around 1% of the UK's homes are heated by heat networks, but expanding this number has proved difficult due to the high cost of the required infrastructure.

Figure 2.24: "Round-trip" efficiency of hydrogen storage



Emissions capture

Although not all related to the energy system, several novel approaches have been proposed to capture carbon emissions. Carbon Capture and Storage (CCS) is used to a very small extent by the oil industry to increase production through the process called "Enhanced Oil Recovery": compressed CO_2 is pumped into the rocks in which oil is stored to drive more of it to the well.

For over twenty years CCS has been proposed as the key technology to allow continued generation of electricity from gas and coal. However, the only power plant operating with CCS – the Boundary Dam project at Saskatchewan in Canada, a very small 0.1GW power station – does not produce transparent figures on performance, and when last reported on by researchers at MIT, was capturing but then releasing its emissions. This technology, despite the very well-funded lobby supported by the incumbent oil and gas industry, is far from mature or ready to be included in meaningful mitigation plans.

Plans for "Bio-energy CCS" or "BECCS" claim to be carbon negative – burning biomass and storing carbon permanently underground – are entirely implausible, due to the shortage of biomass, and should not be considered seriously.

Carbon Capture and Utilisation (CCU) has become a key technology promoted by the industrial operators of conventional plant, particularly the steel and cement industry, but it requires significant additional electrical input, which clearly will not be available before 2050. In future CCU allow conventional steel and cement production to re-start, but only when we have excess non-emitting electricity.

In fact, the idea of carbon capture and storage requires no new technology, as it could be developed by increasing the area of land committed to forestry or "afforestation". We aren't short of tree-seeds, and instead the world is experiencing deforestation under the pressure of needing land for agriculture to provide food. Planting new trees is the most important technology on this page, and does not require any technological innovation.

Industrial processes

In addition to its potential application in energy storage, hydrogen creates a further opportunity in industrial processes because it is sufficiently reactive that it could be used to reduce iron ore to pig iron without releasing carbon emissions in the reaction. Steel has been produced at laboratory scale by hydrogen, and pilot plants are now being developed to demonstrate higher scale production. However, it will only be consistent with a zero-emissions future when the hydrogen is produced with non-emitting electricity, and we have no spare non-emitting electricity to allow this to happen.

Beyond 2050, the incumbent operators of blast furnace steel making, have several process concepts for making new steel from iron ore without emissions. The three main areas being discussed are: separating CO_2 from other blast furnace gases, and applying CCS to it; using hydrogen instead of coke to convert iron ore to steel; separating CO_2 from other blast furnace gases, and using it for other purposes via CCU. All three routes show rich technological opportunities, but will not be operating at scale before 2050.

Flight and shipping

Electric planes are under development, but difficult: the limited rate of improvement in solar cell efficiency shown in Fig. 1.10 suggests that solar power will be never be sufficient for multi-passenger commercial flight. Meanwhile, we have yet to find a sufficient breakthrough in battery development to anticipate sufficient light-weight storage. The most promising route appears to be synthetic jet-fuel - which, inevitably, will be important only after a substantial increase in non-emitting electricity generation.

The decarbonisation of shipping is difficult with current technologies. Although short-distance shipping can be electrified using battery-powered engines, long-distance shipping requires a combustion process. Nuclear propulsion of ships offers a viable alternative to current long-distance shipping and it is already used, although almost only in military vessels. Some commercial operators are currently exploring the opportunity to add sails to conventional ships to reduce their diesel requirements.

Key Message: The problem with breakthrough technologies is not our shortage of ideas, but the very long time required to take a laboratory-scale idea through the technical and commercial development cycle before it can begin to capture a substantial share of the world market.

3. Transitions:

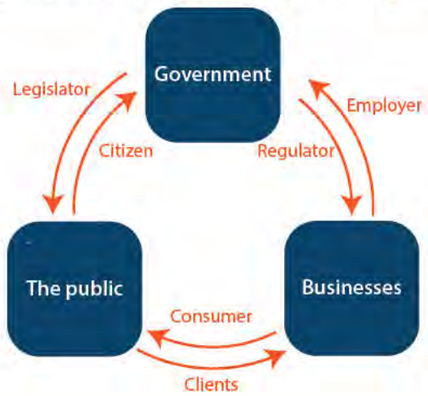
Key Message: No one actor can bring about Absolute Zero. Delivering it is a journey depending on co-operative action by individuals, businesses and governments acting on good information

Absolute Zero is a journey

Action on climate change depends on the co-operation of three "players" illustrated in Fig. 3.1. The public, the government and businesses must act jointly to transform the way we produce, consume and live. Large sections of the public are increasingly concerned with climate change, and some take individual actions such as eating less meat, looking for locally sourced products or taking the plane less often. Politically, this has translated to a growth in the support for Green parties across Europe. Businesses, driven by the demands of the public and driven to efficiency are seeking more efficient production methods and developing products consistent with a zero-emissions future. Governments embrace the drives of the public and businesses to grow the economy and gain votes.

Despite this goodwill towards change, the important transformations outlined in this report do not seem to be happening, or at least not at a sufficient pace. A key reason for this is that these transformations are attempted without the required trust building between the actors which can make them successful. The actors of change are in effect locked in a prisoners' dilemma, and the changes proposed make it seem like a static version of the game. The prisoner's dilemma is a theoretical game where the best outcome for the players cannot be achieved if the players only follow their own best interests. There are many variants to the story but in substance it runs like this: two bandits just successfully robbed a bank and were caught soon after for some minor offence. They are kept in separate cells, and each is told their accomplice has also been caught. They can defect and accuse their accomplice of the robbery, in which case they'll get at least a reduced sentence, or they can cooperate and refuse to accuse each other. Should they both defect, they'll both have a reduced sentence. Should they both cooperate, they'll both have a small fine, should one cooperate and the other defect, the defector will go out free and the cooperator will get a full sentence.

Figure 3.1: The three "players" of climate mitigation



Game theory predicts they should both defect: indeed, there is no outcome from cooperating which cannot be improved by defecting… Every day, all of us are faced with many such dilemmas – but every day we cooperate rather than defect! This is because the prisoner's dilemma when played over and over is a completely different game which is won by achieving cooperation. When considering the so-called iterated prisoner's dilemma, it's not single moves but strategies which matter. This is a well-studied problem, and the winning strategies which achieve cooperation share a number of basic characteristics: they punish defectors, they reward cooperators, they are simple enough that they can be understood by observers. Other research looking at how humans play in games compared to the predictions of game theory suggests another crucial quality of winning strategies: the cooperative strategies must also be fair. Marginally cooperative moves will be treated as defections.

Similarly, the transformation required for climate change mitigation needs to be played out like the repeated game, and not seen as a single huge step which will most likely be resisted and fail. Fortunately, three-player games favour cooperation somewhat, unlike the two-player variant. Unfortunately, having more players may drive each one individually to try and delay making changes. To achieve the scale of transformation required, small incremental changes are the immediately necessary steps to build and reinforce trust between the actors.

Case study: reusing steel

Currently, most of the steel from demolitions is recycled. There is nothing else which can be done with the reinforcing steel of concrete, but steel beams having standard sections and not being damaged from their service as structural elements could be reused. If not directly, after some sand-blasting and the fitting of new connexions the beams are as good as new. Most of the research on the barriers to steel reuse focuses on the certification problem: steel to be used in construction needs to be certified, but the process of obtaining certification assumes the beam is coming out of a mill and is not transposable to already used beams. However, is is possible for a small price premium to test the beams and guarantee that they have all the appropriate properties.

What we found is that the key obstacle in the supply chain was that steel re-use puts the buyer of the building wanting to use steel from reuse and the fabricator responsible for the conditioning of beams in a prisoner's dilemma. Reconditioning the steel takes approximately twice the amount of time to condition a new steel beam direct from the foundry. Although the fabricator can charge for this time, a project being abandoned – always a risk in construction – will translate to large losses. Therefore, all projects that we could study where the fabricator was not part of the planning, failed. Our proposed solution is for steel stockist to take on the job of reconditioning and recertifying steel so that the fabricators need never know whether the steel is from reuse or not. Acting as a trusted intermediary, this would avoid the project failures due to fabricators not wanting to shoulder all the risk. The upfront investment could be helped by government grants, and we showed that this would be overall profitable.

Case study: Cycling in the Netherlands

After the second world war, the Netherlands had, like the rest of Europe embraced cars as a symbol of freedom and mobility and had built highways and roads to accommodate this new transport mode. In 1971 alone, 300 children died in the Netherlands from accidents involving cars, leading to widespread protests. In 1973-74 the oil crisis caused oil shortages, leading the Dutch government to look for strategies which would lower the oil dependency. The protesters were demanding a return to the biking culture which had been an important part of Dutch habits until the war, and the government took this occasion to launch a number of bike-friendly initiatives: a number of car-less Sundays in the years. Some city centres were made car-free. These moves proved popular and were followed by the construction of bike-specific infrastructure.

From the mid-70s onwards, bikes were integrated in urban planning decisions, meaning not only cycles paths being built, but traffic-calmed streets would be favoured, and bike parking be available at convenient locations, and bike traffic be integrated in the general public transport infrastructure. As the bicycle is seen as a symbol of the Netherlands, it was possible to pass more stringent legislation: for example since 1992, in an accident, it is always the motorist's insurance which is liable for the costs in the Netherlands. Safe interaction with bikes is part of passing one's driving license. As the popularity of bikes grow in the 90s and 2000, larger investments in bike infrastructure became possible with the support of the public, leading to even more bikes being ridden.

Overall, the current Dutch biking culture is the result of a long process where multiple changes to legislation, habits and infrastructure were self-reinforcing, leading to today's situation where the Netherlands is Europe's leader in kilometres cycled.

3.1 Individuals – at home and at work

Protesters and school strikers have increased our awareness of the need to address climate change. An individual wanting to reduce their personal emissions can find a wealth of information on social media, websites and podcasts detailing actions they could take. Behavioural changes required to deliver zero emissions by 2050 are already being practised by some people in some places: some people already choose not to fly, to be vegan, to car share, to lower the temperatures in their homes and offices. If large scale social amplification could occur, as it did with the 'Me Too' movement, surely a cultural change could occur to enable zero emissions by 2050?

Although public awareness of the need to act has increased, the UK has not meaningfully reduced its resource use in recent decades, with the International Energy Agency reporting total final energy consumption has reduced by only 7% since 1990 levels. Individuals continue to use nearly as much energy as they did 30 years ago, suggesting that existing strategies to motivate individuals to use less energy are not generating the scale of impact required.

Social norms and individual behaviours

There is a misalignment between the scale of actions recommended by government (e.g. energy conservation) and those most commonly performed by individuals (e.g. recycling) . Actions which can have a big effect, such as better insulation in houses and not flying, are being ignored in favour of small, high profile actions, such as not using plastic straws. This is enabling individuals to feel satisfied that they are 'doing their bit' without actually making the lifestyle changes required to meet the zero emissions target. If large scale social change is to be successful a new approach is needed.

Whilst the thought of society taking radical, meaningful steps to meet zero emission targets could be criticised for being idealistic, we can learn from historical cultural changes. Not long ago, smoking cigarettes was encouraged and considered to be acceptable in public spaces that children frequented, drink-driving was practiced with such regularity that it killed 1000 people per year in the UK, and discrimination based on sexual orientation was written into law. These behaviours now seem reprehensible, showing society is capable acknowledging the negative consequences of certain behaviours and socially outlawing their practice. Focus should therefore be centred on expediting the evolution of new social norms with confidence that change can happen.

Evidence from behavioural science, and the long experience in public health of changing behaviours around smoking and alcohol, shows that information alone is not enough to change behaviour. To make the types of changes described in this report, we will have to think more broadly on the economic and physical contexts in which designers, engineers and members of the public make decisions that determine carbon emissions. At the same time, clear, accurate and transparent information on problems and the efficacy of proposed solutions is essential for maintaining public support for policy interventions.

The phrasing of communication is also important. Messages framed about fear and climate crisis have been found to be ineffective at motivating change. The longevity of the challenge of reducing emissions, and the lack of immediate or even apparent consequences of small individual actions mean it is challenging to link to them to the large-scale climate crisis. This allows individuals to make decisions which contrast with their desire to reduce emissions. Scientific description is not always the most effective means of communication, and language used to promote zero emissions should no longer focus on an 'eco-friendly' and 'green' lexicon, but rather candid descriptions of actions that appeal to human fulfilment. Evidence from time-use studies shows that human fulfilment does not strictly depend on using energy – the activities we enjoy the most are the ones with the lowest energy requirements. Consumers can be satisfied in a zero emissions landscape.

Individuals and industry

If net-zero targets are to be met, all of society needs to change, not just those motivated by the environment. Therefore, as well as persuading and supporting individuals to change with environmental campaigning and one-off sustainability projects, industry should embed a net-zero emissions strategy into business-as-usual, only offering products and services which meet their consumers' welfare needs without emissions.

This change will be driven by individuals acting in their professional capacity, as managers, designers, engineers, cost consultants, and so on. A structural engineer designing a concrete-framed building has vastly more influence over carbon emissions through their design decisions at work than through their personal lifestyle. Therefore, as well as the transitions in businesses discussed in the following section, this section applies also to individuals at work.

Key Message: Changes to social norms and individual behaviours can be positively framed to appeal to human fulfilment. Motivated individuals can be as effective at work as at home.

3.2 Transitions in businesses

Many of the opportunities and changes identified in the first sections of this report will involve businesses making changes to the types of technologies they use, or the way they use them. But this type of change can be difficult to motivate. This section examines why this is, and discusses the role of incentives, market pull, standardisation and collaboration in achieving the change required.

Challenges in changing technologies for zero emissions

We are surrounded by a constant stream of innovation in technology in some areas, such as smartphones – so why is it that some other industries have been slow to respond and to integrate relevant innovations into their operating models? In general, the reason is that new production technologies are introduced at the same as a new generation of products is launched. The new manufacturing technologies and processes are often not central to the functionality of the next product but are driven instead by improvements in cost, quality and logistics. So in areas without a rapid cycle of introducing new generations of products, it can take a long time for manufacturing innovations to be adopted.

In such cases, thorough assessment of technology merits, maturity and readiness are carried out, especially where change represents some form of risk. Without the driver of a new product launch, and associated new revenue stream, firms have displayed a risk-averse attitude towards making significant transformations in the production technologies they use. This is particularly true for safety-critical applications. In such cases, novel technologies have had to pass the test of time before being considered for full deployment. Another reason behind gradual technology adoption is the lack of propensity to invest, especially in highly established industries where the cost of new capital would be prohibitive.

Incentives for technology innovation

Using the "carrot and stick" analogy, it is easy to understand that innovation can have a difficult time permeating into an organisation without the right type of leverage and motivation. Governments can impose additional taxes, policies and regulations to achieve the desired changes but this could be short lived with the next batch of policy changes. Emissions and energy caps can be seen as a "stick" but financial rewards and customer-valued green credentials will be perceived as a "carrot".

Ideally there should be a market pull that is driven by the end customer. Organisations are more likely to adopt innovation and technology when there is a direct correlation to increased revenue and returns. They are also more likely to pursue targets that result in products and services that use less resources but still valued equally or greater by the customer. Consumers are more aware of the macro effects of their purchasing choices and there is a move towards companies that have the same brand values. However, for a business, it can be hard to benefit from this, as the relevant qualities are not easily visible to the end customer. For example, you cannot tell just by looking at a washing machine whether it was produced from renewably-powered recycled steel, or carbon-intensive steel from a blast furnace.

The achievement of Absolute Zero almost certainly requires life extension and better utilisation of certain categories of product, but with progressive insertion of more sustainable manufacturing and through-life engineering technologies throughout life in service. This creates a conflict: life extension and better utilisation of existing products implies that new products need to be introduced less frequently – but as described above, generally more sustainable production processes are difficult to introduce in the absence of new generations of products being developed. A new mechanism is therefore needed to drive forwards the adoption of positive technological changes. The most obvious means of doing this via public intervention would be the establishment, of some form of 'roadmap' which sets out progress.

The role of standardisation

Standardisation can play a significant role in reducing industrial and domestic energy use and CO_2 production. In many industries, standardisation and sharing best practice have paved the way to less resource duplication and greater customer experience. An example that is often mentioned is the light bulb but a more modern example would be the phone charger. In the early days of the mobile phone industry, not only did every manufacturer have their own chargers but every model had its own connector type. Once customer habits were analysed, it was found that customers wanted to upgrade to a new phone every few years, therefore very quickly there would be a build-up of useless chargers and connectors ending up in landfills. Several of the major manufactures developed a standard charger and connector that would be used for all models going forward. This had 4 main benefits:

- Reduction in unnecessary charger variation and legacy part production.
- Increased customer experience as phones could be charged with any charger and no longer limited to one connector.

- Phone manufacturers diverting funds and resources away from charger and connector design into other parts of the product that were more valued by the customer.
- Users investing in higher quality chargers that could be used for years without needing replacement and a reduction in E-waste.

In other industries current practice often requires specialised components and parts that are designed specifically for their intended use. With standardisation comes the reduction in design flexibility. In an already saturated market place, businesses are trying to differentiate their products and services form one another. Customisation currently allows them to achieve these goals, but as discussed above, the future environmental benefits of standardisation could provide an alternative source of differentiation.

It is possible that the progressive roll-out of standards over time could form a central and tangible element of any roadmap for achieving Absolute Zero. The development of standards which drive positive change would however be entirely reliant on some key principals of backward compatibility, such that the implementation of each new standard avoids immediate obsolescence of existing assets.

Making collaboration work

The achievement of Absolute Zero seems to be beyond the ability of individual firms, and even nations, to enact. It requires a level of cooperation which has perhaps only been seen during times of war.

Moving beyond the purely competition-based model and integrating some learning from the collaboration model can be beneficial to competitors as well as the environment. As well as eliminating obvious duplication of resources, a new level of cooperation would be needed so that the benefits of shared learning can rapidly permeate through supply chains, and horizontally across sectors. This presents a more complex legal and organisational challenge to the traditional manufacturing and business model, but one which could create new opportunities for early adopters.

The necessary transition will incorporate the current move beyond the traditional manufacturing line to more flexible manufacturing for increased agility while taking a balanced and holistic planning approach to enable through life considerations to be made. The role of analysis in this model based on increased computing power, but also the carbon impact of data storage and transfer is a complex one. Gathering information on the whole manufacturing process from all participants in the supply chain and then analysing the results to produce the holistic resource usage is one of the ways to truly understand what goes into the final product. Insights from this information will allow for the development of a valid roadmap to Absolute Zero, but there are challenges to obtaining and using this information that will be discussed later, in section 3.4.

A look to the future

Technology innovation and change readiness is becoming a desirable quality. With shortening product life cycles, organisations need to adopt a more agile approach to respond to market needs. Catering to this consumer mentality has led to the production of lower quality products that fail in the time the consumer would be looking to upgrade or replace the product. An extension of through-life engineering approaches beyond ultra-high capital value assets into more mainstream consumer products is needed. Essentially this means producing much higher quality products with parts that can be dismantled, retrieved and reused. Products could either be disassembled and reassembled with some modifications and resold, or they could be cascaded down into a completely new product. This would require forward planning, standardisation and modular design thinking.

Organisational and inter-organisational culture will need to match the aspiration of Absolute Zero over time to become, itself the great incentive and driver of a positive cadence of change. No organisation can outrun their legacy, therefore a roadmap that commits them to real change while keeping the business profitable now and in the future is desirable.

This section has focused on technology transitions in existing businesses, but successful disruptive transformations often come from outsiders and new players. Therefore, support mechanisms also need to exist for new businesses bringing zero-carbon-compatible business models and production processes as an alternative to the status quo.

Key Message: Agreed roadmaps, new forms of market pull and collaboration are needed to spread the required technological innovation through industry.

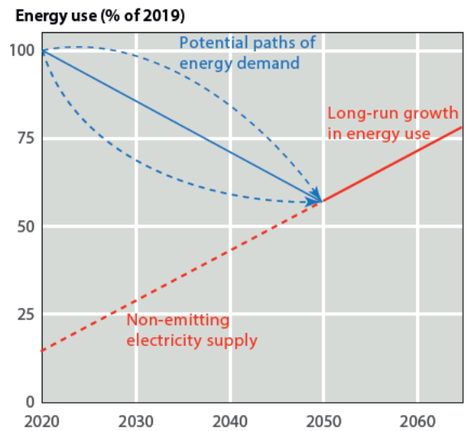
3.3 Action by Government

The government will need to act to create the context in which the individual and supply-chain changes described in the previous sections can develop. There is also a strategic choice about the speed of transition which should be pursued.

Fig. 3.2 shows three potential paths for energy reduction to reach Absolute Zero in 2050. This is predicated on growth in the supply of energy from renewables growing at the rate indicated in Fig. 1.1. This means that demand has to reduce to 60% of its current level by 2050. Growth in energy use beyond 2050 will be driven by ongoing renewable and other carbon-free technologies. The distinction between the pre-2050 and post-2050 analysis is that the steps taken to meet the 2050 target must rely on technologies which are already in existence, and have the clear mechanisms to be scaled, whereas post-2050 growth can reflect new technologies. The three potential paths for energy reduction reflect three different approaches, depending on the extent of delay. What these three paths do not show is that the cost or sacrifice needed for an extra percentage point reduction is not constant: initial reductions are likely to be much easier. This in turn implies that if the desire is to spread the cost of reduction equally over the 30 years to Absolute Zero, then the actual path needs to reflect a sharp early decline, as in the lower dashed blue line.

Absolute Zero means two things: first, that no carbon can be produced by any industry or household; second, averaged across the economy, energy consumption must fall to 30% of its current level. This distinction between the carbon reduction, which is an obligation on all industries, and an energy reduction which is on the average, leads to very different substitution possibilities: there are no substitutes for the reduction of carbon to zero, but there needs to be a mechanism for allocating scarce energy resources. Ensuring carbon is at zero is a regulation issue, with prohibitions on the use of carbon similar to prohibitions on the use of asbestos. Ensuring energy is cut in the aggregate requires an allocation mechanism, and the price of energy to reflect its scarcity. In such a scenario, the owners of the means of production of renewable energy will make very large profits. This in turn raises both efficiency and distributional issues.

Figure 3.2: Pathways of restraint and growth



We break the discussion into four components: first, on the possibilities for substitution away from carbon and energy use across different sectors; second, on the impact on the types of job and the location of jobs; third, on the overall impact on output; and finally, on the implementation.

Production Substitution

At the heart of understanding the impact on the economy of Absolute Zero is an understanding of the substitution possibilities away from carbon and energy in different industries and production processes.

Section 2.3 discusses the options for the construction sector: the production of cement involves the emission of carbon and so cement in its current form cannot be used in construction. At present there is no alternative to the use of cement and so the construction industry has to radically change its production process or close. In this case, radically change means either reverting to using wood or other natural products, or successfully developing the alternatives to current cement production described in Section 2.2. These options, however, limit the size of buildings and so the sector cannot continue as it is. This has implications for the way in which businesses and households operate. Buildings need to be reused rather than rebuilt. On the other hand, it is not clear how the existing stock of buildings will be maintained, and the conclusion is that building space (residential and commercial) will have an ever increasing premium

The difficulty of the construction industry highlights the impact on any assets being used in an industry where there are no substitutes for carbon – such as planes, or industrial plants. The value of these assets will be zero in 2050 and this should directly affect the desire to invest in those assets now. This points to the implementation issue: realising the value will be zero in 2050 may encourage greater use in the run up to 2050 – for example, putting up new buildings at a much faster rate for the next 30 years, knowing that construction must then halt. On the other hand, Fig. 1.1 makes clear that the value of investment in processes of carbon-neutral energy production will increase sharply.

Jobs and Location

There are two key implications for how we live our lives: first, buildings will become much more expensive because the restrictions on building which generate substantial scarcities; second, transport will become much more expensive because the limits on air travel will generate excess demand for other forms of transport. By expensive, we mean the direct costs to an individual or firm, but also indirect costs in terms of reduced quality. We would expect these two substantial changes to lead to pressure on the amount of space any one individual uses, and also where people choose to live and work. This points to increased centralisation, with growth in cities.

The wider problem with the changes in labour is knowing what type of labour or jobs will be in demand. Those who are starting secondary school now, in 2019/2020, will be 43 in 2050. Thinking about what education is appropriate for a very different set of industries is a key question. Should we still be training airplane pilots? Or aeronautical engineers? How are we training architects, civil engineers? Education decisions are far more persistent than capital investments. This in turn highlights the needs to take decisions on investments now where the lead times are very long or depreciation rates very low.

Overall Impact on Output

Economic growth in the industrialised world has been associated with increasing energy use. Long-term growth rates will also be constrained by the rate at which energy production can grow which depends on the growth rate of renewables. The key question in the transition is how much will output decline to reach a level where only 30% of current energy is being used and no carbon is being produced. We have discussed the direct impact of this on the construction and transport sectors. What this misses is the inter-dependence of the non-emitting and emitting sectors. Specialisation in production and the substitution of energy for labour have been key drivers for growth and increased productivity. The open question is whether specialisation can still be achieved without the reliance on energy.

These impacts on output will not be felt equally across the country. Industries are typically geographically concentrated – such as steel production – and this means that large shifts in production will have concentrated impacts. Rural or more isolated communities are likely to be disproportionately affected. The largest distributional impact, however, is intergenerational: the cost of hitting Absolute Zero will be borne by the current generation.

Implementation

The changes in behaviour to achieve Absolute Zero are clearly substantial. In principle, these changes could be induced through changing prices and thus providing clear incentives for behaviour to change. The alternative is that the government prohibits certain types of behaviour and regulates on production processes. Given the difficulty for the government of knowing what production process to change or what options for innovation are available to companies, the natural decentralised solution is for the government to either put a price on carbon or to restrict its use directly. The push for Absolute Zero means the distinction between these two approaches is irrelevant: the price of carbon must be prohibitively large by 2050 to stop all demand. In the run-up to 2050, the question is how fast must the price of carbon be increased, or equivalently, how fast must restrictions on the use of carbon be put in place. It is understanding this time-line for the price increase (or time-line for the strictness of restrictions on use) which is the key issue for the implementation.

The underlying point is that any asset which uses carbon will have essentially zero value in 2050. This in turn may encourage greater use in the run up to 2050. This sort of response is clearly counter-productive: the climate problem is about the stock of carbon, rather than the flow.

A natural question in considering implementation of the 2050 is how to evaluate the cost to the economy of various measures. For example, how to compare the cost of installing solar panels to the cost of driving smaller cars. Individuals' willingness to pay gives a measure of the value of installing solar panels (rather than take electricity from the grid) or the value of driving a small car (rather than a larger one with the same functionality).

Key Message: The effective price of carbon must be prohibitively large by 2050. A key issue for how to implement this is the timeline for how the price must grow (or restrictions must become more strict) from now to 2050.

3.4 Information

Information has a critical role to play in guiding transition to Absolute Zero emissions. Data about our present situation is needed to prioritise change and innovation, to monitor progress, and to identify 'bright spots' of good practice. We also need to understand how the future might develop and how we can make choices now that are robust to future uncertainty. However, information alone is not sufficient to cause actual changes in behaviour, and we should be aware of lessons from behavioural science to maximise the effectiveness of information.

Information on the present

Understanding the current scale of our different activities that drive emissions is key to prioritising the behaviour changes and technical innovations that would most effectively lead to emissions reductions at the scale required. Put simply, the impact of a change (whether behavioural or technical) can be represented as:

$$\text{Impact of change} = \text{Scale} \times \text{Change in flow} \times \text{Impact of flow}$$

For example, in construction it is possible to use post-tensioned floor slabs in place of the standard slab types, to achieve a 20% reduction in cement use (the 'change in flow' of cement entering construction). However, this technique is only applicable to a fraction of all the floor slabs that are constructed (the 'scale'), and the overall impact depends on the impact factor of the flow (in this case, GHG emissions per tonne of cement). Clearly, the overall impact of a change depends on all of these factors. An understanding of all three is critical to formulating a roadmap for change (Section 3.2) that can really reach Absolute Zero emissions. The same applies to research agendas, where there has been more research and policy interest in reducing food waste than on reducing meat consumption, despite the former contributing an estimated 1–2% to emissions and the latter an estimated 50% . Data on how things are currently happening can also support change through identifying 'bright spots' where good practice is already happening .

Looking to the future

However, understanding the present is not enough. Many of the decisions that will influence emissions in 2050 must be made far in advance, such as designing buildings, investing in energy infrastructure and car manufacturing plants (Section 1). These decisions should ideally be robust to a wide range of possible future outcomes, such as faster- or slower-than- expected deployment of zero-carbon energy supplies, or higher or lower loading requirements for buildings in use. When this is not done

well, the result is the situation described in Section 2.3, where structural designs are routinely excessively sized, leading to proportionally excessive carbon emissions. In contrast, it has been shown that an initially-smaller design that allows for reinforcement to be added to beams in future, if needed, would lead to lower lifetime emissions .

There are many possible pathways to zero emissions in 2050, and different reports can reach very different conclusions from by focusing on different scenarios. To provide clarity on our options to reaching Absolute Zero, we need to compare different proposals on a common basis and highlight the different starting assumptions that lead to different conclusions (see box story overleaf for an example).

Getting better information

Despite these important roles that information about our use of resources plays, the data we have is patchy and disconnected. There are two basic ways the situation can be improved: collecting better data, and making smarter use of the limited data we do have.

The UK Government's Resources and Waste Strategy has recognised that 'lack of reliable data on the availability of secondary materials is cited by industry as a barrier to their use', and proposes a National Materials Datahub to address this issue by providing 'comprehensive data on the availability of raw and secondary materials, including chemicals, across the economy to industry and the public sector, and by modelling scenarios around material availability'. The Office for National Statistics is leading the initial development of such a Datahub. As well as official statistics such as these, there is a large body of evidence contained in academic work which is currently difficult to access. Efforts towards Open Science practices ins fields such as Industrial Ecology are starting to improve the discoverability and reusability of this knowledge.

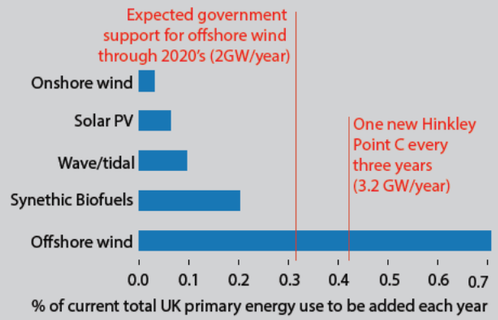
Better information will also be needed within and across supply chains, but there are challenges that will have to be overcome before this can be achieved. The first

Why aren't all plans for zero emissions the same?

Several reports have presented scenarios for how we could achieve net-zero emissions in 2050, such as the Centre for Alternative Technology's "Zero Carbon Britain" report. Unlike the need to reduce absolute energy use described in this report, they find instead that "industrial energy use is expected to remain similar to current levels". How is it possible to reach such a different conclusion on the same question?

It is easier to see the differences by looking at the different assumptions made about the energy system. The figure on the right shows the deployment rates implied by their scenario, together with some reference points to provide context. The Zero Carbon Britain report has much more optimistic assumptions about the deployment rates of renewable generation technologies, especially very early-stage technologies such as producing liquid fuels from biomass – which has not yet been proven at commercial scale – and wave & tidal generation. Assumed deployment rates for offshore wind are also high, requiring a doubling in the speed of installation envisaged in the Governments plans for support through the 2020s.

Figure 3.3: Rates of increase in "Zero Carbon Britain"



is information gathering: it is still not normal practice by suppliers to gather information on all facets of their manufacturing process. Secondly, for business to share collected data with rest of the chain rather than storing in silos. Current corporate practices mean information is often not shared even with different groups within the same organisation let alone with "outsiders". In the information age, industry has remained closed to information out-flow. This may be attributed to good reasons, but the achievement of Absolute Zero requires, possibly above all else, the will to cooperate. The final challenge is analysis of the data and making sense of it. Gathering, storing, processing and presenting data is an energy intensive and expensive task, therefore currently most organisations do not have the appetite to undertake this without proven returns.

Digital tools can potentially help to enable this position. A universal and global approach to IP law and the tracking of information using technologies such as blockchain can greatly increase the confidence of organisations into opening their doors and sharing more of their information. By doing so it is possible to dramatic reduce resource duplication whilst enhancing visibility of resource usage. This could allow businesses to make long-term strategical decisions that lead to higher profitability whilst reducing energy usage and CO_2 production.

Key Message: Good information is critical to transitions in individual behaviour, business operations and in supporting government action, but there are challenges to overcome in collecting and communicating the required information effectively to support decisions and influence behaviour.

4. Opportunity

Key Message: Absolute Zero requires societal change. This will provide opportunities for growth in business, education and research, governance and industrial strategy. To achieve zero emissions we must only pursue the right opportunities and restrain activities which are no longer compatible with a zero emission society.

4.1 Opportunities in business:

This report has revealed an overwhelming wealth of innovation potential for businesses – but not in the area that dominates current discussion about mitigating climate change. Carbon Capture and Storage or Utilisation and "the Hydrogen economy" are important development opportunities and may be significant beyond 2050, but won't play any significant part in national or global emissions reductions by 2050, because implementation at meaningful scale will take too long. Instead, taking the target of Absolute Zero seriously requires a massive expansion of wind and solar power generation, along with the infrastructure required to install, manage and deliver this power and the fertile supply chains of material extraction, production, construction and manufacturing.

The key innovation opportunities revealed in this report are not about how we generate energy, but how we use it. Meeting the target of Absolute Zero requires adapting to using around 60% of the energy we consume today, which without innovation will require restraint. However, section 2 of the report has revealed a tremendous space for business innovation and growth in expanding the benefit we receive from energy use. For the past century, our economy has grown based on an assumption of virtually unlimited energy supply without consequences. Unsurprisingly, this has led to extremely inefficient use – for example with cars weighing around 12 times more than the people within them. The more rapidly the UK commits to delivering its legally binding target, the greater the benefit it will extract from business innovation opportunities. Without question, some incumbent businesses such as the fossil fuel industries, will decline and inevitably they currently spend the most money on lobbying the government to claim that they are part of the solution. This is unlikely.

Instead, future UK growth depends on exploiting the opportunities created by the restraint of Absolute Zero. For example:

- All current aviation activity will be phased out within 30 years, which creates an extraordinary opportunity for other forms of international communication (for example using the technologies of today's gaming industry to transform today's backwards-looking video-conferencing), for the travel and leisure industry to expand more localised vacations and for developments in non-emitting mid-range transport such as electric trains and buses
- The markets for electric cars, electric heating at all scales and temperatures, electric motors at all scales, building retrofit and thermal control are certain to grow at rates far ahead of the recent past. Electric cars comprise a small fraction of new sales today, but under current regulation will, by 2040, have captured 100% of the market. Given the total energy supply constraint of Absolute Zero, the clear evidence of Fig. 2.6 is that the total market will either contract or shift rapidly towards smaller vehicles – this is a fertile and under-populated space.
- Cement and blast furnace steel production will be illegal within 30 years, yet our demand for construction and manufacturing will continue. To meet this demand our supply of bulk materials must transform and there is high-volume innovation potential for non-emitting cement substitutes, for technologies to support high-quality steel recycling, and in the open space of "material efficiency": using half the material per product and keeping the products in use for twice as long.

Beyond the 2050 target of Absolute Zero, technologies that exist at early development stages today may expand into valuable business streams. These include:

- Carbon Capture and Storage or Utilisation applied to fossil fuel power stations, steel or cement production.
- The "hydrogen economy" once there is spare capacity in the supply of non-emitting electricity
- Other forms of electrical transport, including shipping and aviation

The 100% target of the Climate Change Act creates an extraordinary opportunity for UK business to develop the goods and services that will be the basis of a future global economy. However, the biggest commercial opportunities are not breakthrough but incremental developments from today's technologies.

4.2 Opportunities in welfare and education

Today's secondary school entrants will be 43 in 2050. At that age, they will be in leadership positions, so the obvious question is what skills they should be developing now and in their subsequent higher-education years to underpin their decision-making abilities in a very different future world? The legacy of education is surely to know that it is the quality of the questions which one is able to ask which will lead to success. Asking the right questions is a sign of deep education, while answering these questions is an altogether easier proposition even if research is needed.

How do we move from answering questions as the staple of education to asking questions as the hallmark of a necessary education for future uncertainty? Climate change provides us with exactly this opportunity. Some of the current syllabi in secondary schools will be irrelevant in future, and there will be new skills that school children will require. The same is true in universities, both in teaching and in research, where a clear distinction must be made between mitigation actions that can be deployed today through chosen restraint and innovations that might ease the challenge of restraint in future. The former implies hard decision-making, while the latter implies real opportunity.

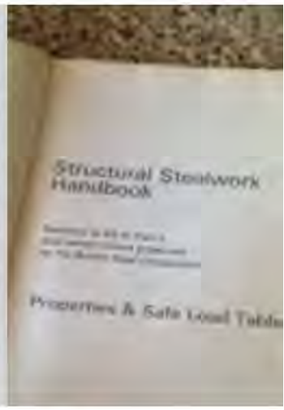
Starting with the difficult decisions, an educational setting should provide a timeline for actions to be taken by humanity in order to ensure that we hit our carbon-reduction targets by 2050. Plans cannot merely relate to actions. They must also relate to the timings of such actions, as any Gantt Chart does. By working backwards from 2050, and sequentially working out the order and timing in which key mitigation actions need to be taken, a roadmap for the necessary restraint can be established. Across the secondary school system, this roadmap is essential in eliciting the questions which will inevitably come from the school children. This will enable an exploration of real change in the mind sets of those who will need to embrace change more than ever before later in their lives. Huge questions will emerge, such as: will internal-combustion engines disappear, will aeroplanes disappear, will meat-and-dairy agriculture disappear and will we need to stop building things? By empowering school children to realise that asking the huge questions is appropriate, we will enable change to be embraced through education. The timing of the change should lead to questions of transition towards electrification, or the trade-offs between energy and labour in delivering services across a whole range of economic activities, for instance. What are the implications for consumption or ownership in a changing society, and how can we ensure that material use down to the finest granularity is all encapsulated in circularity?

Across the education system, we should be seizing the opportunity for the next generation to grow up with 'best practice': from the food available in schools, the way children get to school, to the way school buildings are used. All schools could immediately switch to providing meat-free meals – reducing emissions and promoting healthy eating. Existing efforts to change travel habits aimed at avoiding local air pollution around school gates can be extended to support parents and children in low-carbon travel to school wherever possible. Many schools already feel the need to keep heating temperatures low in an effort to make severely constrained budgets balance, which is a side-effect that could be standardised across the system to help establish the normality of lower-energy, lower-temperature heating setpoints.

Changing Building Design Practices through Education in the 1970's

In the 1970's, British Steel saw an opportunity to expand their market for structural steel sections, by persuading UK clients and the construction supply chain to switch from concrete framed buildings (which remain more common in many European countries even today) to steel framed buildings, like the one illustrated on page 35. Instead of seeking Government support to subsidise or legislate to support this change, they instead developed high quality teaching material and supported the development of new courses in all major civil engineering degree courses about design with steel. As a result, the next generation of graduate civil engineers entering the profession were equipped to use more steel, and expected it to be more normal practice.

This suggests an opportunity to develop teaching material that reconfigures society to adopt new approaches to thriving in a zero carbon economy, by changing the way we live and work.



Looking beyond the need for this kind of restraint in the short term, there are enormous opportunities in education which we could be embracing now to ensure that when the painful period of mitigation nears an end, we have an educated population ready to take advantage of the zero-carbon era. We do not have the luxury of time to wait for graduates to emerge who know something about future possibilities. We need to exploit the creativity, intelligence and ideas of our students before they have graduated. But what are the innovations which we should be teaching? We are still researching them, and research takes time.

A potential solution to this unwanted time dependency is Vertically Integrated Projects (VIP), a concept developed by Georgia Tech, and which is now also operating successfully at the University of Strathclyde in the UK. In essence, undergraduate students across all years of study are involved in major inter-disciplinary research projects, each of which is aimed at a long-term complex research question. Strathclyde ensures that the 17 UN Sustainable Development Goals are central to their VIPs. In this way, undergraduate students not only learn key skills for the future, but they are indeed themselves creating knowledge for all simultaneously. It is the combination of empowerment, inter-disciplinarity, huge research questions, confidence and space to explore without fear of failure which brings this concept alive. In an era of extraordinary change and equally extraordinary opportunity, it feels right and proper that the most fertile brains are exploited and enriched in such a manner.

There are questions which the era of restraint begs concerning research and its funding in universities and companies. Is it right, for instance, to be funding research using public funds which includes technology-developments which we know are not aligned with the 17 UNSDGs? Examples might include trying to squeeze out efficiency gains in 20th century technologies or researching products which rely on scarce materials.

Bold decisions are needed by schools, universities and funding bodies if we are to galvanise education and action towards rapid mitigation, followed by innovative opportunity. Across the span of education and research, areas of importance highlighted by this report include:

- Technologies and their constraints in efficient use of electric motors and electric heating
- The trade-offs between energy and labour in delivering services across the range of all economic activities
- Understanding of welfare dependent on self-actualisation rather than consumption or ownership
- Maximising the value of secondary materials and the realities of reduce/re-use/recycling/ "circularity" etc.
- Renewable generation and the system of its efficient use.

The opportunity in education spans from preparing for the restraint required to achieve Absolute Zero to preparing for the longer-term transformation of prosperity beyond 2050. What could a world look like without cement, internal combustion engines or aeroplanes? We need to educate students for this new reality, and embrace the opportunity, rather than the threat, which this reality offers.

4.3 Opportunities in governance

The Olympic Games was one of the biggest government projects which was delivered on time and to budget. It was a great success and a source of national pride. There are parallels between hosting the 2012 Olympic Games and delivering Absolute Zero. Both commitments were made on a world stage where failure to deliver would result in national embarrassment; both projects require collaboration of multiple government departments, industry and the general public; and both require delivery processes and structures to be built from scratch. We managed to overcome these challenges for the Olympics, but delivering Absolute Zero has additional challenges.

To achieve our emissions goal we have to sustain momentum over a longer timespan than for the Olympics. We also have to consider life beyond 2050, what is the legacy of the net-zero emissions project? The Olympic legacy has been criticised for under delivering, so we must do better this time to ensure society can thrive in a zero emissions world beyond 2050. When we hosted the 2012 Olympics we could draw on the experiences of historical Olympic Games to inform decisions being made, but no country has met a zero-emissions target before, there is no precedent for us to follow. Finally the 2012 Olympic developments generated growth in the delivery of new and improved infrastructure and services. Meeting the net-zero emission targets will generate growth in some industries, but will also require the decline of others, this is likely to be met with resistance as those who benefit from the status quo resist change.

The London Olympics highlighted the following key lessons that could be transferred to emissions targets:

- Form a responsible body in government
- Limit innovation to knowledge gaps to reduce risk
- Maintain a unified cross party vision
- Have a protected and realistic budget
- Invest in programme management & delivery with discipline on time and scope change
- Empower people, with the right skills and track record to deliver against clear responsibilities
- Ensure accountability, with scrutiny and assurance given when risk is identified.

This section attempts to explore the first three of these lessons, the most relevant to Absolute Zero commitment.

Responsible body in government:

For the 2012 Olympics an executive non-departmental public body (NDPB) called the Olympic Delivery Authority (ODA) was established to deliver the infrastructure and venues required for the Olympics. In parallel the London Organising Committee of the Olympic and Paralympic Games (LOCOG) was established as a private company limited by guarantee to fund and stage the Games. The government set up the Government Olympic Executive (GOE) within the Department for Culture, Media & Sport. The GOE was responsible for other elements of the games, such as transport and security, as well as overseeing the ODA and LOCOG. Although the governance structures were considered to be complex, it has been reported that they allowed quick decision making and ensured people remained engaged throughout the delivery process.

Figure 4.1: Olympic-style governance structure for UK Climate Emergency Response:

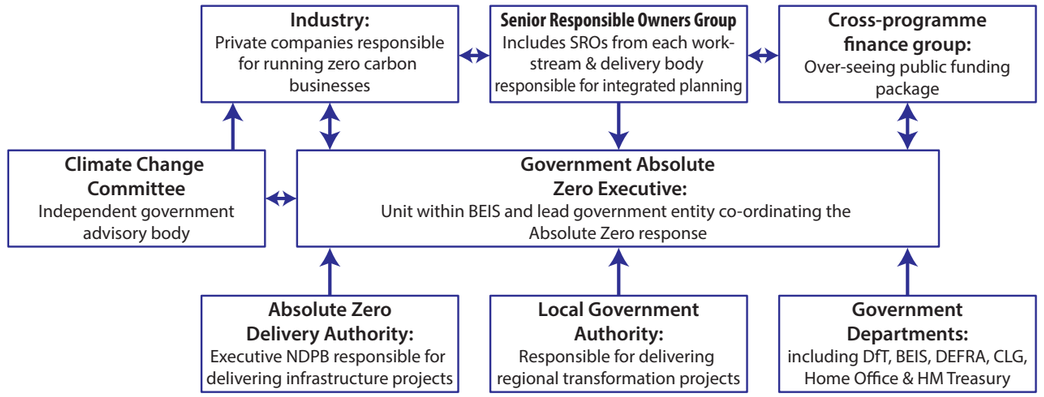


Fig. 4.1 gives an example of how this structure could be applied to delivering Absolute Zero. The proposed Government Absolute Zero Executive would be even more critical since it would be required to coordinate multiple industries and organisations, rather than just two delivery bodies as was the case in the 2012 Olympics. The governance structure proposed in Fig. 4.1 would enable fast decision making and accountability to meeting interim goals, which is essential if we are going to meet the 2050 zero emission targets.

Limit innovation:

The Government Olympic Executive deliberately limited innovation to fill knowledge gaps. This move was considered to be counter-intuitive, but it was successful. Relying only on proven technologies reduced the risk of failure and avoided the temptation to use the Games to showcase risky innovation. Although the Olympics did not innovate new ways of doing things, it did require existing activities to be scaled up to meet unprecedented demand. As Jeremy Beeton, Director General of the Government Olympic Executive explains "It was a whole new business model for London." This scaling up of proven technologies and systems was seen as a risk in itself. This lesson should be transferred to the task of meeting the 2050 zero-emission targets. We have identified in this report 'bright spots' where best practice exists and could be scaled up, if we apply the Olympic approach, this is enough of a risk, and further innovation should be limited. That said, we don't currently have all the answers to transition to a net-zero society and some innovation will be necessary, but approached with caution.

Cross party vision:

The delivery of the 2012 Olympic Games was supported by a unified cross party vision which was maintained through regular progress reports. This enabled stability throughout government changes which allowed the project to maintain momentum. The UK's approach to climate change does not currently have a unified cross party vision. For example in 2019, the Labour party proposed moving the zero-emissions targets to 2030. Whilst parties argue over goals and targets, actions are not being taken and we fall further behind on the journey to zero-emissions. It is essential that government generate a unified cross party vision to emulate the success of the 2012 Olympics which was able to create clear roles and responsibilities which fostered collaborative problem solving, not blame shifting.

If we are to learn from our previous successes, the net-zero target is more likely to be achieved through the establishment of the Government Absolute Zero Executive and the associated Delivery Authority with cross party support. The Executive should set a strategy which is realistic and risk averse, without over-reliance of innovation.

4.4 Opportunities for Industrial Strategy in the UK

With a legal target, now set by the UK government, to achieve net-zero emissions by 2050, UK business are developing organisational strategies to ensure they will prosper in a zero emissions business landscape. This report has shown how placing resource efficiency at the heart of industrial strategy can enable businesses to prosper, but this requires significant changes in the products, production processes and supply chain systems which currently make up the industrial sector.

The UK government has invested £5m in the UK FIRES research programme, bringing together the academics from six universities who have written this report with businesses across the supply-chain in a 'Living Lab'. The subscribing industrial partners pose strategic challenges to the academic research team and test emerging solutions in practice.

UK FIRES research will support businesses in developing industrial strategies to achieve zero emissions in key four areas illustrated in Fig. 4.2:.

1. Opportunity mapping will identify new methods of design and manufacture which improve on existing best practices. Software tools to enumerate all options for design and delivery of resource intensive goods with today's technologies will be developed and commercialised.
2. The tools of recent advances in data science will be applied in a new Resource Observatory, to provide the highest-resolution insights into the UK's use of resources, with new metrics, scenarios and search tools used to identify opportunities for valuable innovation and efficiency gains. These tools will give UK FIRES industry partners foresight in decision making.
3. Through specific case studies of process, product and service innovation, the UK FIRES consortium will seek to define the innovation pathways by which the new practices of resource efficiency can be the basis of thriving UK businesses. The Living Lab industrial partners will be supported to exploit these opportunities in practice.
4. To support holistic industrial strategies and supply chains UK FIRES researchers will create responsive strategic analysis tools. Living Lab industrial partners can then apply these findings through the generation of new business models in collaboration with the UK FIRES Policy Champion.

Figure 4.2: UK FIRES programme structure

The output of the UK FIRES Living Lab collaboration will be published in quarterly reports, made available for government and industry, to provide reliable information to inform the development of their net zero industrial strategies. Focus themes for future Living Lab reports are now outlined.

UK FIRES connections

UK FIRES aims to provide data, tools, experience and analysis to support its partner companies in specifying new business models, diffusing innovation, giving holistic foresight to new opportunities and improving best practice as they pursue Resource Efficiency for a net-zero industrial strategy.

UK FIRES members can access the resources of the £5m programme through:

- Quarterly meetings of the Living Lab, in which members across the bulk materials supply chains specify target challenges for future work, support current activity and provide feedback on the application of programme insights in practice.
- Early access to emerging analysis of strategic opportunities
- Shared or dedicated PhD students applying the collective insights of the UK FIRES team to specific commercial contexts
- Pilot testing of new tools developed in the research programme
- Shaping the agenda and participating in the Annual UK FIRES Resource Efficiency Forum.

For more information contact info@ukfires.org.uk

Notes to the figures

Figure 1.1: Assuming an additional 400 TWh/year is needed by 2050, to be supplied by offshore wind, we need to have 115 GW of offshore wind capacity operational by 2050 (assuming an approximate capacity factor of 40% for offshore wind). The Crown Estate estimates that projects with seabed rights being awarded in 2021 would become operational by 2030, so all projects needed for 2050 would need to be started by 2040. Although current capacity is 9 GW, there is an additional 25 GW already in the pipeline. Therefore new projects need to be established and built at a rate of 4.5 GW/year for the next two decades.

Figure 1.3: Data from the International Energy Agency (IEA, 2018) with data on CCS installations at power-stations from the Oil and Gas funded pro-CCS lobby, Global CCS Institute.

Figure 1.4: This analysis by Vaclav Smil (2014) looks at global deployments of the three major fossil fuels, relative to total world energy demand at the time. Some faster transitions have occurred in individual countries, as shown in the box story on page 3.

Figure 1.5: The data in this figure come from a survey of academic reports by Gross et al. (2018) on the introductions of a range of new technologies - which generally showed that energy technology changes are among the slowest to reach full deployment.

Figure 1.6: Sectoral breakdown of UK energy demand from DUKES (2019); UK domestic internal temperature history from Official Statistics (2014); European car weight (and similar trends for all other regions) from the Global Fuel Economy Initiative a partnership with the International Energy Agency and others.

Figures 1.7–1.8: All constructed using data from DUKES (2019). n.b. there are many ways of calculating the equivalence of fuels - typically, the units of "Mega-tonnes of oil equivalent" are used, but this is not obvious when comparing primary electricity (nuclear or renewably powered electricity) which is not the result of conversion in a power station. We have attempted to be consistent in reporting the Mtoe equivalence of total UK energy demand.

Figure 1.9: Constructed with yearly data on electricity supplied in the UK from DUKES (2019). Electricity generated via non-emitting sources is shown as stacked lines whereas electricity generated from coal, gas and oil is plotted in a separate line.

Figure 1.10: The cost figures represent the weighted average of the levelized cost of electricity of commissioned solar and onshore wind projects in the United Kingdom and were obtained from IRENA (2018). For solar photovoltaic generation only cost figures after 2010 were reported. The figures were converted from US dollars to Pound sterling using yearly average exchange rates. The power density points for onshore wind were obtained using the power density of 61 wind farms commissioned between 1992 and 2007 compiled by Mackay (2009). These data-points were averaged by year of commissioning using installed capacity as averaging weight. The installed capacity and commissioning dates were obtained from Department for Business, Energy & Industrial Strategy (2019). The power density points for solar photovoltaic were estimated using best available cell efficiency data provided by National Renewable Energy Laboratory (2019) for multi-crystalline Si Cells in conjunction with the UK's annual insolation data from Photovoltaic Geographical Information System (2017) and a performance ratio of 84 % obtained from National Renewable Energy Laboratory (2013).

Figure 1.11: This chart was constructed using 2005 global energy data supplied by the International Energy Agency, and multiple sources to estimate the allocation of energy to devices and "passive systems" - the equipment (such as a car or house) in which the final form of energy (typically mechanical work or heat) is exchanged for a service. The chart is from Cullen et al. (2010), which has a lengthy Supplementary Information file giving every detail of the estimations. It is currently arduous to update this form of analysis - and a target of the UK FIRES research programme is to use the emerging techniques of Data Science to make this easier - but we assume that the proportions of energy use have remained approximately similar from 2005 to today.

Figure 1.12: Data taken from Haberl et al. (2007), subject to uncertainty due to definitions and the need for estimation of un-measurable data.

Figure 1.13: all the values represent "real world" efficiencies of conversion devices. The efficiency of electric heater, light and electronic devices was obtained by Cullen and Allwood (2010). The efficiency of electric battery charging applies to charging road vehicles and was obtained from Apostolaki-Iosifidou et al. (2017). The efficiency of heat pumps is the average of all the values reported by Shapiro and Puttagunta (2016) who quantified the coefficient of performance of these devices during use in residential buildings. The remaining values were obtained by Paoli and Cullen (2019).

Figure 1.14: Figure 1.14: This Sankey diagram was obtained using UK energy consumption data for 2018 from National Statistics (2018) and the conversion factors of figure 1.13. The data is disaggregated by energy type and sector. The total electricity demand was scaled to account for population growth using the predictions from National Statistics (2019) and the distribution losses from OECD/IEA (2018). In addition to the efficiencies of figure 1.13, the efficiency of charging electric car batteries was taken from Apostolaki-Iosifidou et al. (2017).

Figure 1.15: This analysis, building on the energy diagram of fig. 1.11 was developed in order to provide clarity for the IPCC's 5th Assessment Report, and based on global emissions data for 2010 taken from the EU's EDGAR database of global emissions. The original analysis was published as Bajzelj et al (2013) but has been modified here to clarify the difference between emissions that occur as equipment (cars, boilers, lights) are used, and those that occur in industry when making equipment that lasts for more than one year. The UK FIRES programme is largely concerned with these industrial emissions, so clarifying the way that stock of goods in service (and therefore their requirements for energy inputs) evolve over time, is of critical importance to understanding how to develop an Industrial Strategy compatible with Absolute Zero.

Figure 2.1: This figure is a summary of the analysis leading to figs. 2.2, 2.4, 2.11 and 2.19.

Figure 2.2: Today's values on energy use in buildings were obtained from UK energy statistics (HM Government, 2019). The values in the second column were calculated using the method described in the notes for Figure 1.13 and the efficiency values estimated by Cullen et al. (2010). The values in the third column were calculated considering the efficiency improvements of better insulation of roofs and attics, and the installation of double-glazed windows estimated by the IEA (2013), considering the number of surviving buildings in 2050 estimated by Cabrera Serrenho et al. (2019).

Figure 2.3: Impact of new buildings and retrofit from Cabrera Serrenho et al. (2019) and IEA (2013), use of heat pumps for space heating (MacKay, 2008), Appliance efficiency improvements (ECUK, 2019, table A1).

Fig 2.4: Today's values on energy use in transport were obtained from UK energy statistics (HM Government, 2019) and IEA energy balances (IEA, 2019). The values in the second column were calculated using the method described in the notes for Figure 1.13 and the efficiency values estimated by Cullen et al. (2010). The values in the third column were calculated considering no international aviation, the substitution of domestic shipping and aviation by rail, a reduction of energy use in passenger road transport to 60% of current levels (as demonstrated in Figure 2.6) and a reduction of 30% in road freight energy demand (Dadhich et al., 2014).

Figure 2.5: Emissions factors from the BEIS Greenhouse gas reporting conversion factors 2019. Equivalent energy intensities calculated using the BEIS values for fuel CO2e intensities, apart from rail which was calculated using the CO2e intensity factor for electric traction. Radiative forcing corrections are included in the emissions intensities for flying. Data for cars are for the current average fleet of petrol cars.

Figure 2.6: Developed assuming a linear correlation between vehicle weight and fuel consumption (there is reasonable empirical support for this) and with current vehicle weight taken from fig. 1.6.

Figure 2.7: Effect of vehicle weight reduction (Cullen et al., 2011), logistical improvements (Dadhich et al, 2014), regenerative braking (Gonzalez-Gil et al, 2014), drag and rolling resistance (Cullen et al, 2011).

Figure 2.8: developed considering the number of cars purchased and discarded in the UK estimated by Serrenho et al. (2017), with full adoption of electric cars in new sales from 2025.

Figure 2.9: This is constructed from emissions intensities reported by Scarborough et al. (2014) combined with data on portion sizes and calories per portion from the UK's National Health Service (www.nhs.uk/live-well/healthy-weight/calorie-checker/). There is significant uncertainty behind the numbers in this figure - due to the difficulty of defining the boundaries of analysis for the emissions calculation, and the arbitrary size of portions - but the scale of difference between the two foods is significant.

Figure 2.10: Is taken from Bajzelj et al. (2014) as used for fig. 1.15

Figure 2.11: Current energy consumption data from ECUK: End uses data tables, 2018, split by 2 digit SIC. Where further disaggregation was needed e.g. chemicals sector, consumption was split by the according proportions in 2007, where data is provided at 4 digit SIC level. Energy embodied in net imports for steel, cement, plastics and textiles by multiplying the energy intensity of UK production by the net imports of each material; tonnage data from Allwood et al. (2019), Shanks et al. (2019), ImpEE project and Allwood et al. (2006) respectively. Energy loss in electricity production is from DUKES aggregate energy balances, 2018. Energy for direct fuel combustion was converted to electricity using the relevant efficiency

values provided in Figure 1.11. Demand reduction interventions: 1) reduce scrap in metal processing to half of the current level, i.e. half of the savings identified in Milford et al. (2011); 2) reduce metal consumption by 20% by avoiding over-design of metal products, consistent with Section 2.3, Section 2.1 and Allwood and Cullen (2012); 3) A 75% cut in cement output based as described in Section 2.2; 4) Life extension of cars, clothes and industrial goods, reducing output of these products by 40%, 45% and 40% respectively. Proportions of steel and aluminium usage as per the global data provided in Allwood and Cullen (2012). 5) Reduction in plastic packaging by 25%; in the UK plastics packaging is 2.2Mt out of 6.3Mt total consumption estimated from the ProdCom database; 6) A 25% cut in fertiliser use, half of the reduction identified for Netherlands in Section 2.2; 7) Reduction of food waste leading to a 3% cut in output in the food processing industry as per the WRAP Courthald Commitment; 8) More efficient use of electricity in industry by improving efficiency of motors, heat pumps for space heating, process heating and lighting from 60% to 80%, 104% to 400%, 80% to 90% and 13% to 15% respectively, consistent with Cullen and Allwood (2010).

Figure 2.12: Original analysis for this report developed by C.F.Dunant

Figure 2.13: Developed from Cooper et al. (2014).

Figure 2.14: Original version of this figure published in Allwood et al. (2012) modified here to show primary production from blast furnaces declining to zero in-line with the zero emissions target.

Figure 2.15: Developed from Daehn et al. (2019)

Figure 2.16: The flows of plastics in the UK were estimated from the UK trade statistics (Eurostat, 2018), using a systematic allocation of trade product codes into the various stages of the supply chain, and by estimating the plastic content and application for each produce code.

Figure 2.17: Developed from Shanks et al. (2019

Figure 2.18: A survey of structural engineers, MEICON showed that, in general, structural engineers are prepared to over-design structures routinely in order to pre-empt any possible later changes to the brief, to deal with design risk and to cover for the possibility of construction error. Material efficient design, for example using fabric form-work, could allow substantial reduction in over-use without any increase in risk.

Figure 2.19: Current energy consumption data from ECUK: End uses data tables, 2018, split by 2 digit SIC, and where further disaggregation needed (e.g. separating primary and secondary wood processing) 2007 data at 4 digit SIC level. Energy loss in electricity production, conversion of direct fuel combustion to electricity and demand reduction interventions are all as described in Figure 2.23.

Figure 2.20: Allocation of emissions from global materials production to the six key sectors based on material flow analysis of steel (Cullen et al., 2012), cement (Shanks et al, 2019), Aluminium (Cullen and Allwood, 2013), plastic (Allwood et al, 2012), Paper (Counsell and Allwood, 2007), food (Bajzelj et al. 2014)

Figure 2.22: This data is made publicly available by the car industry. Horton and Allwood (2017) review the data, and explore several options by which this form of material inefficiency could be addressed.

Figure 2.23: Manufacturing energy efficiency imporvements (Paoli and Cullen, 2019), scrap metal reduction (Milford et al, 2011), reducing over-design and ilfe-extension (Allwood & Cullen, 2012), plastic packaging (Lavery et al, 2013), food waste (WRAP, 2018)

Figure 2.24: The proportions of losses here are indicative and based on data in Li et al (2016). The actually losses vary according to the way the hydrogen is stored and the precise pattern of demand by which electricity is extracted from the fuel cell.

Figure 3.3: The Zero Carbon Britain (Allen et al, 2013) report sets out a scenario for energy supply in 2050. We have calculated the amount that energy generation from each source would have to increase in every year from now to 2050 to achieve the target. Increases are presented as a percentage of current UK primary energy demand of about 2200 TWh (BEIS, 2019). Expectations for Government support for offshore wind in the 2020s are from the Crown Estate (2019), converted into generation values with a representative capacity factor for offshore wind of 40%. A review of Biomass to Liquid systems for transport fuel production reports that no commercial scale plants are yet operating (Dimitriou, 2018).

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Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective

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Aims Long term exposure of humans to air pollution enhances the risk of cardiovascular and respiratory diseases. A novel Global Exposure Mortality Model (GEMM) has been derived from many cohort studies, providing much improved coverage of the exposure to fine particulate matter ($PM_{2.5}$). We applied the GEMM to assess excess mortality attributable to ambient air pollution on a global scale and compare to other risk factors.

Methods and results We used a data informed atmospheric model to calculate worldwide exposure to $PM_{2.5}$ and ozone pollution, which was combined with the GEMM to estimate disease specific excess mortality and loss of life expectancy (LLE) in 2015. Using this model, we investigated the effects of different pollution sources, distinguishing between natural (wildfires, aeolian dust) and anthropogenic emissions, including fossil fuel use. Global excess mortality from all ambi ent air pollution is estimated at 8.8 (7.11 10.41) million/year, with an LLE of 2.9 (2.3 3.5) years, being a factor of two higher than earlier estimates, and exceeding that of tobacco smoking. The global mean mortality rate of about 120 per 100 000 people/year is much exceeded in East Asia (196 per 100 000/year) and Europe (133 per 100 000/ year). Without fossil fuel emissions, the global mean life expectancy would increase by 1.1 (0.9 1.2) years and 1.7 (1.4 2.0) years by removing all potentially controllable anthropogenic emissions. Because aeolian dust and wildfire emission control is impracticable, significant LLE is unavoidable.

Conclusion Ambient air pollution is one of the main global health risks, causing significant excess mortality and LLE, especially through cardiovascular diseases. It causes an LLE that rivals that of tobacco smoking. The global mean LLE from air pollution strongly exceeds that by violence (all forms together), i.e. by an order of magnitude (LLE being 2.9 and 0.3 years, respectively).

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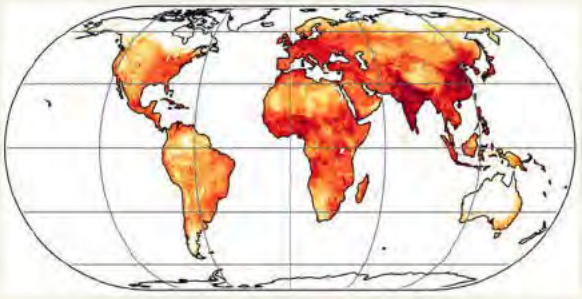
Graphical Abstract



Keywords Air pollution • Fine particulate matter • Public health risks • Loss of life expectancy • Anthropogenic emissions • Fossil fuel emissions • Natural emissions

1. Introduction

Global Burden of Disease (GBD) studies have assessed major health impacts and excess mortality rates from ambient (outdoor) air pollution, building on a growing database from epidemiological cohort studies.[1–3] The World Health Organization (WHO) indicates that more than 70% of global mortality rates are due to non communicable diseases (NCD).[4] We investigated to what degree the long term exposure to air pollution contributes to mortality by NCD, including cardiovascular and respiratory disease, lung cancer (LC), and lower respiratory tract infec tions (LRI). Main health risk factors include tobacco smoking, unhealthy diets and being overweight, hypertension, diabetes, high cholesterol, and air pollution.[2,5] The mortality attributable to air pollution can be esti mated with disease specific hazard models, linked to information about exposure to ambient concentrations.[3,6] We used a global atmospheric chemistry model to estimate exposure to ozone (O_3) and fine particu late matter ($PM_{2.5}$, particles with a diameter of less than 2.5 μm),[7,8] com bined with the new Global Exposure Mortality Model (GEMM) of Burnett *et al.*[6]

Compared with foregoing GBD assessments, the GEMM provides haz ard functions based on a larger dataset derived from 41 cohort studies in 16 countries.[6] The expanded data volume and geographical coverage re duce uncertainty, especially for high $PM_{2.5}$ concentrations, which were previously not explicitly related to observed atmospheric conditions but adopted from studies of second hand smoking.[9] We used the GEMM for the following disease categories: LRI, chronic obstructive pulmonary dis ease (COPD), LC, ischaemic heart disease (IHD), cerebrovascular disease (CEV) leading to stroke, i.e. similarly addressed in GBD assessments, and a new one referred to as 'other NCD'.[10] The GBD has categorized global exposure risks and attributable mortality rates,[2,3] but such comparisons can be ambiguous as the loss of life years differs among health risk factors and between various regions. Here, we derive global, regional, and na tional attributable mortality rates, along with the years of life lost (YLL) and the loss of life expectancy (LLE). By comparing the LLE from different causes, we assess the health burden from air pollution relative to other risk factors.

2. Methods

The global exposure to the air pollutants $PM_{2.5}$ and O_3 for the year 2015 has been computed through data informed modelling. We used the EMAC atmospheric chemistry general circulation model, which was built from a climate model[11] extended with multi phase atmospheric chemistry submodels to account for the atmospheric processing of pol lution emissions.[7,12,13] We distinguish fossil fuel related, all anthropo genic and natural emissions, the latter mostly aeolian dust.[14] While we applied the same model calculations of air pollution exposure, as well as baseline mortality and population data of the WHO for the year 2015 that we used previously,[4,7,8] we revised the results by using the GEMM for the effects of $PM_{2.5}$.[6,10,15] This model yields age dependent excess mortality rates and YLL from five disease categories (LRI, COPD, IHD, CEV, and LC), also distinguished by the GBD,[2,3] plus one that describes NCD + LRI, from which we derive the 'other NCD' by subtraction.[10] The burden of disease from O_3 has been calculated with the hazard func tion of Jerrett *et al.*[16] Uncertainty ranges are expressed as the 95% confi dence intervals (95% CIs), adopted from Burnett *et al.*[6] Since the contribution by 'other NCD' has been derived from the difference be tween the total and the known NCD, the 95% CI is relatively large (glob ally about ±55%) by propagating uncertainties for the five defined disease categories, for which the 95% CI is about 20 40%. The overall uncertainty estimate, including hazard ratio functions (GEMM) and atmo spheric model calculations of annual average exposure, is about ±50% of the calculated mean values.[8,10,17] For more information about the meth ods used, including data sources and country level results, we refer to the Supplementary material online. Uncertainties and limitations are dis cussed in greater detail in Section 4.

3. Results

3.1 Mortality estimates

Table 1 and *Figure 1* present our estimates of excess mortality rates, YLL and LLE attributable to air pollution for different regions and disease

Table 1 Excess mortality attributable to ambient air pollution[a]

	Mortality ($\times 10^3$/year)	Deaths per 100 000 (year^{-1})	YLL ($\times 10^6$/year)	LLE (years)	Avoidable LLE (years)	Avoidable mortality ($\times 10^3$/year)	Mortality for disease categories ($\times 10^3$/year)					
							LRI	COPD	LC	CEV	IHD	Other NCD
Africa	957	81	40.0	3.1	0.7	230	378	28	7	113	224	207
East Asia	3112	196	67.4	3.9	3.0	2403	204	405	300	738	779	686
South Asia	2809	119	83.6	3.3	1.9	1660	478	377	61	383	981	529
West Asia	544	94	14.6	2.3	1.0	241	50	20	19	76	292	87
Europe	790	133	14.3	2.2	1.7	608	54	38	54	64	313	267
Australia	14	47	0.3	0.8	0.2	3	0.6	0.8	0.9	0.6	4	7
North America	360	74	7.5	1.4	1.1	294	24	26	24	14	112	160
South America	207	42	5.3	1.0	0.5	115	30	9	6	14	63	85
World	8793	120	233	2.9	1.7	5554	1218	904	472	1403	2768	2028

Avoidable LLE and mortality were calculated by removing anthropogenic emissions in the model. Australia also includes other islands of Oceania. Data for all countries, including 95% uncertainty intervals, are given in the Supplementary material online, *Tables* (overall uncertainty about ±50%).
CEV, cerebrovascular disease; COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LC, lung cancer; LLE, loss of life expectancy; LRI, lower respiratory infections; NCD, non-communicable diseases; YLL, years of life lost.
[a]Excess mortality expresses the number of deaths over a given period that would not occur in the absence of exposure.

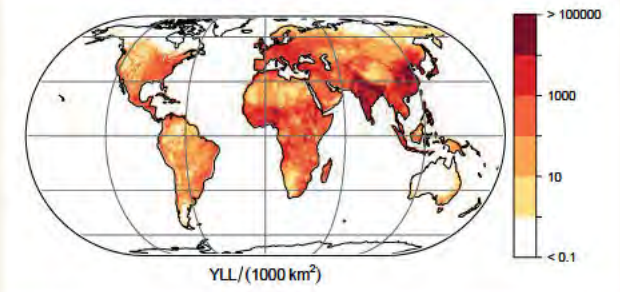


Figure 1 Annual years of life lost from air pollution (units per 1000 km^2). The global total is 233 (221 250) million per year.

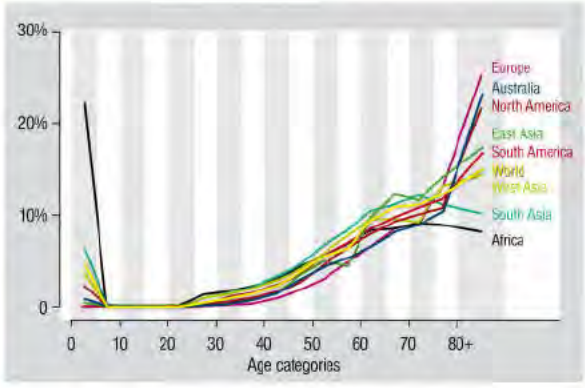


Figure 2 Age distribution of excess mortality from ambient air pollu tion. Globally, about 25% of the attributable mortality occurs at an age of <60 years: in Europe about 11% and in Africa about 55%.

categories. The global mortality rate of 8.8 (95% CI 7.11 10.41) million/year is in good agreement with Burnett *et al.*[6] who reported 8.9 (95% CI 7.5 10.3) million per year, and it is about a factor of two higher than in previous studies using relative risk or hazard ratio values based on less comprehensive epidemiological data.[3,8,9] For comparison, the WHO estimates the global mortality from tobacco smoking (active and passive) at about 7.2 million per year.[4] Geographically, the mortality from air pol lution is dominated by East Asia (35%) and South Asia (32%), followed by Africa (11%) and Europe (9%). The corresponding fractions for the YLL are 29%, 36%, 17%, and 6%, respectively. The global mean mortality rate of 120 (97 142) per 100 000 people/year is exceeded in East Asia [196 (160 229) per 100 000/year] and Europe [133 (108 157) per 100 000/year]. The LLE is 3.9 (3.2 4.6) years in East Asia, associated with the large population fraction that is exposed to poor air quality. Compared with Europe, the attributable mortality rate in South Asia is 12% lower but the LLE is 50% higher [3.3 (2.6 3.9) years], which is re lated to less advanced health care and child mortality. Lowest mortality rates and LLE are found in Australia, associated with the strictest air qual ity standards worldwide.[18]

3.2 Age dependency

Figure 2 illustrates the age dependency of excess mortality, i.e. the rela tive distribution in 5 year intervals (and accumulated over a longer pe riod of above 80 years). The proportion of excess deaths generally increases with age, but child mortality (<5 years) can be high in low income countries, mostly in Africa and South Asia, and related to LRI. *Figure 3* presents the relative contributions of disease categories to LLE. It demonstrates that cardiovascular diseases (CVDs) (CEV + IHD) plus the other NCD dominate excess mortality. While LRI contribute 13.8% to excess mortality globally, they make up 21.4% of LLE, influenced by childhood mortality. The relatively high incidence of CVD outcomes is consistent with recent analyses and partly related to previously unac counted, indirect cardiovascular risks.[19–22] For example, $PM_{2.5}$ induced inflammation, oxidative stress, and vascular (endothelial) dysfunction probably contribute to the development of hypertension, diabetes, and atherosclerosis.[23] It is likely that a large percentage of the other NCD

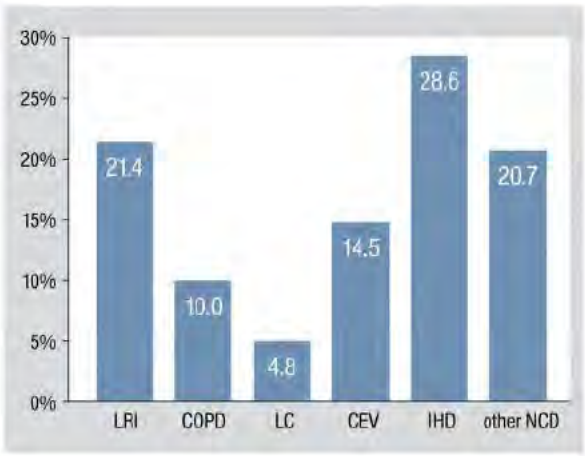


Figure 3 Percentage of global life expectancy loss from air pollution by different disease categories. CEV, cerebrovascular disease; COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LC, lung cancer; LRI, lower respiratory infections; NCD, non communicable diseases.

contribute to CVD mortality, typically at an advanced age. Globally, NCD are the major cause of death, associated with hypertension, tobacco smoking, diabetes, and high cholesterol and air pollution is likewise a leading risk factor.[3,5]

3.3 Comparing health risks

Figure 4 compares the LLE from different risk factors. Humans typically fear violence most, but rational evaluation shows that, only in exceptional cases (Syria, Afghanistan, Honduras, Colombia, and Venezuela), the associated mean LLE exceeds that from ambient air pollution. The leading air pollution source sector is fossil fuel use, which includes emissions from power generation, industry, traffic, and residential energy use. The residential source additionally involves biofuel use, which relatedly causes household air pollution (*Figure 4*). In India, for example, residential biofuel use is a main factor in both ambient and household air pollution.[24] In China, on the other hand, a large part of the residential air pollution is from small scale coal (hence fossil fuel) combustion.[25,26] Since residential ambient and household pollution are not independent, the associated mortality is not additive.[5,27] Relatively high red colour intensities in the upper left panel of Figure 4, compared to the other panels, shows in which areas the LLE from ambient air pollution exceeds that from tobacco smoking, mostly in low and middle income countries. While the prevalence of smoking decreased in the past decades, the total number of smokers increased due to population growth.[28] In the same period, exposure to air pollution grew due to increasing population and emissions in low and middle income countries,[29] as well as ageing and changes in non communicable disease rates. The geographic distribution of risk factors is quite diverse, while many come together in Africa (*Figure 4*). The global mean life expectancy increased from 52 years in 1960 to 72 years in 2015 (and 80 years in high income countries), but in many low income countries, including sub Saharan Africa, it is still below 60 years, which is unsurprising in view of the multiple health risks.[30,31] We note that our LLE estimates for low income regions are possibly lower limits, because air pollution induced infant mortality may be higher than assumed.[32]

3.4 Avoidable mortality

Finally, we calculated to what extent LLE from ambient air pollution could be reduced by removing the avoidable anthropogenic emissions in our atmospheric model. We find that the global LLE of 2.9 (2.3 3.5) years (*Table 1*) could be reduced by 1.7 (1.4 2.0) years through the removal of all potentially preventable anthropogenic emissions and by 1.1 (0.9 1.2) years through the removal of fossil fuel related emissions alone. This corroborates that fossil fuel generated air pollution qualifies as a major global health risk factor by itself. We reiterate that non preventable pollution sources should be distinguished in view of policy making, mostly aeolian dust and natural wildfires, the latter being about 10% of global biomass burning. Because of the large geographic diversity in emissions, our results indicate major regional differences. In East Asia, 3.0 (2.5 3.5) of the 3.9 (3.2 4.6) years LLE could potentially be prevented, whereas in Africa, where population growth is rapid and aeolian dust predominates, it is merely 0.7 (0.5 0.9) of 3.1 (2.3 3.8) years. Contrasts can thus be very large. In the USA and China, up to 80 85% of the LLE is preventable through the control of anthropogenic emissions, whereas in Nigeria and Egypt, it is 16 17%. It should be emphasized that additional LLE can be avoided, both generally and specifically from air pollution, by improving health care.

4. Discussion

4.1 Major health risk

While in some parts of the world air quality remains to be poor, notably in low and middle income countries, in other regions, such as North America, Europe, and most recently China, pollution emissions have decreased. Then, why do attributable mortality rates continue to be so high, and why has air pollution advanced into one of the major public health risk factors worldwide? The answer is fourfold. First, the GEMM accounts for other NCD that were not considered in previous analyses, in line with growing evidence that air pollution aggravates NCD risks such as diabetes and hypertension. Second, there is increasing support for larger than previously assumed health impacts at very low and very high $PM_{2.5}$ concentrations, which are better represented by the GEMM than hazard functions of former GBD assessments.[6,33] Third, in many low and middle income countries, population numbers and industrial and traffic related pollution levels continue to grow. Fourth, NCD, in particular CVD, have become a major cause of death, accompanying the overall increasing life expectancy. Air pollution particularly aggravates chronic health risks, and the extended exposure takes its toll later in life. However, while the rate of attributable NCD mortality increases, the associated LLE typically changes less due to improvements in health care. Therefore, mortality estimates should be interpreted with caution and complemented by YLL and LLE estimates.

4.2 Mortality metrics

The GEMM can be used to estimate how many deaths could be avoided per year if the population were exposed to a lower counterfactual level than current, ambient concentrations of air pollution. Since separate risk functions are derived for age categories, the GEMM additionally incorporates the age structure of the population. When mortality is attributed to a risk factor such as air pollution, the relationship is statistical but not distinctive (unlike car accidents where

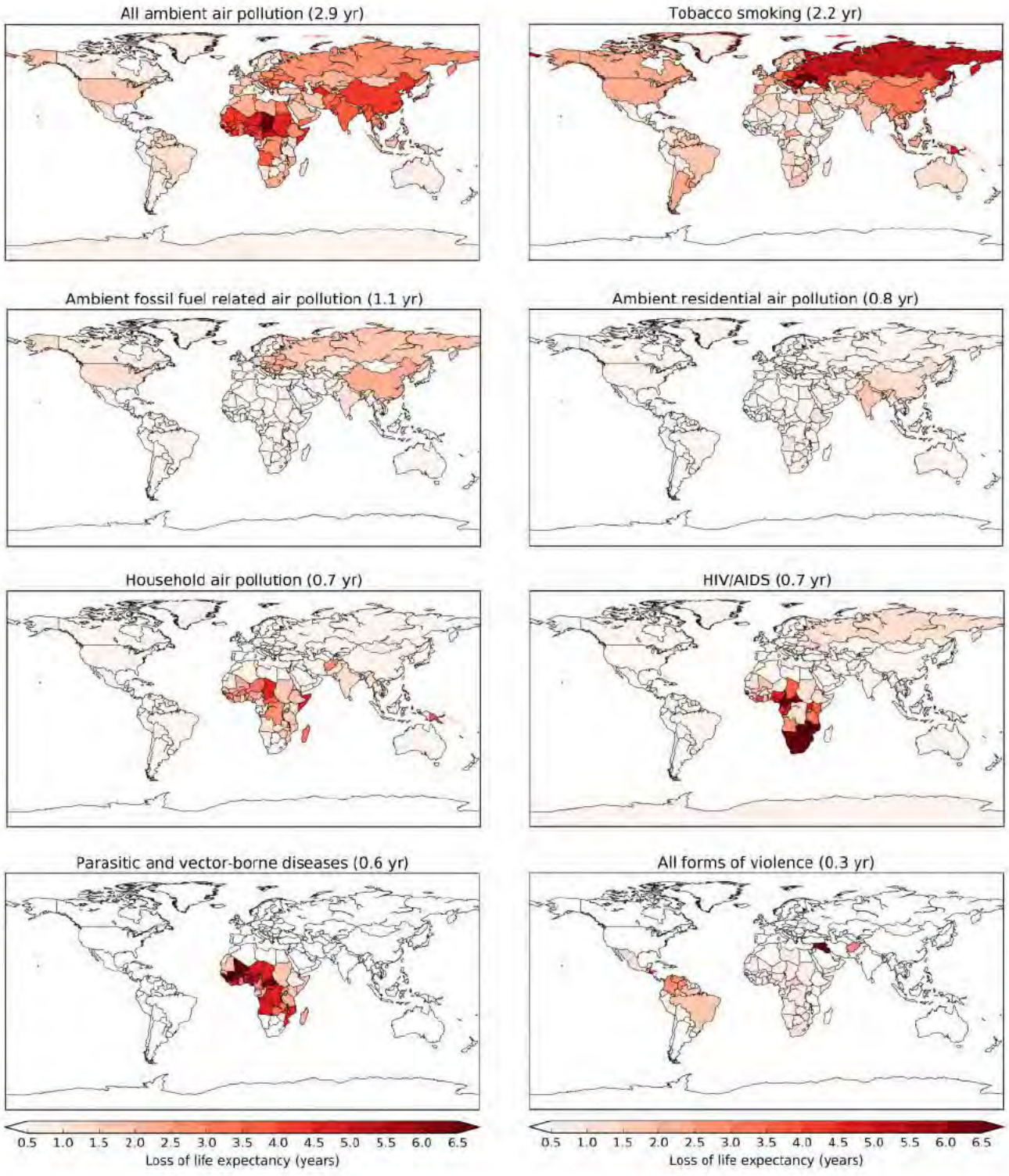


Figure 4 Mean global and country level loss of life expectancy from different causes of death referring to the year 2015. Household air pollution is from the indoor use of solid biofuels. Ambient residential air pollution is mostly from household sources and can include fossil and biofuel use. Parasitic and vec tor borne diseases include malaria, leishmaniasis, rabies, dengue, yellow fever, and others. Violence includes interpersonal, collective conflict, and armed intervention.

excess mortality relates to persons who can be identified). To do jus tice to these differences, we provide several complementary metrics, i.e. excess mortality, YLL, and LLE. While excess mortality (sometimes indicated as premature mortality) is often used as a comparative measure to quantify health risks, the regional diversity among total and per capita mortality, LLE and YLL (*Table 1*), influenced by the prevalence of other risk factors and health care, shows that there is no single best metric. One could argue, for example that, for smoking

the excess mortality (individual exposure) and for air pollution, the LLE (population exposure) is more suitable.

4.3 Limitations and uncertainties

We emphasize that the methodology used with the GEMM is the same as for the health effects of active smoking, obesity, and so on. Hence, whatever limitations are relevant for outdoor air pollution, they also apply to other risk factors like smoking. Although clinical and public health research has uncovered unambiguous associations between air pollution, disease, and mortality, even at very low levels of exposure,[5,33] continued studies are needed to disentangle the physiological mechanisms, causes, and effects. For example, the harmfulness of different types of particles, individually and in mixtures, is not well understood.[34,35] The GEMM assumes that $PM_{2.5}$ toxicity does not significantly depend on the sources and chemical composition, which is a simplification that requires further investigation. While previous studies of exposure–response formulations assumed counterfactual (i.e. potential outcome) uncertainty distributions, in the GEMM, this dependency has diminished by directly deriving the shape of the exposure–mortality association from very low to high levels of air pollution, being accounted for in several of the 41 cohort studies analysed by Burnett *et al.*[6]

Our calculations of mortality from air pollution include 95% CI estimates, which represent uncertainty related to the data used in the calculations. The Supplementary material online, *Excel Tables* present excess mortality, YLL, and LLE for all countries, for different disease categories, and their 95% CI's are given by the mean, minimum, and maximum values. We reiterate that the 95% CI refers to uncertainty in the parameters used in the attribution calculations. There can be additional uncertainty from incomplete knowledge, i.e. epistemic uncertainty. This includes model assumptions for counterfactuals, unaccounted confounding factors, misclassification of health, and other data, or limited representativeness of hazard functions as they rely on data from a relatively small number of countries (16 countries). Confounder uncertainty can be associated with over- as well as underestimates, either by over-attributing air pollution deaths to disease categories, as well as neglect of air pollution impacts on diseases that are not, but should be accounted for. For example, it is conceivable that air pollution worsens smoking-related health effects. It should be noted that the excess mortality estimated for the disease category 'other NCD' (*Table 1*, *Figure 3*) is associated with larger uncertainty than LRI, COPD, LC, CEV, and IHD, as the number of deaths is not necessarily additive due to competing health risks. The NCD + LRI group represents the total impact of $PM_{2.5}$ on mortality and LLE. Specific causes of death are reported separately to indicate their contributions to the total. Ideally, an additional GEMM should be developed with a competing R(z) mode.

4.4 Differential toxicity of particles

Generally, the exposure calculations contribute relatively little to uncertainty, being dominated by the attribution calculations. However, this may not hold if $PM_{2.5}$ toxicity significantly depends on source categories and chemical composition, implying that exposure would be less well characterized than assumed. While epidemiological studies have not identified source categories that distinctively affect the health impacts of fine particulates,[3,5] toxicological investigations have reported that exhaust particles from diesel engines are relatively more toxic than from gasoline engines, followed by biomass burning, coal combustion, and road dust particles, all being significantly more hazardous than ammonium sulphate and nitrate- and also suggesting that different $PM_{2.5}$ mixtures influence different diseases.[36] For example, we have estimated that globally about 5% of mortality is attributable to biomass burning,[7] which amounts to about 440 000 excess deaths per year. However, it is conceivable that organic particles are significantly more toxic than inorganic ones[7]; if this was true, the global excess mortality from biomass burning smoke may add up to about 630 000 per year. Although it is unclear to what extent the toxicological studies are representative for morbidity and mortality in human populations, especially for long term exposure,[36] it cannot be excluded that various particle sources have different impacts. Furthermore, there is discussion about harmfulness related to particle size. Fine particulates, $PM_{2.5}$, are believed to be a more important health concern than course particles up to 10 μm in diameter (PM_{10}), as the smaller ones penetrate more deeply into the lungs with a low probability to be exhaled.

Experimental studies have corroborated that $PM_{2.5}$ provides a good approximation for the extended exposure of the human respiratory tract to particulate pollution.[37] However, there remains concern that ultrafine particles with a diameter of smaller than 0.1 μm ($PM_{0.1}$) could be particularly harmful, as they can directly pass into the bloodstream and affect other organs.[38] It has been observed that specifically the smallest fraction of $PM_{0.1}$, with a diameter of below about 30 nm, can directly translocate into the circulatory system and accumulate at sites of vascular inflammation.[39] Nevertheless, two meta studies on the health effects of ultrafine particles concluded that the available evidence does not indicate that $PM_{0.1}$ is relatively more hazardous, or at least that there is no conclusive support for it but do emphasize the need for continued studies, in particular of the long term health effects.[37,40] In view of this, especially regarding differential toxicity in terms of particle composition and size, it seems probable that the overall uncertainty of our mortality and life expectancy calculations is larger than the 95% CI; we estimate it at approximately ±50%.[8,10]

5. Conclusion

Our comparison of different global risk factors shows that ambient air pollution is a leading cause of excess mortality and LLE, in particular through CVDs. Globally, the LLE from air pollution surpasses that of HIV/AIDS, parasitic, vector borne, and other infectious diseases by a large margin. It exceeds the LLE due to all forms of violence by an order of magnitude and that of smoking by a third. Nonetheless, one could argue that tobacco smoking can be entirely avoided. The removal of anthropogenic air pollution emissions can merely avoid about 25–80% of LLE, i.e. within a large range, depending on the local role of natural emissions (e.g. aeolian dust), but with substantial potential for mortality reduction through the improvement of health care, especially in low-income counties. The fraction of avoidable LLE from anthropogenic air pollution that can be attributed to fossil fuel use is nearly two thirds globally, and up to about 80% in high-income countries.

Supplementary material

Supplementary material is available at *Cardiovascular Research* online.

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Can atmospheric pollution be considered a co-factor in extremely high level of SARS-CoV-2 lethality in Northern Italy?☆

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ABSTRACT

This paper investigates the correlation between the high level of Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS CoV 2) lethality and the atmospheric pollution in Northern Italy. Indeed, Lombardy and Emilia Romagna are Italian regions with both the highest level of virus lethality in the world and one of Europe's most polluted area. Based on this correlation, this paper analyzes the possible link between pollution and the development of acute respiratory distress syndrome and eventually death. We provide evidence that people living in an area with high levels of pollutant are more prone to develop chronic respiratory conditions and suitable to any infective agent. Moreover, a prolonged exposure to air pollution leads to a chronic inflammatory stimulus, even in young and healthy subjects. We conclude that the high level of pollution in Northern Italy should be considered an additional co factor of the high level of lethality recorded in that area.

1. Introduction

Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS CoV 2) (Lu et al., 2020) is the pathogenic agent of Covid 19, a disease first reported in a small cluster in Wuhan, Hubei Province, China, in December 2019, and subsequently spread all over the world. Due to its high contagiousness and aggressive course, it has been declared by World Health Organization (WHO) a Public Health Emergency of International Concern (A public health emergency, 2019). The course of the disease is often mild, undistinguishable from a com mon flu, but in a considerable number of cases may require hos pitalization, eventually leading to an acute respiratory distress syndrome (ARDS) and death.

Due to the high variability of political and sanitary decisions taken by the different Governments, data about incidence, lethality and mortality are notably different among countries and even among regions of the same country. Starting from the end of February 2020, contagious has rapidly spread in Italy, particularly in the North (Lombardy, Veneto and Emilia Romagna), apparently sparing central and southern regions. After a delay of a few days, Covid 19 is now widely diffuse in many other European countries, particularly Spain and Germany, nevertheless with evident inter national dissimilarities which cannot be explained only by different health policies and systems. In particular, since the virus began to spread in Italy, Lombardy and Emilia Romagna recorded a sub stantial high level of lethality if compared with other countries but also than other Italian regions. Despite the difficulty in assessing the reasons of such differences in the middle of this enormous health emergency, researchers all around the world have linked this unexpected surplus of lethality in North Italy with two main co factors i) the different way to report the number of deaths and infects among countries; ii) the old age of Italian population. Few or no hypothesis have identified the atmospheric pollution as poten tial and additional co factor of lethality. Although a study con ducted by Sima (http://www.simaonlus.it/w, 2020) has showed that pollution has played a key role in the propagation of SARS CoV 2 there is no evidence about if pollution may have had an impact on communities exposed to toxic air in terms of worsening of initial health status in order to be considered an additional co factor of SARS CoV 2 lethality.

According to data from Italian Civil Protection on March 21st 2020, lethality in Lombardy and Emilia Romagna was about 12% whereas in the rest of Italy was about 4.5% (Protezione Civile Italian). A team of researchers at the Royal Netherlands Meteoro logical Institute by using data from the Ozone Monitoring Instru ment on NASA's Aura satellite, revealed that Northern Italy is one of

☆ This paper has been recommended for acceptance by Dr. Payam Dadvand.

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Europe's most polluted areas in terms of smog and air pollution also due to its climatic and geographic conditions, which cause the stagnation of pollutants (Earth Observatory. A, 1590). The European Environment Agency (EEA) has recently introduced an aggregated index named as Air Quality Index (AQI), index reflecting the po tential impact of air quality on health, driven by the pollutants in geographical regions. It is calculated hourly for more than two thousand air quality monitoring stations across Europe, using up to date data reported by EEA member countries (European Air Quality Inde). The AQI is based on concentration values for up to five key pollutants, including: PM_{10}, $PM_{2.5}$, O_3, SO_2 and NO_2. Ac cording to the AQI the area covering Lombardia and Emilia Roma gna results to be the most polluted area in Italy (and one of the most polluted in Europe) (Indice di qualitá dell'ar). Qin et al., 2020

Based on this direct and evident correlation between high level of lethality and atmospheric pollution, the overreaching question addressed from this paper is: are communities living in polluted area such as Lombardy and Emilia Romagna more predisposed to die of Covid 19 due to their health status?

2. Analysis

As previously mentioned, the physio pathological event leading to intensive care unit (ICU) and to death is an ARDS, a dramatic event whose treatment is usually only supportive, requiring me chanical ventilation. Regardless of the etiology (Aisiku et al., 2016), a hyper activation of immune innate system is thought to have a paramount role in this condition: inflammatory cytokines and chemokines, such as tumor necrosis factor (TNF) α, interleukin (IL) 1β, IL 6, IL 8, IL 17 and IL 18, as well as several growth factors, are overexpressed in ARDS, triggering apoptotic cascade and epithelial mesenchymal transition (Gouda et al., 2018). Moreover, their high serum and bronchoalveolar lavage level seem related to a poorer prognosis (Butt et al., 2016). These findings, although not validated and not available in the common clinical practice, make them suitable as potential biomarkers and targets for the therapy.

Similar evidences have been reported in patients affected by severe viral pneumoniae such as SARS (Wong et al., 2004) and MERS (Min et al., 2016) and an immune dysregulation is thought to be responsible of a worse outcome in patients affected by Covid 19. Recently published papers have found an imbalance in T cells, as well as high serum levels of IL 6, IL 1 and TNFα (Qin et al., 2020), in the subjects requiring hospitalization and admitted to ICU: this suggests an intriguing role of the most recent immunosuppressive drugs in the treatment of Covid 19 (Stebbing et al., 2020). This being said, we must remind that an overexpression of the above mentioned cytokines occurs in many other conditions in addition to viral pneumonia and ARDS.

Air pollution represents one of the most well known causes of prolonged inflammation, eventually leading to an innate immune system hyper activation. In a small cohort of mice exposed for three months to particulate matter $\leq$2.5 μm in diameter ($PM_{2.5}$), IL 4, TNF α and transforming growth factor (TGF) β1 were significantly increased in both serum and lung parenchyma, as well as leuco cytes and macrophages (Yang et al., 2019). Obviously, a high sys temic inflammation impairs heart function too, as witnessed in another cohort of mice exposed to $PM_{2.5}$ and PM_{10} (Radan et al., 2019). All these findings have been extensively confirmed in humans too: both $PM_{2.5}$ and PM_{10} lead to systemic inflammation with an overexpression of PDGF, VEGF, TNFα, IL 1 and IL 6 even in healthy, non smoker and young subjects (Pope et al., 2016), directly related to the length of the exposure to the pollutant (Tsai et al., 2019).

Similarly, an exaggerated inflammatory status is found in airways too: an outdated paper (Ishii et al., 2004) found that alveolar macrophages (AM), exposed *in vitro* to PM_{10}, significantly increased the levels of IL 1β, IL 6, IL 8 and TNF α, thus underlining the prominent role of AM in cleaning particulates and activating immune response. Such evidences are remarked by a more recent paper, which investigated the effects of Milan city (Lombardy, Italy) winter $PM_{2.5}$ and summer PM_{10}: as expected, human bronchial cells evidenced an *in vitro* elevated production of both IL 6 and IL 8 (Longhin et al., 2018). Also, a high correlation between nitrogen dioxide (NO_2) and particulate in inducing IL 6 hyperexpression was found (Perret et al., 2017), being both responsible of an inflam matory status even in a pediatric population (Gruzieva et al., 2017).

Among the other more common pollutants, ozone (O_3) and sulfur dioxide (SO_2) have also a prominent role in inducing sys temic and respiratory system inflammation, particularly via IL 8 (Kurai et al., 2018), IL 17 (Che et al., 2016) and TNF α (Cho et al., 2007), both *in vitro* and *in vivo* (Knorst et al., 1996). All these modifications are well known to contribute to atherogenesis, chronic respiratory diseases and cardiovascular events, the latter strictly correlated with IL 6 serum levels (Aromolaran et al., 2018). Nevertheless, aside of "classical" pollution related conditions, several recent studies have pointed out a possible correlation be tween poor air quality and development and worsening of chronic inflammatory disease, such as systemic lupus erythematous (Alves et al., 2018; Gulati and Brunner, 2018) and rheumatoid arthritis (Sigaux et al., 2019).

3. Conclusions

In conclusion, it is well known that pollution impairs the first line of defense of upper airways, namely cilia (Cao et al., 2020), thus a subject living in an area with high levels of pollutant is more prone to develop chronic respiratory conditions and suitable to any infective agent. Moreover, as we previously pointed out, a pro longed exposure to air pollution leads to a chronic inflammatory stimulus, even in young and healthy subjects.

This, in our opinion, may partly explain a higher prevalence and lethality of a novel, very contagious, viral agent such as SARS CoV 2, among a population living in areas with a higher level of air pollution, particularly if we consider the relatively high average age of this population. Among elderly living in such a region and affected by other comorbidities, the cilia and upper airways de fenses could have been weakened both by age and chronic expo sure to air pollution, which, in turn, could facilitate virus invasion by allowing virus reaching lower airways. Subsequently, a dysre gulated, weak immune system, triggered by chronic air pollution exposure may lead to ARDS and eventually death, particularly in case of severe respiratory and cardiovascular comorbidities. Moreover, since the prolonged exposure to atmospheric pollution could induce persistent modifications of the immune system (Tsai et al., 2019), short term changes in the air quality may not be suf ficient to break this vicious circle. This might be supported by the persistent high fatality rate, despite the dramatical reduction of air pollution levels in Lombardy since the start of the outbreak. Obvi ously, our considerations must not let us neglect other critical factors responsible for the high contagiousness and fatality of this rapidly spreading disease. Important factors such as the age structure of the affected population, the wide differences among Italian regional health systems, capacity of the intensive care units in the region, and the prevention policies taken by the Government have had a paramount role in the spreading of SARS CoV 2, pre sumably more than the air pollution itself. At the same time, our paper evaluated fatality rate only in two Italian regions: given the pandemic dimension of Covid 19, it will be interesting to evaluate if, similarly, a higher lethality will be also recorded in the most

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polluted regions worldwide.

Finally, experimental and epidemiological studies are urgently needed to evaluate the role of the atmospheric pollution in certain populations: the assessment of bronchial and serological levels of inflammatory cytokines represents the cornerstone for a deeper comprehension of the mechanisms leading to a poorer prognosis.

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Declaration of competing interest

We have no conflict of interests for the paper titled: can atmo spheric pollution be considered a co factor in extremely high level of SARS CoV 2 lethality in Northern Italy?

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Air Pollution's Insidious Link to the Pandemic

By Akshat Rathi (Bloomberg Green)
14 April 2020,

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Even before the pandemic struck, outdoor air pollution was linked to the deaths of as many as nine million people each year. Now two new studies show that Covid-19 patients are more likely to die if they live in regions with high levels of air pollution.

Air pollution affects human health in insidious ways. The burning of fossil fuels in cars and factories creates soot and other too-small-to-see particles. Every breath filled with these particles slowly increases the risk of heart problems, strokes, asthma, pneumonia, and lung cancer.

These particles are so small that they end up in almost every organ in the body. The longer we study air pollution's effects, the longer the list of diseases it's linked to—now including Covid-19.

"The latest science is showing that there seem to be no 'safe' levels of air pollution," said Gretchen Goldman, research director at the Center for Science and Democracy at the Union of Concerned Scientists.

The new studies—one from **Harvard University** looking at the U.S. and the other from the **University of Siena** looking at Italy—show just how bad it can get when air pollution collides with a rapidly spreading respiratory disease.

The Harvard researchers found that a long-term air pollution increase of 1 microgram per cubic meter of small particles can raise the risk of dying from Covid-19 by 15%. The study is yet to undergo peer review but multiple experts familiar with the findings told Bloomberg that the results aren't surprising.

Covid-19 doesn't impact everyone equally. In those who suffer severely, the virus is thought to move from the upper respiratory tract, where it can cause a sore throat, to the lower respiratory tract, where it causes inflammation in the lungs, which can lead to death if it spirals out of control.

The authors of the **University of Siena** study wrote that, because air pollution "impairs the first line of defense" of the upper respiratory tract, it likely explains why those who live in areas with higher air pollution might fall prey to the disease more than others.

Past evidence makes the case stronger. A study published in 2003 found that higher air pollution caused greater deaths from SARS, which was caused by a cousin of the current strain of coronavirus. A range of studies have found that air pollutants are linked to increased risk from influenza-type illnesses.

Air pollution levels are higher in poorer parts of a city or state. "It adds yet another layer of injustice to who is going to be affected by this virus," Goldman said. **The short-term respite from air pollution that most big cities in the world are experiencing because of lockdown measures will save some lives, but only long-term reductions in air pollution can have lasting impacts.**

The good news is that policymakers know what needs to be done: improving access to public transport, electrifying the transport fleet, raising regulations or pricing emissions on power plants and factories, and developing new technology alternatives to polluting industries, such as steel and cement. All of these measures lead to cleaner air (and lower carbon emissions).

Better still, the interventions lead to higher productivity. "Air pollution is a drag on economic growth and solutions to address it are enormously cost effective," said Aaron Bernstein, director of Harvard C-Change, a center dedicated

to climate change and public health. A 2011 study from the U.S. Environmental Protection Agency found that every $1 spent on lowering air pollution returns as much as $30.

Some people with influence might be making the connection between air pollution and ill-health more clearly than before. “We paid people’s lives for the lesson, and we should never do it again,” said Cai Xue’en, delegate of the National People’s Congress and adviser to China’s supreme court, in the context of the country's Covid-19 death toll. “I think environmental protection will rank even higher for both the central and local governments.”

Akshat Rathi writes the Net Zero newsletter on the intersection of climate science and emission-free tech. You can email him with feedback.

— With assistance by Leslie Kaufman

https://www.bloomberg.com/news/articles/2020-04-14/air-pollution-s-insidious-link-to-the-coronavirus-pandemic?sref=xpkx9tNh

https://projects.iq.harvard.edu/covid-pm

Exposure to air pollution and COVID-19 mortality in the United States (Updated April 5, 2020)

Xiao Wu MS, Rachel C. Nethery PhD, M. Benjamin Sabath MA, Danielle Braun PhD, Francesca Dominici PhD
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Corresponding and senior author: Francesca Dominici, PhD

Background: United States government scientists estimate that COVID-19 may kill between 100,000 and 240,000 Americans. The majority of the pre-existing conditions that increase the risk of death for COVID-19 are the same diseases that are affected by long-term exposure to air pollution. We investigate whether long-term average exposure to fine particulate matter ($PM_{2.5}$) increases the risk of COVID-19 deaths in the United States.

Methods: Data was collected for approximately 3,000 counties in the United States (98% of the population) up to April 04, 2020. We fit zero-inflated negative binomial mixed models using county level COVID-19 deaths as the outcome and county level long-term average of $PM_{2.5}$ as the exposure. We adjust by population size, hospital beds, number of individuals tested, weather, and socioeconomic and behavioral variables including, but not limited to obesity and smoking. We include a random intercept by state to account for potential correlation in counties within the same state.

Results: We found that an increase of only 1 $\mu g/m^3$ in $PM_{2.5}$ is associated with a 15% increase in the COVID-19 death rate, 95% confidence interval (CI) (5%, 25%). Results are statistically significant and robust to secondary and sensitivity analyses.

Conclusions: A small increase in long-term exposure to $PM_{2.5}$ leads to a large increase in COVID-19 death rate, with the magnitude of increase 20 times that observed for $PM_{2.5}$ and all-cause mortality. The study results underscore the importance of continuing to enforce existing air pollution regulations to protect human health both during and after the COVID-19 crisis. The data and code are publicly available.

Data and Code:
Our data and code is available on github here.

Manuscript and Supplemental Material

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The data was produced as part of the following paper:
van Donkelaar, A., R. V. Martin, C. Li, R. T. Burnett, Regional Estimates of Chemical Composition of Fine Particulate Matter using a Combined Geoscience-Statistical Method with Information from Satellites, Models, and Monitors, Environ. Sci. Technol., doi: 10.1021/acs.est.8b06392, 2019.

Can atmospheric pollution be considered a co-factor in extremely high level of SARS-CoV-2 lethality in Northern Italy?☆

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Abstract

This paper investigates the correlation between the high level of Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS-CoV-2) lethality and the atmospheric pollution in Northern Italy. Indeed, Lombardy and Emilia Romagna are Italian regions with both the highest level of virus lethality in the world and one of Europe’s most polluted area. Based on this correlation, this paper analyzes the possible link between pollution and the development of acute respiratory distress syndrome and eventually death. We provide evidence that people living in an area with high levels of pollutant are more prone to develop chronic respiratory conditions and suitable to any infective agent. Moreover, a prolonged exposure to air pollution leads to a chronic inflammatory stimulus, even in young and healthy subjects. We conclude that the high level of pollution in Northern Italy should be considered an additional co-factor of the high level of lethality recorded in that area.

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Short Communication

Assessing nitrogen dioxide (NO_2) levels as a contributing factor to coronavirus (COVID-19) fatality

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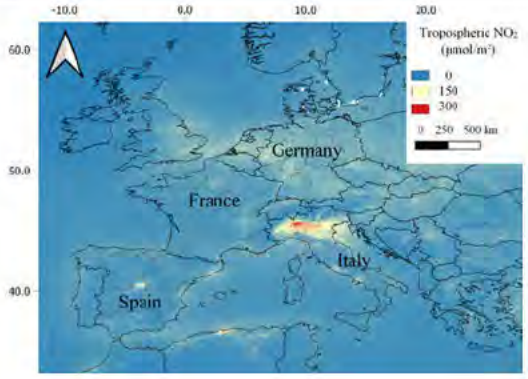
GRAPHICAL ABSTRACT



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ABSTRACT

Nitrogen dioxide (NO_2) is an ambient trace gas result of both natural and anthropogenic processes. Long term exposure to NO_2 may cause a wide spectrum of severe health problems such as hypertension, diabetes, heart and cardiovascular diseases and even death. The objective of this study is to examine the relationship between long term exposure to NO_2 and coronavirus fatality. The Sentinel 5P is used for mapping the tropospheric NO_2 distribution and the NCEP/NCAR reanalysis for evaluating the atmospheric capability to disperse the pollution. The spatial analysis has been conducted on a regional scale and combined with the number of death cases taken from 66 administrative regions in Italy, Spain, France and Germany. Results show that out of the 4443 fatality cases, 3487 (78%) were in five regions located in north Italy and central Spain. Additionally, the same five regions show the highest NO_2 concentrations combined with downwards airflow which prevent an efficient dispersion of air pollution. These results indicate that the long term exposure to this pollutant may be one of the most important contributors to fatality caused by the COVID 19 virus in these regions and maybe across the whole world.

1. Introduction

The outbreak of the novel coronavirus (COVID 19) is an ongoing global epidemic event which started in the city of Wuhan, China in late 2019. By March 2020 the virus has spread globally and was declared as pandemic by the World Health Organization (World Health Organization, 2020). COVID 19 is an acute respiratory disease which may lead to pneumonia with symptoms such as fever, cough and dyspnea (Jiang et al., 2020) and has an approximate fatality rate of 2 3% (Rodriguez Morales et al., 2020). As of March 19, 2020, there have

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Table 1
The most common background diseases evident in over 20% of the cases.

Disease	% of patients
Hypertension	73.8
Diabetes	33.9
Ischemic heart diseases	30.1
Atrial fibrillation	22.0
Chronic renal failure	20.2

been 209,839 confirmed cases and 8788 deaths reported globally. Early studies concluded that the risk factors associated with the development of the disease are older age (Wu et al., 2020), history of smoking (Liu et al., 2020), hypertension and heart disease (Chen et al., 2020). The Italian institute of health (Istituto Superiore di Sanità) reported background diseases of 481 patients in Italy who passed away due to COVID 19 infection. Table 1 shows the information about the most common background diseases which are evident in over 20% of the cases. Furthermore, recent studies suggest that the cause of death of many COVID 19 patients was related to cytokine storm syndrome (Guo et al., 2020; Mehta et al., 2020). This syndrome, also known as hypercytokinemia is an uncontrolled release of proinflammatory cytokines (Tisoncik et al., 2012) and it is a severe reaction of the immune system, leading to a chain of destructive processes in the body that can end in death.

Many studies have shown that the incidence of these diseases can also be caused by a long exposure to air pollution, especially nitrogen dioxide (NO_2), a toxic component. NO_2 enters the atmosphere as a result of anthropogenic activity (mostly fossil fuel combustion from vehicles and power plants) and natural processes (lightning and soil processes). Elevated exposure to NO_2 has been associated with hypertension (Saeha et al., 2020), heart and cardiovascular diseases (Gan et al., 2012; Mann Jennifer et al., 2002; Arden et al., 2004), increased rate of hospitalization (Mann Jennifer et al., 2002), chronic obstructive pulmonary disease (COPD) (De et al., 1993; Euler et al., 1988), significant deficits in growth of lung function in children (Avol et al., 2001; James Gauderman et al., 2000), poor lung function in adults or lung injury (Bowatte et al., 2017; Rubenfeld et al., 2005) and diabetes (Saeha et al., 2020). In addition to these, other studies have focused on the immune system's response to NO_2 exposure. Blomberg et al., 1999, found that exposure to NO_2 causes an inflammatory response in the airways and Devalia et al., 1993, showed that these exposures may induce the synthesis of proinflammatory cytokines from airway epithelial cells which consequently play an important role in the etiology (cause) of airway disease. Moreover, the epithelial cells in the lung may be uniquely susceptible to death when exposed to NO_2 (Persinger et al., 2002).

High NO_2 concentration is significantly associated with respiratory mortality (Beelen et al., 2008; Chen et al., 2007; Hoek et al., 2013) and is also responsible for generating some harmful secondary pollutants such as nitric acid (HNO_3) and ozone (O_3) (Khoder, 2002). As a result, the WHO has stated that the health risks may potentially occur due to the presence of NO_2 or its secondary products (World Health Organization, 2003). Accordingly, the WHO understands the health issues arising from NO_2 and suggests that the world population should be protected from exposure to this pollutant.

The objective of this work is to assess the contribution of a long term exposure to NO_2 on coronavirus fatality. This is achieved by combining three databases: the tropospheric concentration of NO_2, the atmospheric condition as expressed by the vertical airflow, and the number of fatality cases. The data is processed at the administrative level for each country to obtain high spatial resolution.

2. Materials and methods

2.1. Fatality database

The data concerning the number of fatality cases was collected from each country on a regional/administrative level. The use of this method is intended to highlight the spatial variation of the epidemic which exists not only between different countries, but more importantly within each country. Moreover, if high mortality rates are observed in two remote regions in two different countries, we need to identify their common factor which may explain mortality. For that, data was collected from 66 administrative regions in Italy, Spain, France and Germany. Information about fatalities was taken from the Ministry of Health (Italy), Ministry of Health, Social Services and Equality (Spain), The National Agency of Public Health (France) and the Robert Koch Institute and the State Health Offices (Germany).

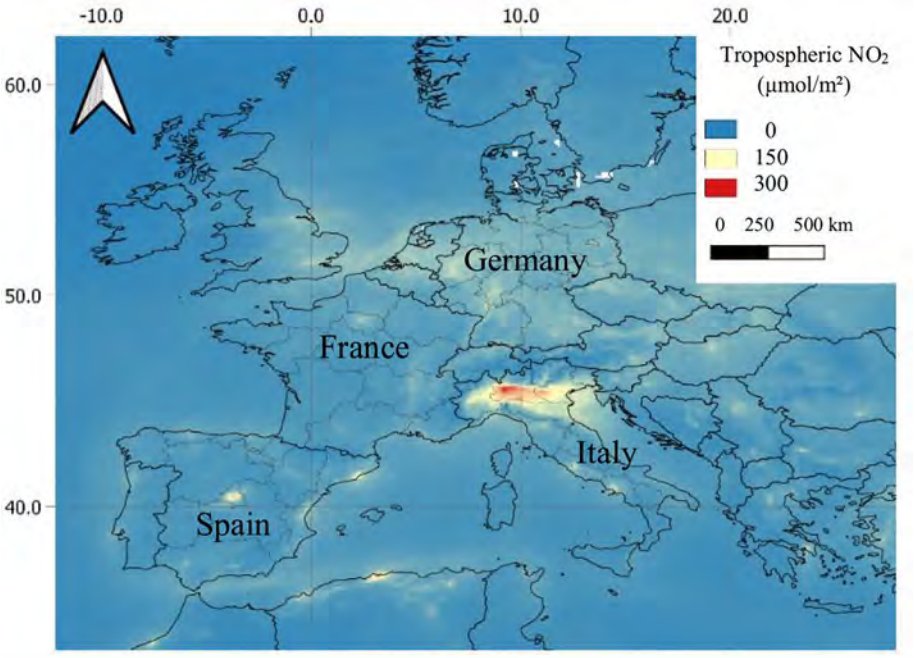

Fig. 1. The tropospheric NO_2 distribution.

2.2. The NO_2 spatial distribution

For the NO_2 concentration in the troposphere (from surface up to ~10 km), the Sentinel 5 Precursor space borne satellite (spatial resolution of 5.5 km) was used which is operated and managed by the European Commission under the "Copernicus" program (Fig. 1). The satellite operates in a sun synchronous orbit at 824 km and an orbital cycle of 16 days. The satellite carries a TRO POspheric Monitoring Instrument (TROPOMI) which provides a (near)global coverage of air pollution caused by NO_2 and other pollutants such as O_3, SO_2, CO, CH_4, CH_2O and aerosols (Veefkind et al., 2012).

For this study, long term exposure was defined as a two month period (January February 2020) prior to the outbreak of COVID 19 in Europe. The spatial data was collected using the Google Earth Engine API (Gorelick et al., 2017). The global cover age of tropospheric NO_2 for this time period was extracted using 832 different images followed by calculating the mean concen tration for each administrative region. Subsequently, only the maximum concentration value was used due to differences in the size of the regions.

2.3. The atmospheric condition

Due to the thickness of the troposphere, the value which represents the NO_2 concentration is not enough. There is also a need to understand the vertical airflow during the same period of the event. For that purpose, the vertical airflows at 850 mb (~1.5 km above sea level) was used as it defines the atmospheric capability to disperse the gas (Fig. 2). This data was provided by the NOAA/OAR/ESRL PSD, Boulder, Colorado, USA (http://www.esrl.noaa.gov/psd/). Downwards airflows are given by posi tive values of omega (in Pa/s), while upwards airflow by negative values of omega. In regions where positive omega is observed, the atmospheric will force the NO_2 to stay close to the surface which leads the population to be exposed to the risk factor. In contrast, in regions with negative omega, the atmospheric conditions will disperse the gas further away and to higher altitudes. In these regions, the population is less exposed to the air pollution and to its associated health risks.

3. Results

Mapping the tropospheric NO_2 over Europe reveals a major 'hotspot' of high concentration in the northern part of Italy. The 'hotspot' is

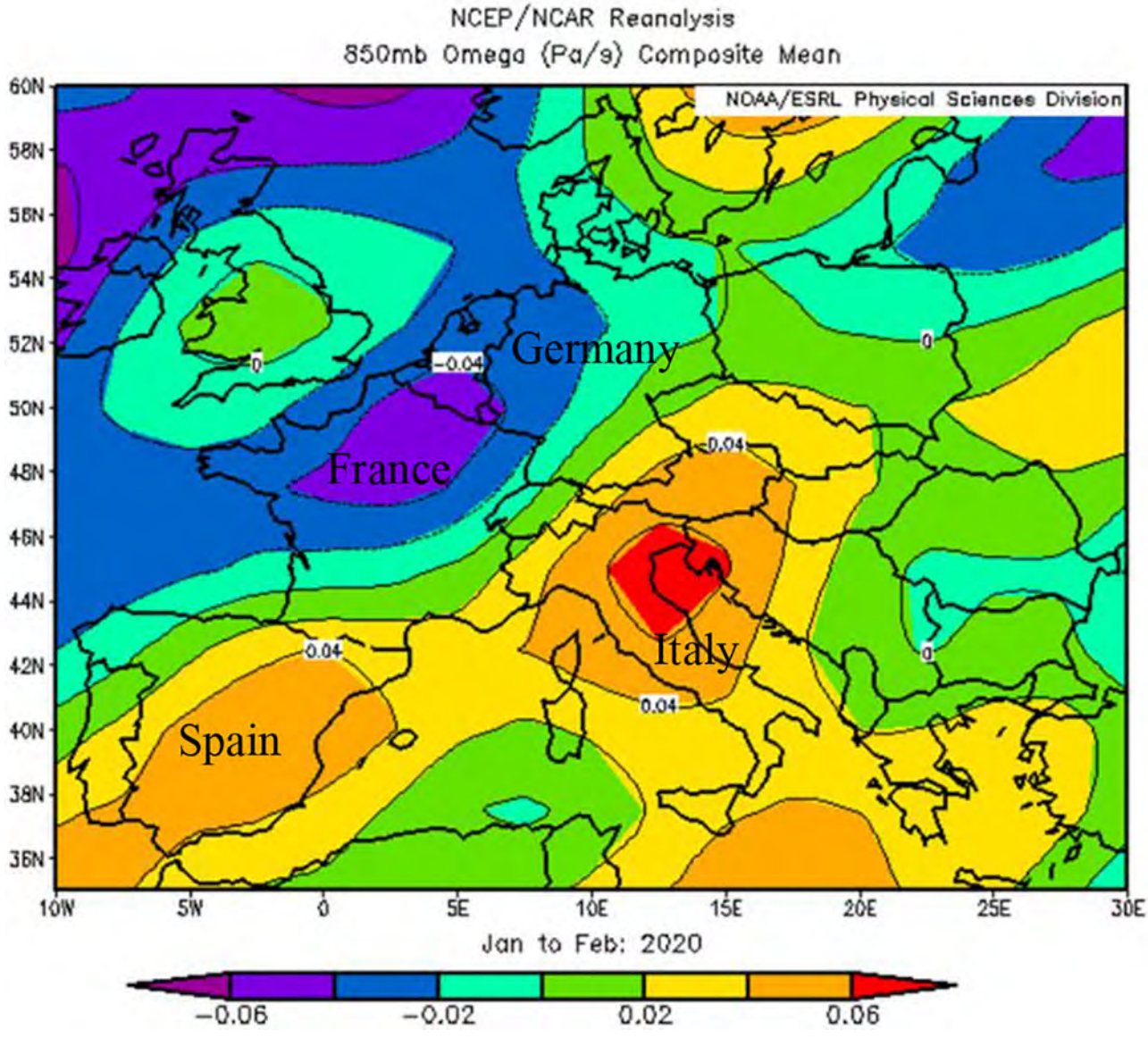

Fig. 2. The vertical airflow (omega) at 850 mb (~1500 m above sea level).

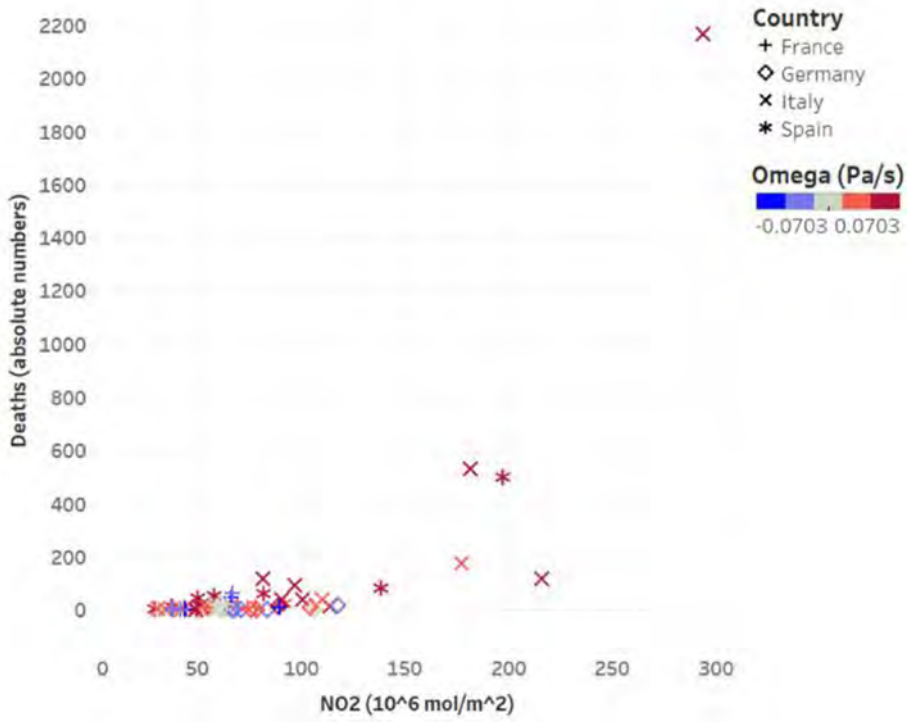

Fig. 3. NO2 vs. the absolute number of death cases.

observed in the Po valley which extends from the slopes of the western Alps to the coastal plains of the Adriatic Sea. Out of the top five regions where high fatality was observed, four of them were in northern Italy (Fig. 3): Lombardia, (2168 cases), Emilia Romanga (531), Piemonte (175 cases) and Veneto (115 cases). The other region was in the admin istrative region 'Community of Madrid' (Comunidad de Madrid), Spain (498 cases) which, like the Po valley, is also surrounded by mountain ranges.

As shown in Fig. 4, 78% of all fatalities due to coronavirus in these se lected countries occurred in those regions. The concentrations of NO_2 were high and ranged between 177.1 and 293.7 μmol/m^2, accompanied by downwards airflows (positive omega ranged between 0.04 and 0.07 Pa/s).

There were 4443 fatalities in these countries due to COVID 19 by March 19, 2020. 83% of all fatalities (3701 cases) occurred in regions where the maximum NO_2 concentration was above 100 μmol/m^2, 15.5% (691 cases) occurred in regions where the maximum NO_2 con centration was between 50 and 100 μmol/m^2, and only 1.5% of all fatal ities (51 cases) occurred in regions where the maximum NO_2 concentration was below 50 μmol/m^2.

4. Discussion and conclusion

In this study, the concentrations of the tropospheric NO_2 which were extracted from the Sentinel 5P satellite were used in order to explain the spatial variation of fatality cases in 66 administrative regions in four European countries. The Sentinel 5P data shows two main NO_2 hotspots over Europe: Northern Italy and Madrid metropolitan area. According to these results, high NO_2 concentration accompanied by downwards airflows cause of NO_2 buildup close to the surface. This to pographic structure combined with atmospheric conditions of inversion (positive omega) prevent the dispersion of air pollutants, which can cause a high incidence of respiratory problems and inflammation in the local population. This chronic exposure could be an important con tributor to the high COVID 19 fatality rates observed in these regions. As earlier studies have shown that exposure to NO_2 causes inflammatory in the lungs, it is now necessary to examine whether the presence of an initial inflammatory condition is related to the response of the immune system to the coronavirus. Hence, poisoning our environment means

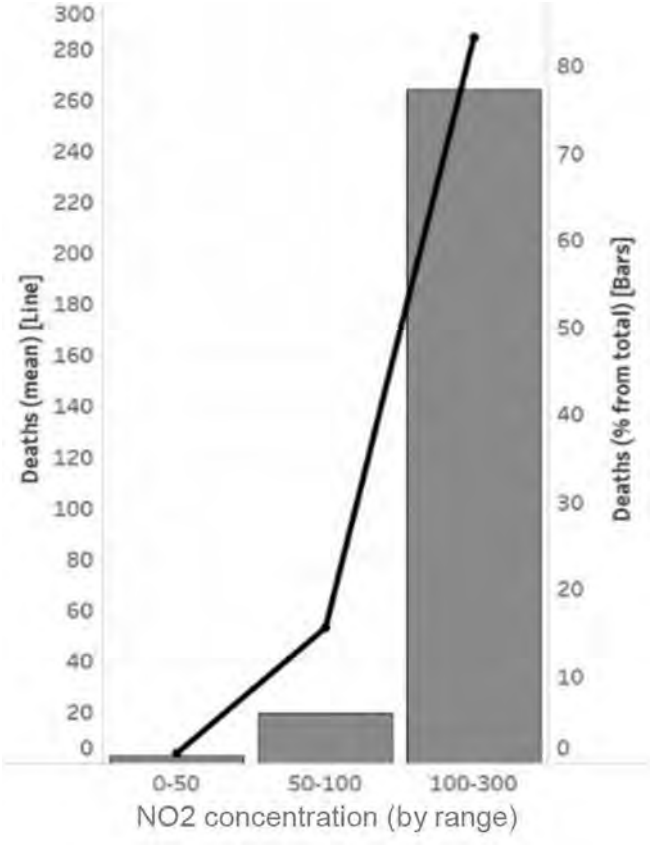

Fig. 4. The mean death cases and the percentage of deaths in each NO2 concentration range.

poisoning our own body and when it experiences a chronic respiratory stress, its ability to defend itself from infections is limited.

According to these results, more studies should be conducted which focus on additional factors such as age and presence of pre existing and background diseases along with the impact of pre exposure to NO_2 and hypercytokinemia in order to verify their impact on fatalities due to the COVID 19 pandemic.

Declaration of competing interest

The author declares no known competing financial interests or per sonal relationships that could have appeared to influence the work re ported in this paper.

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ESC European Society of Cardiology

Cardiovascular Research
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Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective

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Aims Long term exposure of humans to air pollution enhances the risk of cardiovascular and respiratory diseases. A novel Global Exposure Mortality Model (GEMM) has been derived from many cohort studies, providing much improved coverage of the exposure to fine particulate matter ($PM_{2.5}$). We applied the GEMM to assess excess mortality attributable to ambient air pollution on a global scale and compare to other risk factors.

Methods and results We used a data informed atmospheric model to calculate worldwide exposure to $PM_{2.5}$ and ozone pollution, which was combined with the GEMM to estimate disease specific excess mortality and loss of life expectancy (LLE) in 2015. Using this model, we investigated the effects of different pollution sources, distinguishing between natural (wildfires, aeolian dust) and anthropogenic emissions, including fossil fuel use. Global excess mortality from all ambi ent air pollution is estimated at 8.8 (7.11 10.41) million/year, with an LLE of 2.9 (2.3 3.5) years, being a factor of two higher than earlier estimates, and exceeding that of tobacco smoking. The global mean mortality rate of about 120 per 100 000 people/year is much exceeded in East Asia (196 per 100 000/year) and Europe (133 per 100 000/ year). Without fossil fuel emissions, the global mean life expectancy would increase by 1.1 (0.9 1.2) years and 1.7 (1.4 2.0) years by removing all potentially controllable anthropogenic emissions. Because aeolian dust and wildfire emission control is impracticable, significant LLE is unavoidable.

Conclusion Ambient air pollution is one of the main global health risks, causing significant excess mortality and LLE, especially through cardiovascular diseases. It causes an LLE that rivals that of tobacco smoking. The global mean LLE from air pollution strongly exceeds that by violence (all forms together), i.e. by an order of magnitude (LLE being 2.9 and 0.3 years, respectively).

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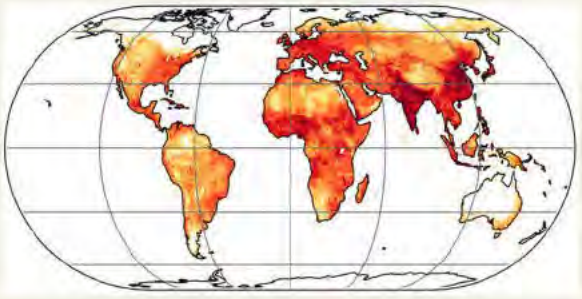
Graphical Abstract



Keywords Air pollution • Fine particulate matter • Public health risks • Loss of life expectancy • Anthropogenic emissions • Fossil fuel emissions • Natural emissions

1. Introduction

Global Burden of Disease (GBD) studies have assessed major health impacts and excess mortality rates from ambient (outdoor) air pollution, building on a growing database from epidemiological cohort studies.[1–3] The World Health Organization (WHO) indicates that more than 70% of global mortality rates are due to non communicable diseases (NCD).[4] We investigated to what degree the long term exposure to air pollution contributes to mortality by NCD, including cardiovascular and respiratory disease, lung cancer (LC), and lower respiratory tract infec tions (LRI). Main health risk factors include tobacco smoking, unhealthy diets and being overweight, hypertension, diabetes, high cholesterol, and air pollution.[2,5] The mortality attributable to air pollution can be esti mated with disease specific hazard models, linked to information about exposure to ambient concentrations.[3,6] We used a global atmospheric chemistry model to estimate exposure to ozone (O_3) and fine particu late matter ($PM_{2.5}$, particles with a diameter of less than 2.5 μm),[7,8] com bined with the new Global Exposure Mortality Model (GEMM) of Burnett *et al.*[6]

Compared with foregoing GBD assessments, the GEMM provides haz ard functions based on a larger dataset derived from 41 cohort studies in 16 countries.[6] The expanded data volume and geographical coverage re duce uncertainty, especially for high $PM_{2.5}$ concentrations, which were previously not explicitly related to observed atmospheric conditions but adopted from studies of second hand smoking.[9] We used the GEMM for the following disease categories: LRI, chronic obstructive pulmonary dis ease (COPD), LC, ischaemic heart disease (IHD), cerebrovascular disease (CEV) leading to stroke, i.e. similarly addressed in GBD assessments, and a new one referred to as 'other NCD'.[10] The GBD has categorized global exposure risks and attributable mortality rates,[2,3] but such comparisons can be ambiguous as the loss of life years differs among health risk factors and between various regions. Here, we derive global, regional, and na tional attributable mortality rates, along with the years of life lost (YLL) and the loss of life expectancy (LLE). By comparing the LLE from different causes, we assess the health burden from air pollution relative to other risk factors.

2. Methods

The global exposure to the air pollutants $PM_{2.5}$ and O_3 for the year 2015 has been computed through data informed modelling. We used the EMAC atmospheric chemistry general circulation model, which was built from a climate model[11] extended with multi phase atmospheric chemistry submodels to account for the atmospheric processing of pol lution emissions.[7,12,13] We distinguish fossil fuel related, all anthropo genic and natural emissions, the latter mostly aeolian dust.[14] While we applied the same model calculations of air pollution exposure, as well as baseline mortality and population data of the WHO for the year 2015 that we used previously,[4,7,8] we revised the results by using the GEMM for the effects of $PM_{2.5}$.[6,10,15] This model yields age dependent excess mortality rates and YLL from five disease categories (LRI, COPD, IHD, CEV, and LC), also distinguished by the GBD,[2,3] plus one that describes NCD + LRI, from which we derive the 'other NCD' by subtraction.[10] The burden of disease from O_3 has been calculated with the hazard func tion of Jerrett *et al.*[16] Uncertainty ranges are expressed as the 95% confi dence intervals (95% CIs), adopted from Burnett *et al.*[6] Since the contribution by 'other NCD' has been derived from the difference be tween the total and the known NCD, the 95% CI is relatively large (glob ally about ±55%) by propagating uncertainties for the five defined disease categories, for which the 95% CI is about 20 40%. The overall uncertainty estimate, including hazard ratio functions (GEMM) and atmo spheric model calculations of annual average exposure, is about ±50% of the calculated mean values.[8,10,17] For more information about the meth ods used, including data sources and country level results, we refer to the Supplementary material online. Uncertainties and limitations are dis cussed in greater detail in Section 4.

3. Results

3.1 Mortality estimates

Table 1 and *Figure 1* present our estimates of excess mortality rates, YLL and LLE attributable to air pollution for different regions and disease

Table 1 Excess mortality attributable to ambient air pollution[a]

	Mortality ($\times 10^3$/year)	Deaths per 100 000 (year^{-1})	YLL ($\times 10^6$/year)	LLE (years)	Avoidable LLE (years)	Avoidable mortality ($\times 10^3$/year)	Mortality for disease categories ($\times 10^3$/year)					
							LRI	COPD	LC	CEV	IHD	Other NCD
Africa	957	81	40.0	3.1	0.7	230	378	36	7	113	224	199
East Asia	3112	196	67.4	3.9	3.0	2403	204	511	300	738	779	580
South Asia	2809	119	83.6	3.3	1.9	1660	478	509	61	383	981	397
West Asia	544	94	14.6	2.3	1.0	241	50	27	19	76	292	80
Europe	790	133	14.3	2.2	1.7	608	54	49	54	64	313	256
Australia	14	47	0.3	0.8	0.2	3	0.6	0.8	0.9	0.6	4	7
North America	360	74	7.5	1.4	1.1	294	24	40	24	14	112	146
South America	207	42	5.3	1.0	0.5	115	30	14	6	14	63	80
World	8793	120	233	2.9	1.7	5554	1218	1187	472	1403	2768	1745

Avoidable LLE and mortality were calculated by removing anthropogenic emissions in the model. Australia also includes other islands of Oceania. Data for all countries, including 95% uncertainty intervals, are given in the Supplementary material online, *Tables* (overall uncertainty about ±50%).
CEV, cerebrovascular disease; COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LC, lung cancer; LLE, loss of life expectancy; LRI, lower respiratory infections; NCD, non-communicable diseases; YLL, years of life lost.
[a]Excess mortality expresses the number of deaths over a given period that would not occur in the absence of exposure.

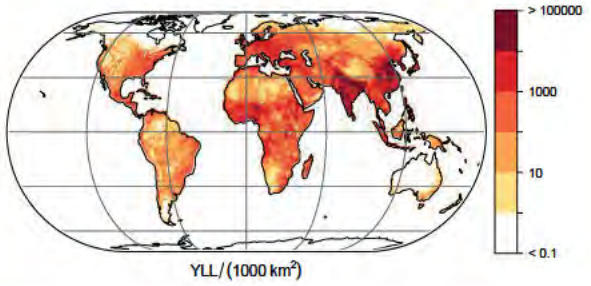


Figure 1 Annual years of life lost from air pollution (units per 1000 km^2). The global total is 233 (221 250) million per year.

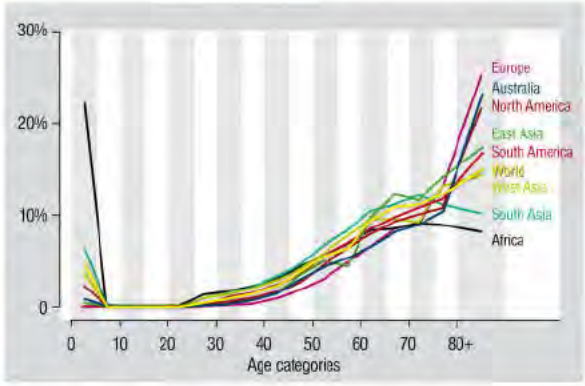


Figure 2 Age distribution of excess mortality from ambient air pollu tion. Globally, about 25% of the attributable mortality occurs at an age of <60 years: in Europe about 11% and in Africa about 55%.

categories. The global mortality rate of 8.8 (95% CI 7.11 10.41) million/year is in good agreement with Burnett *et al.*[6] who reported 8.9 (95% CI 7.5 10.3) million per year, and it is about a factor of two higher than in previous studies using relative risk or hazard ratio values based on less comprehensive epidemiological data.[3,8,9] For comparison, the WHO estimates the global mortality from tobacco smoking (active and passive) at about 7.2 million per year.[4] Geographically, the mortality from air pol lution is dominated by East Asia (35%) and South Asia (32%), followed by Africa (11%) and Europe (9%). The corresponding fractions for the YLL are 29%, 36%, 17%, and 6%, respectively. The global mean mortality rate of 120 (97 142) per 100 000 people/year is exceeded in East Asia [196 (160 229) per 100 000/year] and Europe [133 (108 157) per 100 000/year]. The LLE is 3.9 (3.2 4.6) years in East Asia, associated with the large population fraction that is exposed to poor air quality. Compared with Europe, the attributable mortality rate in South Asia is 12% lower but the LLE is 50% higher [3.3 (2.6 3.9) years], which is re lated to less advanced health care and child mortality. Lowest mortality rates and LLE are found in Australia, associated with the strictest air qual ity standards worldwide.[18]

3.2 Age dependency

Figure 2 illustrates the age dependency of excess mortality, i.e. the rela tive distribution in 5 year intervals (and accumulated over a longer pe riod of above 80 years). The proportion of excess deaths generally increases with age, but child mortality (<5 years) can be high in low income countries, mostly in Africa and South Asia, and related to LRI. *Figure 3* presents the relative contributions of disease categories to LLE. It demonstrates that cardiovascular diseases (CVDs) (CEV + IHD) plus the other NCD dominate excess mortality. While LRI contribute 13.8% to excess mortality globally, they make up 21.4% of LLE, influenced by childhood mortality. The relatively high incidence of CVD outcomes is consistent with recent analyses and partly related to previously unac counted, indirect cardiovascular risks.[19–22] For example, $PM_{2.5}$ induced inflammation, oxidative stress, and vascular (endothelial) dysfunction probably contribute to the development of hypertension, diabetes, and atherosclerosis.[23] It is likely that a large percentage of the other NCD

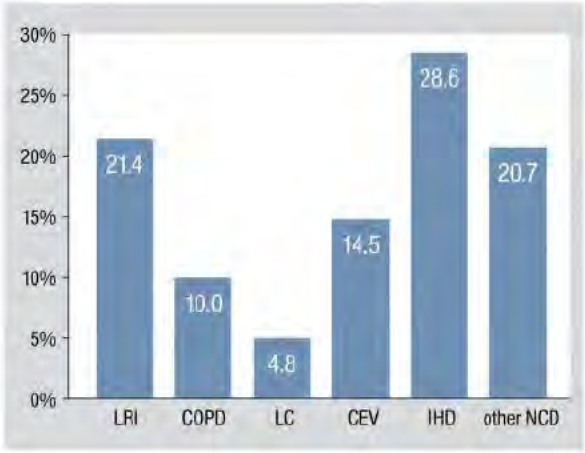


Figure 3 Percentage of global life expectancy loss from air pollution by different disease categories. CEV, cerebrovascular disease; COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LC, lung cancer; LRI, lower respiratory infections; NCD, non communicable diseases.

contribute to CVD mortality, typically at an advanced age. Globally, NCD are the major cause of death, associated with hypertension, tobacco smoking, diabetes, and high cholesterol and air pollution is likewise a leading risk factor.[3,5]

3.3 Comparing health risks

Figure 4 compares the LLE from different risk factors. Humans typically fear violence most, but rational evaluation shows that, only in exceptional cases (Syria, Afghanistan, Honduras, Colombia, and Venezuela), the associated mean LLE exceeds that from ambient air pollution. The leading air pollution source sector is fossil fuel use, which includes emissions from power generation, industry, traffic, and residential energy use. The residential source additionally involves biofuel use, which relatedly causes household air pollution (*Figure 4*). In India, for example, residential biofuel use is a main factor in both ambient and household air pollution.[24] In China, on the other hand, a large part of the residential air pollution is from small scale coal (hence fossil fuel) combustion.[25,26] Since residential ambient and household pollution are not independent, the associated mortality is not additive.[5,27] Relatively high red colour intensities in the upper left panel of Figure 4, compared to the other panels, shows in which areas the LLE from ambient air pollution exceeds that from tobacco smoking, mostly in low and middle income countries. While the prevalence of smoking decreased in the past decades, the total number of smokers increased due to population growth.[28] In the same period, exposure to air pollution grew due to increasing population and emissions in low and middle income countries,[29] as well as ageing and changes in non communicable disease rates. The geographic distribution of risk factors is quite diverse, while many come together in Africa (*Figure 4*). The global mean life expectancy increased from 52 years in 1960 to 72 years in 2015 (and 80 years in high income countries), but in many low income countries, including sub Saharan Africa, it is still below 60 years, which is unsurprising in view of the multiple health risks.[30,31] We note that our LLE estimates for low income regions are possibly lower limits, because air pollution induced infant mortality may be higher than assumed.[32]

3.4 Avoidable mortality

Finally, we calculated to what extent LLE from ambient air pollution could be reduced by removing the avoidable anthropogenic emissions in our atmospheric model. We find that the global LLE of 2.9 (2.3 3.5) years (*Table 1*) could be reduced by 1.7 (1.4 2.0) years through the removal of all potentially preventable anthropogenic emissions and by 1.1 (0.9 1.2) years through the removal of fossil fuel related emissions alone. This corroborates that fossil fuel generated air pollution qualifies as a major global health risk factor by itself. We reiterate that non preventable pollution sources should be distinguished in view of policy making, mostly aeolian dust and natural wildfires, the latter being about 10% of global biomass burning. Because of the large geographic diversity in emissions, our results indicate major regional differences. In East Asia, 3.0 (2.5 3.5) of the 3.9 (3.2 4.6) years LLE could potentially be prevented, whereas in Africa, where population growth is rapid and aeolian dust predominates, it is merely 0.7 (0.5 0.9) of 3.1 (2.3 3.8) years. Contrasts can thus be very large. In the USA and China, up to 80 85% of the LLE is preventable through the control of anthropogenic emissions, whereas in Nigeria and Egypt, it is 16 17%. It should be emphasized that additional LLE can be avoided, both generally and specifically from air pollution, by improving health care.

4. Discussion

4.1 Major health risk

While in some parts of the world air quality remains to be poor, notably in low and middle income countries, in other regions, such as North America, Europe, and most recently China, pollution emissions have decreased. Then, why do attributable mortality rates continue to be so high, and why has air pollution advanced into one of the major public health risk factors worldwide? The answer is fourfold. First, the GEMM accounts for other NCD that were not considered in previous analyses, in line with growing evidence that air pollution aggravates NCD risks such as diabetes and hypertension. Second, there is increasing support for larger than previously assumed health impacts at very low and very high $PM_{2.5}$ concentrations, which are better represented by the GEMM than hazard functions of former GBD assessments.[6,33] Third, in many low and middle income countries, population numbers and industrial and traffic related pollution levels continue to grow. Fourth, NCD, in particular CVD, have become a major cause of death, accompanying the overall increasing life expectancy. Air pollution particularly aggravates chronic health risks, and the extended exposure takes its toll later in life. However, while the rate of attributable NCD mortality increases, the associated LLE typically changes less due to improvements in health care. Therefore, mortality estimates should be interpreted with caution and complemented by YLL and LLE estimates.

4.2 Mortality metrics

The GEMM can be used to estimate how many deaths could be avoided per year if the population were exposed to a lower counterfactual level than current, ambient concentrations of air pollution. Since separate risk functions are derived for age categories, the GEMM additionally incorporates the age structure of the population. When mortality is attributed to a risk factor such as air pollution, the relationship is statistical but not distinctive (unlike car accidents where

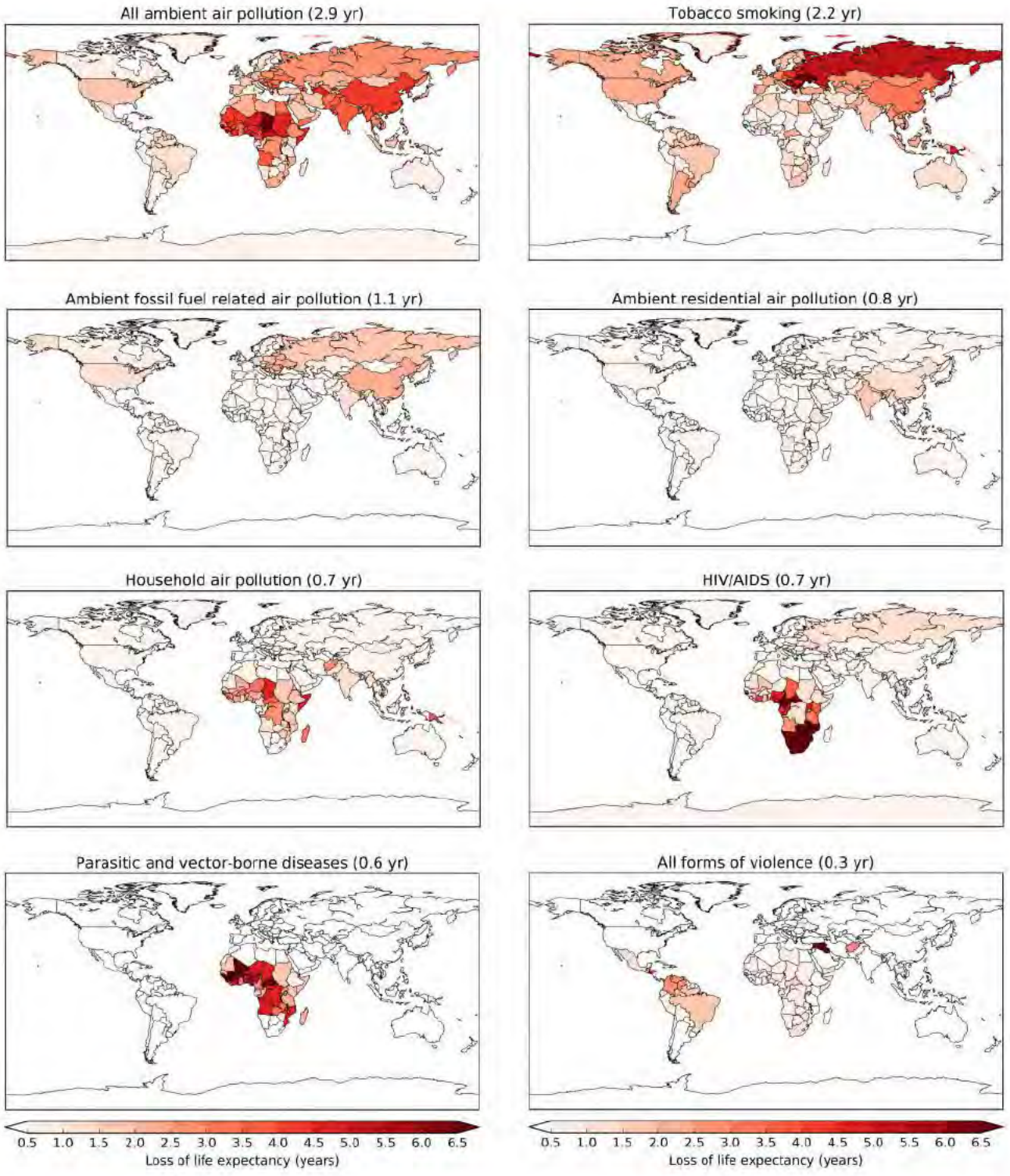


Figure 4 Mean global and country level loss of life expectancy from different causes of death referring to the year 2015. Household air pollution is from the indoor use of solid biofuels. Ambient residential air pollution is mostly from household sources and can include fossil and biofuel use. Parasitic and vec tor borne diseases include malaria, leishmaniasis, rabies, dengue, yellow fever, and others. Violence includes interpersonal, collective conflict, and armed intervention.

excess mortality relates to persons who can be identified). To do jus tice to these differences, we provide several complementary metrics, i.e. excess mortality, YLL, and LLE. While excess mortality (sometimes indicated as premature mortality) is often used as a comparative measure to quantify health risks, the regional diversity among total and per capita mortality, LLE and YLL (*Table 1*), influenced by the prevalence of other risk factors and health care, shows that there is no single best metric. One could argue, for example that, for smoking

the excess mortality (individual exposure) and for air pollution, the LLE (population exposure) is more suitable.

4.3 Limitations and uncertainties

We emphasize that the methodology used with the GEMM is the same as for the health effects of active smoking, obesity, and so on. Hence, whatever limitations are relevant for outdoor air pollution, they also apply to other risk factors like smoking. Although clinical and public health research has uncovered unambiguous associations between air pollution, disease, and mortality, even at very low levels of exposure,[5,33] continued studies are needed to disentangle the physiological mechanisms, causes, and effects. For example, the harmfulness of different types of particles, individually and in mixtures, is not well understood.[34,35] The GEMM assumes that $PM_{2.5}$ toxicity does not significantly depend on the sources and chemical composition, which is a simplification that requires further investigation. While previous studies of exposure–response formulations assumed counterfactual (i.e. potential outcome) uncertainty distributions, in the GEMM, this dependency has diminished by directly deriving the shape of the exposure–mortality association from very low to high levels of air pollution, being accounted for in several of the 41 cohort studies analysed by Burnett *et al.*[6]

Our calculations of mortality from air pollution include 95% CI estimates, which represent uncertainty related to the data used in the calculations. The Supplementary material online, *Excel Tables* present excess mortality, YLL, and LLE for all countries, for different disease categories, and their 95% CI's are given by the mean, minimum, and maximum values. We reiterate that the 95% CI refers to uncertainty in the parameters used in the attribution calculations. There can be additional uncertainty from incomplete knowledge, i.e. epistemic uncertainty. This includes model assumptions for counterfactuals, unaccounted confounding factors, misclassification of health, and other data, or limited representativeness of hazard functions as they rely on data from a relatively small number of countries (16 countries). Confounder uncertainty can be associated with over- as well as underestimates, either by over-attributing air pollution deaths to disease categories, as well as neglect of air pollution impacts on diseases that are not, but should be accounted for. For example, it is conceivable that air pollution worsens smoking-related health effects. It should be noted that the excess mortality estimated for the disease category 'other NCD' (*Table 1*, *Figure 3*) is associated with larger uncertainty than LRI, COPD, LC, CEV, and IHD, as the number of deaths is not necessarily additive due to competing health risks. The NCD + LRI group represents the total impact of $PM_{2.5}$ on mortality and LLE. Specific causes of death are reported separately to indicate their contributions to the total. Ideally, an additional GEMM should be developed with a competing R(z) mode.

4.4 Differential toxicity of particles

Generally, the exposure calculations contribute relatively little to uncertainty, being dominated by the attribution calculations. However, this may not hold if $PM_{2.5}$ toxicity significantly depends on source categories and chemical composition, implying that exposure would be less well characterized than assumed. While epidemiological studies have not identified source categories that distinctively affect the health impacts of fine particulates,[3,5] toxicological investigations have reported that exhaust particles from diesel engines are relatively more toxic than from gasoline engines, followed by biomass burning, coal combustion, and road dust particles, all being significantly more hazardous than ammonium sulphate and nitrate- and also suggesting that different $PM_{2.5}$ mixtures influence different diseases.[36] For example, we have estimated that globally about 5% of mortality is attributable to biomass burning,[7] which amounts to about 440 000 excess deaths per year. However, it is conceivable that organic particles are significantly more toxic than inorganic ones[7]; if this was true, the global excess mortality from biomass burning smoke may add up to about 630 000 per year. Although it is unclear to what extent the toxicological studies are representative for morbidity and mortality in human populations, especially for long term exposure,[36] it cannot be excluded that various particle sources have different impacts. Furthermore, there is discussion about harmfulness related to particle size. Fine particulates, $PM_{2.5}$, are believed to be a more important health concern than course particles up to 10 μm in diameter (PM_{10}), as the smaller ones penetrate more deeply into the lungs with a low probability to be exhaled.

Experimental studies have corroborated that $PM_{2.5}$ provides a good approximation for the extended exposure of the human respiratory tract to particulate pollution.[37] However, there remains concern that ultrafine particles with a diameter of smaller than 0.1 μm ($PM_{0.1}$) could be particularly harmful, as they can directly pass into the bloodstream and affect other organs.[38] It has been observed that specifically the smallest fraction of $PM_{0.1}$, with a diameter of below about 30 nm, can directly translocate into the circulatory system and accumulate at sites of vascular inflammation.[39] Nevertheless, two meta studies on the health effects of ultrafine particles concluded that the available evidence does not indicate that $PM_{0.1}$ is relatively more hazardous, or at least that there is no conclusive support for it but do emphasize the need for continued studies, in particular of the long term health effects.[37,40] In view of this, especially regarding differential toxicity in terms of particle composition and size, it seems probable that the overall uncertainty of our mortality and life expectancy calculations is larger than the 95% CI; we estimate it at approximately ±50%.[8,10]

5. Conclusion

Our comparison of different global risk factors shows that ambient air pollution is a leading cause of excess mortality and LLE, in particular through CVDs. Globally, the LLE from air pollution surpasses that of HIV/AIDS, parasitic, vector borne, and other infectious diseases by a large margin. It exceeds the LLE due to all forms of violence by an order of magnitude and that of smoking by a third. Nonetheless, one could argue that tobacco smoking can be entirely avoided. The removal of anthropogenic air pollution emissions can merely avoid about 25–80% of LLE, i.e. within a large range, depending on the local role of natural emissions (e.g. aeolian dust), but with substantial potential for mortality reduction through the improvement of health care, especially in low-income counties. The fraction of avoidable LLE from anthropogenic air pollution that can be attributed to fossil fuel use is nearly two thirds globally, and up to about 80% in high income countries.

Supplementary material

Supplementary material is available at *Cardiovascular Research* online.

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The Carbon Leakage and Competitiveness Impacts of Carbon Abatement Policy in Aviation

Report to the Department for Transport

Air Transportation Analytics Ltd

and Clarity Ltd

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Air Transportation Analytics

Air Transportation Analytics (ATA) Ltd was incorporated in May 2018 to support the aviation sector with a new level of economic and analytical capability as it addresses growth challenges. Over the past ten years, experts within the ATA team with roots at University College London (UCL) and previously at the University of Cambridge, have been developing and refining a system modelling capability centered around the Aviation Integrated Modelling (AIM) project. The resulting capability can assist with sector needs on forecasting future levels of air transport demand by airline or market, identifying optimum business models for airline profit maximisation, modelling the economic and environmental implications of system and airport capacity expansion and identifying the most promising technology investment strategies of aircraft / engine manufacturers. For more details please contact Roger Gardner at roger.m.gardner@gmail.com or via LinkedIn.

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Executive Summary

If a carbon dioxide (CO_2) emissions mitigation policy is applied only in one region of the world, emissions outside that region might increase. This is because companies and individuals affected by the policy may try and reduce its impacts on them by, for example, moving their operations to unaffected locations. This phenomenon is known as carbon leakage. If leakage is high, it may reduce or negate the intended emissions-reduction aim of the policy. Leakage of 100% implies that a policy produces no net reduction in global CO_2 at all, just a change in the location of emissions. Although leakage is more widely studied in the case of policies affecting energy-intensive manufacturing, it can apply to any industry where the location of emissions can be moved. This includes the aviation industry. In this report, we examine how the application of UK-specific aviation policy might lead to leakage, using a detailed network-based model of the global aviation system.

Similarly, a policy applied in just one region may disproportionately affect companies in that region, who will be faced with a larger increase in costs than those outside the region. This can lead to competitive disadvantage. This is also likely to be a factor in UK-specific aviation policy. The majority of the operations of UK-based airlines are flights to and from the UK, allowing them relatively few options to reduce potential policy costs. More options may be available for airlines which are not based in the UK. Non-UK airlines typically use only a small proportion of their total fleet on UK flights. Therefore we also investigate whether UK-specific aviation policies have different impacts on UK and non-UK airlines operating to and from the UK, and whether policies would have different impacts on UK and non-UK airports.

There is relatively little existing literature about carbon leakage and competitive disadvantage from aviation policy. In general, existing research focusses on individual flight case studies rather than taking a whole-network approach. However, approaching the problem at a global network level may be necessary to assess the different sources of leakage and their relative magnitude. Aviation is unusual in that it is inherently global in scope. Most passenger journeys lead to emissions that can be attributed to multiple countries. Aviation is also unusual in that, as well as having a leakage component associated with the behaviour of airlines, there is also a leakage component associated with passenger behaviour. We model passenger and airline behaviour on a full itinerary basis for all itineraries to, from and via UK airports, as well as those which could route through the UK but do not currently do so. To do this, we use components from the global aviation systems model AIM. This allows the calculation of how CO_2 emissions will change for flights to and from UK airports and more widely for other global flight segments, when a UK-specific aviation policy is applied.

This study finds that carbon leakage associated with airline behaviour is usually positive. In this case, a decrease in emissions from UK aviation is associated with an increase in emissions from non-UK aviation. Actions airlines can take in response to policy which could cause leakage include swapping fleet between UK and non-UK routes; selling older aircraft and buying or leasing newer ones; and tankering fuel (taking on excess fuel at non-UK airports where possible so that a subsequent flight from a UK airport can be flown without refuelling). Leakage associated with changes in fleet allocation can be close to 100%, depending on fleet availability. This is because airlines can move lower-emission aircraft into

use on UK routes and move higher-emission aircraft into use on non-UK routes. This leads to a decrease in the emissions from UK aviation that is roughly matched by an increase in emissions from non-UK aviation. Leakage associated with fuel tankering is variable depending on which flights are most-affected by policy and on how emissions are calculated. If emissions are calculated based on fuel taken up at UK airports, tankering leakage is positive and may be up to 40% in the cases explored here. If emissions are calculated based on fuel used on UK departing flights, regardless of where that fuel was taken on, then tankering leakage is much smaller, typically below 4%.

In contrast, this study finds that leakage associated with passenger behaviour is usually negative. In this case, a decrease in emissions from UK aviation is matched by a decrease in emissions from non-UK aviation. This is because the main effect of a policy which increases UK-specific ticket prices is to decrease passenger demand to and from the UK. Although long-distance connecting passengers who use UK hub airports may switch to competing non-UK airports, the overall impact of this is small compared to the demand impact on passengers who start or end their journey in the UK. In 2015, there were more than twenty times as many passengers on itineraries which started or ended in the UK than passengers who used a UK hub on journeys which started and ended elsewhere.

If the CO_2 emissions from UK aviation are measured on a UK departing flights basis, a decrease in emissions from UK departing flights is within scope, but a decrease in emissions from UK arriving flight is outside scope. However, passenger journeys are generally round-trips with both an arriving and a departing leg. If demand decreases on these journeys, half of the emission reduction will be on departing flights, and half on arriving flights. Therefore if policy response is mainly passenger response, leakage will be close to -100%. This means that the net global reduction in CO_2 will be roughly twice the reduction in CO_2 from UK departing flights only. Additionally, some passengers who start or end their journey in the UK use a further non-UK hub airport (for example, travelling from London to Sydney via Dubai). A demand reduction in this passenger group will lead to negative leakage of more than 100%. This is because demand on all four legs of the round-trip journey will be reduced, but only the UK departing leg is within the UK departing flight scope and therefore treated as UK aviation.

The net carbon leakage for any given policy depends on the balance between passenger and airline response to that policy, as well as on the specific values of uncertain variables which affect the magnitude of passenger and airline response. In this study, we examine three hypothetical policy cases. These are the case of an additional carbon price applied to departing flights at UK airports; a requirement to take on a given percentage of biofuel when refuelling at UK airports; and changes in UK airport landing charges designed to encourage flights by younger, more fuel-efficient aircraft. In each case, we assess the policy across a range of values for uncertain variables. These include the passenger price elasticity of demand, the level of costs passed on at capacity-constrained airports, and the extent to which airlines can swap UK for non-UK fleet.

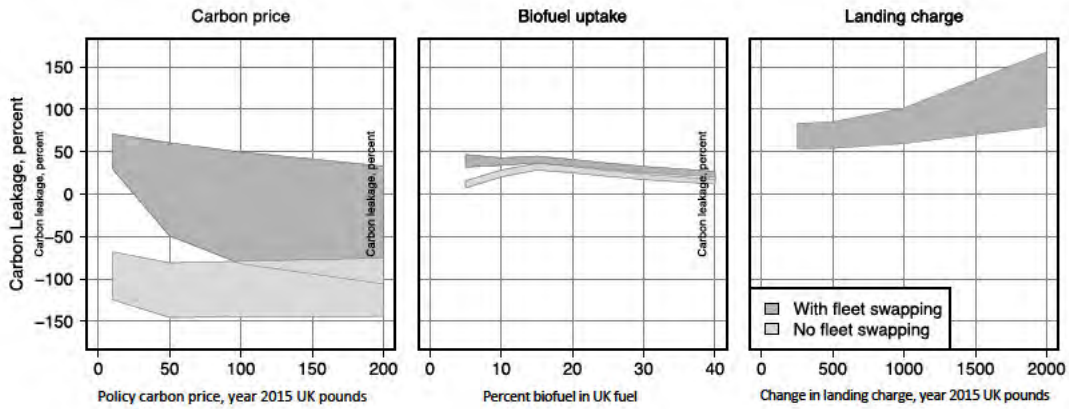

Figure 1. The range of carbon leakage across all uncertain variables examined in this study, by policy type.

A summary of leakage outcomes is shown in Figure 1. In each case, the grey regions show the full range of outcomes across different assumptions for passenger price sensitivity and the amount of cost pass-through at congested airports. The case where airlines are assumed to freely swap fleet between routes and the case where fleet swapping is assumed not to occur are shown separately. Because the landing charge policy targets fleet composition, little change in CO_2 occurs when fleet swapping is assumed not to occur, so leakage is not a useful metric in this case and the results are not shown.

The dominant impact of increasing the carbon price is on demand. Leakage associated with this policy is therefore usually negative even when airline response is accounted for. If the uncertain variables examined in this study are set at central values, leakage from increasing the carbon price is around -50%. This outcome is relatively sensitive to the values of uncertain parameters, particularly the passenger price elasticity of demand, and the amount of cost pass-through at congested airports.

For a hypothetical policy in which some percentage of biofuel is required to refuel at UK airports, it becomes cost-effective for airlines to tanker fuel on short-haul routes. This can lead to positive leakage of 20-40% if emissions from UK aviation are measured on a fuel uptake basis (i.e. based on the amount of fuel taken on at UK airports). If emissions are instead measured based on the amount of fuel used on UK departing flights, leakage will be smaller (around -4 – 30% if uncertain parameters are set at central values). However, the overall UK emissions reduction associated with this policy is much greater than for the carbon price policy, as there is an additional emissions reduction associated with the use of biofuel as well as one associated with increased fuel costs. This also limits the sensitivity of the outcomes to the uncertain parameters examined.

Finally, we also examine a hypothetical policy in which landing charges are increased for older aircraft and decreased for younger aircraft. This policy is primarily aimed at producing an airline response. Overall, it is cost-neutral for airlines with current fleet, but airlines are able to use the policy to reduce their overall costs by moving younger fleet onto UK routes and older fleet onto other routes. As such, leakage is positive and between 50 and 100%. In some cases, the overall impact on global emissions of this policy is a net increase. This is because there is the potential for demand to increase as airlines use the decrease in landing

fees for younger aircraft to reduce their costs, and then pass this decrease in costs on to ticket prices.

The extent of competitive disadvantage for UK airlines and airports also depends on the balance of passenger and airline response to a given policy. We measure competitive disadvantage by comparing the change in UK and non-UK airline passenger numbers; the change in direct operating cost per revenue passenger-km (RPK) travelled for UK airlines and non-UK airlines; and the change in number of passengers travelling through major UK and non-UK airports. For most of the combinations of policy and uncertain input variables examined, impacts on UK and non-UK airlines on UK routes are roughly similar. A summary of outcomes is given in Table 1, for hypothetical policies applied in 2015. The exact impact depends on factors such as the extent to which costs are passed on to ticket prices at congested airports, the price-sensitivity of passengers to price increases, and the extent to which fleet can be swapped between UK and non-UK routes. For example, if cost pass-through is lower at congested airports, UK airline profit margins will be reduced by more than those of non-UK airlines on UK routes, because UK airlines tend to use congested airports more. However, in this case the demand reduction will be greater for non-UK airlines, because ticket prices will increase more for those airlines.

In general, the carbon price policy has the largest impacts on demand and operating costs at the levels examined in this study. For comparison to the values in Table 1, airline ticket revenue per RPK is typically around £0.1; and there were around 250 million passengers per annum (mppa) at UK airports in 2015; and demand at each of the UK's five busiest airports has tended to increase by 1-2 mppa per year over the 2010-2015 period. The largest impacts on cost are seen in the case that airlines are assumed not to pass on carbon costs at congested airports; however, as operating cost increases in this case can be larger than typical airline profit margins, it is likely that in reality at least some costs would be passed through at higher carbon prices. Similarly the largest changes in demand apply in the case that airlines are assumed to pass all costs through onto ticket prices. The biofuel policy typically leads to smaller increases in cost and decreases in demand, and the landing charge policy to small decreases in cost and increases in demand, as discussed above.

Table 1. Impact on airline cost per RPK and passenger numbers, by policy type: summary.

Metric	**Scope**	**Carbon price (£10-200/tCO_2)**	**Biofuel uptake (5-40%)**	**Landing charge (£250-2000/landing)**
Change in non-passed on cost/RPK, UK pounds	UK airlines on UK routes	0 – 0.017	-0.0002 – 0.0018	-0.0009 – 0
	Non-UK airlines on UK routes	0 – 0.014	-0.0002 – 0.0015	-0.0007 – 0
Change in passenger numbers, mppa	UK airlines on UK routes	-16.4 - -0.1	-2.0 – 0	0 – 4.2
	Non-UK airlines on UK routes	-15.7 - -0.1	-1.9 – 0.1	0 – 4.9

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1. Introduction

The purpose of this study is to evaluate whether UK-specific aviation policy carries the risk of increasing CO_2 emissions outside the policy scope (carbon leakage) or of UK airlines or airports losing profits or market share to their non-UK competitors (competitive distortion). To do this, we develop a model to assess passenger and airline response to policy on a network basis. Using this model, we assess different hypothetical policies in terms of the changes in airline fleets, passenger demand and CO_2 that they are likely to produce, and the location of those changes.

The structure of this report is as follows. First, we examine the literature on carbon leakage and competitive disadvantage, with a particular focus on aviation-related studies. We identify potential leakage mechanisms and assess which ones are likely to be important enough to proceed with further modelling on. We also examine key uncertain variables which may affect the outcome of modelling, and compare estimates for these variables from the literature. Second, we describe the modelling system developed for this project, comparing baseline outcomes in 2015 with observable metrics, and discuss how airline and passenger response are modelled. Third, we run the model for a range of UK-specific hypothetical aviation policies and assess its sensitivity to different uncertain variables. We discuss model outcomes in terms of leakage and competitive disadvantage, and how these vary by policy type. Finally, we present overall conclusions.

1.1 Carbon Leakage

The IPCC definition of carbon leakage is '*the increase in CO_2 emissions outside the countries taking domestic mitigation action divided by the reduction in emissions of these countries*' (IPCC, 2007). This effect depends strongly on the characteristics of the sector in which the policy is applied. Across all sectors, it is typically driven by the cost differential between operating within and outside the policy area when carbon costs are factored in (the *terms-of-trade, non-energy* or *competitiveness* effect; Burniaux & Oliviera Martins, 2000), or by the effect of reduced fossil fuel use within the policy region on global fossil fuel prices (the *energy market* effect). The non-energy effect may be further subdivided into a short-term competitiveness channel (where companies affected by the policy lose market share to those who are not) and an investment channel (where companies relocate or focus investment on non-policy regions; Reinaud, 2008).

The overall impact can be substantial. Most literature analyses target either the Kyoto protocol, the EU Emissions Trading Scheme (ETS) or hypothetical regional policies of similar magnitude. Literature estimates of carbon leakage in this context across all sectors typically range from 2-25%, depending on the policy applied, assumptions about international market integration and structure, substitution and supply elasticities, and the extent to which industry responses in terms of technological change or relocation are considered (Kuik & Hofkes, 2010; Di Maria & van der Werf, 2008; Burniaux & Oliviera Martins, 2000). For individual sectors, such as steel or cement production, leakage rates may be significantly higher. As an extreme example, Babiker (2005) projects carbon leakage rates of up to 130%

in cases where there can be substantial relocation of energy-intensive industries outside the policy region. A leakage rate of 100% indicates that reductions in CO_2 emitted in the policy region are exactly matched by increases in CO_2 emitted elsewhere; therefore, a rate of over 100% implies that total global emissions have actually been increased in this case.

In contrast, some carbon leakage-type mechanisms may induce a reduction in emissions outside the policy area ('*negative leakages*'). For example, the policy might induce the development of carbon-reduction technology that is then used worldwide (e.g. Porter & van der Linde, 1995). Similarly, reductions in oil price could stimulate a shift away from coal as an energy source, reducing overall CO_2 emissions (e.g. Burniaux & Oliviera-Martins, 2000).

Historical analyses of carbon leakage are typically theoretical rather than empirical. Some empirical estimates of leakage have been made (e.g. Reinaud, 2008; Martin et al., 2016); these indicate that the overall magnitude of leakage resulting from historical policies is likely small, but that the most carbon-intensive industries are typically most at risk of leakage.

The phenomenon of carbon leakage is well-established and is taken into account in the design of many regional carbon policies. For example, the EU Emissions Trading Scheme (ETS) identifies sectors at risk of carbon leakage, including cement and steel manufacture (EC, 2018; Vivid Economics & Ecofys, 2014); these sectors may then be subject to a higher share of free allowances or other mechanisms designed to reduce the risk of leakage. Another option is border adjustment measures, i.e. the obligation for importers to account for the carbon emissions associated with imported goods, and purchase allowances accordingly (e.g. Kuik & Hofkes, 2010).

1.2 Competitiveness

Competitiveness can be defined as the ability of companies in a region to maintain profits and market share (e.g. Reinaud, 2008). In the case of a unilateral carbon policy applied in one region only, companies operating in that region are faced with an increase in costs, whilst those from outside the region are not. As with carbon leakage, this may result both in companies within the region losing market share to those outside, and longer-term investment and relocation decisions favouring other regions (Cosbey & Tarasofsky, 2008). As discussed in CE Delft (2005), competitive distortion in this context arises from the regional nature of cost impacts. Impacts on costs that would still happen if the policy were applied globally are not considered to be distortion.

For example, Reinaud (2008) compare different studies on the impact of a €20/tCO_2 carbon price on the competitiveness of European firms. They find production cost increases of between 1 and 24%, with strong variation between sectors. Aldy & Pizer (2015) estimate competitiveness impacts, as measured by net imports, of up to 0.8% for the most energy-intensive industries in the case of a \$15/tCO_2 carbon price, a figure which is less than one sixth of the total decrease in production.

1.3 Application to the aviation sector

Aviation differs from other sectors examined in terms of carbon leakage in several ways. First, CO_2 emissions mitigation is typically more expensive in aviation compared to other sectors, and reductions in CO_2 emissions achievable with current and near-future projected technologies are small compared to those achievable in other sectors. Typically, aviation emissions are projected to grow into the future, even with a wide range of alternative technologies available (e.g. Dray et al. 2018). This is a function both of slow reductions in carbon intensity (at most 2-3% reduction per year in tCO_2/RPK even with ambitious technology development; Dray et al. 2018) and rapid projected global demand growth (4-5%/year increase in RPK; e.g. Airbus, 2018; Boeing, 2018). Additionally, fuel is a major component of airline total operating costs (30% in 2015; Al Zayat et al. 2017) and airlines already utilise a wide range of fuel-saving measures which are cost-effective at current fuel prices (e.g. Schäfer et al. 2016). Safety considerations also mean that changes in technology have to go through lengthy testing and certification processes with consequently long lead times. These factors in combination mean that extra within-sector opportunities to reduce carbon intensity in response to policy are limited. Second, aviation is already a highly connected global system. Most passenger round-trip journeys already produce emissions attributable to multiple countries, and intercontinental passengers already have the option to straightforwardly choose between itineraries that route via different airports. Passenger choice is therefore a significant factor in aviation policy leakage in a way that it is not in other sectors.

There are relatively few general analyses of carbon leakage and competitiveness impacts applicable to the aviation sector. However, several studies look at the impact of adding aviation into the EU ETS (e.g. Faber and Brinke (2011); Ernst & Young and York Aviation (2008); Anger & Köhler (2010); SEC (2006); Scheelhaase & Grimme (2007)). These concentrate on the original scope of the EU ETS Aviation directive (EC, 2008), i.e. including all flights to and from countries in the ETS, a scope which was intended to minimize competitive distortion and carbon leakage. Ernst & Young and York Aviation (2008) argue that carbon leakage impacts may be substantial, but illustrate this with a series of route-based case studies rather than a system-wide estimate. Anger and Köhler (2010) assess the overall impact of including aviation in the EU ETS to be small, including only minimal competitive distortion effects. They argue that the projected airline cost increases in the EU ETS are too small to overcome inertial barriers in the existing system, for example the issue of landing slot allocation often being the result of long-standing co-operative agreements, and the structure of existing hub and spoke networks. Similarly, the EC's official analysis (SEC, 2006) concludes that competition between airlines would not be significantly affected. CE Delft (2005) argue that the international nature of aviation, in which most passengers already have fixed geographical origins and destinations, limits the competitive impact compared to that expected in other sectors. Scheelhaase & Grimme (2007) compare the impact of different ways of incorporating aviation into the EU ETS on competition for four airlines with different business models. They find overall impacts are small, but competition effects may be substantial on individual routes.

Faber & Brinke (2007) discuss possible competitive distortion impacts of applying the EU ETS to aviation in three areas:

- Airlines with a greater proportion of routes affected by the policy (e.g. EU-based airlines in the context of the report) will have a reduced ability to cross-subsidise affected routes from profits on unaffected routes (the *cross-subsidisation effect*).
- Airlines with more affected routes will have a larger overall policy-related cost burden (the *volume effect*).
- Airlines with hubs in policy-affected regions will face greater costs than those with hubs outside, and if costs are passed on to fares then ticket prices via these hubs will increase compared to ticket prices via other hubs, likely leading to a shift in market share towards other airlines (the *hub effect*).

CE Delft and MVA (2007) and CE Delft (2005) argue the cross-subsidisation effect will be minimal on a city-pair basis if airlines are assumed to be profit-maximising. This is because, if fares on other routes are already set at a profit-maximizing level, then changing them will reduce overall profit and also put the cross-subsidising routes at a competitive disadvantage against other competitors. However, Scheelhaase & Grimme (2007) find scope for competitive distortion if cross-subsidisation is assumed.

In the case of the volume effect, airlines based in the policy region will certainly be more affected on a whole-network basis than those based outside. However, this is arguably not a competition distortion as airlines compete on a city-pair basis, and at the city-pair level they are affected equally on most routes (Faber & Brinke, 2007). However, the hub effect is potentially substantial. CE Delft and MVA (2007) found a complex overall response to a modelled EU ETS, with non-EU airlines potentially suffering larger reductions in demand on some scopes than EU ones. For a fully passed on allowance price of €30 with no free allowances, they projected an overall increase in demand to North America of 5.0% for EU carriers, compared to a decrease in demand of 4.4% for non-EU carriers. However, in the case of flights to the Asia/Pacific region, EU carrier demand was projected to fall by 5.9% but non-EU carrier demand by 5.2%.

CE Delft (2005) also consider the situation in which there is a difference in environmental efficiency between airlines, leading to those that have higher emissions for the same segments being at a cost disadvantage in the case that a carbon price or other emissions-linked increase in cost is applied.

Vivid Economics (2008) examined how airline profits would be affected by the EU ETS, and did not specifically look at the case of competitive distortion between EU and non-EU carriers. They found that airlines with more price-sensitive passengers were likely to face greater decreases in profits, and that larger airlines may face more adverse impacts on profit than smaller airlines. With substantial allocations of free allowances (over 20-40% of pre-ETS emissions levels) they projected an increase in airline profits due to windfall profits. Without free allowances, the reduction in profits on markets with four competitors was found to be between 20 and 40% of the cost of allowances on those routes, and was relatively insensitive to demand parameters.

In terms of carbon leakage, Faber & Brinke (2007) conclude that leakage related to the EU ETS would primarily occur via the short-term competitiveness channel identified above, i.e. via airlines operating in the policy region losing market share on a city-pair basis to airlines

or ground transportation not affected by the policy. This could occur in a number of ways. For example, passengers or freight may choose to hub via a non-EU airport; passengers or freight who would normally have made a direct journey from the EU may add an intermediate stop in a non-EU airport to reduce the affected portion of their journey; passengers or freight may choose a ground transportation mode instead; or passengers who would have visited the EU may choose an alternate destination instead. In the case of a passenger switching to high-speed rail, the impact may be a reduction in overall emissions. Secondarily, there might be a limited impact on fuel prices via the energy market effect, which could increase demand outside the policy region.

1.4 The case of UK-specific aviation emissions policy

The impact of the EU ETS may differ substantially from the impact of an individual country imposing unilateral aviation emissions mitigation policies. In 2015, flights under the original scope of the EU ETS accounted for around 21% of global departures and 29% of global aviation fuel use (15% and 7% respectively if excluding flights to and from the ETS region). In contrast, around 5% of global scheduled flights started or finished in the UK in 2015 (Sabre, 2015), accounting for around 8% of global fuel use (Lissys, 2017; the relatively high fuel use reflects that this total includes many long-haul, intercontinental flights).

In the case of aviation policy applying just to the UK, the scope for changes in hub choice is significantly greater. This is because the UK is a much smaller region, containing only one major global hub airport (London Heathrow), and is close to several other global hub airports (Amsterdam Schiphol; Paris Charles de Gaulle; Frankfurt). Even in the context of the EU ETS, CE Delft and MVA (2007) note that London Heathrow is relatively vulnerable to policy impacts in comparison to other hubs, due to its wide catchment area and geographical location.

Measuring competitive distortion impacts on UK airlines requires defining what a UK airline is. This can be complex. Relatively few airlines operate in isolation. Many individual airlines are members of airline groups which operate internationally, with members from multiple countries. Airlines within a group may act as a combined entity. For example, some airline groups manage fleet at a group rather than an airline level. Airlines may also be members of airline alliances and/or codeshare with other airlines. This has less impact on fleet but does affect which airlines can be considered to be competing with each other on a route level. Figure 2 shows some of the key current and future relationships between UK airlines.

For the purposes of this report, we consider a UK airline to be any airline which holds a Type A Operating license in the UK (CAA, 2017), excluding helicopter-only operators. These carriers currently are, with IATA/ICAO codes where assigned: 2Excel Aviation Ltd; Air Kilroe Ltd, trading as Eastern Airways (T3/EZE); Air Tanker Services Ltd (9L/TOW); BA CityFlyer Ltd (CJ/CFE); Bae Systems (Corporate Air Travel) Ltd (BAE); British Airways plc (BA/BAW); British Midland Regional Ltd (BM/BMR); *CargoLogicAir Ltd (P3/CLU)*; Cello Aviation Ltd (CLJ); *DHL Air Ltd (D0/DHK)*; EasyJet UK Ltd (U2/EZY); Flybe Ltd (BE/BEE); Jet2.com Ltd (LS/EXS); Jota Aviation Ltd (ENZ); LoganAir Ltd (LM/LOG); Norwegian Air UK Ltd (DI/NRS); RVL Aviation Ltd (REV); TAG Aviation UK Ltd; Thomas Cook Airlines Ltd (MT/TCX); TUI Airlines Ltd (BY/TOM); Titan Airways Ltd (ZT/AWC); Virgin Atlantic Airways Ltd (VS/VIR); Virgin Atlantic

International Ltd (VS/VGI); *West Atlantic UK Ltd (NPT)*; Wizz Air UK Ltd (WUK). Cargo-only operators are shown in italics. Note that IATA codes for airlines are frequently reused; the codes shown are from 2018. For the 2015 data, we also include Monarch Airlines (ZB/MON), which ceased operations in 2017.

This definition includes UK subsidiaries of carriers based outside the UK, for example Norwegian Air UK. It also excludes non-UK subsidiaries of UK airlines, for example EasyJet Switzerland.

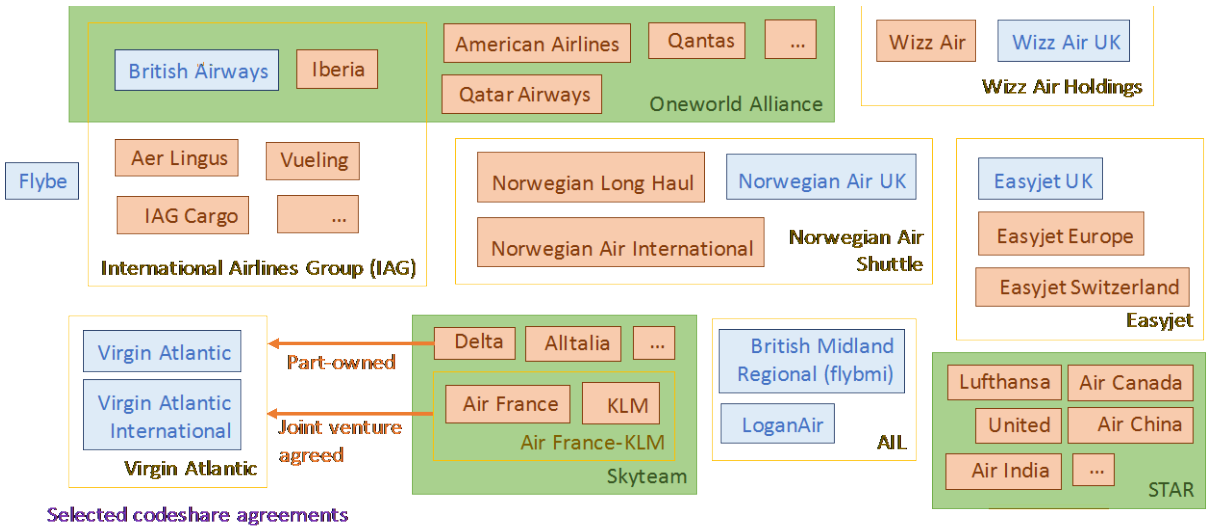

Figure 2. Relationship between key airline groups, alliances and codeshare partners.

We neglect airlines with Type B operating licenses to fly passengers on aircraft with fewer than 20 seats and /or weighing less than 10 tonnes; these are typically small-scale domestic operations where the scope for competitive distortion and carbon leakage is minimal.

2. Mechanisms and approximate level of impact

In this section, we discuss individual mechanisms by which carbon leakage and/or competitive distortion may occur, in the context of unilateral policy affecting airline costs, operations or fleet at UK airports. For each mechanism, we examine the literature and assess the order of magnitude of potential impact.

In 2015, UK international aviation-related emissions were estimated to be around 33.3 $MtCO_2$ from aviation fuel uptake at UK airports, with domestic aviation emissions adding an extra 1.6 $MtCO_2$ (BEIS, 2017). The most recent set of DfT demand projections (DfT, 2017) project emissions on this scope to be between around 35 and 44.3 $MtCO_2$ in 2050. The relatively low growth rate (compared to those projected for global emissions) is the result primarily of capacity constraints and assumptions about the maturity of different aviation markets.

Freight carried at UK airports was around 2.4 million tonnes in 2016, with 69% carried in the holds of passenger aircraft and only around 5% growth during the period 2011-2016 (DfT, 2017). Hold freight is implicitly accounted for in the emissions totals derived below, assuming hold freight weight per aircraft remains roughly constant. Freighter aircraft movements declined between 2001 and 2006, from around 70,000 movements per year to just over 50,000 and are concentrated at Nottingham East Midlands International Airport and Stansted airport. In 2015, they accounted for around 1 $MtCO_2$ (DfT, 2017).

Because any aircraft which flies into the UK must also fly out of the UK, and because air passenger journeys are usually made on a round-trip basis, the analysis below considers flights to as well as from the UK. On this scope, total emissions in 2015 were around 68.2 $MtCO_2$ if it is assumed that emissions from flights to the UK are roughly equal to those from the UK (BEIS, 2017).

In 2015, around 270 million passengers travelled on scheduled city-pair routes where at least one percent of passengers used a route involving the UK (Sabre, 2017). Of these, around 180 million were on routes with the UK as an initial or final destination. 11 million used a hub airport in the UK, of whom 8.7 million neither started nor ended their journeys in the UK. Additionally, approximately an extra 14% passengers travelled on non-scheduled flights, primarily charter flights to holiday destinations.

These numbers may be affected in several ways by a policy that changes airline costs. If airlines pass on costs to passengers via ticket prices, passengers may choose not to fly, to travel via a different route, or to use ground transportation instead (where appropriate). Passenger demand may also change outside the policy area, potentially leading to negative leakage. Similarly freight shippers may choose not to send freight, to reroute freight to avoid extra policy costs, or to send it by truck. Passengers may choose to travel to a different destination which is less-affected by policy costs. Airlines may choose to reassign fleet to reduce their policy costs, or may abandon affected routes altogether. When making decisions about future investment, they may choose to focus that investment outside the

policy area. Similarly, new airlines may choose to locate outside the policy area. Airlines might sell older aircraft and buy new ones, or otherwise invest in emissions-reduction technology. If they can avoid costs by doing so, they may also tanker fuel on routes into the policy area. Finally, reductions in fuel use due to the policy may lead to a reduction in the global price of fuel and therefore increases in fuel use outside the policy area. We consider each mechanism, and its approximate level of impact, individually below.

2.1 Change in passenger or freight routing (to same destination)

There are several mechanisms which may count as a change in routing. In the most frequently cited case in the literature, passengers who route via the UK on journeys not starting or ending in the UK may respond to increased costs by choosing another route. This is the 8.7 million passengers mentioned above. The highest-demand routes involved are shown in Figure 3. These passengers are typically on long-haul intercontinental routes and account for around 9.5 $MtCO_2$ if typical carbon intensities per route from the AIM aircraft performance model are used (e.g. Dray et al., 2018). About half of these emissions are from flights departing from the UK (' a UK departing flight scope'). In the most extreme case where all these passengers change their routing to comparable itineraries not via the UK, these emissions will shift from within a UK-related scope to outside it. Thus the potential effect here could be substantial compared to possible reductions in emissions. Around 70% of these passengers travelled on UK-based airlines and total revenue from these passengers was $3.6 billion year 2015 US dollars in 2015 ($5.3 billion if including all taxes and charges; Sabre, 2017).

Another mechanism for routing change is for UK international origin and destination passengers who hub in the UK (around 1.6 million passengers in 2015, accounting for around 1.1 $MtCO_2$ across their whole journeys) to switch to non-UK hubs.

A third potential mechanism is for UK origin and destination passengers on long-haul direct flights to switch to short-haul transfers to non-UK hubs, followed by a long-haul flight to their final destination. As well as moving passengers out of UK scope, this mechanism could also involve an increase in overall emissions for these passengers due to increased distance flown. In 2015, 42 million UK origin and destination passengers who did not hub in the UK travelled on itineraries of over 3000 km, accounting for around 30 $MtCO_2$ across their whole journeys and revenue of $9.56 billion (excluding taxes and charges) for UK-based airlines. However, as discussed in the section on itinerary choice, below, passengers tend to strongly prefer direct routes over transfer routes when given the choice between the two, even when all other parameters (time, fare, etc.) remain constant, so the overall impact on these passengers is likely small.

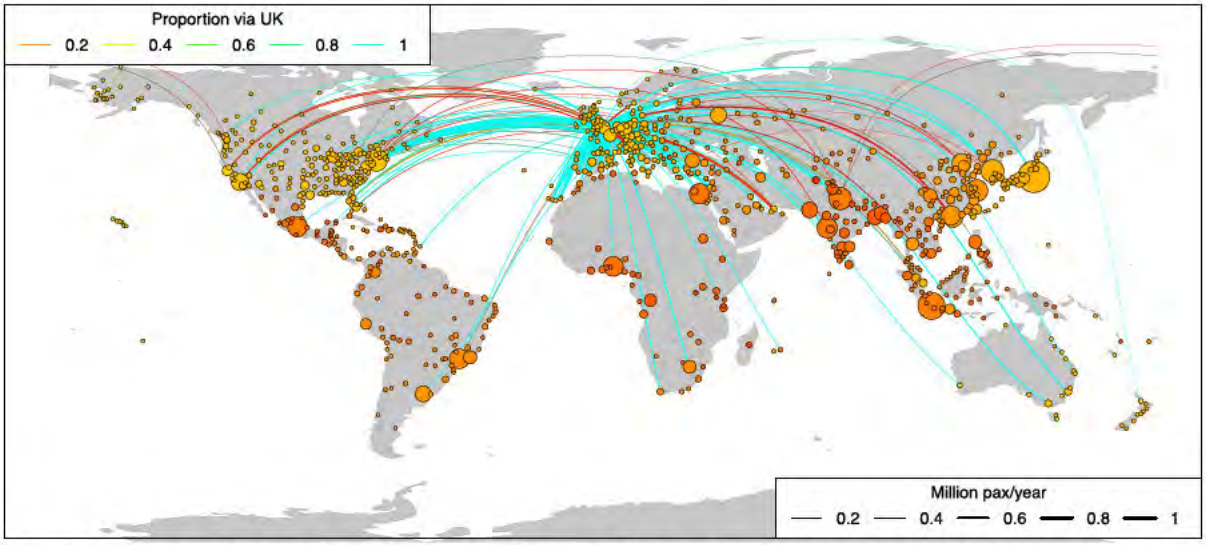

Figure 3. Origin-destination city-city passenger flows of more than 100,000 passengers per year (in 2015) for which at least some passengers route via a UK airport. Data: Sabre, 2017.

The corresponding impact on freight operators may also be substantial. Because freight flights are less labour-intensive than passenger flights, fuel and landing costs are a higher proportion of total operating costs for freight operators, so they may be more impacted by policy. Freighter aircraft are also typically older and less fuel-efficient (e.g. Dray, 2013). However, UK departing freight carried in freighter aircraft (as opposed to in the holds of passenger aircraft) accounted for only around 1 $MtCO_2$ in 2015 (DfT, 2017). There is limited data to assess how much of this freight is being shipped through the UK as opposed to being transported to or from UK destinations, but the likely impact of changes in freight route choice is small in absolute terms compared to the passenger impact.

2.2 Change in passenger destination

As leisure passengers are more price-sensitive than business passengers (e.g. Brons et al. 2002) the largest impact on destination switching is likely to be on leisure trips, either from UK passengers staying at home or from international visitors travelling elsewhere. In the first case no leakage is likely. In the second case, 13.9 million visits to the UK by overseas residents were made for tourism purposes in 2015 (ONS, 2015). The overall impact of destination switching is difficult to estimate without knowing which destinations passengers will switch to. It is also unclear whether this would be a positive or negative effect, as this depends on whether destination-switching passengers travel further to their new destination than they would have to the UK. The impact will also vary by policy, depending on whether cost increases are larger for further-away destinations (as for an increase in fuel or carbon price) or apply per flight (as would be the case for an increase in landing costs). In the latter case, the largest relative impact would be on short-haul flights, discouraging visitors primarily from European destinations. Tourism destination choice is in any case variable year on year and depends on many difficult to measure factors such as destination image and destination loyalty (e.g. Chi & Qu, 2008).

Mayor and Tol (2007) estimate the impact of a comparable policy (Air Passenger Duty) on UK tourism, using the Hamburg Tourism Model with airfare elasticity of destination choice of -0.45 for the UK. They find only a small fall in tourism to the UK of around 1.2%, considerably below typical year-on-year growth rates of 4%; they also note that carbon leakage is possible due to the change in the relative price differential between short-haul and long-haul destinations in this specific case.

Given the uncertainty in estimating which destinations passengers might switch to, we do not directly model destination switching in this study. However, some of this impact will be captured by the demand reduction effect discussed in Section 2.5, below, in the case that UK origin or destination passengers decide to holiday in the UK instead of flying to a more distant destination.

2.4 Mode shift (single segment or whole journey)

Mode shift could affect carbon leakage and/or competitive distortion in two ways. First, passengers or freight could switch to an alternative mode for their entire journey. Depending on the emissions intensity of the alternative mode and the method of accounting used, this may lead to a decrease or increase in overall UK-attributed emissions. For passengers, the most likely mode shift option is high-speed rail via the channel tunnel. High-speed rail is typically a (partial) substitute for air journeys where the rail travel time is under about 200 minutes (e.g. Behrens & Pels, 2012), which limits the number of routes for which mode shift to rail for the whole journey is plausible. Many of these routes already have substantial rail market share, with airlines targeting less price-sensitive business passengers for any remaining flights. For example, high-speed rail had around an 80% mode share of the London-Paris route in 2009 (Behrens & Pels, 2012); in 2015, scheduled air passengers travelling between London and Paris accounted for around 0.25 $MtCO_2$. The impact of more of these passengers switching to rail is therefore relatively small. The channel tunnel also acts as a capacity bottleneck, providing a practical limit to the number of passengers who can switch modes in this way. In 2015, around 21 million passengers used the channel tunnel (DfT, 2016).

For freight, long-distance freight which is less time-sensitive could switch to ship transport, which is associated with a substantially lower carbon intensity than aviation. Domestic air freight could switch to truck transport. However, UK domestic air freighter fuel use is around 0.1% of total UK-associated fuel use, so changes to this total are unlikely to make a large difference to leakage or distortion.

In the second case, UK origin and destination passengers could use a ground transportation mode to access a nearby non-UK hub, e.g. Paris Charles de Gaulle, Brussels or Amsterdam Schiphol. This is similar to the case discussed above of passengers taking a short-haul flight to a nearby non-UK hub and a subsequent long-haul flight from there. In this case, however, passengers will face longer journey times on the ground transportation leg, additional airport access logistics, and a smaller selection of feasible non-UK hubs to choose from.

For freight, adding a truck segment to a continental airport is effectively trading off increased journey time against a reduction in costs. Ohashi et al. (2005), in the context of Northeast Asia, find a 1 hour reduction in transport plus processing time to be more attractive to freight operators that a $1000 reduction in costs when considering transshipment location. This is consistent with air freight being primarily used for high value and/or time-sensitive goods (e.g. Mitra & Leon, 2014). Road transportation time for London-area airports to Paris Charles de Gaulle and Brussels airports is approximately 5 hours (e.g. Google, 2018) in comparison to flight times of around an hour (e.g. Sabre, 2017). This suggests that policy-imposed costs would need to be at least $4000 per flight before freight operators would consider switching in this way. Gardiner et al. (2005a, 2005b) survey freight operators and find that airport location and operational restrictions (for example, night curfew) are the primary criteria used to determine transshipment airport, with airport costs entering the decision process at a later stage. Cargo operators may change airport relatively frequently, with 43% surveyed in Gardiner et al. (2005b) having moved a cargo service in the past two years and 47% of those who had moved doing so partly due to cost reductions available elsewhere. However, such moves are between different airports within the same region. Similarly, Yuen et al. (2017) discuss freight operator airport choice primarily in terms of primary and secondary airports within a given catchment area. These factors in combination suggest that most freighter flights, particularly those which are transporting freight to or from rather than through the UK (which are likely to be the vast majority) are not likely to switch to non-UK airports in response to policy.

Given the constraints on mode choice for passengers and freight discussed above, we do not model mode-switching in response to policy in this study.

2.5 Demand reduction outside the policy area

The global aviation system is highly interconnected. Passengers typically do not just travel one-way on a single flight segment. Most journeys are round-trips, and many journeys involve multiple flight segments in either direction. If a policy increases the cost of travelling on a single segment, this will be experienced by passengers as an increase in the ticket price of their whole itinerary. Additionally, if an aircraft flies into an airport it also has to fly out again (airlines do sometimes carry out empty 'positioning flights', but flying without passengers means no passenger revenue for that flight, so these are relatively rare). These factors mean that demand reduction on a given route is likely to be symmetric across outbound and inbound flights, even when the increased costs apply in only one direction. Similarly, demand may decrease on flight segments that are not to or from the policy area, but which serve passengers on multi-segment itineraries to or from the policy area. One example is flights from Asian or Middle Eastern hub airports to Australia which serve UK-Australia demand.

A demand decrease outside the policy area will lead (all other things being equal) to a decrease in CO_2 emitted outside the policy area. This will lead to negative leakage. In the case that leakage is measured on a departing flights basis, a corresponding reduction in arriving flights will lead to leakage of around -100%, i.e. the same reduction within and outside policy scope.

The vast majority of UK-related passenger round-trip journeys contain flight segments inside and outside policy scope. Therefore demand reduction effects are potentially a major contributor to overall leakage, and need to be considered.

2.6 Changes in existing fleet assignment (within-airline)

Airlines which operate primarily outside the UK will have the option of moving more fuel-efficient aircraft onto their UK routes and using less fuel-efficient aircraft on their non-UK routes in response to UK-based mitigation policies. Airlines which operate primarily to and from the UK will not have this option. In the most extreme case, where non-UK airlines are able to satisfy all policy requirements by rearranging their fleet in this way, all of the carbon reductions achieved by applying the policy to non-UK airlines will be effectively leaked (plus or minus a small extra amount due to the more or less efficient use of each aircraft on its new routes). Non-UK airlines operating to and from the UK accounted for around 28 $MtCO_2$ in 2015; reductions in emissions from switching to the most efficient aircraft types available depend on aircraft type, but could in theory be up to around 15-20% if switching between older single-aisle aircraft types and the most recent generation of single-aisle aircraft. However, this does not account for other requirements on aircraft type that apply at UK airports, which may already effectively restrict the use of older aircraft and make substitution of aircraft from other routes less likely. For example, noise regulations already effectively restrict the aircraft models that can operate to and from Heathrow airport. There is also some evidence that airlines in practice do not reconfigure their fleets in this way in response to policy (e.g. Roy, 2007; Nero & Black, 2000), making the overall impact of this option uncertain.

This mechanism also has substantial potential for competitive distortion. This is because non-UK airlines use a much greater percentage of their fleets on non-UK routes. They can therefore reduce their policy costs to a greater extent by reassigning aircraft between routes.

Due to the large potential leakage and distortion impacts, we include this mechanism in the modelling for this study; however, due to the uncertainty about the extent to which airlines can swap fleet in practice, we model outcomes with and without this option.

2.7 Airlines abandon non-profitable routes and/or don't invest in new routes

This can be considered as another sub-case of the itinerary choice-based carbon leakage route discussed above. In the case that a direct route to the UK is discontinued, passengers on that route will choose either not to travel, to take an indirect route for their journey, or to switch modes, potentially resulting in a change in emissions per passenger. Ernst & Young and York Aviation (2008) use UK domestic flights as a case study; in the case that flights from Southampton to Leeds are discontinued and all passengers travel by car instead, they project an increase in emissions on that one route by 18%. However, this outcome depends strongly on the model and occupancy of car assumed. In any case, UK domestic flights are a small proportion of total emissions.

Airlines will consider abandoning a route if it falls below some threshold rate of return. Generally routes need not only to be profitable on a long-term basis but to generate profit that the carrier deems sufficient. Airlines will generally need to earn their cost of capital plus a premium, and so the route network generally needs to achieve this level. For example, IAG has committed to a 15% Return on Capital Employed (ROCE). Exceptions to this rule may apply in the case that a route has been in operation for less than three years, or in the case of network carriers where the route in itself is not sufficiently profitable but plays an important role in overall network profitability. Airlines may also be reluctant to cut routes to and from 'premium' global airports, such as Heathrow, or to cede routes to a competitor airline in the case that not many airlines compete on the route. However, ultimately the decision is a cost-based one.

We do not directly model airlines abandoning routes in this study. However, we do assess the increase in direct operating cost (DOC) per revenue passenger-km (RPK) by route and airline type. This can be compared to typical values of ticket revenue per RPK of around £0.1/RPK (e.g. Dray et al. 2017). In the case that increases in DOC/RPK become a significant fraction of ticket revenue, we might expect to see routes cancelled to and from UK airports.

2.8 Airlines add new UK-avoiding routes

This affects the passenger choice of itinerary discussed above, with the additional factor that the choice set for passengers may change, reducing the market share of UK airlines further. However, for most of the major routes considered, the choice set is already relatively large and includes UK and non-UK routes as appropriate to scope. The issue of whether the EU ETS would instigate network reconfiguration for passenger and cargo airlines was investigated by Albers et al. (2009) and Derigs & Illing (2013). In the case of passenger networks, a €20/tCO_2 carbon price is found to be insufficient to justify network change. For cargo, which is more impacted by changes in fuel-related cost, a range of €20/tCO_2 - €70/tCO_2 is explored. Some network reconfiguration is seen at high allowance prices and/or high auctioning percentages; however, the costs associated with hub relocation still exceed the savings in emissions cost achievable in nearly all cases.

As with the case of airlines cancelling routes, above, we do not model this directly. However, we do model the increase in DOC/RPK by airline and route type. In the case that this becomes significant in comparison to ticket revenue per RPK, we would expect to see some level of network reconfiguration where possible for airlines. However, in this case airlines will also have weaker balance sheets in general, which can reduce their ability to invest in new routes.

2.9 New airlines locate outside UK and/or existing airlines relocate

This mechanism is dismissed as unlikely by Ernst and Young and York Aviation (2008) in the context of the EU ETS, due to bilateral agreements and ownership regulations. However, this may be less applicable on a UK-only policy basis. Our initial examination of airline operations indicated multiple cases where airlines have recently set up subsidiaries in other countries (for example: EasyJet Europe; Wizz Air UK). However, many of these subsidiaries are directly in response to the uncertainties arising from the UK's exit from the European

Union. Whether a change in costs (as opposed to the risk that they may not be able to operate at all) would be enough to prompt airlines to set-up non-UK subsidiaries is uncertain. Although we do not model this mechanism in this study, it does represent a potential risk to the competitiveness of UK airlines by potentially removing airlines from UK scope.

2.10 Fleet leasing/sales between airlines

The age distribution of the UK fleet in comparison to fleet age distributions by world region is shown in Figure 4, by aircraft size class (RJ = Regional jet; SA = Single-aisle; TA = Twin-aisle; VLA = Very large aircraft). Age distributions depend largely on the history of demand growth per region, as well as individual airline practice on aircraft retirements and sales. For example, recent high growth in the Asia-Pacific and Middle East regions has resulted in relatively young fleets as airlines purchase new aircraft to meet demand. Historically, policies targeted at changing fleet composition (e.g. in terms of noise or local emissions) have targeted aircraft design specifications, with restrictions on older aircraft operations resulting in relatively few retirements (Dray, 2013).

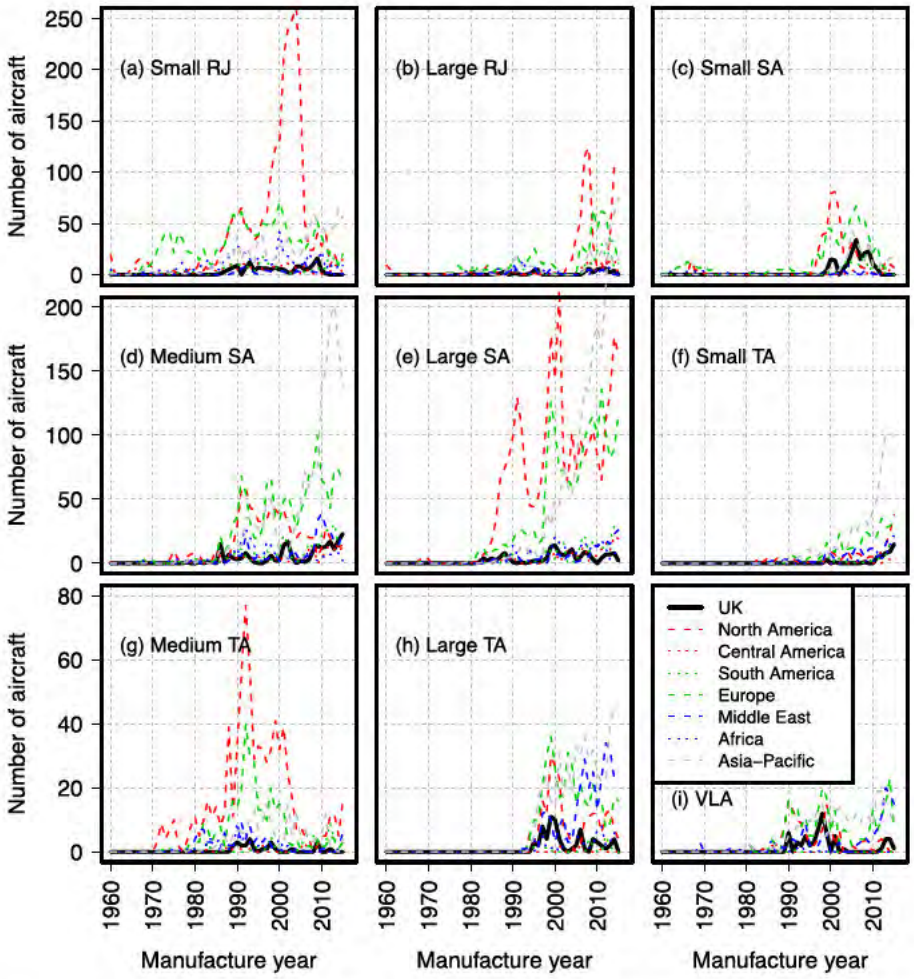

Figure 4. Age distributions of aircraft with operators registered in each region at the end of 2015, from FlightGlobal (2017).

Leakage in this context is likely to occur if, instead of scrapping older aircraft retired from the UK fleet as a result of policy, airlines sell or lease them on to airlines unaffected by the policy. The overall impact on emissions then depends on the extent to which these aircraft are being used as a replacement for even older and/or higher-emission aircraft, or not. In the case that they do replace higher-emitting aircraft then there is the potential for negative leakage. Across most size classes, however, the UK's aircraft age distribution is broadly typical of other world regions, i.e. aircraft retired from the UK fleet may not provide a significant benefit in replacing older aircraft from other world regions.

Additionally, airlines in other world regions that need extra aircraft will have the choice between second-hand older aircraft and new aircraft models with significantly lower fuel burn. Older aircraft are typically less fuel-efficient and noisier. Dray et al. (2018) find a reduction in fuel burn per RPK in new aircraft models of an average 0.7% per year across the different aircraft size classes shown here between 1990 and 2016; major improvements in aircraft technology occur at roughly 15-20 year intervals per size class. This means that relatively large emissions and airline cost reductions may be achievable from fleet replacement, subject to production line capacity. Recent new models of aircraft include the Airbus A320neo, Boeing 737MAX and Bombardier C-Series families, which provide 15-20% reduction in fuel use per RPK over the previous generation. The 777X and A330neo are projected to be available before 2025, with similar reductions in fuel use.

The impact of new UK-based policy on the fleet will also vary by policy specification, and by the other constraints (noise, local emissions) that apply at UK airports. Morrell & Dray (2009) modelled the airline financial decision of whether or not to replace an older aircraft with a new model. They found that fuel and carbon costs need to be significant before this becomes a cost-effective option. For example, replacing a 150-seat single-aisle aircraft was found not to be cost-effective even at oil prices of $140/bbl and carbon prices of $100/t$CO_2$.

Based on the potentially large emissions benefits, we include the option of aircraft sales due to policy cost in the model. As discussed in Morrell & Dray (2009), aircraft which are younger than typical retirement ages of around 30 years are usually sold on rather than scrapped. We therefore assume that sold aircraft join the non-UK fleet and are used for typical non-UK operations. As this affects mainly the oldest UK aircraft, and these aircraft are also old in comparison to global fleets, this produces a small amount of positive leakage.

2.11 Adoption of carbon-reducing technologies and operations

The adoption of carbon-reducing technologies offers the opportunity for negative carbon leakage, in that technologies adopted to reduce emissions-related costs in the UK may then also be used elsewhere. Normally an aircraft is used across multiple routes in the course of a year. In general most UK airline aircraft are used on UK routes, but a non-UK airline aircraft purchased specifically to meet UK requirements could be used on non-UK routes as well. However, as discussed above, policy costs may need to be substantial before they justify the purchase of new aircraft. In this case, non-UK airlines will have a strong incentive to use any aircraft purchased to meet UK requirements primarily on UK routes, as this reduces the number of aircraft required.

If an airline which is purchasing a new aircraft has a choice of future new aircraft models with radically different capabilities, policy costs might prompt them to change their purchasing decision. For example, potentially an airline might have a choice between a hybrid electric aircraft and a more conventional design. However historically technology decisions of this sort have been taken at the manufacturer level. Where competing manufacturers have released new models at similar times, those aircraft models have tended to be comparable in terms of fuel use and technology used. As such, we do not model the airlines' choice between different technology options. However, manufacturer choice of which technologies to invest research and development in may be influenced by their perception of likely future airline costs. We therefore include the user option to include different future trends in new technology emissions, derived from ATA & Ellondee (2018), where more optimistic technology assumptions may be appropriate in the case that fuel and carbon prices are projected to be particularly high, provided the technical challenges in developing each technology can still be met.

The case in which compliance with UK regulation results in new aircraft designs which have lower CO_2 emissions than they would otherwise is a potential further, long-term negative leakage mechanism. However, policy costs would need to be significant to outweigh the impact of future projected trends in fuel and carbon costs. The high importance of fuel costs to airlines also means that manufacturers are already strongly incentivised to design for greater fuel efficiency.

2.12 Increases in tankering

Because fuel prices differ between airports, airlines sometimes take a sufficiently large amount of fuel on board at an airport with lower fuel prices to cover both legs of a return trip, as long as the maximum landing weight is not exceeded. Tankering is profitable if the cost associated with carrying the extra fuel is lower than the difference in fuel costs between the two airports. Thus if UK-based regulation results in significantly higher fuel costs at UK airports, this may lead to increases in tankering on short-haul flights. Analysis for this study (Section 4.4.4) suggests that tankering on an individual flight increases emissions by around 3-10%. The net impact of increasing tankering would be to take emissions outside a UK fuel uptake scope plus a small increase (less than 0.2 $MtCO_2$) in overall emissions. Depending on how many flights are able to tanker fuel, the movement of emissions outside UK fuel uptake scope may result in a significant amount of leakage (effectively in excess of 100% in the case that tankering is the only outcome of the policy). Therefore we include it in this study's modelling of airline response.

If emissions are measured on a departing flights basis rather than a fuel uptake basis, the main impacts of tankering on emissions will be the 3-10% increase in arriving flight emissions on tankering routes discussed above. The departing flight using tankered fuel would be counted as UK emissions and not as leakage. In this case, leakage from tankering will be less than a tenth of what it would be on a fuel uptake basis. The leakage impacts of any policy avoidance from tankering will still apply, though. For example, if tankering is being carried out to avoid taking on biofuel, there will still be a reduction in biofuel use on UK departing flights which will affect within-system emissions reductions and hence the overall value of leakage metrics.

2.13 Reduction in fuel use impacts on fuel price

In the case that a policy causes aviation fuel use to decrease in one area of the world, this may result in a global decrease in fuel prices. In turn, this reduction in fuel price outside the policy area may cause an increase in demand.

Past research on this mechanism has concentrated on the EU ETS and/or Kyoto protocol, both of which (under the original EU ETS scope) account for a significantly higher percentage of global aviation fuel use than flights to and from the UK. The current total fuel use on flights to, from and within the UK is around 22 Mt. Policy-related emissions reductions are likely to be small in comparison to this total, and will be achieved by a combination of within-sector emissions reductions and demand reduction due to increased costs. Global Jet A/Jet A1 consumption was around 252 Mt in 2015 (IEA, 2017) and global demand is projected to grow faster than UK based demand (Airbus, 2018; Boeing, 2018; DfT, 2017), so UK-related fuel use as a proportion of total global fuel use is likely to fall.

The magnitude of this impact depends on the supply elasticity of fossil fuels (e.g. Gerlagh & Kuik, 2007; Boeters & Bollen, 2012). In the case that supply is perfectly inelastic (elasticity = 0), adjustment is via price only and all decreases in use in policy-affected regions are matched by increases in use elsewhere, i.e. 100% leakage. In contrast, a perfectly elastic supply (elasticity = ∞) would imply 0% leakage via this channel. Based on a survey of the literature, Gerlagh & Kuik (2007) find elasticity values of between 0.5 and 8, with the majority of values between 1 and 3. Based on an analysis of the output of a selection of associated CGE models, they conclude that this channel may be the predominant source of leakage observed.

We do not model this channel in this study, due to its high level of uncertainty. However, it should be noted that it potentially represents a significant extra leakage risk. This risk will be greater for policies which reduce fossil fuel use by larger amounts. Therefore, of the policies considered in this study, changes in landing charges are likely to have the lowest risk of this mechanism occurring, followed by changes in carbon price, followed by increases in biofuel use.

3. Metrics and key uncertain variables

To assess the extent of leakage and competitive distortion, we need to define appropriate metrics. The values of these metrics, and hence also the amount of projected impact, depend on key variables that are uncertain. Therefore in this section we explore both which metrics are suitable to use, and which uncertain variables their values may be sensitive to.

3.1 Metrics

3.1.1 Carbon Leakage

For carbon leakage, we use the IPCC definition, in which carbon leakage is the ratio between the increase in emissions from a sector in the non carbon constrained country (or region) as a result of domestic mitigation action, and the decrease in emissions of the carbon constrained sector as a result of the carbon policy:

$$Leakage = \frac{-\Delta CO_{2,outside\ policy\ area}}{\Delta CO_{2,within\ policy\ area}} \quad .$$

If the policy is applied to UK departing flights, then all UK domestic flights and UK departing international flights count as within the policy area. UK arriving flights and non-UK flights are outside the policy area.

This ratio is affected by the change in emissions per flight both within and outside the policy area, and the change in the number of flights within and outside the policy area. In turn, the emissions per flight are affected by the aircraft used; older aircraft typically have higher emissions. The number of flights is affected by changes in ticket price.

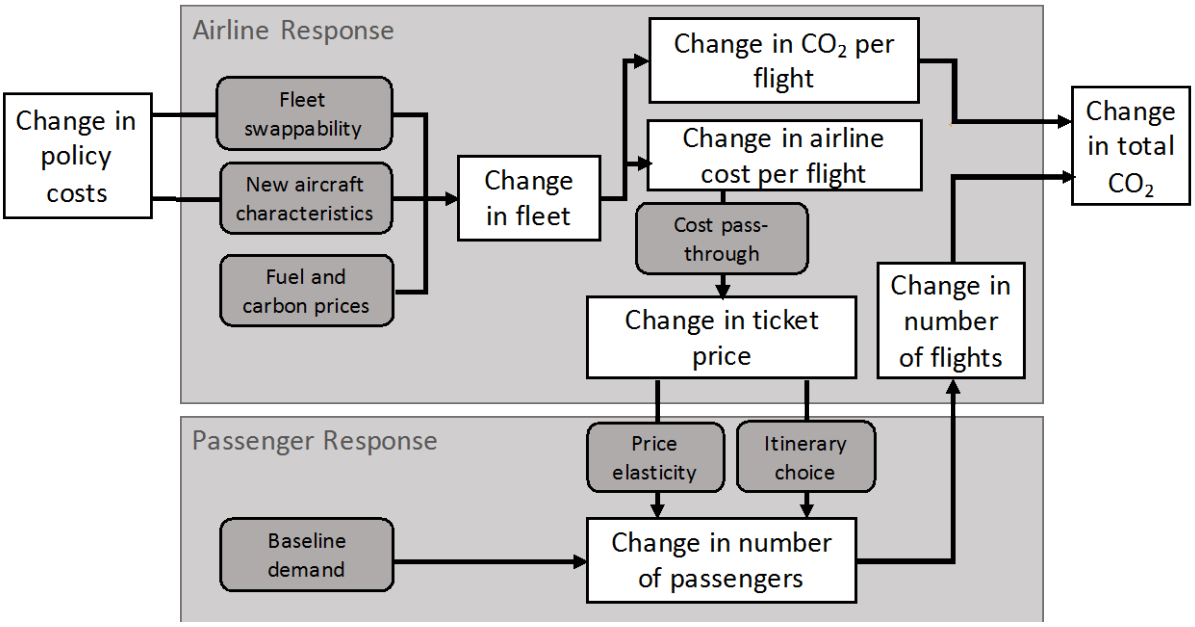

Figure 5. The relationship between the uncertain variables examined and policy CO_2 response.

Figure 5 shows the uncertain variables we consider in this section, and their relationship to the amount of CO_2 reduction. The key variables that affect the magnitude of impact will vary depending on the policy mechanism. In the case of a carbon price, airline costs will be increased by an amount determined by the carbon price (which itself may depend on the carbon intensity of other sectors and mitigation measures available to them), and airlines will have to choose how much of that cost to pass onto tickets. Fuel and carbon prices, cost pass-through and trends in the fuel use of new aircraft models are therefore all relevant uncertain variables.

In turn, passengers will respond to changes in ticket price by choosing not to fly or by changing to a less-affected itinerary. Therefore the passenger (and freight) price elasticities of demand, and itinerary choice parameters, are important variables as well. Similarly, baseline demand growth to the year that the policy is assessed in affects outcomes and is also uncertain.

Airlines may also choose to respond by swapping UK and non-UK fleet or by purchasing new aircraft. The extent to which UK and non-UK fleet are straightforwardly exchangeable, and airline fleet purchasing criteria, are therefore also important uncertain variables. As discussed in Burniaux & Oliviera Martins (2000), this is complicated by interactions between individual parameters, which are typically drawn from separate probability distributions rather than considered as part of a joint probability distribution.

In some cases, leakage is not a useful metric to use. For example, it does not straightforwardly capture the absolute level of emissions reduction. A policy can have relatively high positive leakage and still have a high net reduction in emissions; conversely, a policy can result in negative leakage but still only have a tiny impact on global emissions if the totals involved are small. Because different mechanisms lead to different amounts of positive and/or negative leakage, the value of the leakage metric can also appear to be volatile in the case that small totals of emissions reductions are involved, even when underlying changes in emissions are well-behaved. In the extreme case that a policy causes unintended increases in emissions both inside and outside the system, for example if reduced costs for low-emission aircraft cause a demand rebound, leakage will also technically be negative. Because of this, we also report absolute changes in emissions by scope as well as leakage values.

3.1.2 Competitive distortion

As discussed in Section 1, competitive distortion arises via similar mechanisms to carbon leakage and hence is affected by the same uncertain variables. There is no single universally-accepted metric for measuring competitive distortion. Indeed, as several forms of competitive distortion are possible, several different metrics may be appropriate to fully capture their impacts. Metrics used in the literature include passengers by airline type, changes in demand by airline type, and changes in airline operating margin (e.g. Ernst & Young and York Aviation (2008)). Broadly, these are affected by the same uncertain parameters as leakage, although in the case of airline operating margin, assumptions about current operating margins are required. Ernst & Young and York Aviation (2008) assume a typical operating margin of 4% for network airlines, 2-14% for low-cost carriers and 4% for

cargo airlines, but acknowledge that this is optimistic. DEFRA (2008) show that under Cournot competition, airlines with larger market shares in a given market will have higher operating profit margins. However, airline profits can vary substantially year on year (e.g. CE Delft, 2005) and are influenced by the accounting practices that the airline uses to report profits, which may be geared towards presenting a particular situation for the company to shareholders or regulatory bodies. Therefore if the operating margin is used as a metric, the baseline value used counts as an uncertain parameter.

Based on an analysis of model output data, we choose the following as metrics for competitive distortion:

- The number of passengers by airline (UK/non-UK) and route type (UK/non-UK). This captures the extent to which airline revenues will be disproportionately affected between airlines.
- The change in airline direct operating cost per RPK (DOC/RPK) by airline and route type; this captures similar impacts to using airline operating margin without having to estimate current airline operating margins, on which limited data is available.
- The number of passengers per airport, for major UK airports and major non-UK hubs. This captures whether there will be a significant impact on UK airport competitiveness.

3.2 Key uncertain variables

3.2.1 Cost pass-through

Cost pass-through is the extent to which airlines pass on increases in costs to ticket price as opposed to reducing their operating margin. Ultimately, this decision will be made on a profit- (or market share-) maximisation basis and will interact with passenger price sensitivity; applying one or several rates of cost pass-through is an approximation to this. If airlines pass on all costs to passengers, as would be the case in a perfectly competitive market, the pass-through is 100%. Ernst & Young and York Aviation (2008) argue that airlines will be unable to pass on costs at congested airports where demand exceeds capacity as optimal prices are set by the (constrained) airport supply rather than marginal costs. In this case, pass-through would be 0%. For other routes they recommend 50%, 75% and 90% pass-through for the case where the route is operated by one, three or nine competitors respectively. They model cargo cost pass-through of 40-46%. In contrast, Derigs & Illing (2013) assume cargo emissions-related costs are not passed onto customers at all. CE Delft (2005) argue that empirical evidence suggests pass-through at congested airports is close to 100%. Anger & Köhler (2010) review literature rates of pass-through and find assumptions between 0% (for freely allocated allowances only) to 100% (purchased allowances only), with several studies using intermediate values in the range of 30-50%. SEC (2006) argue that where all airlines on each route are treated equally, they will pass on all or most of their increase in costs. Scheelhaase & Grimme (2007) find opportunities for cost pass-through vary by airline business model, assuming airline willingness to cross-subsidise between routes.

Wang et al. (2018) model pass-through as an elasticity-type term, using historical fare data across different routes and airline cost estimates to specify an econometric model for fare. They find different response to cost increases for different cost categories and different world regions; however, the effective pass-through rates for fuel and non-fuel type costs for a $100 cost increase are typically in the range of 40-70%.

DEFRA (2007) examine cost pass-through due to aviation's inclusion in the EU ETS, where cost pass-through is defined as the proportion of the full cost of emissions at current allowance prices that is passed through to ticket prices, i.e. it is affected by the proportion of free allowances. In most circumstances they find close to 100% pass-through, consistent with a perfectly competitive market. For individual routes they find a range of 80-150% pass-through due to diversity primarily in airline business models and amount of competition. Pass-through is typically projected to be higher for mixed business and leisure (110-150%) than leisure-only (80-100%) due mainly to the higher price sensitivity of leisure passengers; i.e., there is interaction between pass-through rates and price elasticities. Ranges of 80-150% for time sensitive freight, and 95-100% for non time-sensitive freight, are found. For higher-volume routes they project rates closer to 100%.

Faber & Brinke (2007) argue that, because slots at Heathrow are auctioned, pass-through is effectively 0%; i.e. increases in environmental cost for operating at Heathrow will be offset by a reduction in slot costs. However, a recent EC study on slot mobility (EC, 2011) found that slots change hands only infrequently at Heathrow. As shown in Table 2, over 99% of slots at Heathrow remained with the same airlines over the 2006-2010 period.

Because slot trading is rare, this limits the likelihood of slot auctions delivering an economically-efficient outcome. Because Heathrow is perceived as a 'premium' airport there is also the possibility of non-rational or non-profit maximising behaviour. These factors in combination make the level of pass-through uncertain.

Table 2. Slot mobility at different airports. Source: EC (2011).

Slot mobility				**Slot stasis**	
Change in total allocations by carrier	**Period**	**Average annual change**		**Historics as % of total allocation**	**Period covered by data**
13.1%	S07-S10	4.4%	**AMS**	no data	
8.6%	S09-S10	8.6%	**CDG**	89.7%	W08-S10
9.5%	S07-S10	3.2%	**FRA**	91.6%	W09-S10
10.6%	S08-S10	5.3%	**ORY**	no data	
6.6%	S07-S10	2.2%	**LHR**	99.1%	S06-W10

Based on our analysis of the literature, we assume 100% passenger cost pass-through at all non-congested airports. However, we treat pass-through at congested airports (in particular, Heathrow and Gatwick) as an uncertain variable. We use values of 0%, 50% and 100% to represent the level of uncertainty in the literature. For freight, we assume a pass-through rate of 80%, roughly in the middle of the range of literature values.

3.2.2 Price elasticity of demand

The price elasticity of demand is a measure of consumers' sensitivity to price changes for a given service, in this case air transportation. It is defined as:

$$Price\ Elasticity = \frac{\%\ change\ in\ q\square antity\ demanded}{\%\ change\ in\ price}.$$

As with virtually all goods and services, aviation ticket price elasticities are negative, i.e. an increase in price results in a reduction in demand. Different estimates may be obtained depending on the time horizon considered for the reduction in demand, the geographic scope, the characteristics of the journeys considered and the availability of substitute routes. IATA (2007) review literature fare elasticities and supplement them with their own economic modelling. They find typical fare elasticities at the individual market level (i.e. where fares vary on an individual route, leading to some level of route substitution) of between -1.2 and -1.5. At a national level (i.e. where all fares in a country increase by some amount, so there is less scope for route substitution) they recommend a base fare elasticity of -0.8, modified by the characteristics of the route group considered (-1.12 for intra-European flights, -0.96 for transatlantic flights, and -0.72 for Europe-Asia). They additionally propose a short-haul elasticity multiplier of 1.1 for flights of under an hour. Brons et al. (2002) carry out a meta-analysis of aviation price elasticities, using literature price elasticities varying between 0.2 and -3.2 in different contexts, with distributions peaked at -0.8 for business passengers and -1.5 for leisure passengers. These are similar to the assumptions used by Ernst & Young and York Aviation (2008); a similar range of elasticities was found by Oum et al. (1992). DfT (2017) use -0.2 for business passengers, -0.7 for leisure and -0.5 for international to international transfers and domestic passengers; similarly, DEFRA (2007) use -0.7 - -1.3 for leisure passengers and -0.3 - -0.7 for business passengers, and CE Delft (2005) use -0.2 - -0.3 for business passengers and -0.7 - -1.0 for leisure passengers. Scheelhaase & Grimme (2007) use -0.5 to -0.9 for business travellers and -1.1 to -1.5 for leisure travellers.

As discussed in DEFRA (2007), there also is some evidence that passengers are becoming less price-sensitive over time. For example, Brons et al. (2001) project price elasticity reductions by 0.01 per year.

Relatively few studies look at the response of air freight demand to changes in freight rates, in part because less data is available than for passengers. Wai Wang Lo et al. (2015) estimate elasticities of -0.74 to -0.29 in the context of Hong Kong International airport. Chi & Baek (2012) find a range of -1.5 to -3.0 in previous literature on US air freight demand, but themselves estimate a long-run value of -5.6. Ernst & Young and York Aviation use -0.8 for express cargo airlines and -1.6 for standard cargo, citing World Bank research giving this as a typical range. DEFRA (2007) use -0.5—1.5 and CE Delft (2005) use -0.7 throughout. Cargo is less labour-intensive than passenger transport so a higher proportion of cargo airline costs are fuel-related, making cargo airlines more vulnerable to changes in fuel costs.

Several considerations affect which elasticities are most appropriate to use in this study. Because the results and modelling are intended to be compatible with DfT (2017), including the use of demand growth rates over time from DfT (2017), elasticities that are compatible with DfT modelling should be used. Given that we have limited data on the number of business and leisure passengers per route, we use combined elasticities for all passengers and for all freight. The specific circumstances modelled (increase in costs at a country level, with itinerary choice modelled separately) also suggest that values on the low end of literature estimates are appropriate to avoid double-counting impacts from route substitution. We therefore use a range of values between -0.2 and -0.8, taking -0.5 as a central value. For cargo, we use -0.5 throughout.

3.2.3 Baseline demand growth to 2050

UK demand growth will depend on many uncertain factors, including income growth, the application of other policies, and assumptions about market maturity. The most recent set of DfT demand projections (DfT, 2017) project demand in 2050 of between 410 and 435 million passengers per year (mppa). Additionally, DfT (2017) model a range of sensitivity cases including different market maturity, carbon price, GDP and oil price assumptions. The range of demand in 2050 over all of these cases is 354-455 mppa. The relatively low growth rate (compared to those projected for global emissions) is the result of capacity constraints and assumptions about the market maturity of different aviation markets. We use these DfT projections to generate baseline, high and low growth scenarios in passenger demand which can be selected by the model user. More information about the projections used is given in Section 4.3.1.

Freight carried in the holds of passenger aircraft is implicitly included via aircraft payload assumptions. For freight carried in freighter aircraft, few estimates are available for future demand growth. We include in the model a user-set freighter flight demand growth rate. However, as in DfT (2017) this is set by default to zero, consistently with recent trends in UK freight.

Demand growth can affect leakage and distortion in several ways. First, it affects the absolute level of reductions in CO_2 that are possible. Second, it affects the age distribution of aircraft fleets, as more new aircraft are needed if demand growth is higher. Third, some mechanisms to avoid increased policy costs may become more or less effective if patterns in demand change. For example, if there is a switch to longer-haul flights, tankering will become less important as a way of avoiding policy costs. However, both leakage and distortion largely depend on relative rather than absolute changes in cost and emissions, so demand growth is likely to be less important than pass-through and price elasticity in determining outcomes. We group demand growth together with other background variables affecting system development in investigating model sensitivity, and run one set of model runs for year-2015 conditions (lower demand, lower fuel price, lower baseline carbon price) and one for year-2030 conditions (higher demand, higher fuel price, higher baseline carbon price)

3.2.4 Baseline carbon price

Historically, the EU ETS price has never risen above the equivalent of £30 per tonne of CO_2 (year 2015 UK pounds) and, despite recent rises, it is still currently much lower than this (European Climate Exchange, 2018). However, future scenarios aimed at achieving IPCC climate goals often include a higher carbon price applied on a global level. DfT (2017) assumes a carbon price in 2016 of £4 / tCO_2, rising to £77 in 2030 and £221 in 2050 (year 2016 UK pounds). This value is implicit in the central forecast used for baseline demand, above and any increases in carbon price due to policy are effectively additional to it. Carbon prices in the other DfT (2017) demand scenarios used in this study range from 39-116 £/tCO_2 in 2030, and 111-332 £/tCO_2 in 2050.

A higher baseline carbon price increases the cost savings that airlines can make from making reductions in fossil fuel use and from using biofuels (depending on how and whether the carbon price is applied to biofuels). Therefore airline responses to policy-related cost increases may be more likely in the case that the baseline carbon price is high. Since the future baseline carbon price is assumed to apply globally, it also acts to decrease the difference in fuel costs between UK and non-UK routes, i.e. any change in cost due to new policies is a smaller fraction of total costs.

We group baseline carbon price together with other background variables affecting system development in investigating model sensitivity, and run one set of model runs for year-2015 conditions (lower demand, lower fuel price, lower baseline carbon price) and one for year-2030 conditions (higher demand, higher fuel price, higher baseline carbon price).

3.2.5 Fuel price

Future jet fuel prices are highly uncertain. Fluctuations in fuel price will have a similar impact to fluctuations in carbon price, and may be of greater magnitude, particularly over the short term. For consistency with the DfT (2017) demand forecasts discussed above, we use to use the range of oil prices given by BEIS (2016). These project oil prices in 2030-2040 of between 55 and 120 year 2016 US dollars per barrel, with a central case of $80/bbl and a stress test case of $30/bbl. As with DfT (2017), these are assumed to remain constant in real terms between 2040 and 2050. In terms of the price of Jet A, this translates into £0.406 per kg in 2015, rising to £0.601 (0.413-0.902) per kg in 2030 and staying constant at this value in real terms thereafter.

Additionally, in the case that biofuel uptake is simulated, we need the price of biofuel. This is uncertain and depends on the feedstock assumed. Although algae-based fuels are potentially promising, they are associated with high uncertainty and potentially high cost (Quinn & Davis, 2015). Cellulosic biomass is a relatively abundant feedstock which has low impact on food production and favourable cost and scalability characteristics. For example, using data from DoE (2011), Schäfer et al. (2016) estimate that US biomass production potential is comparable to Jet A demand, and that costs of $3.0 – 3.6 per gallon are feasible for commercial-scale production beginning in 2020, with a reduction of 80 – 85% in lifecycle CO_2 compared to fossil-derived Jet A.

Ricardo (2017) assume a biofuel price of £0.789 per kg in 2015. This is around twice the price of fossil Jet A. It is assumed to rise to £1.370 (1.18-1.67) per kg in 2030, and remain at

that value thereafter. This means that in all scenarios the biofuel price is significantly greater than that of fossil Jet A, typically greater than twice as large. For consistency with the Ricardo (2017) projections, we use these values, and assume a 70% reduction in CO2 compared to Jet A. We also assume that no carbon price is charged on biofuel.

We group baseline fossil fuel and biofuel prices together with other background variables affecting system development in investigating model sensitivity, and run one set of model runs for year-2015 conditions (lower demand, lower fuel price, lower baseline carbon price) and one for year-2030 conditions (higher demand, higher fuel price, higher baseline carbon price).

3.2.6 Technology characteristics of new aircraft models

The typical lifetime of an aircraft is around 30 years (Morrell & Dray, 2009). This means that, over the time period to 2050, and to a lesser extent 2030, substantial numbers of aircraft currently in global fleets will retire and be replaced by new aircraft. Other new aircraft will be purchased to serve growing demand, particularly in world regions where rapid growth is projected. Although the characteristics of the current and near-future generation of new aircraft are well-known (for example, the Airbus A320neo and Boeing 737MAX families, the Bombardier C-Series, the Airbus A350 and Boeing 777-X), the characteristics of the subsequent generation of aircraft are more uncertain.

There are several characteristics of new aircraft models which will have an impact on leakage and competitive distortion. First, the fuel use of new aircraft models will affect absolute CO_2 emissions and therefore the amount of change in aviation CO_2 that is achievable; in turn, this affects the cost impact on airlines of fuel prices, the baseline carbon price and any additional policy carbon price. If the fuel efficiency available from new technologies increases rapidly, then airlines in regions of the world with recent fast demand growth will be at an advantage, as they will end up with younger and more efficient fleets than airlines in regions of the world with slower growth. If the purchase price of new aircraft models (which may be a discount of 50% or more from manufacturer list price) changes over time, this in turn changes the attractiveness to airlines of selling older aircraft and buying new ones. Similarly, if aircraft maintenance costs continue their historical downward trend (e.g. ATA & Ellondee, 2018) then this helps to make purchasing a new aircraft more cost-effective. Finally, some proposed new low-CO_2 aircraft technologies may require changes in airline operations; for example, aircraft designs optimised for slower cruise speeds, or in the very long term electric aircraft with reduced range capabilities. Using these aircraft would require a complicated trade-off between reduced emissions-related cost, reduced demand, and increased costs in other areas.

We assume current fleets when modelling policy impact in the 2015 base year. For 2015, we use data from ATA & Ellondee (2018) on the average yearly trends in new aircraft model fuel use, purchase price and maintenance costs. These vary between different aircraft size classes, but typically maintenance costs are projected to decline by around 1% per year on average; fuel use on a comparable mission is projected to decline by 0.7-1.4% per year; and new aircraft prices are projected to remain broadly constant in real terms. Since using more pessimistic or optimistic assumptions for fuel use does not make a substantial difference to

leakage in 2030, we use central case assumptions in the model runs in this study; however, the model contains the option to use the other sets of projections if necessary.

3.2.7 The ability of airlines to swap fleet between UK and non-UK routes

As discussed in Section 2.6, one plausible response of airlines to increased carbon-related policy costs is to move younger aircraft onto UK routes and older aircraft onto non-UK routes. In theory, this is a straightforward action which has minimal costs for the airline. Airlines typically have multiple aircraft of the same size; the exact aircraft used to fly a given route is often only assigned 24 hours in advance and substitution at short notice is possible in the case that there is a problem with the original aircraft. Although slightly less straightforward, there is also the option for airlines in airline groups which hold fleet in common (for example, IAG) to swap aircraft between different airlines in the group.

Empirically, however, there is little evidence that this occurs. Roy (2007) examined airline response to environmental landing charges at Zurich and Stockholm airports and found that, although fleet developed over the time period after the landing charges were applied, fleet also developed similarly at comparable airports without environmental landing charges. Similarly, Nero & Black (2000) find that airlines have tended to simply pay environmental charges rather than adapt fleet in response to them. Some of these restrictions may be due to practical constraints in aircraft use, as discussed further in Section 4.4.1. One potential constraint is that fleet swapping in this way effectively acts as a cross-subsidisation from non-UK to UK routes, because older aircraft with higher fuel costs are moved to the non-UK routes. However, airlines may instead choose to direct investment away from UK routes if UK routes become less profitable.

In this study, we consider two cases: the case in which airlines are able to swap fleet between routes to the fullest extent possible, and the case in which airlines cannot (or are unwilling to) swap fleet at all. The modelling of fleet swapping behaviour and how the maximum potential amount of fleet swapping is calculated, are discussed further in Section 4.4.1.

3.2.8 Itinerary choice parameters

Passenger choices of itinerary between those available are generally modelled using discrete choice models of various types (e.g. Coldren et al. 2003; Warburg et al. 2006; Adler et al. 2005; Lurkin et al., 2017). These models are used by airlines to help manage their networks and test future development scenarios. Most usually, a multinomial or nested logit formulation is used. In the case of a multinomial logit model, each itinerary in the choice set is assigned a utility V_i which is a function of various characteristics of the itinerary, and then the share of passengers using this itinerary is modelled as:

$$Share_i = \frac{e^{V_i}}{\sum_j e^{V_j}} ,$$

where j is the full set of itineraries available for a given airport-pair or city-pair route. This choice may be affected by a wide range of factors, including journey time, ticket price, flight

frequency, the number of flight legs, the level of service offered, carrier loyalty, flight time of day, aircraft type, airport access, frequent flyer programmes, and the demographic characteristics of the passengers themselves. Although fare is an important factor, estimated models using real-world data suggest that it is far from the only factor in passengers' decisions. Data on these different factors may be derived from real-world ticket purchase data (revealed preference) or obtained using surveys with a range of hypothetical itinerary options (stated preference). In the case of revealed preference data, relatively little information may be available on many of these characteristics.

For this study, we use the itinerary choice model estimated as part of the global aviation systems model AIM (e.g. Dray et al. 2017). This model is estimated using Sabre (2017) data on global passenger flows on an itinerary basis, including fares, exact routing and the number of passengers using the itinerary. The utility of each airport-airport itinerary for passengers travelling between a given city-pair is modelled as a function of fare, journey time, itinerary-level flight frequency, number of flight legs and lagged passenger numbers for origin and destination airports, by global region-pair. This model is further described in Section 4.3.2, and parameter estimates for key region-pairs are given in Appendix 2. For this study, the most important parameter is the fare parameter in the utility function, as this affects how much a change in fare per itinerary will affect a passenger's choice compared to the impact of other factors. For intra-European flights, the fare parameter is -0.0051, compared to a journey time parameter of -0.0028 and a parameter for the number of legs of -3.43. This implies that a ten minute increase in journey time roughly trades off against an 5 dollar increase in fare, and that segments with more flight legs are only rarely fully competitive against those with fewer. Parameters for other world region-pairs are broadly similar.

As discussed in Section 4.3.9, using these parameters with baseline year-2015 estimated passenger flows reproduces well the number of UK air passengers and movements. Changing the parameters from their central values produces a less accurate representation of the current system. In this study, we therefore use the estimated values for the AIM itinerary choice model for all model runs.

4. Modelling carbon leakage and competitive disadvantage

In this section, we discuss how we model changes in UK and other air passenger numbers, flights and CO_2 due to the application of policy. The modelling strategy is broadly based on that used in the Aviation Integrated Model (AIM; e.g. Dray et al., 2017), a global open-source aviation systems model. AIM has been used to assess numerous aviation policies and emissions mitigation strategies, including carbon trading, the use of biofuels, adoption of future aircraft technologies and early aircraft retirement (e.g. Dray et al. 2017; Krammer et al. 2013; Dray et al. 2013). It is composed of an interacting system of models for different aspects of the aviation system, including passenger demand; itinerary choice; fares; scheduling; aircraft size choice; routing inefficiencies; local and global emissions; airline costs; technology choice; climate impact; the distribution of airport-level emissions; and airport-level noise. These model components have been validated by peer review in the academic literature and have been shown to closely reproduce global aviation system behaviour between 2005-2015 in a backcasting validation exercise (Dray et al. 2017), as well as matching closely to alternative projections of future global aviation system growth (e.g. Airbus, 2018; Boeing, 2018). Because of the constraints of the current study requirements, including the need to produce a model in Excel as a project deliverable, to concentrate on the UK and regions affected by a change in UK demand only and to maintain consistency with DfT (2017) projections, we use model components from AIM and adapt them to an Excel format rather than directly using the model itself.

Global aviation is a complex, interacting system with multiple stakeholders who may react to policies in different and interacting ways. A policy applied in one region may have wide-reaching impacts outside that region. Therefore any modelling of aviation policy must consider the parts of the wider system that may be affected. This is particularly true in the case of the UK because London Heathrow is one of the world's busiest airports, with an unusually high proportion of long-distance transfer passengers (e.g. ACI, 2018; CAA, 2018).

As discussed in Section 1, a UK-specific change in airline or passenger costs may affect the global aviation system in several ways. In the modelling for this project, we consider the following mechanisms:

- Airlines may pass costs on to passengers or freight shippers, who may in response choose not to fly; this includes passengers on multi-segment itineraries of which only one segment is affected. For example, a reduction in demand from London to Sydney via Dubai will include a reduction in demand for the London-Dubai segment but also for the Dubai-Sydney segment, and a similar reduction for both segments on the return journey.
- Airlines may pass costs onto passengers on a given itinerary, leading to passengers choosing an alternative itinerary which is less-affected. For example, a passenger travelling from New York to Istanbul via Heathrow may choose to travel via Paris Charles de Gaulle instead.
- Airlines may move their existing fleet between UK and non-UK routes in an attempt to minimise their overall policy-related costs.

- Airlines may sell older aircraft and purchase new ones in an attempt to minimise their overall policy-related costs.
- Airlines may tanker fuel to the extent that it is possible to do so to avoid UK fuel uptake-related increases in costs.
- Airlines may choose not to pass costs onto passengers and instead accept a reduced profit margin.

Modelling these impacts requires modelling passenger demand and itinerary choice on an individual itinerary basis; the resulting airport-airport segment demand by airline type, and which aircraft are used to fulfil it; overall fleet structure by airline type; the costs and emissions associated with different aircraft types; and the cost and emissions associated with airline strategies to reduce policy costs. As discussed above, the modelling strategies used in this project are based on models already developed for the global open-source aviation systems model AIM (e.g. Dray et al, 2018) which are adapted for this project requirements, including the need to produce a spreadsheet form of the model. The model scope and components are discussed individually below.

4.1 Model scope

To capture the full impact of the leakage mechanisms discussed above, all passenger itineraries and flight segments that could be impacted by UK aviation policy need to be considered. This includes flight segments which do not go to or from the UK at all but which could see a change in demand or in aircraft type used. It also includes passengers who could choose to travel via the UK but currently do not. Based on an analysis of passenger data from Sabre (2017), we choose to model passengers on all city-city routes where at least one percent of traffic travels via a UK airport. In 2015, this covers approximately 270 million passenger journeys. Figure 6 shows all city-pair routes of over 100,000 passengers per year which meet this definition. As well as routes to and from UK cities, many long-haul flows between a wide range of global cities are also captured.

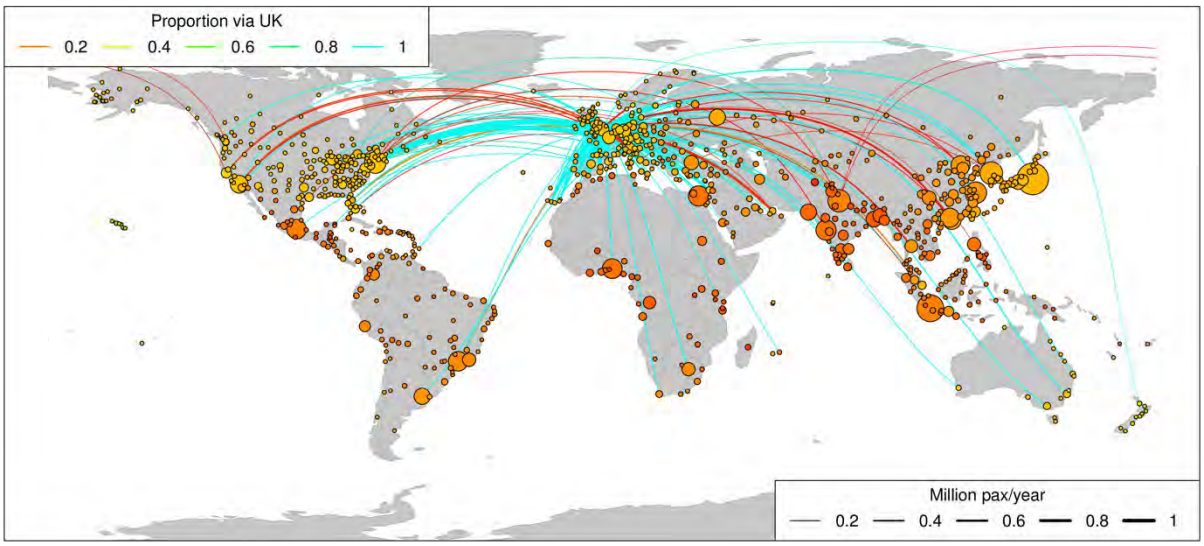

Figure 6. City-pair routes with at least 100,000 passengers per year on which at least 1% of passengers travel to, from or via the UK. Data is from Sabre (2017).

Because of the potentially large impact on leakage of passengers on international-international transfer routes switching hubs, it is important to be able to fully model transfer passengers. Typically, transfer passengers using major global hubs are making long-distance journeys for which there are few or no direct flight options. Transfer demand through London Heathrow Airport in particular is the aggregate of many small passenger flows between a diverse range of global origins and destinations. Figure 7 shows the distribution of passengers by itinerary demand for Heathrow. If itineraries with fewer than 10,000 yearly passengers – roughly the equivalent of one single-aisle aircraft flight a week – are neglected, the majority of demand travelling to and from Heathrow is captured. However, almost none of the transfer passenger demand is captured. To fully cover transfer passenger demand, itineraries with as few as 50 passengers per year may need to be included.

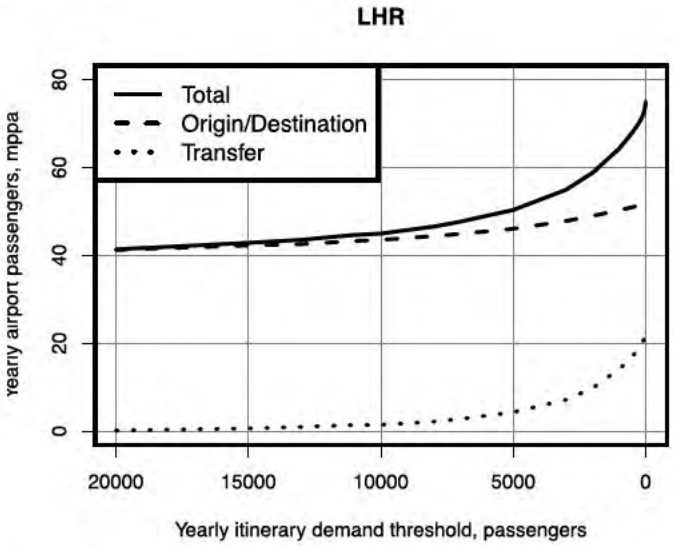

Figure 7.Passengers travelling through Heathrow Airport by yearly itinerary demand threshold. Data: Sabre (2017).

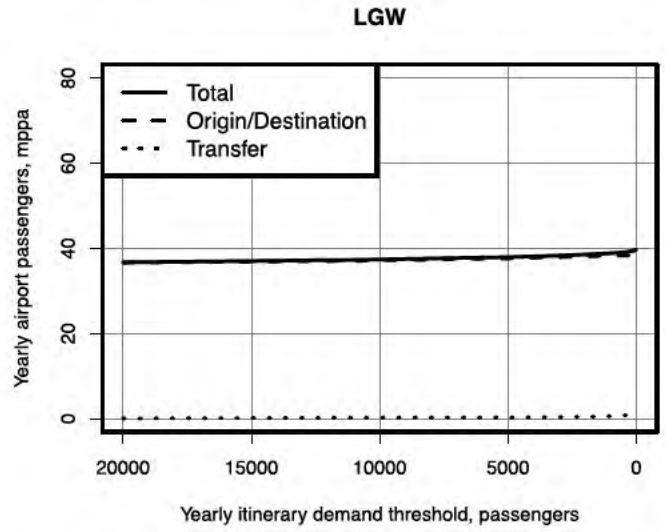

Figure 8. Passengers travelling through London Gatwick airport by yearly itinerary demand threshold. Data: Sabre (2017).

This is not the case with London Gatwick airport, as shown in Figure 8. Heathrow is a global airport with unusually high connectivity to long-haul destinations. As a result, finding a connecting route through Heathrow for passengers travelling between low-demand city-pairs may be more straightforward than constructing a connecting route through another airport.

In modelling terms, this suggests that any model set up to examine leakage needs to consider all city-city OD flows which may travel through an airport, even very minor ones. However, in practice this can add an unacceptably large computational burden. As shown in Figure 9, the number of itineraries that need to be considered rises rapidly as the demand threshold decreases. Therefore a hybrid approach is taken in this project. Itineraries with more than 1,000 passengers per year are modelled directly. Passengers on itineraries with fewer than 1,000 passengers per year are modelled by adding their demand totals to geographically similar itineraries above this demand threshold (for example, demand travelling from minor Alaskan destinations to London is added to aggregate demand travelling through Anchorage to London). Using this approximation, around 80,000 itineraries need to be modelled to capture demand to, from and through UK airports, including non-UK itineraries which can act as a substitute for UK itineraries. This allows total transfer passenger demand to be examined without greatly increasing model run time. These 80,000 itineraries cover demand between around 20,000 individual city-pairs, and make use of around 20,000 different flight segments.

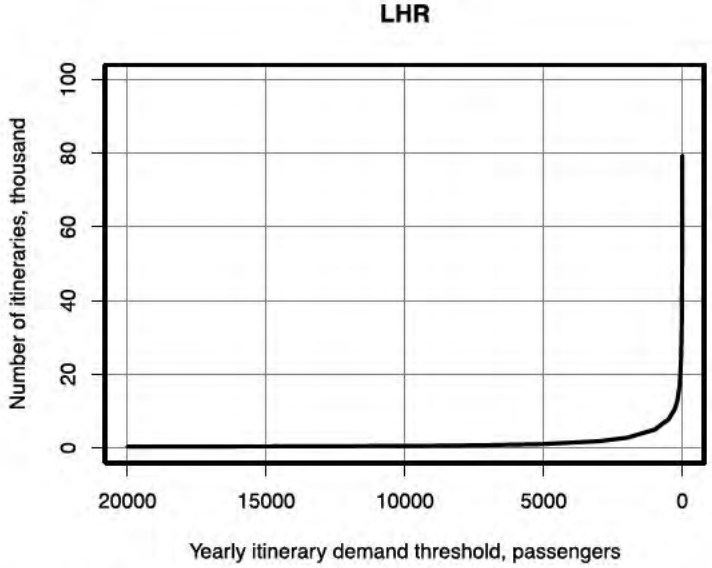

Figure 9. Number of itineraries by yearly itinerary demand threshold, London Heathrow Airport. Data: Sabre (2017).

4.2 Model Structure

The broad structure of the model developed for this project is shown in Figure 10. Initially, values for policy characteristics and key uncertain variables are specified. Policy characteristics include carbon prices, the percentage of biofuel in UK fuel and changes in landing charges by UK airport and aircraft size. The uncertain variables considered are discussed in Section 3. They include cost pass-through on a system-wide basis and for

congested airports, price elasticities of demand, itinerary choice parameters, and variables related to airline response (discussed below in Section 4.4).

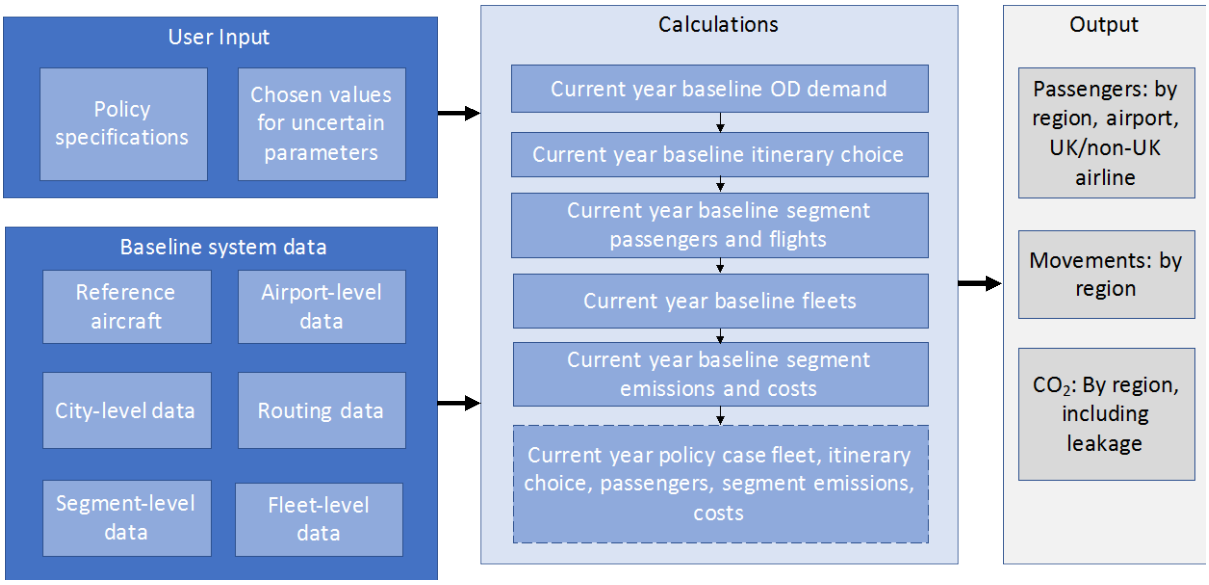

Figure 10. Model structure.

Subsequently, data describing the baseline aviation system in 2015 are specified. These data are discussed below in Section 4.3 on reproducing the baseline system, and include the characteristics of existing aircraft, airports, cities, fleets by airline type, flight segments and itineraries offered. Using these data, the baseline city-pair demand, itinerary choice, fleet structure and emissions with no policies applied are estimated. The segment-level costs that airlines will experience from applying the user-specified policy option are then calculated. It is assumed that airlines will respond first. Initially, they have the option of switching fleet between routes; subsequently they can also choose to purchase new fleet and sell older aircraft, and to tanker fuel. Any remaining policy costs are assumed to be passed on to ticket prices to the extent specified by the user. Passengers then respond to the resulting changes in itinerary-level ticket prices. Finally, the segment-level emissions and changes in costs following airline and passenger response is calculated, and compared to the baseline to generate metrics for carbon leakage and competitive disadvantage for UK airlines and airports. This represents a first-order calculation of policy impacts; in reality, some of the calculated impacts will in turn generate second-order impacts on other variables, requiring an iterative or optimisation-type solution as is carried out in the full AIM model. For example, reductions in passenger demand will lead to reductions in fleet needed, which in turn will lead to a slightly different fleet age structure. However, tests with the full AIM model suggest that these second-order impacts are typically small.

4.3 Reproducing the baseline system

The first modelling step is to reproduce the baseline (i.e. before imposing any of the policies modelled here) aviation system in the year modelled. This includes passenger flows by itinerary and by flight segment, aircraft used, fleets, costs and emissions. The individual stages of this process are discussed in the sections below.

4.3.1 City-pair passenger flows

As the model examines trends in demand including airport and itinerary choice, the initial specification of demand is on a regional rather than an individual airport basis. We use the city-based specification utilised in the aviation systems model AIM (e.g. Dray et al. 2018). A city-pair flow is specified as the number of yearly passengers which travel between two cities across all possible air routes. Year-2015 demand between cities is based on the output of a global city-pair level demand model within AIM estimated from Sabre (2017) data on passenger flows. For consistency with DfT modelling, the baseline trends in city-pair demand by region-pair are externally specified to agree with DfT scenarios (e.g. DfT, 2017). Therefore the baseline city-pair flow between a pair of cities in a given year is given by the year-2015 value multiplied by a demand growth factor appropriate for the origin and destination city world regions. Because the DfT model does not project demand for city-pair routes which are not to and from the UK, but these routes may still be important in estimating leakage, we also add growth rates for non-UK region-pairs as well. Central values are sourced from Airbus (2018), with upper and lower values of 1%/year higher and lower demand growth. These projections are also broadly consistent with past AIM projections using the IPCC SSP range of socioeconomic scenarios (Dray et al. 2017). Table 3 shows projected growth rates in passenger numbers by key region-pairs and scenario. We use the DfT (2017) region specification: Western Europe (WE), OECD, Newly Industrialised Countries (NIC) and Least Developed Countries (LDC). A more detailed specification of which country is assigned to which region is given in DfT (2017). The values in brackets show the range between the high and low scenario in each case; note that for the DfT values the high and low demand labels are applied on an aggregate basis, so trends may differ on an individual region-pair basis.

Table 3. Assumed growth rate in passenger numbers per year by world region-pair.

Origin Region	**Destination Region**	**Growth rate 2015-2020, %/year**	**Growth rate 2020-2030, %/year**	**Growth rate 2030-2040, %/year**	**Growth rate 2040-2050, %/year**
UK	LDC	1.3 (0.1 – 2.7)	2.8 (2.9 – 2.9)	1.1 (1.2 – 1.5)	1.2 (1.2 – 2.0)
UK	NIC	2.4 (1.2 – 3.9)	2.9 (3.1 – 3.1)	1.2 (1.3 – 1.8)	1.4 (1.0 – 1.8)
UK	OECD	2.4 (1.5 – 3.2)	2.6 (2.3 – 2.6)	0.6 (0.4 – 0.7)	0.1 (0.0 – 0.7)
UK	WE	1.1 (0.2 – 1.8)	1.6 (2.1 – 1.9)	1.3 (1.5 – 1.4)	1.7 (1.5 – 1.2)
UK	UK	1.0 (-0.2- 1.8)	2.0 (1.2 – 1.8)	1.4 (1.0 – 1.4)	1.2 (1.6 – 1.7)
WE	LDC	1.4 (0.4 – 2.4)	1.4 (0.4 – 2.4)	3.5 (2.5 – 4.5)	3.5 (2.5 – 4.5)
WE	NIC	3.0 (2.0 – 4.0)	3.0 (2.0 – 4.0)	4.1 (3.1 – 5.1)	4.1 (3.1 – 5.1)
WE	OECD	2.8 (1.8 – 3.8)	2.8 (1.8 – 3.8)	2.8 (1.8 – 3.8)	2.8 (1.8 – 3.8)
WE	WE	2.9 (1.9 – 3.9)	2.9 (1.9 – 3.9)	2.3 (1.3 – 3.3)	2.3 (1.3 – 3.3)
OECD	LDC	2.4 (1.4 – 3.4)	2.4 (1.4 – 3.4)	3.5 (2.5 – 4.5)	3.5 (2.5 – 4.5)
OECD	NIC	3.3 (2.3 – 4.3)	3.3 (2.3 – 4.3)	6.3 (5.3 – 7.3)	6.3 (5.3 – 7.3)
OECD	OECD	1.9 (0.9 – 2.9)	1.9 (0.9 – 2.9)	2.2 (1.2 – 3.2)	2.2 (1.2 – 3.2)
NIC	LDC	6.4 (5.4 – 7.4)	6.4 (5.4 – 7.4)	4.6 (3.6 – 5.6)	4.6 (3.6 – 5.6)
NIC	NIC	7.4 (6.4 – 8.4)	7.4 (6.4 – 8.4)	5.6 (4.6 – 6.6)	5.6 (4.6 – 6.6)
LDC	LDC	6.5 (5.5 – 7.5)	6.5 (5.5 – 7.5)	5.9 (4.9 – 6.9)	5.9 (4.9 – 6.9)

4.3.2 Segment-level passenger flows

To project segment-level passenger flows, a model for itinerary and airport choice is needed. We use the itinerary choice model from AIM (e.g. Dray et al., 2017), which is estimated using data on passenger demand and routing from Sabre (2017). A passenger's choice of itinerary between those available will depend on multiple characteristics of each itinerary. The number of passengers between cities *o* and *d* on itinerary *k* in year *y* is modelled as

$$N_{odky} = \frac{N_{ody} e^{V_{odky}}}{\sum_j e^{V_{odjy}}} ,$$

where the deterministic part of the utility, V_{odky}, for an itinerary *k* between cities *o* and *d,* travelling between airport *m* in *o* and and airport *n* in *d*, is:

$$V_{odky} = \gamma_0 + \gamma_1 f_{odky} + \gamma_2 t_{odky} + \gamma_3 \ln freq_{odky} + \gamma_4 Nlegs_{odky} + \gamma_5 P_{m,y-1} + \gamma_6 P_{n,y-q} ,$$

and f_{odky} is the itinerary fare, t_{odky} is the total itinerary travel time, $freq_{odky}$ is the itinerary frequency, $Nlegs_{odky}$ is the number of flight legs in the itinerary, $P_{m,y-1}$ is the total number of non-transfer scheduled passengers using airport *m* in the previous year, and the parameters γ are estimated. Of these, the fare, time and number of legs parameters are the most important, as they govern how passengers may choose routes with fewer, shorter or no UK segments in the case of an increase in UK-based fares. The model parameters for major route groups used are given in Appendix 2.

Table 4. Model itineraries for the example case of New York to Istanbul in 2015.

Origin Airport	Destination Airport	Hub Airport	Journey time, min	One-way fare, year 2015 USD	Minimum leg frequency, flights/year	Modelled passengers, 2015
JFK	IST	-	590	740	930	59000
JFK	IST	CDG	710	520	2480	8500
JFK	*IST*	*LHR*	*710*	*780*	*2800*	*8600*
JFK	IST	FCO	720	420	1100	6500
JFK	IST	SVO	840	360	810	4600
JFK	IST	FRA	700	760	1400	7100
JFK	IST	AMS	710	540	1100	6600
JFK	IST	ZRH	700	520	960	6400
JFK	IST	KBP	770	340	110	2800

To apply this model to the demand totals used here, some additional data is needed. The itineraries available for travel between each city-pair are derived from Sabre (2017) data, including up to the top nine itineraries for each city-pair but excluding itineraries which

served less than 1% of city-pair demand in 2015. The choice set for a give city pair is specified in terms of airport-airport itineraries. For example, one itinerary between New York and London is the direct flight from JFK airport to Heathrow. The baseline fare for each of these itineraries is derived from a fare model estimated from Sabre (2017) data by Wang et al. (2018). A set of itineraries for an example route (New York to Istanbul) is shown in Table 4. Routes with UK carrier presence are shown in italics. IATA three letter airport codes are used to identify airports (for example: New York John F. Kennedy International (JFK); Istanbul Atatürk (IST); London Heathrow (LHR); Paris Charles de Gaulle (CDG)). A full list of these codes can be found in IATA (2018).

How fares will develop over time is uncertain. Although for policy costs we use a simple pass-through model, this is less appropriate for long-term fare developments where a wide range of factors that are not directly modelled here (for example: airline business models; ancillary revenue; changes in labour costs) may impact on future ticket prices. Although baseline demand growth is taken directly from DfT projections and so is not dependent on future fares assumed, the absolute value of baseline fares will affect the relative size of any policy-induced change in fare, and hence the relative size of the demand and itinerary choice responses. AIM model runs using the Wang et al. (2018) fare model over long-term changes in airline costs with a range of different carbon price options suggest that fares per RPK are likely to remain broadly at the same level over time; although some cost categories, such as fuel and carbon costs, are projected to increase in real terms, other categories, such as maintenance, are projected to decrease, and others are projected to remain at a similar level. We include the overall trend in absolute baseline fare levels over time as a variable which can be set by the user. Although the default value is for fares to remain constant, a small increasing value may be appropriate for scenarios in which the background carbon price is particularly high. Journey time is derived from airline schedule data on individual segment travel time (Sabre, 2017). A change time of one hour is assumed for multi-segment journeys, based on an analysis of feasible minimum connection times in Sabre (2017) schedule data. Journey time is assumed to remain constant over time. Similarly, frequency is derived from schedule data on yearly flight frequencies per segment. For multi-segment itineraries, the overall frequency is assumed equal to the smallest yearly frequency of the segments that make up the itinerary. Itinerary frequency is assumed to scale over time by the same factor as city-pair level demand for itineraries serving each city pair. Similarly, future lagged airport-level scheduled demand is scaled using the model city-level OD demand growth projections for the appropriate city.

Using this model, the share of each itinerary for each city-pair is modelled. Summing over each flight segment for all itinerary-level demand using that segment gives segment-level passenger demand. Because the model scope only includes city-pair demand where a UK itinerary is a feasible route, segment-level demand totals do not necessarily include all demand from all sources on a segment. In this case, only the flights and emissions on that segment that relate to UK-substituting itineraries are modelled.

Additionally, using data aggregated from Sabre (2017) passenger flows by airline, we estimate what proportion of each itinerary is marketed by UK and non-UK airlines. The distinction between marketing and operating airlines can be complex and depends on the details of airline alliances, subsidiaries and code-share agreements. In this study, we count

demand as UK airline demand if the tickets are marketed by a UK airline. We also assume that fleet requirements calculated on a marketing airline basis will in aggregate be similar to those required on an operating airline basis.

4.3.3 Aircraft flows and fleet requirement

Aircraft are classified by size according to the nine categories used by Sustainable Aviation (e.g. Sustainable Aviation, 2015). This classification is used because the models from AIM that are used here are estimated using it. Broadly, the SA size category 1 (small regional jet) corresponds to size class 1 in DfT (2017), SA categories 2-4 (large regional jet – medium single aisle) correspond to size class 2, SA categories 5-6 (large single aisle – small twin aisle) correspond to size class 3, SA category 7 (medium twin aisle) corresponds to size class 4, SA category 8 (large twin aisle) corresponds to size class 5, and SA category 9 (very large aircraft) corresponds to size class 6. Table 5 shows the size classes and the reference aircraft that aircraft characteristics for each are derived from. These reference aircraft are chosen based on an analysis of the current and likely near future most-used aircraft in 2015 on an aircraft-kilometre basis, using flight schedule data from Sabre (2017).

Table 5. Aircraft size categories used in modelling.

Size Category	Approx. seat range	Reference aircraft	Reference engine
Small regional jet (Small RJ)	30-69	CRJ 700	GE CF34 8C5B1
Large regional jet (Large RJ)	70-109	Embraer 190	GE CF34 10E6
Small narrowbody (Small SA)	110-129	Airbus A319	V.2522
Medium narrowbody (Medium SA)	130-159	Airbus A320	CFM56-5B4
Large narrowbody (Large SA)	160-199	Boeing 737-800	CFM56-7B27
Small twin aisle (Small TA)	200-249	Boeing 787-800	Genx-1B67
Medium twin aisle (Medium TA)	259-299	Airbus A330-300	Trent 772B
Large twin aisle (Large TA)	300-399	Boeing 777-300ER	PW4090
Very large aircraft (VLA)	400+	Airbus A380-800	EA GP7270

Year-2015 scheduled flight frequencies per segment by size class are derived from Sabre (2017) schedule data, and passenger typical load factors per segment in 2015 are derived from Sabre (2017) passenger flow data in combination with scheduled seat capacities. We assume for simplicity that the ratio between the number of flights in different size categories for each segment will remain constant over time. The choice of aircraft size for a particular segment is driven by several factors, most notably the segment demand, the number of airlines competing on the segment, distance, runway length and available fleet. For example, shorter segments are usually flown with smaller aircraft. As discussed by Givoni & Rietvald (2009), size choice is largely unrelated to the characteristics of the airports used (provided that aircraft of that size are able to land and take off there). Keeping the ratio of aircraft sizes used constant per segment effectively assumes that any changes in these variables over time are small or have net small impact.

Given the ratio between aircraft different size class frequencies on a route, a typical load factor, and estimated passenger demand, the number of flights by each size class in a year can be estimated. Additionally, data on typical aircraft utilisation from FlightGlobal (2017) is used to estimate how many aircraft would be needed to fly that schedule in a year. Similarly, UK airline-marketed demand is summed across segments to estimate how many of these flights can be allocated to UK airlines.

Typically, smaller aircraft carry out more flights per day than larger ones, but are in the air for a smaller proportion of the day. This difference affects how they are relatively affected by different policies. For example, a small regional jet which makes eight landings per day on a short-haul route will be affected much more by a blanket change in landing cost than a large twin aisle aircraft which makes one or two landings a day on a long-haul route, but the twin aisle aircraft will be much more affected by policies where the increase in costs is proportional to fuel used. As noted previously, the demand modelled on a segment is only demand on routes which are in or can substitute for UK-related itineraries. Therefore the frequency totals and fleet requirement estimated for each route only cover this demand.

4.3.4 Fleet size and age structure

The fleet required for different airline types (UK/non-UK) is summed across all segments to estimate how many aircraft of each size class are needed to fulfil scheduled passenger demand on the modelled routes in the current year. To calculate the fleet age structure, we use data on the initial (year-2015) fleet age structure for UK and non-UK airlines, as shown in Figure 4. We assume that aircraft of all ages are evenly distributed over modelled and non-modelled demand in the case of non-UK airlines; we assume UK airline demand is fully modelled. For 2015, we use schedule and fleet data to estimate the number of aircraft that are required to fulfil demand on modelled routes, and how many aircraft are required to fulfil demand on routes that are not directly modelled in this study.

In years after the base year, some proportion of these aircraft will have been retired. Typically, aircraft retire from the global fleet at around 30 years old, showing a remarkably consistent s-curve behaviour over time (Figure 11). As discussed in Morrell & Dray (2009), early scrappage is unusual and was seen in only one circumstance in the data examined: during a recession, with weak demand growth, high fuel prices and with significantly more fuel-efficient new aircraft available from manufacturers. The specific 30-year timeframe is likely related to the necessity of carrying out costly aircraft major maintenance checks (D-checks) at around this time.

For model years after 2015, we retire aircraft with age according to the retirement curves estimated in Morrell & Dray (2009). In this framework, the number of active aircraft $N_{Active,\ t}$ remaining at age t, compared to the number of aircraft that have retired from the global fleet $N_{Retired,\ t}$, is given by:

$$\frac{N_{Active,t}}{N_{Active,t} + N_{Retired,t}} = \frac{1}{1 + e^{-\varphi_1 - \varphi_2 t}},$$

where the parameters φ_1 and φ_2 are estimated by aircraft size from historical fleet data (e.g. FlightGlobal, 2017).

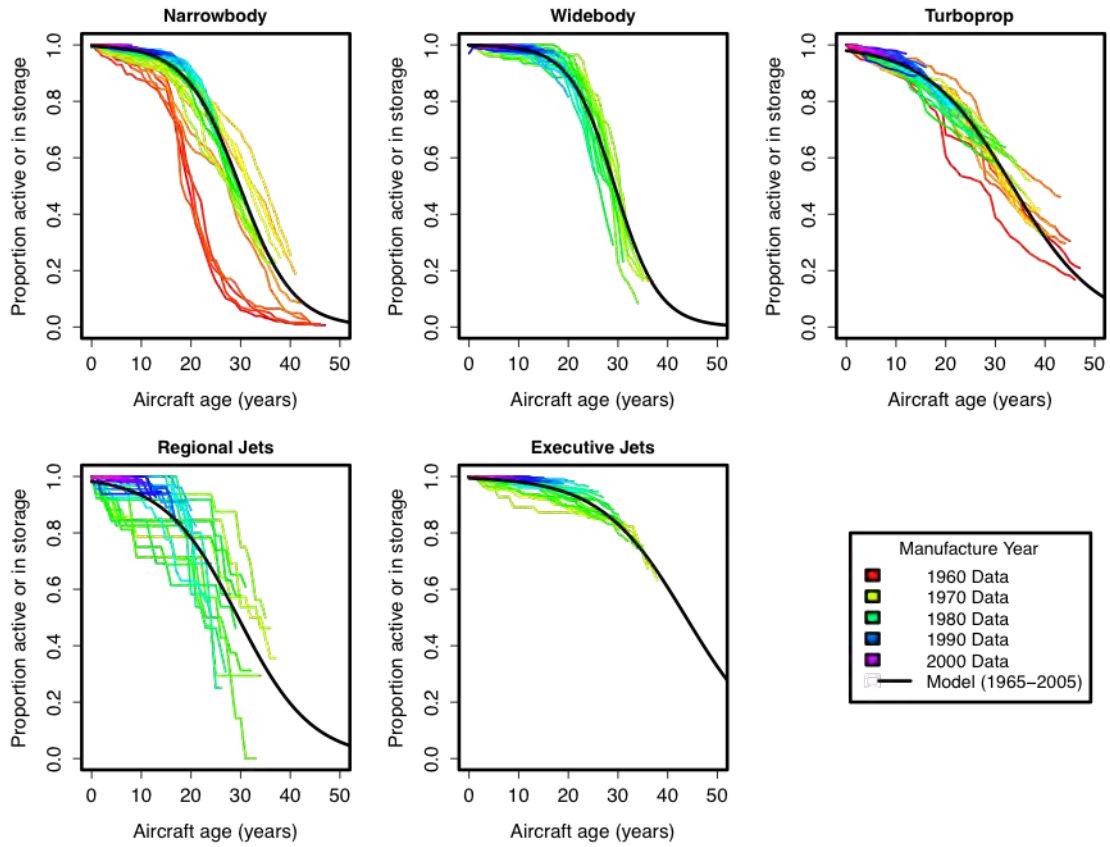

Figure 11. Aircraft retirement curves, from Morrell & Dray (2009).

After these retirement curves have been applied, the remaining aircraft after retirement are then compared to the demand for aircraft from the demand calculations. There are several components to the demand for aircraft: demand from UK airlines, demand from non-UK airlines for aircraft operating on modelled routes, and demand from non-UK airlines for aircraft operating on non-modelled routes. In the latter case, we assume a rate in increase of overall fleet size that is consistent with the Airbus (2017) Global Market Forecast, for consistency with the demand growth rates used in Section 4.3.1 to fill in route groups not modelled by DfT (2017). Additionally we distinguish between demand for aircraft to operate on UK and non-UK routes, and also between non-UK airlines which are in groups with UK airlines versus those which are not, as discussed in Section 4.4.1.

For each fleet component, we assume any shortfall between fleet remaining from 2015 and fleet needed to serve demand is met by the purchase of new aircraft. In reality, the age distribution of these new aircraft will reflect historical demand trends between 2015 and the modelled year. However, as the model assesses a single future year only, we assume an even distribution of aircraft purchases across the years between 2015 and the model year, consistent with relatively smooth growth in demand and constant production line capacity.

4.3.5 Fuel use and emissions

To model fuel use and emissions per flight, we use a model fit to the output of the aircraft performance model PIANO-X (Lissys, 2017) with distance and payload. This is also the approach used in AIM. Fuel use per flight phase for climb, cruise and descent for each aircraft size class is modelled as:

$$F_{phase} = \sigma_1 + \sigma_2 D + \sigma_3 P + \sigma_4 D^2 + \sigma_5 PD + \sigma_6 D^2 P,$$

where D is the flight distance, P is the payload carried and the parameters σ are estimated for each aircraft size class and flight phase using grids of PIANO-X model runs. We assume 95 kg for a passenger with luggage and an average of 4,500 kg hold freight (ICAO, 2009; ICAO, 2014); the distribution of hold freight is further discussed in the section on freight modelling, below. For landing and takeoff, emissions totals by aircraft type are used. For taxi and holding, fuel use rates per second, again derived from PIANO-X, are used.

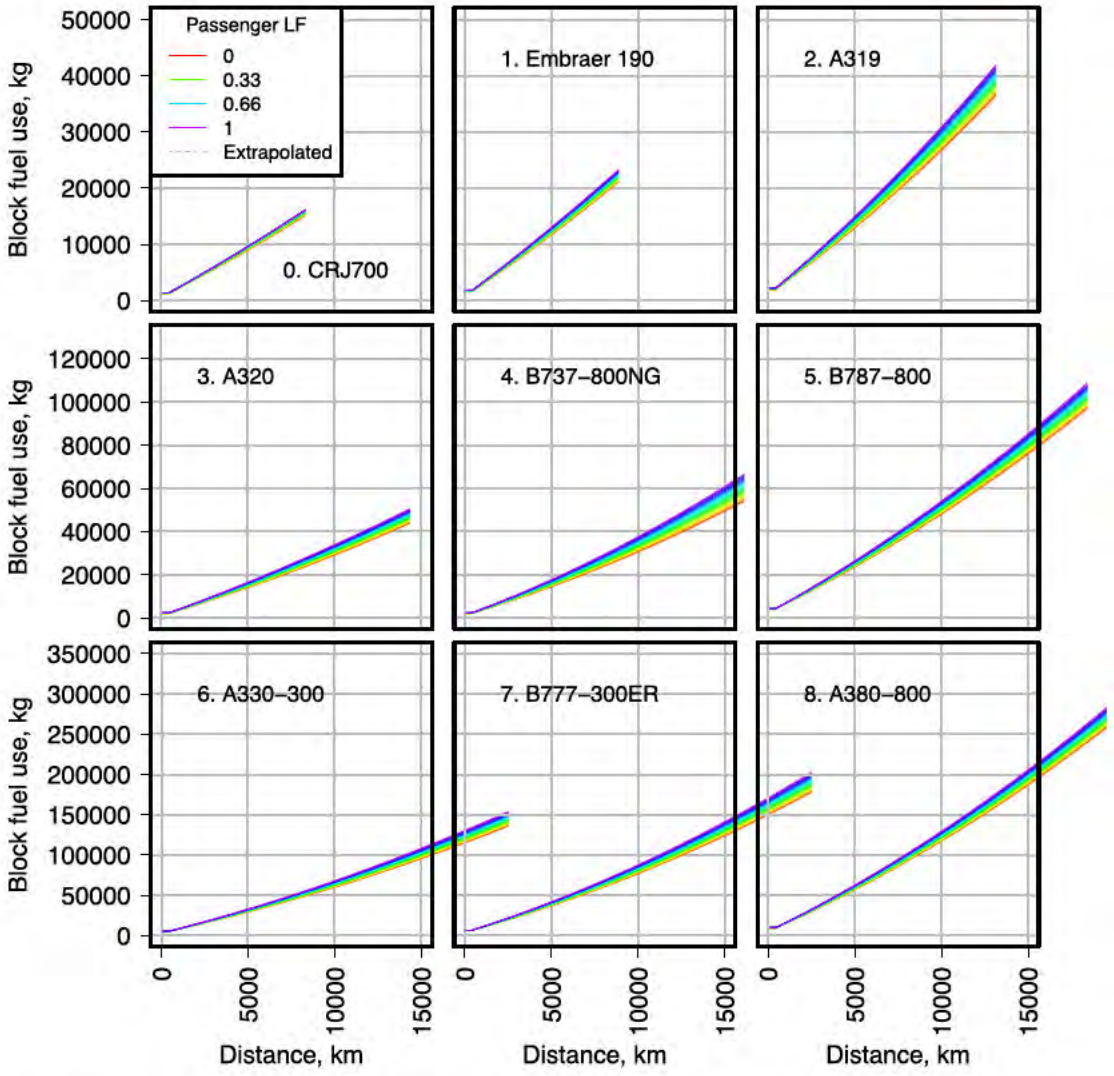

Figure 12. Modelled fuel use by distance and payload.

The flown distance between a given pair of airports is usually greater than the great circle distance due to practical inefficiencies in routing (for example, avoiding military airspace; maintaining separation between aircraft; routing around weather). We use track extension

distances from Reynolds (2009). For some routes these result in lower amounts of track extension than assumed in DfT (2017) and in this case we use the DfT (2017) assumptions for consistency in fuel use. The total block fuel burn is calculated as the sum of fuel burn across all flight phases. An average of 15 minutes taxi (in + out) and 10 minutes holding is assumed (e.g. Eurocontrol, 2018). This formulation has been tested against an interpolation model directly using PIANO-X output and has been found to have less than 1% difference in block fuel burn across the range of feasible input values. Typical fuel use values by payload and ground track distance are given in Figure 12 (LF = passenger load factor).

This model gives fuel use as appropriate for the nine reference aircraft under ideal conditions. However, typical fleet fuel use will differ from this value. First, older aircraft tend to have higher fuel use and emissions. Based on the analyses of historical fuel burn trends in DfT (2017) and Dray et al. (2018) we model long-term historical decreases per year in the fuel use of new aircraft models on comparable routes as in Table 6 ('Historical new aircraft model fuel use'). These trends define the extent to which older aircraft currently in the fleet may have higher fuel use because technologies to reduce fuel use were less advanced when they were built. Technologies to reduce fuel use are expected to improve in future. For future aircraft models, however, this trend will differ depending on what new technologies are assumed to become available. Using data from ATA & Ellondee (2018), we model these changes by aircraft size as shown in Table 6 ('Future new aircraft model fuel use'). Values in brackets represent upper and lower ranges for each size class. Although these trends are expressed in percent per year, in reality the fuel burn of new aircraft models will behave like a step function as new generations of aircraft become available for purchase. However, over the long term the overall impact will be broadly similar.

Table 6. Assumptions about historical and future aircraft technology and cost characteristics, by size class.

Aircraft size class	**Future new aircraft model fuel use, %/year decrease**	**New aircraft model maintenance costs, %/year decrease**	**Historical new aircraft model fuel use, %/year decrease**
Small RJ	1.2 (0.8 – 1.4)	0.7 (0.0 – 1.1)	1.1
Large RJ	1.2 (0.8 – 1.4)	0.7 (0.0 – 1.1)	1.1
Small SA	1.2 (0.8 – 1.4)	0.7 (0.0 – 1.1)	1.2
Medium SA	1.2 (0.8 – 1.4)	0.7 (0.0 – 1.1)	1.2
Large SA	1.0 (0.7 – 1.2)	0.8 (0.0 – 1.2)	1.2
Small TA	1.0 (0.7 – 1.2)	0.8 (0.0 – 1.2)	1.2
Medium TA	1.2 (0.7 – 1.4)	0.9 (0.0 – 1.4)	1.2
Large TA	1.1 (0.7 – 1.3)	1.0 (0.0 – 1.5)	1.2
VLA	1.1 (0.7 – 1.3)	1.0 (0.0 – 1.5)	1.2

Second, aircraft fuel burn deteriorates with age. Some of this deterioration is correctable with maintenance and some is not; therefore, the exact amount of deterioration will go up and down over an aircraft's lifetime. We assume an average deterioration with age of 0.2% per year (Morrell & Dray, 2009). This adds up to around a 6% increase in fuel burn on a comparable mission for a 30 year old aircraft compared to the same aircraft when it was new.

CO_2 emissions are derived from fuel burn by assuming a factor of 3.15 kg CO_2 emitted per kg fossil-derived Jet A burnt. For biofuel, this factor is multiplied by 0.3 to reflect a reduction in fuel lifecycle emissions, for consistency with DfT (2017).

4.3.6 Baseline costs

Airline costs are modelled using the cost model developed in Al Zayat et al. (2017), which is also in use in AIM. Airline direct operating costs are divided into fuel, carbon, maintenance, crew, finance (interest, depreciation and insurance), landing and enroute costs. Because baseline demand and fare developments are modelled with user-set trends in this study, we do not need to model the development of costs which will do not change in response to policy. We assume crew costs will remain the same between the baseline and policy cases. Similarly, although small changes in baseline landing and enroute costs may occur in response to policy if newer aircraft which have lower maximum takeoff weight (MTOW) are substituted in, we assume that these costs will also broadly remain constant. Fuel and carbon costs are modelled using fuel use totals and external projections for fossil Jet A, biofuel and baseline carbon prices (DfT, 2017). These are given Table 7. Values in brackets indicate the range between the high and low scenarios in each case. In Figure 13 we show how the year-2015 and year-2030 central case fuel and biofuel prices combine under different biofuel percentage and carbon price scenarios to give the effective price of a kilogram of fuel, assuming that no carbon price is charged on biofuel use and that changes in the amount of biofuel used do not have an impact on biofuel price. For example, under year-2015 conditions a £200/tCO_2 carbon price would more than double the price of fuel.

Table 7. Assumptions about future fuel, biofuel and carbon prices.

Year	**Fossil Jet A price, UK pounds per kg**	**Aviation biofuel price, UK pounds per kg**	**Baseline carbon price, UK pounds per tonne CO_2**
2015	0.41	0.79 (0.73 – 0.89)	5.2
2020	0.40 (0.23-0.56)	0.90 (0.73 – 1.10)	4.6 (0.0 – 9.1)
2030	0.60 (0.41-0.90)	1.4 (1.2 – 1.7)	78 (39 – 120)
2040	0.60 (0.41-0.90)	1.4 (1.2 – 1.7)	150 (75-220)
2050	0.60 (0.41-0.90)	1.4 (1.2 – 1.7)	220 (110 – 330)

It should be noted, however, that this is similar to the range of recent variation in jet fuel prices due to fluctuation in oil prices. Figure 14 shows the variation of oil and jet A prices in real terms since 1978, in comparison with year-2015 values, using data from EIA (2018). Jet fuel prices have varied between about half and about two times the year-2015 value over that time period. Only in the case that a future increase in fuel price is combined with a high carbon price would projected effective fuel price be significantly greater than that experienced in the recent past. However, in the policy cases looked at here, effective fuel prices are different for the UK and for non-UK regions. This will produce different behaviour than the case of a globally high fuel price, because there are more options available to reduce fuel costs.

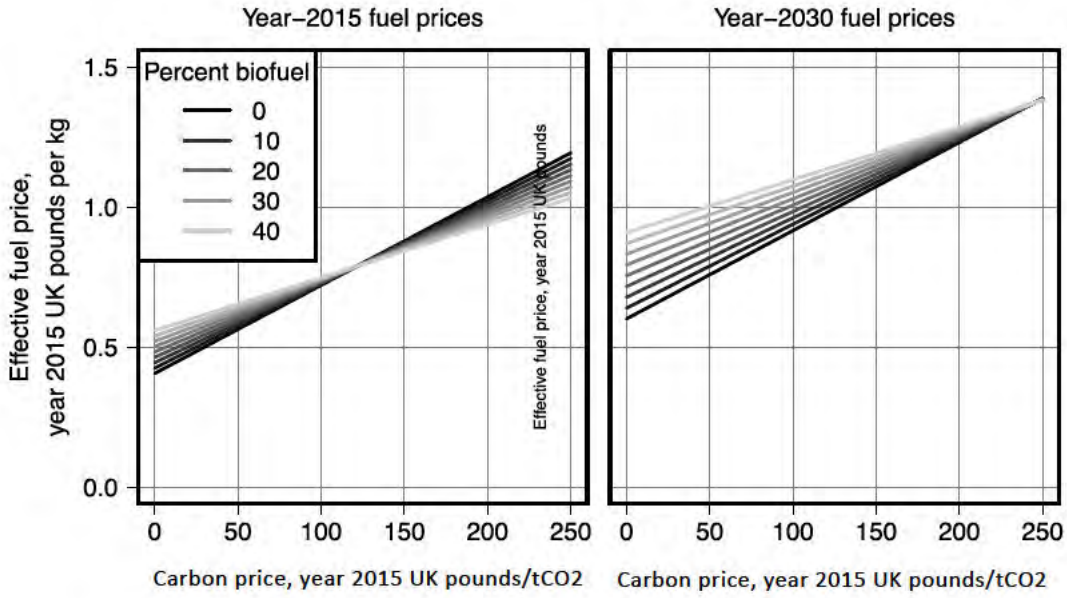

Figure 13.Effective fuel price taking into account carbon and biofuel costs, for the year-2015 and year-2030 central case fuel and biofuel prices.

One other notable feature of Figure 13 is that, under year-2015 conditions, there is a break-even carbon price within the range examined at which biofuel becomes the cheaper option to use. If a large supply of aviation biofuel were available, this might prompt airlines to use it, providing another route for biofuel into the system. In this case, the carbon pricing policy examined below would behave similarly to the biofuel uptake policy examined below after the break-even carbon price. In reality, however, there are likely to be complex interactions between biofuel pricing, supply, carbon and fuel prices, biomass demand from other sectors and the level of policy support.

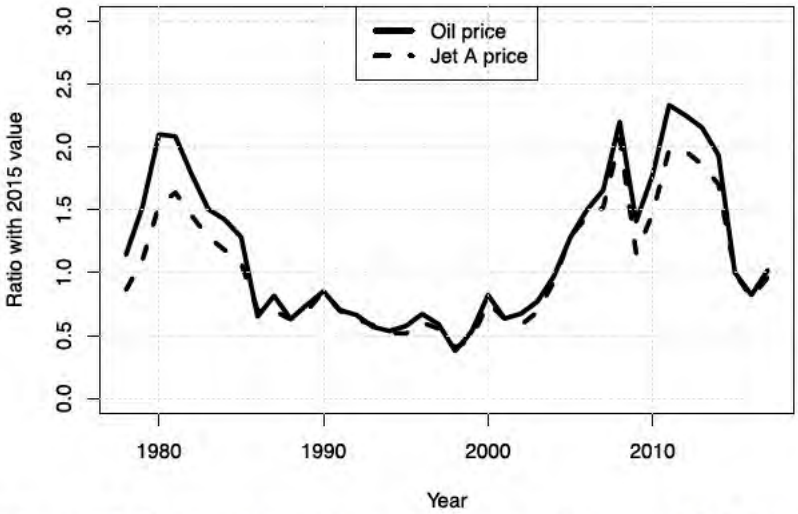

Figure 14. Fuel and oil price variation in real terms, 1978-2015, as a ratio with 2015 values.

Aircraft engine and airframe maintenance is modelled as the sum of per-cycle and per-flight hour components. As with fuel costs, maintenance costs are likely to change over time as new aircraft models become available and as aircraft already in the fleet age. This will affect overall costs if the fleet age structure changes as a result of policy. Typically, newer aircraft

models have lower maintenance costs. We use data from ATA & Ellondee (2018) to model historical and future likely trends in maintenance costs. For historical trends in maintenance costs we assume 1% per year decrease, based on analysis of US Form 41 data (BTS, 2018). For future maintenance costs we use the trends shown in Table 6. Additionally, maintenance costs tend to increase with increasing aircraft age. We model this as in Morrell & Dray (2009), using a 2.5% per year increase.

Finance-type costs depend primarily on the aircraft purchase price and assumptions about depreciation. We assume that purchase price (after typical discount from manufacturer list price, which can be in excess of 50%) remains constant in real terms over time, based on the analysis of ATA & Ellondee (2018). We use assumptions from Morrell & Dray (2009) for key financial parameters, including insurance costs of 1.2% of market value, a depreciation period of 20 years, and residual value of 5% of purchase price.

4.3.7 Freight

The lack of readily-available data about air freight makes it difficult to model. Around 70% of UK air freight is carried in the holds of passenger aircraft (DfT, 2017). This freight is implicitly included in the passenger emission totals via the addition of an extra payload factor for freight carried. ICAO (2014) estimate that an average of 4500 kg freight is carried per flight across the global fleet. To estimate how this factor varies by aircraft size class, we calculate the remaining payload capacity for each reference aircraft once the weight of passengers at a typical load factor is accounted for. Assuming the 4500 kg total is appropriate for a large single-aisle aircraft, we scale the freight load for the other aircraft types so that freight makes up the same fraction of available non-passenger payload capacity in all cases.

For air freight carried in freighter aircraft, little information is available about routing. DfT (2017) calculate that there were around 70,000 UK freighter flights in 2015, the vast majority of which were international rather than domestic flights. These flights primarily operated from London Stansted and East Midlands airports (CAA, 2017). They accounted for around 1 $MtCO_2$ in 2015. Demand for all-freight flights to and from the UK is projected to remain broadly constant in future (DfT, 2017). To account for these flights and emissions we use a simple aggregate model. As with passenger demand, baseline freight demand is assumed to grow by a user-set growth factor to the policy year. It is assumed that the current network, load factors and aircraft size distribution are maintained, such that this growth rate can be applied to both number of flights and tonne-km. Baseline trends in fuel efficiency are assumed to be the same as for passenger aircraft. This represents a significant simplification, as freighter aircraft are usually older than passenger aircraft and are often converted from old passenger aircraft (e.g. Morrell & Dray, 2009). US DoT (2017) report air freight revenue of $2.22 (year 2015 US dollars) per tonne-km. We take this value as a baseline. Cost changes due to policy are calculated on a tonne-km basis assuming a typical flight distance of 1,450 km (consistent with current CO_2 and number of flights) and landing charges appropriate to London Stansted airport. Demand changes due to policy are then calculated assuming user-specified levels of cost pass-through and price elasticity.

This model is a highly simplified representation of UK air freight, consistent with the limited data available about UK freight networks and the small percentage of UK aviation emissions

attributable to freight. Further discussion of how freight networks could change in response to policy is given in Section 2.8, above; however, given the relatively small emissions totals and low growth rates projected for freight flights, combined with freight journey time requirements, any impact due to freight network change is likely to be small.

4.3.8 Non-scheduled flights

The baseline passenger, aircraft movement, fleet and emissions totals generated thus far are appropriate for scheduled flights. However, many non-scheduled flights also use UK airports. In particular, many charter flights, primarily to holiday destinations, contribute to total UK fuel use and emissions. As with freight, relatively little data is available about these flights. CAA (2018) provide statistics on the proportion of UK movements which are scheduled and non-scheduled; approximately 9% of UK domestic movements are non-scheduled, and approximately 14% of international movements are non-scheduled. To reproduce absolute passenger, movement and emission totals, we assume a constant factor over the scheduled totals for non-scheduled flights of these amounts. This assumes that patterns of non-scheduled passenger demand are broadly similar to scheduled demand.

Table 8. Baseline model aircraft movements by scope, thousand flights per year.

	2015 modelled aircraft movements	**CAA (2015) airport data aircraft movementa**
Domestic	635.035	600
UK departing international flights	736.935	755.5
UK arriving international flights	733.938	755.5
UK-related total	2105.907	2111
London departing flights	560.876	
Other South East departing flights	29.501	
Midlands departing flights	59.134	
South West and Wales departing flights	70.687	
North departing flights	157.764	
Scotland departing flights	128.748	
Northern Ireland departing flights	47.742	
Non-UK, total	1601.212	-

4.3.9 Baseline outcomes

The modelled baseline system for 2015 in terms of passengers, movements and CO_2 is given in Table 8-Table 13. Several features are apparent. First, as shown in Table 8, the overall number of aircraft movements is relatively well-captured. The model over-predicts domestic demand by around 6% and under-predicts international demand by around 2.5%, with overall totals similar to those from CAA (2017) once double-counting of domestic flight movements is accounted for. The geographical distribution of flights is centred on London, with much smaller totals in other regions of the UK. The number of non-UK movements included in the model is of a similar order of magnitude to the number of UK movements.

Non-UK flights in the model include alternatives to itineraries hubbing through the UK and non-UK segments of itineraries starting and ending in the UK; for example, the Hong Kong-Australia leg of passengers travelling from the UK to Australia via Hong Kong.

Table 9. Baseline model passengers per year by scope, mppa.

	2015 modelled passengers, mppa	**CAA 2015 airport data, mppa**
Domestic	43.670	41.2
UK departing international flights	99.590	105.15
UK arriving international flights	100.303	105.15
UK-related total	243.564	251.5
London departing flights	75.616	
Other South East departing flights	1.459	
Midlands departing flights	6.433	
South West and Wales departing flights	5.172	
North departing flights	16.471	
Scotland departing flights	11.909	
Northern Ireland departing flights	3.736	
Non-UK, total	138.842	

Similarly, as shown in Table 9, total passenger numbers are close to those reported by CAA (2015), with a slight over-prediction for domestic flights and a slight under-prediction for international flights. Passenger totals are even more strongly concentrated in the London area than movement totals, reflecting the larger size of aircraft in use for flights from the major London airports. These totals can also be divided by airport, as in Table 10. On an airport level they are broadly consistent with CAA totals, although Heathrow demand is slightly over-predicted and demand at Stansted and Manchester airports is under-predicted. These differences may have to do with the number of charter flights in operation at different airports; since a single factor is applied at all airports, differences between different airports in terms of the amount of charter demand are not captured.

Finally, CO_2 totals are around 10% lower than those calculated from fuel uptake. There are several reasons why this may be the case. First, the model slightly under-predicts the number of international passengers. If this under-prediction applies most strongly for longer-haul passengers, this may lead to a larger under-prediction in CO_2. Many of the longest, highest-emission journeys are part of the 'long tail' of low-demand itineraries connecting through London Heathrow, as discussed in Section 4.1. By aggregating these itineraries, it is possible that the full CO_2 impact is slightly lower than it would otherwise be. Second, the model fuel use calculations are derived from a performance model (PIANO-X; Lissys, 2017) which assumes ideal operating conditions for new aircraft rather than practical use conditions.

Table 10. Baseline passengers per major airport in 2015, in comparison to CAA totals. Note that non-UK airport totals represent only the demand considered for this project, not the absolute totals of passengers travelling through the airport.

Airport	2015 modelled passengers, mppa	CAA 2015 airport data passengers, mppa
LHR (London Heathrow)	79.281	75
LGW (London Gatwick)	39.169	40
STN (London Stansted)	17.803	23
MAN (Manchester)	19.968	23
EDI (Edinburgh)	11.310	11
GLA (Glasgow International)	7.867	9
EMA (East Midlands)	3.981	4
DXB (Dubai)	16.222	-
CDG (Paris Charles de Gaulle)	20.992	-
FRA (Frankfurt International)	18.040	-
AMS (Amsterdam Schiphol)	23.252	-
BRU (Brussels International)	4.239	-
IST (Istanbul Atatürk)	8.658	-
DUB (Dublin)	15.332	-

Although we model the deterioration of aircraft fuel efficiency with increasing age and the impact of track extension, we do not model any other sources of non-ideal conditions which may cause increases in emissions; additionally, as discussed in ATA & Ellondee (2018), different performance models can produce fuel use outcomes that are several percent different at long flight distances, which are also the flights that are disproportionately important for matching CO_2 totals. Analysis of radar track data, as used in Reynolds et al. (2009), also suggests that individual fuel use totals can vary by up to 10% between the same flight with the same equipment on different days. Finally, the adjustment used above to account for charter flights assumes that charter flights are similar in distance and emissions per flight to scheduled flights, which may not be the case. Since the analysis of leakage and to some extent competitive disadvantage depend on relative changes in emissions rather than emissions totals, this under-prediction of CO_2 is unlikely to make a large difference to model outcome. We therefore leave the totals as they are without attempting to correct for these differences.

Table 12 shows the number of passengers by UK and non-UK airlines on UK and non-UK routes, counting routes both to and from the UK as UK routes. As noted above, we count demand as UK airline demand if the ticket is marketed by a UK airline. On this basis, about half of demand to and from UK airports is served by UK airlines. Conversely, only a small amount of demand that is not to or from UK airports is served by UK airlines. This means that the majority of UK airline fleet is involved in UK operations.

Table 11. Model baseline CO_2 totals by scope in comparison to UK bunker fuel uptake, $MtCO_2$/year.

	2015 model CO_2, tonnes	**NAEI 2015 bunker fuel uptake totals, tonnes CO_2**
Domestic	1.832	1.52
UK departing international passenger flights	28.641	
UK arriving international passenger flights	29.154	
UK domestic freighter flights	0.064	
UK departing international freighter flights	0.961	
UK arriving international freighter flights	0.961	
UK departing international total	29.601	32.95
UK-related total	61.612	
London departing passenger flights	24.108	
Other South East departing passenger flights	0.208	
Midlands departing passenger flights	0.930	
South West and Wales departing passenger flights	0.550	
North departing passenger flights	2.862	
Scotland departing passenger flights	1.467	
Northern Ireland departing passenger flights	0.348	
Modelled non-UK passenger flights, total	75.580	

Finally, Table 13 shows the number of scheduled passengers and associated CO_2 by itinerary type and scope. Because only scheduled passengers are shown and the totals are not adjusted for freight, absolute values are smaller than those above which include charter and freighter flights. If emissions are measured on a UK departing flight basis, the different parts of UK-associated demand and emissions that fall within and outside this scope will affect how leakage is measured.

Table 12. UK and non-UK airline passenger demand for operations on UK and modelled non-UK routes in 2015, mppa

	UK route passengers, mppa	**Non-UK route passengers, mppa**	**Total passengers, mppa**
UK airline	112.906	1.890	114.796
Non-UK airlines	108.823	136.952	245.774
Total	221.729	138.842	360.571

The largest part of UK-associated demand and emissions is in passengers who start or finish their journey in the UK, and take a direct flight only. Because the vast majority of these passengers are making round-trip journeys, the CO_2 associated with them is evenly divided between UK arriving and departing flights. This means that half of the emissions associated with UK origin-destination (OD) direct itinerary passengers are within UK departing flight scope, and half are outside. If a policy affects the demand of these passengers and has no

other impact, we would expect roughly equal reductions in emissions inside and outside UK departing flight scope. Since carbon leakage is defined as the increase in emissions outside the policy scope divided by the decrease in emissions within scope, this would result in leakage of -100%.

Table 13. Scheduled passenger demand in mppa and CO_2 by in tCO_2/year by itinerary type, 2015, within and outside UK departing flight scope.

	Itinerary passengers, mppa	**CO_2 in UK departing flight scope, tonnes**	**CO_2 outside UK departing flight scope, tonnes**
UK domestic direct itineraries	18.802	1.600	0.000
UK international departing direct itineraries	68.922	15.208	0.000
UK international arriving direct itineraries	68.484	0.000	15.150
UK departing via UK hub	0.775	0.530	0.027
UK arriving via UK hub	0.795	0.057	0.520
UK departing via non-UK hub	9.832	5.019	4.457
UK arriving via non-UK hub	10.637	0.005	10.135
International-international transfer via UK	8.700	4.724	4.882
International-International transfer via non-UK	37.390	0.000	38.744
International-International direct	25.219	0.000	18.923

The next largest component of UK departing flight emissions is passengers who start their journey in the UK but travel via a non-UK hub. On average, these passengers emit about half of the CO_2 on the UK departing leg of their journey in reaching the non-UK hub (within UK departing flight scope) and about half in travelling from the non-UK hub to their final destination (outside UK departing flight scope). None of the CO_2 on the UK arriving leg of their journey is within UK departing flight scope. For a typical round-trip journey of this type, therefore, only a quarter of emissions are within UK departing flight scope. If demand falls on these routes, a quarter of the corresponding emissions reductions will be in UK departing flight scope and the rest will count as leakage. Leakage for policies which affect demand in this group of passengers would therefore be greater than 100%.

The third largest component of UK departing flight CO_2 is international-international transfer passengers travelling via a UK hub. This is the component of passengers most-discussed in the literature on aviation carbon leakage. About half of the CO_2 associated with these passengers is in UK departing flight scope, in either direction. Although routes with a UK origin or destination cannot eliminate policy impacts by changing routing, UK transfer passengers can. Therefore policies which affect this group of passengers are likely to result in positive leakage, i.e. emissions moving outside UK scope. However, for policies which primarily affect demand, this effect may be swamped by emissions reductions and negative leakage from the much larger set UK OD demand itineraries. Other components of UK departing flight CO_2, including domestic flights and UK OD connecting itineraries via a UK hub, are much smaller components of overall CO_2.

4.4 Modelling response to policy

The application of policies can affect this baseline system in several ways. We assume the main impact of policy on airlines and passengers will be via airline costs. In the case of an additional carbon price, this would act as an increase in an airline's fuel-related costs. The case of a requirement to take on biofuel would similarly act to change an airline's fuel costs, depending on the price of biofuel and any applicable carbon price at the time. Both of these changes effectively act on a per-RPK basis, penalising longer-haul flights and larger aircraft to a greater extent. A change in landing charges, in comparison, acts on a per-flight basis, penalising aircraft that make more landings in the UK (typically smaller aircraft) to a greater extent. A requirement to adopt specific mitigation options or technologies will typically provide per-RPK type cost savings (or per-landing cost savings in the case of technologies such as electric taxi which target ground-related emissions only) set against a per-aircraft cost.

In all of these cases, the airline is faced with a change in its operating costs which it can either act to reduce by changing fleet or operations, pass on to passengers, or accept as a decrease in its operating margin. We assume that any policy will be announced sufficiently far in advance that airlines will have ample chance to respond. In the case of purchasing new aircraft, typical order-delivery times mean that this may need to be at least eight years in advance (e.g. FlightGlobal, 2017). We assume that airline responses are made purely on a cost basis, and that decisions relating to fleet and operations are made before the decision on whether or not to pass any remaining costs onto passengers. Once costs are passed on to ticket prices, passengers in turn respond to this.

Based on the analysis in Section 2, we concentrate on airline response in terms of switching fleet between UK and non-UK routes, buying new aircraft, and tankering fuel; and passenger response in terms of switching routes and/or choosing not to fly. These areas are discussed individually below.

4.4.1 Airline response: substituting non-UK for UK fleet

Airlines which operate primarily outside the UK will have the option of moving more fuel-efficient aircraft onto their UK routes and using less fuel-efficient aircraft on their non-UK routes in response to UK-based carbon reduction policies. Airlines which operate primarily to and from the UK will not have this option. In the most extreme case, where non-UK airlines are able to satisfy all policy requirements by rearranging their fleet in this way, all of the carbon reductions achieved by applying the policy to non-UK airlines will be effectively leaked (plus or minus a small extra amount due to the more or less efficient use of each aircraft on its new routes). Non-UK airlines operating to and from the UK accounted for around 28 $MtCO_2$ in 2015; reductions in emissions from switching to the most efficient aircraft types available depend on aircraft type, but could in theory be up to around 15-20% if switching between older single-aisle aircraft types and the most recent generation of single-aisle aircraft. However, this does not account for other requirements on aircraft type

that apply at UK airports, which may already effectively restrict the use of older aircraft and make substitution of aircraft from other routes less likely.

This situation is complicated by airline groups which purchase fleet in common. These groups may contain UK and non-UK airlines and potentially have the option to switch fleet between the two, allowing the UK airline greater flexibility in responding to policy at the cost of increased fuel costs and emissions for the non-UK airline. A summary of major airline groups and their relationship to individual UK airlines was given in Figure 2. Current airline groups which may choose to use their fleet in this way are IAG (BA, Iberia, Vueling, Aer Lingus) and Easyjet (Easyjet UK, Easyjet Switzerland, Easyjet Europe). After Virgin joins the Air France-KLM group its fleet may also be similarly affected. There may be some additional costs associated with switching in this manner, for example rebranding.

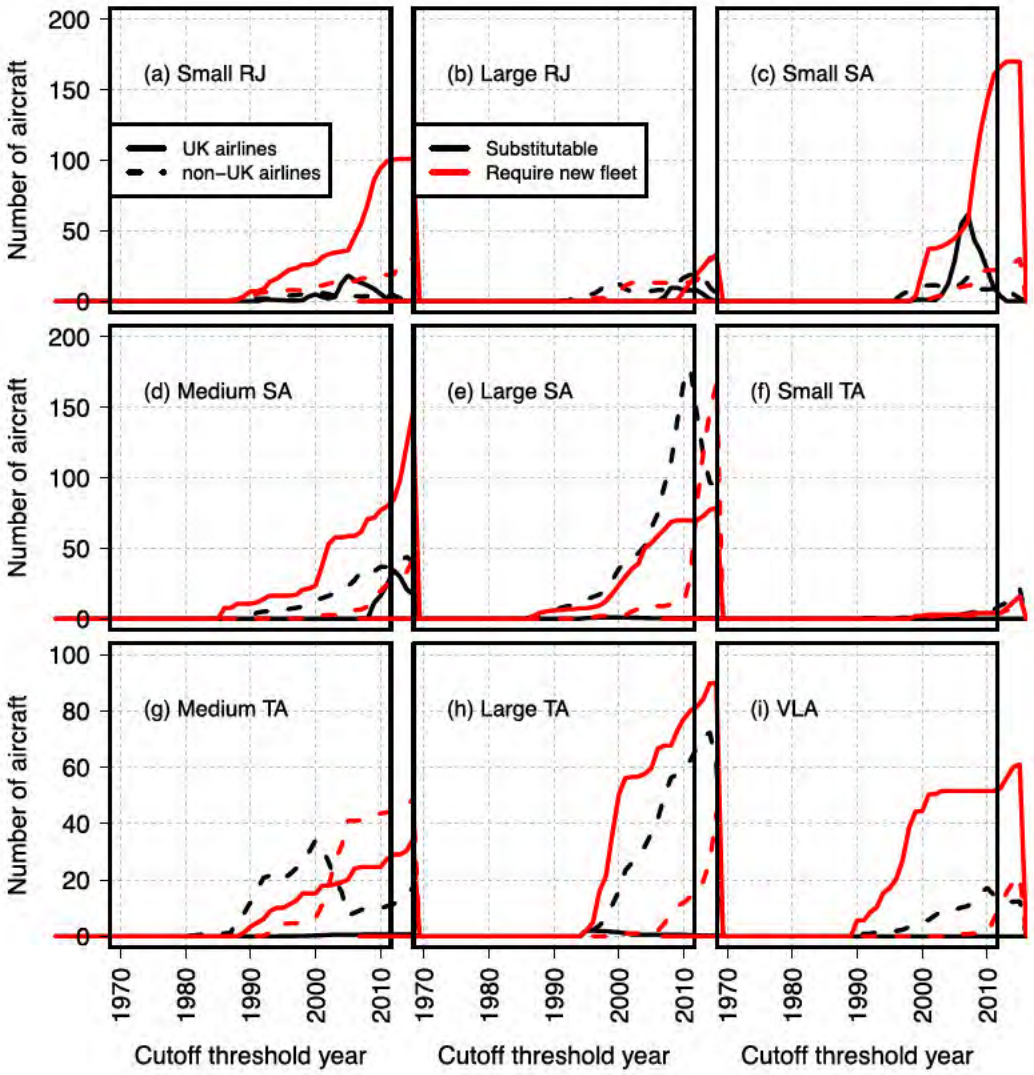

Figure 15. Available responses to fleet policy by UK and non-UK airlines, for a threshold year of manufacture before which aircraft cannot use UK airports, and treating all airlines as individual entities without fleet commonality.

Fleet-related policies could be applied either as regulatory restrictions on movements (for example, aircraft which do not meet some fuel efficiency threshold cannot land at UK airports) or cost-based policies (for example, aircraft which do not meet some fuel efficiency threshold have significantly increased landing fees at UK airports). In practice, the first situation is a special case of the second in which fees for some aircraft types are high enough to completely discourage their use. Figure 15 shows the options which were available to UK and non-UK airlines by aircraft size class in 2015 for a hypothetical policy restricting use of less fuel-efficient aircraft. Aircraft manufacture year is used as a proxy for fuel efficiency, with aircraft manufactured before a cutoff year assumed no longer usable at UK airports. The fleet size needed to carry out UK and non-UK operations by airline is derived from schedule data (Sabre, 2017) plus data on typical aircraft utilization (FlightGlobal, 2017). Aircraft age distributions by airline and size class were derived from FlightGlobal (2017). In Figure 15 it is assumed that all airlines are individual entities which cannot exchange fleet, and that the initial (non-policy) situation is that there is no difference in the age distributions of the fleet used in the UK per airline and those used elsewhere. It is also assumed that airlines will not switch between different size classes on any routes in response to the policy but will seek a like-for-like replacement. Switching between size classes implies either a change in frequency or operating at lower load factor, both of which may come with significant additional costs.

Several features are apparent. First, there is a large disparity in how UK and non-UK airlines can respond. Nearly all of the UK airline fleet is engaged in UK-related operations. Using 2015 data, the main exception is Easyjet; however, many of Easyjet's fleet used for European operations are due to be transferred to Easyjet Europe. In contrast, non-UK airlines tend to require only a small number of aircraft for their UK operations compared to their total fleets. Most airlines have aircraft with a range of different manufacture years. Therefore, if a policy is applied which strongly discourages the use of older aircraft, non-UK airlines will typically be able to substitute those aircraft with younger aircraft already in their fleet, assuming no other restrictions apply to their non-UK flights. UK airlines will not be able to do this unless they have fleet commonality via an airline group with non-UK airlines. This implies both a risk of carbon leakage and one of competitive distortion.

Secondly, these risks primarily affect larger aircraft and hence longer-haul journeys. The majority of non-UK airline aircraft operating to and from the UK are in the medium single-aisle and above size classes. These aircraft are also associated with higher emissions than smaller aircraft.

Figure 16 shows the corresponding situation in which fleet commonality within airline groups is assumed. This has little impact on the three smallest size classes, where flights are often performed by smaller regional airlines. However, it increases the number of aircraft that UK airlines can substitute for the other size classes. This increases the potential for leakage, but decreases the competitive distortion impacts expected.

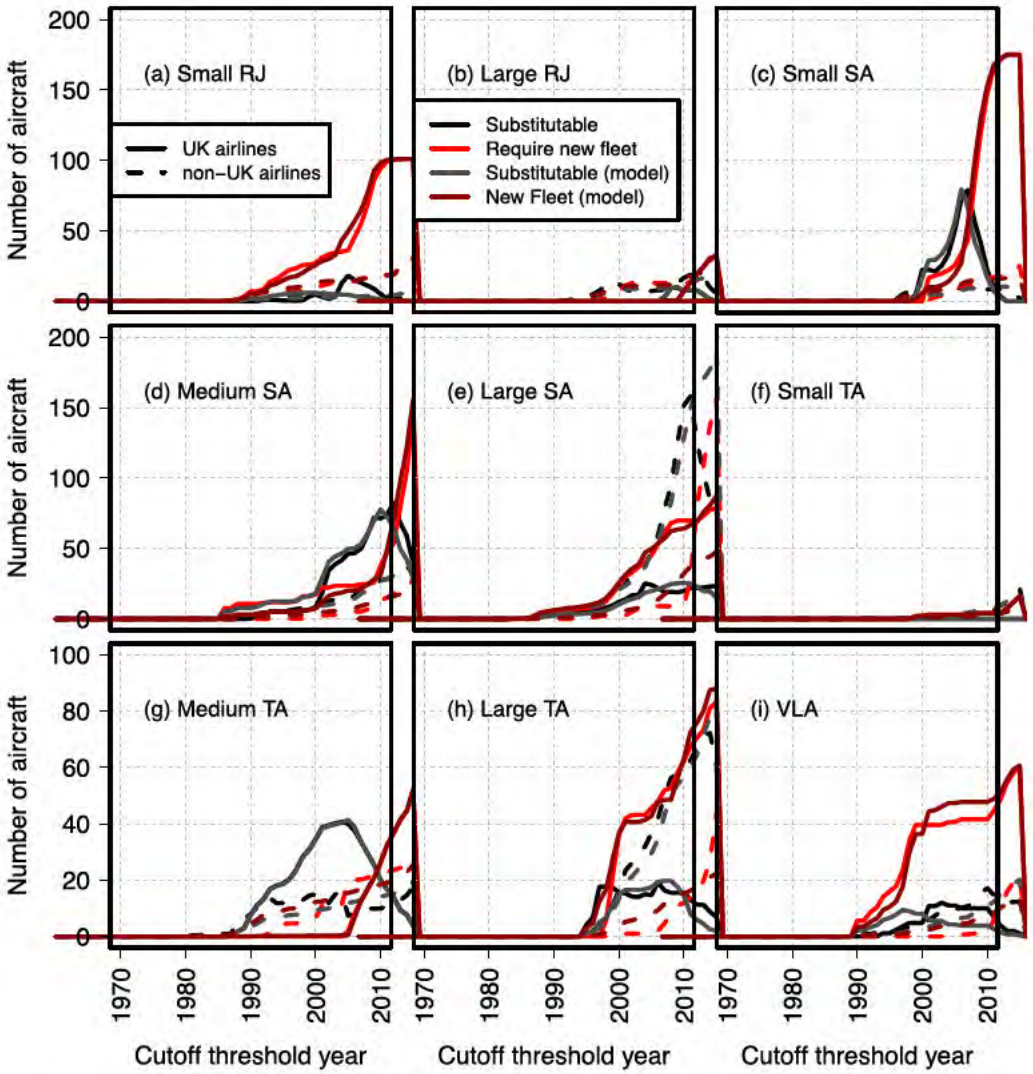

Figure 16. Available responses to fleet policy by UK and non-UK airlines, for a threshold year of manufacture before which aircraft cannot use UK airports, including the potential impact of airline group fleet commonality.

To include this mechanism in the model, we first calculate the size and age distribution of the 2015 fleet per size class for three airline types: UK airlines, those which may have fleet commonality with UK airlines, and other airlines. Grouping them in this way avoids having to model the fleet of individual airlines, which would add significant complexity to the model and is also unlikely to be accurate to 2050. Airlines in the UK group will not be able to fully substitute fleet on UK operations from fleet on non-UK operations because this group in reality includes a number of competing airlines; similarly, other restrictions may apply on substitutability, for example noise or emissions regulations at non-UK airports. We therefore also apply a substitutability parameter to each size class in each group indicating what proportion of the non-UK operations fleet can be substituted in for UK operations. This is one of the model uncertain parameters, with initial values per size class estimated from the year-2015 data shown in Figure 16. These initial values are typically between 0.3 and 0.7 for UK airlines and are a function of current airline networks and competition in each size class. If there are additional barriers to substitution, these numbers will decrease. The

comparable modelled curves are also shown in Figure 16 and are implemented in the spreadsheet model.

Fleet substitution can in theory be done at minimal extra cost to an airline. Although the airline type is assigned will in advance of flights on any given route, the exact aircraft used to fly the route is typically only assigned 24 hours in advance and can be substituted at short notice if unplanned maintenance is required. However, there is some evidence in practice that airlines have not changed the fleet that they use at individual airports in response to environmental policy. Roy (2007) examined airline response to environmental landing charges at Zurich and Stockholm airports, finding that, although fleet developed over the time period after the landing charges were applied, it did so only in line with wider fleet developments that would have been expected without the landing charges and which also applied at other airports without similar environmental policies. Similarly, Nero & Black (2000) find that airlines have tended to simply pay environmental charges rather than adapt fleet in response to them. Some of these restrictions may be due to practical constraints in aircraft use. For example, airlines may have configured different aircraft of the same class differently to suit their requirements on different routes; they may be using an aircraft allocation model which is relatively unsophisticated and is not easy to adapt to the requirements of environmental policy; or there may be technical constraints which limit how different aircraft can be used, such as the requirement for an aircraft flying over open water to have two VHF radios. Another potential constraint is that fleet swapping in this way effectively acts as a cross-subsidisation from non-UK to UK routes, because older aircraft with higher fuel costs are moved to the non-UK routes. This is in direct opposition to the possibility that airlines will instead direct investment away from UK routes if policies significantly increase costs there, because those routes will become less profitable. It may also be a difficult situation to justify if fleet is swapped from other airlines within the same airline group.

Because in theory there is no barrier to reallocating aircraft from non-UK to UK routes, the model recommends this as a cost-effective option for policies which increase airline costs even by only a small amount, provided only that costs increase for some aircraft more than others. As discussed above, this is probably unlikely. The real situation likely lies somewhere between 'no aircraft are reallocated' and 'aircraft are reallocated to the extent possible', with the balance between the two depending on the stringency of the policy applied. We therefore run both cases as another dimension of uncertainty in our policy runs.

4.4.2 Airline response: purchase or leasing of new aircraft

As discussed in the previous section, one potential policy response of airlines is to stop using older aircraft (by selling them, terminating the lease, leasing them out to other airlines or retiring them early) and buy or lease new aircraft. This might either be in response to an outright prohibition on using older aircraft, or it might be a decision based on the increased costs of operating those aircraft. In either case, the airline will experience increased costs associated with this decision which may or may not be balanced out by fuel, maintenance or carbon savings from operating the new aircraft. The size of those increased costs depends on several factors, including whether enough aircraft of this type are up for sale due to the policy to reduce the likely sale price.

We assume that airline economic decisions are taken on a Net Present Value (NPV) basis, as in Morrell & Dray (2009). In this framework, purchasing decisions are approved if the NPV associated with them is positive, where:

$$NPV_x = \sum_{t=0}^{T_N} R_{t,x}/(1 + i^t) ,$$

and T_N is the time horizon over which the technology is evaluated, i is the discount rate, and $R_{t,x}$ is the cash flow associated with technology x in year t. The discount rate and time horizon are user input values. By default they are set at ten percent and seven years. These are the values used in Dray et al. (2018). To simplify the modelling process we make several assumptions. First, we concentrate on the case where an aircraft that is owned by an airline is sold onwards and a new aircraft is purchased, rather than situations which involve leasing either the old aircraft, the new aircraft, or both. Based on the fleet analysis in Dray (2014) we assume that early scrappage is less likely than sale onwards in an environment of increasing global demand. We assume that costs across all categories will remain broadly constant over the assessment time horizon for both the new and old aircraft. We also assume that crew costs, baseline landing charges and enroute charges will remain the same between the two aircraft, and neglect the impact of any reduction in aircraft utilization with increasing age. Other costs are assumed to change over time as discussed in Section 4.3.6. The aircraft purchasing model from Morrell & Dray (2009) was directly adapted (with some simplifications) to use as part of this study.

As discussed in Morrell & Dray (2009) and Roy (2007), increases in policy-related costs have to be significant before they can be used to justify the purchase of a new aircraft, and may need to apply in conjunction with a high fuel price. The main barrier is the high capital costs associated with new aircraft purchase. Morrell & Dray (2009) found that early replacement of a 15 year old 150-seat single-aisle aircraft is not cost-effective even at oil prices of \$140/bbl and carbon prices of \$100/tCO_2. Similarly, we find that most combinations of modelled fuel, carbon and extra policy costs are insufficient to justify the purchase of significant numbers of new aircraft, with the number of new purchases due to policy projected to be below ten aircraft in most cases modelled here. In the case that a new aircraft is purchased, we model the overall change in finance-related and maintenance costs to be spread across the whole modelled aircraft fleet for a given airline type, rather than assigned to specific flight segments.

4.4.3 Airline response: policy-induced change in technology choice

As well as inducing sales of older aircraft, emissions reduction policies may also change airlines' choice of aircraft for new purchases (e.g. to meet new demand, or to replace aircraft that were going to be retired anyway). If aircraft models with different capabilities are available for purchase, then increased fuel-related costs may influence which model is chosen. However, historically this decision has been made more at manufacturer level than airline level; when major manufacturers have offered new aircraft models at similar times, those models have tended to have similar capabilities. We therefore include the fuel- and carbon-price dependent technology trends from ATA & Ellondee (2018) as discussed in Section 4.3.6. It is assumed that new aircraft purchases will be consistent with these trends.

4.4.4 Airline response: tankering fuel

Aircraft on short-haul flights sometimes have enough spare payload and fuel capacity to be able to carry fuel for the return as well as the outbound leg of a return journey. If the fuel price at the destination airport is greater than that at the origin airport, it may be cost-effective to do so even though the increased fuel load slightly increases fuel use and emissions on the outbound leg. This practice is known as tankering, and airlines already often use it in cases where it is cost-effective (e.g. Schäfer et al. 2016). If a policy is applied to UK flights which effectively increases the fuel price at UK airports, then airlines may attempt to tanker fuel where possible to avoid it. This applies particularly to the hypothetical case where some fraction of biofuel is required for refueling at UK airports. Projected biofuel prices vary, but in general they are projected to be higher than those for fossil Jet A (e.g. Schäfer et al. 2016). The assumptions for fuel and carbon costs over time used in this study are discussed in Section 4.3.6 above and given in Table 7.

We assume tankering is feasible on a flight if:

- The fuel prices at the origin and destination airports differ
- The aircraft's initial take-off weight including extra fuel weight is less than its Maximum Takeoff Weight (MTOW)
- The landing weight at the end of the first flight segment is less than the aircraft's Maximum Landing Weight (MLW)
- The initial fuel load needed is less than the aircraft's maximum fuel capacity.

Data on MTOW, MLW and maximum fuel load is sourced from manufacturer specifications for the reference aircraft models in each size class with typical configurations.

To calculate the extra fuel use arising from tankering, the performance model described in Section 4.3.5 is used, treating the extra fuel weight on the outbound leg as extra payload. Typically, the extra fuel weight adds between 3 and 10 percent extra fuel use for this outbound leg. Tankering is assumed adopted if the increased cost due to the extra fuel needed (both in terms of fuel cost and in terms of any change in carbon costs from the baseline carbon price) is less than the cost saving of not taking on the more expensive fuel. Using these assumptions, tankering is sometimes cost-effective for flights facing increased costs from mandatory UK biofuel uptake, with the exact amount of tankering depending on the relative prices associated with Jet A, biofuel and carbon.

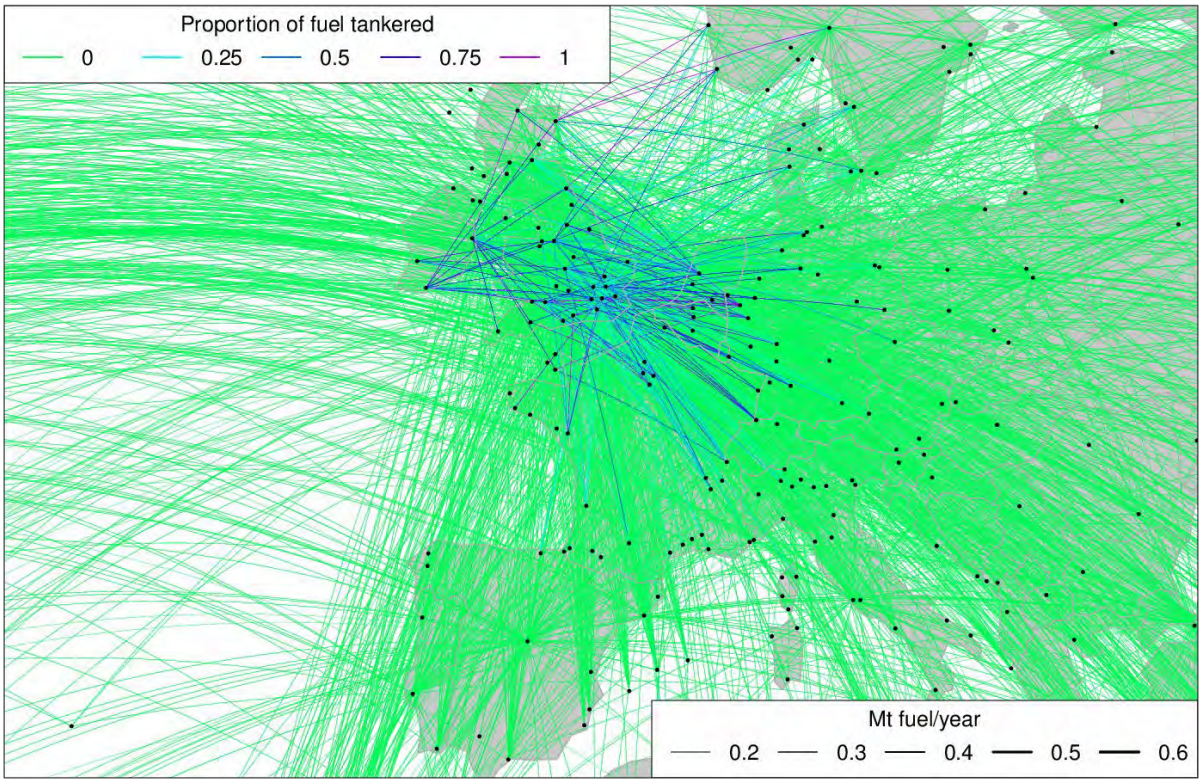

Figure 17. Hypothetical tankering scenario, assuming 2015 fuel prices and operations, biofuel around twice the price of Jet A, and ten percent biofuel requirement for refuelling at UK airports.

Figure 17 shows a hypothetical tankering scenario, based on applying a ten percent biofuel requirement to the 2015 baseline system. In this case, around 0.9 $MtCO_2$ is tankered. If CO_2 emissions from UK aviation are measured on a fuel uptake basis, these emissions are moved from being treated as UK aviation to being treated as non-UK aviation, leading to positive leakage. If instead CO_2 emissions are considered on a departing flights basis, positive leakage still occurs because the extra weight from carrying the tankering fuel increases emissions slightly on UK arriving flights. However, this leakage is much less, because the changes in fuel amounts involved on a departing flights scope are under 10% of those on a fuel uptake scope. Figure 18 shows a more extreme case in which a 50% biofuel requirement is applied. In this case, it is cost-effective to tanker fuel on all flights which are physically capable of doing so. Around 2.2 $MtCO_2$ is tankered in this case. Typically, under the year-2015 assumptions used here, tankering capability begins to saturate at around 20-30% biofuel requirement.

We assume that tankering is available only as a response to policies which directly change UK fuel price. Carbon pricing is assumed to be based on the airline's own carbon accounting (as for the EU ETS; EC, 2018a) rather than fuel uptake within a specific jurisdiction. This means that airlines cannot avoid paying carbon prices on UK departing flight fuel by tankering.

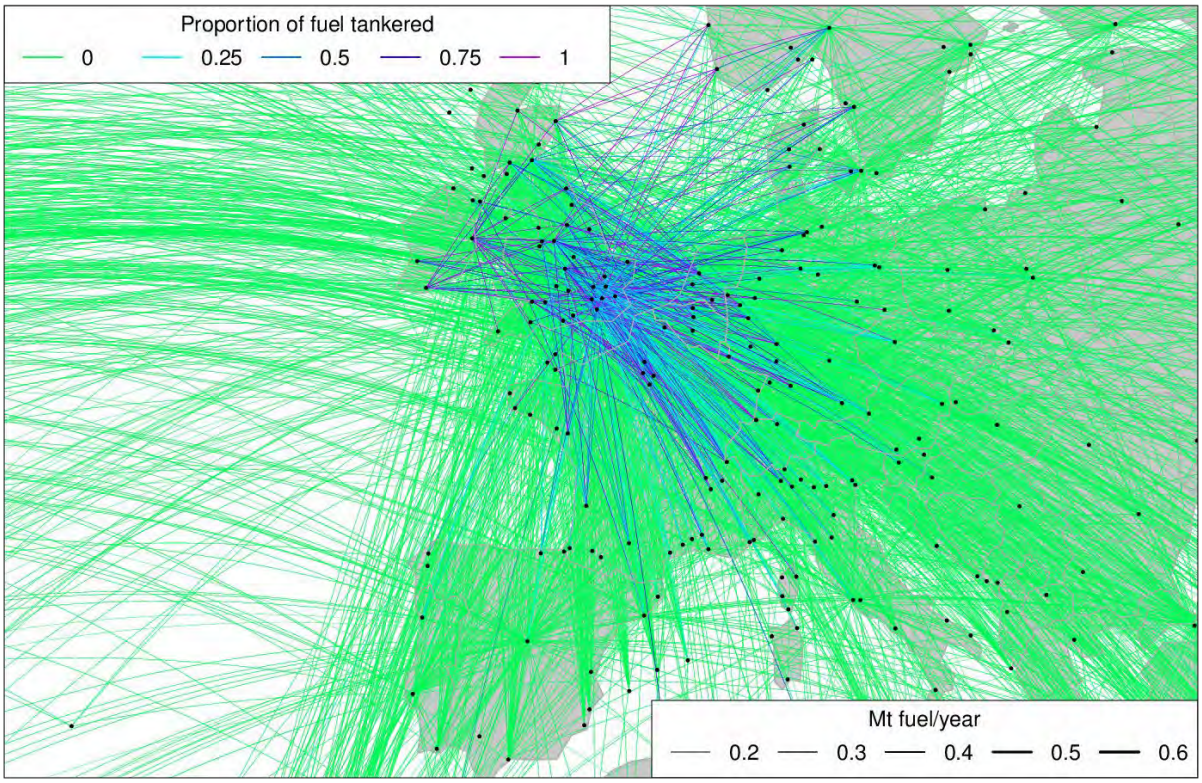

Figure 18. Hypothetical tankering scenario, assuming 2015 fuel prices and operations, biofuel around twice the price of Jet A, and fifty percent biofuel requirement for refuelling at UK airports

4.4.5 Passenger response

Once airlines have made the decision whether or not to reallocate fleet, purchase new aircraft or tanker fuel, they have the choice of whether or not to pass on the resulting changes in costs to passengers. As discussed in Section 3.2.1, the amount of cost pass-though is likely variable depending on the specific circumstances of a given flight: for example, the amount of competition and whether the origin or destination airports are capacity-constrained. Based on the literature review in Section 3, we assume different rates of pass-through at congested airports and all other airports. Literature estimates of pass-through at non-congested airports tend to be close to 100% (e.g. DEFRA, 2007). However, estimates of pass-through at congested airports vary more widely. This will affect demand travelling through Heathrow and to some extent Gatwick airports. Therefore we model a range of values of pass-through for these airports between 0 and 100%.

After some proportion of increased airline costs on a segment is passed through to passengers, this value is added to ticket prices on a round-trip itinerary basis. For example, typically a passenger travelling from London to Sydney and back will not book each leg of their journey separately, but will purchase tickets for all legs of their journey at the same time from the same airline.

Faced with an increase in ticket prices, passengers may choose not to travel and/or to take a different itinerary. To model itinerary choice, we rerun the itinerary choice model discussed in Section 4.3.2 with the new ticket prices appropriate for each itinerary. Parameters for this model are given in Appendix 2. We assume that the choice set of itineraries per city-pair remains the same as in the non-policy case, i.e. airline network change in response to the policy is limited, as discussed in Section 2.8. Increasing the fare prompts passengers who have a choice of routes to move towards routes that are less affected by policy; for example, changing from a UK to a non-UK hub, flying from the UK to a nearer hub airport than they would otherwise have used, or adding a hub to what was previously a direct journey. However, fare is only one of the parameters affecting this decision. Routes with fewer flight legs tend to be strongly preferred over those with more, and journey time and route flight frequency are also important. Therefore an increase in fare may need to be significant to prompt a large-scale change in itinerary choice.

Table 14 shows the change in passengers by itinerary type in the case where a large carbon price ($200/t$CO_2$) with 100% cost pass-through is applied to the baseline system in 2015, and the only policy response modelled is itinerary choice (i.e., the price elasticity of demand is set to zero, and no airline response is modelled). For a long-haul round-trip flight from the UK this adds around 20% to the overall ticket price. In this case, passenger responses are similar to those frequently discussed in the literature with regard to carbon leakage.

Table 14. The change in passengers (mppa) and CO_2 (tCO_2) by itinerary type and emissions scope in the case that a $200/t$CO_2$ carbon price with 100% pass-through is applied to the 2015 baseline system, and itinerary choice is the only modelled response.

	Itinerary passengers, mppa	**CO_2 in UK departing flight scope, tonnes**	**CO_2 outside UK departing flight scope, tonnes**
UK domestic direct itineraries	0.000	-0.008	0.000
UK international departing direct itineraries	-0.072	-0.095	0.000
UK international arriving direct itineraries	-0.084	0.000	-0.091
UK departing via UK hub	-0.054	-0.034	-0.001
UK arriving via UK hub	-0.054	-0.004	-0.031
UK departing via non-UK hub	0.132	-0.015	0.108
UK arriving via non-UK hub	0.141	0.000	0.101
International-international transfer via UK	-0.576	-0.265	-0.279
International-International transfer via non-UK	0.407	0.000	0.347
International-International direct	0.169	0.000	0.120
Total	0.000	-0.421	0.274

The largest change in passenger numbers and emissions is associated with international-international transfer passengers travelling via UK hubs. These passengers switch primarily to non-UK hub routes, with a smaller number taking alternative direct more expensive direct routes. However, the demand decrease is well under 10% of the baseline absolute international-international UK transfer passenger total (Table 13). The net impact once

charter flights are included is a decrease of just under 0.5 $MtCO_2$ in UK departing flight scope, a similar decrease of just under 0.5 $MtCO_2$ in UK arriving flights (as UK transfer passengers have both a UK arriving and departing leg), and an increase of around 0.75 $MtCO_2$ in flights on non-UK routes. The net leakage on a UK departing flight basis is thus around 50%.

However, in reality passengers faced with increased costs will also have to make the choice of whether to fly or not. As discussed in Section 3.2.2, this is handled using the price elasticity of demand for passengers at a city-pair level, based on the average passenger-weighted increase in fare across all routes on that city-pair. The range of demand elasticities estimated in the literature is discussed in Section 3.2.2. Estimates vary depending on the geographic scope, time horizon, the substitutes available, the type of passenger and the type of route. In the case of the current study, substitution to and from other air routes is already modelled separately, so a value of price elasticity on the low end of literature estimates is appropriate. If the test case in Table 14 is rerun with a small price elasticity (-0.2), the resulting outcomes by itinerary type are shown in Table 15. Although there is still a switch from UK to non-UK emissions due to itinerary choice of similar magnitude to the previous case, there is now a much larger impact on UK departing and arriving direct itineraries. The decrease in demand for these itineraries is only around 2% of total demand. But, because many more passengers travel on UK departing and arriving direct itineraries than transfer via the UK, the resulting change in CO_2 in UK departing flight scope is greater than the change in CO_2 due to itinerary choice.

Table 15. The change in passengers (mppa) and CO_2 (tCO_2) by itinerary type and emissions scope in the case that a $200/$tCO_2$ carbon price with 100% pass-through is applied to the 2015 baseline system, with itinerary choice and a small price elasticity of demand.

	Itinerary passengers, mppa	**CO_2 in UK departing flight scope, tonnes**	**CO_2 outside UK departing flight scope, tonnes**
UK domestic direct itineraries	-0.603	-0.061	0.000
UK international departing direct itineraries	-1.438	-0.438	0.000
UK international arriving direct itineraries	-1.486	0.000	-0.450
UK departing via UK hub	-0.068	-0.044	-0.002
UK arriving via UK hub	-0.068	-0.005	-0.041
UK departing via non-UK hub	-0.097	-0.146	0.010
UK arriving via non-UK hub	-0.107	0.000	-0.145
International-international transfer via UK	-0.636	-0.300	-0.316
International-International transfer via non-UK	0.306	0.000	0.280
International-International direct	0.116	0.000	0.082
Total	-4.081	-0.994	-0.582

As discussed in Section 2.5, the main impact of a decrease in demand on UK OD flights is negative leakage. This is because any decrease in demand and CO_2 emissions on UK

departing flights is matched by a similar decrease in UK arriving flights; additionally, there may be extra negative leakage from the decrease in demand on non-UK flight legs of passengers originating in the UK but travelling via a non-UK hub. As the demand impact on UK-origin passengers exceeds the impact of itinerary choice, overall leakage in this case is around -60%. If the same test case is repeated with a price elasticity of demand of -0.8, the effect of demand decreases on UK OD passengers increases, but the amount of change in itineracy choice remains the same. Overall leakage in this case is around -115%. This leakage is made up of multiple components, of which the most important are:

- Changes in itinerary choice (around 50% leakage on their own, but affecting a smaller fraction of total CO_2 compared with other leakage sources).
- Changes in the demand of UK OD direct passengers, which lead to around -100% leakage as there are equal decreases in arriving and departing round-trip passengers.
- Changes in the demand of UK OD passengers who travel via an additional non-UK hub. Around three quarters of the CO_2 these passengers emit is outside UK departing flight scope, so the leakage associated with them is in excess of -100%.

In general, therefore, carbon leakage due to passenger response is likely to be negative. Carbon leakage due to airline response tends to be positive. The overall leakage impact of a policy thus depends on the balance between its demand-side and supply-side impacts.

In terms of competitive disadvantage between airlines, policies which have only a demand impact have an approximately symmetric impact on UK and non-UK airlines operating on UK routes, with some small differences arising from the different fleet and networks of different airline types. However, the ability of airlines to respond to policy differs by airline type. Therefore we would also expect policies which have a greater supply-side impact to also have a higher risk of competitive disadvantage. Policies which mainly affect demand are likely to affect the competitiveness of UK airports, however, as demand shifts between them and non-UK hubs.

5. Model outcomes

5.1 Hypothetical policies and uncertain parameters

Using the demand baseline calculated above, we explore the model response to three categories of hypothetical policy:

- An increased carbon price applying to all UK departing flights. This is assumed additional to the baseline global carbon price used in DfT (2017).
- A requirement for aircraft refuelling in the UK to use a given percentage of biofuel.
- An increase in landing charges across all UK airports, formulated such that older aircraft have higher landing charges and younger aircraft lower landing charges, with the overall outcome being roughly revenue-neutral.

These different policy categories are likely to have different outcomes on leakage and competitive disadvantage, based on their relative demand impacts and the available strategies that airlines can use to try and reduce their policy-related costs.

Additionally, we explore the model response to these policies with different assumptions about uncertain parameters. As discussed in Section 3, there are many uncertain parameters which may affect outcomes. We select a range of parameters that we believe are likely to have the largest impact on outcomes, and which are affected by the largest amount of uncertainty, to explore:

- Cost pass-through at congested airports. We assume cost pass-through at non-congested airports is always 100%, but explore cost pass-through values of 0%, 50% and 100% for congested airports.
- Passenger price elasticity of demand. We explore values of -0.2, -0.5 and -0.8. These values are relatively small compared to the range given in the literature but are chosen for consistency with the values used in DfT (2017) and because the impact of itinerary choice on demand is already separately modelled.
- The extent to which airlines can swap aircraft from UK to non-UK routes. We examine two cases: that in which they can swap to the full extent possible, as examined in Section 4.4.1, and that in which they cannot or choose not to swap aircraft at all.
- The baseline system conditions, in terms of fleet, fuel price, baseline carbon price, etc. We assume two cases: policies applied in 2015, which has relatively low fuel and baseline carbon prices, and policies applied in the 2030 central case, which has higher fuel and baseline carbon prices.

Outcomes in each case are discussed individually below.

5.2 Policies applied in 2015

5.2.1 Increased carbon price

Figure 19 shows carbon leakage in the case that an increased carbon price is applied to the 2015 baseline system, with values up to £200/tCO_2 for UK departing flights only. For comparison, the baseline carbon price assumed in 2015 is around £5/tCO_2, so the upper end of the range modelled would represent a substantial change from present-day values. As shown in Figure 13, this level of carbon tax would more than double year-2015 fuel prices. The model runs in Figure 19 assume airlines can respond to any new policy by exchanging their fleet between different routes. Figure 20 shows the corresponding case where fleet swapping does not occur. Both sets of model runs consider a range of values for price elasticity and congested airport cost pass-through ('CA pass-through').

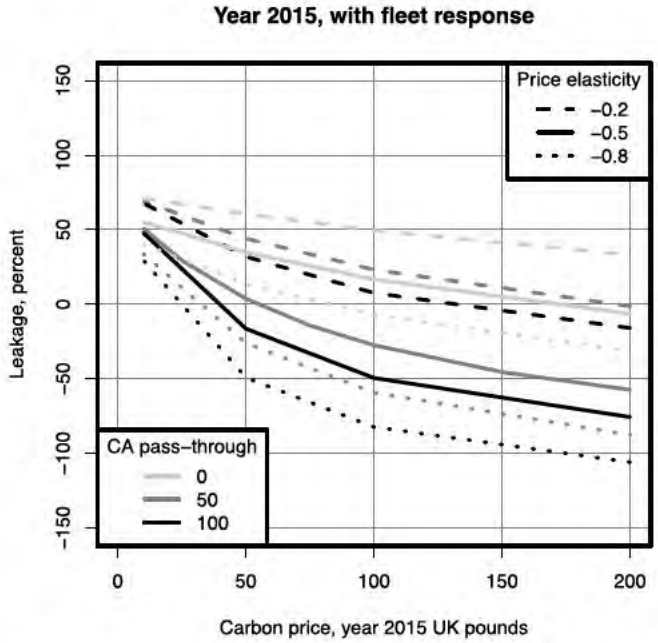

Figure 19. Carbon leakage for a hypothetical carbon price policy applied in 2015, with fleet response.

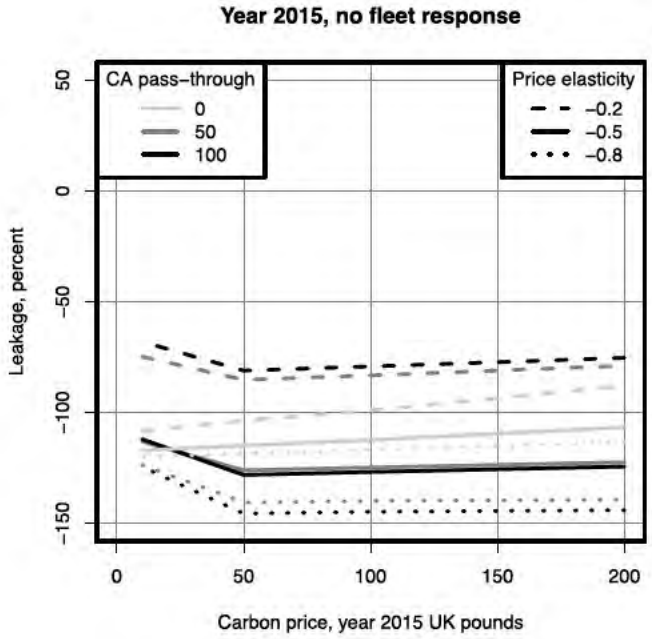

Figure 20. Carbon leakage for a hypothetical carbon price policy applied in 2015, without fleet response.

Several features are apparent. First, leakage is negative in the majority of cases when airlines can respond to policy by swapping fleet between routes, and negative in all cases in the case that they cannot. The origin of this negative leakage is discussed in Section 2.5. In the case that airlines cannot swap fleet, the main outcome of the increased carbon price policy is an increase in ticket price, i.e. it primarily has an impact on demand. Because passengers usually make round trips, a demand reduction on the outbound leg of a journey

is matched by a demand reduction on the inbound leg. But leakage here is measured on a UK departing flights basis. Therefore in the simplest case, there is a reduction in demand and hence emissions for UK departing flights, and a similar reduction in demand and emissions for UK arriving flights, leading to leakage of around -100%.

However, the actual amount of leakage varies between around 50% and -150%, depending on the level of carbon price assumed and the values used for uncertain parameters. This is due to the interaction of several different effects. First, fleet swapping is assumed to be a minimal-cost option for airlines. Therefore it is cost-effective for airlines to move lower-emission fleet onto UK routes even where the additional carbon price is small (as discussed in Section 4.4.1, there are several reasons to believe that this level of response in unlikely). Fleet swapping results in positive leakage because higher-emission aircraft are moved onto non-UK routes, increasing the CO_2 attributed to them. The underlying changes in emissions by scope are shown in Figure 21 (with fleet swapping) and Figure 22 (without fleet swapping). As shown in Figure 21, fleet swapping leads to increases in emissions on routes that are not to or from the UK in all cases. At low carbon prices, this fleet swapping impact is greater than the negative leakage from demand reduction, so the overall leakage is positive.

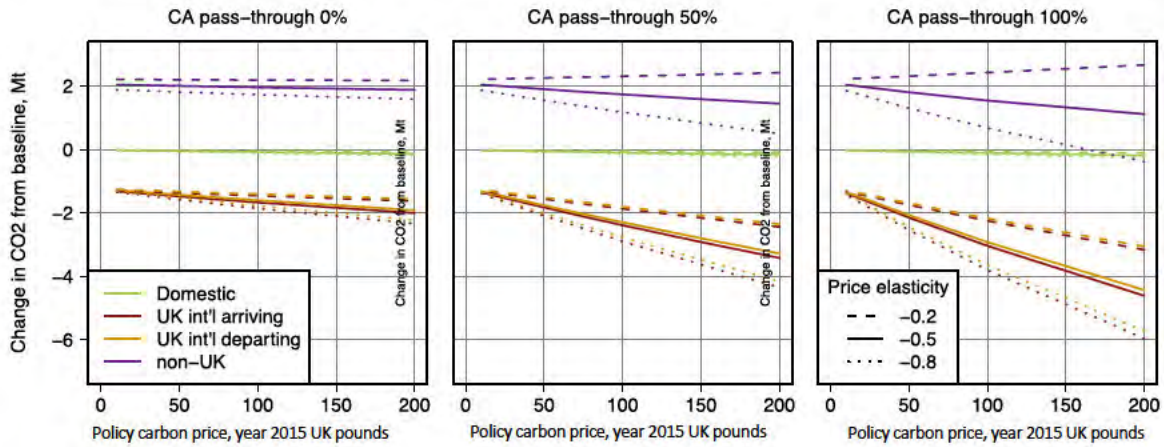

Figure 21. Underlying changes in CO_2 emitted by scope, for a hypothetical carbon price policy applied in 2015 with airline fleet swapping.

Another source of positive leakage is passengers changing itineraries from UK-hubbing routes to non UK-hubbing routes. As discussed in Section 4.4.5, this effect is comparable to that from demand reduction if the price elasticity of demand is small. Therefore model runs with lower price elasticity of demand have net positive leakage (in the case that fleet response is assumed) or less negative leakage than other runs (in the case that there is no fleet response).

The model runs also investigate the impact of cost pass-through at congested airports ('CA pass-through'). At 0% pass-through, there is no change in ticket price for passengers travelling through Heathrow and Gatwick airports. As Heathrow takes the vast majority of UK international-international transfer passengers, this means that the itinerary choice effect in the case of zero pass-through is extremely limited. The amount of pass-through also affects the balance between demand-based negative leakage and supply-based positive leakage. Airlines are assumed to try and reduce their costs by swapping fleet, buying new

aircraft or tankering before they decide how much of the remaining cost increase to pass on to passengers. Therefore model runs with lower pass-through at congested airports have higher positive or less negative leakage. The greater the proportion of cost that is passed on to passengers, the larger the demand-based negative leakage effect.

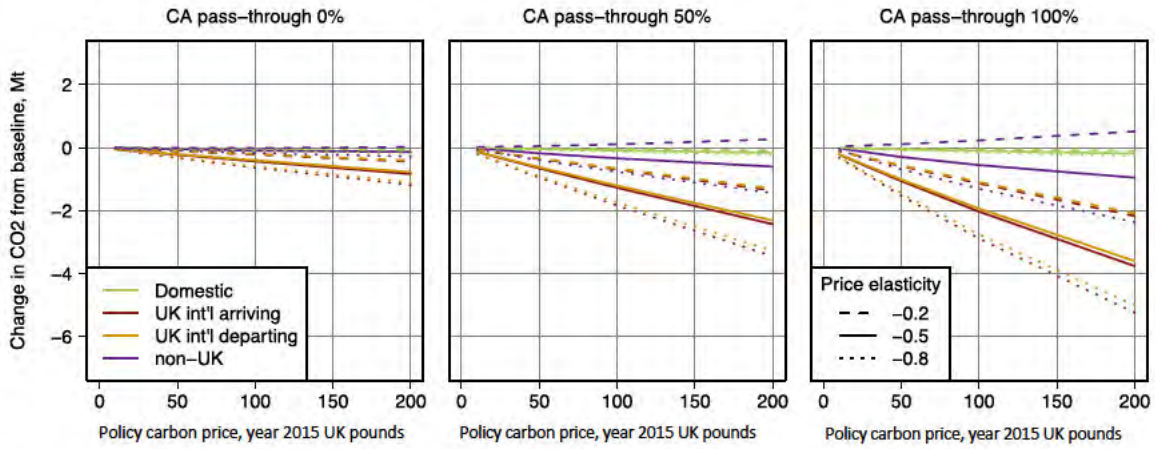

Figure 22. Underlying changes in CO_2 emitted by scope, for a hypothetical carbon price policy applied in 2015 without airline fleet swapping.

To assess competitive disadvantage impacts, we look at the change in demand by carrier and route type and the amount of cost not passed on by carrier and route type. The change in passenger demand due to an increased carbon price is shown in Figure 22 (with fleet swapping) and Figure 24 (without fleet swapping). The cases with and without fleet swapping are generally similar, although demand reductions on UK routes are slightly greater without fleet swapping, as airlines have fewer ways of reducing their policy-related increased costs.

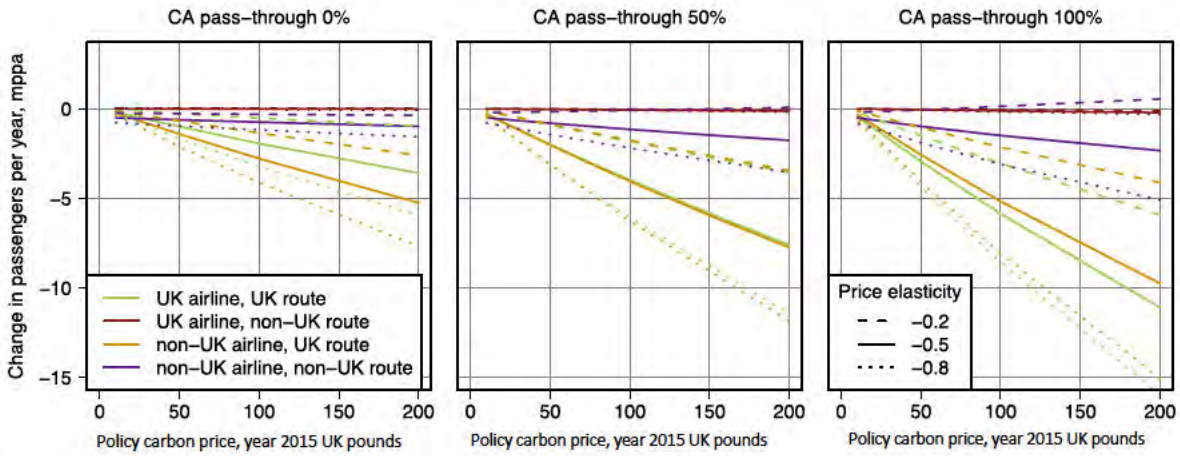

Figure 23. Change in demand by airline and route type for a hypothetical policy increasing carbon price in 2015, for different assumptions about price elasticity and cost pass-through at congested airports. Airline fleet swapping is included.

In general, changes in demand on non-UK routes are small compared to those on UK routes. In most cases demand reduction for UK OD passengers, rather than changes in itinerary choice for international-international transfer passengers, is the dominant demand impact. In the case that fleet swapping occurs, non-UK routes may also have increased costs from using older aircraft, leading to a small damping effect on demand. As non-UK airlines are more able to swap fleet, this effect is greater for non-UK airlines.

On UK routes (which includes both routes to the UK and those from the UK), changes in demand depend primarily on the amount of cost pass-through at congested airports and the assumed price elasticity of demand. Larger amounts of pass-through, and passengers who are more price-sensitive, lead to greater reductions. These reductions are usually at similar levels for UK and non-UK airlines. Generally, non-UK airlines are more impacted than UK airlines at low levels of congested airport pass-through, and UK airlines are more impacted than non-UK airlines at higher levels of congested airport pass-through. This reflects the different distribution of UK and non-UK carriers between congested and non-congested airports. Major UK carriers, for example BA and Virgin Atlantic, have many flights from Heathrow and Gatwick airports. If pass-through is assumed to be low at these airports, then the demand impact on these carriers will be small. However, the reduction in their profit margins may be substantial.

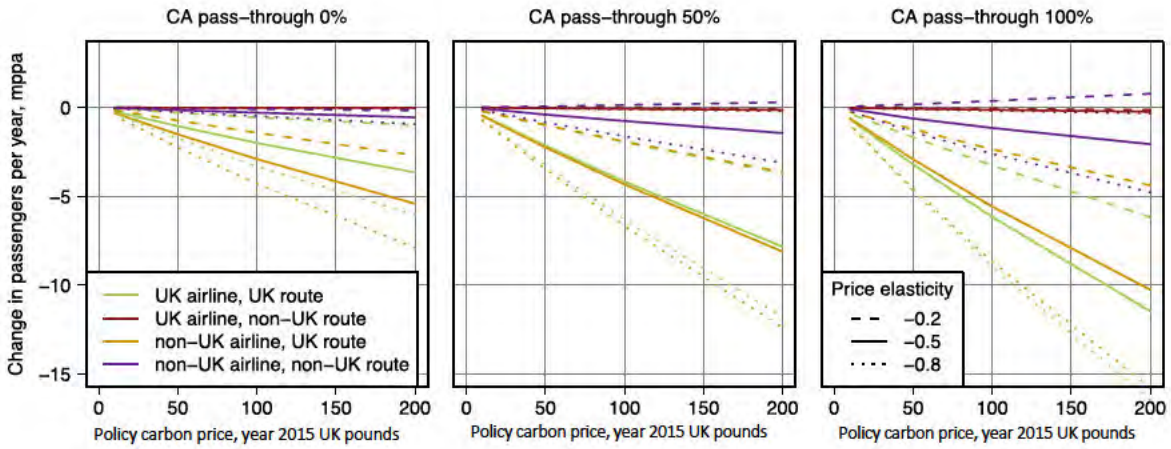

Figure 24. Change in demand by airline and route type for a hypothetical policy increasing carbon price in 2015, for different assumptions about price elasticity and cost pass-through at congested airports. Airline fleet swapping is not included.

The change in non passed-through cost per RPK (i.e. the overall increase in airline costs that is not passed onto ticket price divided by revenue passenger-kilometre travelled) is shown in Figure 25 (with fleet swapping) and Figure 26 (without fleet swapping). For reference, average global airline ticket revenue per RPK is around £0.1 (e.g. ICAO, 2016). Therefore an increase in costs of £0.015 is substantial. Although airlines have other sources of revenue (for example, for low-cost airlines ancillary revenue from activities such as website advertising, car hire and hotel booking tie-ins and selling food on board is an important component of total revenue without which the airline may appear to be loss-making), ticket revenues are usually their dominant revenue source. Assuming typical operating margins pre-policy of 4% (Ernst & Young and York Aviation, 2008), this suggests that airlines which did not pass on costs at congested airports would be making a loss at the higher end of the

carbon price range explored here. In reality, this suggests that after some threshold carbon price they would pass on at least some of their increased costs.

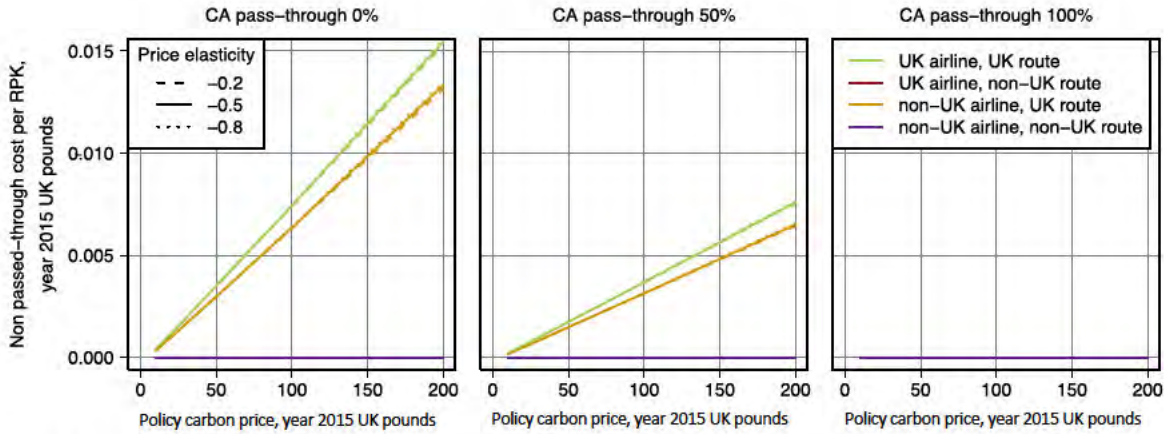

Figure 25. Change in costs not passed on per RPK, for the case of an increased carbon price in 2015 with airline fleet swapping.

As discussed above, the differences between UK and non-UK airlines in terms of who is most affected are mainly related to the airports that they operate from. In the case that some costs are not passed on at congested airports, UK airlines are more affected because of the heavy presence of major UK carriers at Heathrow and Gatwick airports. Additionally, there are differences between UK and non-UK carriers in terms of the type of operations carried out. For example, most UK domestic flights are carried out by UK carriers. This has relatively little impact in the case of an increased carbon price because domestic flights are typically short, carried out by smaller aircraft, and associated with relatively low total CO_2.

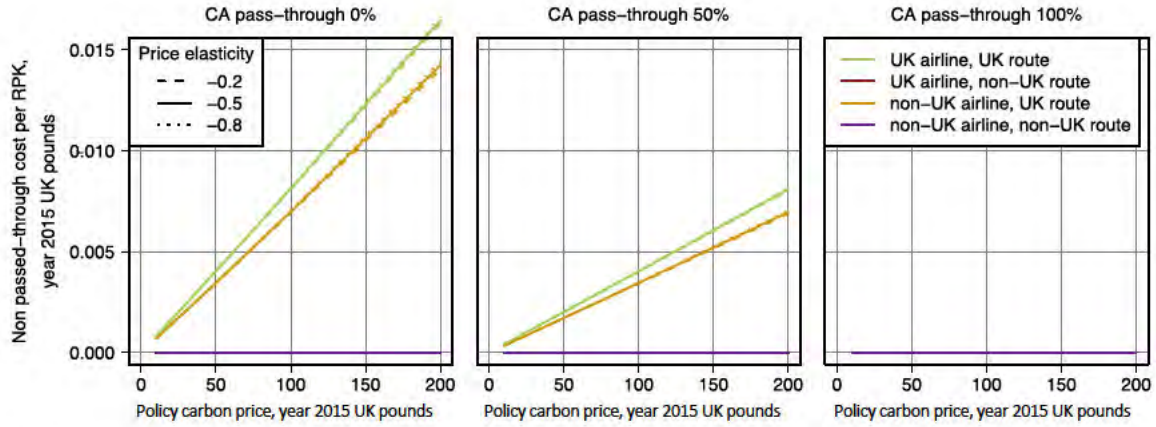

Figure 26. Change in costs not passed on per RPK, for the case of an increase carbon price in 2015 without airline fleet swapping.

Finally, we examine the change in demand per major airport. Here results again reflect that demand reduction on routes to and from the UK is the major impact of the increased carbon price policy. UK airports see reductions in demand in all cases. For example, in the case that 50% of cost is passed through at congested airports and price elasticity is -0.5, demand at Heathrow reduces by up to 4.8 mppa (around 6% of the modelled Heathrow total). For comparison, demand at Heathrow over the 2010-2016 period has tended to increase by 1-2

mppa per year (CAA, 2016). However, non-UK airports see reductions in demand in most cases as well. The extent of the demand reduction depends on the airport's connections to the UK and how much it is used as a hub for UK-originating traffic. For example, Dubai airport passenger demand reduces in almost all model runs because it is used as a hub for passengers flying to Asian destinations from the UK, rather than as an alternative hub to Heathrow for long-distance passengers travelling between non-UK destinations. For nearer hub airports, such as Paris Charles de Gaulle, outcomes are mixed. In the case that there is 100% or 50% cost pass-through at congested airports and a price elasticity of -0.2, itinerary choice effects dominate and demand increases at Charles de Gaulle by up to 0.2 mppa. However, for more negative price elasticities, the reduction in demand for UK origin and destination passengers is greater than the increase in demand from passengers changing routing.

The overall most likely outcome of this policy on airports is therefore that nearly all airports, UK and non-UK, will see a reduction in revenues caused by decreasing passenger throughput. However, UK airports will have larger decreases in throughput than non-UK airports.

5.2.2 Increased use of biofuel

This hypothetical policy case assumes that airlines are required to use a particular percentage of biofuel when refuelling at UK airports. For 2015, this is wholly theoretical; the supply and delivery infrastructure for aviation biofuels is not yet in place. However, small amounts of aviation biofuel are in everyday use for scheduled flights at Los Angeles International Airport (LAWA, 2016), including delivery infrastructure from a commercial biofuel plant (AltAir), and other aviation biofuel production facilities are under construction. Therefore, depending on the priority that aviation biofuel development is given in comparison to other uses of biomass, it may be a feasible option in the near future. It is assumed that biofuel is around twice the price of Jet A; therefore, a 40% biofuel blend would increase fuel prices by around 40%. This can be compared to the impact of a \$200/tCO_2 carbon price, which would more than double year-2015 fuel prices. Therefore the largest biofuel blends investigated here have a significantly smaller cost impact on airlines than the largest carbon prices investigated above.

In this section, we assume that emissions changes are evaluated on a UK fuel uptake basis. In practice this is identical to a UK departing flights basis unless tankering occurs. In the case that tankering occurs, fuel for some UK departing flights will be taken on board at non-UK airports and the amount of fuel taken on board at UK airports will decrease. As discussed in Section 2.12, leakage on a departing flights basis from tankering will be around a tenth of leakage on a fuel uptake basis from tankering, and will be roughly similar to the case without tankering. To quantify this difference, we also carry out biofuel model runs without tankering and compare the outcomes to those with tankering.

Figure 27 shows leakage on a UK fuel uptake scope due to the biofuel policy in the case that airline fleet swapping between UK and non-UK routes is assumed. Figure 28 shows the case in which airlines are assumed not to swap fleet. Leakage in both cases is relatively similar and is typically between 10 and 40% positive, i.e. an emissions reduction on a UK departing

flight scope with a smaller emissions increase on non-UK flights. In both cases leakage has a peaked structure with increasing biofuel percentage, with maximum leakage at around 15% biofuel.

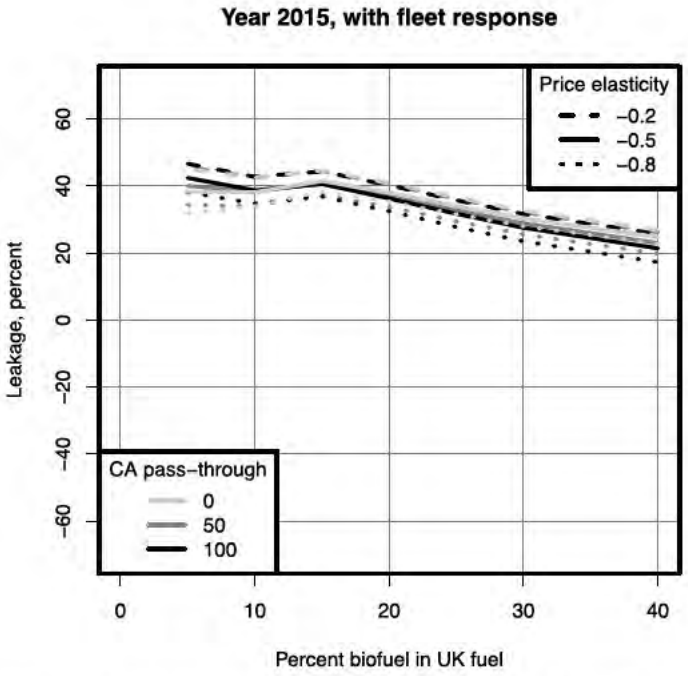

Figure 27. Carbon leakage in the case of a hypothetical UK departing flight biofuel uptake policy, under year-2015 conditions with fleet response.

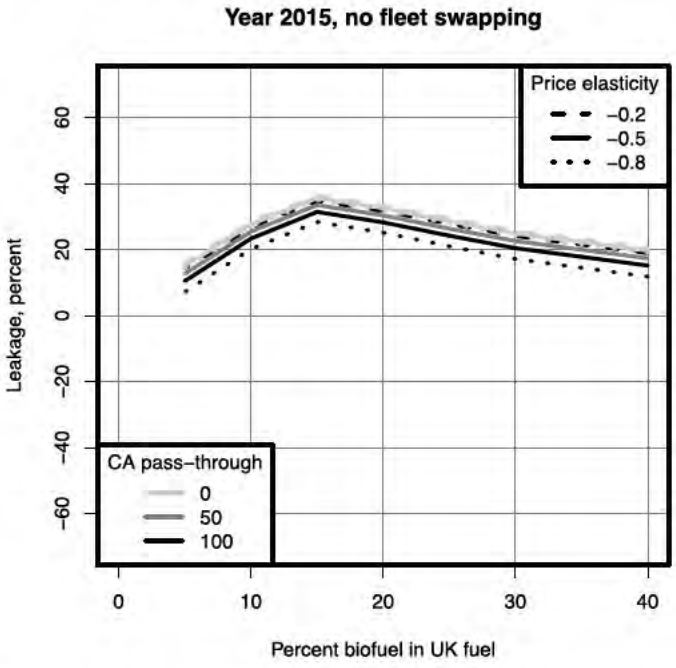

Figure 28. Carbon leakage in the case of a hypothetical UK departing flight biofuel uptake policy, under year-2015 conditions without fleet swapping.

Several interacting factors are behind these trends. In particular, there are two factors that apply to the biofuel policy which do not apply to the carbon price policy. One is that the policy is assumed applied on a UK fuel uptake basis. Therefore airlines on short-haul routes can avoid it by tankering fuel. The second is that using biofuel results in a decrease in emissions for UK departing flights regardless of any demand reduction, because biofuel is assumed to have lower emissions than fossil-derived aviation fuel. Tankering is the practice of taking enough fuel on board at an airport with lower fuel prices to cover both legs of a return journey, rather than paying higher fuel prices to refuel at the intermediate airport. The net impact of tankering is to take emissions outside a UK departing flights scope, plus a small additional increase in fuel use from increased aircraft weight on the outbound journey. If emissions are derived from fuel uptake, tankered fuel will be counted as emissions attributed to the non-UK airports where tankering flights took on their increased fuel load.

Tankering therefore causes positive leakage. The amount of leakage depends on how many flights it is cost-effective to tanker on, and how many flights it is possible to tanker on. As discussed in Section 4.4.4, there are practical limits on which flights can tanker. For example, the aircraft must have the available fuel tank capacity to take on the extra fuel and cannot be over its maximum takeoff weight on initial departure, or maximum landing weight on first landing. These constraints limit tankering use to short-haul flights only. Figure 29 shows the amount of CO_2 taken outside a UK departing flights scope by tankering for different UK fuel uptake biofuel percentages. The case with fleet swapping is shown, but all scenarios have similar outcomes. As the increased costs associated with taking on more biofuel at UK airports increase, more fuel is tankered. However, for year-2015 conditions tankering potential begins to level off at around 15% biofuel. By 20% biofuel, all flights that can tanker are doing so, taking around 2 $MtCO_2$ outside of a UK departing flights scope.

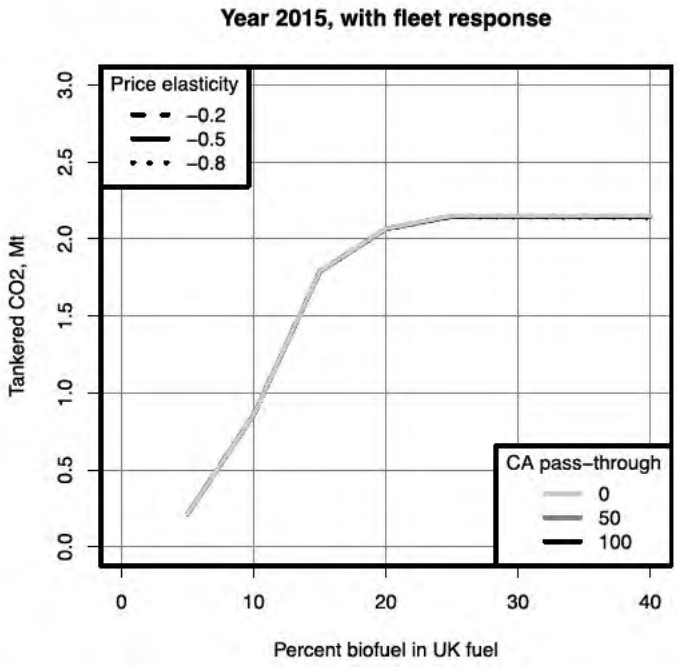

Figure 29. The amount of CO_2 tankered (i.e., removed from a UK departing flight scope and added to a UK arriving flights scope) for the aviation biofuel policy under year-2015 conditions.

The impact of emissions reductions caused by biofuel use, in contrast, is linear with increasing biofuel uptake. This reduction applies only to UK departing flights. Figure 30 shows the absolute change in emissions by scope caused by the policy in the case with airline fleet swapping. Figure 31 shows the corresponding case without airline fleet swapping. Outcomes with and without fleet swapping are more similar than they were in the increased carbon price case. This is because the potential emissions reduction from using biofuel is much greater than the change in emissions from fleet swapping. However, fleet swapping is still widely employed in this scenario where allowed. Because we have assumed fleet swapping is a minimal-cost option to airlines, airlines will use it wherever they can reduce their costs by using a newer aircraft on a route. Because a newer aircraft of a given size class typically uses less fuel, this reduces the overall increase in fuel costs to airlines from using biofuels. Therefore, where fleet swapping is allowed, the model projects airlines using it even at relatively low biofuel uptake percentages. Widespread fleet swapping potentially moves around 2 $MtCO_2$ from flights to and from the UK to flights unrelated to the UK. This is distinct from the impact of tankering; for tankering, emissions on flights to the UK are slightly increased, whereas fleet swapping reduces the emissions of these flights.

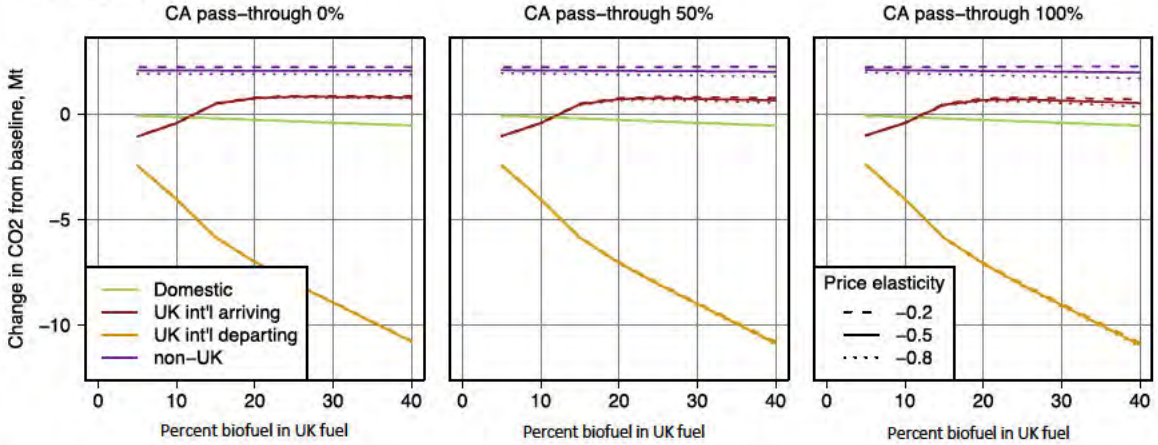

Figure 30. Change in CO_2 by scope for the hypothetical biofuel uptake policy under year-2015 conditions, assuming airline fleet swapping.

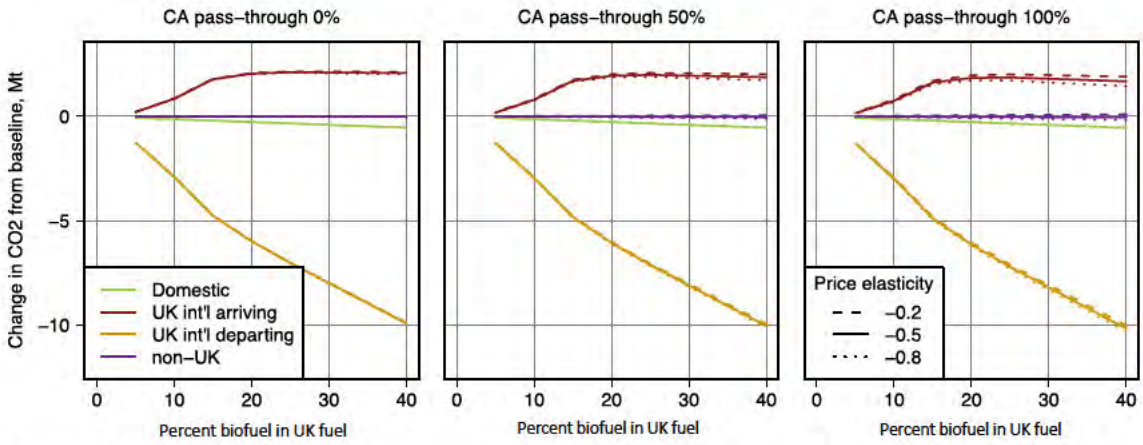

Figure 31. Change in CO_2 by scope for the hypothetical biofuel uptake policy under year-2015 conditions, assuming no airline fleet swapping.

The largest impact on overall CO_2, however, comes from the use of biofuel itself. Biofuel is assumed to have 30% of the CO_2 emissions of fossil-derived Jet A (Section 4.3.5). This is a simplified way of accounting for its lower emissions on a fuel lifecycle basis; when in use, drop-in biofuels will result in the around the same amount of CO_2 being emitted directly from aircraft engines as fossil-derived Jet A. However, growing feedstock for biofuels absorbs CO_2 from the atmosphere. Biofuel is assumed in use only on UK departing flights. The net impact of the biofuel policy on leakage is thus made up of the following components:

- A large reduction in UK departing flight emissions from the use of biofuel (up to 10 $MtCO_2$ in the extreme case of 40% biofuel use).
- A smaller shift of emissions from a UK to a non-UK fuel uptake scope due to tankering (up to 2$MtCO_2$ at 20% biofuel, at which point the maximum tankering potential is reached).
- If fleet swapping is considered, a shift of around 2$MtCO_2$ from UK departing and arriving flights to non-UK flights, which is roughly the same across all policy levels.
- Similar (but smaller-magnitude due to an overall lower cost to airlines) demand and itinerary choice impacts as for the increased carbon price policy.

Of these, the most important factors are the tankering-led movement of emissions outside a UK fuel uptake scope, which results in net-positive leakage; and the large reduction in UK departing flight emissions from biofuel use, which makes the leakage percentage smaller. The end result is positive leakage of around 10-40% which is relatively insensitive to demand and congested airport cost pass-through parameters.

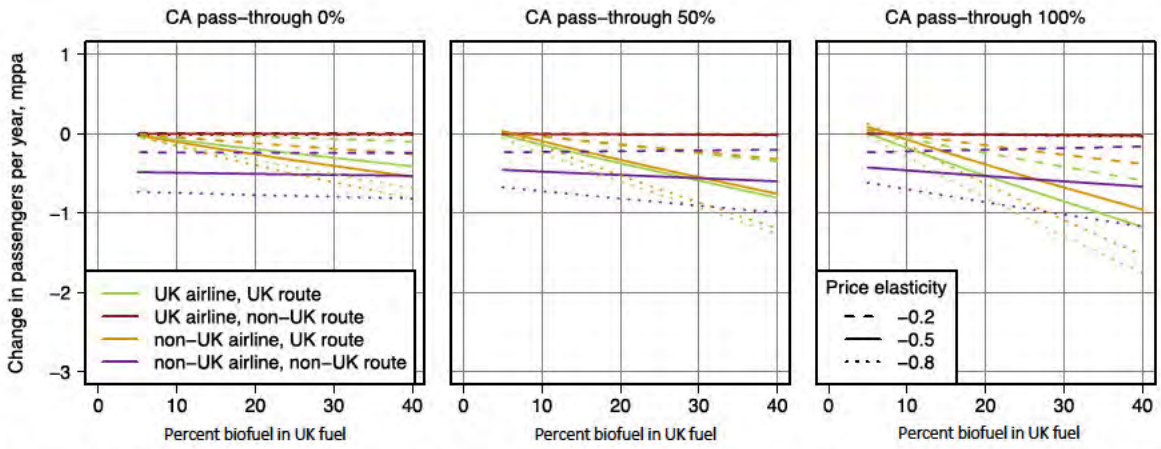

Figure 32. The change in demand by airline and route type for the hypothetical biofuel policy under year-2015 conditions, with fleet swapping.

If tankering does not allow policy avoidance (for example, if the policy is specified as a requirement on all flights departing UK airports, rather than all fuel taken on at UK airports) then the overall leakage total is smaller. For passenger price elasticity of demand of -0.5 and 50% cost pass-through at congested airports, leakage without tankering but with fleet swapping is around 5-35%, compared to 23-40% with tankering. If neither tankering or fleet swapping is assumed, leakage in this case is close to zero, i.e. the demand and itinerary choice impacts for non-UK flights are small compared to the biofuel reduction in UK departing flight CO_2. In the case that tankering occurs but emissions are measured on a UK departing flight basis, outcomes will be closer to the no-tankering case than the tankering

case with emissions on a fuel uptake scope. This is because tankering in this case only increases non-UK emissions by a small amount (the 3-10% increase per arriving tankering flight discussed above).

The corresponding change in passenger demand by airline and route type is shown in Figure 32 (with fleet swapping) and Figure 33 (without fleet swapping). As noted above, the effective fuel cost increase associated with the higher levels of biofuel uptake modelled here is much less than that associated with the higher levels of carbon price modelled in the carbon price case. Therefore the demand impact is correspondingly smaller. However, the overall broad patterns of response are similar. Because most air journeys are round-trips, demand reduction is similar on UK departing and UK arriving flights, even though the emissions associated with these flights are different. In the case of fleet swapping, there is a demand reduction on non-UK flights associated with higher fuel use on those routes from older aircraft swapped out from UK routes. Without fleet swapping, demand response is broadly linear with policy level.

As with the carbon price policy, UK and non-UK airlines on UK routes are affected at a similar level by demand reductions. The exact balance between them depends on the amount of cost pass-through at congested airports. This is because UK carriers have more flights from the congested airports modelled.

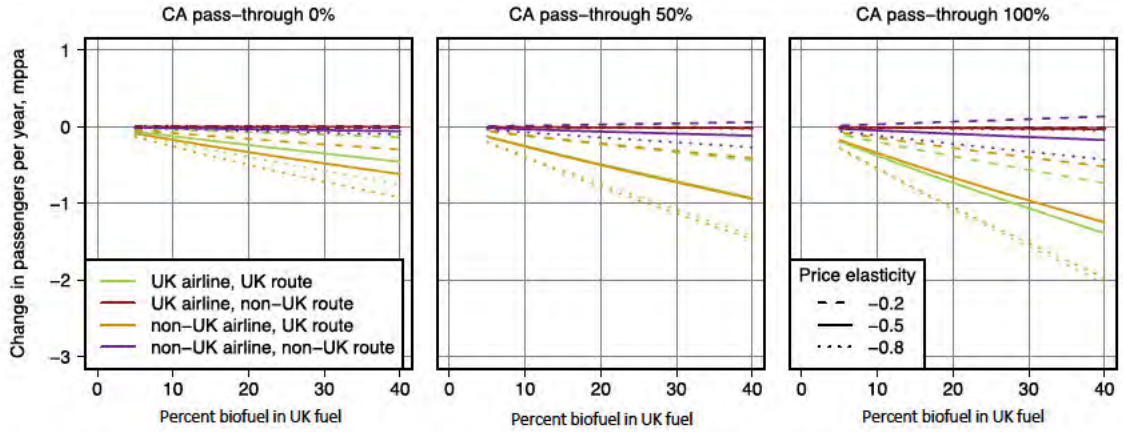

Figure 33. The change in demand by airline and route type for the hypothetical biofuel policy under year-2015 conditions, without fleet swapping.

The corresponding changes in non passed-through operating cost per RPK are shown in Figure 34 (with fleet swapping) and Figure 35(without fleet swapping). For comparison, airline ticket revenue per RPK is around £0.1 (e.g. ICAO, 2016). The projected increases in non passed-through cost are small relative to this value and probably lie within existing airline operating margins, making it more feasible that airlines will absorb some or all of the cost increases for operations to and from congested airports.

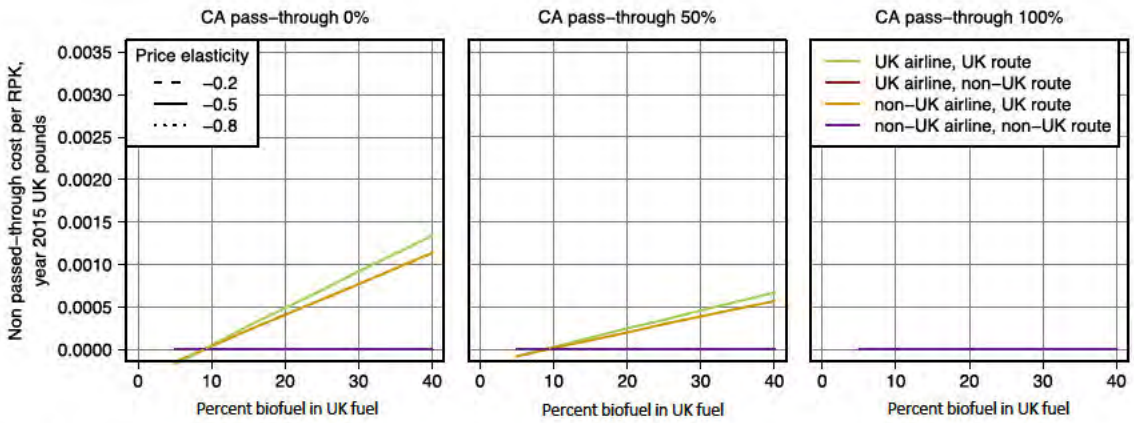

Figure 34. Non passed-on cost per RPK in the case of a hypothetical biofuel uptake policy applied under year-2015 conditions, with fleet swapping assumed.

In the case with fleet swapping, there is a slight decrease in costs for UK routes at the lowest biofuel percentage assumed. This is due to the cost saving from fleet swapping being marginally larger than the cost increase from biofuel use. Cost increases for non-UK flights are assumed fully passed on, so there is not a corresponding change in non passed-through cost for non-UK routes.

For airport-level demand, results are similar to, but smaller in magnitude than, the carbon pricing case. Demand at Heathrow airport reduces by up to 0.6 mppa in the case of 50% pass-through at congested airports and a price elasticity of -0.5. Demand at non-UK airports remains broadly constant or shows a small decrease, suggesting costs are not high enough to produce enough itinerary change for the demand increase due to passengers changing from UK hub routes to cancel out the demand decrease from passengers starting and ending their journeys in the UK.

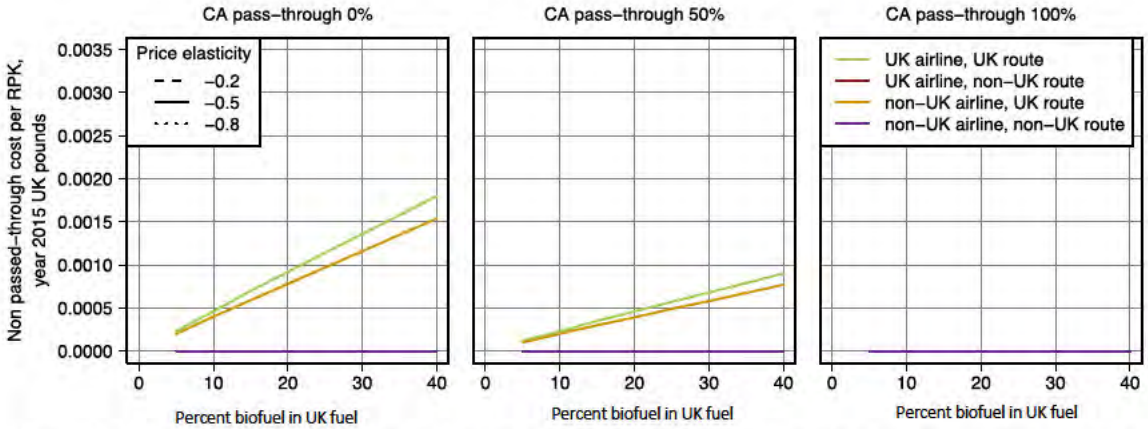

Figure 35. Non passed-on cost per RPK in the case of a hypothetical biofuel uptake policy applied under year-2015 conditions, without fleet swapping assumed.

5.2.3 Environmental landing changes

For the third hypothetical policy case, we look at making changes to UK airport landing charges to encourage the use of lower-emission aircraft. As with many existing environmental landing charge schemes (e.g. Roy, 2007) the changes are designed to be

overall cost-neutral, with an increase in cost for older aircraft balanced out by a decrease in cost for younger aircraft. We choose age thresholds of 5 and 15 years to define younger, mid-aged and older aircraft. The older aircraft are assumed to have an increase in landing charge of a given amount (for example, £1,000/landing) at all UK airports across all aircraft sizes. The younger aircraft are assumed to have a decrease in landing charge of the same amount. Mid-aged aircraft are assumed to have no landing cost change. For comparison, current landing charges at UK airports can reach up to around £10,000 for large aircraft at Heathrow. The structure of landing charges can be complex, with factors like noise, number of passengers carried, international or domestic status and airline potentially affecting the exact value. However, usually landing charges for smaller aircraft are lower. Using thresholds of 5 and 15 years means that the policy is roughly cost-neutral with current fleets. However, airlines can make overall cost savings by changing their fleets.

Changes in landing charges have a fundamentally different impact on airline costs than policies which change the effective price of fuel. Both the carbon pricing and biofuel uptake policies produce a cost increase which is greater for longer flights, larger aircraft and older aircraft. In contrast, changes in landing charges penalise older aircraft, but they also penalise aircraft that land in the UK more often. This is generally smaller aircraft on short-haul routes. A regional jet on a UK domestic route might land up to ten times a day at UK airports (e.g. FlightGlobal, 2017). A large, long-haul aircraft, which might land at UK airports only once or twice a day, has a much smaller relative cost burden.

The overall aim of the hypothetical policy is to produce airline response to reduce emissions without substantial passenger response. Given that airline response in the previous hypothetical policy test cases has been associated with positive leakage, it is likely that it will also occur in this case. Leakage is shown in Figure 36, for the case where fleet swapping is assumed. Since the policy is aimed at prompting airlines to make fleet changes, running the model without fleet response produces very little change from the baseline system. There are some small demand shifts associated with different age distributions in the different aircraft size classes. For £2000/year increases in landing charge without fleet swapping, there are also up to 60 new aircraft purchases projected; these are nearly all regional jets, and result from the policy's larger impact on smaller aircraft on domestic and short-haul routes. However, emissions reductions from the purchase of new aircraft are balanced out by demand increases. This is because the policy is designed to be broadly cost-neutral under the current age distribution of aircraft using UK airports. Therefore if airlines can reduce the average age of their fleet using UK airports, they can make cost savings. If these are passed on to ticket price, there is a demand rebound effect, i.e. demand on UK routes increases. The net impact on emissions if no fleet swapping is assumed is small and, because it is composed of positive and negative terms, the absolute value of leakage is highly variable. In this case leakage is not a useful metric to use.

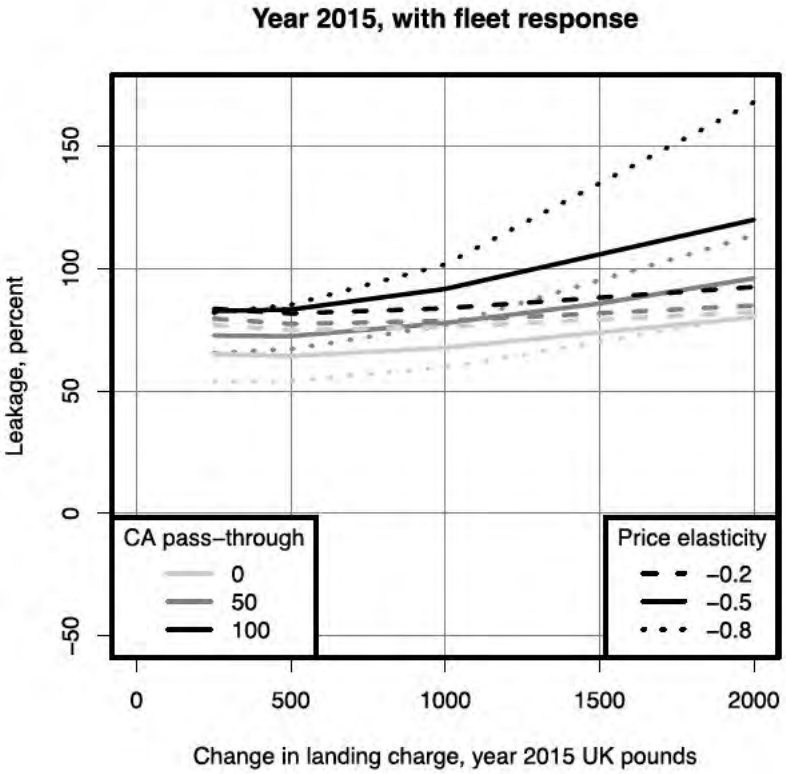

Figure 36. Carbon leakage in the case of environmental landing charges applied at UK airports under year-2015 conditions, with fleet swapping.

In the case that fleet swapping is assumed, leakage is positive and varies between around 50 and 150%. The main factors leading to leakage in this case are:

- Airlines swapping fleet between UK and non-UK routes. This moves around 2 $MtCO_2$ from routes to and from the UK to routes not associated with the UK.
- A demand impact on UK routes. As airlines are able to reduce their overall costs by swapping fleet and/or buying new aircraft, demand may increase on UK routes. This has the effect of reducing the overall emissions reduction on a UK departing flights scope, so tends to increase leakage. This demand effect is greater on short-haul routes, because short-haul aircraft usually land more times per day.
- A demand impact on non-UK routes. This arises from increased fuel use on those routes, because older aircraft have been switched to them from UK routes. This acts to decrease demand on non-UK routes and hence to reduce leakage.
- Airlines buying new aircraft. Because of the large increase in costs for regional jets, this policy can make it cost-effective to sell older regional jets and buy newer ones. This reduces emissions on UK routes, but also results in a small increase in non UK route emissions, because the sold aircraft are added to the non-UK fleet and they are usually older than the average age of the non-UK fleet.

The corresponding changes in demand by geographical scope are given in Figure 37. This shows the case where fleet swapping is included. The absolute emissions changes from the landing charge policy in the case without fleet swapping are close to zero, as discussed above.

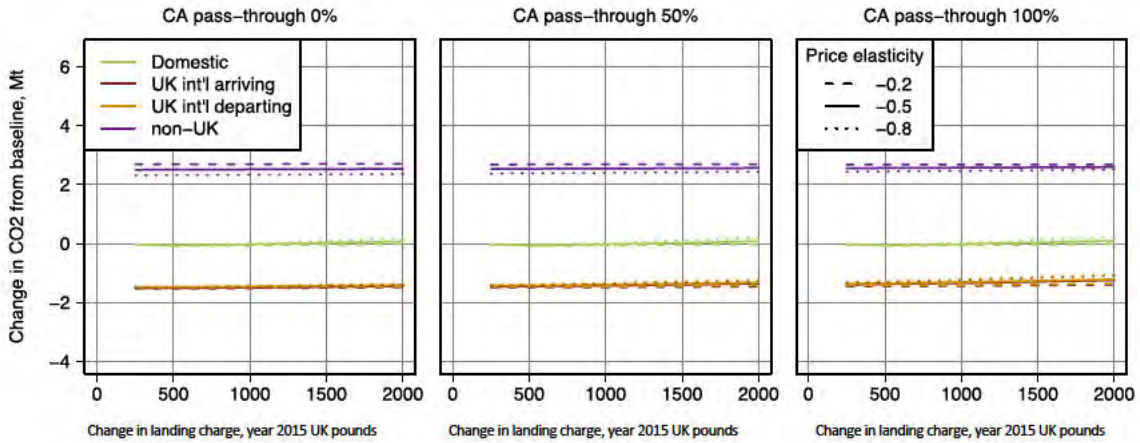

Figure 37. Changes in CO_2 by scope for a hypothetical policy in which landing charges are increased for older aircraft and decreased for younger aircraft, under year 2015 conditions with fleet swapping.

Net leakage is higher in the case that the change in landing charge is greater and/or cost pass-through at congested airports is greater. The relationship between leakage and price elasticity is more complex. If passengers are assumed to be more price-sensitive, the amount of leakage varies more around central values. The highest-leakage case is when cost pass-through is high and passengers are more price-sensitive. In this case, airlines are able to reduce their overall costs by putting as many aircraft onto UK routes as possible that are in the reduced landing charge category. This decrease in cost is passed on to passengers, leading to a demand increase on UK routes. Figure 38 shows the change in passenger numbers by airline and route type. In the most extreme case, demand on UK routes increases by 4 mppa, primarily on short-haul routes. This increase in demand causes a rebound in emissions. The reduction in emissions on a UK departing flights scope is smaller than anticipated, leading to leakage that is greater than 100%. If demand were even more price-sensitive, it is possible that the UK route demand increase would lead to an actual increase in emissions on a UK departing flight scope, i.e. leakage would be apparently negative because emissions within and outside scope both increase.

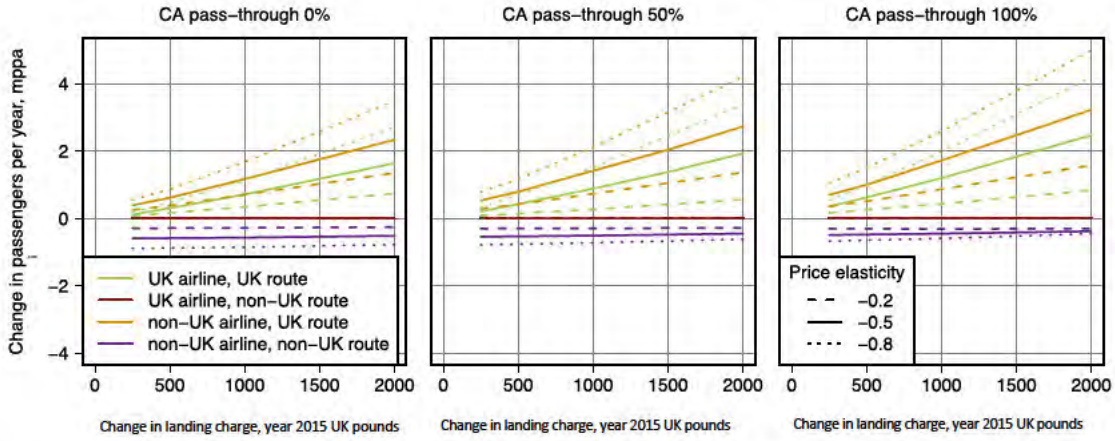

Figure 38.Change in passenger demand by airline type and scope for the landing charge policy, under year 2015 conditions with fleet swapping.

As shown in Figure 38, the demand increase is greater for non-UK airlines, for greater values of cost pass-through at congested airports, and for passengers who are more price-sensitive. However, demand changes are less sensitive to congested airport cost pass-through than for the other policies investigated. This is because short-haul routes from non-congested airports are the most affected. For non-congested airports 100% pass-through is assumed throughout. It is likely that domestic flights and flights by low-cost carriers are seeing the majority of this demand increase. For example, up to 1 mppa of the passenger demand increase is at London Stansted airport, and in the central, 50% pass-through and -0.5 price elasticity case, the demand increase at Stansted is greater than that at Heathrow.

The demand impact at non-UK hub airports is mixed. Demand increases mainly on short-haul routes from the UK to smaller European airports. Major non–UK hub airports are more likely to see demand remain flat or decrease slightly. One exception is Amsterdam Schiphol airport, where demand increases by up to 0.24 mppa.

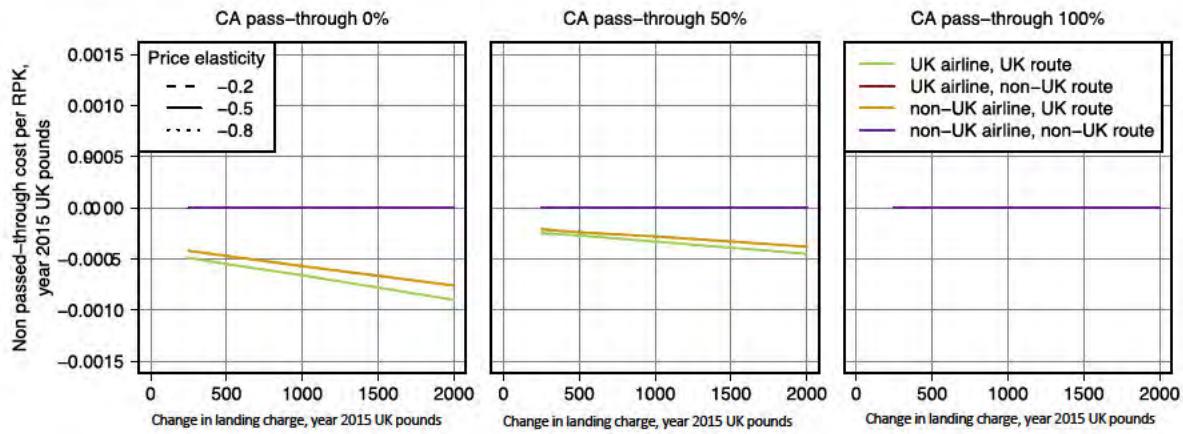

Figure 39. The change in non passed-through operating cost per RPK for the landing charge policy, for year-2015 conditions in the case that fleet swapping is assumed.

Figure 39 shows the corresponding change in costs not passed through per RPK for the landing charge policy, in the case that fleet swapping is assumed. As noted above, these costs are negative, i.e. airlines are able to reduce their overall costs by fleet swapping to get as many aircraft as possible into the lower landing charge category. Because this policy has the largest impact on smaller airports, where costs are assumed to be fully passed through in all cases, the total costs not passed through are small in comparison to airline revenues per RPK of around £0.1, and are similar for UK and non-UK airlines.

5.3 Policies applied in 2030

The total UK central-case aviation demand in terms of passenger movements in 2030, with no extra policy applied, is projected to be 321 mppa. This is consistent with DfT (2017)'s capacity-constrained central case scenario of 315 mppa. Total UK departing flight CO_2 is projected to be 38 Mt, in comparison to 37.3 $MtCO_2$ from DfT (2017). At a system-wide level, therefore, outcomes are broadly reproduced. Because we use system-wide growth rates, however, growth is assumed to be evenly distributed across all airports. Therefore, for example, demand growth at Heathrow is greater than in the DfT 2030 forecast case

without capacity expansion, and demand growth at Stansted is smaller (at 116 and 21 mppa respectively, they are close to DfT (2017)'s ENR Heathrow expansion case). Because of this divergence, we concentrate on system-wide metrics rather than airport-level metrics for the 2030 model runs.

As well as changes in passenger demand, 2030 differs in several other characteristics from 2015:

- Baseline fuel prices are around 50% higher (£0.6 per kg compared to £0.4). This increases the importance of fuel as a component of airline costs.
- Baseline carbon prices are much higher (£77/tCO_2 compared to £5/tCO_2). As shown in Figure 13, this increases the effective fuel price by around 40%, to £0.84, before any of the policies applied in this study are applied.
- There are changes in the age structure, emissions and costs of UK and non-UK aircraft fleets. Because demand growth is relatively slow, these tend towards the fleet being older on average than the current one. However, fuel use per flight and maintenance costs per flight are typically lower than in 2015.

These factors change leakage and competitive disadvantage in several ways. Greater demand means that the absolute values of demand reduction, tankering potential, swappable fleet and other system totals are greater than in the year-2015 case. The changes in fleet age structure also mean that there is a greater potential to reduce policy costs through fleet swapping between routes. However, the overall change in output metrics compared to the year-2015 case is small. This is because the policy metrics examined largely rely on relative rather than absolute changes.

Table 16. Scheduled passenger demand and CO_2 by itinerary type for central year-2030 baseline conditions.

	Itinerary passengers, mppa	**CO2 in UK departing flight scope, tonnes**	**CO2 outside UK departing flight scope, tonnes**
UK domestic direct itineraries	24.125	1.777	0.000
UK international departing direct itineraries	88.187	18.006	0.000
UK international arriving direct itineraries	87.590	0.000	17.879
UK departing via UK hub	1.089	0.660	0.034
UK arriving via UK hub	1.113	0.070	0.646
UK departing via non-UK hub	14.360	6.385	5.694
UK arriving via non-UK hub	15.530	0.006	12.893
International-international transfer via UK	13.410	6.194	6.401
International-International transfer via non-UK	57.712	0.000	52.455
International-International direct	38.178	0.000	24.984

Additionally, because demand is assumed to grow at different rates per region-pair, the balance between demand for different itinerary types changes. This in turn affects the overall demand response. Table 16 shows scheduled passenger demand by itinerary type for year-2030 central conditions, and the associated emissions within and outside a UK departing flights scope. The corresponding table for year-2015 conditions is Table 13. As in Table 13, the totals are not adjusted for freight or non-scheduled flights.

The main shift in itinerary type to 2030 is between domestic and international direct itineraries, where passenger numbers grow more slowly (under 30% total growth), hubbing itineraries starting or finishing in the UK, which grow faster (around 40-45% total growth) and international-international itineraries hubbing via the UK, which grow the fastest (54% total growth). This reflects the balance of region-pair demand growth rates assumed (Table 3). Itineraries hubbing via the UK are more likely to be for faster-growth region-pairs. This slightly increases the importance of itinerary choice in determining the amount of leakage. This raises the risk of positive leakage. However, under year-2030 conditions UK origin and destination direct flights are still the dominant source of CO_2 within a UK departing flight scope. Additionally, because UK departing and arriving flights which travel via a non-UK hub have also grown by more than average, the negative leakage from this group of itineraries, which can be in excess of 100%, is greater. These factors tend to cancel each other out, leading to total leakage which is not much different from the year-2015 case.

Because outcomes are similar to those for the 2015 model runs, we show a more limited range of output below. However, the full range of other outcomes are included in Appendix 3.

5.3.1 Increased carbon price

Carbon leakage in the case of an increased carbon price is shown in Figure 40 (in the case that fleet swapping is assumed to occur freely) and Figure 41 (in the case the fleet swapping is not assumed). These outcomes are similar to those seen under year-2015 conditions. This is because leakage relies on relative changes rather than absolute ones. One exception is that leakage is more positive that in 2015 when passengers are assumed to have low price sensitivity. This is because of the larger number of transfer passengers switching itineraries under 2030 conditions; this arises because transfer passengers are a larger proportion of total passengers in 2030. Although the amounts of emissions reduction within and outside a UK departing flights scope change between 2015 and 2030, they do so in a way that is generally proportional and driven by the same interactions as the year-2015 case. The absolute values of emissions reductions in each case are shown in Appendix 3.

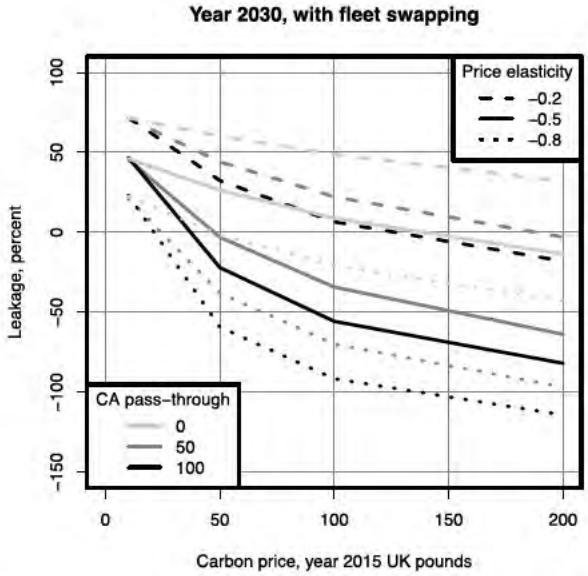

Figure 40. Carbon leakage for a hypothetical carbon price policy applied in 2030, with fleet response.

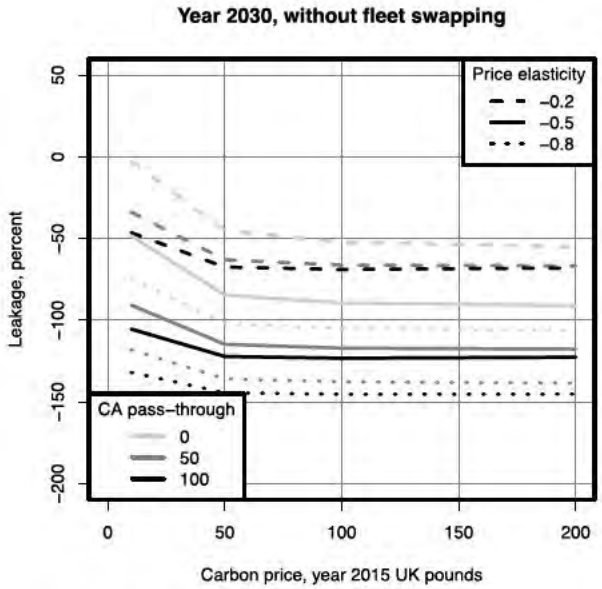

Figure 41. Carbon leakage for a hypothetical carbon price policy applied in 2030, without fleet response.

The corresponding changes in passenger numbers by scope are shown in Figure 42 (with fleet swapping) and Figure 43 (without fleet swapping). As discussed above, absolute values of emissions reductions are slightly higher than in the year-2015 case. This is because total demand and total emissions are higher than in the year-2015 case. However, in general the same factors interact in the same way as in 2015 and produce a response that is proportionally similar.

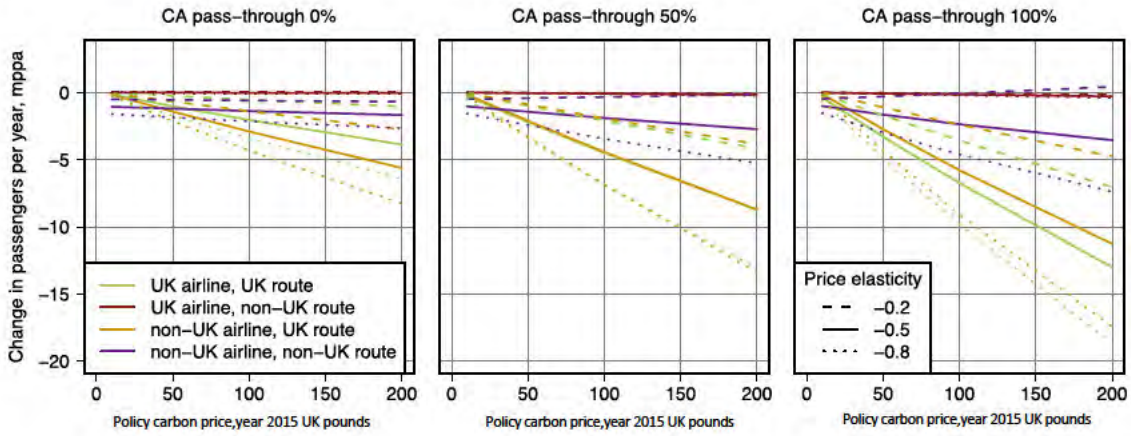

Figure 42. The change in demand with scope and airline type for a hypothetical carbon price policy applied in 2030, with fleet response.

The change in non-passed through cost per RPK by policy type is very close to that in the year-2015 carbon price case; as in the year-2015 case, UK airlines on UK routes are somewhat more affected than non-UK airlines, primarily due to the different structure of their networks, the airports that they operate out of, and the extent to which they can carry out fleet swapping. Figures for non passed-through cost are given in Appendix 3.

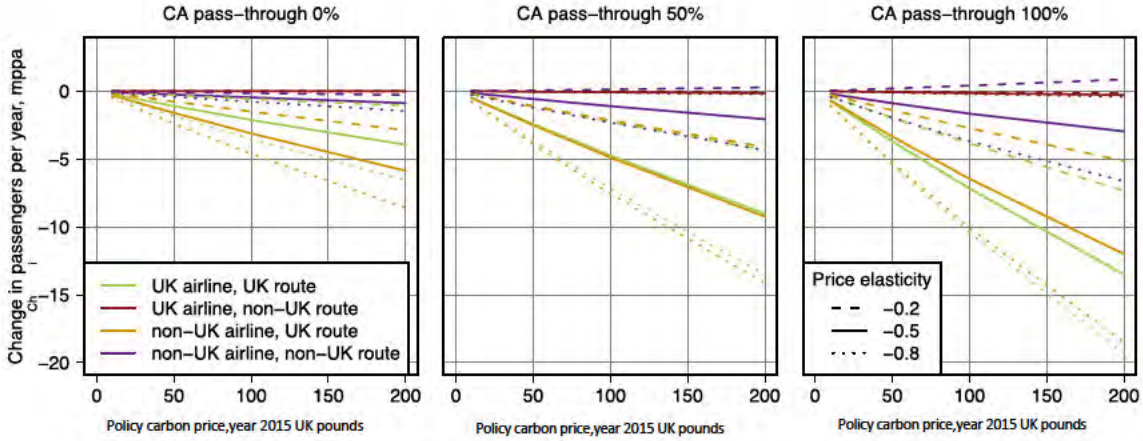

Figure 43. The change in demand with scope and airline type for a hypothetical carbon price policy applied in 2030, with no fleet swapping assumed.

5.3.2 Increased use of biofuel

As in 2015, the year-2030 biofuel policy requires airlines to use a set percentage of biofuel when refueling at UK airports. It is specified on a fuel uptake basis, so airlines may decide to tanker fuel as a response to it. We assume the same reduction in CO2 for biofuel compared to Jet A as in 2015. However, the price of biofuel is higher, as is the price of Jet A. Although the background carbon price is also higher, the biofuel price in 2030 is large enough that biofuel is still substantially more expensive than Jet A, as shown in Figure 13. Carbon leakage for the biofuel policy applied in 2030 is shown in Figure 44 (in the case that fleet swapping is assumed) and Figure 45 (in the case that it is not).

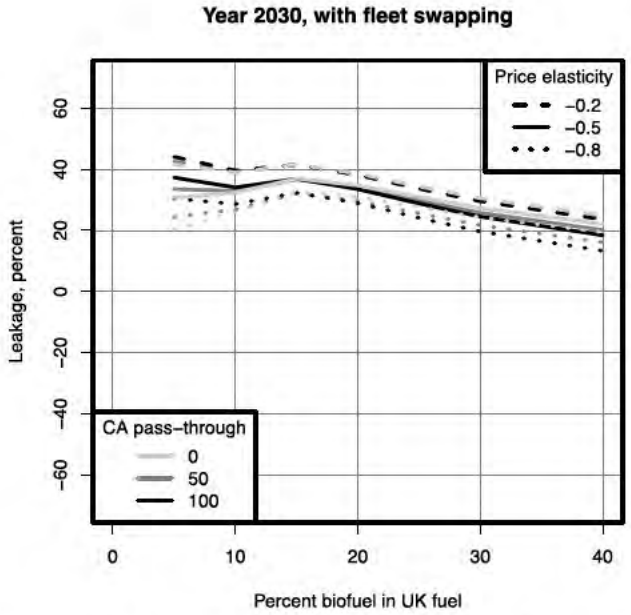

Figure 44. Carbon leakage from the biofuel uptake policy applied in 2030, with fleet swapping.

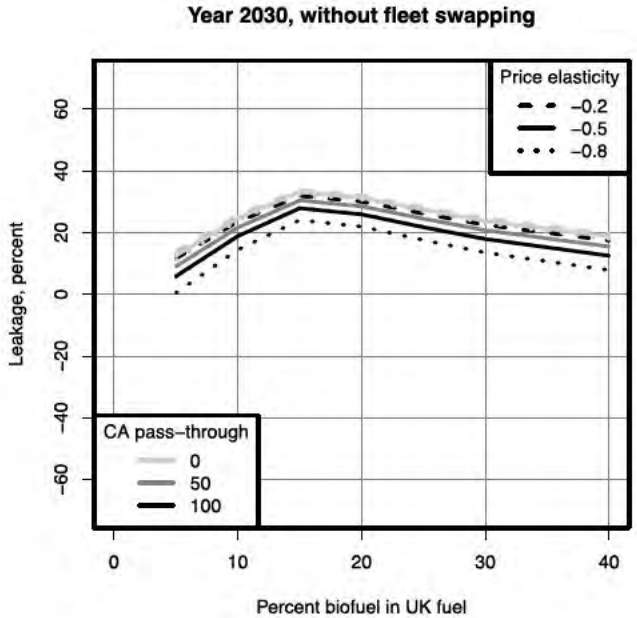

Figure 45. Carbon leakage from the biofuel uptake policy applied in 2030, without fleet swapping.

In general, outcomes match closely to those seen in 2015. Leakage is mainly in the positive 10-40% range and peaks at around 15% biofuel use. As in 2015, this is because airlines tanker more fuel as the required biofuel percentage in UK departing fuel increases. However, the potential for tankering saturates at around 20% biofuel. After this point there are no more flights on which it is physically possible to tanker fuel. After this point, leakage decreases as more costs are passed on to ticket prices and negative-leakage passenger demand effects take over. The amount of CO_2 tankered is shown in Figure 46. Tankering

potential is around 0.5 $MtCO_2$ greater than in 2015. This is due to demand increases on tankerable routes, which are mainly short-haul international ones.

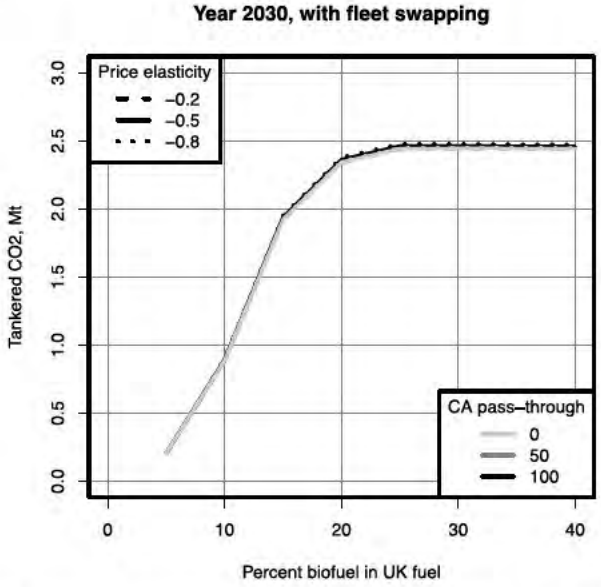

Figure 46. Amount of CO_2 tankered, for the biofuel uptake policy under year-2030 conditions.

Leakage is generally slightly smaller than under year-2015 conditions, but by an amount which is less than the amount of variability due to other uncertain parameters. This is mainly the result of a shift towards longer-haul flights, which cannot be tankered on, due to greater demand growth between longer-haul region pairs. Additionally, the range of uncertainty at low biofuel percentages is greater. This is due to the larger number of transfer passengers and the way that they interact with cost pass-through at congested airports.

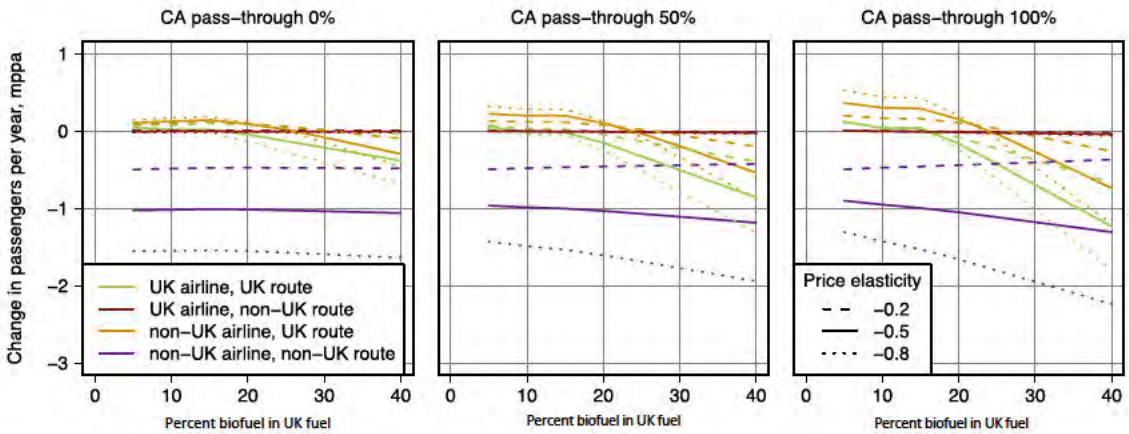

Figure 47. Change in number of passengers by scope and airline type, for the biofuel uptake policy under year-2030 conditions with fleet swapping.

The change in demand by airline type and scope for the biofuel uptake policy in 2030 is shown in Figure 47 (in the case that fleet swapping is assumed) and Figure 48 (if fleet swapping is not assumed). Demand reduction is greater than in 2015 for a comparable level of policy. There are two reasons why this occurs. First, as discussed above, total demand is higher. Second, the assumed difference in price between biofuel and jet A is higher in 2030

than in 2015 when using the DfT (2017) and Ricardo (2017) jet A and biofuel projected price trends (Table 7), so the same amount of biofuel use leads to greater costs for airlines. This also means that tankering has a larger impact on airline costs and on demand. Similarly, fleet swapping older aircraft onto non-UK routes produces a greater cost increase on those routes than in 2015, and hence a larger reduction in demand.

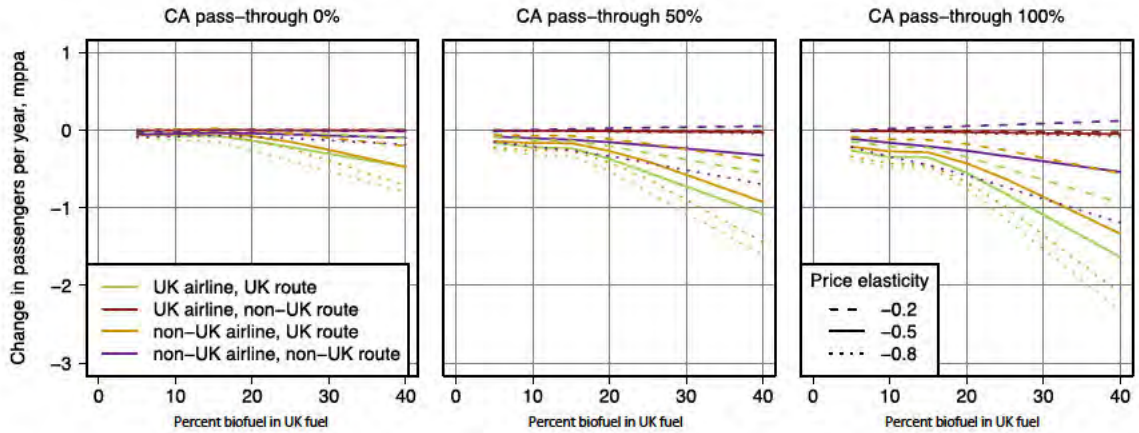

Figure 48. Change in number of passengers by scope and airline type, for the biofuel uptake policy under year-2030 conditions without fleet swapping.

5.3.3 Environmental landing charges

As with the year-2015 case, we show results for the landing charge policy only when fleet swapping is assumed. Without fleet swapping, airline response to the policy is very small; the policy is roughly cost-neutral, leading to only small changes in demand and fleet; and as a result, leakage is not meaningful as an output metric.

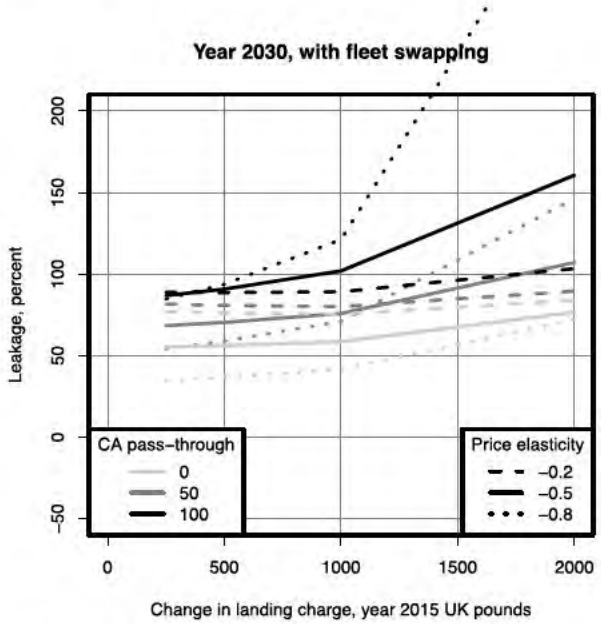

Figure 49. Carbon leakage in the case of the landing charge policy applied in 2030, with fleet swapping.

Carbon leakage in the case of the environmental landing charge policy is shown in Figure 49. As in 2015, the hypothetical policy is applied to aircraft in three age bands. Aircraft older than 15 years have an increase in landing costs of the given amount. Aircraft younger than five years have a decrease in landing costs of the same amount. Airlines therefore have an incentive to fly a younger fleet on UK routes. The policy is broadly cost-neutral if there is no change in fleet. However, by swapping their fleet between UK and non-UK routes or buying new aircraft, airlines are able to reduce their overall costs. If this happens, they may choose to reduce ticket prices, leading to a demand rebound effect.

Leakage outcomes are generally similar to those seen under 2015 conditions. For this policy, the main differences between 2015 and 2030 are that the total fleet is larger; the aircraft age distribution is slightly older, due to slow rates of growth; and the increased baseline carbon price adds an extra incentive to buy new aircraft (although not to swap fleet, because it is assumed to be the same on UK and non-UK routes). Fleet swapping, and to a lesser extent demand rebound effects and new aircraft purchases, produce leakage that is positive and significant, potentially being greater than 100%. Leakage greater than 100% occurs when within-system benefits are reduced by a demand rebound, whilst emissions for flights outside a UK departing scope are increased by older aircraft swapped from UK routes. Compared to 2015, a larger demand rebound effect is seen. This is because fuel and carbon prices are higher, so the impact on ticket prices of reducing fuel-related costs is greater. This effect is particularly noticeable in the case where all costs are passed through and passengers are more price-sensitive. In this case, the demand rebound at landing charge changes of over £1000/landing is enough to cancel out most of the CO_2 emissions reductions due to fleet change. Within-system emissions decreases are much smaller than emissions increases outside the system, leading to leakage well in excess of 100%. The absolute values of CO_2 emissions changes by scope are shown in Appendix 3.

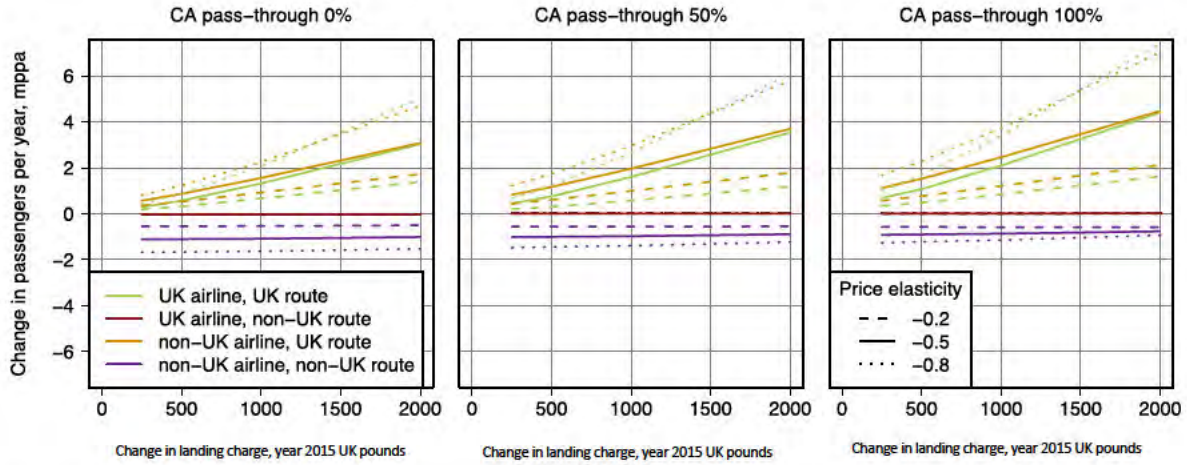

Figure 50. Change in passenger demand by scope and airline type, for the landing charge policy applied under year-2030 conditions, with fleet swapping.

Figure 50 shows the corresponding change in passenger demand by airline type and scope. As with the other policies examined under year-2030 conditions, outcomes are similar to the year-2015 case but totals are slightly larger, reflecting the larger total number of passengers in 2030.

6. Conclusions

This study investigated the impact of UK-specific aviation policy on carbon leakage and the competitive position of UK airlines and airports. To do so, a network model of city-pair aviation demand, routing and fleets was developed, based on components from the global aviation systems model AIM. The model outcomes were assessed for three hypothetical policies under a range of values for uncertain input parameters. This allowed the uncertainty in outcomes to be assessed as well as typical behavior in response to policy.

The main general conclusion is that there are two main components to aviation policy carbon leakage. One component is associated with airline response to policy. This component is generally positive leakage: emissions decrease within the policy area, but increase outside the policy area. It is caused by airline strategies to reduce policy costs, for example swapping fleet between policy and non-policy routes, selling older aircraft to airlines outside the policy region, or tankering fuel. The second component is associated with passenger response to policy. On a whole-network basis, this component is negative: an emissions reduction within the policy area is matched by an emissions reduction outside the policy area. This passenger effect arises because, even if a policy applies a cost increase on a single flight segment, this will be experienced by passengers as a cost increase across their entire round-trip itinerary. This effect has been neglected in previous studies due to a focus on individual route case studies rather than examining leakage on a whole-system basis. It is robust across a range of values for uncertain parameters, including cost pass-through at congested airports and the price elasticity of demand.

A second conclusion is that policies may differ substantially in the mix of passenger and airline response that they produce. In turn, this leads to substantial differences in typical leakage. In this study, increasing the carbon price led primarily to negative leakage. This was because the dominant effect of doing so was to increase ticket prices. Although some international-international transfer passengers were projected to change routing away from UK hubs in response, the primary impact of this ticket price change was to reduce demand for the much larger cohort of passengers starting or ending their journeys in the UK. This resulted in net negative leakage of typically between -50 and -150%. In contrast, a policy to increase landing charges for older aircraft and reduce landing charges for younger aircraft led primarily to an airline-based response, and resulting positive leakage.

Finally, the majority of the policies examined here have roughly the same impact on UK and non-UK airlines operating on UK routes, with some small differences caused by the different route networks and hub airports used by different airline types. One exception may be the case of changes in landing charge. If airlines swap fleet between UK and non-UK routes to try and reduce environmental landing costs, non-UK airlines will be at an advantage because they have a larger pool of non-UK aircraft to choose from, even after the impact of airline group fleet commonality is accounted for.

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Appendix 1: Quality Assurance

A quality assurance process was also carried out for the model by an independent reviewer (Dr Ilkka Keppo). This involved:

- Running the model numerous times with different policy inputs and assessing whether model responses correspond with the top level rationale of the tool,
- Reviewing model inputs and equations for errors (note however that whilst all equations were reviewed on some level, the QA process did not involve a line-by-line audit), and
- Assessing the documentation, transparency and usability dimensions of the tool.

The final model implements the recommendations that followed from this process.

Appendix 2: Parameters for the itinerary choice model

For further discussion of this model and the parameters included, see section 4.3.2. Pax_{origin} and Pax_{dest} refer to the parameters for total airport passenger numbers in the previous year. Major route groups are shown below.

Table 17. Parameters for major route groups for the itinerary choice model.

Route group	Intercept	Fare	Time	Frequency	N_{legs}	Pax_{origin}	Pax_{dest}	R^2
Intra North America	0.86 (0.004)	-3.9e-03 (5.9e-05)	-5.5e-03 (4.6e-05)	0.74 (0.004)	-1.99 (0.01)	2.75e-08 (4.1e-10)	2.79e-08 (4.1e-10)	0.59
Intra Europe	0.76 (0.006)	-5.1e-03 (8.6e-05)	-2.8e-03 (4.4e-05)	0.84 (0.004)	-3.43 (0.02)	3.9e-08 (8.8e-10)	4.0e-08 (9.0e-10)	0.65
Intra Asia	0.95 (0.01)	-2.1e-03 (1.1e-04)	-1.3e-03 (4.7e-05)	0.82 (0.009)	-3.51 (0.02)	3.5e-08 (9.9e-10)	3.6e-08 (1.0e-09)	0.58
Intra South America	0.81 (0.02)	-8.2e-03 (4.1e-04)	-1.5e-03 (1.9e-04)	0.88 (0.02)	-2.50 (0.06)	1.2e-07 (6.7e-09)	1.1e-07 (6.7e-09)	0.60
Intra Central America	0.91 (0.03)	-2.2e-03 (5.4e-04)	-1.7e-03 (1.2e-04)	0.48 (0.03)	-1.84 (0.08)	1.4e-07 (1.1e-08)	1.3e-07 (1.1e-08)	0.43
Intra Middle East	0.67 (0.04)	-3.4e-03 (4.8e-04)	-2.7e-03 (2.4e-04)	0.60 (0.03)	-2.88 (0.08)	5.2e-08 (4.6e-09)	5.2e-08 (4.5e-09)	0.91
Intra Africa	0.97 (0.03)	-1.6e-03 (1.5e-04)	-3.6e-04 (6.6e-05)	0.53 (0.03)	-1.30 (0.07)	3.9e-07 (4.0e-08)	3.5e-07 (4.3e-08)	0.85
North America-Europe	0.84 (0.006)	-8.5e-04 (4.3e-05)	-3.7e-03 (4.8e-05)	0.72 (0.006)	-2.24 (0.02)	8.2e-08 (9.7e-10)	8.1e-08 (9.8e-10)	0.91
North America - Asia	1.13 (0.01)	2.7e-04 (4.6e-05)	-2.6e-03 (5.5e-05)	0.78 (0.02)	-2.47 (0.03)	2.4e-08 (1.2e-09)	2.2e-08 (1.3e-09)	0.80
Europe - Asia	1.00 (0.01)	-5.7e-04 (3.6e-05)	-2.3e-03 (3.4e-05)	0.79 (0.009)	-2.36 (0.02)	1.9e-08 (9.2e-10)	2.1e-08 (9.6e-10)	0.90
North - South America	0.76 (0.01)	-3.2e-04 (5.2e-05)	-3.4e-03 (7.8e-05)	0.76 (0.01)	-1.81 (0.03)	8.7e-08 (2.1e-09)	8.4e-08 (2.1e-09)	0.92
Europe - Middle East	0.94 (0.01)	-2.2e-03 (7.8e-05)	-2.5e-03 (6.5e-05)	0.72 (0.09)	-2.58 (0.03)	5.6e-08 (1.8e-09)	5.6e-08 (1.8e-09)	0.91
Asia - Middle East	0.91 (0.15)	-1.8e-04 (1.2e-04)	-2.6e-03 (7.0e-05)	0.69 (0.17)	-1.91 (0.03)	3.2e-08 (2.0e-09)	3.3e-08 (1.9e-09)	0.93
Africa - Europe	1.01 (0.01)	-7.9e-04 (4.9e-05)	-1.6e-03 (3.7e-05)	0.66 (0.01)	-2.27 (0.03)	6.3e-08 (2.3e-09)	6.6e-08 (2.5e-09)	0.74
South - Central America	0.85 (0.02)	-7.25e-06 (1.5e-04)	-4.8e-03 (1.3e-04)	0.46 (0.02)	-1.01 (0.07)	1.7e-07 (9.5e-09)	1.2e-07 (9.2e-09)	0.82

Appendix 3: Additional results from the 2030 model runs

Because model outcomes under year-2030 conditions are similar to those under year-2015 conditions, we include these outcomes as an appendix to the report.

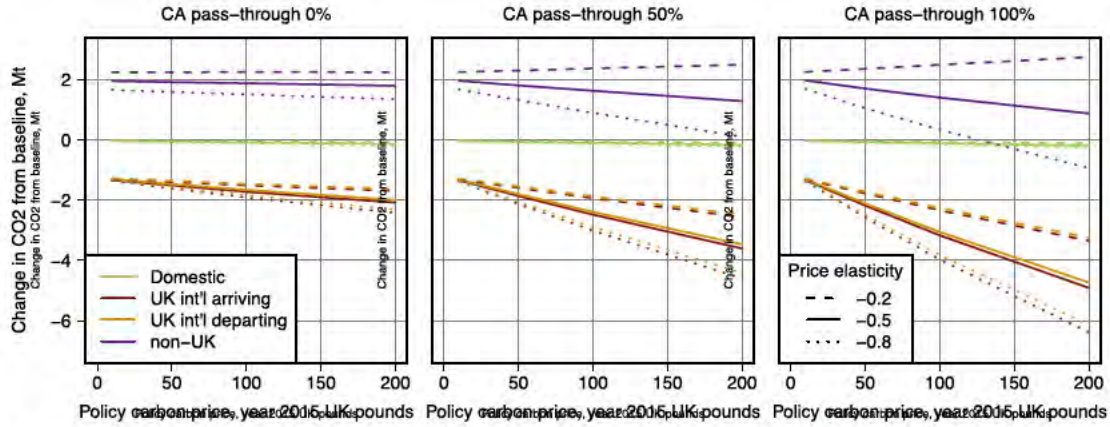


Figure 51. Absolute change in emissions by scope for the increased carbon price policy, in the case that no airline fleet swapping is assumed.

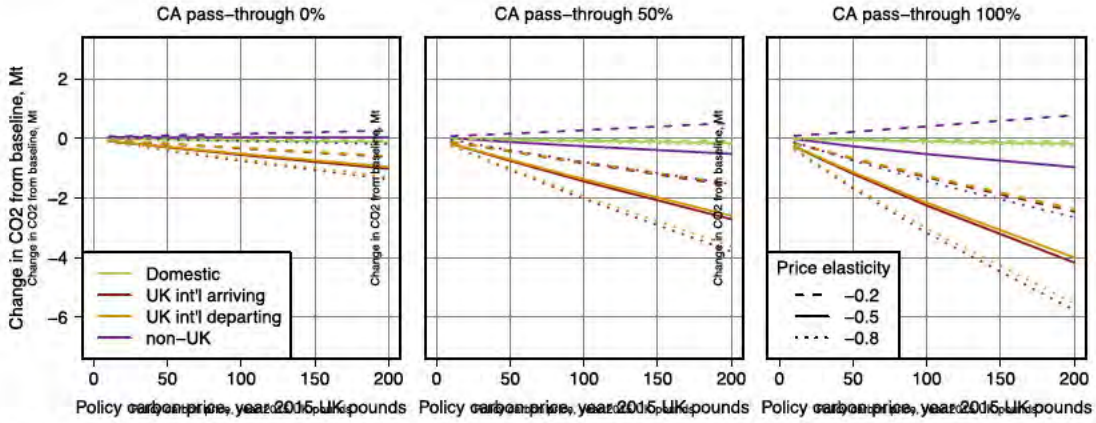


Figure 52. Absolute change in emissions by scope for the increased carbon price policy in 2030, in the case that airline fleet swapping is assumed.

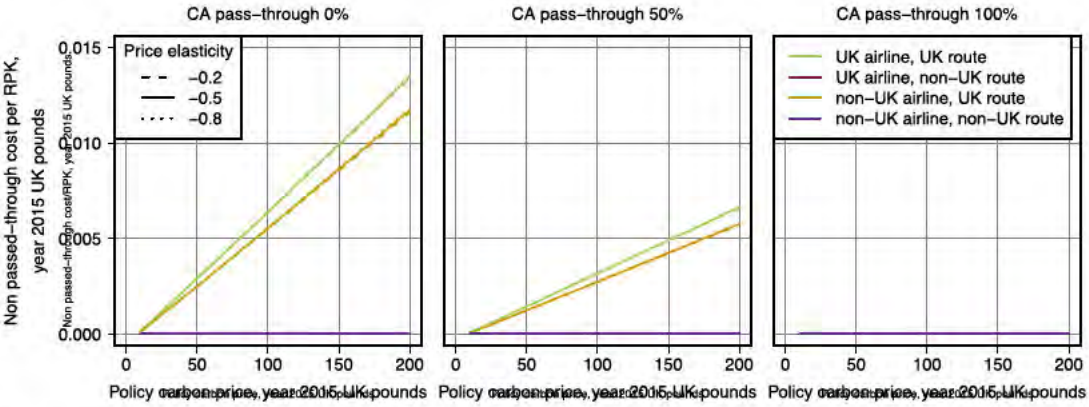


Figure 53. Change in non passed-on cost per RPK by airline type and scope for the increased carbon price policy, in the case that airline fleet swapping is assumed.

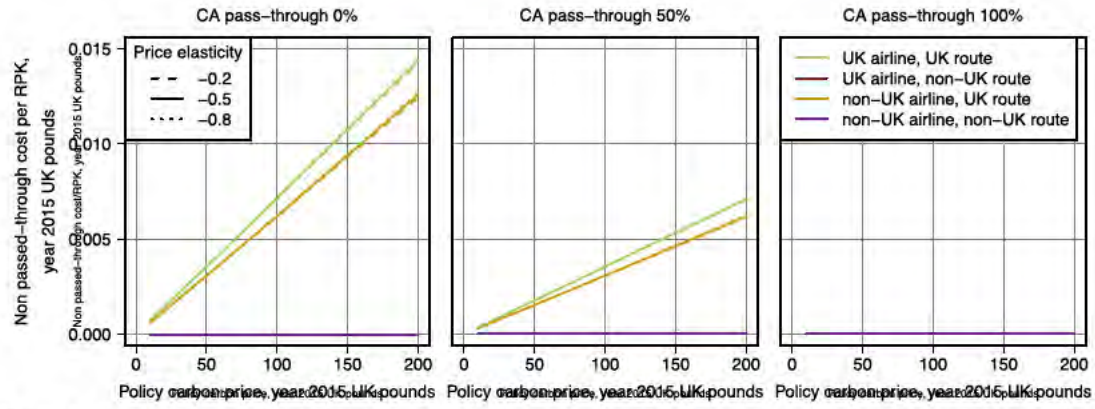


Figure 54. Absolute change in emissions by scope for the increased carbon price policy in 2030, in the case that no airline fleet swapping is assumed.

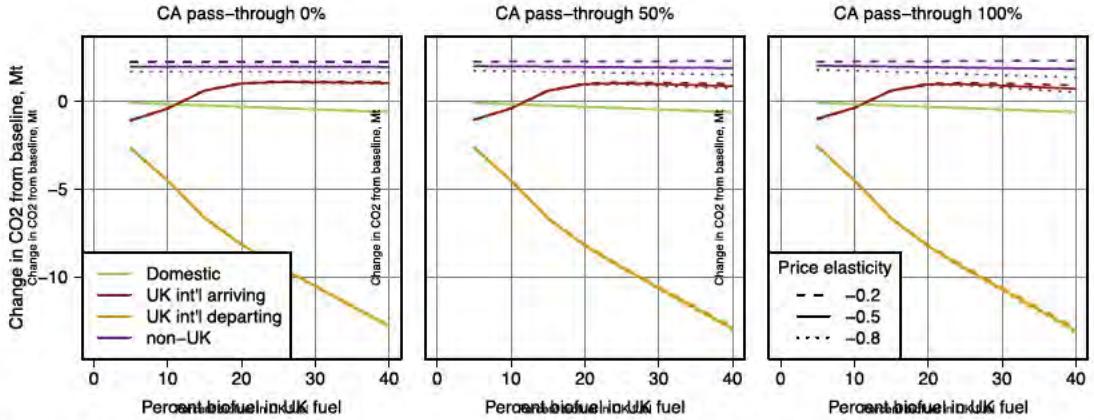


Figure 55. Absolute change in emissions by scope for the biofuel uptake policy, in the case that airline fleet swapping is assumed.

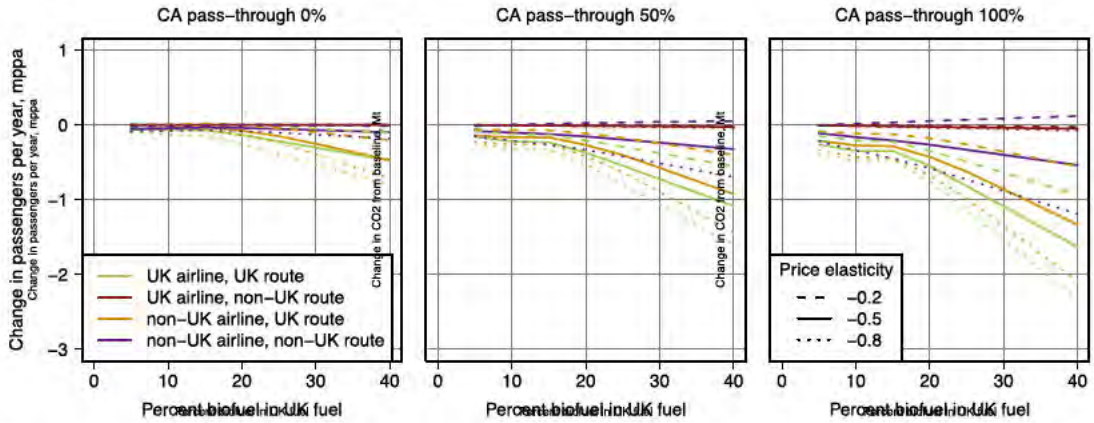


Figure 56. Absolute change in emissions by scope for the biofuel uptake policy, in the case that no airline fleet swapping is assumed.

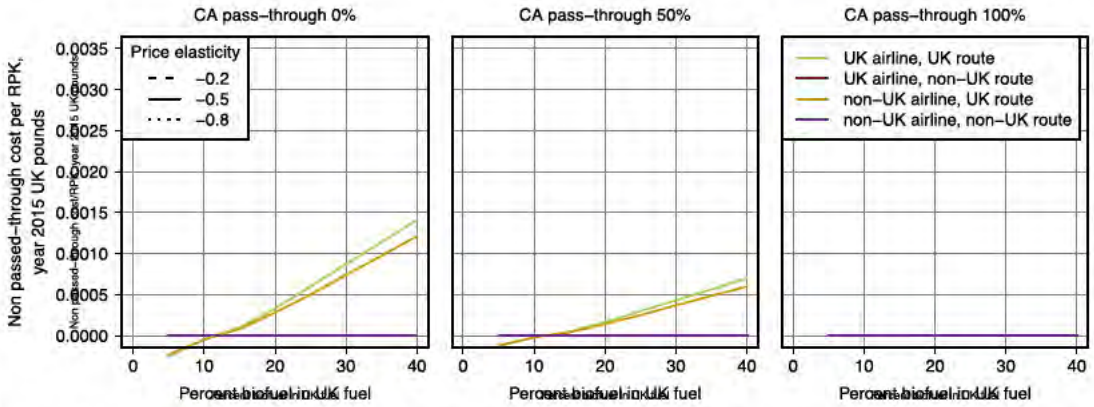


Figure 57. Change in non passed-on cost per RPK by airline type and scope for the biofuel uptake policy, in the case that airline fleet swapping is assumed.

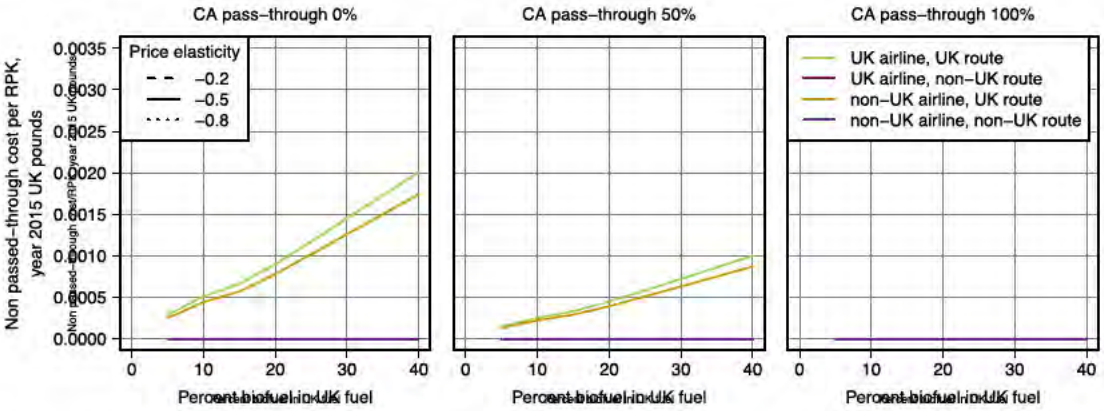


Figure 58. Change in non passed-on cost per RPK by airline type and scope for the biofuel uptake policy, in the case that no airline fleet swapping is assumed.

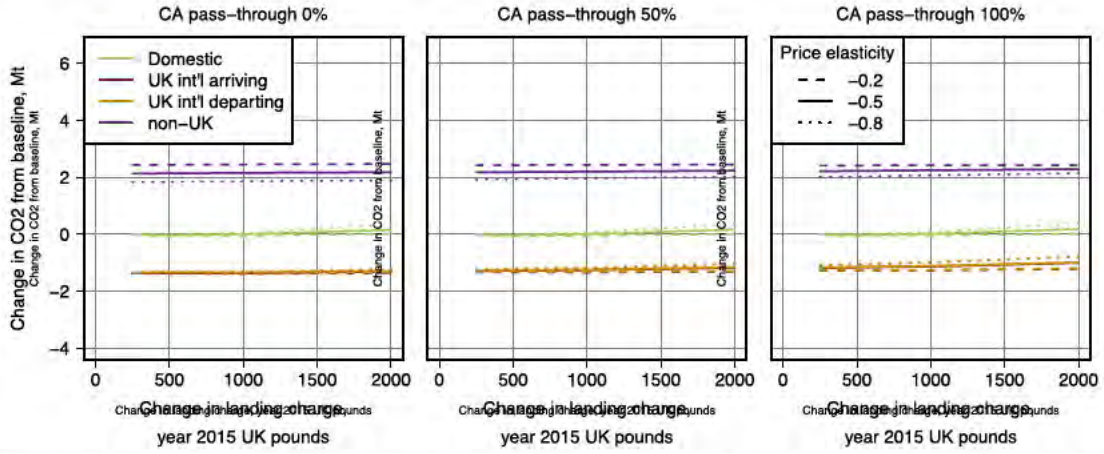


Figure 59. Absolute change in emissions by scope for the landing charge policy, in the case that airline fleet swapping is assumed.

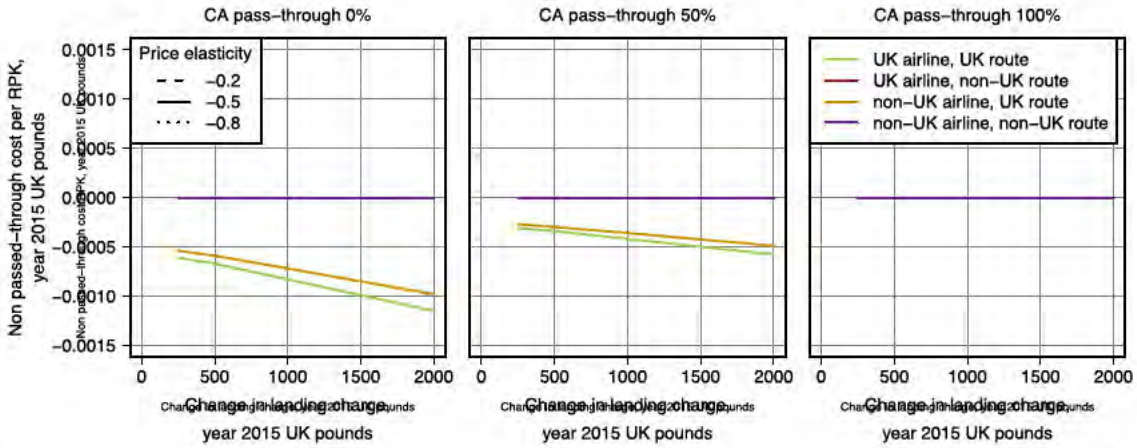


Figure 60. Change in non passed-on cost per RPK by airline type and scope for the landing charge policy, in the case that airline fleet swapping is assumed.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.66 Five10Twelve Ltd Late Rep 050520 : Letter to Secretary of State with New Evidence: Airports Council International World.
Date:	29 June 2020 17:30:49
Attachments:	Letter to Secretary of State with New Evidence_Airports Council International World.pdf

From: Samara Jones-Hall [redacted]
Sent: 05 May 2020 20:40
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>; [redacted]
Subject: FILED: Letter to Secretary of State with New Evidence: Airports Council International World.

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence: Airports Council International World.

Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18, Great Minster House
33 Horseferry Road
London SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk
Cc: Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

5 May 2020

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination: Airports Council International (ACI) World

As you will be aware, the Airports Council International (ACI) World has released updated modelling that shows the worsening economic impact on the global airport industry. It states that "the forecasts of prolonged – and more widespread – impacts and effects of the COVID-19 pandemic have resulted in worsening predictions for traffic and revenue losses for airports across all regions" [1]

[1] https://aci.aero/news/2020/05/05/predicted-global-impact-of-covid-19-on-airport-industry-escalates/ (accessed 5 May 2020)

It now "estimates a reduction of more than two billion passengers at the global level in the second quarter of 2020 and more than 4.6 billion passengers for all of 2020. The estimated decline in total airport revenues on a global scale is estimated to be $39.2 billion (figures in US Dollars) in the second quarter and more than $97 billion for 2020"[2].

The ACI collects and analyses data from a significant sample of airports that provide regular reports on month-by-month passenger and air freight statistics; this forms part of the world's most comprehensive source for airport data[3].

It reported, that in February of this year, "the crisis's impact on figures for the freight industry were not yet as significant, with global volume**s** declining by -0.5% on a year-over-year basis. The **global 12-month rolling average stood at -2.7% by the of February.** With what is now known, there appears no likelihood of a rebound in the next months"[4].

"Though global freight volumes should not be affected to the same extent as passenger traffic in the coming months, **the freight industry should still face major challenge**s[5]".

"The global recession that is starting to take hold due to the crisis will likely create a major demand shock and the current disruptions in supply chains, as well as declines in airline capacity, are likely to **also impact the industry negatively**[6]".

Without prejudice to our earlier submissions and others - including but not limited to York Aviation LLP's submission of 28 January 2020[7], the impacts and effects of the COVID-19 pandemic on the

[2] https://aci.aero/news/2020/05/05/predicted-global-impact-of-covid-19-on-airport-industry-escalates/ (accessed 5 May 2020)
[3] https://aci.aero/news/2020/05/01/acis-global-traffic-data-reveals-growing-impact-of-covid-19/ (accessed 5 May 2020)
[4] https://aci.aero/news/2020/05/01/acis-global-traffic-data-reveals-growing-impact-of-covid-19/ (accessed 5 May 2020)
[5] https://aci.aero/news/2020/05/01/acis-global-traffic-data-reveals-growing-impact-of-covid-19/ (accessed 5 May 2020)
[6] https://aci.aero/news/2020/05/01/acis-global-traffic-data-reveals-growing-impact-of-covid-19/ (accessed 5 May 2020)
[7] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005226-York%20Aviation%20LLP%20lt%20Manston%20DfT%2028.1.20.pdf

airline and airport industries **can and and respectfully should, constitute a reason for development consent refusal.**

From: Rob Pridham
To: Manston Airport
Subject: No.67 Gerry Abrahams Late Rep 090520
Date: 29 June 2020 17:36:54

From: general-enquiries@forms.dft.gov.uk [mailto:general-enquiries@forms.dft.gov.uk]
Sent: 09 May 2020 16:21
To: Contactdft <Contactdft@dft.gov.uk>
Subject: New submission from Contact Department for Transport

I would like my enquiry sent to the following organisation:

Department for Transport

Name

Gerry abrahams Abrahams

Address:

[redacted]

Email

[redacted]

Subject

Manston airport

Enquiry details

Is the decision on Manston airport still going ahead.
With the decline in economics this would provide employment

From:	Rob Pridham
To:	Manston Airport
Subject:	No.68 Five10Twelve Ltd 110520 - Financial Position of Applicant Company - NEW EVIDENCE
Date:	29 June 2020 17:38:48
Attachments:	Letter re Update on RSP Manston Financial Position May 2020.pdf

From: Jason Jones-Hall [redacted]
Sent: 11 May 2020 18:52
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Cc: Susan Anderson <Susan.Anderson@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>; Samara Jones- [redacted]
Subject: Manston DCO Application - Financial Position of Applicant Company - NEW EVIDENCE

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence regarding the updated financial position of the DCO Applicant, Riveroak Strategic Partners Ltd, as per accounts filed with Companies House on 29 April 2020.

Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Five10Twelve Limited

Five10Twelve Limited
[redacted]

The Rt Hon Grant Shapps
The Secretary of State for Transport
Department for Transport
Zone 1/18 Great Minster House
33 Horseferry Road
London SW1P 4DR

Date: 11 May 2020

BY EMAIL:
transportandworksact@dft.gov.uk
Cc. Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

Dear Sir

RiverOak Strategic Partners ("the Applicant")
Proposed Manston Airport Development ("Manston") Ref: TR020002
Development Consent Order ("DCO")

New evidence since the close of the examination: Applicant most recent published accounts (April 2020) and corporate structure

1. As the Secretary of State will be aware, concerns were raised regarding the adequacy of the Applicant's Funding Statement and accompanying evidence prior to the Examination in the UK Planning Inspectorate's Section 51 Advice dated 14 August 2018[1].

2. These concerns regarding source of funds, transparency of corporate structure and ultimate beneficial ownership continued to be raised throughout the Examination and public hearings, including after the Applicant had provided its revised Funding Statement dated 24 May 2019 (REP7a-005)[2].

3. Since the end date of the Secretary of State's Consultation of 17 January 2020, the Applicant has filed its unaudited accounts for the year ending 31 July 2019, with accounts date 29 April 2019.

---

1 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002549-TR020002%20Post-acceptance%20s51%20advice%20to%20the%20Applicant%20FINAL.pdf

2 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004069-Funding%20Statement.pdf

4. These filings made at Companies House show the following:

   4.1. Prior to Covid-19 and for the year ending 31/7/19, the Applicant company, Riveroak Strategic Partners Ltd, (registered number 10269461), has **debts of £13.1m** and fixed assets totalling £4[3].

   4.2. Riveroak Strategic Partners Ltd is the parent company of Riveroak AL Limited, (registered number 10269458). Riveroak AL Limited has **debts of £109,378** - owed to fellow subsidiary Riveroak Operations Ltd - and assets totalling £1, as of year ending 31/7/19 and according to accounts dated 29 April 2019. [4]

   4.3. According to accounts for year ending 31 August 2018 and filed on 5 June 2019, Riveroak Operations Ltd (registered number 10311804), owned by Riveroak Strategic Partners Ltd, has **debts of £8,949,973** and assets of £549,942, (including the aforementioned debt owed by fellow subsidiary Riveroak AL Limited), with net liabilities in excess of £8.4m. [5]

5. The beneficial ownership and corporate structure for the Applicant and its **eight** known associated companies has been made no more transparent by the applicant's allotment of shares, dated 15 April 2020 and filed with Companies House on 4 May 2020. This Return of Allotment of Shares form (SH01) shows the following changes from the previous confirmation statement dated 2 May 2019:

   Shares Allocation as per 2 May 2019 Confirmation Statement[6]:

   Class A Number Allotted 9000 and aggregate nominal value £0.9
   Class B Number allotted 1000 and aggregate nominal value £0.1
   Total number of shares: 10000 and total aggregate nominal value £1

   Shareholding 1 transferred on 2 May 2019, 9000 Class A ordinary shares formerly held by MIO Investments Limited (Belize co) to Shareholding 2 (below)

   Shareholding 2 9000 A ordinary shares Riveroak investments (UK) Limited (60% owned by HLX NomineesLtd - a BVI Registered Company - and 40% owned by Swiss residents)

   Shareholding 3 1000 B ordinary shares held by Riveroak Manston LImited (UK co - shares divided between Anthony Freudmann (UK 1 share), Niall Lawlor (Irish 2 shares), and GY Manston LLC (US Delaware registered company - 1 share)

   Shares Allocation as per 4 May 2020 SHO1(ef) Form [7]:

   Class A number allotted 67285 and value of each share 0.0001

[3] Appendix 01: Riveroak Strategic Partners Ltd unaudited accounts
[4] Appendix 02: Riveroak AL Ltd unaudited accounts
[5] Appendix 03: Riveroak Operations Ltd unaudited accounts
[6] Appendix 04: Riveroak Strategic Partners Ltd Confirmation Statement, 2 May 2019
[7] Appendix 05: Riveroak Strategic Partners Ltd form SH01(ef), 4 May 2020

Statement of capital (share capital)

Class A number allotted 76285 with aggregate nominal value 7.6285
Class B number collared 1000 with aggregate value 0.1
Total number of shares 77285 with aggregate nominal value 7.7285

6. We attach herewith a summary of the corporate structure and balance sheets of the Applicant and its associated companies, updated with the latest filings as of 4 May 2020[8].

7. Given the lack of evidence of available funds and/or credible investors and the considerable levels of debt carried by the Applicant company and its UK-registered subsidiaries we maintain that it is not credible that the Secretary of State might have any level of comfort that the Applicant could fund and implement the scheme as described in its DCO application.

   7.1. We further maintain that the financial and operational landscape affecting existing, proven UK airports and airport operators in the foreseeable future - including but not limited to Heathrow Airports Ltd, Gatwick and Manchester Airports Group - makes it even less credible that a new competitor to the UK market with no track record of airport operations might feasibly raise the investment required or develop and operate the scheme as proposed in the Applicant's DCO application.

8. In light of the continued lack of transparency regarding the ultimate beneficial ownership of the Applicant company, we respectfully reiterate that this represents a significant risk - both reputationally and financially - that may result from granting the DCO, as outlined in our letter to the Secretary of State, dated 23 December 2019[9].

9. In light of this information, we maintain that the DCO should be refused.

[8] Summary of corporate structure of applicant and associated companies

[9] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005187-Five10Twelve%20Ltd%20Letter%20to%20Secretary%20of%20State_%20PUBLIC%20COST%20AND%20REPUTATIONAL%20AND%20RISK%20FINAL_Redacted.pdf

Appendix 01

Riveroak Strategic Partners Ltd
unaudited accounts

Registered number: 10269461

RIVEROAK STRATEGIC PARTNERS LIMITED

UNAUDITED

FINANCIAL STATEMENTS

INFORMATION FOR FILING WITH THE REGISTRAR

FOR THE YEAR ENDED 31 JULY 2019

RIVEROAK STRATEGIC PARTNERS LIMITED
REGISTERED NUMBER: 10269461

STATEMENT OF FINANCIAL POSITION
AS AT 31 JULY 2019

	Note		2019 £		*2018 £*
Fixed assets					
Investments	3		**4**		*2*
Current assets					
Debtors: amounts falling due after more than one year	4	**13,099,999**		-	
Debtors: amounts falling due within one year	4	**1**		*1*	
		13,100,000		*1*	
Creditors: amounts falling due within one year	5	**(3)**		*(2)*	
Net current assets/(liabilities)			**13,099,997**		*(1)*
Creditors: amounts falling due after more than one year	6		**(13,100,000)**		-
Net assets			**1**		*1*
Capital and reserves					
Called up share capital	8		**1**		*1*
			1		*1*

The directors consider that the Company is entitled to exemption from audit under section 477 of the Companies Act 2006 and members have not required the Company to obtain an audit for the year in question in accordance with section 476 of the Companies Act 2006.

The directors acknowledge their responsibilities for complying with the requirements of the Companies Act 2006 with respect to accounting records and the preparation of financial statements.

The financial statements have been prepared in accordance with the provisions applicable to companies subject to the small companies regime and in accordance with the provisions of FRS 102 Section 1A - small entities.

STATEMENT OF FINANCIAL POSITION (CONTINUED)
AS AT 31 JULY 2019

The financial statements have been delivered in accordance with the provisions applicable to companies subject to the small companies regime.

The Company has opted not to file the statement of income and retained earnings in accordance with provisions applicable to companies subject to the small companies' regime.

The financial statements were approved and authorised for issue by the board and were signed on its behalf on 29 April 2020.

A Freudmann
Director

The notes on pages 3 to 5 form part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 JULY 2019

1. Accounting policies

1.1 Basis of preparation of financial statements

The financial statements have been prepared under the historical cost convention unless otherwise specified within these accounting policies and in accordance with Section 1A of Financial Reporting Standard 102, the Financial Reporting Standard applicable in the UK and the Republic of Ireland and the Companies Act 2006.

The following principal accounting policies have been applied:

1.2 Borrowing costs

All borrowing costs are recognised in the Statement of income and retained earnings in the year in which they are incurred.

1.3 Valuation of investments

Investments in subsidiaries are measured at cost less accumulated impairment.

1.4 Debtors

Short term debtors are measured at transaction price, less any impairment. Loans receivable are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method, less any impairment.

1.5 Creditors

Short term creditors are measured at the transaction price. Other financial liabilities, including bank loans, are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method.

1.6 Financial instruments

The Company only enters into basic financial instrument transactions that result in the recognition of financial assets and liabilities like trade and other debtors and creditors, loans from banks and other third parties, loans to related parties and investments in non-puttable ordinary shares.

2. Employees

The average monthly number of employees, including directors, during the year was 6 *(2018 - 6)*.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 JULY 2019

3. Fixed asset investments

	Investments in subsidiary companies
	£
Cost or valuation	
At 1 August 2018	2
Additions	2
At 31 July 2019	4

4. Debtors

	2019	*2018*
	£	*£*
Due after more than one year		
Amounts owed by group undertakings	13,099,999	*-*
	13,099,999	*-*

	2019	*2018*
	£	*£*
Due within one year		
Other debtors	1	*1*
	1	*1*

5. Creditors: Amounts falling due within one year

	2019	*2018*
	£	*£*
Amounts owed to group undertakings	3	*2*
	3	*2*

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 JULY 2019

6. Creditors: Amounts falling due after more than one year

	2019	*2018*
	£	*£*
Bank loans	13,100,000	-
	13,100,000	-

7. Loans

	2019	*2018*
	£	*£*
Amounts falling due 1-2 years		
Bank loans	13,100,000	-
	13,100,000	-

8. Share capital

	2019	*2018*
	£	*£*
Allotted, called up and fully paid		
9,000 *(2018 - 9,000)* A Ordinary shares of £0.0001 each	1	*1*
1,000 *(2018 - 1,000)* B Ordinary shares of £0.0001 each	-	-
	1	*1*

Following the year end, on 15th April 2020, the company issued a further 67,285 A Ordinary Shares of £0.0001 for consideration of £6.73 per share.

9. Controlling party

The company's parent undertaking is Riveroak Investments (UK) Limited, which owns 90% of the issued share capital. The ultimate controlling party is HLX Nominees Limited a company incorporated in the British Virgin Islands, which holds 60% of the share capital in the parent undertaking.

Appendix 02

Riveroak AL Ltd
unaudited accounts

Registered number: 10269458

RIVEROAK AL LIMITED

UNAUDITED

FINANCIAL STATEMENTS

INFORMATION FOR FILING WITH THE REGISTRAR

FOR THE YEAR ENDED 31 JULY 2019

RIVEROAK AL LIMITED
REGISTERED NUMBER: 10269458

STATEMENT OF FINANCIAL POSITION
AS AT 31 JULY 2019

	Note		2019 £		*2018 £*
Current assets					
Debtors: amounts falling due within one year	4	**1**		*1*	
		1		*1*	
Creditors: amounts falling due within one year	5	**(111,178)**		*(78,360)*	
Net current liabilities			**(111,177)**		*(78,359)*
Total assets less current liabilities			**(111,177)**		*(78,359)*
Net liabilities			**(111,177)**		*(78,359)*
Capital and reserves					
Called up share capital	6		**1**		*1*
Profit and loss account	7		**(111,178)**		*(78,360)*
			(111,177)		*(78,359)*

The directors consider that the Company is entitled to exemption from audit under section 477 of the Companies Act 2006 and members have not required the Company to obtain an audit for the year in question in accordance with section 476 of the Companies Act 2006.

The directors acknowledge their responsibilities for complying with the requirements of the Companies Act 2006 with respect to accounting records and the preparation of financial statements.

The financial statements have been prepared in accordance with the provisions applicable to companies subject to the small companies regime and in accordance with the provisions of FRS 102 Section 1A - small entities.

The financial statements have been delivered in accordance with the provisions applicable to companies subject to the small companies regime.

The Company has opted not to file the statement of income and retained earnings in accordance with provisions applicable to companies subject to the small companies' regime.

The financial statements were approved and authorised for issue by the board and were signed on its behalf on 29 April 2020.

A Freudmann
Director

The notes on pages 2 to 4 form part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 JULY 2019

1. Accounting policies

1.1 Basis of preparation of financial statements

The financial statements have been prepared under the historical cost convention unless otherwise specified within these accounting policies and in accordance with Section 1A of Financial Reporting Standard 102, the Financial Reporting Standard applicable in the UK and the Republic of Ireland and the Companies Act 2006.

The following principal accounting policies have been applied:

1.2 Operating leases: the Company as lessee

Rentals paid under operating leases are charged to the Statement of income and retained earnings on a straight line basis over the lease term.

1.3 Debtors

Short term debtors are measured at transaction price, less any impairment. Loans receivable are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method, less any impairment.

1.4 Creditors

Short term creditors are measured at the transaction price. Other financial liabilities, including bank loans, are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method.

1.5 Financial instruments

The Company only enters into basic financial instrument transactions that result in the recognition of financial assets and liabilities like trade and other debtors and creditors, loans from banks and other third parties, loans to related parties and investments in non-puttable ordinary shares.

2. Judgments in applying accounting policies and key sources of estimation uncertainty

In the application of the company's accounting policies management is required to make judgements, estimates and assumptions about the carrying value of assets and liabilities that are not readily ascertainable from other sources. The estimates and underlying assumptions are based on historical experience and other factors that are considered to be relevant. Actual outcomes may differ from these estimates.

The estimates and underlying assumptions are reviewed on a continuing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised.

The key areas of estimation uncertainty that have a significant effect on the amounts recognised in the financial statements are described below:

Prepayments & Accrued Expenditure

The company includes a provision for invoices which are yet to be received from and amounts paid in advance to suppliers. These provisions are estimated based upon the expected values of the invoices which are issued and services received following the period end.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 JULY 2019

3. Employees

The average monthly number of employees, including directors, during the year was 3 *(2018 - 3)*.

4. Debtors

	2019	*2018*
	£	*£*
Amounts owed by group undertakings	1	*1*
	1	*1*

5. Creditors: Amounts falling due within one year

	2019	*2018*
	£	*£*
Amounts owed to group undertakings	109,378	*76,560*
Accruals and deferred income	1,800	*1,800*
	111,178	*78,360*

6. Share capital

	2019	*2018*
	£	*£*
Allotted, called up and fully paid		
1 *(2018 - 1)* Ordinary share of £1.00	1	*1*

7. Reserves

Profit and loss account

The profit and loss reserve is fully distributable.

8. Related party transactions

At the year end, a balance of £109,378 (2018 - £76,560) was owing to Riveroak Operations Limited, a fellow subsidiary.

9. Controlling party

The company's parent undertaking is Riveroak Strategic Partners Limited, which owns 100% of the issued share capital. The ultimate controlling party is Riveroak Investments (UK) Limited, a 90% shareholder in the parent undertaking.

Appendix 03

Riveroak Operations Ltd
unaudited accounts

Registered number: 10311804

RIVEROAK OPERATIONS LIMITED

UNAUDITED

FINANCIAL STATEMENTS

INFORMATION FOR FILING WITH THE REGISTRAR

FOR THE YEAR ENDED 31 AUGUST 2018

RIVEROAK OPERATIONS LIMITED
REGISTERED NUMBER: 10311804

STATEMENT OF FINANCIAL POSITION
AS AT 31 AUGUST 2018

	Note		2018 £		As restated 2017 £
Fixed assets					
Investments	4		**800,000**		*1,000,000*
			800,000		*1,000,000*
Current assets					
Debtors: amounts falling due within one year	5	**694,928**		*555,168*	
Cash at bank and in hand	6	**12,375**		*45,251*	
		707,303		*600,419*	
Creditors: amounts falling due within one year	7	**(957,361)**		*(903,089)*	
Net current liabilities			**(250,058)**		*(302,670)*
Total assets less current liabilities			**549,942**		*697,330*
Creditors: amounts falling due after more than one year	8		**(8,949,973)**		*(4,349,979)*
Net liabilities			**(8,400,031)**		*(3,652,649)*
Capital and reserves					
Called up share capital	10		**1**		*1*
Profit and loss account	11		**(8,400,032)**		*(3,652,650)*
			(8,400,031)		*(3,652,649)*

The directors consider that the Company is entitled to exemption from audit under section 477 of the Companies Act 2006 and members have not required the Company to obtain an audit for the year in question in accordance with section 476 of Companies Act 2006.

The directors acknowledge their responsibilities for complying with the requirements of the Companies Act 2006 with respect to accounting records and the preparation of financial statements.

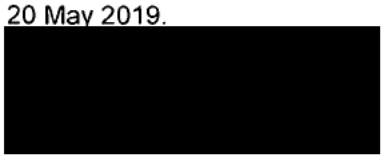
The financial statements have been prepared in accordance with the provisions applicable to companies subject to the small companies regime and in accordance with the provisions of FRS 102 Section 1A - small entities.

The financial statements have been delivered in accordance with the provisions applicable to companies subject to the small companies regime.

The Company has opted not to file the statement of income and retained earnings in accordance with provisions applicable to companies subject to the small companies' regime.

STATEMENT OF FINANCIAL POSITION (CONTINUED)
AS AT 31 AUGUST 2018

The financial statements were approved and authorised for issue by the board and were signed on its behalf on 20 May 2019.



A Freudmann
Director

The notes on pages 3 to 7 form part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 AUGUST 2018

1. Accounting policies

1.1 Basis of preparation of financial statements

The financial statements have been prepared under the historical cost convention unless otherwise specified within these accounting policies and in accordance with Section 1A of Financial Reporting Standard 102, the Financial Reporting Standard applicable in the UK and the Republic of Ireland and the Companies Act 2006.

The following principal accounting policies have been applied:

1.2 Interest income

Interest income is recognised in the Statement of income and retained earnings using the effective interest method.

1.3 Borrowing costs

All borrowing costs are recognised in the Statement of income and retained earnings in the year in which they are incurred.

1.4 Valuation of investments

Investments in subsidiaries are measured at cost less accumulated impairment.

Investments in unlisted Company shares, whose market value can be reliably determined, are remeasured to market value at each balance sheet date. Gains and losses on remeasurement are recognised in the Statement of income and retained earnings for the period. Where market value cannot be reliably determined, such investments are stated at historic cost less impairment.

1.5 Debtors

Short term debtors are measured at transaction price, less any impairment. Loans receivable are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method, less any impairment.

1.6 Cash and cash equivalents

Cash is represented by cash in hand and deposits with financial institutions repayable without penalty on notice of not more than 24 hours. Cash equivalents are highly liquid investments that mature in no more than three months from the date of acquisition and that are readily convertible to known amounts of cash with insignificant risk of change in value.

1.7 Creditors

Short term creditors are measured at the transaction price. Other financial liabilities, including bank loans, are measured initially at fair value, net of transaction costs, and are measured subsequently at amortised cost using the effective interest method.

1.8 Financial instruments

The Company only enters into basic financial instrument transactions that result in the recognition of financial assets and liabilities like trade and other debtors and creditors, loans from banks and other third parties, loans to related parties and investments in non-puttable ordinary shares.

1. Accounting policies (continued)

1.8 Financial instruments (continued)

Debt instruments (other than those wholly repayable or receivable within one year), including loans and other accounts receivable and payable, are initially measured at present value of the future cash flows and subsequently at amortised cost using the effective interest method. Debt instruments that are payable or receivable within one year, typically trade debtors and creditors, are measured, initially and subsequently, at the undiscounted amount of the cash or other consideration expected to be paid or received. However, if the arrangements of a short-term instrument constitute a financing transaction, like the payment of a trade debt deferred beyond normal business terms or financed at a rate of interest that is not a market rate or in the case of an out-right short-term loan not at market rate, the financial asset or liability is measured, initially, at the present value of the future cash flow discounted at a market rate of interest for a similar debt instrument and subsequently at amortised cost.

Financial assets that are measured at cost and amortised cost are assessed at the end of each reporting period for objective evidence of impairment. If objective evidence of impairment is found, an impairment loss is recognised in the Statement of income and retained earnings.

For financial assets measured at amortised cost, the impairment loss is measured as the difference between an asset's carrying amount and the present value of estimated cash flows discounted at the asset's original effective interest rate. If a financial asset has a variable interest rate, the discount rate for measuring any impairment loss is the current effective interest rate determined under the contract.

For financial assets measured at cost less impairment, the impairment loss is measured as the difference between an asset's carrying amount and best estimate of the recoverable amount, which is an approximation of the amount that the Company would receive for the asset if it were to be sold at the reporting date.

Financial assets and liabilities are offset and the net amount reported in the Statement of financial position when there is an enforceable right to set off the recognised amounts and there is an intention to settle on a net basis or to realise the asset and settle the liability simultaneously.

2. Judgments in applying accounting policies and key sources of estimation uncertainty

In the application of the company's accounting policies management is required to make judgements, estimates and assumptions about the carrying value of assets and liabilities that are not readily ascertainable from other sources. The estimates and underlying assumptions are based on historical experience and other factors that are considered to be relevant. Actual outcomes may differ from these estimates.

The estimates and underlying assumptions are reviewed on a continuing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised.

The key areas of estimation uncertainty that have a significant effect on the amounts recognised in the financial statements are described below:

Prepayments & Accrued Expenditure

The company includes a provision for invoices which are yet to be received from and amounts paid in advance to suppliers. These provisions are estimated based upon the expected values of the invoices which are issued and services received following the period end.

3. Employees

The average monthly number of employees, including directors, during the year was 3 *(2017 - 3)*.

4. Fixed asset investments

	Other fixed asset investments £
Cost or valuation	
At 1 September 2017	**1,000,000**
Disposals	**(200,000)**
At 31 August 2018	**800,000**

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 AUGUST 2018

5. Debtors

	2018	As restated 2017
	£	£
Amounts owed by group undertakings	**576,561**	*45,481*
Other debtors	**118,367**	*509,687*
	694,928	*555,168*

6. Cash and cash equivalents

	2018	As restated 2017
	£	£
Cash at bank and in hand	**12,375**	*45,251*
Less: bank overdrafts	**(29,054)**	-
	(16,679)	*45,251*

7. Creditors: Amounts falling due within one year

	2018	As restated 2017
	£	£
Bank overdrafts	**29,054**	-
Trade creditors	**919,715**	*803,575*
Other taxation and social security	**2,196**	-
Directors current account	**-**	*91,014*
Wages and Salaries	**1,896**	-
Accruals and deferred income	**4,500**	*8,500*
	957,361	*903,089*

8. Creditors: Amounts falling due after more than one year

	2018 £	*As restated 2017 £*
Bank loans	**8,949,973**	*4,349,979*
	8,949,973	*4,349,979*

9. Loans

Analysis of the maturity of loans is given below:

	2018 £	*As restated 2017 £*
Amounts falling due 1-2 years		
Bank loans	**8,949,973**	*4,349,979*
	8,949,973	*4,349,979*

10. Share capital

	2018 £	*As restated 2017 £*
Allotted, called up and fully paid		
1 *(2017 - 1)* Ordinary share of £1.00	**1**	*1*

11. Reserves

Profit and loss account

The profit and loss reserve is fully distributable.

12. Controlling party

The company's parent undertaking is Riveroak Strategic Partners Limited, which owns 100% of the issued share capital. During the year the company's ultimate controlling party was MIO Investments Limited, a 90% shareholder in the parent undertaking. Following the year end, MIO Investments Limited transferred its share in the company to Riveroak Investments (UK) Limited, the new ultimate controlling party.

Appendix 04

Riveroak Strategic Partners Ltd
Confirmation Statement, 2 May 2019

Companies House

CS01 (ef)

Confirmation Statement

Company Name: **RIVEROAK STRATEGIC PARTNERS LIMITED**
Company Number: **10269461**

Received for filing in Electronic Format on the: **02/05/2019**

X84L6K8Y

Company Name: **RIVEROAK STRATEGIC PARTNERS LIMITED**

Company Number: **10269461**

Confirmation Statement date: **02/05/2019**

Statement of Capital (Share Capital)

Class of Shares:	**A**	Number allotted	**9000**
	ORDINARY	Aggregate nominal value:	**0.9**
Currency:	**GBP**		

Prescribed particulars

THE SHARES HAVE ATTACHED TO THEM FULL VOTING RIGHTS.

Class of Shares:	**B**	Number allotted	**1000**
	ORDINARY	Aggregate nominal value:	**0.1**
Currency:	**GBP**		

Prescribed particulars

THE SHARES HAVE ATTACHED TO THEM FULL VOTING RIGHTS.

Statement of Capital (Totals)

Currency:	**GBP**	Total number of shares:	**10000**
		Total aggregate nominal value:	**1**
		Total aggregate amount unpaid:	**0**

Full details of Shareholders

The details below relate to individuals/corporate bodies that were shareholders during the review period or that had ceased to be shareholders since the date of the previous confirmation statement.

Shareholder information for a non-traded company as at the confirmation statement date is shown below

Shareholding 1:	**9000 transferred on 2019-05-02** **0 A ORDINARY shares held as at the date of this confirmation statement**
Name:	**M.I.O. INVESTMENTS LIMITED**
Shareholding 2:	**9000 A ORDINARY shares held as at the date of this confirmation statement**
Name:	**RIVEROAK INVESTMENTS (UK) LIMITED**
Shareholding 3:	**1000 B ORDINARY shares held as at the date of this confirmation statement**
Name:	**RIVEROAK MANSTON LIMITED**

Confirmation Statement

I confirm that all information required to be delivered by the company to the registrar in relation to the confirmation period concerned either has been delivered or is being delivered at the same time as the confirmation statement

Authorisation

Authenticated

This form was authorised by one of the following:

Director, Secretary, Person Authorised, Charity Commission Receiver and Manager, CIC Manager, Judicial Factor

Appendix 05

Riveroak Strategic Partners Ltd
Form SH01(ef), 4 May 2020

Companies House

SH01 (ef)

Return of Allotment of Shares

Company Name: **RIVEROAK STRATEGIC PARTNERS LIMITED**
Company Number: **10269461**

Received for filing in Electronic Format on the: **04/05/2020**

X94B94KR

Shares Allotted (including bonus shares)

Date or period during which shares are allotted	From	To
	15/04/2020	**15/04/2020**

Class of Shares:	**A ORDINARY**	Number allotted	**67285**
Currency:	**GBP**	Nominal value of each share	**0.0001**
		Amount paid:	**0.0001**
		Amount unpaid:	**0**

No shares allotted other than for cash

Statement of Capital (Share Capital)

Class of Shares:	**A**	Number allotted	**76285**
	ORDINARY	Aggregate nominal value:	**7.6285**
Currency:	**GBP**		

Prescribed particulars

THE SHARES HAVE ATTACHED TO THEM FULL VOTING, DIVIDEND AND CAPITAL DISTRIBUTION (INCLUDING ON WINDING UP) RIGHTS; THEY DO NOT CONFER ANY RIGHTS OF REDEMPTION.

Class of Shares:	**B**	Number allotted	**1000**
	ORDINARY	Aggregate nominal value:	**0.1**
Currency:	**GBP**		

Prescribed particulars

THE SHARES HAVE ATTACHED TO THEM FULL VOTING, DIVIDEND AND CAPITAL DISTRIBUTION (INCLUDING ON WINDING UP) RIGHTS; THEY DO NOT CONFER ANY RIGHTS OF REDEMPTION.

Statement of Capital (Totals)

Currency:	**GBP**	Total number of shares:	**77285**
		Total aggregate nominal value:	**7.7285**
		Total aggregate amount unpaid:	**0**

Authorisation

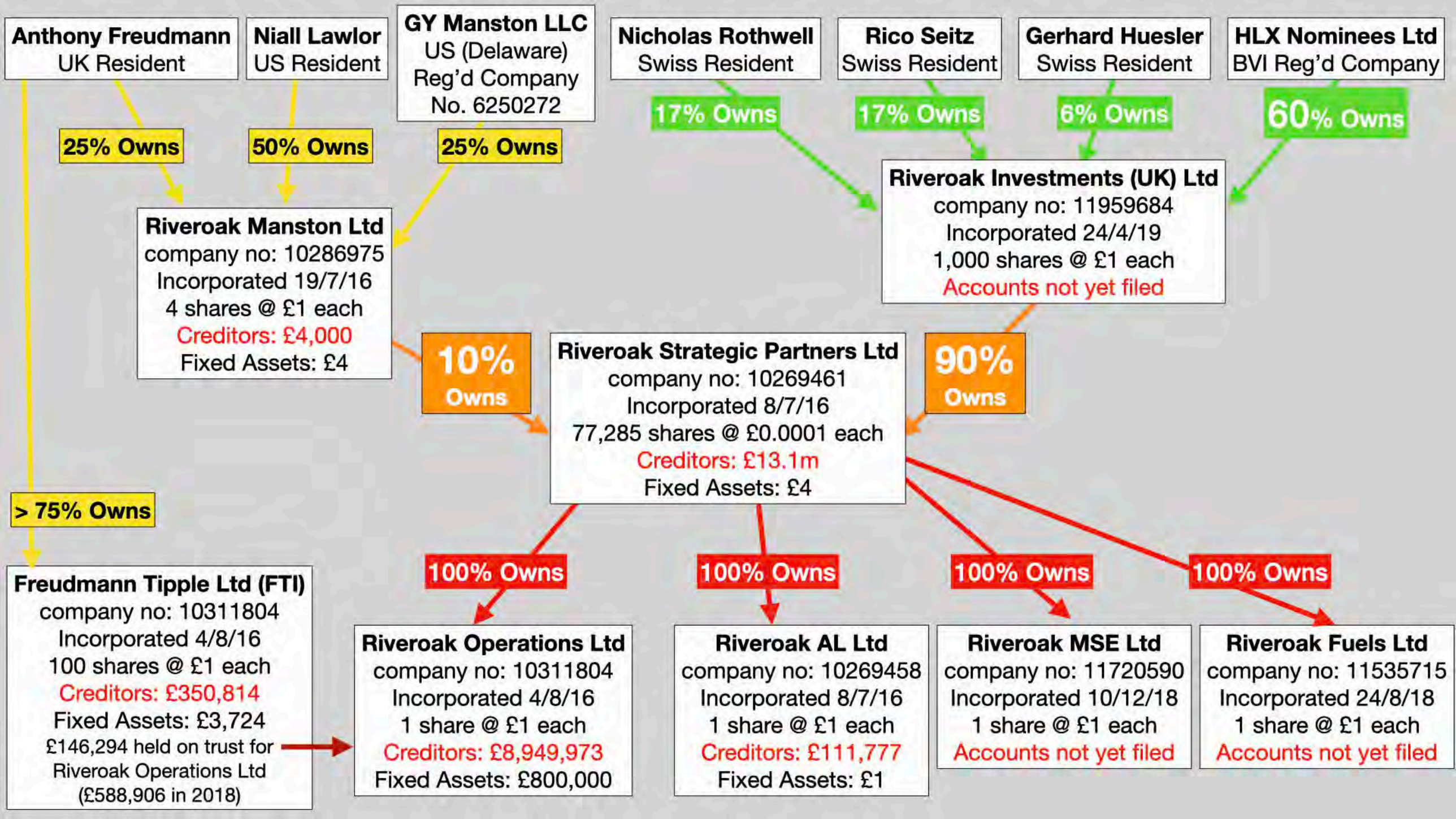
Authenticated

This form was authorised by one of the following:

Director, Secretary, Person Authorised, Administrator, Administrative Receiver, Receiver, Receiver Manager, CIC Manager.

Appendix 06

Riveroak Strategic Partners Ltd and associated companies - corporate structure


Anthony Freudmann
UK Resident
Niall Lawlor
US Resident
GY Manston LLC
US (Delaware)
Reg'd Company
No. 6250272
Nicholas Rothwell
Swiss Resident
Rico Seitz
Swiss Resident
Gerhard Huesler
Swiss Resident
HLX Nominees Ltd
BVI Reg'd Company
25% Owns
50% Owns
25% Owns
17% Owns
17% Owns
6% Owns
60% Owns
Riveroak Manston Ltd
company no: 10286975
Incorporated 19/7/16
4 shares @ £1 each
Creditors: £4,000
Fixed Assets: £4
Riveroak Investments (UK) Ltd
company no: 11959684
Incorporated 24/4/19
1,000 shares @ £1 each
Accounts not yet filed
10% Owns
Riveroak Strategic Partners Ltd
company no: 10269461
Incorporated 8/7/16
77,285 shares @ £0.0001 each
Creditors: £13.1m
Fixed Assets: £4
90% Owns
> 75% Owns
Freudmann Tipple Ltd (FTI)
company no: 10311804
Incorporated 4/8/16
100 shares @ £1 each
Creditors: £350,814
Fixed Assets: £3,724
£146,294 held on trust for
Riveroak Operations Ltd
(£588,906 in 2018)
100% Owns
100% Owns
100% Owns
100% Owns
Riveroak Operations Ltd
company no: 10311804
Incorporated 4/8/16
1 share @ £1 each
Creditors: £8,949,973
Fixed Assets: £800,000
Riveroak AL Ltd
company no: 10269458
Incorporated 8/7/16
1 share @ £1 each
Creditors: £111,777
Fixed Assets: £1
Riveroak MSE Ltd
company no: 11720590
Incorporated 10/12/18
1 share @ £1 each
Accounts not yet filed
Riveroak Fuels Ltd
company no: 11535715
Incorporated 24/8/18
1 share @ £1 each
Accounts not yet filed

From:	Rob Pridham
To:	Manston Airport
Subject:	No.69 Five10Twelve Ltd Late Rep 110520 New Evidence: Airspace Design and Procedures Option Development Part 2
Date:	29 June 2020 17:40:00
Attachments:	Letter to Secretary of State_ New Evidence since the Close of the Examination_ Airspace Design and Procedures Option Development Part 2_app.pdf

From: Samara Jones-Hall [redacted]
Sent: 11 May 2020 23:24
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; Jason Jones-Hall [redacted]
Subject: Letter to Secretary of State with New Evidence: Airspace Design and Procedures Option Development Part 2

Dear Sirs

Please find attached our Letter to Secretary of State with New Evidence: Airspace Design and Procedures Option Development Part 2.

Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

Five10Twelve Limited Marlowe
[redacted]

The Rt Hon Grant
Shapps The Secretary of
State for Transport
Department for
Transport Zone 1/18,
Great Minster House 33
Horseferry Road
London, SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.u
k Cc: Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

Dear Sir

RiverOak Strategic Partners ("the Applicant)
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination: Airspace Design and Procedures Option Development Part 2

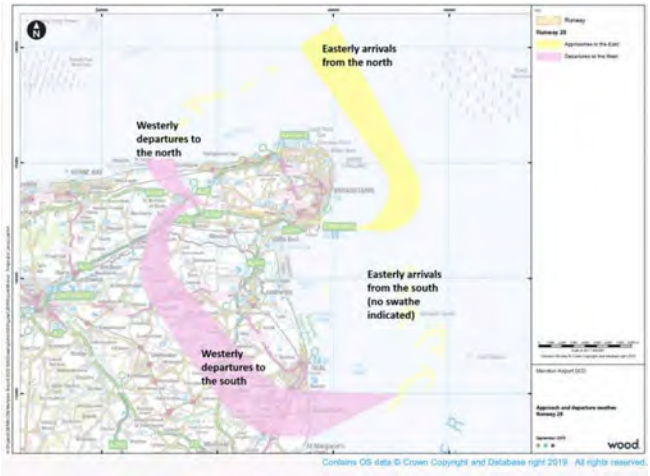
As you will be aware, the Applicant has in May this year circulated the document known as *Appendix A - Manston Airport Airspace Design and Procedures Options Development Part 2* ("**Applicant's 2020 Airspace Design**")[1].

[1] Attached at Appendix A

As you will recall during the DCO Examination the Applicant submitted flight swathes showing airspace for departures and arrivals to the Examining Authority, Statutory Bodies, Local Authorities and other Interested Parties in order for these parties to submit and/or comment upon the draft DCO, Local Impact Reports, Statements of Common Ground and the Report on the Implications for European Sites (RIES).

There is a clear and material difference between the Applicant's DCO Examination 2019 flight swathes showing airspace for departures and approaches and the Applicant's 2020 Airspace Design.

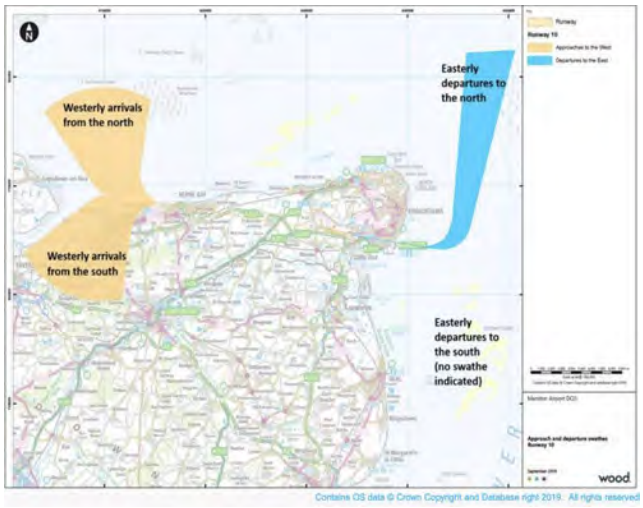
<u>For example in relation to Runway 28:</u>



Applicant's DCO Examination 2019 flight swathes showing airspace for departures and approaches

Applicant's 2020 Airspace Design

For example in relation to Runway 10:



Applicant's DCO Examination 2019 flight swathes showing airspace for departures and approaches

Figure 4 – Runway 10 Left-Hand Departures

Applicant's 2020 Airspace Design

Figure 5 – Runway 10 Right-Hand Departures

Applicant's 2020 Airspace Design

As evidenced above, there is a clear and material difference between the Applicant's DCO Examination 2019 flight swathes showing airspace for departures and approaches and the Applicant's 2020 Airspace Design.

Natural England's response to the Secretary of State's Consultation of 17 January 2020 is but one example that highlights the importance of the Applicant's flight swathes. In its letter it states:

"*Natural England's principle concern at this stage is that the Report on the Implications for European Sites (RIES) is based on the same assessments and assumptions that the rest of the DCO application documents are based on, and that these* ***represent the most realistic 'worst case' development scenario*** *(i.e. following the precautionary approach required by the Habitats Regulations*[2]*"* (emphasis added).

The clear and material difference between the Applicant's DCO Examination 2019 flight swathes showing airspace for departures and approaches and the Applicant's 2020 Airspace Design can and respectfully should, constitute a reason for development consent refusal.

2 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005238-Natural%20England%20response%20to%20DfT%20request%20for%20further%20info_Manston%20Airport_306180_31Jan20.pdf (accessed 11 May 2020)

RSP | Manston Airport

Appendix A – Manston Airport Airspace Design and Procedures

Options Development Part 2

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Glossary

Acronym	Meaning
ACP	Airspace Change Proposal
AMS	Airspace Modernisation Strategy
amsl	above mean sea level
ANSP	Air Navigation Service Provider
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
DCO	Development Consent Order
FASI-S	Future Airspace Strategy Implementation - South
ft	feet
GA	General Aviation
GNSS	Global Navigation Satellite System
IAP	Instrument Approach Procedure
IFP	Instrument Flight Procedure
ILS	Instrument Landing System
LAMP	London Airspace Modernisation Programme
LTMA	London Terminal Manoeuvring Area
MAP	Missed Approach Procedure
NATMAC	National Air Traffic Management Advisory Committee
NDB	Non-Directional Beacon
PBN	Performance Based Navigation
RSP	RiverOak Strategic Partners Ltd
SID	Standard Instrument Departure

1. Options Development

1.1 Introduction

The purpose of this document is to seek the input of key stakeholders in the development of the design options that address the requirements of the Manston Airport Airspace Change Proposal (ACP). This ACP concerns the introduction of appropriate Performance Based Navigation (PBN) flight procedures and airspace to enable safe operations at the redeveloped airport.

1.2 Background

Manston Airport is a disused airport on the Isle of Thanet in Kent. It has one of the longest and widest runways in the UK, comparable to other international airports, making it a valuable infrastructure asset. RiverOak Strategic Partners (RSP) is proposing to secure the future of this valuable national asset by redeveloping and reopening it as a successful hub for international air freight which also offers passenger travel, executive travel and aircraft engineering services.

RSP has applied to the Planning Inspectorate for a Development Consent Order (DCO) to build Manston Airport and a decision is expected in May 2020. In addition, RSP must also secure approval from the CAA, through the CAP 1616 process, for its use of airspace and procedures.

This document relates only to the CAP 1616 process and the proposal to introduce the airspace and Instrument Flight Procedures (IFPs) required to enable safe and efficient operations to and from the airport.

1.3 CAP 1616 Airspace Design Guidance

CAP 1616 is a seven-stage process published by the CAA that provides guidance on the process to follow when seeking to change the way airspace is used. The whole Manston Airport CAP 1616 process is envisaged to take 2½ years. The seven stages of the process are as follows:

- Stage 1 – Define
- Stage 2 – Develop and Assess (current stage)
- Stage 3 – Consultation
- Stage 4 – Update and Submit
- Stage 5 – Decide
- Stage 6 – Implement
- Stage 7 – Post-Implementation Review

Manston Airport is currently at Stage 2 which requires the development of options that seek to meet the original Statement of Need. The options are required to align, where practicable, with the Design Principles generated in Stage 1. These options are then assessed to understand the positive/negative impacts before progressing to the Stage 2 Gateway. There is a formal public consultation in Stage 3, but this document is your opportunity as a key stakeholder involved in the development of the Design Principles to contribute early and help influence the design options taken forward to Stage 3. Outside the formal consultation windows, when we are asking for you to contribute, we will still listen to what you have to say about the proposal or generally about our operations.

1.4 Progress So Far

In November 2018, RSP submitted a Statement of Need to the CAA. This is the formal explanation as to why RSP wishes to make changes within the airspace surrounding the Airport. The CAA indicated that an airspace change was an appropriate mechanism to achieve the objectives in the Statement of Need. A copy of the Statement of Need and other associated documentation can be viewed at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112.

At the end of February 2020, the first stage in the change process was successfully completed when the RSP submission for Manston Airport passed through the CAA's Stage 1 DEFINE Gateway.

The work undertaken during Stage 1 helped to establish a prioritised shortlist of Design Principles to act as a framework against which Design Options will be drawn up. The prioritised list of Design Principles is shown in Table 1 below.

Priority	Design Principle
1	Procedures must be designed to meet acceptable levels of flight safety
2	Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it
3	Procedures should be designed to minimise the impact of noise below 7,000 feet
4	Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas
5	Designs should minimise the impact on other airspace users in the local area
6	Procedures should be designed that minimise aircraft emissions to reduce air pollution
7	Designs should make provision for multiple routes that can be used to spread the noise burden more equitably
8	Procedures should be designed to minimise the number of track miles flown

Table 1 - Prioritised Design Principles

1.5 Step 2A – Options Development

Stage 2, Step 2A in the process is about the development of a potential long list of design options that seek to meet the original Statement of Need and are aligned with the Design Principles shown above. RSP has developed a comprehensive list of design options for Manston Airport which, with your input, will be refined to produce one or more options that address the Statement of Need and align with the defined Design Principles. RSP would like to ensure that stakeholder concerns have been properly understood and accounted for in designing these options. It is important to us that you are satisfied that the design options are aligned with the Design Principles and that we have properly understood and accounted for your concerns in designing options.

In addition, RSP will be hosting workshops (physically or virtually) to further engage with stakeholders to make sure that your views have been captured and demonstrate how this feedback has influenced the design options.

Once stakeholder feedback has been received, RSP will produce a Design Principle Evaluation that sets out how its design options have responded to the Design Principles.

1.6 Step 2B – Options Appraisal

The second part of Stage 2 (Step 2B) involves an assessment of the options in order to develop the short list of options that will be taken forward to Stage 3 (Consultation). Your input will assist us in developing the shortlist. Any options that are unviable and cannot be taken forward, or any restrictions on the design options developed, will be clearly explained to the stakeholders, with the appropriate evidence to support the reasons. At the end of this Step 2B, RSP will submit details of the options developed to the CAA to pass through the Stage 2 DEVELOP AND ASSESS Gateway, currently programmed for 25th September 2020.

1.7 Next Steps

This engagement is focussed on those representative bodies and individuals that were involved in developing the Design Principles in Stage 1, who can offer early views on behalf of their local communities, including elected community representatives, commercial aviation operators, including airlines, airports and Air Navigation Service Providers (ANSPs), representatives of local General Aviation organisations or clubs and members of the National Air Traffic Management Advisory Committee (NATMAC).

Once the Stage 2 DEVELOP AND ASSESS Gateway has been passed, we will launch formal public consultation as part of Stage 3, in which we will be consulting widely with residents, businesses, communities, the public and other stakeholders. Details of the formal consultation will be communicated in due course, at which point RSP will welcome all relevant views about its ACP.

2 Design Options

2.1 Proposed Procedures

RSP is seeking to introduce Instrument Flight Procedures (IFPs) for aircraft departing from, and arriving at, the airport. IFPs is a term used to describe the published routes aircraft fly over the ground, both in plan and elevation view. These new procedures allow aircraft to make the best use of the airspace, utilising Global Navigation Satellite System (GNSS) technology to make more efficient use of the airspace around the airport by defining more accurate routing and to allow the airport to explore different options for the way aircraft will approach and depart the airport, whilst ensuring acceptable levels of safety.

RSP is proposing to introduce Standard Instrument Departures (SIDs), Transition procedures and Instrument Approach Procedures as part of this Airspace Change Proposal (ACP).

RSP has developed a comprehensive list of design options and would now like to share these with those representative bodies that contributed to the development of the Design Principles in Stage 1. We have already engaged with ANSPs in order to identify any constraints or restrictions that could influence the way in which the options are developed. This will enable us to ensure that any design options accord with the CAA's published Airspace Modernisation Strategy (AMS) and in particular, the Future Airspace Strategy Implementation – South (FASI-S).

We are now seeking further input from our stakeholders to initially identify the design envelopes, or swathes, in which the routes would be contained. This will be followed by an assessment of the route options that will be developed within the envelopes.

2.2 Departure - Standard Instrument Departure (SID)

A SID describes the route that an aircraft must fly on departure from an airport in order to connect safely with the en-route airspace structure. Aircraft will follow a designated route profile, including any altitude constraints, to a designated waypoint that forms part of the national airspace structure. As this ACP forms part of the FASI-S programme, the precise designated waypoints at the end of each SID are yet to be determined and will be developed by NATS as part of the London Airspace Management Programme (LAMP) Phase 2 ACP.

2.2.1 Runway 28 Departures

Figure 1 and Figure 2 in Annex A1 show all the possible options for departures from Runway 28. The red line extending from the runway indicates the route that aircraft could fly from the earliest possible turn after take-off. The blue arrows represent the directions that the aircraft could follow on departure and are representative only; aircraft could feasibly follow routes that are between the indicated arrows. The ends of the arrows represent the approximate location where the aircraft would reach 7,000 feet (ft) above mean sea level (amsl), the point at which they join the airways network above. In addition, the designed routes do not necessarily need to be straight lines and could involve turns in direction before reaching 7,000 ft. The different routes are depicted on two diagrams to avoid unnecessary clutter and, for instance, aircraft wishing to depart on a northerly heading could either continue to turn left after take-off until heading north (a 270° turn as shown in Figure 1), or turn right after take-off directly onto a northerly heading (as shown in Figure 2).

Figure 3 in Annex A1 depicts the region of airspace in which, departure procedures from Manston Airport would conflict with procedures from other airports, most notably London City, Biggin Hill, Southend and Gatwick. The 3,000 ft and 4,000 ft lines represent the points at which departing aircraft from Manston are likely to reach these heights and might interact with other airports' procedures. It would be feasible to plan the new procedures within this area but in this case, we will continue to liaise and coordinate with other FASI-S sponsors to resolve any interactions. Once aircraft reach the 5,000 ft line and shaded area, they are likely to conflict with these procedures, as well as the flow of air traffic in the airspace above (the London Terminal Manoeuvring Area (LTMA)) and the Danger Area EG D138. As such, the shaded area will become a constraint on the design options for Runway 28 departures.

2.2.2 Runway 10 Departures

Figure 4 and Figure 5 in Annex A2 show all the possible options for departures from Runway 10. The layout of these diagrams is the same as described for Runway 28 departures in paragraph 2.2.1 above.

Figure 6 in Annex A2 depicts the region of airspace in which, departure procedures from Manston Airport would conflict with procedures from other airports, most notably London City, Biggin Hill and Southend. After take-off, the aircraft could turn left or right, but in either case, the 3,000 ft and 4,000 ft lines represent the points at which departing aircraft from Manston are likely to reach these heights, and might interact with other airports' procedures. In this case, we will continue to liaise and coordinate with other FASI-S sponsors to resolve any interactions. Once aircraft reach the 5,000 ft line and shaded area, they are likely to conflict with these procedures, as well as the flow of air traffic in the airspace above (the LTMA) and the Danger Area EG D138. As such, the shaded area will become a constraint on the design options for Runway 10 departures.

2.3 Arrival - Transitions

The Transitions describes the route that the aircraft will take when arriving at an airport from the en-route network to the Initial Approach Fix (see paragraph 2.4) for an Instrument Approach Procedure (IAP). These are represented by the green arrows in Figure 7 (Annex A3) and Figure 10 (Annex A4).

2.4 Arrival - Instrument Approach Procedure (IAP)

The IAP is the final stage of flight as an aircraft arrives at the airport to land, detailing the route and descent profile that an aircraft must follow to ensure safe deconfliction from ground obstacles in the final, critical stages of flight. It also includes a Missed Approach Procedure (MAP) that details what the aircraft should do in the event of not being able to land off the approach. Manston Airport is planning on introducing IAPs that will use satellite navigation technology to guide the aircraft as well as procedures that utilise a ground-based Instrument Landing System (ILS) and Non-Directional Beacon (NDB). An ILS is a as a precision runway approach aid based on two radio beams which together provide pilots with both vertical and horizontal guidance during an approach to land; an NDB is a non-precision approach, as there is no vertical guidance, used by small General Aviation (GA) aircraft.

An IAP is designed to align an aircraft in a direction that will enable it to make a safe approach to land at the designated runway at an airport. Aircraft will need to be lined up with the runway from 5 nautical miles (nm) in order to carry out the approach procedure safely. Aircraft can carry out a maximum turn of a 90° in order to line up with the runway. This is indicated by the red lines perpendicular to the final approach track, shown in Figure 7 in Annex A3 (for Runway 28) and Figure 10 in Annex A4 (for Runway 10). Different approach procedures can be designed for intermediate positions, as shown by the additional red lines in these figures.

The red shaded areas in Figure 8 in Annex A3 (for Runway 28) and Figure 11 in Annex A4 (for Runway 10) show the region in which feeding traffic from the en-route network onto the approach procedure will be challenging due to the confliction with traffic flows on the arrival procedures for London City and Biggin Hill Airports. As such, the shaded area will become a constraint on the design options for the arrival transitions at Manston Airport.

Figure 9 in Annex A3 shows the possible options for the MAP for Runway 28 and Figure 12 in Annex A4 shows the possible options for the MAP for Runway 10. If aircraft are unable to land off an approach for any reason, they will execute the MAP which will involve a climb to a nominated altitude (generally approximately 2 – 3,000 ft) and proceed to a nominated position (the Hold) to await Air Traffic instructions to carry out a further approach procedure. The blue lines on Figure 9 and Figure 12 represent the routes that the aircraft could follow. No Hold positions have been indicated at this stage and it is anticipated that this will evolve from stakeholder discussions, but these procedures will again need to be cognisant of the arrival flows into London City and Biggin Hill Airports.

2.5 Design Envelopes – Your Input

RSP is requesting your input in relation to any areas on the figures in Annexes A1-A4 where you consider that the design envelopes should or should not be. It is these design envelopes that will ultimately contain the specific route options that will be shared with you for further consideration.

RSP is seeking any views or comments that stakeholders may wish to express regarding the comprehensive design envelopes shown in Annexes A1 to A4 below in order to refine the envelopes before developing some specific route options for the procedures.

2.6 How to Respond

2.6.1 By email

Please send us your comments and views via email to the following address:
manstonairspace@communityrelations.co.uk

It is important that individual email responses, subject heading 'Manston ACP Stage 2',
clearly show your name and contact details; this will allow us to cross refer to the emails we send out.

Please return any responses by **Friday 22nd May 2020.**

2.6.2 By Teleconference

If you wish to provide your input via a teleconference/online method, please send your contact details and preferred meeting method to the e-mail address above.

As described in paragraph 1.7, it is anticipated that the full public consultation will be conducted in 2021 and all participants will have a further opportunity to comment. RSP will ensure any views expressed at this stage will also be recorded and processed through to the full consultation.

A1 Runway 28 Departures

Figure 1 – Runway 28 Left-Hand Departures

Figure 2 – Runway 28 Right-Hand Departures

Figure 3 – Runway 28 Departures ANSP Constraints

A2 Runway 10 Departures

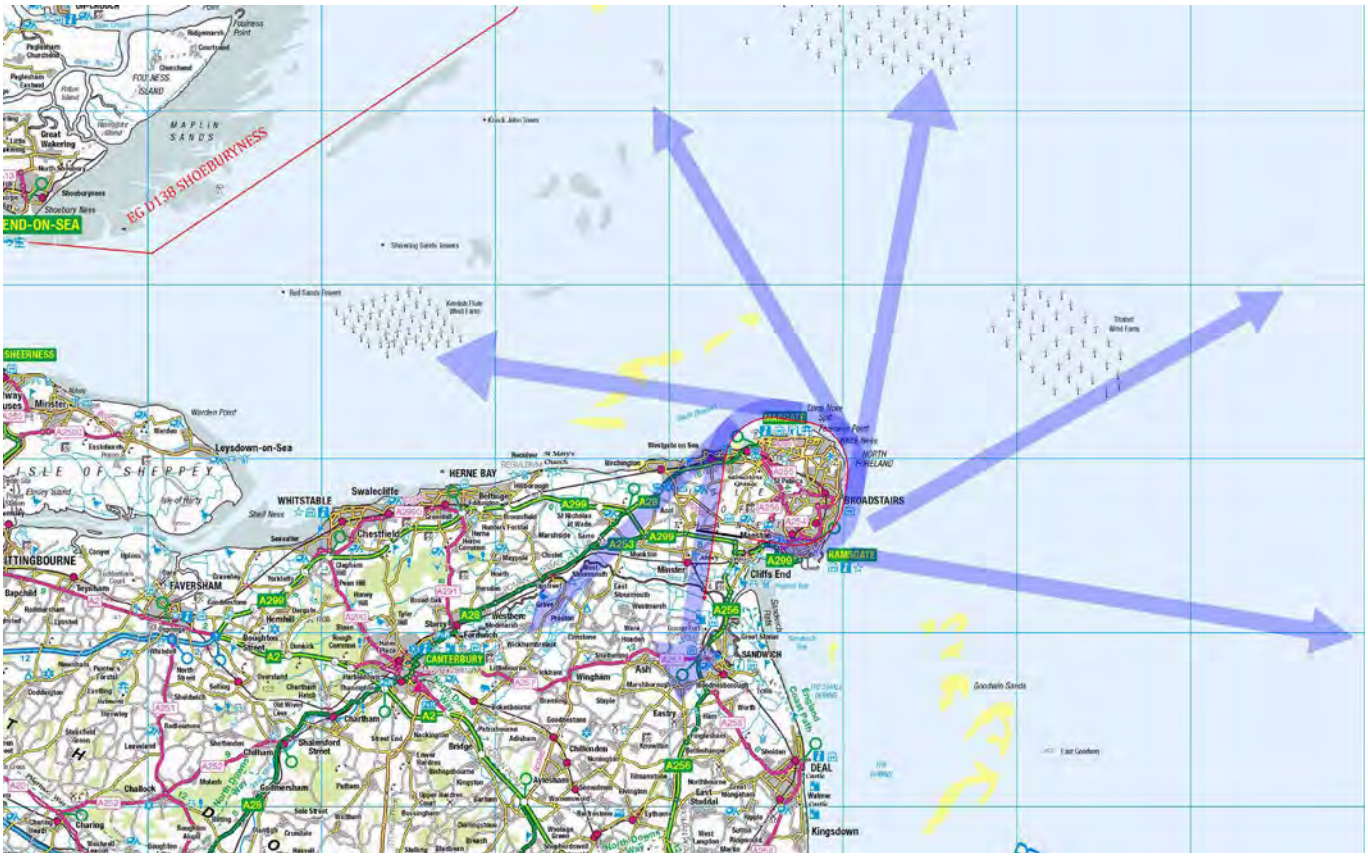

Figure 4 – Runway 10 Left-Hand Departures

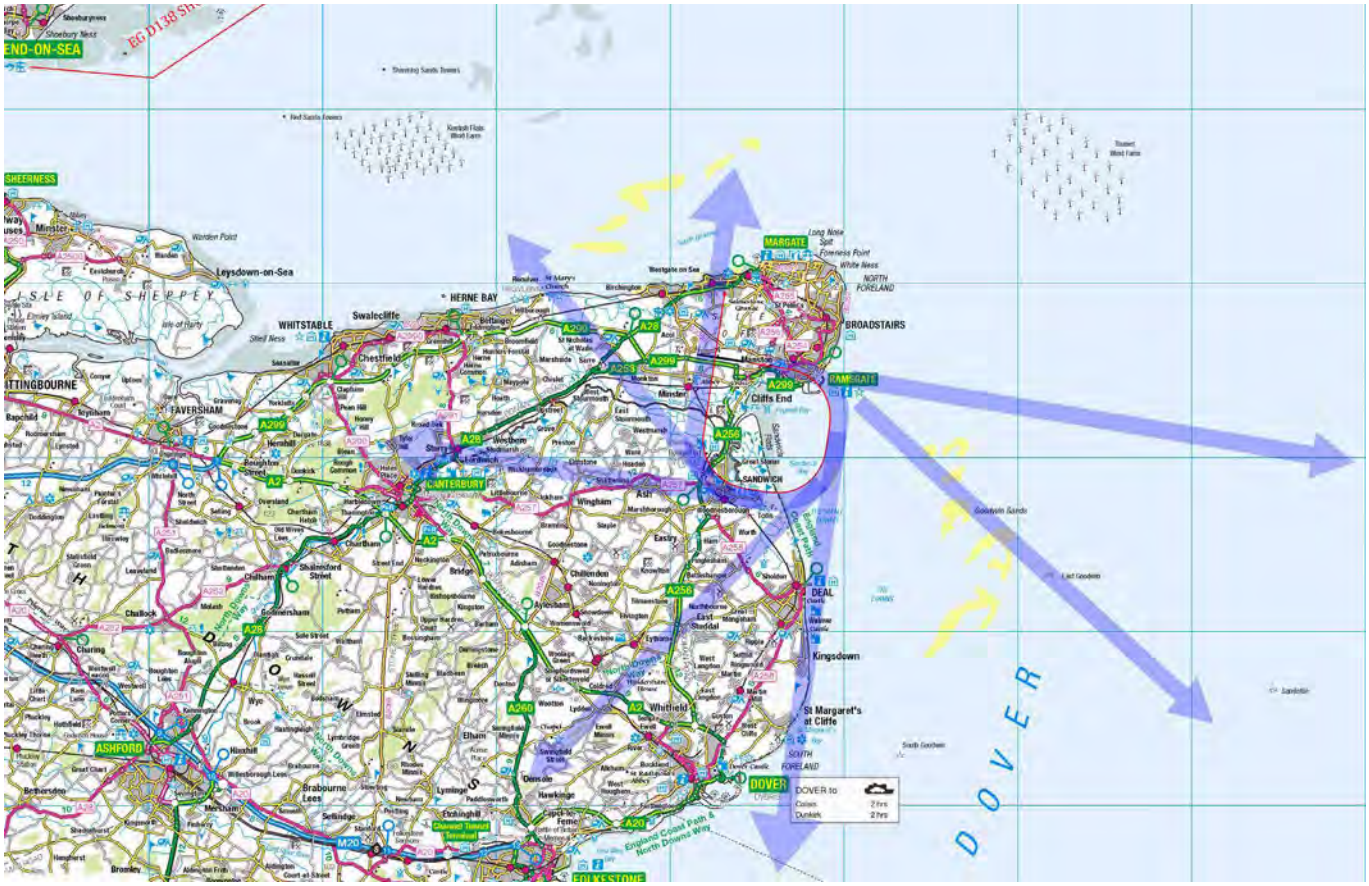

Figure 5 – Runway 10 Right-Hand Departures

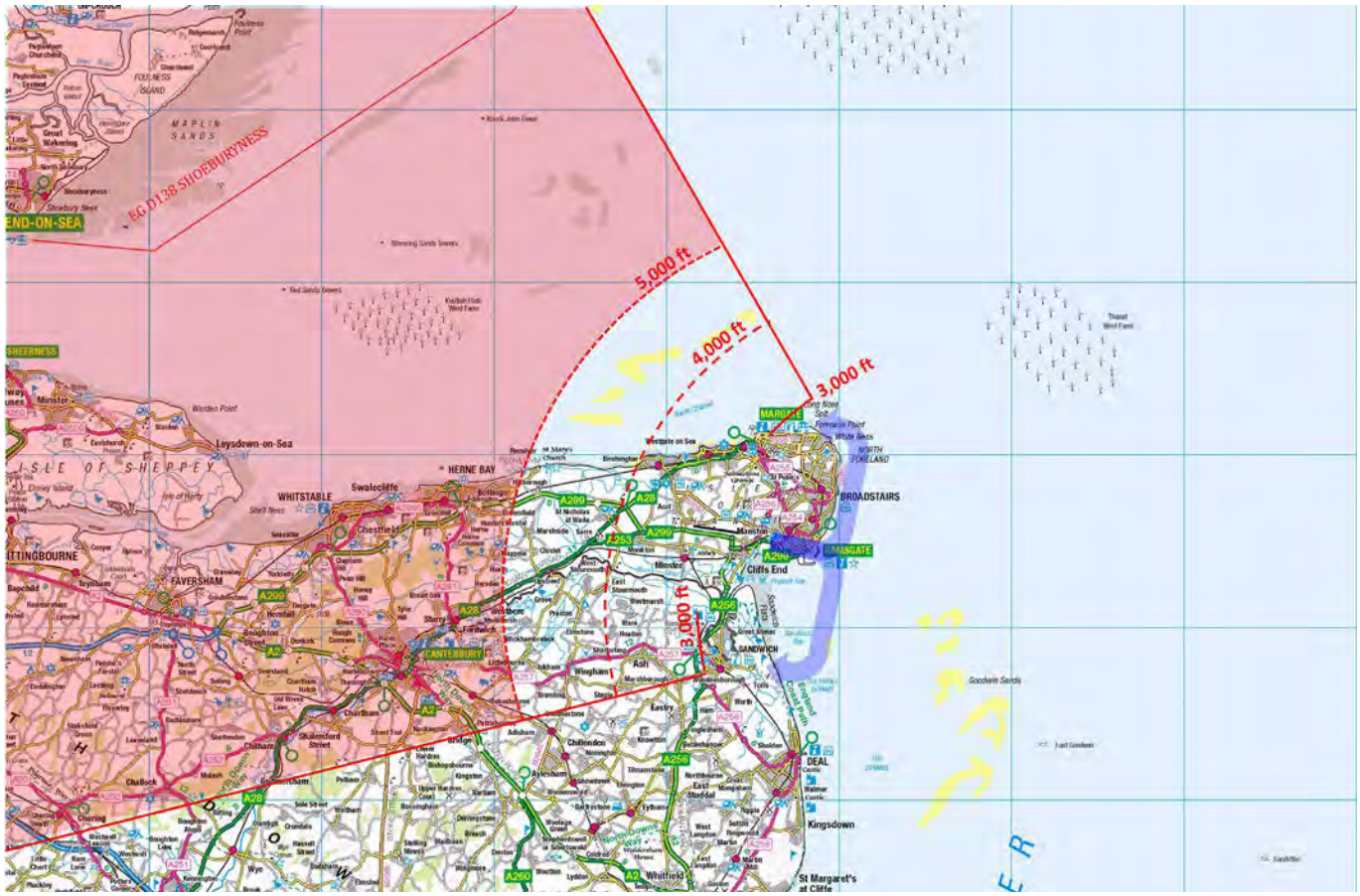

Figure 6 – Runway 10 Departures ANSP Constraints

A3 Runway 28 Approach and Missed Approach

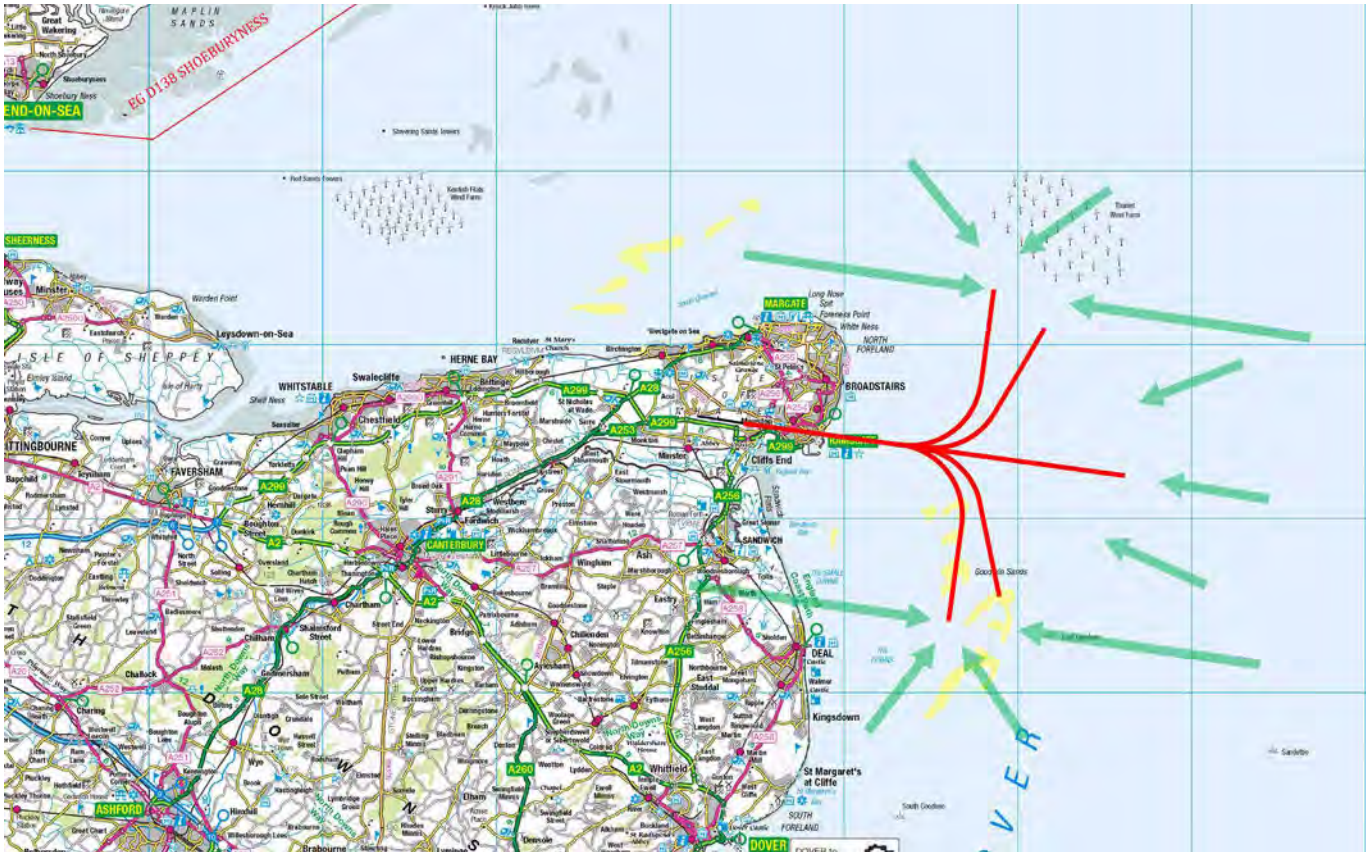

Figure 7 – Runway 28 Approach

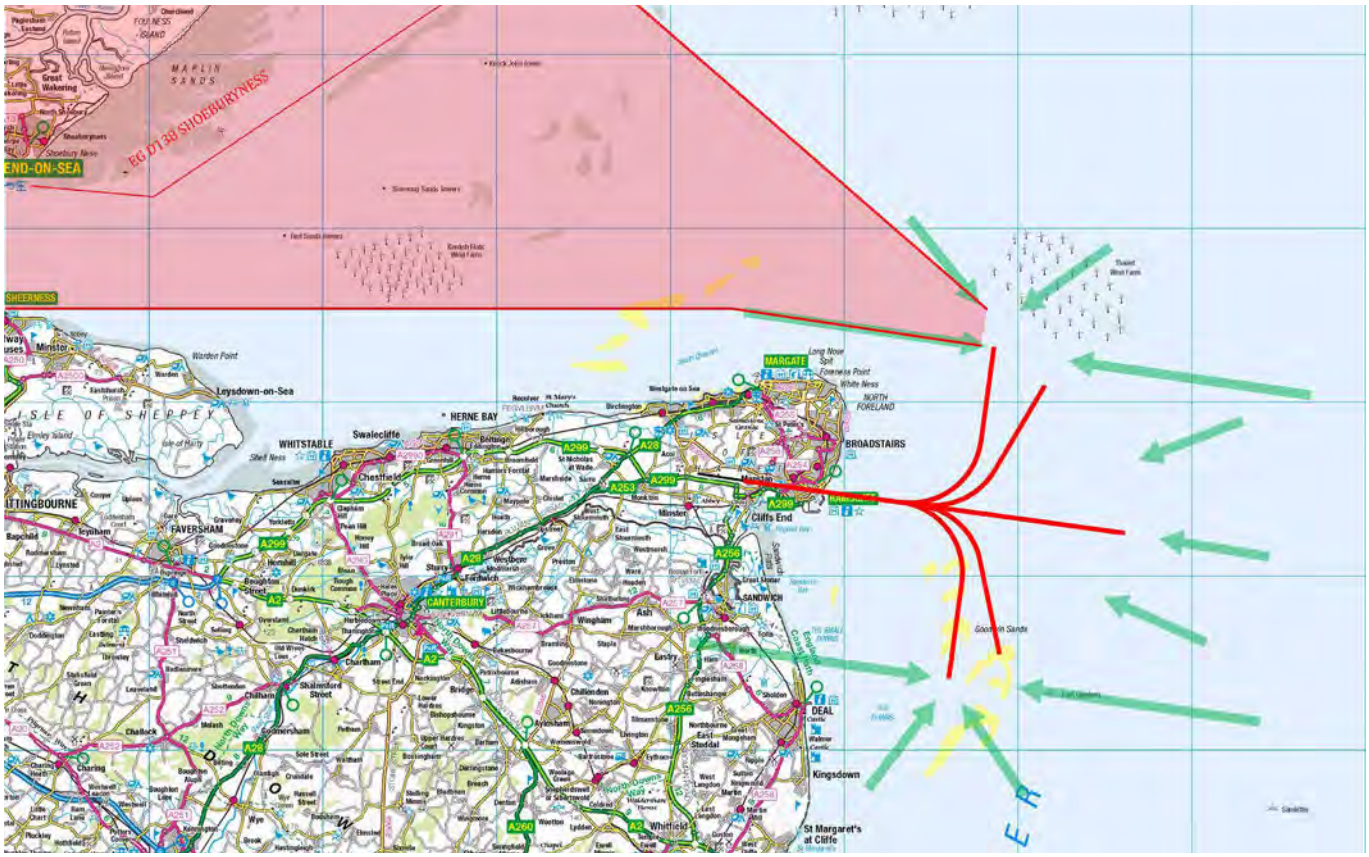

Figure 8 – Runway 28 Approach ANSP Constraints

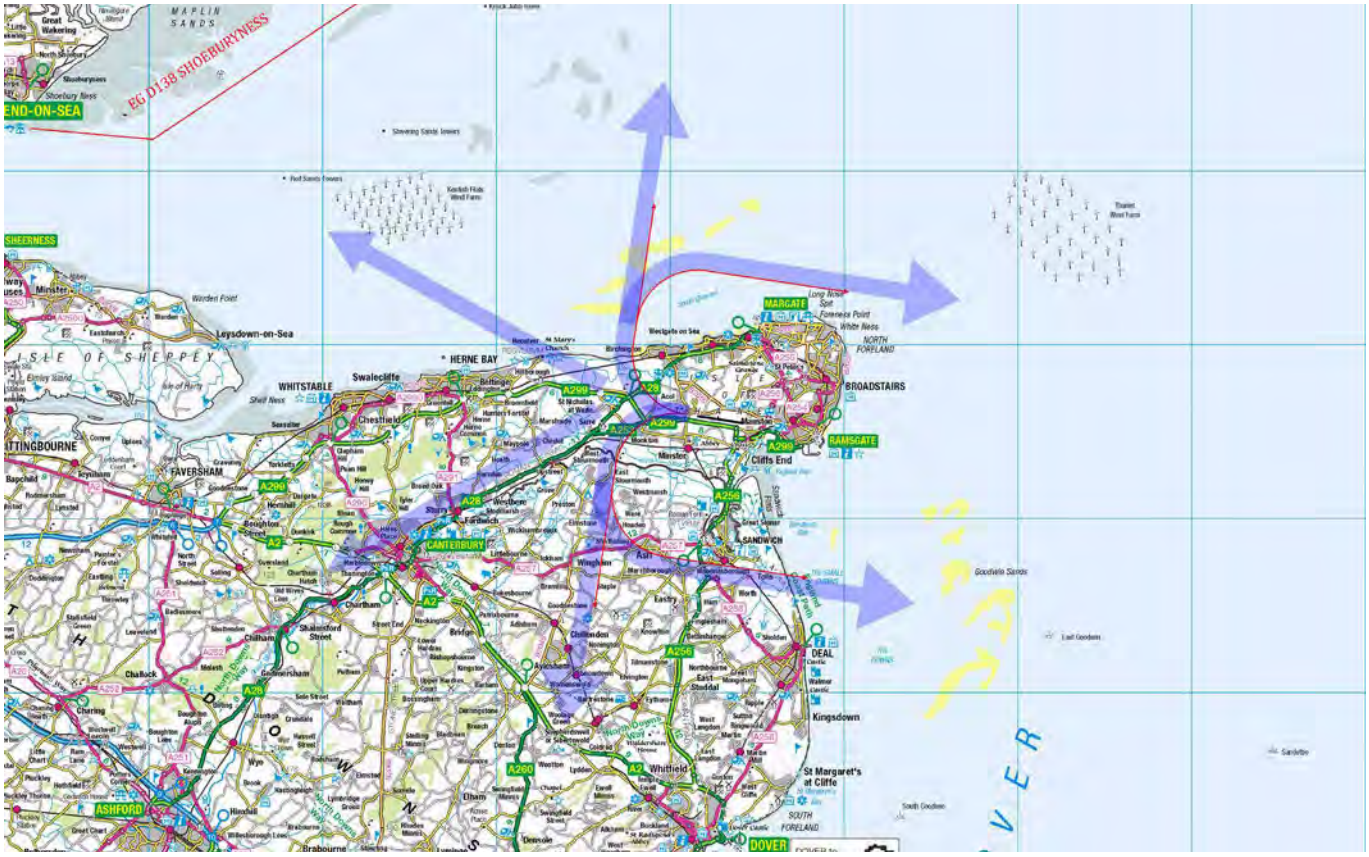

Figure 9 – Runway 28 Missed Approach

A4 Runway 10 Approach and Missed Approach

Figure 10 – Runway 10 Approach

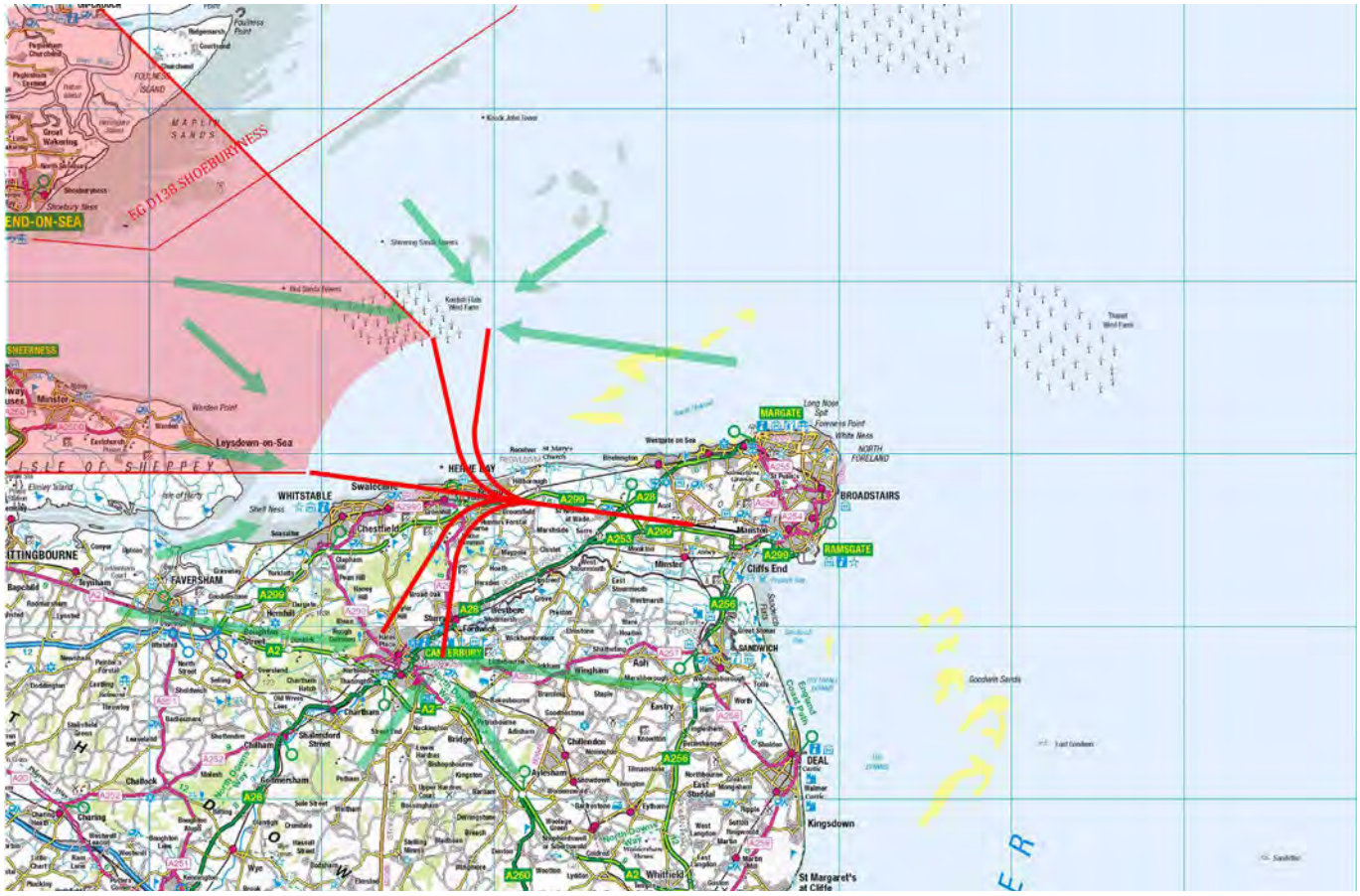

Figure 11 – Runway 10 Approach ANSP Constraints

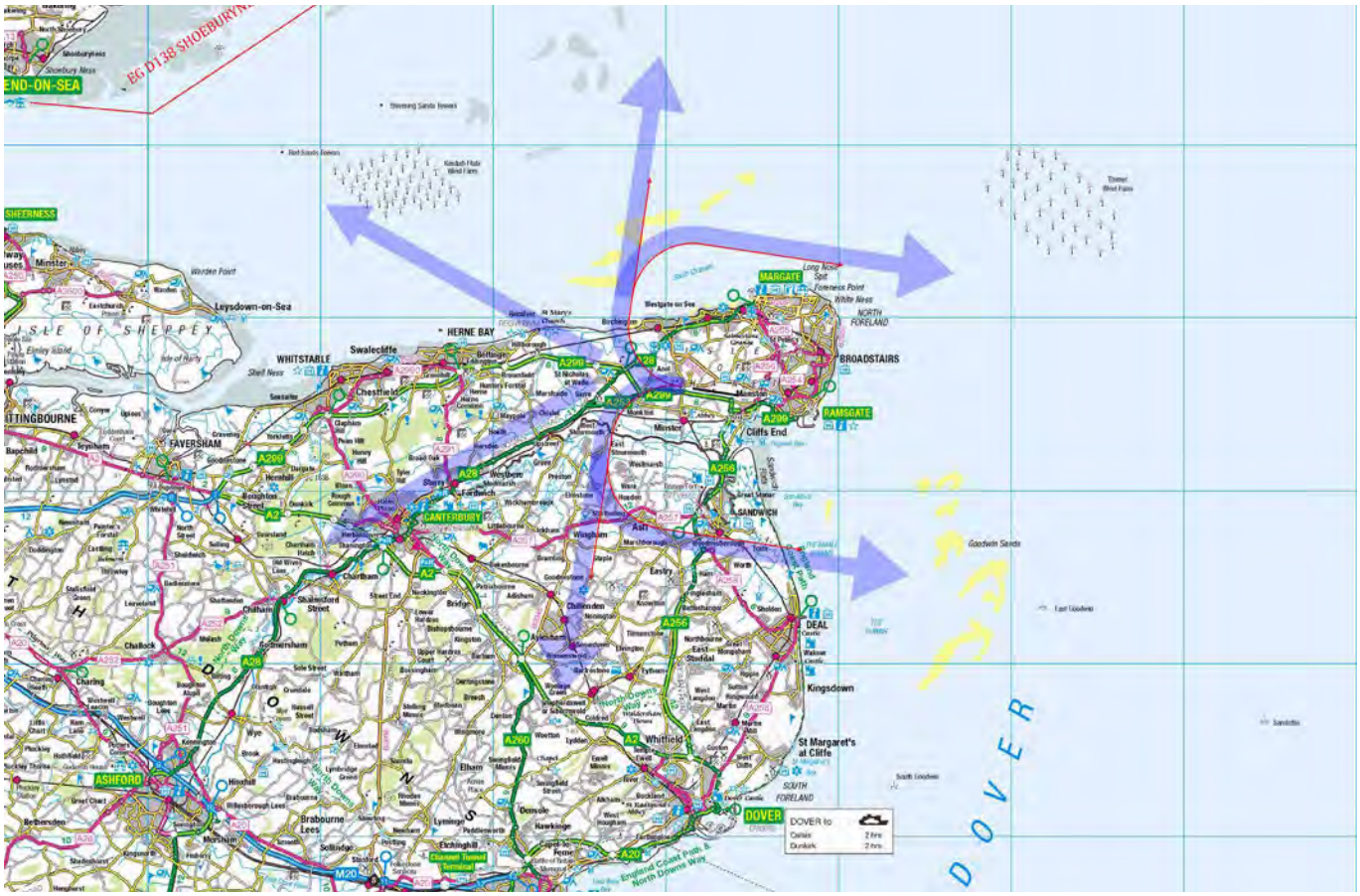

Figure 12 – Runway 10 Missed Approach

RSP

Manston Airport

www.rsp.co.uk

RSPManston @RSPManston

From:	[redacted]
To:	transportandworksact@dft.gov.uk; susan.anderson@dft.gov.uk; rob.pridham@dft.gov.uk; Manston Airport
Subject:	Urgent Letter on Manston Airport DCO decision
Date:	15 May 2020 12:06:17
Attachments:	Manston - Further submissions -- 14 05 20 (2).pdf
Importance:	High

Dear Sirs,

We attach a letter from the Environmental Law Foundation and would be grateful if you would give this your urgent consideration before the decision on the DCO for Manston Airport is taken, due to announced on Monday the 18th May 2020.

Could you please confirm that the letter has been received.

Yours sincerely,

Emma Montlake
ELF

Environmental
Law Foundation

[redacted]

www.elflaw.org

15th April 2020

By email (only) to the following:-

transportandworksact@dft.gov.uk

susan.anderson@dft.gov.uk

rob.pridham@dft.gov.uk

manstonairport@planninginspectorate.gov.uk

Dear Sirs,

Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010
Application by RiverOak Strategic Partners Limited ("the Applicant") for an Order granting Development Consent for the reopening and development of Manston Airport in Kent.

FURTHER SUBMISSIONS ON CLIMATE CHANGE ON BEHALF OF THE ENVIRONMENTAL LAW FOUNDATION ("ELF")

A. INTRODUCTION

1. Further to its detailed response of 30 January 2020,[1] to the Department of Transport's ("DfT") written request for comments and further information of 17 January 2020, the Environmental

[1] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005295-Five10Twelve%20Limited%20FINAL%20SOS.pdf.

Law Foundation ("ELF")[2] makes further submissions as to the issue of climate change, following the Court of Appeal's conclusion that the decision to designate the Airports National Policy Statement was unlawful in *R. (on the application of Plan B Earth) v Secretary of State for Transport* [2020] EWCA Civ 214 ("the Heathrow JR").[3] This is a critical change to the landscape governing the DCO decision.

2. In short, the ELF is extremely concerned by the very real risk that if the Climate Change and GHG emissions targets put forwards by the Manston Airport Development Consent Order ("DCO") Applicant ("the Applicant") are accepted here, there will be wide-ranging implications in due course, as other airports also seek to expand through DCO processes.

3. The ELF therefore request that:
    a. the DCO be refused, particularly given the Applicant's inadequate response to the Secretary of State's questions in its January Consultation on Climate Change, or;

    b. in the event that the Secretary of State is still minded to grant the DCO, regardless of its climate change failings, such a decision should be deferred given the forthcoming Supreme Court appeal of the Heathrow JR.

B. BACKGROUND

4. The climate change issues raised by the DCO are summarised in detail in ELF's response of 30 January 2020.[4] The key background set out therein is, in short, as follows:

    a. Legal framework: In 2008, the UK implemented a legislative framework for it to achieve its long-term goals of reducing greenhouse gas emissions and to ensure steps are taken towards adapting to the impact of climate change:[5] the Climate Change Act 2008 ("the CCA 2008") and the Planning Act 2008 ("the PA 2008"). Pursuant to section 1 of the CCA 2008, it is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990

[2] The ELF is a pro-bono legal charity that was set up in 1992 to assist local communities and individuals with environmental, public interest concerns; helping to address the imbalance of resources and access to experts available to local communities. ELF takes enquiries direct from members of the public, receiving approximately 250 enquiries a year. ELF takes an on-going interest in the environmental impacts of airport expansion, such proposals as are occurring on an unprecedented scale currently across the UK.
[3] Permission to appeal has been granted by the Supreme Court.
[4] At paras 4 to 35.
[5] Climate Change Act 2008, Explanatory Notes, para 3.

baseline ("the Net Zero target").[6] Moreover, parts 2 and 3 of the PA 2008 provide national policy statements are the statements of national planning policy for "nationally significant infrastructure projects" in England and Wales.

b. The Paris Agreement: The Paris Agreement, an agreement within the United Nations Framework Convention on Climate Change ("UNFCCC") was adopted by consensus on 12 December 2015, following the 21st Conference of the Parties of the UNFCCC. The UK ratified the Paris Agreement on 17 November 2016. In the recitals to the Paris Agreement, the parties *'[recognised] the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge'*. The Paris Agreement's key aim is to improve the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and moreover, to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (as prescribed in Article 2). Article 4(3) states that each party's '*successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition…*' (emphasis added).

c. UK aviation policy: The UK's aviation strategy is currently in development. Insofar as is relevant, the Aviation 2050 Consultation Paper (December 2018), explains that, in order to implement the government's long term vision and pathway for addressing UK aviation's impact on climate change, the government also proposes to (at para 3.96): '*Require planning applications for capacity growth to provide a full assessment of emissions, drawing on all feasible, cost-effective measures to limit their climate impact, and demonstrating that their project will not have a material impact on the government's ability to meet its carbon reduction targets*.'

C. THE IMPLICATIONS OF THE HEATHROW JUDGMENT

Overview

5. On 26 June 2018, the Secretary of State for Transport ("the Secretary of State") designated "Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England" ("the ANPS") under section 5 of the PA 2008. The ANPS set outs the Government's policy on the need for new airport capacity in the South East of England.

[6] Climate Change Act 2008 (2050 Target Amendment) Order 2019 SI No 1056, art.2(2) (June 27, 2019).

6. Whilst the ANPS does not have effect in relation to an application for development consent for an airport development not comprised in an application relating to the Heathrow Northwest Runway, '*the contents of the Airports NPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the South East of England'*.[7]

7. On 27 February 2020, the Court of Appeal handed down its judgment in *R. (on the application of Plan B Earth) v Secretary of State for Transport* [2020] EWCA Civ 214. There are three aspects of the Court of Appeal's unanimous judgment on the climate change grounds which have a material bearing on the DCO.

8. First, the Court of Appeal held that the Secretary of State's failure to take the Paris Agreement into account in designating the ANPS was unlawful because: (i) it was in breach of section 5(8) of the PA 2008, that failure being '*enough to vitiate the designation*' of the ANPS (at paras 222 to 233), and (ii) it was also in breach of section 10 of the PA 2008. The ANPS in its current form is therefore unlawful and has no legal effect.

9. Secondly, the Court of Appeal further considered that the Secretary of State should have taken into consideration the non-CO2 climate impacts of aviation, and the effect of emissions beyond 2050. The Court observed that (at paras 258 to 261):

> *258…the fact that there would be non-CO2 effects was acknowledged and it was recognized that they would be more than twice the CO2 effects. In line with the precautionary principle, and as common sense might suggest, scientific uncertainty is not a reason for not taking something into account at all, even if it cannot be precisely quantified at that stage.*
> *259. The core of that principle is reflected in Principle 15 of the Rio Declaration (adopted at the UN Conference on Environment and Development in Rio de Janeiro on 14 June 1992 and endorsed by the UN General Assembly on 22 December 1992), which provides:*
> *"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*
> *260. The precautionary principle is well-established in the jurisprudence of the Court of Justice of the European Union (see, for example, Case C-127/02, Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris Van Landbouw, Natuurbeheer en Visserij [2004] ECR I-07405).*
> *261. Since the outcome of our decision is that the preparation and designation of the ANPS was unlawful, and the ANPS will be remitted to the Secretary of State for*

[7] ANPS, para 1.41.

reconsideration in accordance with the law, this matter will need to be taken into account as part of that exercise.

10. Thirdly, it was argued by Heathrow Airport Limited ("HAL"), the airport operator at Heathrow and promoter of the scheme, that it was '*unnecessary and inappropriate'* for the Court grant a remedy because the substance of the issues raised by the appellants could be considered at the stage of an application for development consent. However, the Court firmly rejected this contention (addressing the argument at paras 274 to 276):

> *274…Mr Humphries submitted that it is unnecessary and inappropriate to grant a remedy in these proceedings because policy in the ANPS requires the applicant for development consent to provide evidence of the carbon impact of the project "such that it can be assessed against the Government's carbon obligations" (paragraph 5.76 of the ANPS) and that carbon emissions alone may be a reason to refuse development consent if they would be "so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets, including carbon budgets" (paragraph 5.82). Therefore, submitted Mr Humphries, the substance of the issues raised by the appellants can be considered by the Secretary of State at the stage of an application for development consent. And even that would not be the end of the matter. Even if a decision to grant development consent would be in accordance with the ANPS, the Secretary of State would not be bound to grant consent if to do so would lead to the United Kingdom being in breach of any of its international obligations (see section 104(4) of the Planning Act). This would include compliance with the Paris Agreement. Mr Humphries also pointed out, and emphasized, that the Secretary of State has agreed to consider a request from Plan B Earth to review the ANPS in light of the Committee on Climate Change's advice of 2 May 2019. That request is being considered under section 6(3) and (4) of the Planning Act. Mr Humphries submitted that this development renders Plan B Earth's proceedings academic.*
>
> *275. We do not accept those submissions on behalf of HAL. In essence, we are of the clear view that it is incumbent on the Government to approach the decision-making process in accordance with the law at each stage, not only in any current review of the ANPS or at a future development consent stage. The stages of the decision-making process are inter-dependent. The formulation of the ANPS sets the fundamental framework within which further decisions will be taken.*
>
> *276. We are unable to accept the suggestion that the terms of section 31(2A) are satisfied in this case. We find it impossible to conclude that it is "highly likely" that the ANPS would not have been "substantially different" if the Secretary of State had gone about his task in accordance with law. In particular, in our view, it was a basic defect in the decision-making process that the Secretary of State expressly decided not to take into account the Paris Agreement at all. That was a fundamentally wrong turn in the whole process.* (emphasis added)

11. Accordingly, the Court of Appeal made clear that:
    a. the designation of the ANPS was unlawful on climate change grounds, and;
    b. the unlawful designation contaminated the entirety of the decision-making process, and it could not be remedied at the DCO stage of the process.

Impact on the DCO

12. As noted above, the ANPS is an important and relevant consideration for all airports in the South East of England, including Manston Airport. The Secretary of State is respectfully urged to defer the DCO decision, pending the outcome of the Supreme Court appeal, and if the Court of Appeal's judgment is upheld, the re-designation of the ANPS.

13. The quashed ANPS favoured expansion at Heathrow. It was deemed unlawful for failing to take account of the Paris Agreement. The consequence of this, and indeed of the Net Zero target, is that the Secretary of State is required to have regard to the carbon emissions generally available, in determining the policy for airport development in the South East of England. There is only one 'pot' from which to take the emissions. If the ANPS favours expansion at Heathrow, it therefore necessarily views, without favour, expansion elsewhere if that would reduce the available overall carbon budget. Indeed, this was addressed by the Committee on Climate Change ("CCC"), before the Court of Appeal's judgment, as follows:

> *The Government should assess its airport capacity strategy in the context of net zero. Specifically, investments will need to be demonstrated to make economic sense in a net-zero world and the transition towards it. Current planned additional airport capacity in London, including the third runway at Heathrow, is likely to leave at most very limited room for growth at non-London airports.*[8] (emphasis added)

14. The Court of Appeal's judgment entrenches this notion. In order to meet the Net Zero target, and the commitments made in the Paris Agreement, there is a finite capacity for aviation growth. Expansion must be limited, and carefully managed, if the overall carbon emissions target is to be met. A single development proposal cannot be viewed in an isolated vacuum. In other words, if expansion is favoured at one airport (such as Heathrow), then it cannot also proceed at other sites if the ccumulative effect of the development, viewed together, is to breach the carbon emissions target. It is simply not enough to look at the situation as it currently is because that situation leaves both an evidential and policy vacuum that is central to the justification (or otherwise) for airport expansion at Manston Airport.

15. In other words, the Court of Appeal held that there was a failure to have regard to a commitment to reduce emissions by 2050, and if that is to be a real, rather than a fanciful commitment, one has to know what is happening in terms of development elsewhere in order to decide whether what is proposed at any particular site can be justified. The determining authority needs to understand what the eventual government policy is, and how much spare

[8] Annex, p 14: https://www.theccc.org.uk/wp-content/uploads/2019/09/Letter-from-Lord-Deben-to-Grant-Shapps-IAS.pdf (last accessed 30 January).

capacity there is by way of carbon credit available to other expansions. Otherwise, the authority would fail to take into account a material consideration.

16. As such, it is premature in these circumstances to determine whether or not to grant a DCO for Manston Airport. If the DCO is granted, you may be using up carbon emissions that conflict with government policy.

17. This problem cannot be remedied until after the Supreme Court hearing, and indeed if the Court of Appeal's judgment is upheld, after the Government designates a lawful ANPS which is compliant with the PA 2008.

18. More fundamentally, counsel on behalf of the Applicant relied upon the effect of the High Court decision leaving intact the ANPS. He contended that the "*Government explained during those judicial reviews its decision and those grounds of challenge to the Airports National Policy Statement failed*" and that "*it is not a function of this examination … to re-examine Government policy in the light of other things that we may be aware of*".[9] However, there is now currently no (lawful) policy as to government preferences for airport expansion.

19. As such, and in any event, it is necessary to properly take into account: (i) the Paris Agreement, (ii) the non-CO2 climate impacts of aviation, and (iii) the effect of emissions beyond 2050, at the DCO stage. These material considerations have not been adequately addressed in the DCO process.

D. THE APPLICANT'S RESPONSE ON CLIMATE CHANGE

20. If minded to determine the DCO, the ELF urges the Secretary of State to refuse the application for the reasons set out in its detailed response of 30 January 2020. In summary, the Applicant has failed to establish that the scheme would not have a material impact on the Government's ability to deliver the Net Zero target by 2020.

21. The issues raised by the ELF have not been addressed by the Applicant's inadequate response to the DfT's written request for comments and further information of 17 January 2020. In particular:

[9] As per Counsel for the Applicant, in the hearing of 5 June 2019 at 01:07:00 - 01:08:13 of the audio recording, available online: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004201-Manston%20Wednesday%20Session%203.mp2.

a. The Applicant maintains its reliance on the target of a total emissions cap of 37.5MtCO2/annum from the aviation sector by 2050. This target is now out of date, as it has been superseded by the Net Zero requirement prescribed by the CCA 2008.

b. Moreover, the Applicant relies on the 'headroom' approach based on the exclusion of international aviation from the Net Zero target, despite Government recognised that '*international aviation and shipping have a crucial role to play in reaching net zero emissions globally*',[10] and has made clear that its plans for net zero emissions cover the whole of the economy, including emissions from international aviation and shipping. The Government has indicated an intention to legislate to that effect.[11]

c. In any event, the Applicant's analysis of the proposed development's contribution to the emissions cap target fails to properly reflect that the baseline relied upon does not account for expansion at Heathrow, nor for other existing airports increasing GHG emissions, nor, indeed, for expansions of other airports. Even the out of date 37.5MtCO2/annum target would not be likely to be met in any event. As set out in ELF's submissions of 30 January 2020, on the Government's projections, the 37.5 MtCO2 target may well be breached without airport expansion, and would be breached by the implementation of the Heathrow scheme alone.[12]

d. The Applicant's response on climate change places significant reliance on largely hypothetical technology advancement. It cites development and implementation of as-yet-unproven, undeveloped and unavailable technologies, which are even less likely to be implemented in the foreseeable future for dedicated air freight operations, such as those proposed by the Applicant at its dedicated cargo airport. As the Independent Transport Commission as explained, dedicated freight aircraft are '*usually either conversions of older passenger aircraft or the last aircraft from a given aircraft production line. This means that the rates of technology*

[10] Climate Change Act 2008 (2050 Target Amendment) Order 2019 SI No 1056, art.2(2) (June 27, 2019), Explanatory Notes, para 10.5.
[11] The Secretary of State for Business, Energy and Industrial Strategy, Mr Greg Clark MP, stated that '*We have followed the advice of the Committee on Climate Change and our plans for net zero cover the whole economy, including international aviation and shipping. We await the committee's advice on how to legislate*.' Hansard HC (12 June 2019) Volume 661 Column 682 Net Zero Emissions Target.
[12] At paras 29 to 30.

implementation for dedicated freighter airlines are among the lowest in the industry.'[13]

e. Finally, for clarification, insofar as the Applicant relies on the Forestry Commission's Urban Tree Challenge Fund initiative in Thanet, it is important to note that it is a publicly-funded programme, with a £525,000 contribution from the public purse and £430,000 a labour in-kind contribution from community volunteers. The Applicant's own contribution to this £1m project amounts to just £100,000.[14]

E. CONCLUSION

22. This is the first DCO process for an airport expansion, and will be likely to be followed by others. As such, the approach to the assessment of climate change will provide an invocable precedent. It is notable that the Committee on Climate Change has observed that:

> *The Government should assess its airport capacity strategy in the context of net zero. Specifically, investments will need to be demonstrated to make economic sense in a net-zero world and the transition towards it. Current planned additional airport capacity in London, including the third runway at Heathrow, is likely to leave at most very limited room for growth at non-London airports.*[15] (emphasis added)

23. Due to the particulars of this scheme, set out in the ELF response of 30 January 2020, Manston Airport is seriously at risk of materially impacting the Government's ability to meet Net Zero. The proposed development's impact on climate change is a sufficient ground to refuse the DCO.

24. In the event that the Secretary of State is still minded to grant the DCO, regardless of its climate change failings, such a decision should be deferred given the pending Supreme Court appeal if the Court of Appeal's conclusion that the ANPS is unlawful.

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[13] Independent Transport Commission, *The Sustainability of UK Aviation: Trends in the mitigation of noise and emissions* (March 2016), para 4.23 (available online here: http://www.theitc.org.uk/wp-content/uploads/2016/03/ITC-Aviation-Sustainability-March-2016-complete.pdf).

[14] https://theisleofthanetnews.com/2019/12/16/exclusive-new-group-to-re-green-thanet-with-1200-trees-thanks-to-successful-funding-bid/.

[15] Annex, p 14: https://www.theccc.org.uk/wp-content/uploads/2019/09/Letter-from-Lord-Deben-to-Grant-Shapps-IAS.pdf (last accessed 30 January).

In view of the fact the decision is to be taken on the 18th May, we would be grateful to have confirmation that this letter has been received and will be brought before the relevant decision makers.

Yours sincerely,

Environmental Law Foundation

From:	Rob Pridham
To:	Manston Airport
Subject:	No.71 James Hose Late Rep 190520
Date:	29 June 2020 17:42:29
Attachments:	page1image822082256.png page1image822082544.png page1image822082832.png page1image822083120.png page1image859848832.png page1image859849024.png page1image859849312.png

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From: James Hose [redacted]
Sent: 19 May 2020 10:54
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Manston Airport DCO

Dear Sir,

As the Secretary of State for Transport your department is responsible for the decision following the DCO application made by Riveroak concerning Manston Airport in Kent. This went to Public Inquiry in 2019.

A statement was published in January of this year postponing your decision to 18th May 2020 (See below). This date has now passed with no announcement being made. While the airport holds little significance as a National asset the Public Inquiry outcome is of significance to residents living in Ramsgate and surrounding area.

I would be grateful to hear why no announcement has been made and when your decision will be made public.

Regards

James Hose
[redacted]

Dear Sir/Madam
Telephone: e-mail: Web:
transportinfrastructure@dft.gov.uk
www.gov.uk/dft
17 January 2020

Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010 Application by RiverOak Strategic Partners Limited ("the Applicant") for an Order granting Development Consent for the reopening and development of Manston Airport in Kent.
I am writing to notify you of a decision announced by Nusrat Ghani (on behalf of the Secretary of State) to set a new deadline for the decision on this application.
In accordance with section 107(7) of the Planning Act 2008, the attached statement was made to the House of Commons on 16 January 2020 setting the new deadline as 18 May 2020. This letter is without prejudice to the decision whether to give development consent for this project, and nothing in this letter should be taken to imply what that decision might be.
Yours faithfully
Susan Anderson
Head of Transport Infrastructure Planning

From: [redacted]
To: Manston Airport; shappsg@parliament.uk; kelly.tolhurst.mp@parliament.uk
Subject: When will the DCO that never met the DCO criteria be announced
Date: 19 May 2020 12:06:15

Hello there

We've desperate for the outcome here in Ramsgate, our town of 40,000 lives with the horrific threat of a plane landing over our houses at less than 500 feet every 10 minutes in pursuit of a cargo hub plan that isn't needed. Nowhere in the UK has a town of 40,000 directly under a horribly low descent, across our heritage zone and our royal harbour.

You've read the evidence. There is no need, no viable business plan and certainly no competent person in charge of RSP unless you want to pin your hopes on a persistently failed aviator. Even Thanet District Council rejected RSP when the administration was UKIP, Labour and Conservative.

Meanwhile, the Ramsgate regeneration has stalled and the anti housing/anti London rhetoric stoked up by many is making our community a divisive and toxic town. Despite PINS confirming that there would be no variations or edits made to their recommendations report from October, we have Roger Gale suggesting there are edits to be made?

Despite Grant Shapps confirming the decision was delegated to Kelly Tolhurst, Roger suggests it's back with you Grant?

We have an MP to the south who forgot he owned an airline and an MP to the north who is the self confessed spokesperson for RSP. We residents, the environment, the economy deserve so much better. I remain appalled at how we are pawns in this plane spotting obsession. Perhaps everyone could see sense, read the evidence, and kill the dead duck of Manston.

Save us from the cheer leading spin of Roger Gale. Please. I promise you, thousands of tory voters object to Manston!

PLEASE

Yours sincerely

Laura Marks
[redacted], directly under the flight path where >100Db noise routinely occurred during the last failed airport operations.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.73 Laura Marks Late Rep 200520
Date:	29 June 2020 17:44:35
Attachments:	image001.png

From: Laura Marks [redacted]]
Sent: 20 May 2020 11:36
To: Rob Pridham <Rob.Pridham@dft.gov.uk>
Subject: Re: When will the DCO that never met the DCO criteria be announced

Dear Rob, many thanks as ever

Can you please help me understand

1) What further work is being carried out?
2) By whom and why?
3) Will registered parties get to see or comment on this further work?
4) If so, when?

I do not understand what is happening here to the laid down rules of the DCO framework and the Planning Act. If you have made your recommendations, what is taking the SoS so much time? It is clear, with respect, from the additional queries he laid out in January that he had not read the full submission nor the representations given that many of his additional queries had already been raised and answered numerous times.

Can you shed some light on what this extra work is? It feels to us like there's a lot of political goodwill and backslapping going on here which flies in the face of good evidence to the contrary and the rigour of the DCO process.

If feels like we're all being taken for a ride.It feels like a vocal few are simply desperate for a cargo hub, despite no evidence to support it and an aviation industry in meltdown for some years to come.

Any response you are able to provide would be very helpful. By all means include this reply as a 2nd late submission from me.

Best wishes

Laura

From: Rob Pridham <Rob.Pridham@dft.gov.uk>
Sent: 20 May 2020 10:30
To: Laura Marks <[redacted]
Subject: RE: When will the DCO that never met the DCO criteria be announced

Dear Ms Marks,

Thank you for your email message below to the Planning Inspectorate and Transport Ministers regarding the Manston Airport Development Consent Order (DCO) application. I have been asked to reply.

I am writing to confirm that Transport Minister, Andrew Stephenson has today made a Written Ministerial

Statement to Parliament extending the deadline for a decision on the Manston Airport DCO until 10 July 2020 in order that further work can be carried out before the application is determined (see https://infrastructure.planninginspectorate.gov.uk/projects/south-east/manston-airport/?ipcsection=docs). I can also confirm that the Secretary of State and Minister Tolhurst will have no role in the decision on the application.

Finally, given the concerns you raised in your email, it will also be treated as a late representation and taken into account in the decision on the application in due course.

Yours sincerely,

Department for Transport

Rob Pridham
Senior Planning Manager, Transport Infrastructure Planning Unit
East Wing, Albany House
94-98 Petty France
Westminster, London, SW1H 9EA
[redacted]
Follow us on twitter @transportgovuk
Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: Laura Marks [redacted]
Sent: 19 May 2020 12:06
To: Manston Airport <ManstonAirport@planninginspectorate.gov.uk>; shappsg@parliament.uk; kelly.tolhurst.mp@parliament.uk
Subject: When will the DCO that never met the DCO criteria be announced

Hello there

We've desperate for the outcome here in Ramsgate, our town of 40,000 lives with the horrific threat of a plane landing over our houses at less than 500 feet every 10 minutes in pursuit of a cargo hub plan that isn't needed. Nowhere in the UK has a town of 40,000 directly under a horribly low descent, across our heritage zone and our royal harbour.

You've read the evidence. There is no need, no viable business plan and certainly no competent person in charge of RSP unless you want to pin your hopes on a persistently failed aviator. Even Thanet District Council rejected RSP when the administration was UKIP, Labour and Conservative.

Meanwhile, the Ramsgate regeneration has stalled and the anti housing/anti London rhetoric stoked up by many is making our community a divisive and toxic town. Despite PINS confirming that there would be no variations or edits made to their recommendations report from October, we have Roger Gale suggesting there are edits to be made?

Despite Grant Shapps confirming the decision was delegated to Kelly Tolhurst, Roger suggests it's back with you Grant?

We have an MP to the south who forgot he owned an airline and an MP to the north who is the self confessed spokesperson for RSP. We residents, the environment, the economy deserve so much better. I remain appalled at how we are pawns in this plane spotting obsession. Perhaps everyone could see sense, read the evidence, and kill the dead duck of Manston.

Save us from the cheer leading spin of Roger Gale. Please. I promise you, thousands of tory voters object to Manston!

PLEASE

Yours sincerely

Laura Marks
[redacted], directly under the flight path where >100Db noise routinely occurred during the last failed airport operations.

From:	Rob Pridham
To:	Manston Airport
Subject:	No.74 Kenneth Wraight Late Rep 200520
Date:	29 June 2020 17:46:44

From: Kenneth Wraight [redacted]
Sent: 20 May 2020 16:13
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Subject: manston

Good morning ,
What work? From who? Will we get a chance to comment on this work that is still required for SoS to make up his mind? Are you involved in this work? When will we see what is required? When will YOU know what is going on? You have posted your work is done sone is the new work in an attempt to bypass you and for our MPs to carry on putting their case for their own interests 1st to SoS , Against normal practice rules, will this set a prescident to all future DCOs as a standard of incompetence that is required from applicant and to bypass PINs by use of MPs in direct conract with SoS? What new work and by who? Is it work by you?rsp? fraud team Most disappointed minister has had all the information since before covid 19 outbreak,
Once again it looks like rsp has failed again to supply relevant documents in time . please note AT EACH STAGE OF THE DCO RSP FAILED TO MEET ALL DEADLINES. Why is the minister giving this application special treatment? Sir roger gale ie as known locally as sir rogeroak and fellow mp craigh McKinley who failed to mention twice his airline company to HoC, A they bending the ministers ear, once again I stress WE MUST HAVE THE RIGHT TO SEE ALL NEW WORK AND BE ALLOWED TO COMMENT ON IT BEFORE A DECISION IS MADE.

KIND REGARDS

KEN WRAIGHT

Sent from Mail for Windows 10

From: Rob Pridham
To: Manston Airport
Subject: No.75 Christabel Smith Late Rep 200520
Date: 29 June 2020 17:48:24

-----Original Message-----
From: christabel smith [redacted]
Sent: 20 May 2020 15:30
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>
Subject: URGENT ENQUIRY RE MANSTON DCO (DELAYED AGAIN)

Dear DFT,

Following the statement by Andrew Stephenson on behalf of the S of S, I wonder if you could clarify what it means when he says the second delay over the DCO decision is to: 'enable further work to be carried out'?

What would that involve, please?

Will interested parties be shown the 'further work' in order to make further submissions?

I was assured by email yesterday that the report submitted to the SofS by PINS would not be altered and would be in the same form when the decision is finally made.

Residents in Ramsgate have been living with this uncertainty for years now and each delay brings additional strain. The last deadline passed on Monday 18 May with no notification or explanation. I would be grateful if you could please respond as soon as possible.

Yours,

Christabel Bradley

From:	Rob Pridham
To:	Manston Airport
Subject:	No.76 Adem Mehmet Late Rep 200520
Date:	29 June 2020 17:51:17

From: TransportSecretary
Sent: 20 May 2020 17:58
To: POCorrespondence <POCorrespondence@dft.gov.uk>
Subject: FW: Manston DCO

Thomas Wroblewski | Diary Manager and Assistant Private Secretary to the Special Advisers to the Secretary of State, the Rt Hon Grant Shapps MP, , Department for Transport
5/14 | [redacted]

From: SHAPPS, Grant [mailto:grant.shapps.mp@parliament.uk]
Sent: 20 May 2020 16:47
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: FW: Manston DCO

From: [redacted]>
Sent: 20 May 2020 11:18
To: TOLHURST, Kelly <kelly.tolhurst.mp@parliament.uk>; SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Fwd: Manston DCO

Kelly, Grant, please see email train below concerning the Manston DCO and comments made in the media by Sir Roger Gale MP.

Adem Mehmet

Begin forwarded message:

> **From:** Adem Mehmet [redacted]
> **Date:** 19 May 2020 at 16:18:49 BST
> **To:** Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
> **Cc:** Richard Price <richard.price@pins.gsi.gov.uk>
> **Subject: Re: Manston DCO**
>
> Thank you for your rapid response, doesn't look like there are any staffing issues at the planning inspectorate !
>
> Sir Roger Gale has throughout this process sought to manipulate the outcome of this important decision in his support for the sponsor RSP. I am at a loss as to why he continues to require that his government uses it's statutory DCO powers to award a DCO to a company whose recently posted latest accounts again show a large amount of debt with no material assets and which continues to have ultimate ownership in the BVI ensuring they can evade UK tax on any income derived through their operations. I hope I will have both pins and the relevant ministers support on this issue.
>
> Adem

[redacted]

On Tuesday, May 19, 2020, 3:30 pm, Manston Airport <ManstonAirport@planninginspectorate.gov.uk> wrote:

Dear Mr Mehmet

Thank you for your email.

We are unable to comment on statements made in the media. Suffice it to say that the Recommendation Report that was sent to the Transport Ministers on 18 October 2019 will be published alongside the Minster's decision in the same form as it was submitted.

The decision currently remains with the Transport Ministers; please check the project webpage for updates in the coming days.

Kind regards

The Manston Airport Case team

National Infrastructure Planning

The Planning Inspectorate

Helpline: 0303 444 5000
Email: manstonairport@planninginspectorate.gov.uk

Web: https://infrastructure.planninginspectorate.gov.uk/ (National Infrastructure Planning)

Web: www.gov.uk/government/organisations/planning-inspectorate (The Planning Inspectorate)

Twitter: @PINSgov

This communication does not constitute legal advice.
Please view our Privacy Notice before sending information to the Planning Inspectorate.

From: Adem Mehmet [redacted]
Sent: 19 May 2020 13:37

To: Price, Richard <RICHARD.PRICE@planninginspectorate.gov.uk>
Cc: Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
Subject: Manston DCO

Richard, please see in the attached a statement from Sir Roger Gale MP saying the delay is due to staffing issues at the Planning Inspectorate due to Covid 19. Is this true ?

Adem

https://theisleofthanetnews.com/2020/05/19/manston-airport-site-dco-delay-due-to-impact-of-covid-19-on-planning-staff-says-mp/

[redacted]

Putting the Customer at the heart of everything we do!

From:	Rob Pridham
To:	Manston Airport
Subject:	No.77 Alison Wilby Late Rep 210520
Date:	29 June 2020 18:13:44

From: alison Wilby [redacted]
Sent: 21 May 2020 17:16
To: STEPHENSON, Andrew <andrew.stephenson.mp@parliament.uk>
Subject: Manston Airport

Dear Mr Stephenson

I am writing to express my frustration and deep disappointment at the continued delay to the decision regarding the future of Manston Airport.

While I appreciate we are currently living through turbulent times with Covid-19, nevertheless, the application for a DCO by RSP has been with PINS and, subsequently, government ministers for several months now.

RSP and their investors have already spent over £40 million just to get this far. They remain committed to spending £300 million - a level of investment this country will be glad of in the months ahead - on re-opening Manston as a global freight hub, fulfilling the need for resilient cargo capacity.

Given that Manston Airport has been an airport for over 100 years and is designated as such in the Local Plan AND given that RSP (as of last year) are now the owners of the airport, surely there is only one conclusion to make - to give the green light to RSP's exciting plans.

Their proposals will go some way towards turning around the likely recession triggered by Covid-19. An array of jobs would be created (both skilled and unskilled), revitalising the much-deprived economy of Thanet - all at NO COST TO THE PUBLIC PURSE.

One rather wonders why the government is not biting off RSP's hand so to speak, or at the least, rather more assiduously courting them.

We can only hope that on - or better yet, before, 10th July - a favourable decision is made and the DCO granted. The country could do with some good news.

Yours sincerely
Alison Wilby (Ramsgate resident)

From: [redacted]
To: Manston Airport
Date: 21 May 2020 14:30:05

My apologies about coming back with a question at this late stage but as I explained I was diverted from pursuing the Manston DCO by the Infected Blood Public Enquiry, because of the involvement of my old school Lord Mayor Treloar College for the disabled.
With the coronavirus pandemic there is very little happening with the public enquiry and this has given me the time and opportunity to go over my questions related to the DCO.
One question that I asked I am unable to fid the answer to in the documentation on your website or in the various emails I sent to the DCO team at pins. I am sure it must be somewhere in the documents and would appreciate it if you could tell me where.
This is the question: In the various submission documents the applicant has taken the dispersal distance, (the distance where most of the particles fall to the ground and therefore cease to be an air pollutant) for pm2.5 particulates as being the same as the dispersal distance for pm10 particulates. I assume this was an error and I also assume it has been corrected as it would have a considerable impact on the mortality figures related to the amount of aviation fuel burn =t on and near to the runway at Manston.
Could you please provide me with the dispersion distance the applicant has for pm2.5 particulates?
Best regards Michael

[redacted]

Due to the nature of Clown Computing this email has been sent to you from some sort of fruit, it may make you more comfortable to know the following:- If it makes sense, it was sent by my PineApple Device, which has an ordinary keyboard. If it contains random wrong words, it was sent by my RaspBerry Device, which has predictive text and a small screen that I can't always see properly. If it makes no sense whatsoever, it was sent by my new BaNana Device, with which I develop the persona of a chimpanzee and hit keys randomly hoping it will produce the works of Shakespeare, or at least something coherent.

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Frank McNamara Late Reps 210520
Date: 29 June 2020 18:17:09

From: Frank Mcnamara <[redacted]
Sent: 21 May 2020 14:51
To: TOLHURST, Kelly <kelly.tolhurst.mp@parliament.uk>
Subject: Manston Airport

Dear Ms Tolhurst,

Copy of email sent to Grant Shapps SOS for Transport.

I look forward to hearing from you.

Yours Sincerely

Frank Mcnamara

Dear Mr Shapps,
I am writing to you to express my total disgust at your decision to once again now for the third time to delay the DCO appication on the former airfield at Manston Kent.
You and your government have shamefully treated the people of Ramsgate. We do not want this airport it will destroy our area, our health and that of our children and grandchildren. Have you any idea the angst, stress and anxiety that you are causing by doing this? We deserve better from a government who boasts of its green credentials when in reality this is far from the truth.
You are stifling investment in our area, companies will not want to invest in Ramsgate because of your stance on this defunct and pointless airport. It has failed time after time and the man at the top who presided over all these failures is Tony Freudaman who remarkably is fronting Riveroak Strategic Partners (RSP) campaign to reopen this behemoth. And he is supported by our two local tory MP's who have paid no attention to the concerns and worries of local residents indeed ignoring them at every turn. Why is this? Why are they giving such unconditional support to RSP yet showed not one jot of interest in the previous owners Stonehill Park and would not even meet and discuss with them their plans for the brownfield site? They had an excellent business plan for the site which if they were allowed to bring to fruition would have brought great investment to the area both in tourism and business terms, and yet our two Tory MP's and our Tory councillors together did all they could to hinder and frustrate them at every turn in a most disgraceful and shoddy way. These individuals are our representatives but in truth gave us no support at all unless of course you supported the re-opening of the airport. There is also concern over the finances of RSP and their so called investors yet this company still manages to pull the wool over everyone's eyes.
I have no doubt that when the latest pointless deadline expires in July it will be extended again, and then again, and again!!! unless of course the DCO is granted! What is the point of a deadline when it can be just dismissed in such a cavalier way? What was the reason for this deferral? The Planning Inspectorate have supplied all the relevant documents in plenty of time as did we the residents with our submissions to PINS we abided by the deadline given to us so why then the need for yet another postponement unless of course you are giving RSP more time to get their house in order.
In closing I have lost all faith in a government that I voted for back in December and indeed in you, to show such scant disregard for Ramsgate and its people that you would allow this debacle to continue when it makes no sense to do so whilst at the same time destroying a town and surrounding area. Frankly we deserve better!!

I look forward to hearing from you.

Yours Sincerely

Frank Mcnamara

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Michael Child Late Rep 210520 [redacted]
Date: 29 June 2020 18:44:15

From: [redacted]
Sent: 21 May 2020 14:30
To: Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
Subject:

My apologies about coming back with a question at this late stage but as I explained I was diverted from pursuing the Manston DCO by the Infected Blood Public Enquiry, because of the involvement of my old school Lord Mayor Treloar College for the disabled.
With the coronavirus pandemic there is very little happening with the public enquiry and this has given me the time and opportunity to go over my questions related to the DCO.
One question that I asked I am unable to fid the answer to in the documentation on your website or in the various emails I sent to the DCO team at pins. I am sure it must be somewhere in the documents and would appreciate it if you could tell me where.
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From: Rob Pridham
To: Manston Airport
Subject: [redacted] Malcom Langton Late Rep 220520
Date: 29 June 2020 18:20:13

From: SHAPPS, Grant [mailto:grant.shapps.mp@parliament.uk]
Sent: 27 May 2020 01:02
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: FW: Tony Freudman

From: Malcolm Langton [redacted]
Sent: 22 May 2020 23:59
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Tony Freudman

Dear Mr Shapps

As a Ramsgate resident I am very concerned regarding the DCO proposal for the possible opening of a CARGO hub at Manston in Ramsgate, Kent. Firstly I am extremely disappointed that your decision has been delayed not once, but twice. This is unacceptable however I, along with some 40K residents will just have to wait.

That said I am deeply concerned to learn that Tony Freudmann, who I am sure you are very aware is one of the Directors of River Oak Strategic Partners, is, I believe to be in a relationship with Sam Bambridge, Conservative Councillor for Westgate on Sea. Given her party allegiance, I believe there to be a conflict of interest with regard to the DCO.

I have also been advised that Mr Freudmann has offered a contract on a personal level to a female, in order to silence her partner on Twitter (who was an avid anti Manston supporter) to prevent him saying 'bad things' about Mr Freudmann, and I would assume RSP, in order to prevent people seeing both in a bad light, therefore not challenging the DCO for Manston.

I would ask that these matters are looked into and I look forward to a response.

Yours sincerely

Malcolm Langton

[redacted]

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Kenneth Wraight Late Rep 220520
Date: 29 June 2020 18:23:13

From: Kenneth Wraight [redacted]>
Sent: 22 May 2020 11:35
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Cc: TOLHURST, Kelly <kelly.tolhurst.mp@parliament.uk>
Subject: manston

What new work? Work by whom? Work requested by you? Surely you are not in a position to ask that as it is the planning office who have asked all that is required and at each DCO deadline rsp failed each time to submit required information , or is it as you are aviation related doing your friends sir roger gale nee rogeroak a favor,by delaying your decision until rsp finally supplies what is required, are you aware that you are setting a precedent that all future DCOs will follow as at each stage of the application it should have been thrown out due to lack of respect for the planning office and by there refusal to divulge required information , This whole process stinks of backhanders and dogy dealings from the start.you should have recused yourself from making the decision as it's a certainty that you will pass the application not because it's a NSIP but because of secret talks and nods .
Kind regards
Ken wraight

[redacted]

From: [redacted]
Sent: 24 May 2020 12:30
To: Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
Cc: committee@savemanstonairport.org.uk; [redacted]
Subject: Letter to the Secretary of State for Transport concerning Manston Airport DCO

Dear Planning Inspectorate,
The Save Manston Airport association have today posted the attached letter to the Secretary of State for Transport,
concerning DCOs in general and Manston Airport in particular.

Yours faithfully, on behalf of our 3,500 members,
The Save Manston Airport association committee :

Dr. Beau Webber (Chairman)
Liam Coyle ((Vice-Chairman) & Chief Moderator)
Angela Stevens (Secretary)
Gregory Nocentini (Treasurer)
Margaret Sole (Treasurer)

Ex-officio members :
Bryan Girdler
Gary Dumigan

TR020002 Manston Airport

Save Manston Airport association.
[redacted]

The Rt. Hon. Grant Shapps MP
Secretary of State for Transport
Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR

24th May 2020.

Dear Secretary of State,

The Save Manston Airport association (SMAa) are aware that this is an extremely busy time for you and your department but feel compelled to write to you concerning the DCO process in general and the DCO for Manston Airport in particular.

For the Manston Airport DCO there have been a series of delays. The decision was originally due on the 18th January 2020 but, following a statement on the 16th January 2020, this was extended by 4 months to the 18th May 2020.

There is now a further delay of nearly 2 months but what is particularly upsetting about this one is the lack of common courtesy. On the 29th April 2020, the DfT issued a statement outlining extensions to 5 Transport DCOs. Why was the same not done for Manston prior to the 18th May 2020 deadline? Instead, there was no statement or explanation until 20th May and no apology given for the huge inconvenience and stress caused to all concerned including ITV and BBC crews who were at the airport all day waiting to do interviews with RiverOak Strategic Partners (RSP), Sir Roger Gale and others.

We feel that RSP and their investors have been treated very badly with these delays. This is not a strain on the Public Purse, it is money from investors who keep having the door slammed in their faces.

We are fully aware regarding the huge difficulties the DfT faces, due to Covid-19, and that this is a hugely complicated DCO. But surely most of the work on the DCO was completed by early January?

SMAa regret that we have to write this letter. PINS have been exemplary in the way that they have run and regulated the DCO process, and SMAa and its members are very impressed. We have always endeavoured to keep strictly within the bound of the DCO process, keeping to all the deadlines, and SMAa are content with the extensive submissions we made to PINS during the examination period.

Can you please do all you can to expedite the process so that this, and other National Infrastructure projects, can start to transform this country and help deliver your election pledge:

> ***"If this Conservative Government is returned to office, we will have an infrastructure revolution for this country"***

Clearly it is vital to create a DCO document that will withstand all assaults, and looking at your other tasks in hand, we wish the DfT the best in crafting a watertight DCO for Manston Airport.

Yours faithfully, on behalf of our 3,500 members,

The Save Manston Airport association committee :

Dr. Beau Webber (Chairman)
Liam Coyle ((Vice-Chairman) & Chief Moderator)
Angela Stevens (Secretary)
Gregory Nocentini (Treasurer)
Margaret Sole (Treasurer)

Ex-officio members :
Bryan Girdler
Gary Dumigan

From:	[redacted]
To:	andrew.stephenson.mp@parliament.uk
Cc:	shappsg@parliament.uk; kelly.tolhurst.mp@parliament.uk; Manston Airport
Subject:	Manston Airport DCO Application 2018 extension
Date:	24 May 2020 15:03:08
Attachments:	NNF letter to Minister May 2020.docx

Dear Mr Stephenson,

Please find attached a letter from No Night Flights in response to your announcement on 20th May 2020. Given the time frame, we look forward to you early response to the questions we ask.

Best regards,

Ros McIntyre

--

No Night Flights

Andrew Stephenson MP
House of Commons
London
SW1A 0AA

24th May 2020

Dear Minister,

Manston Airport Development Consent Order (DCO) Application 2018

We note your written statement of 20th May 2020 to the House of Commons in which you announced an additional eight-week extension to the deadline by which the above DCO application must be determined. You will be aware that on 18th October 2019 the Planning Inspectorate sent to the Secretary of State for Transport the report by the four Inspectors of their six month public examination of the application, following an examination period which began on 9th January 2019. The original deadline by which the Secretary of State was obliged to determine this application was then set as 18th January 2020.

On 16th January 2020, just two days before that January 2020 deadline, Nusrat Ghani MP, Parliamentary Under Secretary at the Department for Transport, announced a four month extension to the original deadline: "*to enable further information on a range of issues to be provided by the Applicant and other Interested Parties before determination of the application by the Secretary of State*."

On 17th January 2020, Susan Anderson, Head of Transport Infrastructure Planning for the Department for Transport, published a letter which set out specific questions for the Applicant and for Interested Parties. The deadline for responding to these questions was 31st January 2020.

On 14th February 2020, the Planning Inspectorate confirmed that all the responses to the additional questions set by the Secretary of State for Transport had been published on the Planning Inspectorate's website. The Inspectorate confirmed that the new deadline for the Secretary of State's decision would be 18th May 2020.

It was two days after that extended deadline that you announced a further extension to the deadline.

The new deadline allows for a total period of thirty eight weeks for the Secretary of State to reach his decision. This is instead of the thirteen weeks envisaged in the legislation. This further extension to the deadline is apparently: "*to enable further work to be carried out before determination of the application*."

Throughout the process of considering this application, the Planning Inspectorate has been keen to emphasise that the process should be open, transparent and fair. The first extension to the decision period was accompanied by a letter setting out the further questions that the Secretary of State wished to consider during that extension period. The letter invited Interested Parties to make submissions in response to those questions.

No such letter has been produced to accompany this second extension announced by you.

Please would you set out as a matter of urgency what *"further work"* is going to be *"carried out before the determination of the application"*. It is clear from your statement that the Secretary of State intends to take this new, additional work into account in the determination of this application.

Government guidelines on the Planning Act 2008 say:

> "*The Secretary of State is required under the Procedure Rules to notify all interested parties if he is inclined to disagree with the Examining Authority's recommendation because he differs from the Examining Authority on any matter of fact mentioned in, or appearing to be material to, a conclusion reached by the Examining Authority, or because the Secretary of State proposes to take into consideration any new evidence or any new matter of fact.*
>
> *The Secretary of State will set out the reasons for disagreement with the Examining Authority and will give interested parties the opportunity to make representations in writing, in respect of any new evidence or new matter of fact, by an appropriate deadline*."

Please would you set out as a matter of urgency whether the Secretary of State is inclined to disagree with the Examining Authority's recommendation and, if he is, the nature of that disagreement.

Please would you set out as a matter of urgency whether the Secretary of State is proposing to take into consideration any new evidence or any new matter of fact.

In the interests of transparency and fairness, **please ensure that Interested Parties are given a fair opportunity to comment on:**

- **the nature of any *"further work"* that you intend to carry out following the submission of the Examining Authority's report on 18th October**
- **the nature of any disagreement that the Secretary of State may have with the recommendation made by the Examining Authority**
- **any new evidence or new matter of fact that the Secretary of State is intending to take into account.**

Yours sincerely,

Ros McIntyre

Spokesperson, No Night Flights

NO NIGHT FLIGHTS

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Phil Rose Late Rep and Reply 240620[redacted]
Date: 29 June 2020 18:40:06
Attachments: Infomation request - Manston Airport DCO application.pdf

---

From: Phil Rose[redacted]
Sent: 24 May 2020 15:25
To: STEPHENSON, Andrew <andrew.stephenson.mp@parliament.uk>
Subject: Manston Airport DCO Application 2018 extension

Please note that all e-mails and their attachments sent by a Private Secretary on behalf of a Minister relating to a decision or comment made by a Minister, or note of a Ministerial meeting, should be filed appropriately by the recipient. DfT Private Office does not keep official records of such e-mails or documents attached to, or forwarded with, them.

From: STEPHENSON, Andrew [

Dear Mr Stephenson,

I am writing to you in your capacity as Minister of State (Department for Transport).

I have a number of questions in relation to your announcement of 20th May 2020, in which you stated that there would be a further delay in the determination of this application for the following reason: ***"to enable further work to be carried out before determination of the application."***

I am making a request for information under the Environmental Information Regulations 2004.

Please can you tell me:

1. what prompted the decision that further work is required?
2. who has asked for further work to be carried out?
3. what is the further work that is to be carried out?
4. who will be carrying out this further work?
5. why was this work not carried out by the original deadline of 18th January 2020 or the extended deadline of 18th May 2020?
6. why are Interested Parties not being invited to make submissions on whatever further work it is that is apparently needed?
7. has the Applicant been asked or invited to submit further work and/or comments?
8. what contact and/or communications has there been between the Applicant and the Department for Transport since the Applicant submitted its responses in January 2020 to the questions raised by the Secretary of State at that time?

Given the tight time scales, I would welcome a prompt response to my questions. My preference is for you to send the answers to these questions to me by email.

Many thanks, and best regards,

Phil Rose
[redacted]

Department for Transport

DEPARTMENT FOR TRANSPORT
GREAT MINSTER HOUSE
33 HORSEFERRY ROAD
LONDON
SW1P 4DR

TEL: 0300 330 3000
web site: www.gov.uk/dft

23 June 2020

SENT BY EMAIL ONLY

Mr Phil Rose

[redacted]

Dear Mr Rose

Information request - in relation to the announchment of 20 May 2020 to extend the determination date of the Manston Airport Development Consent Order application.

I refer to your email of 25 May 2020 where the following request were made;

Please can you tell me:

1. *what prompted the decision that further work is required?*
2. *who has asked for further work to be carried out?*
3. *what is the further work that is to be carried out?*
4. *who will be carrying out this further work?*
5. *why was this work not carried out by the original deadline of 18th January 2020 or the extended deadline of 18th May 2020?*
6. *why are Interested Parties not being invited to make submissions on whatever further work it is that is apparently needed?*
7. *has the Applicant been asked or invited to submit further work and/or comments?*
8. *what contact and/or communications has there been between the Applicant and the Department for Transport since the Applicant submitted its responses in January 2020 to the questions raised by the Secretary of State at that time?*

I am writing to advise you that the Department does hold information that is relevant to your request but regret to inform you of my decision not to disclose this information.

The Department intends to make a decision on the Manston Airport Development Consent Order by 10 July 2020. The information you requested in relation to this case is being withheld as it falls under the exception in regulation 12(4)(d) of the Environmental Information Regulations 2004 because it relates to material which is in the course of completion and disclosure, at this time, would harm or prejudice that decision making process

The attached annex to this letter set out the exception in full.

The information relates to continuing work being carried out by the Department on the Manston Airport Development Consent Order application. The timing of this request means that the Department at present continues to consider the proposed scheme and the related information prior to making a decision on the application.

Public interest considerations favouring disclosure

There is a presumption in favour of disclosure of information under the Regulations. There is always a general public interest in disclosing environmental information and, in this case, the development is a matter of local interest. Disclosure would also reflect the Government's commitment to the transparency agenda.

Public interest considerations favouring withholding the information

As a live planning application for a nationally significant infrastructure project, the Department is unable to comment on the merits of the application or provide specific details of the further work that is being carried out by the Department before the application is determined. Having previously undertaken a public consultation and obtained interested parties views, the Department now requires a safe space in which to consider the relevant information and to ensure the integrity of its decision making process.

A decision will be made by the Secretary of State in due course and published on the Planning Inspectorates website, together with all other relevant information considered as part of that decision process.

On balance, we take the view that the public interest considerations favouring withholding the information outweigh those in favour of its release.

If you are unhappy with the way the Department has handled your request or with the decisions made in relation to your request you may complain within 40 working days of the date of this letter by writing to the Department's FOI Advice Team at:

Zone D/04
Ashdown House
Sedlescombe Road North
Hastings
East Sussex TN37 7GA
E-mail: FOI-Advice-Team-DFT@dft.gsi.gov.uk

Please send or copy any follow-up correspondence relating to this request to the FOI Advice Team to help ensure that it receives prompt attention. Please also remember to quote the reference number above in any future communications.
Please see attached details of DfT's complaints procedure and your right to complain to the Information Commissioner.

Yours sincerely

Susan Anderson

Your right to complain to DfT and the Information Commissioner

You have the right to complain within 40 working days of the date of this letter about the way in which your request for information was handled and/or about the decision not to disclose all or part of the information requested. In addition a complaint can be made that DfT has not complied with its publication scheme.

Your complaint will be acknowledged and you will be advised of a target date by which to expect a response. Initially your complaint will be re-considered by the official who dealt with your request for information. If, after careful consideration, that official decides that his/her decision was correct, your complaint will automatically be referred to a senior independent official who will conduct a further review. You will be advised of the outcome of your complaint and if a decision is taken to disclose information originally withheld this will be done as soon as possible.

If you are not content with the outcome of the internal review, you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at:

Information Commissioner's Office Wycliffe House Water Lane Wilmslow Cheshire SK9 5AF 180917

Annex

Environmental Information Regulations 2004

Regulation 12 (4) (d) states:

> **12.** – (4) For the purposes of paragraph (1)(a), a public authority may refuse to disclose information to the extent that-
>
> (d) the request relates to material which is still in the course of completion, to unfinished documents or to incomplete data

From:	Rob Pridham
To:	Manston Airport
Subject:	No.86 Craig Mackinley MP (Cllr David Green) Late Rep 270520[redacted]
Date:	29 June 2020 18:49:00
Attachments:	image001.png

From: Craig Mackinlay MP [mailto:craig.mackinlay.mp@parliament.uk]
Sent: 27 May 2020 14:29
To: DFT Ministers <DFT.Ministers@dft.gov.uk>
Subject: FW: Delay in Manston DCO decision (Case Ref: CM2597)

Dear Minister
Re: Cllr David Green, [redacted]
Please could you address the questions that have been sent below that have been sent to Craig by Cllr David Green about the Manston (Airport) site in Kent?
Many thanks and kind regards
Mel

Mel Barratt
Office of Craig Mackinlay MP
Member of Parliament for South Thanet

www.craigmackinlay.com

From: DAVID GREEN
Sent: 27 May 2020 14:22
To: MACKINLAY, Craig
Subject: Re: Delay in Manston DCO decision (Case Ref: CM2597)

Dear Mel

Thank you for your reply.
I know Craig and I differ in our views on the airport. However, the questions I wish him to pursue are neutral on that question and should be of interest to whatever position taken. I would appreciate knowing that Craig has actually asked the questions.

David

On Tuesday, 26 May 2020, 11:43:27 BST, Craig Mackinlay MP wrote:

Dear Cllr Green
Thank you for your questions for Craig and interest in this matter.
Craig continues to work with Sir Roger Gale MP, Riveroak Strategic Partnership, the Department for Transport and all relevant bodies with a view to achieving the re-opening of Manston Airport as he promised he would at the three general elections he has successfully fought since 2015. As Craig works towards this end, I shall ensure Craig is aware of your email.
All the best
Mel

Mel Barratt
Office of Craig Mackinlay MP
Member of Parliament for South Thanet

[https://storage.googleapis.com/electormail-uk/c6d2e757955ec1e7b0ce1bde2ec4b4e4/Portcullis%20image.png]

www.craigmackinlay.comhttp://www.craigmackinlay.com

From: DAVID GREEN
Sent: 25 May 2020 13:04
To: MACKINLAY, Craig
Subject: Delay in Manston DCO decision

The application by RSP for a DCO decision for Manston Airport has been with the SoS for a number of months, and it has been reported to parliament that the decision is deferred until 10th July, because "further work is required". Could you use your contacts with Transport Ministers to answer:
1. what prompted the decision that further work is required?
2. who has asked for further work to be carried out?
3. what is the further work that is to be carried out?
4. who will be carrying out this further work?
5. why was this work not carried out by the original deadline of 18th January 2020 or the extended deadline of 18th May 2020?
6. why are Interested Parties not being invited to make submissions on whatever further work it is that is apparently needed?
7. has the Applicant been asked or invited to submit further work and/or comments?
8. what contact and/or communications has there been between the Applicant and the Department for Transport since the Applicant submitted its responses in January 2020 to the questions raised by the Secretary of State at that time?
Yours sincerely

Cllr David Green
[redacted]

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From:	Rob Pridham
To:	Manston Airport
Subject:	No.87 Five10Twelve Ltd Late Rep 040620 New Evidence Ultimate Control of Applicant
Date:	29 June 2020 18:50:58
Attachments:	Letter to Secretary of State_ New Evidence since the Close of the Examination_ Ultimate Control of the Applicant.pdf

From: Samara Jones-Hall [redacted]
Sent: 04 June 2020 17:13
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>; Jason Jones-Hall [redacted]
Subject: Manston DCO: letter to Secretary of State New Evidence Ultimate Control of Applicant

Dear Sirs

Please find attached our Letter to the Secretary of State with New Evidence Ultimate Control of Applicant. Could you please escalate this letter to his department for his consideration.

Please do confirm receipt.

Kind regards

Samara and Jason Jones-Hall

Samara Jones-Hall
Five10Twelve Limited

Five10Twelve Limited Marlowe
[redacted]

4 June 2020

The Rt Hon Grant
Shapps The Secretary of
State for Transport
Department for
Transport Zone 1/18,
Great Minster House 33
Horseferry Road
London, SW1P 4DR

BY EMAIL:

transportandworksact@dft.gov.u
k Cc: Susan.Anderson@dft.gov.uk
Rob.Pridham@dft.gov.uk

Dear Sir

RiverOak Strategic Partners ("the Applicant)
Proposed Manston Airport Development ("Manston")
Development Consent Order ("DCO")
New Evidence since the Close of the Examination: Ultimate Control of the Applicant

As you will be aware since the Applicant's incorporation in July 2016 to June 2020 the ultimate control of the Applicant has moved from the UK[1] to Belize[2] to the BVI[3] and now to Panama[4].

[1] Incorporation filed with Companies House 8 July 2016
[2] 27 March 2017: M.I.O. Investments Limited Belize registered company (Para 12 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004069-Funding%20Statement.pdf)
[3] 24 April 2019: HLX NOMINEES LIMITED British Virgin Islands registered company (Confirmation Statement filed with Companies House 24 April 2019)

The ultimate control of Riveroak Strategic Partners Limited was raised during the Examination.

The Applicant wrote to the Planning Inspectorate on 18 January 2019 stating that:

"...In particular, concern has been expressed that 90% of shares in the Applicant company were owned by a Belize registered company whose ultimate beneficial owners are resident in Switzerland as well as the United Kingdom. This was said to give rise to an absence of transparency. The Applicant has recognised that the lack of transparency in relation to the Belize entity in particular has given rise to a number of questions. ***As a consequence, a restructuring of the ownership of RSP is currently taking place with a view to simplifying its ownership****. The intention is that RSP's parent company will be registered in the UK* ***with full transparency as to its directors and shareholders***[5]*."* (Bold added for emphasis)

As you will be aware as of 4 June 2020, the directors and shareholders of the company with current ultimate control of Riveroak Strategic Partners Limited, the company known as HLX NOMINEES LIMITED, are still unknown and there is still not full transparency as to its shareholders nor as to the directors of HLX NOMINEES LIMITED.

As you will be aware as of 4 June 2020, the ownership of Riveroak Strategic Partners Limited has not been simplified[6].

---

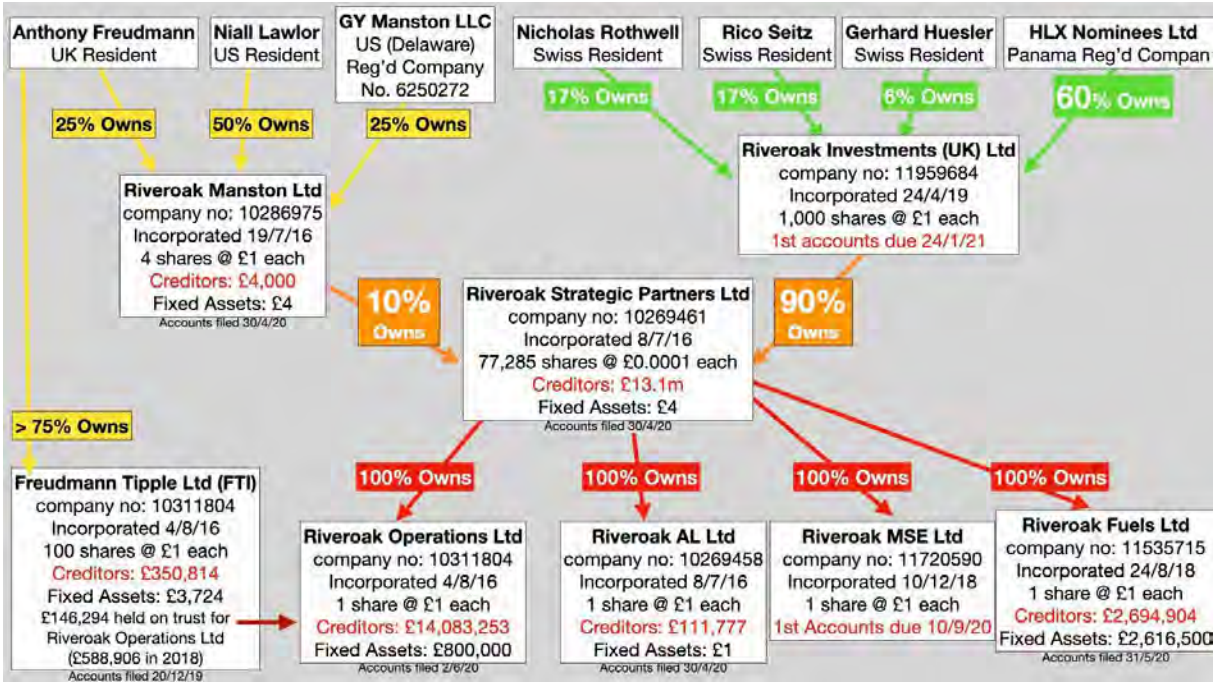
[4] 23 April 2020: HLX NOMINEES LIMITED Panama registered company (Notes to Financial Statements for the period 31 August 2019 for Riveroak Fuels Limited at Note 8 re Controlling Party filed with Companies House on 31 May 2020.
Notes to Financial Statements for the period 31 August 2019 for Riveroak Operations Limited at Note 12 re Controlling Party filed with Companies House on 31 May 2020).

[5] S51 Advice on Funding Response for Deadline 1 enclosure to Main Letter Page 26 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002881-Cover%20letter%20-%20RSP.pdf

[6] Applicant Confirmation Statement filed with Companies House of 27 March 2017 Shareholding 1: 1 transferred on 2016-12-15, 0 Ordinary Shares held Anthony Freudmann. Shareholding 2:1000 B Ordinary Shares held Riveroak Manston Limited (UK registered company - 1 Ordinary Shares Anthony Freudmann UK), 2 Ordinary Shares Niall Lawlor (US), 1 Ordinary shares GY Manston LLC (Delaware company File Number 6250272)). Shareholding 3:9000 A Ordinary Shares held by M.I.O. Investments Limited (Belize registered company - Para12 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004069-Funding%20Statement.pdf)
Applicant Confirmation Statement filed with Companies House of 2 May 2019 Shareholding 1: 9000 transferred on 2019-05-02 0 A Ordinary Shares held M.I.O. Investments Limited (Belize registered company) Shareholding 2:9000 A Ordinary Shares held Riveroak Investments (UK) Limited (UK registered company - Riveroak Investments (UK) Limited - full details of shareholders - Shareholding 1: 170 Ordinary Shares held Nicholas Rothwell (Switzerland); Shareholding 2: 170 Ordinary Shares held Rico Seitz (Switzerland); Shareholding 3: 60 Ordinary Shares held Gerhard Kuno Huesler (Switzerland);

As of 4 June 2020 the ownership of the Applicant and its subsidiary companies has not simplified.

Diagram of corporate structure of Riveroak Strategic Partners and its subsidiary companies



It is, perhaps, of note that all the UK registered companies are in debt and the combined debt across all 6 UK registered companies where accounts have been filed is in excess of £30 million.

As you will be aware 92.5% of the Applicant's shareholders are off-shore with a further 5% held by a US resident and fall out with the reach of HMRC.

Further, as of 4 June 2020 the confirmation statement for Riveroak Strategic Partners Limited is overdue. The confirmation statement was due by 16 May 2020. This is now over 14 days overdue and accordingly the company and its officers may be prosecuted and the company may be struck off the register[7].

The Applicant's capacity to meet its debts, inability to file very basic statutory company information with Companies House and lack of transparency regarding its ultimate beneficial owner provides little or no comfort that it can be able to deliver the scheme as proposed. This can and respectfully should, constitute a reason for development consent refusal.

Shareholding 4: 600 Ordinary Shares held as of 24 April 2019 HLX NOMINEES LIMITED (BVI and as of 23 April 2020 Panama)

Applicant Confirmation Statement filed with Companies House of 2 May 2020 has not been filed with Companies House as of 4 June 2020

[7] https://www.gov.uk/guidance/confirmation-statement-guidance

From:	[redacted]
To:	NI Enquiries
Subject:	TR020002 Manston Airport
Date:	04 June 2020 17:29:25
Attachments:	Percentage of Thanet people.docx
Importance:	High

Dear Sirs,

I apologise for this late submission of the document attached, but I do feel this up to date information is pertinent and relevant to this application to re-open Manston Airport, Thanet residents need the jobs this project can provide as the contents do point out.

Many Thanks

Mike Jackson

Percentage of Thanet people claiming out of work benefits rises to highest level in more than 20 years

June 2, 2020 Kathy Bailes News 0

Unemployment rise during the pandemic

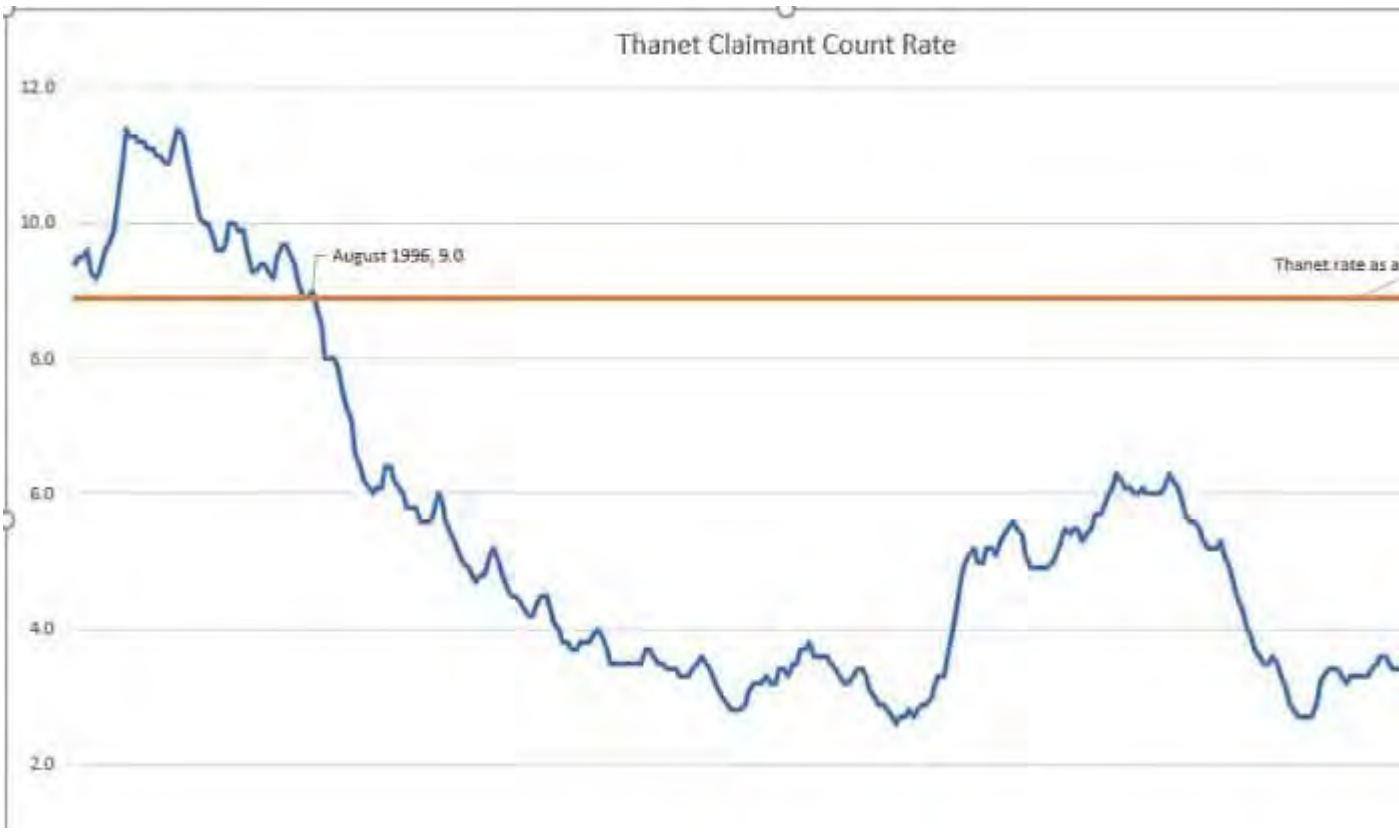
The coronavirus pandemic has had a huge impact on the number of people needing to claim out of work benefits with Thanet having the highest benefit claimant rate in Kent – and the highest in the south east for those aged between 18 and 24.

Data from Kent County Council shows the rate of unemployment claimants in Thanet in April had rocketed by 56.5% and now stands at its highest since September 1996 – as does the rate for the entire county.

In March there were 4,630 Jobseekers or Universal Credit claimants recorded on the isle. By April this number had grown by 2,615 to 7,245. This represents 8.9% of Thanet's working population compared to 5.7% in February and March this year – the highest amount recorded in over 20 years.

For Kent as a whole the spike in claims has resulted in a 77.3% increase rising by 20,965 claimants to 48,075 people needing out of work benefits.

Documentation from KCC says: “COVID-19 has had a significant impact on the number of claimants of unemployment benefits. The claimant rate in Kent is currently 5.1%, the highest it has been since Autumn 1996. Kent has seen a higher percentage increase over the previous month than was seen nationally.”



Source KCC

Thanet has the highest claimant rate in Kent and the number of 18 to 24-year-olds not in employment stands at a shocking 13.6% – 1415 people -the highest in the south east. This is in stark comparison to Canterbury which records the lowest number of 18 to 24-year-old claimants at 3.6%.

At ward level Margate Central is hardest hit with 17.5% of its population claiming jobseekers or UC – a rise of 200 people from March. In Cliftonville West the rate is 15% and in Dane Valley it stands at 12%.

Thanet

April 2020

Monthly Summary of Unemployment in Kent : Wards (Resident Based)

		Unemployed April 2020		Change Since Last Month		Change Since Last Year	
		Number	%	Number	%	Number	%
	Great Britain	**2,061,030**	**5.1**	**822,610**	**66.4**	**983,985**	**91.4**
	South East	**219,910**	**3.9**	**98,980**	**81.8**	**121,725**	**124.0**
	Kent County Council Area	**48,075**	**5.1**	**20,965**	**77.3**	**25,045**	**108.7**
	Thanet District	**7,245**	**6.9**	**2,615**	**56.5**	**2,915**	**67.3**
E05005081	Beacon Road	205	7.2	95	86.4	85	70.8
E05005082	Birchington North	75	4.3	30	66.7	35	87.5
E05005083	Birchington South	235	7.3	100	74.1	105	80.8
E05005084	Bradstowe	125	5.9	65	108.3	85	212.5
E05005085	Central Harbour	500	11.0	215	55.8	240	66.7
E05005086	Cliffsend and Pegwell	145	5.6	70	93.3	75	107.1
E05005087	Cliftonville East	195	6.0	95	95.0	120	160.0
E05005088	Cliftonville West	990	15.0	230	30.3	315	46.7
E05005089	Dane Valley	560	12.0	140	33.3	155	38.3
E05005090	Eastcliff	565	10.6	200	54.8	170	43.0
E05005091	Garlinge	255	8.9	130	104.0	145	131.8
E05005092	Kingsgate	50	4.1	35	233.3	35	233.3
E05005093	Margate Central	680	17.5	200	41.7	220	47.8
E05005094	Nethercourt	170	6.0	80	88.9	85	100.0
E05005095	Newington	350	10.6	110	45.8	115	46.9
E05005096	Northwood	335	8.7	120	55.6	100	42.6
E05005097	St Peters	200	5.1	90	81.8	110	122.2
E05005098	Salmestone	290	8.2	110	61.1	125	75.6
E05005099	Sir Moses Montefiore	240	7.9	80	50.0	85	54.8
E05005100	Thanet Villages	235	5.4	120	104.3	145	161.1
E05005101	Viking	210	5.3	80	61.5	105	100.0
E05005102	Westbrook	210	7.9	80	61.5	100	90.9
E05005103	Westgate-on-Sea	320	7.1	130	68.4	155	93.9

The claims in many cases are as a direct result of the covid crisis and the shutdown of businesses, particularly those from the leisure and hospitality trade and retail, have had a huge impact. The numbers do not include people who have been furloughed.

Retail accounts for almost 20% of the isle's employment and accommodation and food industries employ another 10% – equivalent to 12,000 jobs. Arts, entertainment and recreations accounts for another 1,500 jobs – just under 4% of the isle's employment, – according to government statistics.

Tourism is worth some £320 million per year to the local economy and supports, directly and indirectly 7,950 jobs.

The vast majority of the isle's businesses are small, employing less than 10 people.

Although some have been able to continue with takeaway services and others will be eligible to reopen from June 15, if measures are in place to reduce the transmission of coronavirus, yet more will not be able to open until after July 4.

And for some, such as Dreamland, large gatherings will mean many of the year's events will remain cancelled, exacerbating the impact on local employment and income for Thanet businesses.

David Foley, chief executive of the Thanet and east Kent Chamber of Commerce. Said: "The claimant count figures released on May 19 reflected the first effects of the pandemic. Thanet again topped the list in Kent at 8.9% with 7,245 unemployed across the district, a rise of nearly 3,000 since this time last year.

"More worrying perhaps is the data for 18 to 24 year olds which shows the highest youth unemployment rate in the south east at 13.6%. It is almost three times more difficult for a school leaver to find employment in Thanet than in Sevenoaks.

"These figures illustrate again how important it is for Thanet District Council and other public bodies to use their discretionary funds to support the businesses and training providers that are best placed to stimulate our local economy and produce the funds that ultimately support every public service, including our cherished NHS."

The national picture

Nationally, in April 2.1 million people claimed unemployment related benefits. This was an increase of over 850,000 claimants from March.

Thinktank, the Resolution Foundation said in a report this month: "The economic fallout from the coronavirus has taken the UK into uncharted territory.

"While the health sector has gone into overdrive, other large industries ranging from nonfood retail to hospitality and travel have been deliberately shut down, resulting in sharper rises in unemployment, and steeper falls in job vacancies, than occurred even during the 2008-2009 economic crisis.

"The recovery will not be straightforward: restrictions are likely to persist in many sectors, and many businesses will struggle to survive.

"While the realities of being unemployed are damaging in real time – potentially putting health, well-being and security at risk – the experience can also scar a person's employment and pay for years to come.

"This is particularly worrying for young people, who are more likely to experience unemployment during a downturn, and who have their whole working lives ahead of them."

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Matt Savidge Late Rep 080620
Date: 29 June 2020 18:57:34

From: Matt Savidge [redacted]
Sent: 08 June 2020 18:34
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Manston DCO

Dear Mr Shapps

I am a Ramsgate resident, I moved from London with my partner, and we both have business here. Us, like many, are fearful of the consideration of Manston as a cargo hub airport.

It is my belief, based on a consideration of Ramsgate and the greater world around us that Sir Roger Gale and Craig Mackinlay are misguided and out of touch with their dangerous views on Manston.

We, like the many, are focused on next months decision.

Please, I hope. Decline RiverOak Strategic Partners DCO request.

Best wishes

Mr M Savidge

From:	[redacted]
To:	transportinfrastructure@dft.gov.uk; Manston Airport; kelly.tolhurst.mp@parliament.uk; shappsg@parliament.uk
Subject:	Manston DCO
Date:	09 June 2020 16:55:13
Attachments:	DCO EXTENSION JUNE.docx

Please find attached a letter from Nethercourt Action Group requesting information on the Manston DCO

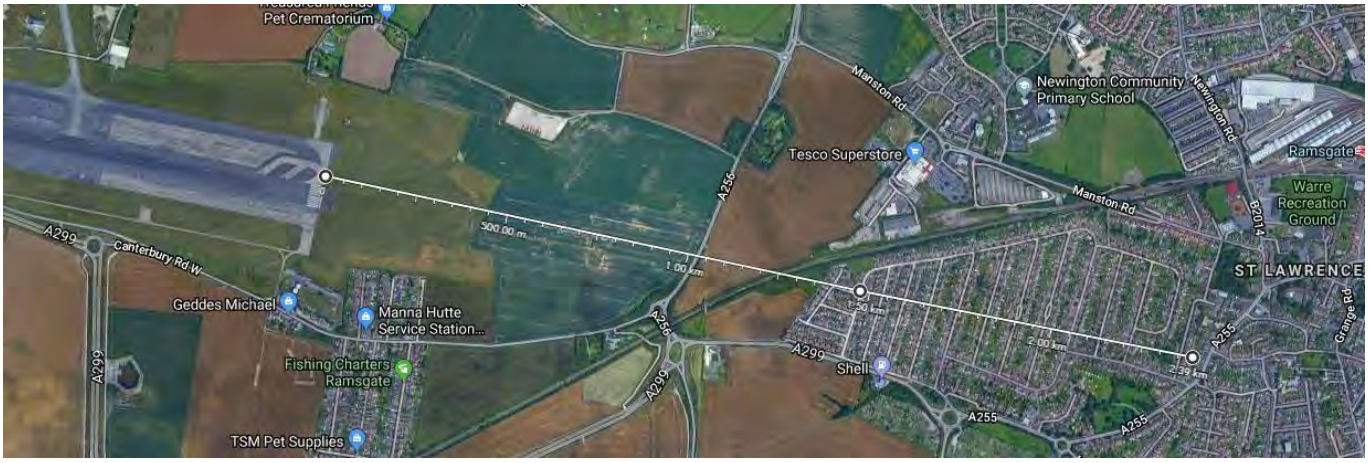
Dear Sir/Madam.

We are writing on behalf of Nethercourt Action Group.

REGISTRATION NUMBER 20013745

We are a group of over 250 people opposed to the reopening of Manston Airport as a 24/7 cargo hub.

Our community is in a unique position as our homes begin less than one mile from the airport site. No other airport has a housing estate so close and as such we will be amongst the worst affected by the noise and pollution such an operation will cause. Not that anyone in Ramsgate will fare much better.



Following yet another delay in announcing the DCO outcome we have several questions we feel are pertinent given the situation the aviation industry finds itself in now following the covid19 pandemic.

1. What prompted the decision that further work is required at this late stage?

2. Who has asked for further work to be carried out?

3. What is the further work that is to be carried out?

4. Who will be carrying out this further work?

5. Why was this work not carried out by the original deadline of 18th January 2020 or the extended deadline of 18th May 2020?

6. Why are Interested Parties not being invited to make submissions on whatever further work it is that is apparently needed?

7. Has the Applicant been asked or invited to submit further work and/or comments?

8. Have any further submissions been received by the applicants?

9. What contact and/or communications has there been between the Applicant and the Department for Transport since the Applicant submitted its responses in January 2020 to the questions raised by the Secretary of State at that time? We would like copies of all communications.

9. Why were interested parties not given the opportunity to respond to RSP's submissions to the January extension?

10. With the complete change in the world of aviation since the covid19 pandemic will the new position be taken into consideration as the original application is now totally obsolete?

With Flybe going into receivership many regional airports were already teetering on the edge of bankruptcy without the effects of covid19. This will leave many regional airports with excess runway capacity. In spite of RSP's claims there was already spare runway capacity. Manston will certainly not be needed.

Heathrow chief executive John Holland-Kaye has said that a third runway at Heathrow Airport has said that it could be 10 to 15 years before the UK needs a third runway at the airport due to the corona virus crisis.

Luton Airport has cancelled their plan for a second terminal.

Both Boeing, & Airbus are laying off staff as are Rolls Royce in their aviation division so they expect a contraction in the manufacture of new aircraft in the coming years.

BA, Virgin, Easyjet, Ryanair, Emirates and all major airlines are cutting large number of staff so are obviously not expecting air travel to return for many years. It also seems BA and Virgin may not return to Gatwick. Many regional airports will struggle to reopen when flights begin again. As has been pointed out there are only a finite number jobs in aviation and any jobs created at Manston will be to the detriment of jobs at other established airports. Should Manston reopen it certainly will not help the recovery of airports that have proved their viability.

We also have Tilbury 2 a state of the art port which has now opened for container freight. This is the right side of the Thames for the north of England and has a much smaller carbon footprint in line with government policy to reduce CO2 & greenhouse gas emissions.

As we feel that RSP's consultation & DCO application is not longer valid due to the time elapsed and the current climate in the aviation industry along with other groups we are already taking legal advice regarding starting a legal challenge should the Manston DCO be passed.

Yours Sincerely on behalf of Nethercourt Action Group

Ian & Hilary Scott, David & Elizabeth Green

From:	Rob Pridham
To:	Manston Airport
Subject:	[redacted] Stan Vines Late Rep 100620 : Royal Ramsgate Freeport - Project Proposal and News Bulletin
Date:	29 June 2020 19:04:00
Attachments:	Ramsgate Freeport Combined Regional Development.pdf News bulletin Freeport status bid for Ramsgate.docx

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From: Stan Vines <[redacted]
Sent: 10 June 2020 14:12
To: SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Cc: CHAPMAN, Nathaniel <nathaniel.chapman@parliament.uk>
Subject: Royal Ramsgate Freeport - Project Proposal and News Bulletin

Dear Mr Secretary

Please find attached our Project Proposal and News Bulletin for Royal Ramsgate Freeport and Combined Regional Development including in part an EU exit plan component.

I have sent this to you at your parliamentary address because on first glance I didn't find the exact e-mail address for your Secretary of State office. Maybe it is not available. I know this to be different as my MP, Ben Wallace already has a copy of the scheme as, a) he is my MP and, b) I was under the impression that Manston was under the control of the MOD him having authority there and, c) I have met and spoken to him before of other projects. I did try to no avail find your itinerary on your visit to Fleetwood and the Fylde to speak of this to you.

I understand the decision on usage of Manston, subject also to the Planning Inspectorate ultimately rests with your good self. I further understand that there are other schemes under consideration for the use of the site, one of which is for it to be returned to use as an airport freight hub. As you can see we have a different, we think a more comprehensive and beneficial idea for its use, all of which is detailed in the proposal. There will be a decision, albeit has been delayed several times, due on the 10th July and we sincerely hope our idea will have a bearing on that decision, possibly to our favour.

The core differences of our proposal are, 1) we see the site better utilized as a 'Technology Freezone' and extension to the port with Freeport status (consultation period application closes 13th July) connected via an extension of the existing tunnel and 2) as part of the EU exit strategy to provide the port capacity to spread the risk of catastrophes which may arise from delays through customs etc., under and a new and extrapolated processes at Dover through new EU rules.

Our development proposal has been prepared in co-operation with Architects ORMS and The Crawford Partnership, Alan Crawford being the chair of RIBA London and MD of ORMS, John McRae the vice-chair, Tony Gee Engineers and the city law firm Temple Bright: their experience serves to build strength and stability into our unique development's origin and host of merits. We believe the needs of the region and the timing at this political juncture are suited to this new and radical course change to overcome the impasse endured to date.

I very much look forward to hearing from you for consideration and discussion before the decision dates.

With kind regards
Stan Vines

Stan Vines i4c Ltd [redacted]

International House

24 Holborn Viaduct

London EC1A 2BN

[redacted]

+44 207 7193 9856

NEWS BULLETIN – 9th June 2020

A FREEPORT STATUS BID FOR HISTORICAL RAMSGATE

I4c, Information for Contracts Ltd., of Holborn London, in association with City Architects ORMS, the Crawford Partnership, Consulting Engineers Tony Gee and Partners LLP., and the law firm Temple Bright LLP., propose a regeneration of Ramsgate and Thanet region. In line with Central Government policy to create Freeports throughout the UK, the proposed new Ramsgate Freeport includes the use of Manston Airfield, connected to the port via an extension to the existing road tunnel, and creating a technology based Free Zone for the future.

The refurbishment and upgrade of the existing port will be the first phase in dual purpose development to also create additional channel port capacity in readiness for the UK exit from the European Union on the 31st December 2020. This will spread the risk of any possible 'Brexit' delays in neighbouring ports which will easily be dealt with via the upgraded Ramsgate facility.

"There have been other schemes submitted for the regeneration of Ramsgate and the region but none as comprehensive as this from i4c with the unique

inclusion of Manston in application for Freeport status", said Managing Director of i4c Stan Vines. "The i4c proposal ticks many boxes for the regions regeneration including satisfying the needs created by the now certain UK break from the EU. The overall plan provides a vision which merges modern technology with tradition in one of the most important and significant commercial and marine centres of the past".

Ramsgate, historically one of the Cinque port consortium, had the responsibility of supplying ships for the Royal Navy long before the formation of the Admiralty in 1707. This development recognises and draws on Ramsgate's rich history as a leading UK region, breaking decades of industrial decline. "Thousands of jobs will be created at the 'free zone technology park' and through the port expansion and many more with the development of substantial retail, residential and leisure facilities. The new and again unique traffic segregation scheme will continue to keep commercial vehicles away from the town but will enable and encourage access to local facilities for leisure and tourist traffic from incoming ferries", added Stan Vines. The Freeport will reinstate Ramsgate's historical significance as a major contributor to the UK economy with a technology centred future for the prosperity of Great Britain, particularly in the wake of the Covid pandemic.

--ENDS--

Editorial inquiries and further information from –

Information for Contracts Ltd.,

International House, 24 Holborn Viaduct, London, EC1A 2BN.

Tel. +44 2071939856. E-mail. info@i4c.ch

Orms

temple bright

Tony Gee

Project

Ramsgate Royal Freeport

Title

Combined Regional Development

Client

Information for Contracts Ltd

Date

June 2020

Executive Summary
Ramsgate Royal Freeport

In line with central government policy we propose to create a Freeport in the southeast of England at Ramsgate. This site has been chosen for development for its ability to perform a dual role as a facility for cross channel Ro-Ro business, post exit from the European Union, in support of Dover which currently works at capacity. The commercial port at Ramsgate is presently used for some aggregates, a wind farm facility base and as a car park and storage for newly imported cars. It has had little traffic for more than a decade and has lost £20m between the years 2010 and 2018. In its existing form Ramsgate port does not have the capacity and land area needed for a Freeport and our proposal is to incorporate Manston Airfield, physically linked to the port.

Our plan develops the Port of Ramsgate in three key phases that are outlined in detail within the document:

- Year 1 – Refurbish and upgrade the Port linking Manston
- Year 5 – Expand the Offer
- Year 10 – The Ramsgate Renaissance

Within these phases it is proposed that the port is also extended seawards in addition to the inclusion of Manston to which it will be joined via new highways. Manston Airfield is currently owned by the Ministry of Defence. It is proposed that area will become the commercial Free Zone and commercial vehicle terminal with customs control. No planning permission has been granted for the airfield and surrounding enabling land and although some proposals have been tabled and rejected, no decision has been made as yet to its use. A lease for various existing activities issued by the MOD terminates on 31st December 2020. There is a considerable housing development planned in around the airfield. It is proposed that Information for Contracts Ltd be the Developer and Project Manager to see this combined port and Freeport project through to completion. This document, prepared in collaboration with leading UK Architect, ORMS, outlines the concept and forms a directional discussion document, a precursor to the feasibility study.

Currently Dover deals with a throughput of around 300 commercial vehicles per hour. However the final EU exit negotiations conclude, there will be some friction at ports due to elongated procedures in customs clearance for European imports. If there is an average delay of even 30 seconds for each vehicle that would mean 150 minutes in each hour to be found along with the need for large areas of the port and/or highways to accommodate the vehicles delayed through the port. Additionally, the assumption is post 31st December 2020, traffic through south coast ports will increase with the probability of more time-consuming customs procedures with goods being imported from countries outside of the EU bloc. It is logical to spread the congestion risk by using neighbouring Ramsgate port to its prosperity, regaining business lost in the last decades through under investment.

Central government has allocated funding to further the regions ‘Stack’ parking by using Manston Airfield. Our proposal takes the specific reason for this funding/development into consideration to satisfy the post 31st December need for additional port capacity, avoiding a possible catastrophic venturi effect of problems at Dover/Calais. It seems unreasonable that the whole of the county should be used and inconvenienced by ‘Stacking’ just to accommodate the geographical and topographical constraints at this one port.

It is proposed that part of the central government allocation is made available to recalibrate this solution to include a feasibility study for this more comprehensive project, the first construction phase being the upgrade of the port which will include securing the perimeter of the airfield.

In terms of the Gross Value Added (GVA) factor, the southeast region trails the national average by some 30%, fairing only marginally better than the lowest regions of Humberside and the South West. Our vision of Manston’s technology based commercial Freezone, closely, physically and easily coupled Ramsgate port, represents a considerable and much needed regeneration project for the region. Developing the airfield site will provide some 2500 acres of commercial facilities for modern businesses resulting in many thousands of permanent jobs across all employment sectors. The port expansion and development will ensure new employment opportunities in the town: the overall construction phase will create employment over the next 10 years of its development.

Britain is a united kingdom of island nations steeped in marine and shipping history.

Surrounded by sea, the development of ports, marine terminals, boat and shipyards and the industry generally for thousands of years have been a necessity. Without them, Britain would be isolated, never to have developed the reach and trading ability into the rest of the world for which Great Britain is renowned. Today, its importance is reflected in that 90% of world trade of goods is still delivered by sea. Even so, this represents only 3% of global carbon emissions. Importantly, less than 1% of that of air cargo per kilo for the same distance travelled. An inherent environmental awareness is permanently built into our Ramsgate and region vision.

The marine industry has spawned laws, courtesies and values, words and sayings that we use in everyday life. This proposal for Ramsgate is brings together technology and the finest of British history and tradition, respecting its important past and providing a facility for 21st Century demands. We believe the following plan uses the challenges created by our exit from the European Union and leverage this opportunity to regain the commercial prosperity of Ramsgate, Thanet and Kent….the garden county. A true ‘Ramsgate Renaissance’.

Stan Vines - Director

Information for Contracts Ltd

Why a Freeport?

Examples from across the world

Freeports in Europe

The European Union's 82 freeports tend to be hubs for the logistics industry as streamlined customs procedures and trade agreements negate advantages of the Freeport. Largely they maintain Freeport status as a legacy.

The EU is looking to revoke freeport status to prevent "high incidence of corruption, tax evasion, criminal activity".

Freeports in the USA

In the US, where there are around 230 "foreign trade zones", Freeports are often used to cope with an anomaly in the customs regime: parts can face a higher tariff than finished goods. Freeports allow for components to be brought in tariff free and used to assemble products which then only have to pay the lower duty when they are exported to the US. Without the Freeport the associated manufacturing jobs may not be in the US at all.

Freeports as Depositories

Geneva Freeport is the preferred storage facility for the international elite where users "come for the security and stay for the tax treatment." Similar facilities have been constructed in Luxemburg and Singapore in an effort to boost the wealth management industry and become a regional hub for luxury collectables and bullion trading.

Geneva Freeport holds about 1.2 million works of art, allegedly including around 1000 works by Pablo Picasso.

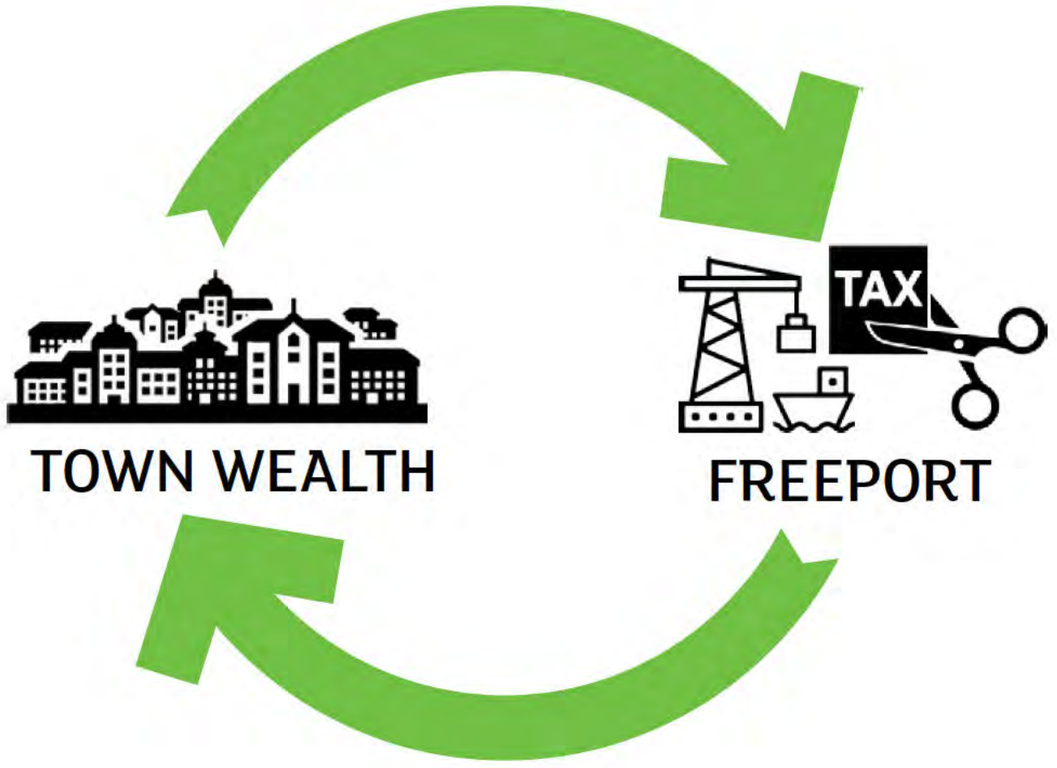
Freeports in the UK

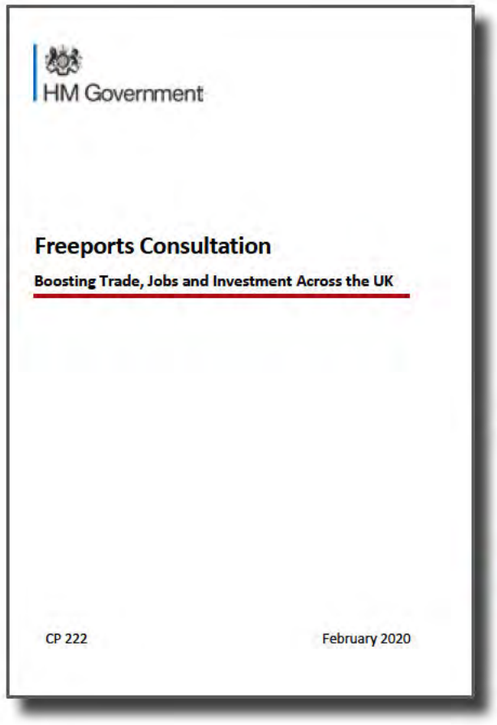
The proposal from the British government, however, appears to mix these areas with "special economic zones" where companies are offered tax advantages and the kind of urban development corporations that, through a more streamlined planning process, created the financial centre Canary Wharf in a former industrial part of London during the 1980s. The Isle of Man, a British crown dependency that is neither part of the EU nor the UK, operates a Freeport

Why a Freeport?
The UK Government's Vision

- UK to develop 10 freeports.
- Located in port regions, *particularly those situated in or near deprived areas.*

- Freeports will:
  - Attract businesses and innovation.
  - Create high-skills jobs.
  - Bring wealth to towns where allocated.

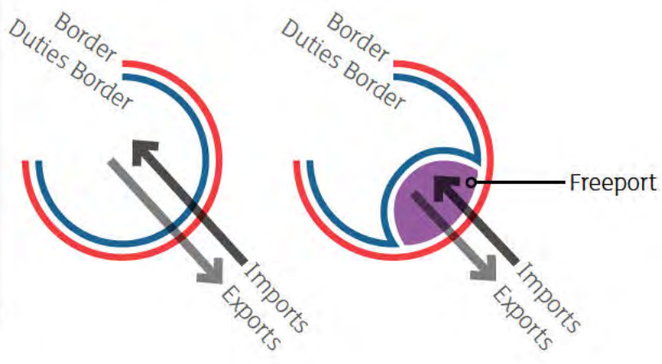



HM Government

Freeports Consultation

Boosting Trade, Jobs and Investment Across the UK

CP 222 February 2020



Why Ramsgate?
Key Link to Dover and Europe

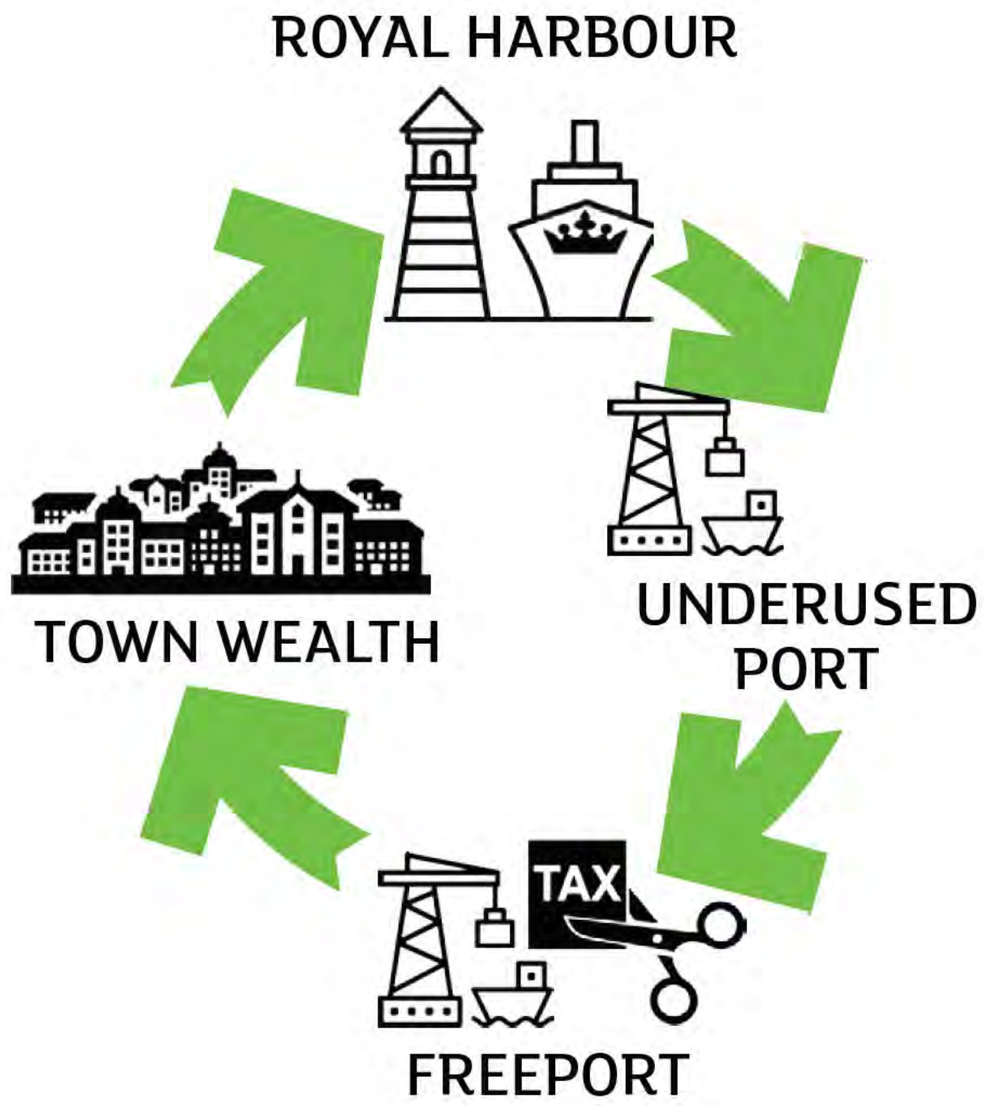
- Close proximity to Dover - Overspill easily provided preventing post Brexit delays.
- Existing infrastructure can be easily upgraded with minimal capital investment.
- Opportunity to cross channel 'duty-free ' services post Brexit.
- Existing Harbour is currently under utilised.
- Requirement for additional housing in Ramsgate area.
- Ability to regenerate Ramsgate by reinventing its significant and rich maritime and naval past.
- Potential to adapt land at former Manston airfield.

Why Ramsgate?
Established Infrastructure

1. Port of Ramsgate
2. Royal Harbour
3. RoRo Ferry
4. Brett Aggregates
5. South Breakwater
6. Turning Basin
7. Windfarm Operators
8. Car Parking
9. Lorry Parking
10. Slipways
11. Lighthouse
12. Smack Boys Building
13. West Cliff Lift
14. Jacobs Ladder
15. Royal Esplanade Gardens
16. Ramsgate Main Sands
17. Ramsgate Tunnels
18. A299 Tunnel

Why Ramsgate?
Realise its potential

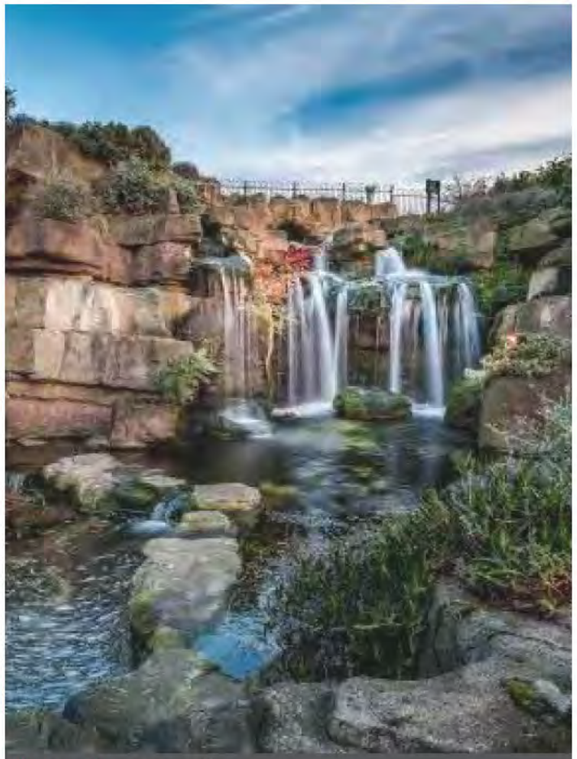
- Close proximity to Dover - Overspill easily provided preventing post Brexit delays.
- Existing infrastructure can be easily upgraded with minimal capital investment.
- Opportunity to cross channel 'duty-free ' services post Brexit.
- Royal Harbour is currently under utilised.
- Requirement for additional housing in Ramsgate area.
- Ability to regenerate Ramsgate by reinventing its maritime past.
- Potential to adapt and repurpose land at former Manston airfield.



Why Ramsgate?
The Ramsgate Renaissance

- Reinforce the royal history of Ramsgate.
- Maritime Connections: Maximise the potential of being Ramsgate's location.
- Residential: Refurbishment and new build houses.
- Commercial development: creation of new workplaces.
- Leisure: Harness Cultural Tourism - be part of the Creative Coast.
- Curation of the 900 listed buildings in Ramsgate (200 in the Harbour) - Showcase Ramsgate's abundance of Regency, Georgian and Victorian buildings and squares.

Ramsgate Marina

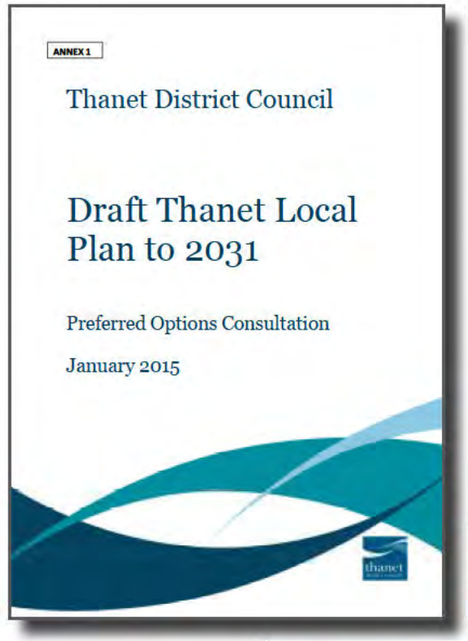

Albion Place Gardens

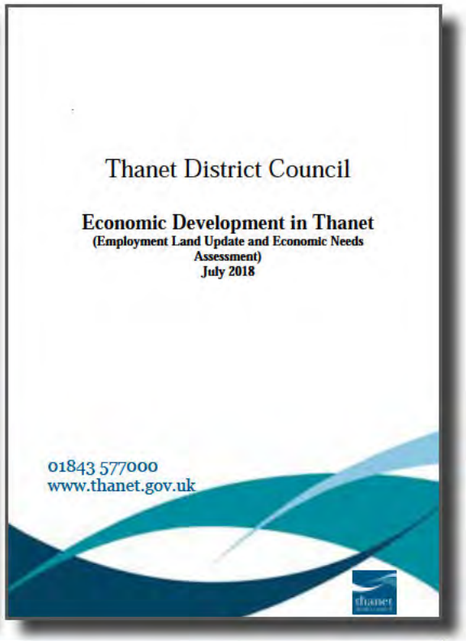

Ramsgate East Cliff Beach

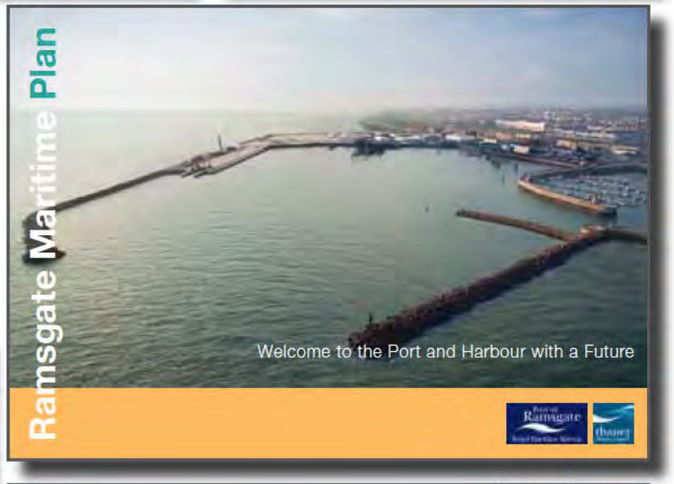
Royal Victoria Pavilion

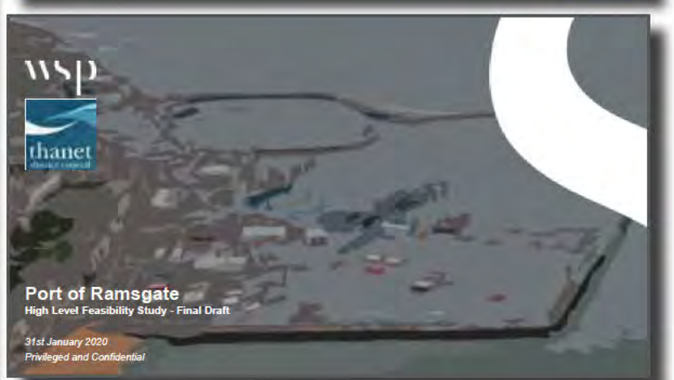
Setting the scene
Planning and Policies

In order to understand the context and parameters within which redevelopment of the Port of Ramsgate should be undertaken within, a review of several local policy documents has been undertaken. Conclusions from the most current and relevant document are overleaf. Additionally a review of alternative plans for the port and surrounding key infrastructure developments have also been undertaken. These have also been summarised on the following pages.









Setting the scene

Thanet District Council / WSP proposal

Concept

Create a Maritime Village combining the following uses:

- Residential
- Commercial
- Industrial

This aims to:

- Deliver commercial success for the port site.
- Deploy limited capital resources as catalyst for private sector investment.
- Not negatively impact on local environment and high street funding work.

Priorities

- Retain commercial / industrial port uses on a streamlined basis with a view to attracting a regular RoRo service.
- Leverage land closest to the marina site for residential and leisure purposes.
- Retain and add to employment opportunities on site with a particular emphasise on lower skilled jobs.

Programme

- New residential zone with potential to reclaim land.
- RoRo terminal - condensed footprint with single berth.
- Convert Smack Boys building into Boutique hotel.
- East Marina - upgrade to achieve '5 Anchor Status'.
- Brett Aggregates remain on site - lease runs until 2054.
- Light manufacturing to compliment port uses.
- Victorian slipways replaced to create maintenance facilitates.

Timeline

Briefing	*4 Months*
Concept Design	*3 Months*
Developed Design	*6-9 Months*
Technical Design	*6-12 Months*
Construction	*18-24 Months*

3-5 years estimated

Potential Issues

- Long term lease obligations to Brett Aggregates, Renewable Operators and Dry Boat yard.
- Executive Homes are specifically included in the Thanet Local Plan.

Setting the scene
Thanet District Council / WSP proposal

Zone 1 – Industrial/Commercial Developments

Creating an industrial part of the Ramsgate site would create jobs and opportunities in the area. The options selected have the possibility to bring a diverse range of employment opportunities which can expand to new areas benefitting wider area, both economically and socially.

Zone 2 – Commercial Port Developments

The prioritization of RoRo as the sole commercial port target user requires the least CAPEX and builds on an already established business. Other cargo types would be reliant on opportunistic trade volumes and require CAPEX for necessary port infrastructure including; alongside quay, mobile cranes, and storage/warehousing. The latter requires further space on the site which will necessarily detract from other suggested options Primary port operations are to increase through added services and investment, this will have some consequence for alternative facilities but will not overwhelm planned residential and industrial activity.

Zone 3 – Renewable O&M / Education Facility Developments

The established renewable O&M section of the port is a consistent and low maintenance source of revenue for the port. While currently operating under a fixed sum agreement, the sector is evolving, thus offering the potential for Thanet District Council work closely with its tenants to capitalise on developments and deliver further value added services to its incumbent customers. It is anticipated that any educational facilities would operate under similar conditions, in a nearby area of the site, potentially co-locating under circumstances which necessitate the relocation of existing Renewable O&M facilities.

Zone 4 – Residential, Retail & Food & Beverage Developments

Residential developments satisfies the local housing market by increasing supply and contributing to a healthier supply demand balance. As per the councils plans to build 500 homes per year, it is valuable to contribute space and living area on the Ramsgate port site. Creating executive homes can also bring new demand for higher market retailing and marine activities, thus providing stimulus to the local economy.

Zones 5-9 – Marina Developments

The options available for the various zones will provide better utilisation to the port site as well as provide diversification of offerings at Ramsgate that can increase local economic and social benefits

Setting the scene
Thanet Parkway

Concept

The creation of a new 'parkway' railway station south of the Manston Airport site served by both Mainline and High Speed trains.

The station will offer good transport links to the surrounding highway network via the A299 Hengist Way, and provide local connections for pedestrians and cyclists.

Priorities

- Encourage park and ride to London and Ramsgate.
- Introduction of high speed trains via Ashford to London reducing journey times by 40% to under 1 hour.
- Unlock the potential to create local jobs for local people through the inward investment of businesses.
- Reduce congestion and parking demands at Ramsgate station.

Programme

- The two platform station built on existing Ashford International to Ramsgate line.
- 300 Space Car park and Taxi rank.
- Connections to bus network.

Timeline

Planning Approval	*2020*
Construction Begins	*2021*
Completion	*2022*

Potential Issues

- Cost escalation has caused funding review by SE England Local Enterprise Partnership.
- Lack of local support.
- Safety issues caused by unmanned station.

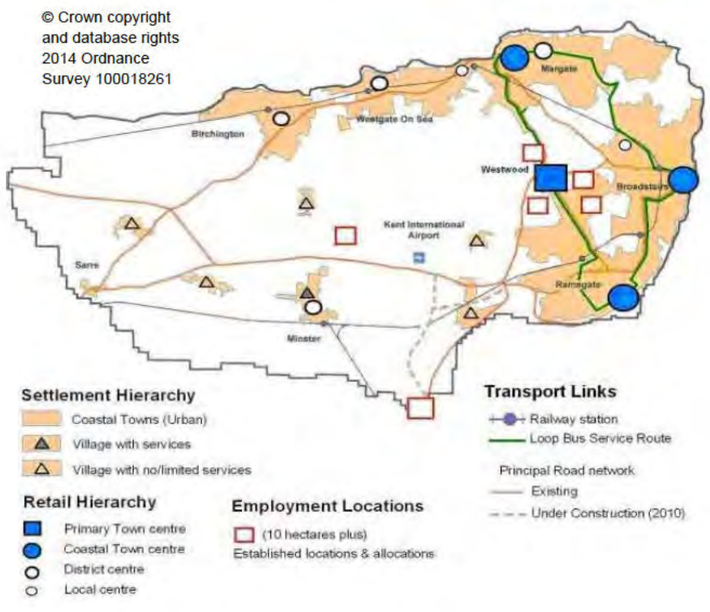
Setting the scene

Draft Thanet Local Plan to 2031

- The Plan's housing strategy sets out how the Local Plan seeks to meet the housing needs by identifying sufficient and suitable land for expected population growth.*
- Further in-migration will be needed to provide an adequate labour supply to deliver the economic strategy.
- The Council's Housing Strategy seeks to create sustainable communities.
- Housing provision is made for 12,000 additional homes over the 20 year period to 2031.
- **Manston Green** identified as Strategic Housing Sites. Applications to develop such sites shall be accompanied by a detailed development brief including an illustrative site masterplan.
- Land is allocated for up to 700 new dwellings at a maximum density of 35 dwellings per hectare net at land known as Manston Green.
- Built development will be focused at the northern part of the site.

*) Thanet Local Plan to 2031 is not taking into account what this document is considering: Ramsgate Royal Freeport which will require further housing development .

Map 11 - Settlement Hierarchy



Connecting with the past
Ramsgate

1749 - onwards
Following the storm, Ramsgate largely developed as a Harbour of Refuge, to the form we know today.

Mercenaries Hengest and Horsa landed in the 5th century to herald the pagan Anglo-Saxon age in England.

5th Century

Ramsgate join the Confederation of Cinque Ports, a Royal Charter established the ports to maintain ships ready for The Crown in case of need.

15th Century

Construction of Ramsgate Harbour intended as a Harbour of Refuge, following a violent storm (completed in about 1850).

1749

Jacob's Ladder Steps

1826

597

The Christian missionary St. Augustine landed in Ramsgate which re-established the link between England and the Christian church in Rome.

1748

Violent Storm

1817

4_ The Clock House was built in - currently: maritime museum.

1820

King George IV set off from Ramsgate with the Royal Squadron en route to Hanover. He was so impressed by the hospitality he received at the Kent port that he decreed it be declared a 'Royal Harbour' – a status that's unique in mainland Britain.*

*) This 1821 cartoon by George Cruikshank may reveal why King George liked Ramsgate so much. The cartoon called Nosing the Nob at Ramsgate, shows the King having coffee with Lady Curtis. The King stayed at Cliff House, home of the Curtis family. Gossip of the time suggested the King may well have received rather more than coffee, on his stays in Ramsgate. On the right of the picture is Lord Curtis the husband.

1842
Lighthouse

Connecting with the past
Ramsgate

Ramsgate Harbour railway station.

1863

1875

1900

1945

Plans for the Ramsgate Blitz Experience.

1988

1850

Completion of Ramsgate Harbour.

1876

Artist Vincent Van Gogh lived in Ramsgate for a year from April 1876

1878

1_ Sailor's Church.

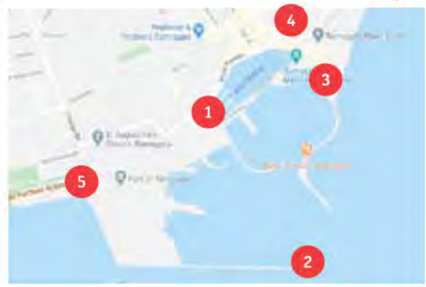
1929

5_ The West Cliff lift. Designed by Basil Charlton, inspired by the Art Deco. (Decommissioned in 1993)

1926

Ramsgate Sands or Harbour Station, abandoned in 1926.

2020



Connecting with the past

Ramsgate - Golden Age


1


2


3


4


5

6

1.Sailor's Church

2.Jacob's Ladder

3.Royal Harbour Marina

4.Royal Crescent

5.West Cliff Arches

6.West Cliff Lift

Connecting with the past

Ramsgate - Golden Age


7


8


9


10


11


12

7.Albion Place Garden
8.West Pier Lighthouse
9.The Galley
10. The Clock House
11. Royal Victoria Pavilion
12. Obelisk

Ramsgate Royal Freeport
As things stand

Year **1**
Establish

Year **5**
Expand

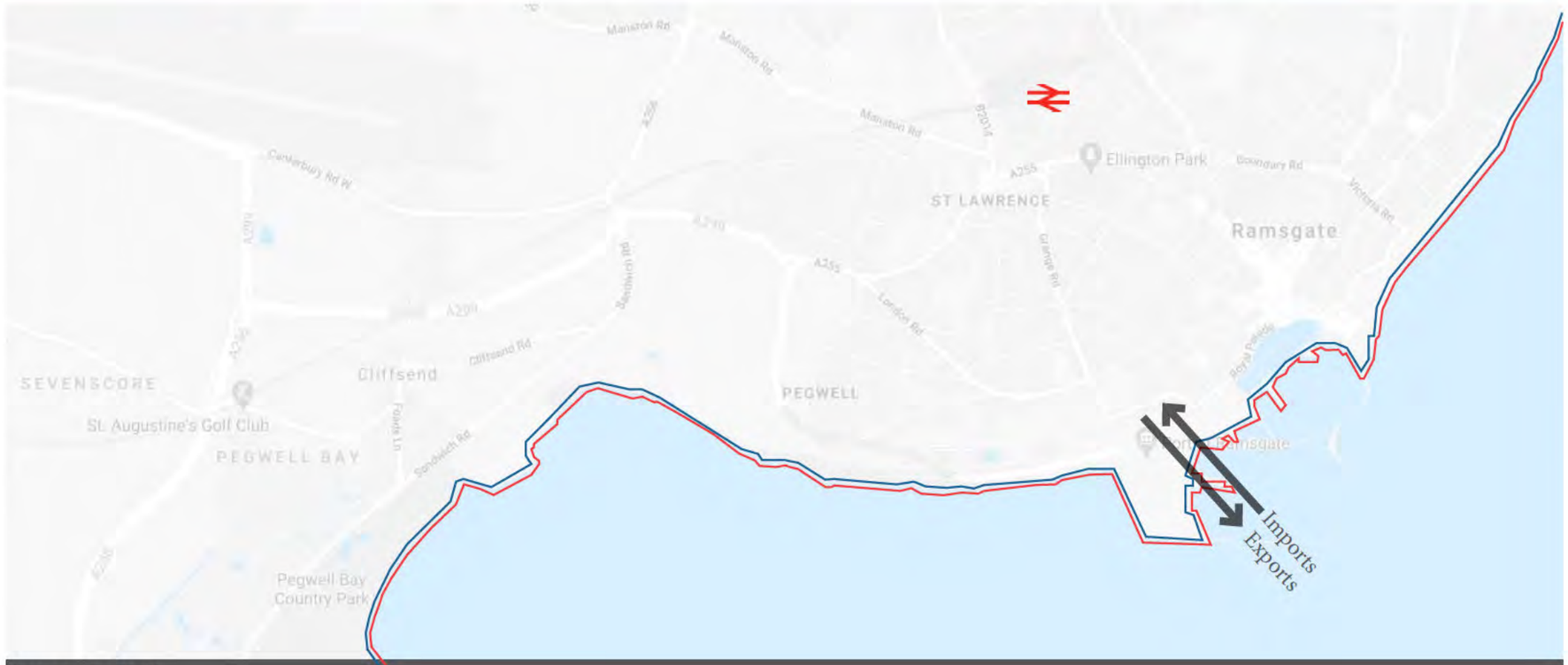
Year **10**
Renaissance

Existing Facilities:

- 3no. RoRo berths accommodating 1no 140m vessel and 2no 160m vessels.
- Passenger and customs facilities.
- Dedicated warehousing for transhipment and storage.
- Existing aggregate facility accommodates 60m long cargo vessels.
- Windfarm Operatives maintenance depots.
- Lorry and car parking.
- Under utilised Royal Harbour.
- Potential capacity of up to 500,000 freight units and five million passengers each year.

Border

Duties Border



Ramsgate Port

Ramsgate Royal Freeport

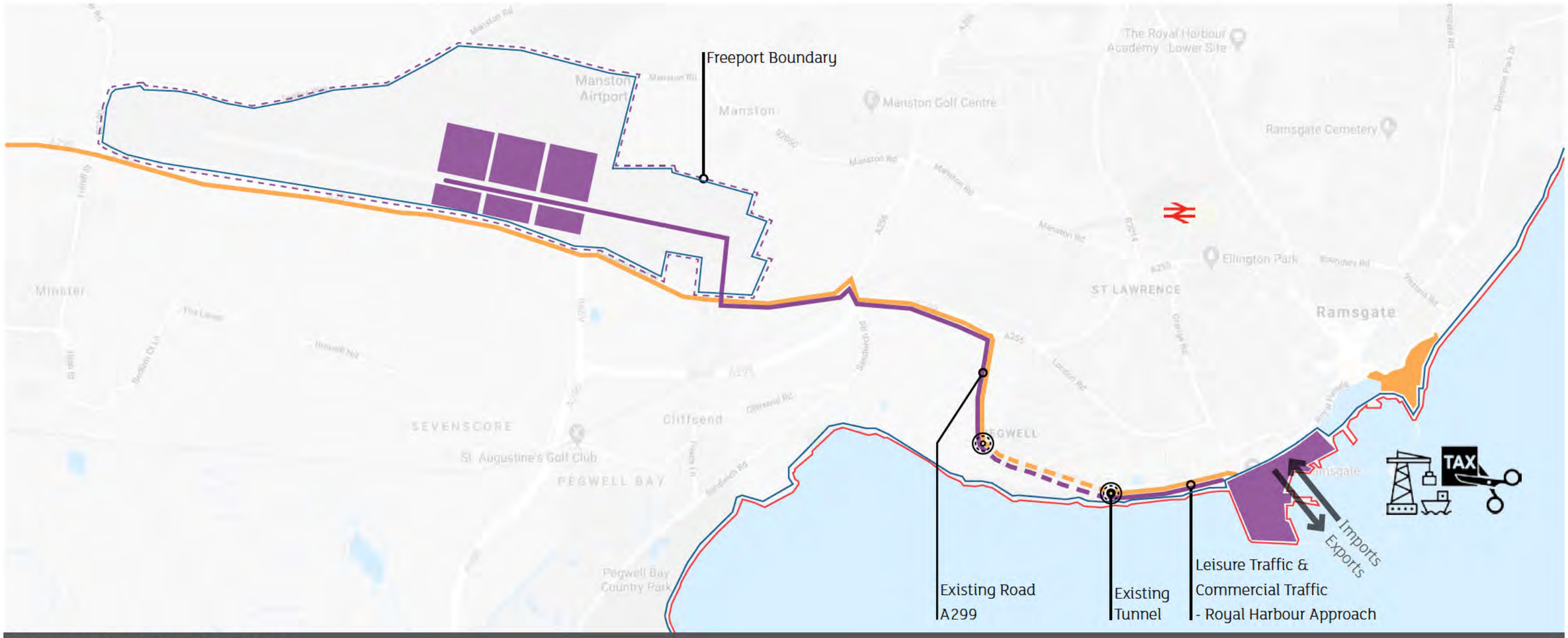
Year 1 - Establishing the Freeport

Year 1
Establish

Year **5**
Expand

Year **10**
Renaissance

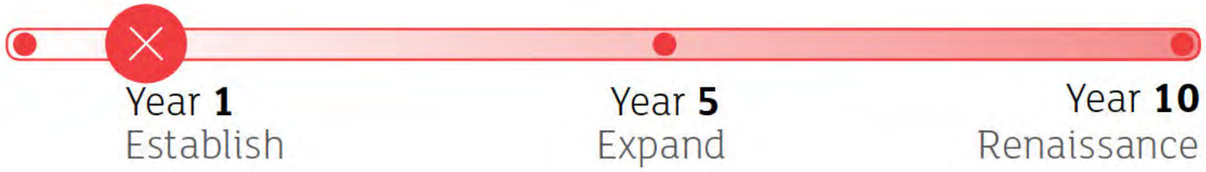
- Border
- Duties Border
- Freeport Zone 2
- Benefits of the reactivation of the Port of Ramsgate
- Ramsgate Marina
- Freeport Zone 1



Ramsgate Port and Manston - Year 1

Ramsgate Royal Freeport

Year 1 - Establishing the Freeport



Zone 1 - Port of Ramsgate

- Upgrade of RoRo ramps and ancillary equipment, maximising the existing potential of the port.
- Berths to be assessed to accommodate of larger RoRo vessels within new infrastructure.
- Renovation of port and customs buildings.
- Construction of additional stevedore and parking areas including security and signage.
- Construction of secure perimeter around freeport area.
- Create clear segregation of existing Port activities, such as renewables and aggregates.

Zone 2 - Manston

- Unlocks the potential to repurpose the underused former airfield site at Manston as a Freeport.
- Creates space required for Freeport, leveraging the potential of Ramsgate Port.
- Demolition of terminal buildings.
- Construction of required Customs facilities.
- Renovation of existing hanger and cargo facilities for use as storage facilities.
- Construction of secure perimeter and security facilities.
- Establishment of logistics and storage hub that compliments Port of Ramsgate in order to facilitate Freeport.
- Potential for introduction of light industry.

Linking Infrastructure

- Utilisation of existing road network between Port and Manston.
- Use of the tunnel between A299 and Royal Harbour approach.
- Technology utilised to ensure secure link between two operating zones.

Ramsgate Royal Freeport

Year 5 - Expanding the Offer

Year **1**
Establish

Year **5**
Expand

Year **10**
Renaissance

Border

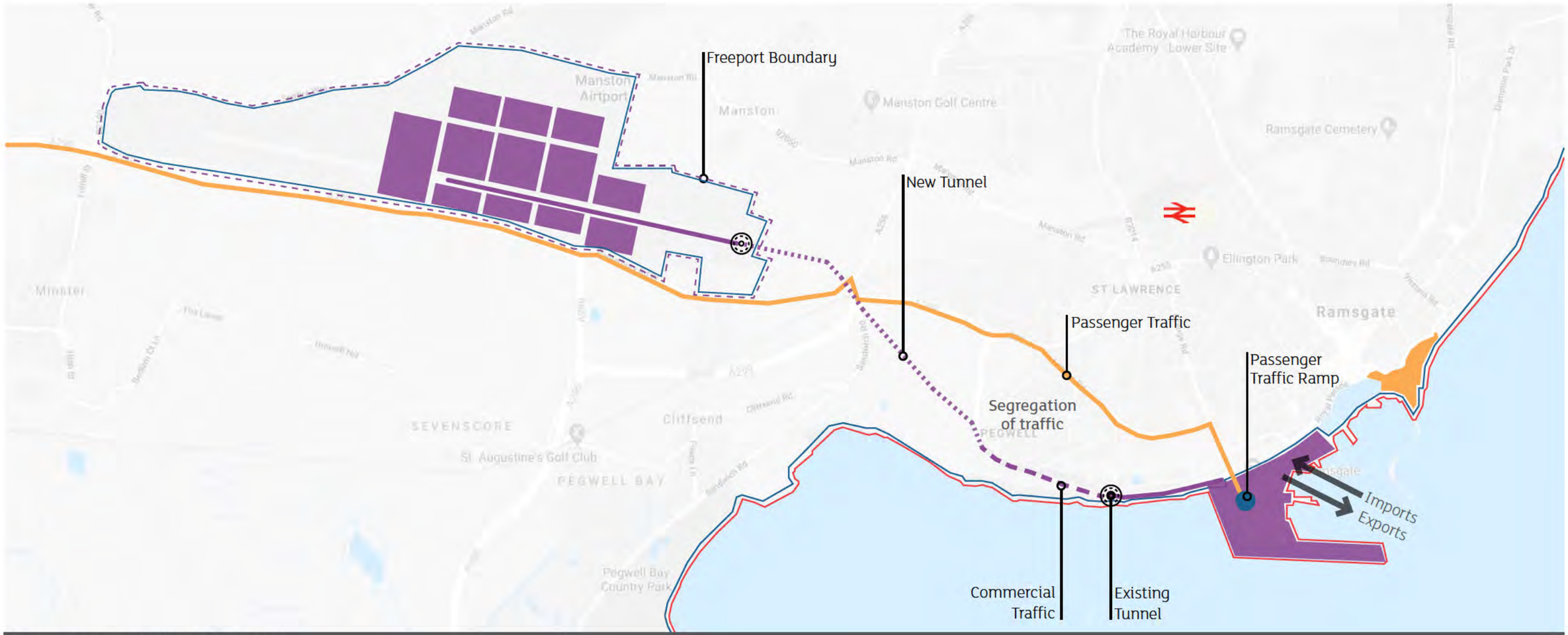
Duties Border

Freeport Zone 2

Benefits of the reactivation of the Port of Ramsgate

Ramsgate Marina

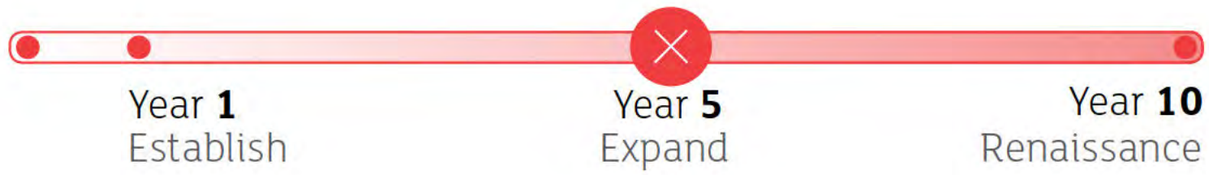
Freeport Zone 1



Ramsgate Port and Manston - Year 5

Ramsgate Royal Freeport

Year 5 - Expanding the Offer



Zone 1 - Port of Ramsgate

- Extension of the Pier to the West to create further capacity. Reclaim area of unusable water. Relocation of aggregates as required.
- Extension of the pier to the South - Conversion of the Ports southern breakwater into harbour to provide new cargo berth.
- Construction of additional crane and infrastructure, such as additional stevedore and storage facilities.
- Construction of ramp in order to create new passenger traffic route that bypasses the town centre, linking to the A299.
- Relocation of renewable industry facilities to Western extension.

Zone 2 - Manston

- Sustainable development of storage and logistics hub.
- Creation of UK's high value storage depository.
- Construction of manufacturing facilities.
- Promotion of area as Research and Development hub. Emphasis on Innovation.
- Integration of new technology to increase efficiency.

Linking Infrastructure

- Segregation of commercial freeport traffic and passenger traffic into two distinct routes.
- Construction of tunnel or deep cut highway to link existing A299 tunnel and Manston site.
- Upgrade of road infrastructure at Grange Road, connecting to new ramp.

Connecting to the Town

Town improvements to accommodate an agreed programme from the 2011 Master Plan for Ramsgate Port. These include:

- Refurbishment of Harbour arches for commercial uses.
- Improved public realm.
- Development along the cross wall.
- Landmark commercial redevelopment.
- Refurbish harbour arm restaurant.
- New facilities for offshore windfarm servicing.

Ramsgate Royal Freeport

Year 10 - Ramsgate Renaissance

Year 1
Establish

Year 5
Expand

Year 10
Renaissance

Border

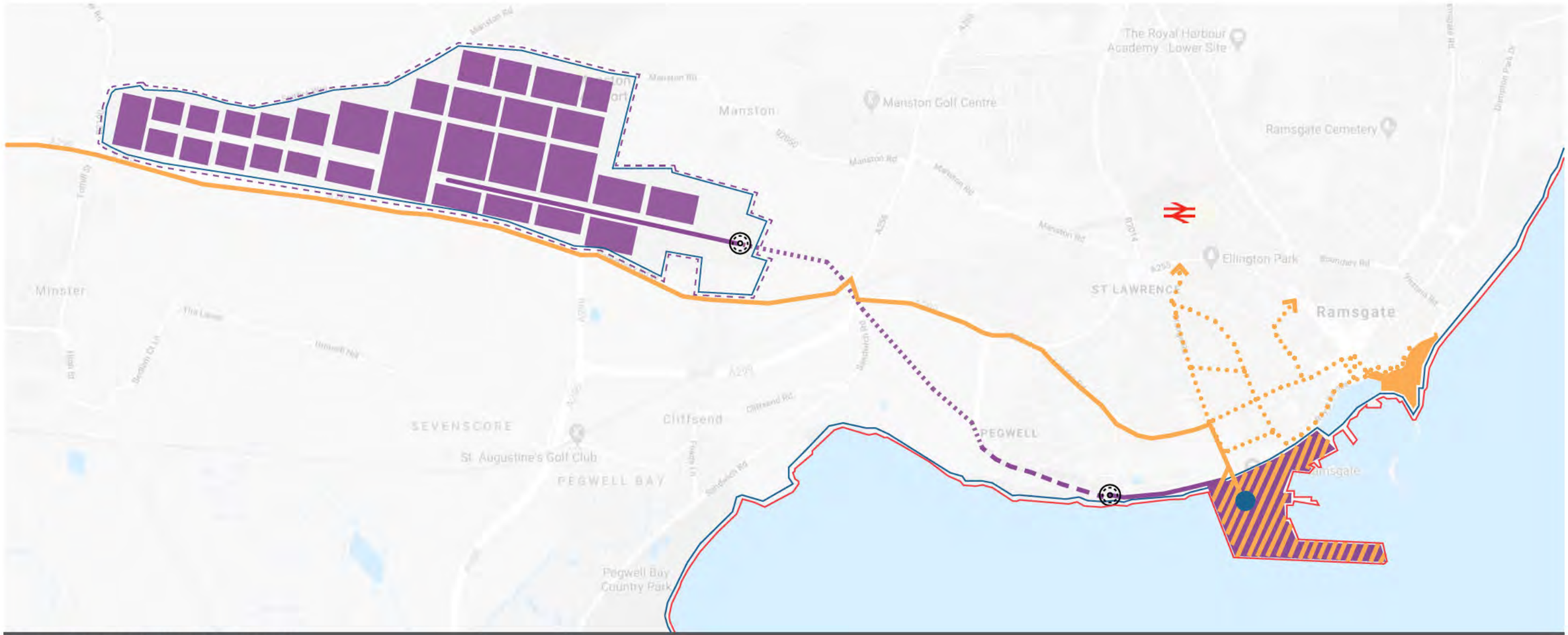
Duties Border

Freeport Zone 2

Benefits of the reactivation of the Port of Ramsgate

Ramsgate Marina

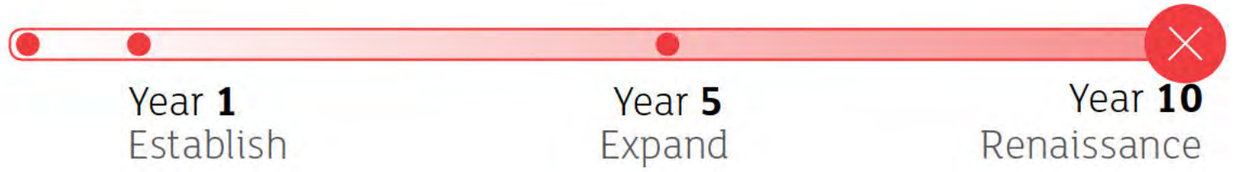
Freeport Zone 1



Ramsgate Port and Manston - Year 10

Ramsgate Royal Freeport

Year 10 - Ramsgate Renaissance



Zone 1 - Port of Ramsgate

- Development Maritime Village combining residential, commercial and industrial uses.
- Construction of deck over existing facilities allowing for creation of leisure facilities, creating new public space and promoting seafront regeneration.
- Construction of residential buildings adjacent to Marina.
- Construction of additional car parking and storage facilities under deck.
- Upgrade Passenger facilities to maximise RoRo capacity.
- Maximise cargo capacity.

Zone 2 - Manston

- Continued sustainable development of storage and logistics hub.
- Further development of manufacturing facilities.
- Construction of commercial premises as part of Research and Development hub.

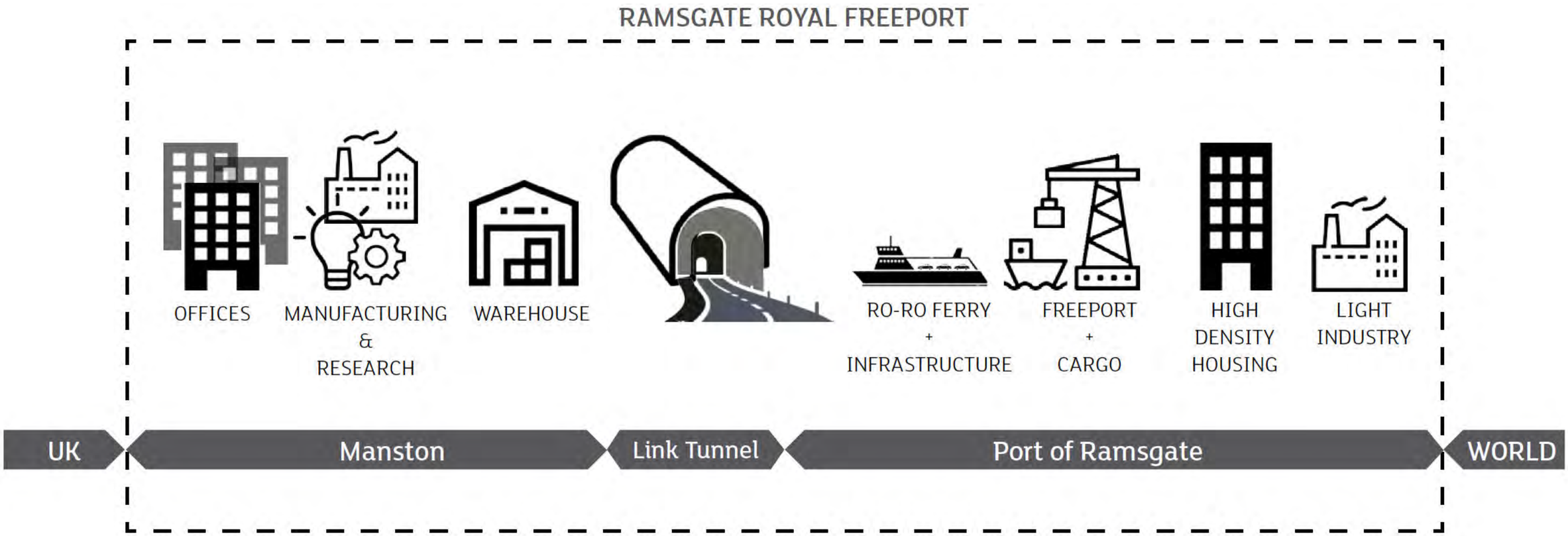
Linking Infrastructure

- Upgrade of existing roads as required.
- Construction of new pedestrian and cycle route connecting Manston with Thanet Parkway Train Station.

Connecting to the Town

- Development of Smack Boys Building for leisure use.
- Continued investment in restoration of Ramsgate's existing maritime history.
- Upgrade of Royal Marina facilities to achieve '5 anchor status'.

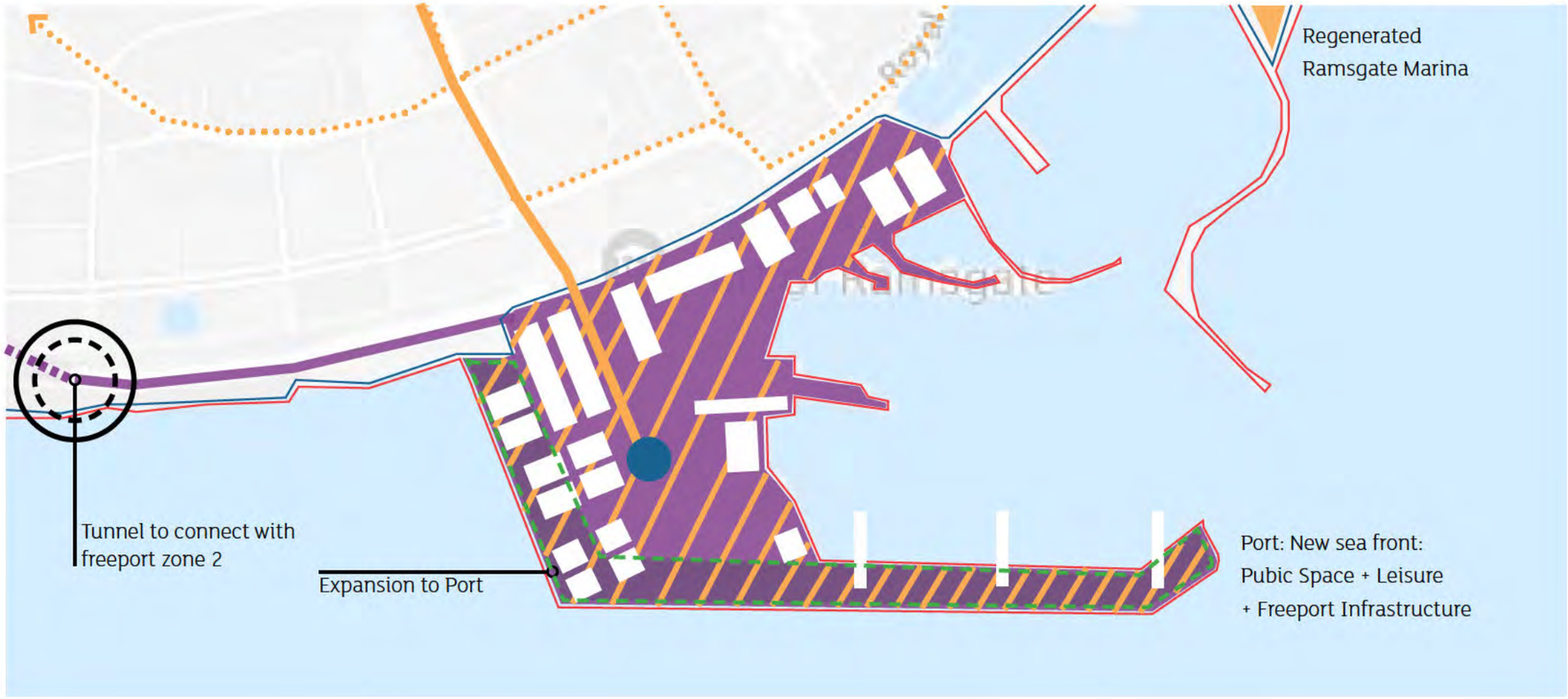
Ramsgate Royal Freeport
The Concept



Ramsgate Royal Freeport
Port of Ramsgate

Aspirations for a new Ramsgate Port:

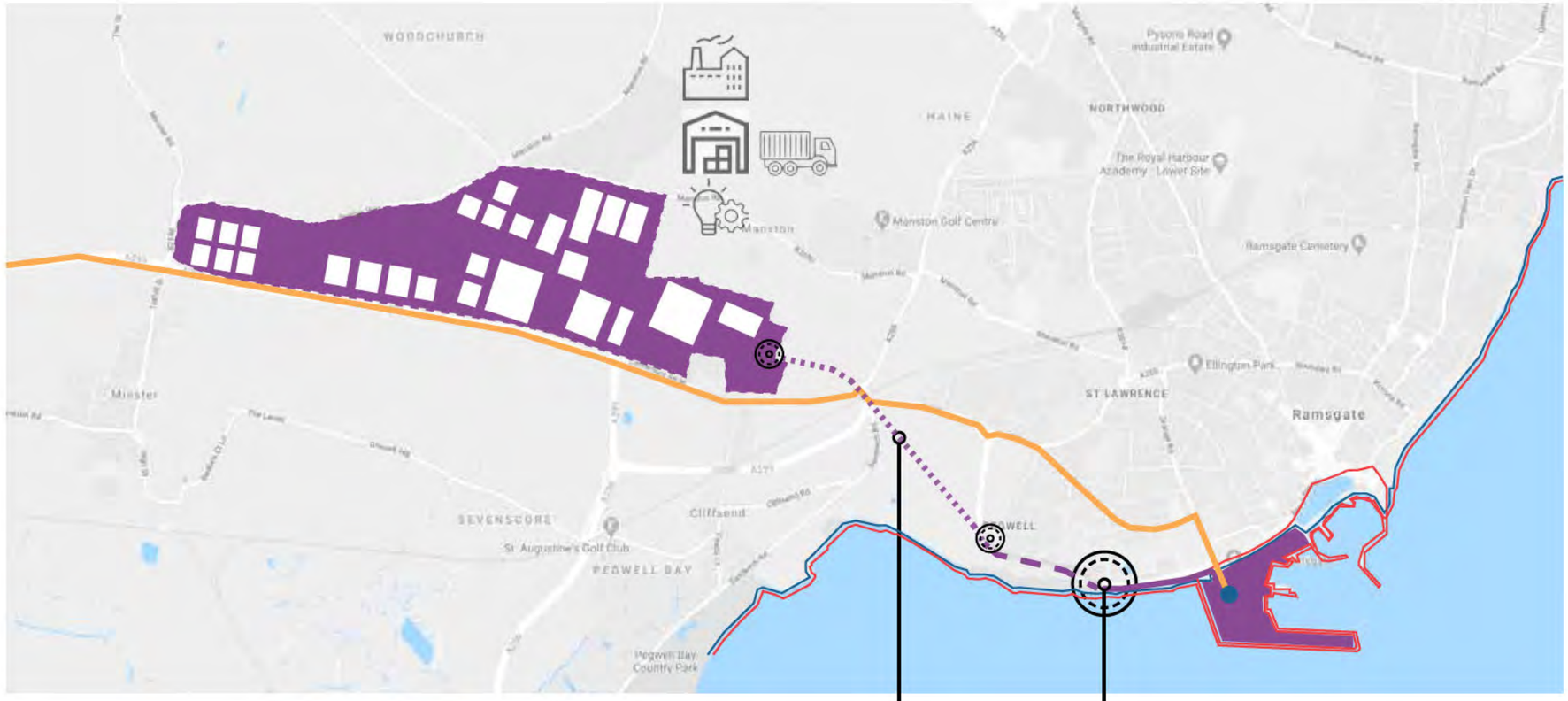
- Create cargo landing area for Freeport.
- Reintroduce and increase RoRo Ferry activities.
- Revitalise Facilities.
- Connect the port to the town.
- Build on Ramsgate's historic maritime history.
- Add leisure and residential offers.
- Boost light industry.
- Create jobs and enhance the local economy.



Ramsgate Royal Freeport
Manston

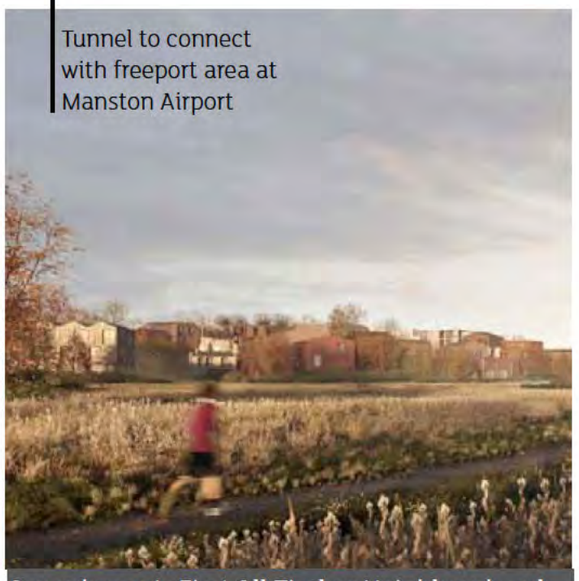
Aspirations for a new Manston:

- Create warehouses and storage for Freeport – a new logistics hub.
- Create high skilled jobs centred around manufacturing.
- Take advantage of tax advantages of Freeport.
- Promote research and development.
- Build homes for workers that will boost the population and economy.
- A sustainable and innovative development.
- Utilise existing transport infrastructure where possible.
- Link directly to port through extended tunnel.




Automated Warehousing Facility


BingDing Wood Kiln Factory Renovation

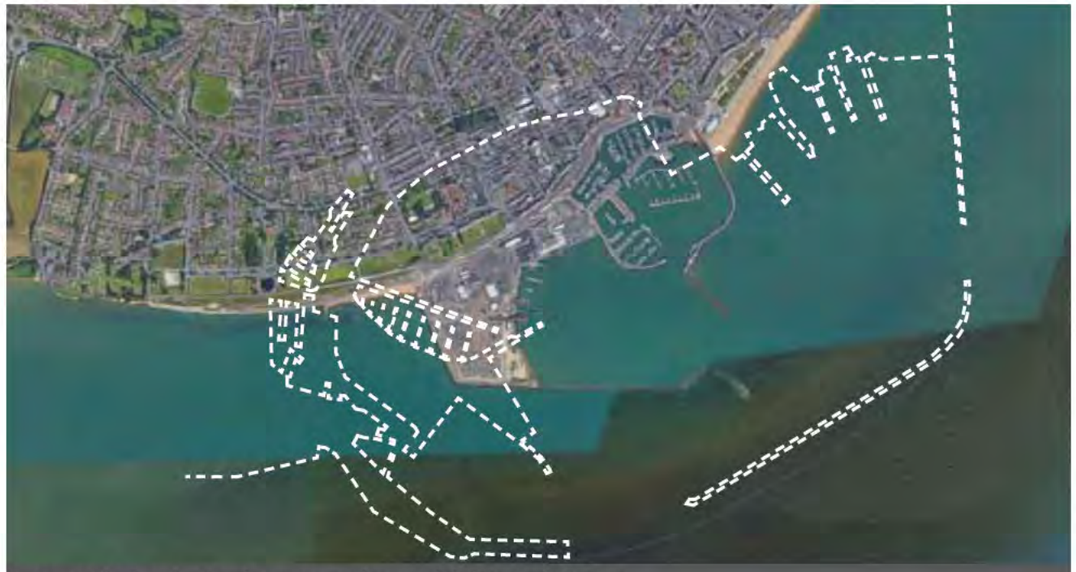

Copenhagen's First All Timber Neighbourhood

Ramsgate Royal Freeport

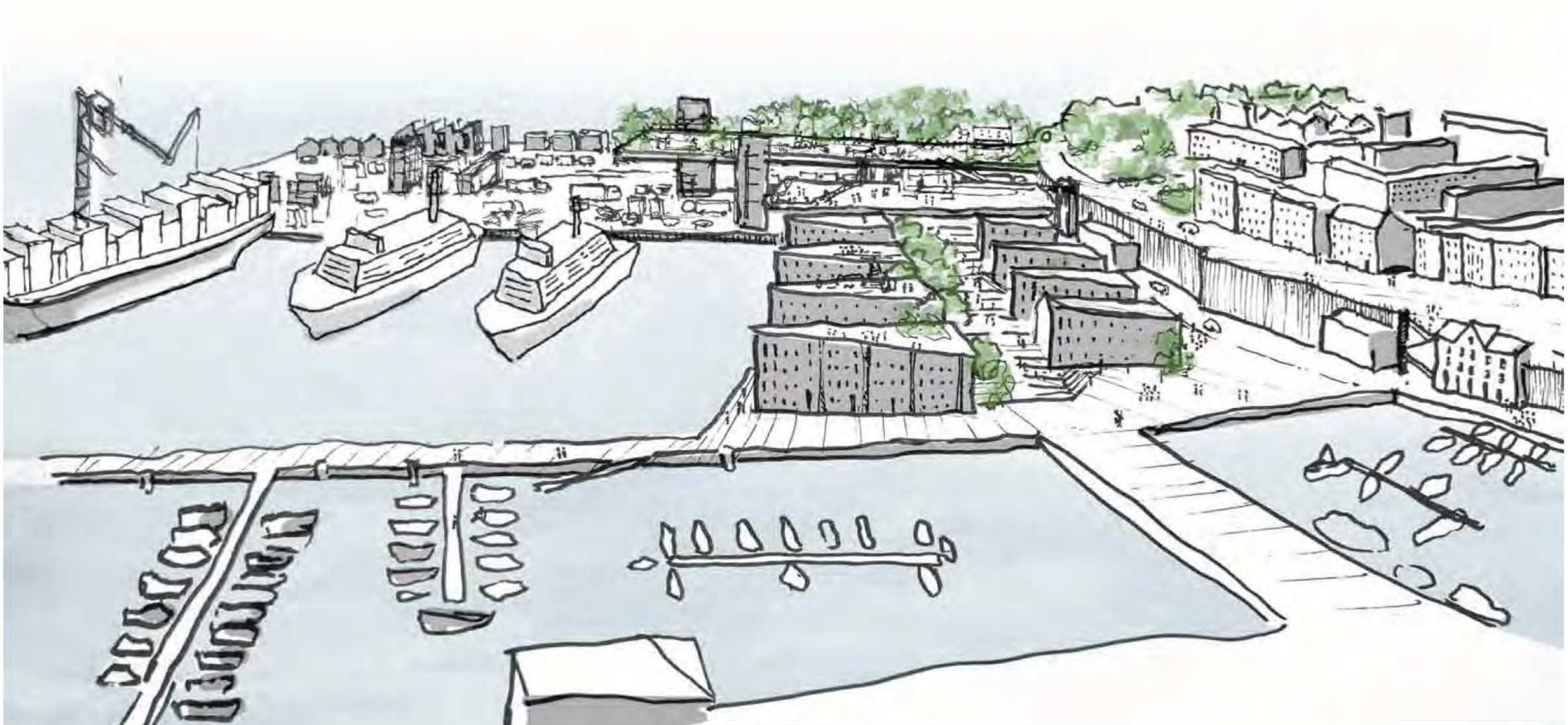
Scale Comparison with Port of Dover

- Utilise Freeport status to diversify Harbour offer.
- Create competitor to Dover.
- Utilise Ramsgate as Dover overspill.
- Maximise assets of site.

Port of Dover


Ramsgate Port - Scale comparison with Port of Dover

	Port of Dover	Port of Ramsgate
Opened	1606	1850
Available Berths	8	3 + 700 berths in marina
Piers	2	1
Passenger Traffic Capacity	13 M/year	2M/year
Area	1050 acres/4,249,200 sq. metres	32 acres/132,000 sq. metres
RoRo Bridges	5	3 - max. vessel length: 1 = 140m; 2&3 = 180m



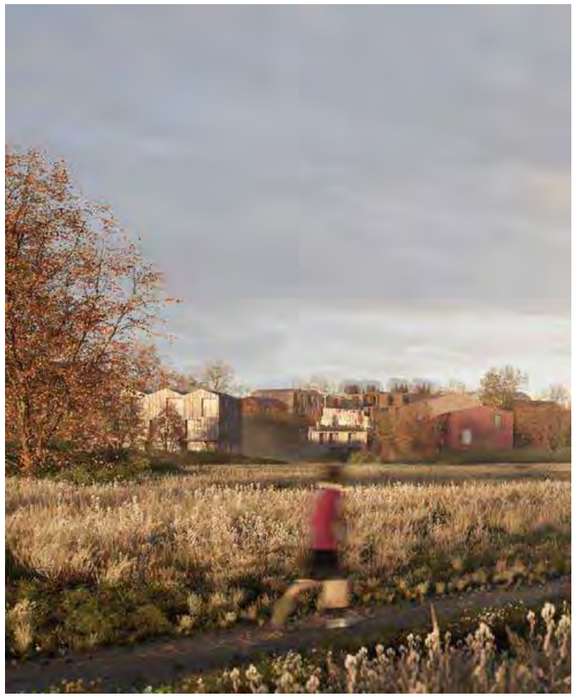
A New Vision for Ramsgate

Precedents
Ramsgate and Manston










From:	[redacted]
To:	transportandworksact@dft.gov.uk
Cc:	Manston Airport; Rob.Pridham@dft.gov.uk
Subject:	Representation relating to: NSIP: TR2020002 Proposed Manston Airport
Date:	14 June 2020 11:10:25
Attachments:	Manston Airport Airspace Change Proposal (ACP) Stage 2 DCO Evidence.rtf RSP Manston Explanatory Leaflet Stage 2.pdf RSP Manston Appendix A Technical Info Airport Options Dev Stage 2 v2 correction.pdf

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From: Chris Lowe. Interested party: 20014275

For the Attention of :

The Rt. Hon. Grant Shapps, The Secretary of State for Transport,Department for Transport,Zone 1/18, Great Minster House, 33 Horseferry Road, London SW1P 4DR

Copy to:
Planning Inspectorate, Nationally Significant Infrastructure Projects

Rob Pridham, Senior Planning Manager, Transport Infrastructure Planning Unit, East Wing, Albany House, 94-98 Petty France, Westminster, London, SW1H 9EA

Dear Sir,

As you are probably aware, the Applicant is seeking Airspace Change for its proposed airport, but the location of the proposed airport is such that it is impossible to find suitable flightpaths to enable the airport to operate.

So I attach my representations on this relevant new information that has been published recently with further details to assist you in refusing of this Application.

I hope that this is helpful to you.

Chris Lowe

[redacted]

From: Chris Lowe. Interested party: 20014275

Representation relating to: NSIP: TR2020002 Proposed Manston Airport

Manston Airport Airspace Change Proposal (ACP)

The submission below relates to the Applicant's Document Attached.

The Applicant's, River Oak Strategic Partnership (RSP), proposed Airspace Changes, are impossible to implement without devastating impacts on the area, and are therefore provided as evidence that the proposed airport cannot operate safely without endangering the health of thousands of people.

1 Over- Riding First Principles for Planning Airspace Change

On 20 May, 2020, the Independent Commissioner on Civil Aviation noise (ICCAN) wrote to the Secretary of State for Transport, The Rt Hon. Grant Shapps MP, and to the Parliamentary Under Secretary of State (Aviation), Kelly Tolhurst MP, stating that; "**Noise management is a key priority when aviation levels increase**".

He highlights the, perhaps obvious, fact: "One of the expected consequences of the quieter skies that many, though by no means all, communities are now experiencing is that subsequent increases in aviation activity levels will be even more noticeable."

Furthermore: "The public will need to trust that the rebuilding of the aviation industry – at whatever pace – is done in a sustainable way. The decisions taken when rebuilding cannot be at any cost and this applies to the detrimental effects of noise on the public, as much as it does to climate change concerns."

Please note that the Commissioner equates the need to manage noise and climate change.
Action is already taking place on the latter, so action is now needed on noise.

Also: "We must build on decisions taken recently by airlines, such as the early retirement of some of the older and noisier fleet of aircraft, and implement a clear, consistent and transparent approach to noise mitigation. Given the particular health impacts of noise on some communities around airports, it is of paramount importance that noise management and mitigation is properly considered."

For an airport that plans to be almost entirely for cargo, the Commissioner's statement about retiring older and noisier aircraft, is particularly relevant.

Cargo planes are usually of older design, or are passenger aircraft that "retire" into dedicated cargo planes.
They are therefore even noisier than passenger aircraft, and a fully loaded cargo plane will be slower and lower than its passenger equivalent, and therefore much more intrusive.

He also intends to shortly publish their work on noise metrics and other noise issues, with clear guidance on management of noise.

Therefore this guidance means that the Applicant's proposals are unacceptable.

2 Progress So Far, Paragraph 1.4

RSP state that "The work undertaken during Stage 1 helped to establish a prioritised shortlist of Design Principles to act as a framework against which Design Options will be drawn up."

However it is unclear what responses RSP had to the original list nor how the priorities were evaluated.

In view of the very significant objections to the airport and its associated air traffic it should be obvious that most objectors would place different priorities on the issues.

For example, this alternative list would place a higher priority on respondents concerns, rather than those seeking to operate the airport without concern for those affected.

REVISED TABLE 1

1	Procedures must be designed that minimise aircraft emissions to reduce air pollution
2	Designs must minimise the impact of noise on particularly sensitive areas
3	Procedures must minimise the impact of noise below 7,000 feet
4	Designs must make provision for multiple routes that can be used to spread the noise burden more equitably
5	Procedures must be designed to meet acceptable levels of flight safety
6	Procedures must be designed to minimise the number of track miles flown
7	Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it
8	Designs must minimise the impact on other airspace users in the local area

In addition, Priority 2, above, has had "Where practicable' deleted, because sensitive areas must be protected, and also none of the other principles say 'where practicable'.

Likewise "should seek to" has been changed to "must", because the priorities "minimise" impacts, so "should seek to" is too vague, and easily whitewashed away.

RSP may say that Priority 5, "Procedures must be designed to meet acceptable levels of flight safety" must be a top priority, but that is putting the cart in front of the horse.

For example, if procedures which minimise aircraft emissions cannot be designed to be safe, then they would unacceptable.

So the initial design process must be to achieve Principles 1 to 4, and can then be assessed against 5 to 8.

As the Ramsgate Town Council response to RSP has shown, this process would yield no acceptable flight paths, hence it is obvious that the airport cannot operate, and these flight path proposals are unacceptable.

The only routes that might actually minimise impacts would be routes over the sea, well away from the coast and any bird migration routes.

This would also mean all departures on Runway 28 to the west, and then turning right over the sea.

3 Design Options

The primary focus of any route, as noted above, must be to go over the sea, well away from the coast and any bird migration routes.

A1 Runway 28 Departures:

None of the routes Shown in Fig 1 are acceptable

In Figure 2, except for the three routes going north west, north and north east all others are unacceptable.

A2 Runway 10 Departures

None of the routes shown in Figure 4, Left hand departures and Figure 5 Right-hand departures are possible, because they all go over Ramsgate at low level, causing unacceptable noise, disturbance and pollution to the 40,000 people who live there.

A3 Runway 28 Approaches

Likewise none of the approaches shown in Figs, 7, 8 and 9 acceptable.

A4 Runway 10 Approaches

Similarly none of the options shown in figures 10 and 11, are acceptable because they all go over Herne Bay, which like Ramsgate, has some 40,000 people who would suffer unacceptable noise, disturbance and pollution.

The Revised Figure 12, also shows the unacceptable impacts over Ramsgate.

Hence the conclusion is that there are no routes are possible using both Runway 10 and Runway 28.

So the Applicant's airport proposals with associated airspace change are unacceptable and impossible to implement in this area.

Annex

Letter to Secretary of State for Transport, The Rt Hon. Grant Shapps MP, and to the Parliamentary Under Secretary of State (Aviation), Kelly Tolhurst MP from ICCAN

The Rt Hon. Grant Shapps MP, Secretary of State for Transport Kelly Tolhurst MP, Parliamentary Under Secretary of State (Aviation) Department for Transport Great Minster House 33 Horseferry Road London SW1P 4DR

Dear Secretary of State for Transport and Minister for Aviation,

Noise management a key priority when aviation levels increase

20 May 2020

When the Independent Commission on Civil Aviation Noise (ICCAN) published our first Corporate Strategy in the spring of 2019, we could scarcely have imagined the events to come and the impact Covid-19 would have on the aviation industry.

My fellow ICCAN board members and I feel a great deal of empathy for the many thousands of people employed in the aviation industry, and the uncertainty that lies ahead. I know that you and your teams will be focussed on the industry's recovery, which will be vital in returning our nation to something like normality. As the independent body that advises on aviation noise, we are ready to play our role in shaping the way noise is managed as the industry recovers.

We see current events – and I write this with utmost sensitivity – as an opportunity for a re-think about the way aviation noise is considered when both strategic and operational decisions are taken about the future of aviation. One of the expected consequences of the quieter skies that many, though by no means all, communities are now

experiencing is that subsequent increases in aviation activity levels will be even more noticeable.

The public will need to trust that the rebuilding of the aviation industry – at whatever pace – is done in a sustainable way. The decisions taken when rebuilding cannot be at any cost and this applies to the detrimental effects of noise on the public, as much as it does to climate change concerns.

In the understandable desire to rebuild aviation swiftly and efficiently, not being seen to prioritise aviation noise management is likely to generate a significant negative reaction from local communities. This, we believe, could have considerable momentum as the awareness of aviation activity increases towards pre Covid-19 levels.

We must build on decisions taken recently by airlines, such as the early retirement of some of the older and noisier fleet of aircraft, and implement a clear, consistent and transparent approach to noise mitigation. Given the particular health impacts of noise on some communities around airports, it is of paramount importance that noise management and mitigation is properly considered as activity levels pick up again and, in due course, the modernisation of our airspace is begun.

Independent Commission on Civil Aviation Noise Spaces, Albion House High Street Woking GU21 6BG

The events of the last few months have also required us to review and revise ICCAN's work programme, and in the next few weeks we will publish our plans for the second year of our two- year Corporate Strategy and work programme. Given the impact on the levels of aviation activity, we have chosen to use the summer 2020 period to collect and analyse data on aircraft movements, noise monitoring and attitudes around airports – a unique opportunity for us to use data to understand the impact as such historic low levels of activity begin to increase.

We also intend to publish our work on metrics before the summer recess, in which we will set out our opinion on improvements required to the way in which aviation noise is monitored, measured, analysed and published. This publication will set out a framework of improvements to the consistency, reliability and transparency of noise measurement – one step further along the path to rebuilding the trust between communities and the industry.

While we have a number of other ongoing projects and lines of enquiry in our work programme, our activity this year will build towards our advice to Government on the future of aviation noise regulation; we expect to deliver this by the end of the year. We are already clear that in many aspects of noise management, increased consistency and transparency across the UK is required.

The best practice guidance we intend to produce in the coming months on issues such as consultation and engagement, insulation, metrics and operational procedures will be framed along those lines.

When the time is right, I would be delighted to meet you to discuss ICCAN's role in giving guidance on noise management during the recovery of the aviation industry, and how we can advise government as it re-considers the Aviation 2050 strategy and white paper.

I am copying this letter to the Ministers responsible for transport in the devolved nations, with whom I would be equally keen to meet and discuss our role in managing aviation noise.

Yours sincerely,

Rob Light Head Commissioner, ICCAN

2

RSP | Manston Airport

Designing safe, efficient and sustainable airspace

Stage 2: Developing and Assessing design options

About RSP and Manston Airport

RiverOak Strategic Partners (RSP) has plans to revive Manston Airport on the Isle of Thanet in Kent as a successful freight hub, with complementary passenger and engineering services.

RSP is awaiting a decision from the Government on its application for a Development Consent Order (DCO) to reopen Manston. In the meantime, as part of the Government's Airspace Modernisation Strategy, RSP is developing an Airspace Change Proposal to establish airspace and operating procedures for flights to and from Manston if the DCO is approved.

About the airspace change process

The airspace change process is a lengthy one and can take more than two years to complete. By starting this process now, we can ensure that, should permission be given to reopen Manston, flights will operate as safely, efficiently, and sustainably as possible from the start. It is also important to coordinate this process with the wider airspace modernisation programme, as there is a high degree of interconnectedness between each piece in the UK's airspace jigsaw.

Airspace change is overseen by the Civil Aviation Authority (CAA), the UK's aviation regulator, following the guidance set out in its CAP1616 publication and led by a change sponsor – in this case, RSP.

The story so far

The CAP1616 guidance consists of seven stages and a series of gateways at which CAA approval is required before moving on to the next part of the process.

Step 1b of stage 1, in which design principles were identified, was completed for Manston in February 2020 following engagement with representatives of the aviation sector and local communities.

We are now progressing stage 2, during which a comprehensive list of options for airspace change will be developed and an initial appraisal made of the impacts of each option.

We are seeking your input again as we develop design options which align with the design principles you helped us shape in stage 1. It is important that we understand and consider any concerns you have related to the design options.

Design options for consideration

Our proposed design options are set out in detail in *Appendix A – Manston Airport Airspace Design and Procedures*.

In line with the requirements to consider a comprehensive list of options, this document shows all possible options for departures from and arrivals to runway 28 and runway 10 (the designations for Manston's runway when operated in each direction).

Our commitment to stakeholder engagement

Effective stakeholder engagement underpins the airspace change process.
The CAA suggests that contact in the early stages of the process (ahead of a wider public consultation in stage 3) is primarily with stakeholders' representatives, such as local authorities and industry groups.

Throughout the process, documents will be shared on the CAA's online portal (https://airspacechange.caa.co.uk/)

At the outset of this stage we sought initial feedback from air navigation service providers at neighbouring airports to ensure any critical technical and operational interdependencies have been considered. We would now like to hear from the wider aviation community and local community representatives with any views on our long list of options.

How to have your say

Please send any comments to
manstonairspace@communityrelations.co.uk by 22 May.

Your feedback will enable us to further refine the design options ahead of focus groups for aviation and community representatives which we plan to hold in June.

An invitation to join the focus groups will follow later this month, including details of how these focus groups will be held given the need to comply with current constraints on face-to-face meetings.

What happens next?

Having considered feedback on the long list of design options and evaluated them against the design principles developed in step 1b, we will carry out an initial appraisal of the impacts of each option identified.

The CAA will review work undertaken at this stage before approving progress to stage 3 (consultation).

RSP | Manston Airport

Appendix A – Manston Airport Airspace Design and Procedures

Options Development Part 2

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Glossary

Acronym	Meaning
ACP	Airspace Change Proposal
AMS	Airspace Modernisation Strategy
amsl	above mean sea level
ANSP	Air Navigation Service Provider
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
DCO	Development Consent Order
FASI-S	Future Airspace Strategy Implementation - South
ft	feet
GA	General Aviation
GNSS	Global Navigation Satellite System
IAP	Instrument Approach Procedure
IFP	Instrument Flight Procedure
ILS	Instrument Landing System
LAMP	London Airspace Modernisation Programme
LTMA	London Terminal Manoeuvring Area
MAP	Missed Approach Procedure
NATMAC	National Air Traffic Management Advisory Committee
NDB	Non-Directional Beacon
PBN	Performance Based Navigation
RSP	RiverOak Strategic Partners Ltd
SID	Standard Instrument Departure

1. Options Development

1.1 Introduction

The purpose of this document is to seek the input of key stakeholders in the development of the design options that address the requirements of the Manston Airport Airspace Change Proposal (ACP). This ACP concerns the introduction of appropriate Performance Based Navigation (PBN) flight procedures and airspace to enable safe operations at the redeveloped airport.

1.2 Background

Manston Airport is a disused airport on the Isle of Thanet in Kent. It has one of the longest and widest runways in the UK, comparable to other international airports, making it a valuable infrastructure asset. RiverOak Strategic Partners (RSP) is proposing to secure the future of this valuable national asset by redeveloping and reopening it as a successful hub for international air freight which also offers passenger travel, executive travel and aircraft engineering services.

RSP has applied to the Planning Inspectorate for a Development Consent Order (DCO) to build Manston Airport and a decision is expected in May 2020. In addition, RSP must also secure approval from the CAA, through the CAP 1616 process, for its use of airspace and procedures.

This document relates only to the CAP 1616 process and the proposal to introduce the airspace and Instrument Flight Procedures (IFPs) required to enable safe and efficient operations to and from the airport.

1.3 CAP 1616 Airspace Design Guidance

CAP 1616 is a seven-stage process published by the CAA that provides guidance on the process to follow when seeking to change the way airspace is used. The whole Manston Airport CAP 1616 process is envisaged to take 2½ years. The seven stages of the process are as follows:

- Stage 1 – Define
- Stage 2 – Develop and Assess (current stage)
- Stage 3 – Consultation
- Stage 4 – Update and Submit
- Stage 5 – Decide
- Stage 6 – Implement
- Stage 7 – Post-Implementation Review

Manston Airport is currently at Stage 2 which requires the development of options that seek to meet the original Statement of Need. The options are required to align, where practicable, with the Design Principles generated in Stage 1. These options are then assessed to understand the positive/negative impacts before progressing to the Stage 2 Gateway. There is a formal public consultation in Stage 3, but this document is your opportunity as a key stakeholder involved in the development of the Design Principles to contribute early and help influence the design options taken forward to Stage 3. Outside the formal consultation windows, when we are asking for you to contribute, we will still listen to what you have to say about the proposal or generally about our operations.

1.4 Progress So Far

In November 2018, RSP submitted a Statement of Need to the CAA. This is the formal explanation as to why RSP wishes to make changes within the airspace surrounding the Airport. The CAA indicated that an airspace change was an appropriate mechanism to achieve the objectives in the Statement of Need. A copy of the Statement of Need and other associated documentation can be viewed at https://airspacechange.caa.co.uk/PublicProposalArea?pID=112.

At the end of February 2020, the first stage in the change process was successfully completed when the RSP submission for Manston Airport passed through the CAA's Stage 1 DEFINE Gateway.

The work undertaken during Stage 1 helped to establish a prioritised shortlist of Design Principles to act as a framework against which Design Options will be drawn up. The prioritised list of Design Principles is shown in Table 1 below.

Priority	Design Principle
1	Procedures must be designed to meet acceptable levels of flight safety
2	Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it
3	Procedures should be designed to minimise the impact of noise below 7,000 feet
4	Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas
5	Designs should minimise the impact on other airspace users in the local area
6	Procedures should be designed that minimise aircraft emissions to reduce air pollution
7	Designs should make provision for multiple routes that can be used to spread the noise burden more equitably
8	Procedures should be designed to minimise the number of track miles flown

Table 1 - Prioritised Design Principles

1.5 Step 2A – Options Development

Stage 2, Step 2A in the process is about the development of a potential long list of design options that seek to meet the original Statement of Need and are aligned with the Design Principles shown above. RSP has developed a comprehensive list of design options for Manston Airport which, with your input, will be refined to produce one or more options that address the Statement of Need and align with the defined Design Principles. RSP would like to ensure that stakeholder concerns have been properly understood and accounted for in designing these options. It is important to us that you are satisfied that the design options are aligned with the Design Principles and that we have properly understood and accounted for your concerns in designing options.

In addition, RSP will be hosting workshops (physically or virtually) to further engage with stakeholders to make sure that your views have been captured and demonstrate how this feedback has influenced the design options.

Once stakeholder feedback has been received, RSP will produce a Design Principle Evaluation that sets out how its design options have responded to the Design Principles.

1.6 Step 2B – Options Appraisal

The second part of Stage 2 (Step 2B) involves an assessment of the options in order to develop the short list of options that will be taken forward to Stage 3 (Consultation). Your input will assist us in developing the shortlist. Any options that are unviable and cannot be taken forward, or any restrictions on the design options developed, will be clearly explained to the stakeholders, with the appropriate evidence to support the reasons. At the end of this Step 2B, RSP will submit details of the options developed to the CAA to pass through the Stage 2 DEVELOP AND ASSESS Gateway, currently programmed for 25th September 2020.

1.7 Next Steps

This engagement is focussed on those representative bodies and individuals that were involved in developing the Design Principles in Stage 1, who can offer early views on behalf of their local communities, including elected community representatives, commercial aviation operators, including airlines, airports and Air Navigation Service Providers (ANSPs), representatives of local General Aviation organisations or clubs and members of the National Air Traffic Management Advisory Committee (NATMAC).

Once the Stage 2 DEVELOP AND ASSESS Gateway has been passed, we will launch formal public consultation as part of Stage 3, in which we will be consulting widely with residents, businesses, communities, the public and other stakeholders. Details of the formal consultation will be communicated in due course, at which point RSP will welcome all relevant views about its ACP.

2 Design Options

2.1 Proposed Procedures

RSP is seeking to introduce Instrument Flight Procedures (IFPs) for aircraft departing from, and arriving at, the airport. IFPs is a term used to describe the published routes aircraft fly over the ground, both in plan and elevation view. These new procedures allow aircraft to make the best use of the airspace, utilising Global Navigation Satellite System (GNSS) technology to make more efficient use of the airspace around the airport by defining more accurate routing and to allow the airport to explore different options for the way aircraft will approach and depart the airport, whilst ensuring acceptable levels of safety.

RSP is proposing to introduce Standard Instrument Departures (SIDs), Transition procedures and Instrument Approach Procedures as part of this Airspace Change Proposal (ACP).

RSP has developed a comprehensive list of design options and would now like to share these with those representative bodies that contributed to the development of the Design Principles in Stage 1. We have already engaged with ANSPs in order to identify any constraints or restrictions that could influence the way in which the options are developed. This will enable us to ensure that any design options accord with the CAA's published Airspace Modernisation Strategy (AMS) and in particular, the Future Airspace Strategy Implementation – South (FASI-S).

We are now seeking further input from our stakeholders to initially identify the design envelopes, or swathes, in which the routes would be contained. This will be followed by an assessment of the route options that will be developed within the envelopes.

2.2 Departure - Standard Instrument Departure (SID)

A SID describes the route that an aircraft must fly on departure from an airport in order to connect safely with the en-route airspace structure. Aircraft will follow a designated route profile, including any altitude constraints, to a designated waypoint that forms part of the national airspace structure. As this ACP forms part of the FASI-S programme, the precise designated waypoints at the end of each SID are yet to be determined and will be developed by NATS as part of the London Airspace Management Programme (LAMP) Phase 2 ACP.

2.2.1 Runway 28 Departures

Figure 1 and Figure 2 in Annex A1 show all the possible options for departures from Runway 28. The red line extending from the runway indicates the route that aircraft could fly from the earliest possible turn after take-off. The blue arrows represent the directions that the aircraft could follow on departure and are representative only; aircraft could feasibly follow routes that are between the indicated arrows. The ends of the arrows represent the approximate location where the aircraft would reach 7,000 feet (ft) above mean sea level (amsl), the point at which they join the airways network above. In addition, the designed routes do not necessarily need to be straight lines and could involve turns in direction before reaching 7,000 ft. The different routes are depicted on two diagrams to avoid unnecessary clutter and, for instance, aircraft wishing to depart on a northerly heading could either continue to turn left after take-off until heading north (a 270° turn as shown in Figure 1), or turn right after take-off directly onto a northerly heading (as shown in Figure 2).

Figure 3 in Annex A1 depicts the region of airspace in which, departure procedures from Manston Airport would conflict with procedures from other airports, most notably London City, Biggin Hill, Southend and Gatwick. The 3,000 ft and 4,000 ft lines represent the points at which departing aircraft from Manston are likely to reach these heights and might interact with other airports' procedures. It would be feasible to plan the new procedures within this area but in this case, we will continue to liaise and coordinate with other FASI-S sponsors to resolve any interactions. Once aircraft reach the 5,000 ft line and shaded area, they are likely to conflict with these procedures, as well as the flow of air traffic in the airspace above (the London Terminal Manoeuvring Area (LTMA)) and the Danger Area EG D138. As such, the shaded area will become a constraint on the design options for Runway 28 departures.

2.2.2 Runway 10 Departures

Figure 4 and Figure 5 in Annex A2 show all the possible options for departures from Runway 10. The layout of these diagrams is the same as described for Runway 28 departures in paragraph 2.2.1 above.

Figure 6 in Annex A2 depicts the region of airspace in which, departure procedures from Manston Airport would conflict with procedures from other airports, most notably London City, Biggin Hill and Southend. After take-off, the aircraft could turn left or right, but in either case, the 3,000 ft and 4,000 ft lines represent the points at which departing aircraft from Manston are likely to reach these heights, and might interact with other airports' procedures. In this case, we will continue to liaise and coordinate with other FASI-S sponsors to resolve any interactions. Once aircraft reach the 5,000 ft line and shaded area, they are likely to conflict with these procedures, as well as the flow of air traffic in the airspace above (the LTMA) and the Danger Area EG D138. As such, the shaded area will become a constraint on the design options for Runway 10 departures.

2.3 Arrival - Transitions

The Transitions describes the route that the aircraft will take when arriving at an airport from the en-route network to the Initial Approach Fix (see paragraph 2.4) for an Instrument Approach Procedure (IAP). These are represented by the green arrows in Figure 7 (Annex A3) and Figure 10 (Annex A4).

2.4 Arrival - Instrument Approach Procedure (IAP)

The IAP is the final stage of flight as an aircraft arrives at the airport to land, detailing the route and descent profile that an aircraft must follow to ensure safe deconfliction from ground obstacles in the final, critical stages of flight. It also includes a Missed Approach Procedure (MAP) that details what the aircraft should do in the event of not being able to land off the approach. Manston Airport is planning on introducing IAPs that will use satellite navigation technology to guide the aircraft as well as procedures that utilise a ground-based Instrument Landing System (ILS) and Non-Directional Beacon (NDB). An ILS is a as a precision runway approach aid based on two radio beams which together provide pilots with both vertical and horizontal guidance during an approach to land; an NDB is a non-precision approach, as there is no vertical guidance, used by small General Aviation (GA) aircraft.

An IAP is designed to align an aircraft in a direction that will enable it to make a safe approach to land at the designated runway at an airport. Aircraft will need to be lined up with the runway from 5 nautical miles (nm) in order to carry out the approach procedure safely. Aircraft can carry out a maximum turn of a 90° in order to line up with the runway. This is indicated by the red lines perpendicular to the final approach track, shown in Figure 7 in Annex A3 (for Runway 28) and Figure 10 in Annex A4 (for Runway 10). Different approach procedures can be designed for intermediate positions, as shown by the additional red lines in these figures.

The red shaded areas in Figure 8 in Annex A3 (for Runway 28) and Figure 11 in Annex A4 (for Runway 10) show the region in which feeding traffic from the en-route network onto the approach procedure will be challenging due to the confliction with traffic flows on the arrival procedures for London City and Biggin Hill Airports. As such, the shaded area will become a constraint on the design options for the arrival transitions at Manston Airport.

Figure 9 in Annex A3 shows the possible options for the MAP for Runway 28 and Figure 12 in Annex A4 shows the possible options for the MAP for Runway 10. If aircraft are unable to land off an approach for any reason, they will execute the MAP which will involve a climb to a nominated altitude (generally approximately 2 – 3,000 ft) and proceed to a nominated position (the Hold) to await Air Traffic instructions to carry out a further approach procedure. The blue lines on Figure 9 and Figure 12 represent the routes that the aircraft could follow. No Hold positions have been indicated at this stage and it is anticipated that this will evolve from stakeholder discussions, but these procedures will again need to be cognisant of the arrival flows into London City and Biggin Hill Airports.

2.5 Design Envelopes – Your Input

RSP is requesting your input in relation to any areas on the figures in Annexes A1-A4 where you consider that the design envelopes should or should not be. It is these design envelopes that will ultimately contain the specific route options that will be shared with you for further consideration.

RSP is seeking any views or comments that stakeholders may wish to express regarding the comprehensive design envelopes shown in Annexes A1 to A4 below in order to refine the envelopes before developing some specific route options for the procedures.

2.6 How to Respond

2.6.1 By email

Please send us your comments and views via email to the following address:
manstonairspace@communityrelations.co.uk

It is important that individual email responses, subject heading 'Manston ACP Stage 2',
clearly show your name and contact details; this will allow us to cross refer to the emails we send out.

Please return any responses by **Friday 22nd May 2020.**

2.6.2 By Teleconference

If you wish to provide your input via a teleconference/online method, please send your contact details and preferred meeting method to the e-mail address above.

As described in paragraph 1.7, it is anticipated that the full public consultation will be conducted in 2021 and all participants will have a further opportunity to comment. RSP will ensure any views expressed at this stage will also be recorded and processed through to the full consultation.

A1 Runway 28 Departures

Figure 1 – Runway 28 Left-Hand Departures

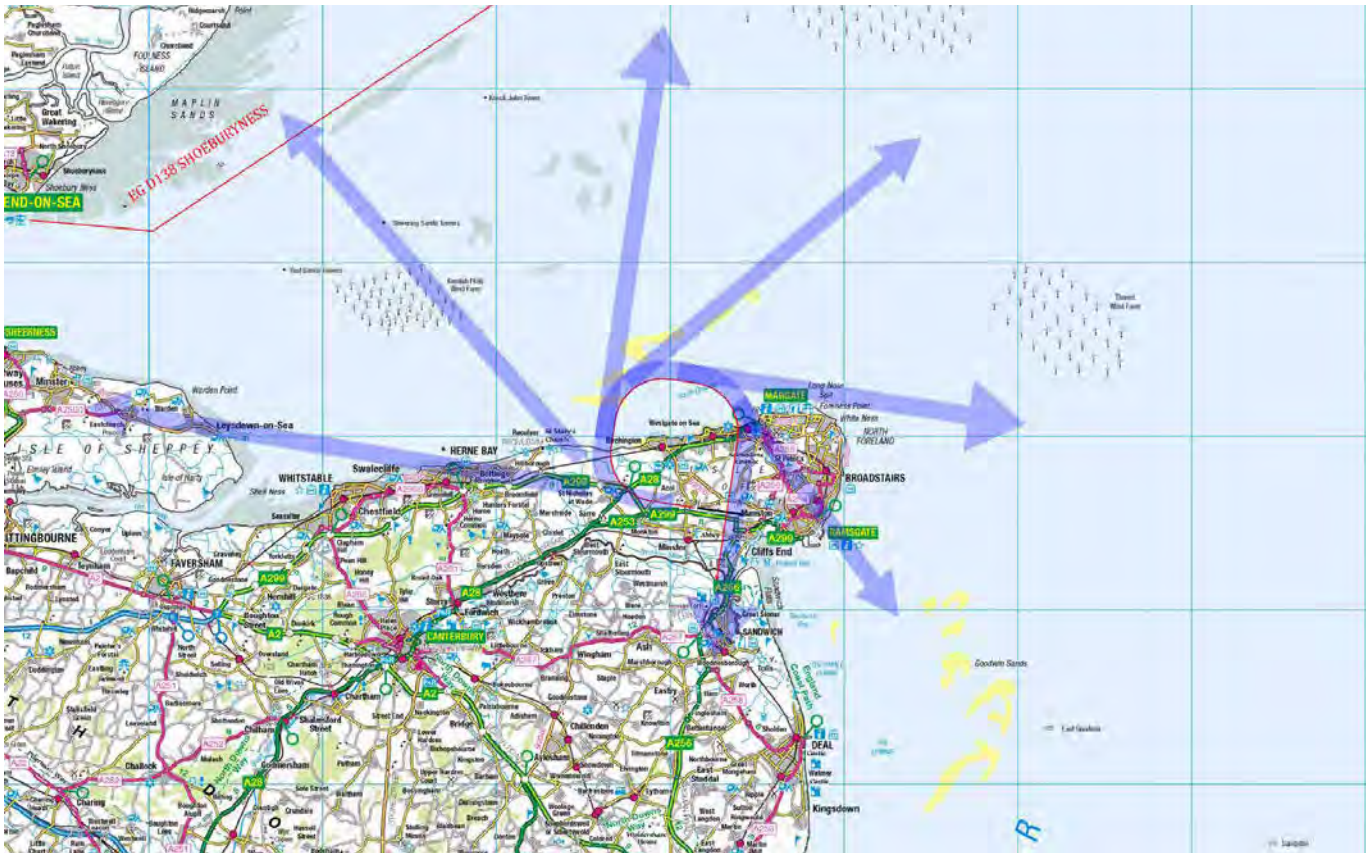


Figure 2 – Runway 28 Right-Hand Departures

Figure 3 – Runway 28 Departures ANSP Constraints

A2 Runway 10 Departures

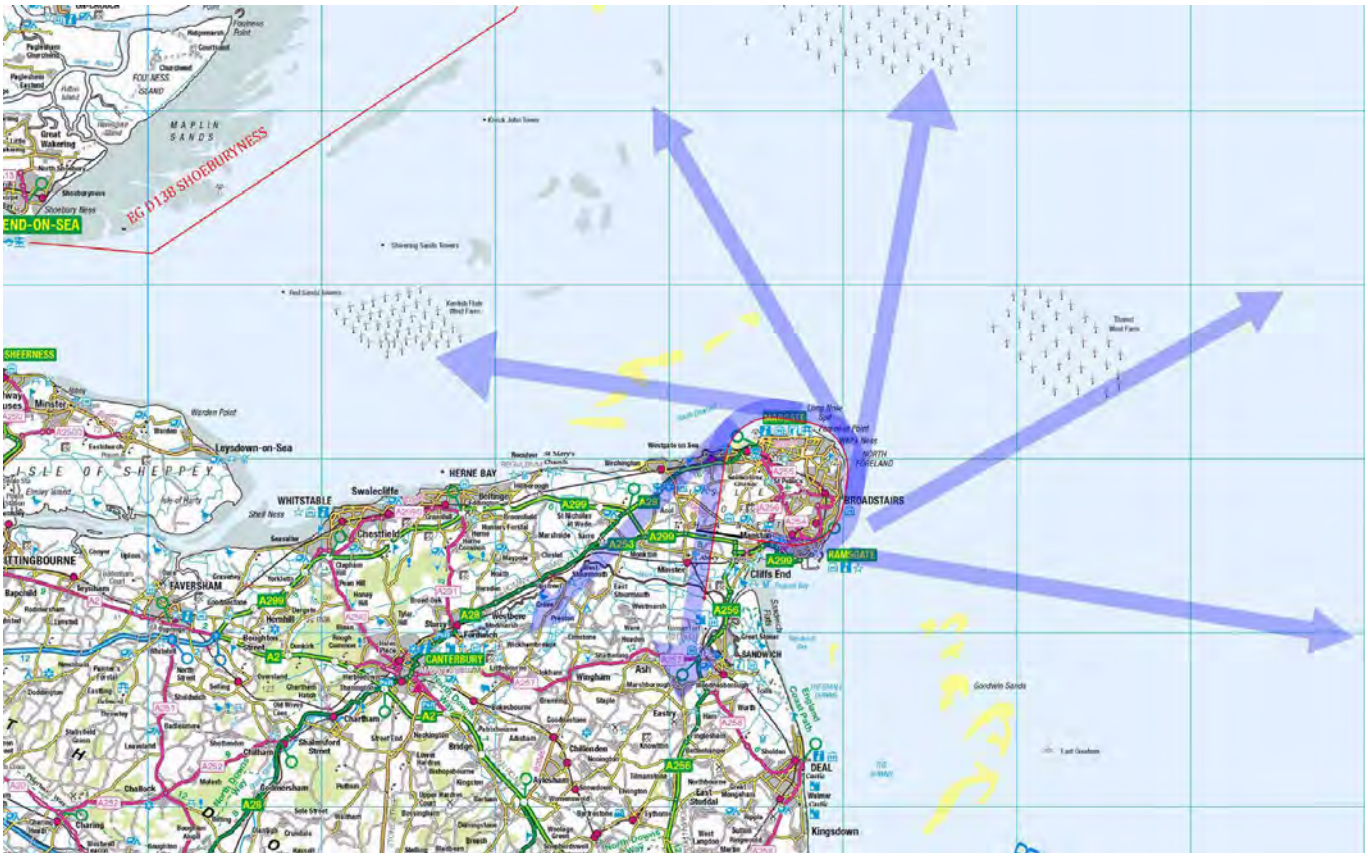


Figure 4 – Runway 10 Left-Hand Departures

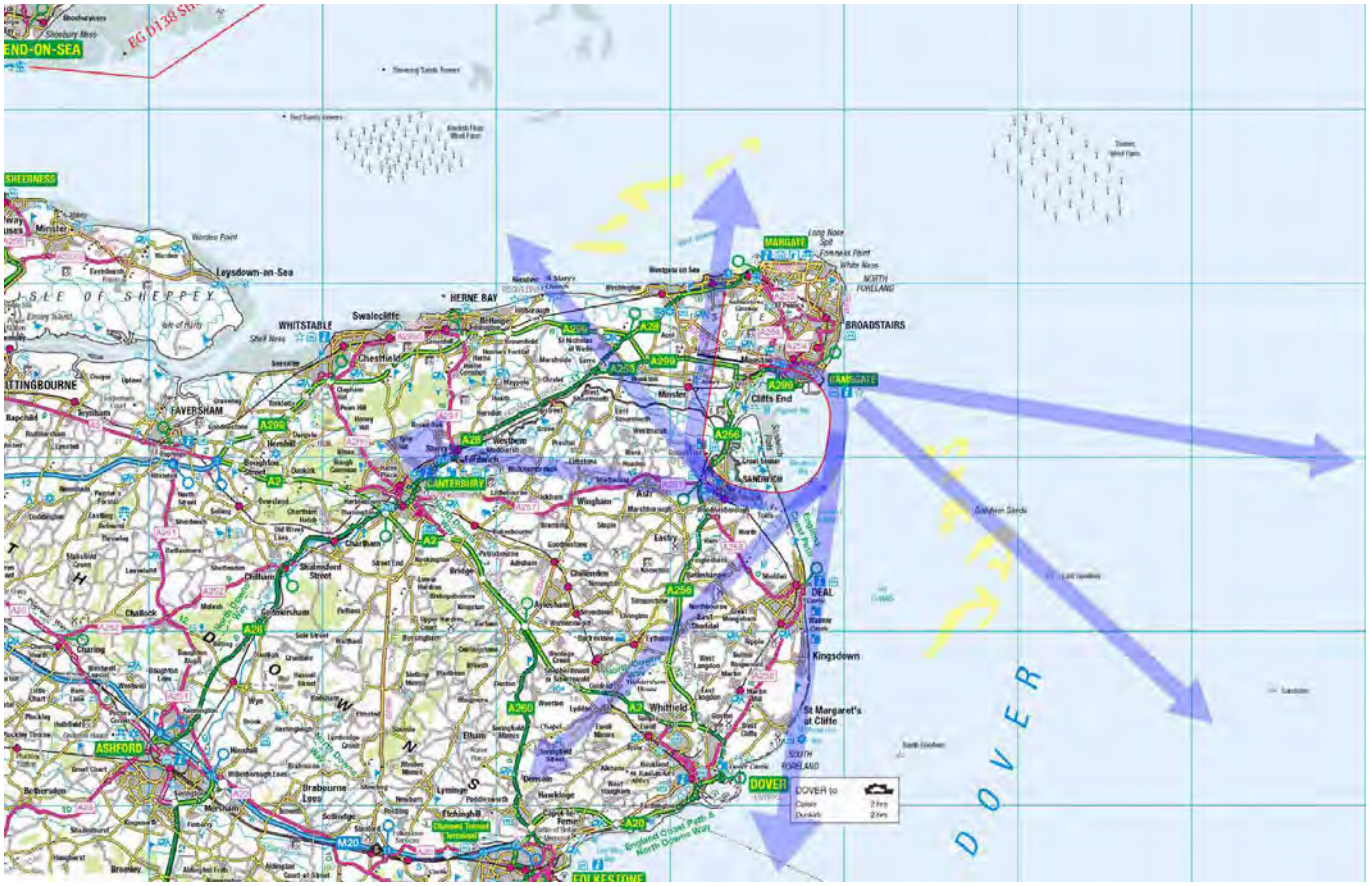


Figure 5 – Runway 10 Right-Hand Departures

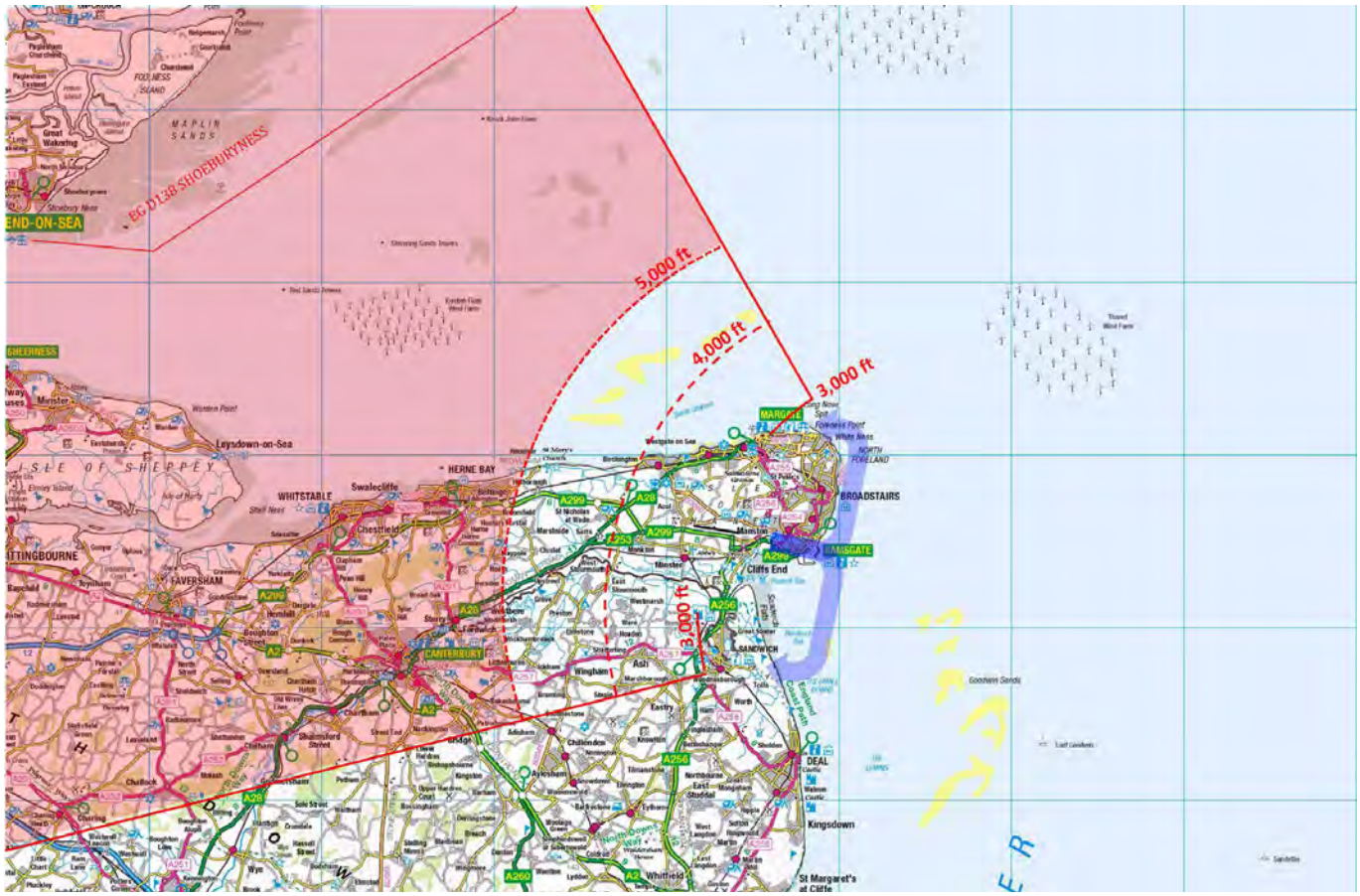


Figure 6 – Runway 10 Departures ANSP Constraints

A3 Runway 28 Approach and Missed Approach

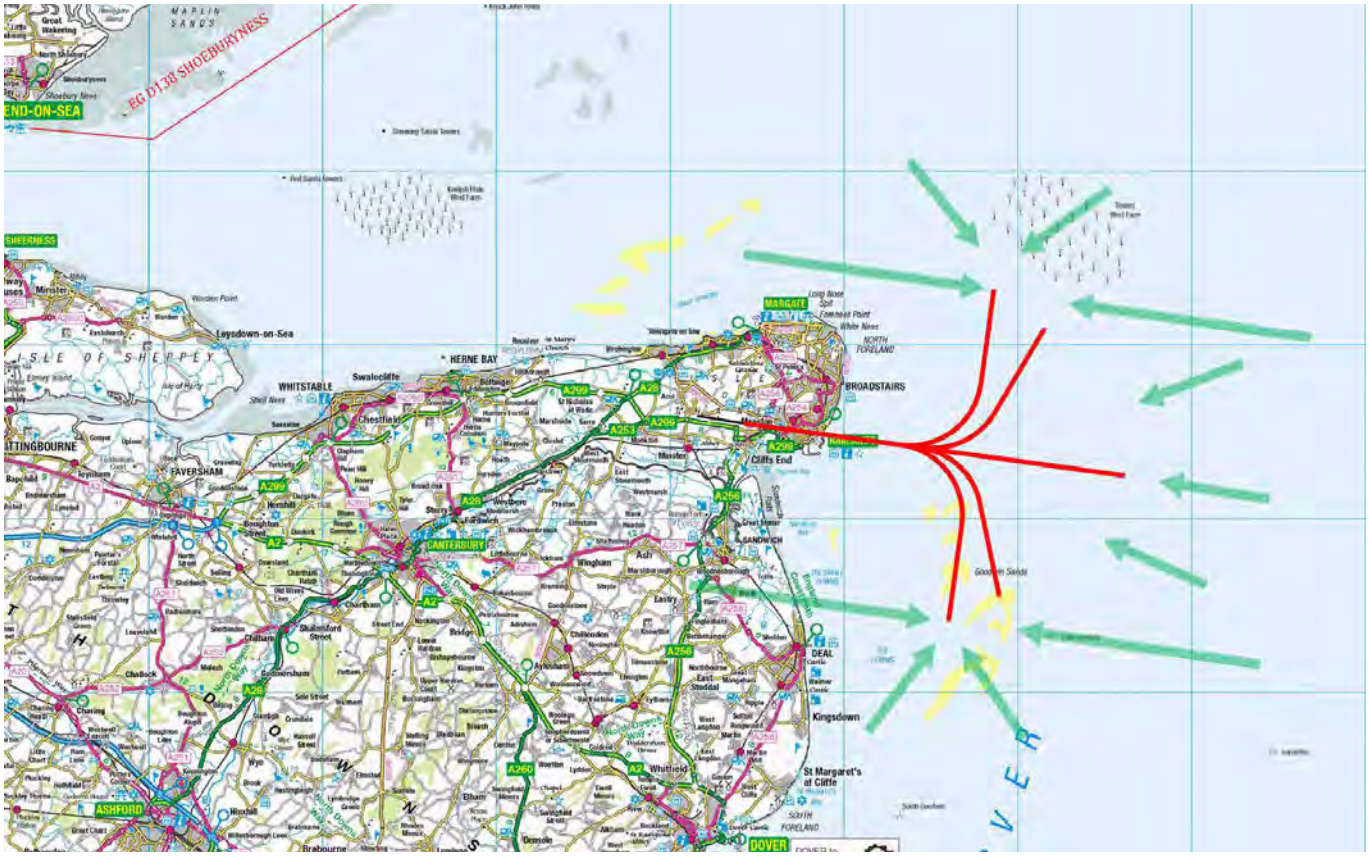


Figure 7 – Runway 28 Approach

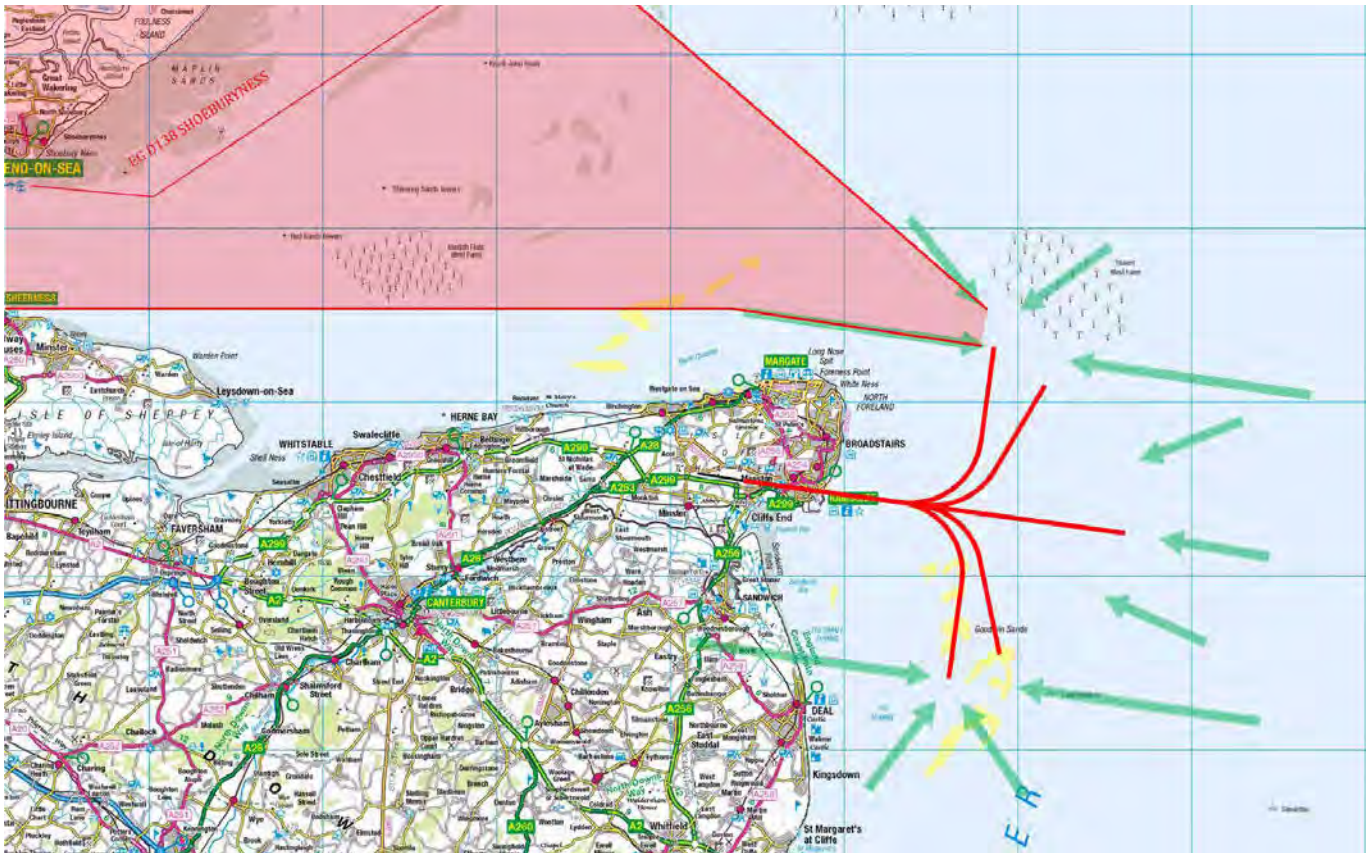


Figure 8 – Runway 28 Approach ANSP Constraints

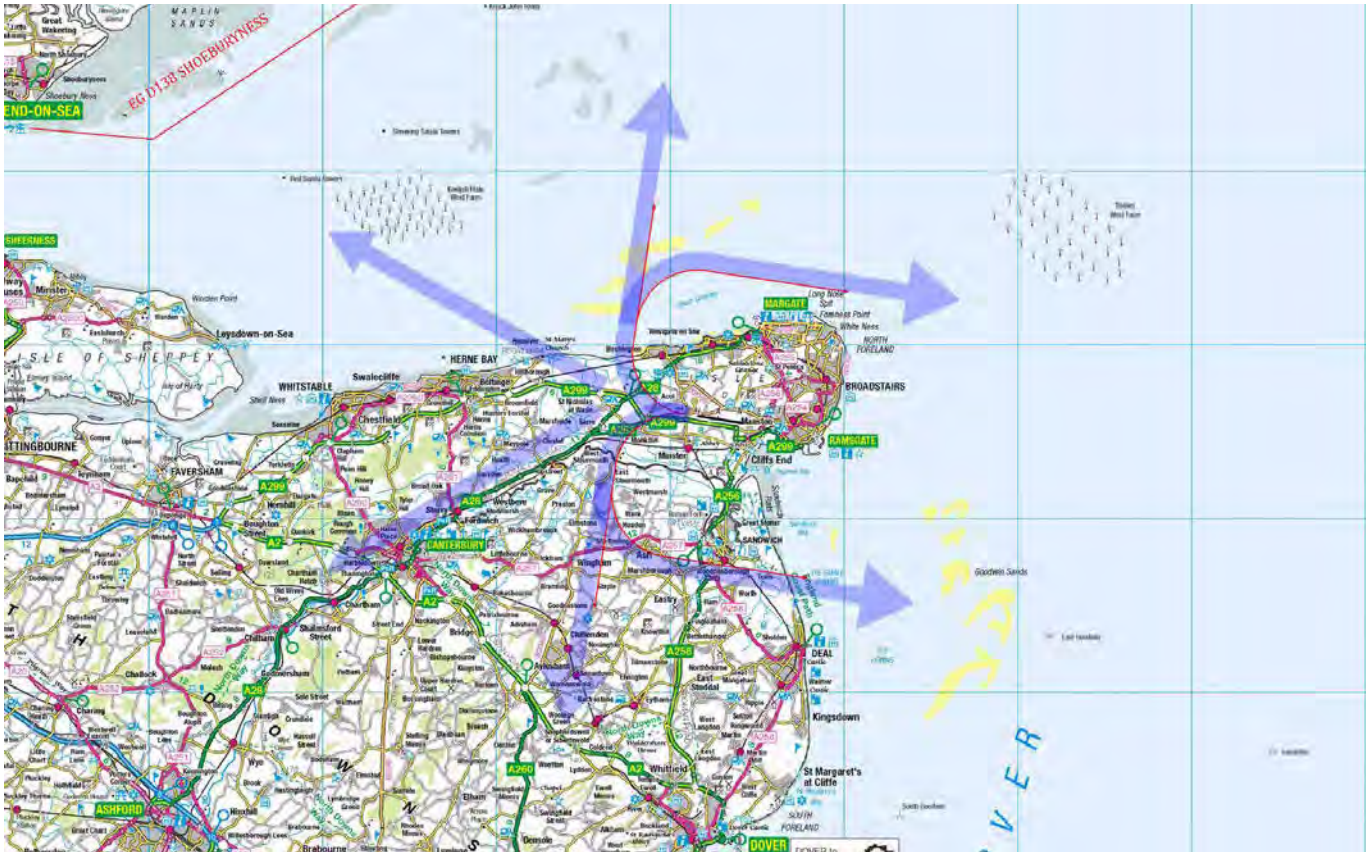


Figure 9 – Runway 28 Missed Approach

A4 Runway 10 Approach and Missed Approach

Figure 10 – Runway 10 Approach

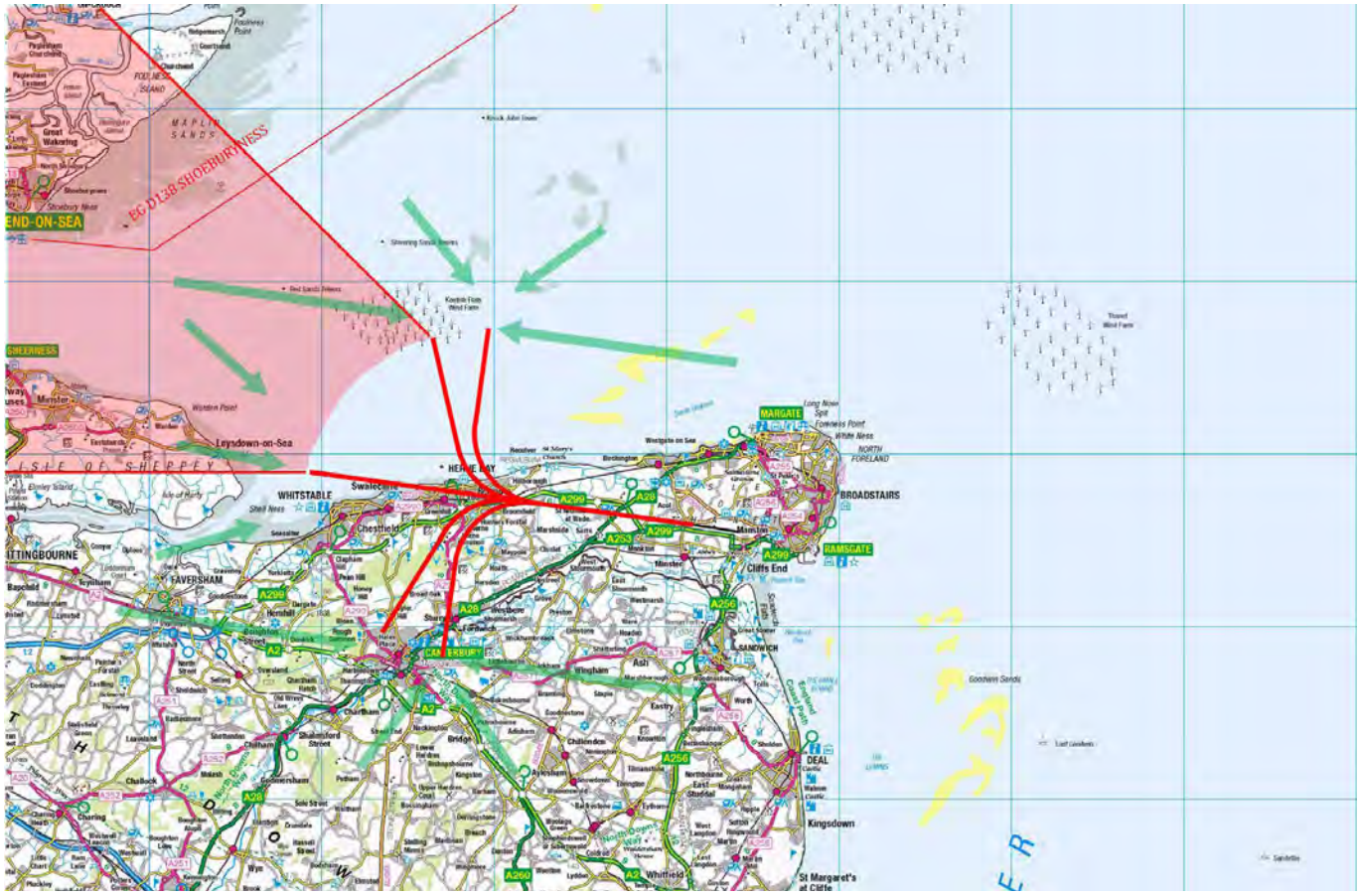


Figure 11 – Runway 10 Approach ANSP Constraints

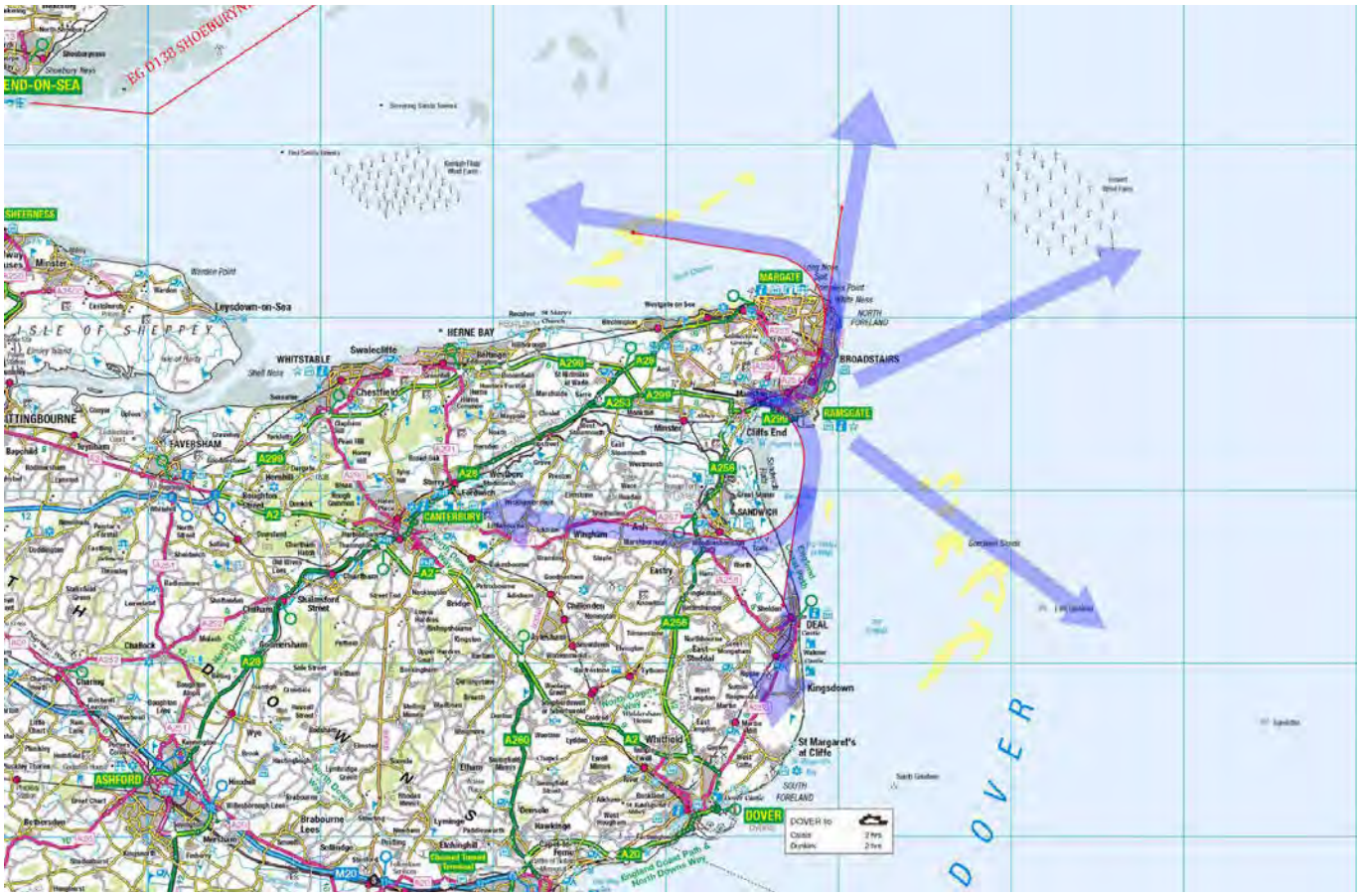


Figure 12 – Runway 10 Missed Approach

RSP

Manston Airport

www.rsp.co.uk

RSPManston @RSPManston

From:	WALKER Angus
To:	"Rob Pridham"
Cc:	Susan Anderson; Manston Airport; GRAHAM Jessica
Subject:	RE: MANSTON AIRPORT DCO APPLICATION -UNILATERAL UNDERTAKINGS [BDB-BDB1.FID9947610]
Date:	17 June 2020 16:35:55
Attachments:	image003.png Manston Airport - Unilateral Undertaking - TDC - 17.06.20.PDF Manston Airport - Unilateral Undertaking - KCC - 17.06.20.PDF

Dear Mr Pridham

Please find newly signed and dated versions of the two unilateral undertakings attached.

Rather han date the ones that were signed on 31 January, we have adopted this approach because due to a combination of Covid-19 restrictions and the fact that we are in the middle of an office move, we were not sure that the originals could have been retrieved from their current location in off-site storage, dated and sent to you in time.

Kind regards

BDB PITMANS

Angus Walker **Partner**
T +44 (0)20 7783 3441
[redacted]

For and on behalf of BDB Pitmans LLP

From: Rob Pridham <Rob.Pridham@dft.gov.uk>
Sent: 16 June 2020 11:23
To: WALKER Angus <AngusWALKER@bdbpitmans.com>
Cc: Susan Anderson <Susan.Anderson@dft.gov.uk>; Manston Airport <ManstonAirport@planninginspectorate.gov.uk>
Subject: MANSTON AIRPORT DCO APPLICATION -UNILATERAL UNDERTAKINGS
Importance: High

Dear Mr Wa ker,

We have been reviewing the two Unilateral Undertakings ("UUs") submitted in favour of Kent County Council and Thanet District Council alongside various other documents from the Applicant and other Interested Parties, as part of the further work being carried out before the Manston Airport Development Consent Order application is determined. It has come to our attention that although signed versions of the UUs were submitted by the Applicant in January 2020, both were undated (i.e. where "DATE" and "2020" is printed in both documents, the day and month has not been completed in writing). This appears to be an administrative oversight.

In the circumstances, I should be grateful if you would provide signed and dated versions of the UUs by close of play on Thursday 25 June 2020 in order that they can also be considered as part of the decision making process and published alongside this letter and any response from you in due course.

This letter is without prejudice to the Secretary of State's decision whether or not to grant development consent for the reopening and development of Manston Airport, and nothing in this letter is to be taken to imply what that decision might be.

Yours sincerely,

Department for Transport

Rob Pridham
Senior Planning Manager, Transport Infrastructure Planning Unit
East Wing, Albany House
94-98 Petty France
Westminster, London, SW1H 9EA
[redacted]
Follow us on twitter @transportgovuk
Post to Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

RIVEROAK MSE LIMITED

and

RIVEROAK FUELS LIMITED

to

THANET DISTRICT COUNCIL

PLANNING OBLIGATION BY DEED OF UNILATERAL UNDERTAKING

under section 106 and 106A of the Town and Country Planning Act 1990 (as amended) and section 111 of the Local Government Act 1972 and section 1 of the Localism Act 2011 relating to land at Manston Airport, Manston Rd, Ramsgate, Kent, CT12 5BQ

DATE [redacted] 2020

(1) **RIVEROAK MSE LIMITED** (Company Registration Number 11720590) whose registered office is situated at Calder & Co, 16 Charles II Street, London, SW1Y 4NW and **RIVEROAK FUELS LIMITED** (Company Registration Number 11535715) whose registered office is situated at Calder & Co, 16 Charles II Street, London, SW1Y 4NW (together "**RiverOak**")

in favour of

(2) **THANET DISTRICT COUNCIL** of Cecil Street, Margate, Kent, CT9 1XZ ("the **District Council**")

INTRODUCTION

1. The District Council is the local planning authority for the purposes of the 1990 Act for the area in which the Site is situated.

2. RiverOak MSE Limited is the freeholder owner of the Site which is registered at the Land Registry under title number K743314, K803975, K806190, K837264, K873633, K87364, K891199, including all right title and interest in the unregistered land (as shown on Plan 1 and Plan 2). RiverOak Fuels Limited is the freehold owner of the Jentex Site which is registered at the Land Registry under title number K315361.

3. RiverOak Strategic Partners Limited has submitted the Application to the Planning Inspectorate for development consent to construct and operate the Project. The Application was accepted for examination by the Planning Inspectorate on 14 August 2018. The Secretary of State is responsible for determining the Application.

4. The District Council is satisfied that the obligations in this Deed are compliant with Regulation 122 of the Regulations and they meet the following tests:-

4.1 They are necessary to make the development of the Project acceptable in planning terms; and

4.2 They are directly related to the development of the Project; and

4.3 They are fairly and reasonably related in scale and kind to the development of the Project.

5. RiverOak has agreed that the development of the Project shall be carried out only in accordance with the Development Consent Order and the rights and obligations set out in this Deed.

6. RiverOak Fuels Limited are a signatory to this Deed only for the purpose of confirming clause 4

NOW THIS DEED WITNESSES AS FOLLOWS

OPERATIVE PART

1. **DEFINITIONS**

In this Deed unless the context otherwise requires the following terms and expressions (arranged in alphabetical order) shall have the following meanings:

Word or Phrase	**Meaning**
"1990 Act"	means the Town and Country Planning Act 1990 (as amended);
"2008 Act"	means the Planning Act 2008 (as amended);
"Application"	means the application for a development consent order under s37 of the 2008 Act submitted by RiverOak Strategic Partners Limited (Company Registration Number 10269461) to the Planning Inspectorate on 17 July 2018 and given reference number TR020002;
"Charging Schedule"	means a charging schedule as detailed in Regulation 2(1) of the CIL Regulations;
"CIL"	means the charge created pursuant to Part 11 of the 2008 Act and Regulation 3 of the CIL Regulations and referred to as the Community Infrastructure Levy in those enactments;
"CIL Regulations"	means the Community Infrastructure Levy Regulations 2010 (as amended);
"Commencement"	means the carrying out of a "material operation" (as defined in section 155 of the 2008 Act) comprised in or carried out for the authorised development (as defined in Schedule 1 of the Development Consent Order) other than operations consisting of environmental surveys and monitoring, investigations for the purposes of assessing ground conditions, diversion and laying of services, receipt and erection of construction plan and equipment, erection of any temporary means of enclosure, the temporary display of site notices or advertisements or installation of a site compound or any other temporary building or structure to the extent that it is unlikely to give rise to any materially new or materially different environmental effects from those identified

Word or Phrase	**Meaning**
	in the environmental statement (and in this Deed "**Commence**" and "**Commenced**" and cognate expressions shall be construed accordingly);
"Commencement Date"	means the date a material operation under section 155 of the 2008 Act has been carried out pursuant to the Development Consent Order;
"Contributions"	means the financial contributions payable to the District Council under the terms of this Deed and "Contribution" shall be construed accordingly;
"Decision Letter"	means the decision letter issued by the Secretary of State confirming whether or not the DCO is granted;
"Development Consent Order" or "DCO"	means the development consent order in a form as may ultimately be made by the Secretary of State if he is minded to issue development consent pursuant to the Application;
"Dispute"	means any dispute, issue, difference or claim as between RiverOak and the District Council in respect of any matter contained in or arising from or relating to this Deed or the obligations and rights pursuant to it (other than in respect of any matter of law);
"Expert"	means an independent person appointed in accordance with the provisions of clause 10 to determine a Dispute between RiverOak and the District Council;
"Index"	means the BIS Index of Construction Prices and Costs or in each case in default of publication thereof, such substitute index which replaces it or is the nearest equivalent;
"Index Linked"	means the indexation payable by reference to the Index calculated in accordance with clause 12 of this Deed;
"Infrastructure"	has the meaning ascribed in section 216(2) of the 2008 Act as amended by Regulation 63 of the CIL Regulations;

Word or Phrase	Meaning
"Interest Rate"	means interest at 4% per annum above the Bank of England's base rate applicable from the date the relevant Contribution or Contributions are due under this Deed until the date of payment;
"Jentex Site"	means the land and building on the north side of Canterbury Road West, Manston, Ramsgate which forms part of the Site and is identified as shaded in blue on Plan 1;
"Manston Airport"	means Manston Airport situated at Manston Road, Ramsgate, Kent, CT12 5BQ;
"Operation"	means commencement of air transport movements at Manston Airport pursuant to the DCO;
"Plan 1"	means the plan of the Site attached to this Deed at Annex 1 and labelled "Plan 1";
"Plan 2"	Means the plan of the unregistered land attached to this Deed at Annex 2 labelled "Plan 2";
"Practically Completed"	means the issue of a certificate of practical completion in relation to the Project or any part of a Project (as appropriate) by RiverOak's architect, engineer, project manager or other suitably qualified professional and "**Practically Complete**" shall be construed accordingly;
"Planning Inspectorate"	means the executive agency of the Ministry of Housing, Communities and Local Government;
"Project"	means the redevelopment of Manston Airport as defined in Schedule 1 of the Development Consent Order;
"Requirement"	means a requirement of the Development Consent Order;
"Secretary of State"	means the Secretary of State for Transport;

Word or Phrase	Meaning
"Site"	means the land identified in the Development Consent Order shown edged red on Plan 1 and including the land coloured pink on Plan 2; and
"Working Day(s)	means any day apart from Saturday, Sunday and any statutory bank holiday on which clearing banks are open in England for the transaction of ordinary business.

2. **CONSTRUCTION OF THIS DEED**

2.1 Where in this Deed reference is made to any clause, paragraph or schedule or recital such reference (unless the context otherwise requires) is a reference to a clause, paragraph or schedule or recital in this Deed.

2.2 Words importing the singular meaning where the context so admits include the plural meaning and vice versa.

2.3 Words of the masculine gender include the feminine and neuter genders and words denoting actual persons include companies, corporations and firms and all such words shall be construed interchangeably in that manner.

2.4 "Including" means including without limitation or prejudice to the generality of any preceding description defined term phrase or word(s) and "include" shall be construed accordingly.

2.5 Words denoting an obligation on a party to do any act or matter or thing include an obligation to procure that it is done and words placing a party under a restriction include an obligation not to cause permit or allow infringement of that restriction.

2.6 Any reference to an Act of Parliament shall include any modification, extension or re-enactment of that Act for the time being in force and shall include all instruments, orders, plans regulations, permissions and directions for the time being made, issued or given under that Act or deriving validity from it and "statutory requirement" shall be construed accordingly.

2.7 Reference to any party to this Deed shall include the successors in title to that party and to any deriving title through or under that party and in the case of the District Council the successors to its statutory functions.

2.8 Clause headings in this Deed are for convenience only and shall not be taken into account in its construction and interpretation.

2.9 If any provision in this Deed is held to be invalid illegal or unenforceable such invalidity illegality or unenforceability shall not affect the validity or enforceability of the remaining provisions of this Deed.

2.10 References to "notice" shall mean notice in writing.

3. **LEGAL BASIS**

3.1 This Deed is made pursuant to Section 106 and 106A of the 1990 Act Section 111 of the Local Government Act 1972 Section 1 of the Localism Act 2011 and all other enabling powers.

3.2 The covenants contained in the Schedules are development consent obligations (to the extent that they are capable of being so) for the purposes of Section 106 of the 1990 Act and are enforceable by the District Council as local planning authority.

3.3 To the extent that any obligations contained in this Deed are not development consent obligations for the purposes of Section 106 of the 1990 Act they are entered in pursuant to the powers contained in Section 111 of the Local Government Act 1972 Section 1 of the Localism Act 2011 and all other enabling powers.

4. **DISCHARGE**

4.1 This Unilateral Undertaking supersedes the Unilateral Undertaking given by Riveroak Fuels Limited to Thanet District Council on 9 July 2019.

5. **CONDITIONALITY**

5.1 Subject to clause 4.1, none of the terms or provisions in this Deed shall have operative effect unless and until:

5.1.1 the Development Consent Order has been duly made; and

5.1.2 the Development Consent Order has Commenced.

with the exception of this Clause 5 insofar as it relates to obligations in the Schedules that must be complied with prior to Commencement, all of which shall have operative effect upon the making of the Development Consent Order and shall have operative effect from the date of this Deed.

5.2 Where the Development Consent Order becomes the subject of any judicial review proceedings:-

5.2.1 until such time as such proceedings including any appeal have been finally determined, the terms and provisions of this Deed will remain without operative effect unless the Project has been Commenced

5.2.2 if following the final determination of such proceedings the Development Consent Order is quashed and, in the event that the court orders the Application to be remitted to the

Secretary of State, the Application is subsequently refused, this Deed will cease to have any further effect and any money paid to the District Council pursuant to the Schedules and not spent by the District Council (or such other person as the money has been paid to under this Deed) shall be repaid in full within 56 days of the final determination of such proceedings; and

5.2.3 if following the final determination of such proceedings the Development Consent Order is validly Commenced, then this Deed will take effect in accordance with its terms.

5.3 Wherever in this Deed reference is made to the final determination of judicial review proceedings (or cognate expressions are used), the following provisions will apply:-

5.3.1 proceedings by way of judicial review are finally determined:-

(a) when permission to bring a claim for judicial review has been refused and no further application may be made;

(b) when the court has given judgment in the matter and the time for making an appeal expires without an appeal having been made or permission to appeal is refused;

(c) when any appeal is finally determined and no further appeal may be made.

6. DEVELOPMENT CONSENT OBLIGATIONS

6.1 RiverOak covenants with the District Council to observe and perform:-

6.1.1 the development consent obligations and covenants contained in Schedules One to Five; and

6.1.2 any other obligations which are not development consent obligations contained in the Schedules pursuant to section 111 of the Local Government Act 1972 and all other powers so enabling, in each case so far as they relate to the Site from time to time.

6.2 The development consent obligations contained in this Deed shall:

6.2.1 be enforceable against the Site and RiverOak's successors in title to the Site; and

6.2.2 not be enforceable against any other owner of any land interest in the Site.

7. RELEASE

7.1 RiverOak and its successors in title and those deriving title from them shall, upon disposing of the whole or any part of the Site, be released from all obligations in this Deed in relation to that interest

or the relevant part thereof (as the case may be) but without prejudice to the rights of RiverOak or the District Council in relation to any antecedent breach of those obligations.

8. **FURTHER PLANNING PERMISSIONS AND DEVELOPMENT CONSENT ORDERS**

Nothing in this Deed shall be construed as prohibiting or limiting the rights of RiverOak to use or develop any part of the Site in accordance with and to the extent permitted by a certificate of lawful use, planning permission, development consent order or other statutory authority other than the Development Consent Order granted either before or after the date of this Deed.

9. **LAPSE**

It is agreed that this Deed shall lapse and be no further effect if:

9.1 the Development Consent Order expires or is revoked prior to the Commencement Date; or

9.2 The Development Consent Order is amended or repealed otherwise than with the consent of RiverOak

in which case this Deed shall forthwith determine and cease to have effect and the District Council shall use reasonable endeavours to cancel all entries made in its register of local land charges in respect of this Deed.

10. **RESOLUTION OF DISPUTES**

10.1 In the event of any Dispute RiverOak will attempt to resolve that Dispute amicably including holding a meeting attended by at least one representative from RiverOak and the District Council.

10.2 If RiverOak and the District Council are unable to resolve the Dispute amicably pursuant to clause 10.1 within two months from the Dispute arising (or such other period as may be agreed between the parties to the dispute), RiverOak may serve notice on all the District Council (the "**Notice**") to refer the Dispute to an Expert for determination.

10.3 The Notice must specify:-

10.3.1 the nature, basis and brief description of the Dispute;

10.3.2 the clause or paragraph of this Deed pursuant to which the Dispute has arisen; and

10.3.3 details of the proposed Expert.

10.4 In the event that RiverOak and the District Council are unable to agree whom should be appointed as the Expert within 10 Working Days after the date of the Notice then either party may request the President of the Law Society to nominate the Expert at their joint expense, and the parties shall request that such nomination shall be made within 10 Working Days of the request, and any failure

for such nomination to be made within 10 Working Days shall entitle any party to withdraw from the process of appointing an Expert and to refer the Dispute to the courts of England and Wales instead.

10.5 The Expert shall act as an expert and not as an arbitrator and his decision will (in the absence of manifest error) be final and binding on the parties hereto and at whose cost shall be at his discretion or in the event that he makes no determination, such costs will be borne by the parties to the Dispute in equal shares.

10.6 The Expert will be appointed subject to an express requirement that he reaches his decision and communicates it to RiverOak and the District Council within the minimum practicable timescale allowing for the nature and complexity of the dispute and in any event not more than 20 Working Days from the date of his appointment to act.

10.7 The Expert will be required to give notice to RiverOak and the District Council inviting each of them to submit to him within 10 Working Days written submissions and supporting material and will afford to each of them an opportunity to make counter submissions within a further 5 Working Days in respect of any such submission and material.

11. NOTICES

11.1 Any notice, consent or approval required to be given under this Deed shall be in writing and shall be sent to the address and marked for the attention of the persons identified below or instead to such other persons as may be substituted for them from time to time.

11.2 Any such notice must be delivered by hand or by pre-paid Special Delivery post and shall conclusively be deemed to have been received:-

11.2.1 if delivered by hand, on the next Working Day after the day of delivery; and

11.2.2 if sent by Special Delivery post and posted within the United Kingdom, on the day 2 Working Days after the date of posting.

11.3 The address for service of any such notice, consent or approval as aforesaid shall:-

11.3.1 in the case of service upon the District Council be at its address given above or such other address for service as shall have been previously notified in writing to the other parties and any such notice shall be marked for the attention of Iain Livingstone; and

11.3.2 in the case of service upon RiverOak be at its address given above or such other address for service as shall have been previously notified in writing to the other parties and any such notice shall be marked for the attention of Tony Freudmann.

12. **INDEXATION**

Subject to the terms of this Deed, any Contributions in this Deed shall be adjusted by reference to changes in the relevant Index in accordance with the following formula:-

Amount Payable = Sum x (Index at Payment Date / Index at today's date)

where:-

"Amount Payable" is the amount of money required to be paid;

"Sum" is the amount of the Contribution or other sum of money stated in this Deed;

"Index at Payment Date" is the relevant Index last published before the date the Contribution is payable; and

"Index at today's date" is the relevant Index last published prior to the date the Development Consent Order is made.

13. **INTEREST**

13.1 Where any obligation in this Deed is expressed to require RiverOak to pay any Contributions or Contribution, interest at the Interest Rate shall be payable (as applicable).

13.2 Where RiverOak has paid, provided or made available any sum of money (whether by way of a Contribution or otherwise) and the sum or sums have not been applied as required or within the agreed timescale set out in this Deed then the sum or sums to be refunded shall be returned to RiverOak inclusive of interest calculated in accordance with clause 13.1.

14. **LOCAL LAND CHARGES**

14.1 This Deed is a local land charge and shall be registered as such by the District Council.

15. **NOTICE OF WORKS**

15.1 RiverOak shall notify the District Council:-

15.1.1 prior to the Commencement Date, of the anticipated date of Commencement of works pursuant to the Development Consent Order (which obligation shall apply again if Commencement Date does not occur on the notified date);

15.1.2 within seven days of the actual Commencement Date;

15.1.3 within two weeks of the day on which the Project is Practically Completed; and

15.1.4 within two weeks of each of the triggers in relation to the development consent obligations as set out in the Schedules to this Deed.

15.2 RiverOak shall give written notice to the District Council within five Working Days of RiverOak paying, providing or making available to any third party any Contributions pursuant to this Deed.

16. **COMMUNITY INFRASTRUCTURE LEVY**

It is acknowledged that:-

16.1 this Deed has been negotiated and agreed on the assumption that liability to CIL does not arise in respect of any of the development authorised by the Development Consent Order because such development is situated in an area for which no charging schedule is in effect on the date of this Deed and no charging schedule is anticipated to be in effect in relation to such development on the day the Development Consent Order is made;

16.2 If in determining the DCO the Secretary of State expressly states in the Decision Letter that any one or more of the development consent obligations contained in this Deed:

16.2.1 is not a material development consent obligation; or

16.2.2 can be given no weight in determining the granting of the DCO; or

16.2.3 should be dealt with by a requirement imposed upon the DCO; or

16.2.4 does not constitute a reason for granting the DCO in accordance with Regulation 122 of the CIL Regulations; or

16.2.5 fails to satisfy the provisions of Regulation 123 of the CIL Regulations;

then subject to the provisions of clause 2.9 of this Deed such development consent obligation shall not be enforceable pursuant to this Deed and shall cease to have effect within this Deed save to the extent set out in the Decision Letter

16.3 In the event that in determining the DCO the Secretary of State grants the DCO then if at the date of the grant of the DCO a Charging Schedule has been approved by the District Council and has come into effect any contribution payable under the terms of this Deed which is for an Infrastructure project or type of Infrastructure set out in the Charging Schedule shall cease to be payable.

17. **VAT**

17.1 If this Deed or anything contained in it gives rise to a taxable supply for VAT purposes by the District Council to RiverOak then the District Council shall use reasonable endeavours to recover the VAT in the first instance.

17.2 If this Deed or anything contained in it gives rise to a taxable supply for VAT purposes by the District Council to RiverOak then, subject to the District Council complying with clause 17.1, RiverOak shall pay to the District Council or third party an amount equal to the VAT chargeable in addition to and at the same time as any payment or the provision of any other consideration for such supply upon provision of a valid VAT invoice addressed to RiverOak.

18. **APPROVALS**

Where any approval, agreement, consent, confirmation or an expression of satisfaction is required under the terms of this Deed by RiverOak or the District Council such approval, agreement, consent, confirmation or expression of satisfaction shall be given in writing and shall not be unreasonably withheld or delayed.

19. **DISTRICT COUNCIL'S POWERS**

Nothing in this Deed shall fetter the respective statutory rights, powers or duties of the District Council.

20. **GOOD FAITH**

RiverOak will act reasonably and in good faith in the discharge of the obligations contained in this Deed.

21. **RIGHTS OF THIRD PARTIES**

It is not intended that any person who is not a party to this Deed shall have any right under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this Deed.

22. **JURISDICTION**

22.1 This Deed including its construction, validity, performance and enforcement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with English law.

22.2 Each party irrevocably agrees that the courts of England shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this Deed or its subject matter or formation (including non-contractual disputes or claims).

IN WITNESS whereof RiverOak hereto have executed this Deed on the day and year first before written.

FIRST SCHEDULE

AIR QUALITY STATION ZH3

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	**Meaning**
"Air Quality Station ZH3 Contribution"	means the following sums to be Index Linked and used towards the Air Quality Station ZH3 Contribution Purposes: • Tranche 1 - £70,000 (Seventy thousand pounds) Index Linked to be used for the capital cost of an air quality monitoring station; • Tranche 2 - £4,000 (Four thousand pounds) Index Linked to be used for the installation of an air quality monitoring station; • Monthly Payment 1 - £1,200 (One thousand two hundred pounds) Index Linked per month to be used for the servicing of the air monitoring station to be paid on a monthly basis for the lifetime of the operation of Manston Airport; • Monthly Payment 2 – £600 (Six hundred pounds) Index Linked per month to be used in relation to the costs of the diffusion tubes for the air monitoring station as well as putting out and recovering the diffusion tubes, analysis and reporting to be paid on a monthly basis for the lifetime of the operation of Manston Airport; and • Annual Payment - £4,000 (Four thousand pounds) Index Linked per annum to be used for the reporting costs in relation to the air monitoring station to be paid annually for the lifetime of the operation of Manston Airport.
"Air Quality Station ZH3 Contribution Purposes"	means the reinstatement and ongoing operational costs in relation to the continuous monitoring of air quality (NO_2 and NO) at Air Quality Station ZH3 (as shown on the Air Quality Station ZH3 Plan) such works including data examination; maintenance; operation; and a request for ongoing support for passive monitoring via diffusion tubes and receptors (including the monitoring of fine particles PM10 and PM2.5) close to Manston Airport; and

Word or Phrase	Meaning
"Air Quality Station ZH3 Plan"	means the plan attached to this Deed at Annex 3 showing Air Quality Station ZH3 marked as 'Thanet Airport ZH3'

2. RiverOak covenants with the District Council as follows:

2.1 To pay Tranche 1 and Tranche 2 of the Air Quality Station ZH3 Contribution in full to the District Council prior to the coming into Operation of the Project.

2.2 Not to cause permit or allow the Project to come into Operation until Tranche 1 and Tranche 2 of the Air Quality Station ZH3 Contribution has been paid in full to the District Council.

2.3 To pay Monthly Payment 1 and Monthly Payment 2 in full to the District Council for the lifetime of the operation of Manston Airport pursuant to the DCO (unless agreed otherwise in writing with the District Council) on a monthly basis with the first payments to be made at the end of the first month following the installation of Air Quality Station ZH3.

2.4 To pay the Annual Payment of the Air Quality Station ZH3 Contribution in full to the District Council for the lifetime of the operation of Manston Airport pursuant to the DCO (unless agreed otherwise with the District Council) on each anniversary of the installation of Air Quality Station ZH3.

SECOND SCHEDULE

NOISE MONITORING

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	**Meaning**
"Noise Monitoring Stations"	means noise monitoring stations to be located at Manston Airport;
"Noise Monitoring Assessment Contribution"	means the annual payment of £10,000 (ten thousand pounds) Index Linked and used towards the Noise Monitoring Assessment Contribution Purposes; and
"Noise Monitoring Assessment Contribution Purposes"	means an independent assessment of the data from the Noise Monitoring Stations to ensure that provisions of the District Council's Noise Mitigation Plan and the Development Consent Order are being complied with.

2. RiverOak covenants with the District Council as follows:

2.1 To agree the exact locations of the Noise Monitoring Stations with the District Council prior to the coming into Operation of the Project.

2.2 To provide a report of the data from the Noise Monitoring Stations to the District Council every 12 months unless otherwise agreed in writing with the District Council.

2.3 To pay the first annual Noise Monitoring Assessment Contribution to the District Council at the time of the compilation of the first report (pursuant to paragraph 2.2 above).

2.4 To pay the annual Noise Monitoring Assessment Contribution to the District Council for the lifetime of the operation of Manston Airport (unless agreed otherwise in writing with the District Council) on each anniversary of the payment of the first annual Noise Monitoring Assessment Contribution.

THIRD SCHEDULE

EDUCATION / TRAINING / RECRUITMENT / PROCUREMENT

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	**Meaning**
"Education & Training Contribution"	means: • an initial payment of £250,000.00 Index Linked (Two hundred and fifty thousand pounds) ("**Initial Payment**"); and • an annual payment of Fifty thousand pounds (£50,000.00) to be paid for a period of twenty years commencing on the 1st anniversary of the Initial Payment ("**Annual Payment**"). such sums to be used for towards those requirements set out in the Education, Employment and Skills Plan; and
"Education, Employment & Skills Plan"	means the Education, Employment and Skills Plan required to be submitted under Requirement 20 of the Development Consent Order which, for the avoidance of doubt, must contain the following: • chapters addressing: o legal compliance; o reporting procedures; and o obligations to be placed upon third parties including local educational establishments and bodies; • plans and policy documents including: o a local hiring policy; o an education and skills policy; o a workplace training policy; • provision for the establishment of a local employment partnership board to include the relevant planning authority and the relevant local education authority and other relevant

Word or Phrase	Meaning
	stakeholders as appropriate, to assist in the delivery of the plans and policies listed above; • provision for a process under which the contents of the employment and skills plan is continually reviewed against relevant best practice and any consequent changes are submitted for approval by the District Council; and • the employment and skills plan approved must be implemented in full.

2. RiverOak covenants with the District Council:

2.1 To pay to the District Council the Education & Training Contribution as follows:

2.1.1 the Initial Payment prior to the coming into Operation of the Project.

2.1.2 the Annual Payment on the first anniversary of payment of the Initial Payment and on the following nineteen such anniversaries.

2.2 Not to cause permit or allow the Project to come into Operation unless the Initial Payment has been paid in full to the District Council.

FOURTH SCHEDULE

BIODIVERSITY

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	**Meaning**
"Biodiversity Contribution"	means the sum of £100,000 (One hundred thousand pounds) Index Linked to be used for the Biodiversity Contribution Purposes; and
"Biodiversity Contribution Purposes"	means the mitigation of adverse impacts of Manston Airport on the bird populations in Pegwell Bay with the Biodiversity Contribution split and utilised as follows: • Tranche 1 - £20,000 Index Linked to be used to support the current (as at the date of this Deed) bird disturbance monitoring study being undertaken by Kent Wildlife Trust; • Tranche 2 - £80,000 Index Linked to be used to develop and support projects directly relevant to species affected by the disturbance caused by the operation of Manston Airport such sum being made available to Kent Wildlife Trust, Thanet District Council and Natural England.
"Community Trust Fund"	means the community trust fund established through the noise mitigation plan required under Requirement 9 of the DCO
"Community Trust Fund Contribution"	means the sum of £50,000 to be paid annually for the lifetime of the operation of Manston Airport

2. RiverOak covenants with the District Council:

2.1 to pay Tranche 1 of the Biodiversity Contribution prior to the coming into Operation of the Project and not to cause permit or allow the Project to come into Operation until Tranche 1 the Biodiversity Contribution has been paid to the District Council.

2.2 in the event that the bird disturbance monitoring study (in relation to which Tranche 1 of the Biodiversity Contribution is to be used) shows that birds are affected by the

operation of Manston Airport to pay Tranche 2 to the District Council within 1 (one) year of the Project coming into Operation IT BEING AGREED THAT in the event that the bird disturbance monitoring study (in relation to which Tranche 1 of the Biodiversity Contribution is to be used) shows that birds are not affected by the operation of Manston Airport the Owner shall not be obliged to pay Tranche 2 to the District Council.

3. RiverOak covenants with the District Council to pay the first annual Community Trust Fund Contribution to the District Council on the first anniversary of the Project coming into Operation.

4. RiverOak covenants with the District Council to pay the annual Community Trust Fund Contribution to the District Council for the lifetime of the operation of Manston Airport (unless agreed otherwise in writing with the District Council) on each anniversary of the payment of the first annual Community Trust Fund Contribution pursuant to paragraph 3 above.

FIFTH SCHEDULE

CAR PARKING MANAGEMENT STRATEGY

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	**Meaning**
"Controlled Parking Zone"	means the controlled parking zone to be implemented in the locality of Manston Airport further to the Travel Plan;
"CPZ Contribution"	means a contribution of £231, 400 (Two hundred and thirty one thousand and four hundred pounds) Index Linked towards the costs of implementing a Controlled Parking Zone to control parking used in relation to Manston Airport for 20 years;
"Car Parking Management Strategy"	means the Car Parking Management Strategy required to be submitted under Requirement 7 of the Development Consent Order;

2. RiverOak covenants with the District Council:

2.1 If required to do so by the District Council to pay the CPZ Contribution to the District Council (or the relevant local parking authority with powers for civil parking enforcement powers pursuant to section 75 of the Traffic Management Act 2004 ("the Local Parking Authority") when the payment becomes due) with 28 days of written notice by the District Council or the Local Parking Authority of implementation of the Controlled Parking Zone.

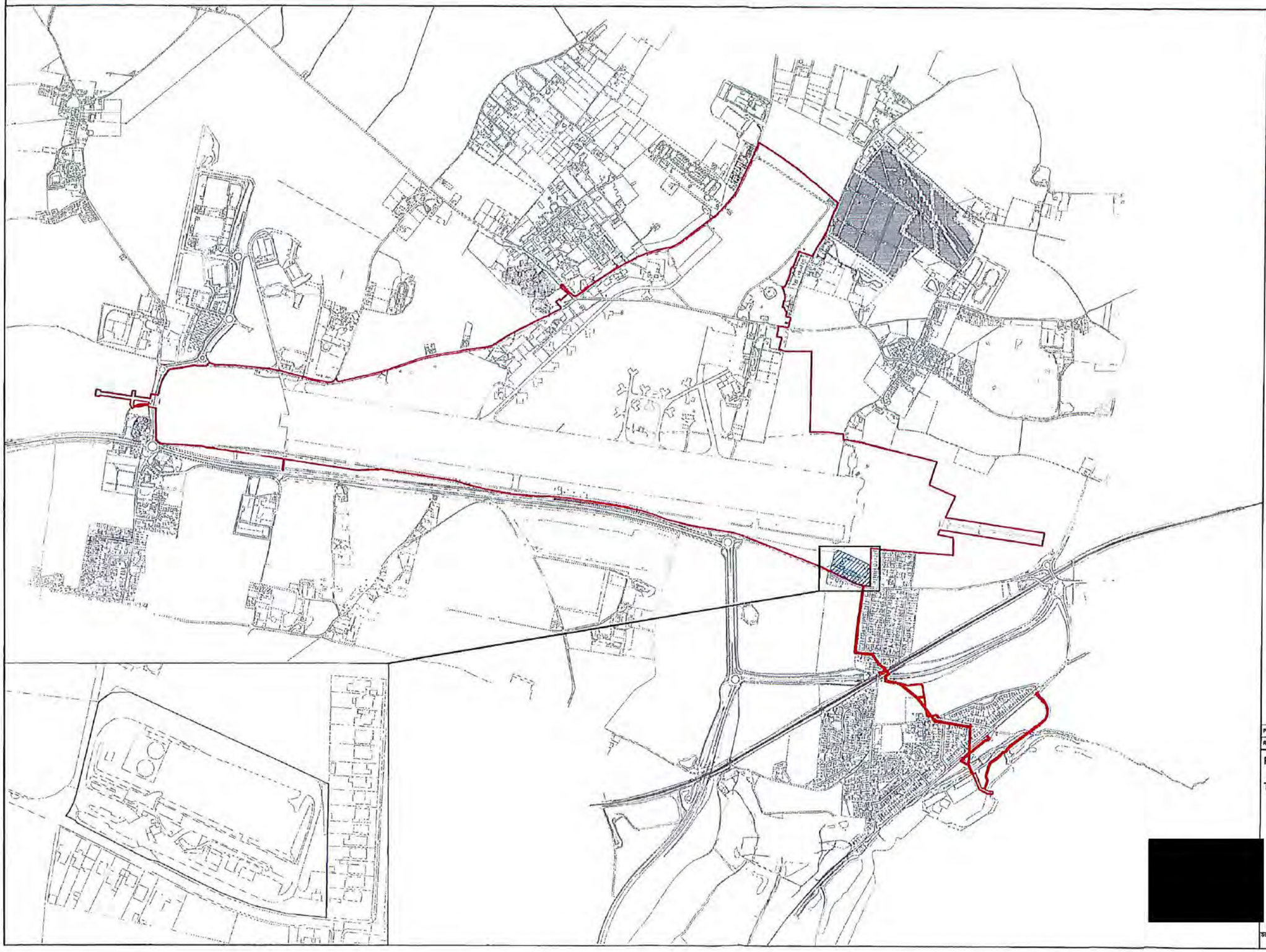
ANNEX 1

PLAN 1 - PLAN OF THE SITE

5

Manston Airport Development Consent Order
Site Plan
Sheet 1 of 1

RSP



Key Plan
Scale: NTS

KEY

Jentex Site
Order limits

Notes

1. OS Data obtained from emapsite™ May 2017:
© Crown copyright and database rights 2019
Ordnance Survey 0100031673

0 170 340 680
Metres

Rev	Description	By	Chd	Apr	Date
P01	FOR INFORMATION	CM	DL	BJ	03/07/2019

Project Manston Airport
Development Consent Order

Title Site Plan
Sheet 1 of 1
Thanet District Council

Scale	Sheet Size	Sheet No	Status
1:8,500	A1	1 of 1	FOR INFORMATION

ANNEX 2

PLAN 2 – UNREGISTERED LAND

HM Land Registry
Official copy of
title plan

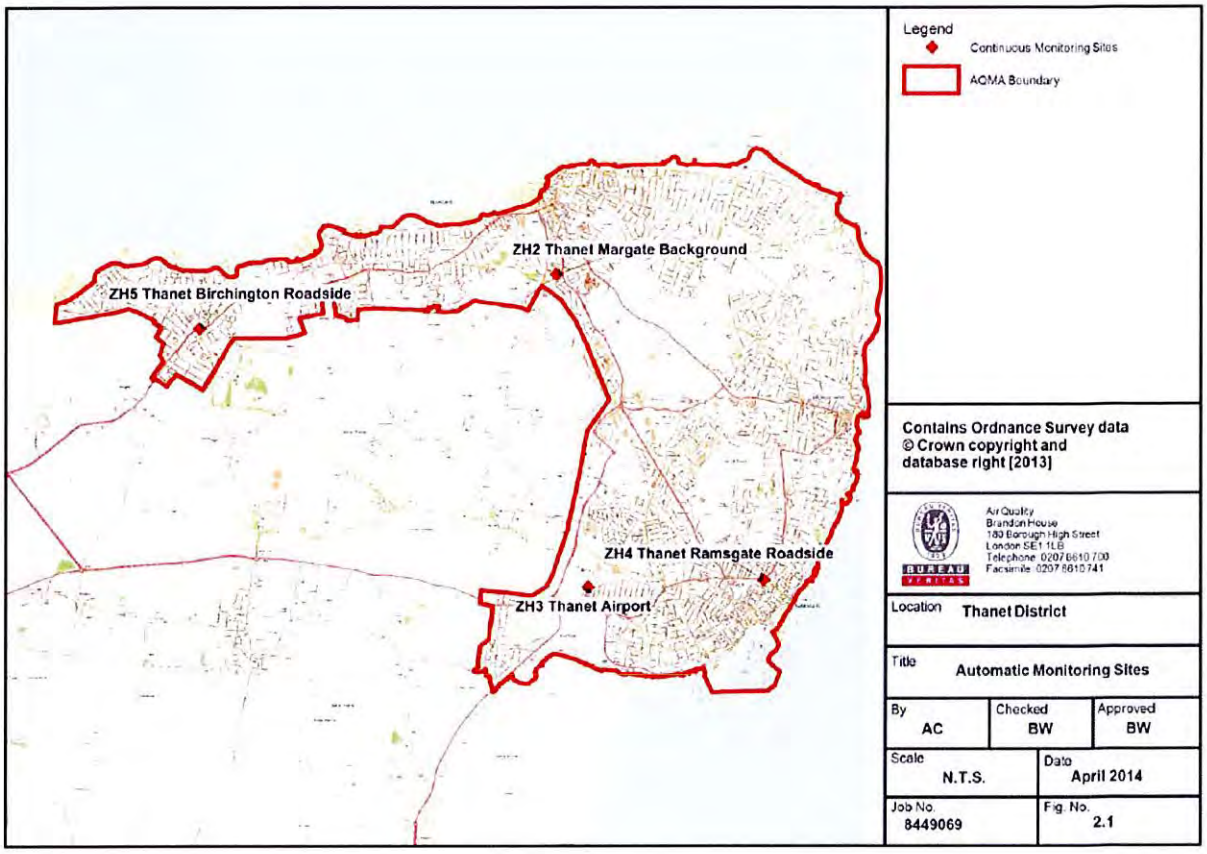
~~Title number K873634~~
Ordnance Survey map reference TR3466SW
Scale 1:2500
Administrative area Kent : Thanet

Triangular Land

Unregistered land bounded by K803975, K873634 and K837633

ANNEX 3

AIR QUALITY ZH3 PLAN



EXECUTED AS A DEED by **RIVEROAK MSE LIMITED** acting by a Director and Secretary of two Directors

[redacted]

Director

Witness Signature

Witness Name
(block capitals)

Witness Address

[redacted]

EXECUTED AS A DEED by **RIVEROAK FUELS LIMITED** acting by a Director and Secretary of two Directors

[redacted]

Dire

Witness Signature

Witness Name
(block capitals)

Witness Address

[redacted]

RIVEROAK MSE LIMITED

and

RIVEROAK FUELS LIMITED

to

KENT COUNTY COUNCIL

PLANNING OBLIGATION BY DEED OF UNILATERAL UNDERTAKING

under section 106 and 106A of the Town and Country Planning Act 1990 (as amended) and section 111 of the Local Government Act 1972 and section 1 of the Localism Act 2011 relating to land at Manston Airport, Manston Rd, Ramsgate, Kent, CT12 5BQ

DATE [redacted] 2020 [redacted]

PARTIES

(1) **RIVEROAK MSE LIMITED** (Company Registration Number 11720590) whose registered office is situated at Calder & Co, 16 Charles II Street, London, SW1Y 4NW and **RIVEROAK FUELS LIMITED** (Company Registration Number 11535715) whose registered office is situated at Calder & Co, 16 Charles II Street, London, SW1Y 4NW (together ("**RiverOak**")

in favour of

(2) **KENT COUNTY COUNCIL** of County Council Hall, Maidstone, Kent, ME14 1QX ("the **County Council**")

INTRODUCTION

1. The County Council is the local highways authority for the purposes of the 1980 Act for the area in which the Site is situated. It is also a planning authority for the purposes of the 1990 Act and the education authority for the purposes of this Deed.

2. RiverOak MSE Limited is the freeholder owner of the Site which is registered at the Land Registry under title number K743314, K803975, K806190, K837264, K873633, K87364, K891199, including all right title and interest in the unregistered land (as shown on Plan 1 and Plan 2). RiverOak Fuels Limited is the freehold owner of the Jentex Site which is registered at the Land Registry under title number K315361.

3. RiverOak Strategic Partners Limited has submitted the Application to the Planning Inspectorate for development consent to construct and operate the Project. The Application was accepted for examination by the Planning Inspectorate on 14 August 2018. The Secretary of State is responsible for determining the Application.

4. The County Council is satisfied that the obligations in this Deed are compliant with Regulation 122 of the Regulations and they meet the following tests:-

4.1 They are necessary to make the development of the Project acceptable in planning terms; and

4.2 They are directly related to the development of the Project; and

4.3 They are fairly and reasonably related in scale and kind to the development of the Project.

5. RiverOak has agreed that the development of the Project shall be carried out only in accordance with the Development Consent Order and the rights and obligations set out in this Deed.

6. RiverOak Fuels Limited are a signatory to this Deed only for the purpose of confirming clause 4.

NOW THIS DEED WITNESSES AS FOLLOWS

OPERATIVE PART

1. **DEFINITIONS**

In this Deed unless the context otherwise requires the following terms and expressions (arranged in alphabetical order) shall have the following meanings:

Word or Phrase	Meaning
"1980 Act"	means the Highways Act 1980 (as amended);
"1990 Act"	means the Town and Country Planning Act 1990 (as amended);
"2008 Act"	means the Planning Act 2008 (as amended);
"Application"	means the application for a development consent order under s37 of the 2008 Act submitted by RiverOak Strategic Partners Limited (Company Registration Number 10269461) to the Planning Inspectorate on 17 July 2018 and given reference number TR020002;
"Charging Schedule"	means a charging schedule as detailed in Regulation 2(1) of the CIL Regulations;
"CIL"	means the charge created pursuant to Part 11 of the 2008 Act and Regulation 3 of the CIL Regulations and referred to as the Community Infrastructure Levy in those enactments;
"CIL Regulations"	means the Community Infrastructure Levy Regulations 2010 (as amended);
"Commencement"	means the carrying out of a "material operation" (as defined in section 155 of the 2008 Act) comprised in or carried out for the authorised development (as defined in Schedule 1 of the Development Consent Order) other than operations consisting of environmental surveys and monitoring, investigations for the purposes of assessing ground conditions, diversion and laying of services, receipt and erection of construction plan and equipment, erection of any temporary means

Word or Phrase	Meaning
	of enclosure, the temporary display of site notices or advertisements or installation of a site compound or any other temporary building or structure to the extent that it is unlikely to give rise to any materially new or materially different environmental effects from those identified in the environmental statement (and in this Deed "**Commence**" and "**Commenced**" and cognate expressions shall be construed accordingly);
"Commencement Date"	means the date a material operation under section 155 of the 2008 Act has been carried out pursuant to the Development Consent Order;
"Contributions"	means the financial contributions payable to the County Council under the terms of this Deed and "Contribution" shall be construed accordingly;
"Decision Letter"	means the decision letter issued by the Secretary of State confirming whether or not the DCO is granted;
"Development Consent Order" or "DCO"	means the development consent order in a form as may ultimately be made by the Secretary of State if he is minded to issue development consent pursuant to the Application;
"Dispute"	means any dispute, issue, difference or claim as between the parties in respect of any matter contained in or arising from or relating to this Deed (except in respect of the quantum of the Contributions) or the obligations and rights pursuant to it (other than in respect of any matter of law);
"Expert"	means an independent person appointed in accordance with the provisions of clause 10 to determine a Dispute between the parties to this Deed;
"Index"	means the General Building Costs Index published by the Building Cost Information Service of the Royal Institution of Chartered Surveyors or successor organisation or in the event that such index shall no longer be published or that the basis thereof shall be

Word or Phrase	Meaning
	materially altered then the Index shall be such index as the Council shall reasonably specify.;
"Index Linked"	means the indexation payable by reference to the Index calculated in accordance with clause 12 of this Deed;
"Infrastructure"	has the meaning ascribed in section 216(2) of the 2008 Act as amended by Regulation 63 of the CIL Regulations;
"Interest Rate"	means interest at 4% per annum above the Bank of England's base rate applicable from the date the relevant Contribution or Contributions are due under this Deed until the date of payment;
"Jentex Site"	means the land and building on the north side of Canterbury Road West, Manston, Ramsgate which forms part of the Site and is identified as shaded blue on Plan 1;
"Manston Airport"	means Manston Airport situated at Manston Road, Ramsgate, Kent, CT12 5BQ;
"Operation"	means commencement of air transport movements at Manston Airport pursuant to the DCO;
"Plan 1"	means the plan of the Site attached to this Deed at Annex 1 and labelled "Plan 1";
"Plan 2"	Means the plan of the unregistered land attached to this Deed at Annex 2 labelled "Plan 2";
"Practically Completed"	means the issue of a certificate of practical completion in relation to the Project or any part of a Project (as appropriate) by RiverOak's architect, engineer, project manager or other suitably qualified professional and "**Practically Complete**" shall be construed accordingly;
"Planning Inspectorate"	means the executive agency of the Ministry of Housing, Communities and Local Government;

Word or Phrase	Meaning
"Project"	means the redevelopment of Manston Airport as defined in Schedule 1 of the Development Consent Order;
"Requirement"	means a requirement of the Development Consent Order;
"Secretary of State"	means the Secretary of State for Transport;
"Site"	means the land identified in the Development Consent Order shown edged red on the Plan 1 and including the land coloured pink on Plan 2; and
"Working Day(s)	means any day apart from Saturday, Sunday and any statutory bank holiday on which clearing banks are open in England for the transaction of ordinary business.

2. **CONSTRUCTION OF THIS DEED**

2.1 Where in this Deed reference is made to any clause, paragraph or schedule or recital such reference (unless the context otherwise requires) is a reference to a clause, paragraph or schedule or recital in this Deed.

2.2 Words importing the singular meaning where the context so admits include the plural meaning and vice versa.

2.3 Words of the masculine gender include the feminine and neuter genders and words denoting actual persons include companies, corporations and firms and all such words shall be construed interchangeably in that manner.

2.4 "Including" means including without limitation or prejudice to the generality of any preceding description defined term phrase or word(s) and "include" shall be construed accordingly.

2.5 Words denoting an obligation on a party to do any act or matter or thing include an obligation to procure that it is done and words placing a party under a restriction include an obligation not to cause permit or allow infringement of that restriction.

2.6 Any reference to an Act of Parliament shall include any modification, extension or re-enactment of that Act for the time being in force and shall include all instruments, orders, plans regulations, permissions and directions for the time being made, issued or given under that Act or deriving validity from it and "statutory requirement" shall be construed accordingly.

2.7 Reference to any party to this Deed shall include the successors in title to that party and to any deriving title through or under that party and in the case of the County Council the successors to its statutory functions.

2.8 Clause headings in this Deed are for convenience only and shall not be taken into account in its construction and interpretation.

2.9 If any provision in this Deed is held to be invalid illegal or unenforceable such invalidity illegality or unenforceability shall not affect the validity or enforceability of the remaining provisions of this Deed.

2.10 References to "notice" shall mean notice in writing.

3. LEGAL BASIS

3.1 This Deed is made pursuant to Section 106 and 106A of the 1990 Act Section 111 of the Local Government Act 1972 Section 1 of the Localism Act 2011 and all other enabling powers.

3.2 The covenants contained in the Schedules are development consent obligations (to the extent that they are capable of being so) for the purposes of Section 106 of the 1990 Act and are enforceable by the County Council as local planning authority.

3.3 To the extent that any obligations contained in this Deed are not development consent obligations for the purposes of Section 106 of the 1990 Act they are entered in pursuant to the powers contained in Section 111 of the Local Government Act 1972 Section 1 of the Localism Act 2011 and all other enabling powers.

4. DISCHARGE

4.1 This Unilateral Undertaking supersedes the Unilateral Undertaking given by Riveroak Fuels limited to Kent County Council on 9 July 2019.

5. CONDITIONALITY

5.1 Subject to clauses 4.1, the parties agree that none of the terms or provisions in this Deed shall have operative effect unless and until:

5.1.1 the Development Consent Order has been duly made; and

5.1.2 the Development Consent Order has Commenced.

with the exception of this Clause 5 insofar as it relates to obligations in the Schedules that must be complied with prior to Commencement, all of which shall have operative effect upon the making of the Development Consent Order and shall have operative effect from the date of this Deed.

5.2 Where the Development Consent Order becomes the subject of any judicial review proceedings:-

5.2.1 until such time as such proceedings including any appeal have been finally determined, the terms and provisions of this Deed will remain without operative effect unless the Project has been Commenced

5.2.2 if following the final determination of such proceedings the Development Consent Order is quashed and, in the event that the court orders the Application to be remitted to the Secretary of State, the Application is subsequently refused, this Deed will cease to have any further effect and any money paid to the County Council pursuant to the Schedules and not spent by the County Council (or such other person as the money has been paid to under this Deed) shall be repaid in full within 56 days of the final determination of such proceedings; and

5.2.3 if following the final determination of such proceedings the Development Consent Order is validly Commenced, then this Deed will take effect in accordance with its terms.

5.3 Wherever in this Deed reference is made to the final determination of judicial review proceedings (or cognate expressions are used), the following provisions will apply:-

5.3.1 proceedings by way of judicial review are finally determined:-

(a) when permission to bring a claim for judicial review has been refused and no further application may be made;

(b) when the court has given judgment in the matter and the time for making an appeal expires without an appeal having been made or permission to appeal is refused;

(c) when any appeal is finally determined and no further appeal may be made.

6. **DEVELOPMENT CONSENT OBLIGATIONS**

6.1 RiverOak covenants with the County Council to observe and perform:-

6.1.1 the development consent obligations and covenants contained in Schedules One to Five; and

6.1.2 any other obligations which are not development consent obligations contained in the Schedules pursuant to section 111 of the Local Government Act 1972 and all other powers so enabling, in each case so far as they relate to the Site from time to time.

6.2 The parties agree that the development consent obligations contained in this Deed shall:

6.2.1 be enforceable against the Site and RiverOak's successors in title to the Site; and

6.2.2 not be enforceable against any other owner of any land interest in the Site.

7. **RELEASE**

7.1 RiverOak and its successors in title and those deriving title from them shall, upon disposing of the whole or any part of the Site, be released from all obligations in this Deed in relation to that interest or the relevant part thereof (as the case may be) but without prejudice to the rights of the parties in relation to any antecedent breach of those obligations.

8. **FURTHER PLANNING PERMISSIONS AND DEVELOPMENT CONSENT ORDERS**

Nothing in this Deed shall be construed as prohibiting or limiting the rights of RiverOak to use or develop any part of the Site in accordance with and to the extent permitted by a certificate of lawful use, planning permission, development consent order or other statutory authority other than the Development Consent Order granted either before or after the date of this Deed.

9. **LAPSE**

It is agreed that this Deed shall lapse and be no further effect if:

9.1 the Development Consent Order expires or is revoked prior to the Commencement Date; or

9.2 The Development Consent Order is amended or repealed otherwise than with the consent of RiverOak

in which case this Deed shall forthwith determine and cease to have effect and the County Council shall use reasonable endeavours to cancel all entries made in its registers of local land charges in respect of this Deed.

10. **RESOLUTION OF DISPUTES**

10.1 In the event of any Dispute arising RiverOak will attempt to resolve that Dispute amicably including holding a meeting attended by at least one representative from each RiverOak and the District Council.

10.2 If RiverOak and the District Council are unable to resolve the Dispute amicably pursuant to clause 10.1 within two months from the Dispute arising (or such other period as may be agreed between the parties to the dispute), RiverOak may by serving notice on the District Council (the "**Notice**") refer the Dispute to an Expert for determination.

10.3 The Notice must specify:-

10.3.1 the nature, basis and brief description of the Dispute;

10.3.2 the clause or paragraph of this Deed pursuant to which the Dispute has arisen; and

10.3.3 details of the proposed Expert.

10.4 In the event that RiverOak and the District Council are unable to agree whom should be appointed as the Expert within 10 Working Days after the date of the Notice then either party may request the President of the Law Society to nominate the Expert at their joint expense, and the parties shall request that such nomination shall be made within 10 Working Days of the request, and any failure for such nomination to be made within 10 Working Days shall entitle any party to withdraw from the process of appointing an Expert and to refer the Dispute to the courts of England and Wales instead.

10.5 The Expert shall act as an expert and not as an arbitrator and his decision will (in the absence of manifest error) be final and binding on the parties hereto and at whose cost shall be at his discretion or in the event that he makes no determination, such costs will be borne by the parties to the Dispute in equal shares.

10.6 The Expert will be appointed subject to an express requirement that he reaches his decision and communicates it to RiverOak and the District Council within the minimum practicable timescale allowing for the nature and complexity of the dispute and in any event not more than 20 Working Days from the date of his appointment to act.

10.7 The Expert will be required to give notice to each of RiverOak and the District Council inviting each of them to submit to him within 10 Working Days written submissions and supporting material and will afford to each of them an opportunity to make counter submissions within a further 5 Working Days in respect of any such submission and material.

11. **NOTICES**

11.1 Any notice, consent or approval required to be given under this Deed shall be in writing and shall be sent to the address and marked for the attention of the persons identified below or instead to such other persons as may be substituted for them from time to time.

11.2 Any such notice must be delivered by hand or by pre-paid Special Delivery post and shall conclusively be deemed to have been received:-

11.2.1 if delivered by hand, on the next Working Day after the day of delivery; and

11.2.2 if sent by Special Delivery post and posted within the United Kingdom, on the day 2 Working Days after the date of posting.

11.3 The address for service of any such notice, consent or approval as aforesaid shall:-

11.3.1 in the case of service upon the County Council be at its address given above or such other address for service as shall have been previously notified in writing to the other parties and any such notice shall be marked for the attention of the Office of the General Counsel; and

11.3.2 in the case of service upon RiverOak be at its address given above or such other address for service as shall have been previously notified in writing to the other parties and any such notice shall be marked for the attention of Tony Freudmann.

12. **INDEXATION**

12.1 Subject to the terms of this Deed, any Contributions in this Deed shall be adjusted in the same proportion as the percentage increase in the General Building Cost Index between the monthly index figure of October 2016 and the monthly index figure for the month of the date of actual payment.

12.2 Where reference is made to any index in this Deed and that index ceases to exist or is replaced or rebased then it shall include reference to any index which replaces it or any rebased index (applied in a fair and reasonable manner to the periods before and after rebasing under this Deed) issued or caused to be issued from time to time by the Building Costs Information Service, Royal Institution of Chartered Surveyors or other appropriate body and as may commonly be used in place of that index and as approved by the County Council or in the event that the index is not replaced to an alternative reasonably comparable basis or index as the County Council shall approve acting reasonably.

13. **INTEREST**

13.1 Where any obligation in this Deed is expressed to require RiverOak to pay any Contributions or Contribution, interest at the Interest Rate shall be payable (as applicable).

14. **LOCAL LAND CHARGES**

14.1 This Deed is a local land charge and shall be registered as such by the County Council.

15. **NOTICE OF WORKS**

15.1 RiverOak shall notify the County Council:-

15.1.1 prior to the Commencement Date, of the anticipated date of Commencement of works pursuant to the Development Consent Order (which obligation shall apply again if Commencement Date does not occur on the notified date);

15.1.2 within seven days of the actual Commencement Date;

15.1.3 within two weeks of the day on which the Project is Practically Completed; and

15.1.4 within two weeks of each of the triggers in relation to the development consent obligations as set out in the Schedules to this Deed.

15.2 RiverOak shall give written notice to the County Council within five Working Days of RiverOak paying, providing or making available to any third party any Contributions pursuant to this Deed.

16. **COMMUNITY INFRASTRUCTURE LEVY**

The parties hereby acknowledge and agree that:-

16.1 this Deed has been negotiated and agreed on the assumption that liability to CIL does not arise in respect of any of the development authorised by the Development Consent Order because such development is situated in an area for which no charging schedule is in effect on the date of this Deed and no charging schedule is anticipated to be in effect in relation to such development on the day the Development Consent Order is made.

16.2 If in determining the DCO the Secretary of State expressly states in the Decision Letter that any one or more of the development consent obligations contained in this Deed:

16.2.1 is not a material development consent obligation; or

16.2.2 can be given no weight in determining the granting of the DCO; or

16.2.3 should be dealt with by a requirement imposed upon the DCO; or

16.2.4 does not constitute a reason for granting the DCO in accordance with Regulation 122 of the CIL Regulations; or

16.2.5 fails to satisfy the provisions of Regulation 123 of the CIL Regulations;

then subject to the provisions of clause 2.9 of this Deed such development consent obligation shall not be enforceable pursuant to this Deed and shall cease to have effect within this Deed save to the extent set out in the Decision Letter

16.3 In the event that in determining the DCO the Secretary of State grants the DCO then if at the date of the grant of the DCO a Charging Schedule has been approved by the District Council and has come into effect any contribution payable under the terms of this Deed which is for an Infrastructure project or type of Infrastructure set out in the Charging Schedule shall cease to be payable.

17. **VAT**

17.1 If this Deed or anything contained in it gives rise to a taxable supply for VAT purposes by the County Council to RiverOak then the County Council shall use reasonable endeavours to recover the VAT in the first instance.

17.2 If this Deed or anything contained in it gives rise to a taxable supply for VAT purposes by the County Council to RiverOak then, subject to the County Council complying with clause 17.1, RiverOak shall pay to County Council or third party an amount equal to the VAT chargeable in addition to and at the same time as any payment or the provision of any other consideration for such supply upon provision of a valid VAT invoice addressed to RiverOak.

18. **APPROVALS**

Where any approval, agreement, consent, confirmation or an expression of satisfaction is required under the terms of this Deed by RiverOak or the County Council such approval, agreement, consent, confirmation or expression of satisfaction shall be given in writing and shall not be unreasonably withheld or delayed.

19. **COUNTY COUNCIL'S POWERS**

Nothing in this Deed shall fetter the respective statutory rights, powers or duties of the County Council.

20. **GOOD FAITH**

The parties agree with each other to act reasonably and in good faith in the discharge of the obligations contained in this Deed.

21. **RIGHTS OF THIRD PARTIES**

It is not intended that any person who is not a party to this Deed shall have any right under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this Deed.

22. **JURISDICTION**

22.1 This Deed including its construction, validity, performance and enforcement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with English law.

22.2 Each party irrevocably agrees that the courts of England shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this Deed or its subject matter or formation (including non-contractual disputes or claims).

IN WITNESS whereof RiverOak hereto have executed this Deed on the day and year first before written.

FIRST SCHEDULE

PUBLIC RIGHTS OF WAY

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"PRoW Contribution"	means the sum of £275,805.00 (Two hundred and seventy five thousand eight hundred and five pounds) Index Linked to be used in the proportions as set out in the PRoW Contribution Purposes;
"PRoW Contribution Purposes"	means the following works: 1. the diversion of TR8 for which £120,015 of the PRoW Contribution shall be used; 2. the works to TR9 to enable the diversion of TR8 to be completed for which £25,650 of the PRoW Contribution shall be used; and 3. the improvement works required to TR10 for which £130,140 of the PRoW Contribution shall be used.
"PRoW Plan"	means the plan attached to this Deed at Annex 2 showing TR10 coloured yellow and TR8 coloured green and TR9 coloured dashed blue and marked "Public Rights of Way".

1. RiverOak covenants with the County Council to pay the PRoW Contribution to the County Council prior to the coming into Operation of the Project and not to cause permit or allow the Project to come into Operation until the PRoW Contribution has been paid in full to the County Council.

SECOND SCHEDULE

CAR PARKING MANAGEMENT STRATEGY

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Car Parking Management Strategy"	means the Car Parking Management Strategy required to be submitted under Requirement 7 of the Development Consent Order;
"Traffic Regulation Order"	means the Traffic Regulation Order to be made by the County Council pursuant to the 1980 Act in relation to parking restrictions in the locality of Manston Airport;
"Traffic Regulation Order Contribution"	means the sum of £6,000.00 (Six thousand pounds) Index-linked to be used towards the advertising and administration of the Traffic Regulation Order;
"Travel Plan"	means the Travel Plan required to be submitted under Requirement 7 of the Development Consent Order; and
"Travel Plan Monitoring Contribution"	means an annual contribution of £1,667.00 (One thousand six hundred and sixty seven pounds) Index-linked to be paid for the purposes of monitoring adherence measures set out in the Travel Plan for 20 years.

PART 1

2. RiverOak covenants with the County Council:

2.1 To pay to the initial annual Travel Plan Monitoring Contribution to the County Council prior to the coming into Operation of the Project.

2.2 Not to cause permit or allow the Project to come into Operation unless the initial annual Travel Plan Monitoring Contribution has been paid in full to the County Council.

2.3 To pay the remaining annual payments of the Travel Plan Monitoring Contribution to the County Council on the following nineteen anniversaries of payment of the initial annual Travel Plan Monitoring Contribution.

PART 2

3. RiverOak covenants with the County Council:

3.1 To pay the Traffic Regulation Order Contribution to the County Council prior to the coming into Operation of the Project.

3.2 Not to cause permit or allow the Project to come into Operation unless the Traffic Regulation Order Contribution has been paid in full to the County Council.

THIRD SCHEDULE

SCHOOLS CONTRIBUTIONS

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Schools"	means the following schools which will be impacted by the noise caused as a result of the operation of Manston Airport: • Manston School House Nursery; • Chatham & Clarendon Gramma School; • The Elms Nursery School; • Priory County Infant School; • Masque Theatre School; • Fledglings Nursery School; and • Ellington Infant School;
""Schools Contribution"	means an annual payment of £139,000.00 to be paid to the Schools for a period of 20 years for the Schools Contribution Purposes; and
"Schools Contribution Purposes"	means the provision of noise insulation measures at the Schools to ameliorate the noise impact of the operation of Manston Airport and any other measures deemed necessary to benefit the pupils of the Schools against the impact of the operation of Manston Airport.

2. RiverOak covenants with the County Council:

2.1 To pay to the County Council the Schools Contribution as follows:

2.1.1 to pay the first annual payment of the Schools Contribution to the County Council six months prior to the coming into Operation of the Project; and

2.1.2 not to cause permit or allow the Project to come into Operation unless the first annual payment of the Schools Contribution has been paid to the County Council.

2.1.3 to pay the remaining nineteen annual payments of the Schools Contribution to the County Council on the following nineteen anniversaries of the first annual payment.

FOURTH SCHEDULE

MANSTON – HAINE LINK ROAD

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Manston – Haine Link Road"	means that area of land sited in the Northern Grass Area as shown coloured orange on the Manston – Haine Link Road Plan such road to be used to link the A256 to the B2050 through part of the Northern Grass Area;
"Manston – Haine Link Road Contribution"	means the sum of £500,000.00 (Five hundred thousand pounds) Index-linked to be used towards the construction of the Manston – Haine Link Road;
"Manston – Haine Link Road Plan"	means the plan attached to this Deed at Annex 3 showing the Manston – Haine Link Road; and
"Northern Grass Area"	means the area shown on the Manston – Haine Link Road Plan falling within the limits of the Development Consent Order which shall include other airport-related development (as defined in the Development Consent Order) at Manston Airport.

2. RiverOak covenants with the County Council:

2.1 In carrying out the Project to ensure that the part of the Northern Grass Area which may potentially be required for the provision of the Manston – Haine Link Road is safeguarded until 31 December 2036 or until the County Council has obtained funding and planning permission for the Manston – Haine Link Road whichever is the earlier.

2.2 No to cause permit or allow any development of any kind whether or not connected with the Development Consent Order save for landscaping works to take part on that part of the Northern Grass Area which may be required for the provision of the Manston – Haine Link Road until 31 December 2036 or until the County Council has obtained funding and planning permission for the Manston – Haine Link Road whichever is the earlier.

2.3 If by 31 December 2036 or by the time the County Council has obtained funding and planning permission for the Manston – Haine Link Road whichever is the earlier, the County Council has obtained funding for and brought forward a scheme for the Manston – Haine Link Road to transfer that part of the Northern Grass Area safeguarded for the Manston – Haine Link Road to the County Council for £1.00.

2.4 To pay the Manston – Haine Link Road Contribution to the County Council within 20 Working Days of the County Council obtaining planning permission for the Manston – Haine Link Road IT BEING AGREED THAT in the event the County Council has not been able to obtain planning permission for the Manston – Haine Link Road by 31 December 2036 the Manston – Haine Link Road Contribution shall not be payable.

FIFTH SCHEDULE

PUBLIC TRANSPORT

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Manston Airport Bus Service"	means a bus service to be funded and provided by RiverOak in accordance with the Manston Airport Bus Service Scheme;
"Manston Airport Bus Service Scheme"	means the scheme for the Manston Airport Bus Service to be submitted to and approved by the County Council;
"Public Transport Contribution"	means the annual sum of £150,000.00 (One hundred and fifty thousand pounds) (Index Linked) such sum to be used for the Public Transport Contribution Purposes; and
"Public Transport Contribution Purposes"	means the enhancement of local bus services which may include the following: • increase in frequency of existing local bus services; • extension of the operating times of local bus services; and • extension of existing local bus routes.

2. RiverOak covenants with the County Council as follows:

2.1 To pay to the County Council the Public Transport Contribution as follows:

2.1.1 to pay the first annual payment of the Public Transport Contribution to the County Council prior to the coming into Operation of the Project;

2.1.2 not to cause permit or allow the Project to come into Operation until the Public Transport Contribution has been paid to the County Council; and

2.1.3 to pay the remaining annual payments of the Public Transport Contribution on all following anniversaries of the first annual payment for the lifetime of the operation of Manston Airport unless otherwise agreed in writing with the County Council.

2.2 To submit and receive written approval from the County Council and the Manston Airport Bus Service Scheme prior to the coming into Operation of the Project.

2.3 Not to cause permit or allow the Project to come into Operation without having received written approval from the County Council of the Manston Airport Bus Service Scheme.

2.4 To provide the Manston Airport Bus Service for the lifetime of the Project unless otherwise agreed in writing with the County Council.

SIXTH SCHEDULE

OFF-SITE JUNCTIONS

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Off-Site Junctions"	means the following junctions in the environs of the land comprising the Development Consent Order: • Junction 1 (A256/Sandwich Road) • Junction 2 (A299 / A256 / Cottington Link Road) • Junction 4 (A299 / B2190) • Junction 6 (A299 / Seamark Road / A253 / Willetts Hill) • Junction 7 (A299 / A28) • Junction 10 (Shottendane Rd / Manston Road / Margate Hill) • Junction 13 (Manston Court Road / B2050) • Junction 15 (Manston Rd / Hartsdown Rd / Tivoli Rd / College Rd / Nash Rd) • Junction 16 (Ramsgate Rd / College Rd / A254 / Beatrice Rd) • Junction 17 (Ramsgate Road / Poorhole Lane / Margate Road / Star Lane) or, in the event that the above junctions are not forthcoming, other off-site junction works as the County Council deems necessary to carry out works on in order to mitigate the effect of the Development Consent Order;
"Off-Site Junctions Contributions"	means the following amounts (all Index-linked) in respect of each Off-Site Junction: • Junction 1 - £91,000

Word or Phrase	Meaning
	• Junction 2 - £836,500 • Junction 4 - £826,800 • Junction 6 - £826,800 • Junction 7 - £162,000 • Junction 10 - £71,100 • Junction 13 - £590,500 • Junction 15 - £50,500 • Junction 16 - £415,700 • Junction 17 – £53,500
"Off-Site Junctions Plan"	means the plan attached to this Deed at Annex 4 showing the Off-Site Junctions; and
"Off-Site Junctions Contributions Purposes"	means the following in respect of each Off-Site Junction • Junction 1 – minor widening on arms • Junction 2 – signalisation of roundabout • Junction 4 – signalisation of roundabout • Junction 6 – signalisation of roundabout • Junction 7 – improvements to signage and carriageway markings • Junction 10 – minor widening and white lining • Junction 13 – Provision of a new three arm signalised junction with pedestrian crossing facilities linked to the signalised junction proposals for the main airport terminal access • Junction 15 – provision of new signal head locations, road markings and revised stage sequence operation.

Word or Phrase	Meaning
	• Junction 16 – provision of new stop line, road markings, signal head locations and revised stage sequence operation. • Junction 17 – minor widening and white lining

2. RiverOak covenants with the County Council as follows:

2.1 To pay the Off-Site Junction Contributions in full to the County Council as follows:

2.1.1 Junction 13 – by the third year of the Operation of the Project;

2.1.2 Junctions 1, 2 and 4 – by the tenth year of the Operation of the Project;

2.1.3 Junctions 6 and 7 – by the fifteenth year of the Operation of the Project;

2.1.4 Junctions 10, 15, 16, 17 and- by the twentieth year of the Operation of the Project.

3. In the event that the above junction improvements are not necessary, the payments may be put towards other highway improvements as the County Council deems necessary provided that such improvements are required for the purpose of mitigating the effects of the Project.

SEVENTH SCHEDULE

PRELIMINARY FREIGHT MANAGEMENT STRATEGY

DEFINITIONS AND INTERPRETATION

1. Where in this Schedule the following defined terms and expressions are used they shall have the following respective meanings unless otherwise stated:-

Word or Phrase	Meaning
"Preliminary Freight Management Strategy Signage Contribution"	means the sum of £7,650 (Seven thousand six hundred and fifty pounds) to be paid to the County Council for the Preliminary Freight Management Strategy Signage Purposes;
"Preliminary Freight Management Strategy Signage Purposes"	means the provision of clear routeing signage to ensure HGV drivers use appropriate roads to reach the Site.

2. RiverOak covenants with the County Council as follows:

2.1 To pay the Preliminary Freight Management Strategy Signage Contribution to the County Council prior to the coming into Operation of the Project;

2.2 Not to cause permit or allow the Project to come into Operation unless the Preliminary Freight Management Strategy Signage Contribution has been paid in full to the County Council.

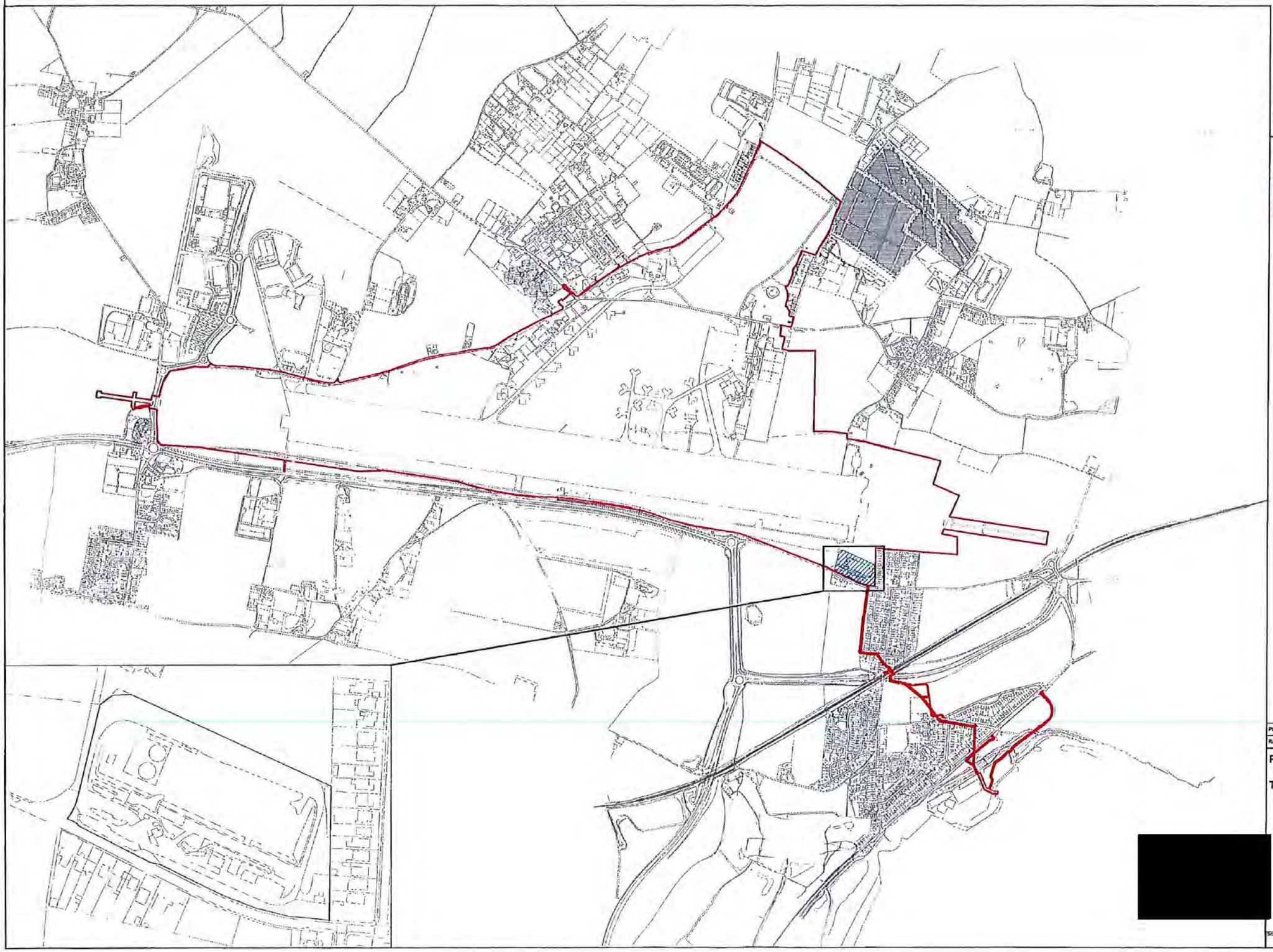
ANNEX 1

PLAN 1 - PLAN OF THE SITE

5

Manston Airport Development Consent Order
Site Plan
Sheet 1 of 1

RSP



Key Plan
Scale: NTS

KEY

Jentex Site
Order limits

Notes

1. OS Data obtained from emapsite™ May 2017:
© Crown copyright and database rights 2019
Ordnance Survey 0100031673

0 170 340 680
Metres

P01	FOR INFORMATION	CM	DL	BJ	05/07/2019
Rev	Description	By	Chd	Apr	Date

Project Manston Airport
Development Consent Order

Title Site Plan
Sheet 1 of 1
Thanet District Council

Scale	Sheet Size	Sheet No.	Status
1:8,500	A1	1 of 1	FOR INFORMATION

ANNEX 2
UNREGISTERED LAND

HM Land Registry
Official copy of
title plan

~~Title number K873634~~
Ordnance Survey map reference TR3466SW
Scale 1:2500
Administrative area Kent : Thanet

Triangular Land

Unregistered land bounded by K803975, K873634 and K837633

ANNEX 3
PRoW PLAN

Court

Wood Farm

46

51

Spratling Street

Spratling Court Farm

Manston

Grove Farm

TR8

TR9

51

Manston Road

Chapel Farm

TR10

Bush Farm

TR9

To be joined western boundary of the Manston Green Development

[redacted]

Key

- Order limits
- TR8 - to be diverted, widened to 3m and upgraded with suitable paved surface
- TR9 - no upgrade required as existing provision is suitable
- TR9 - element of TR9 within red line boundary to be extinguished
- TR10 - to be widened to 3m and upgraded with suitable paved surface

0 m 300 m

Scale 1 5000 @ A3

Client

RSP

Manston Airport DCO

Public Rights of Way

[redacted]e 2019

wood.

R:\Projects\40820 STH Manston Airport Post Application\D Design\Drawings\AutoCAD\40820-Lon217.dwg Originator: PRANAV.YADAV

ANNEX 3

MANSTON-HAINE LINK ROAD PLAN

Manston Airport DCO

Manston - Haine Link Land for Safeguarding Sheet 1

June 2019

wood.

[redacted]

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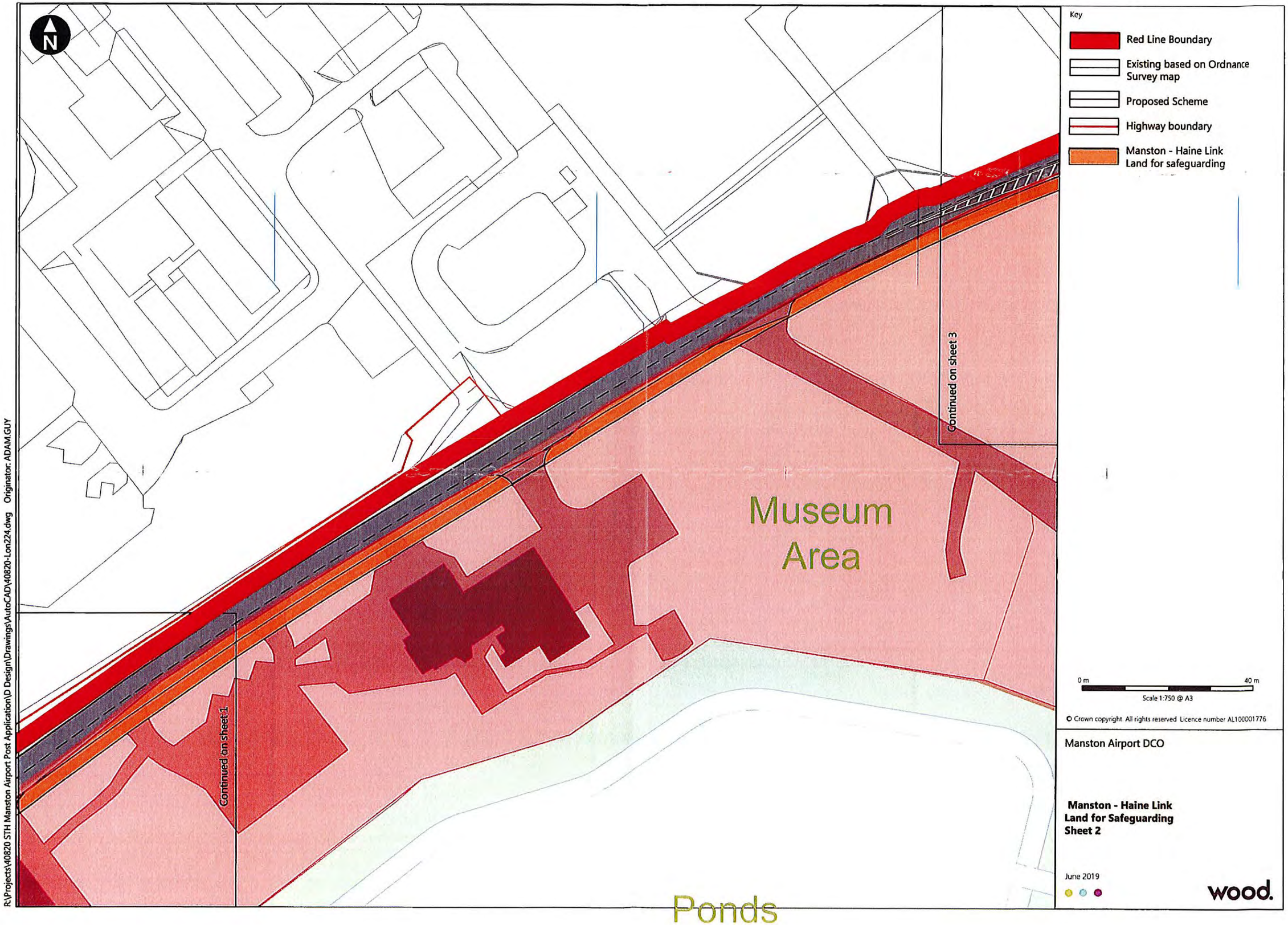

Manston Airport DCO

Manston - Haine Link Land for Safeguarding Sheet 2

June 2019

wood.

R:\Projects\40820 STH Manston Airport Post Application\D Design\Drawings\AutoCAD\40820-Lon224.dwg Originator: ADAM.GUY

N

Continued on sheet 4

Continued on sheet 2

Key

- Red Line Boundary
- Existing based on Ordnance Survey map
- Proposed Scheme
- Highway boundary
- Manston - Haine Link Land for safeguarding
- Northern Grass Area boundary

0 m 40 m

Scale 1:750 @ A3

Manston Airport DCO

-Manston - Haine Link Land for Safeguarding Sheet 3

June 2019

wood.

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N

Continued on sheet 5

Continued on sheet 3

Key

- Red Line Boundary
- Existing based on Ordnance Survey map
- Proposed Scheme
- Highway boundary
- Manston - Haine Link Land for safeguarding
- Northern Grass Area boundary

0 m 40 m

Scale 1:750 @ A3

Manston Airport DCO

-Manston - Haine Link Land for Safeguarding Sheet 4

June 2019

wood.

[redacted]

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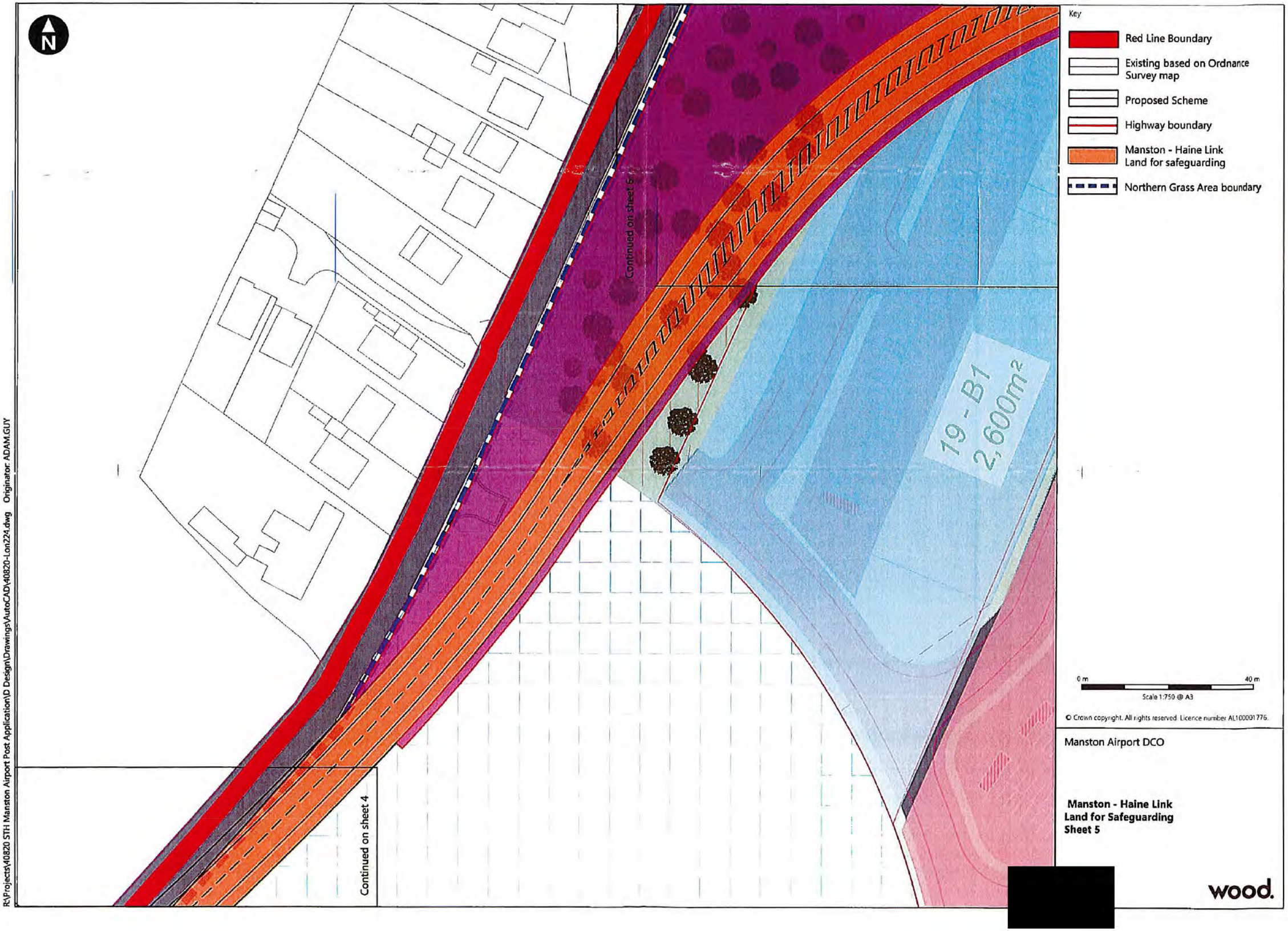
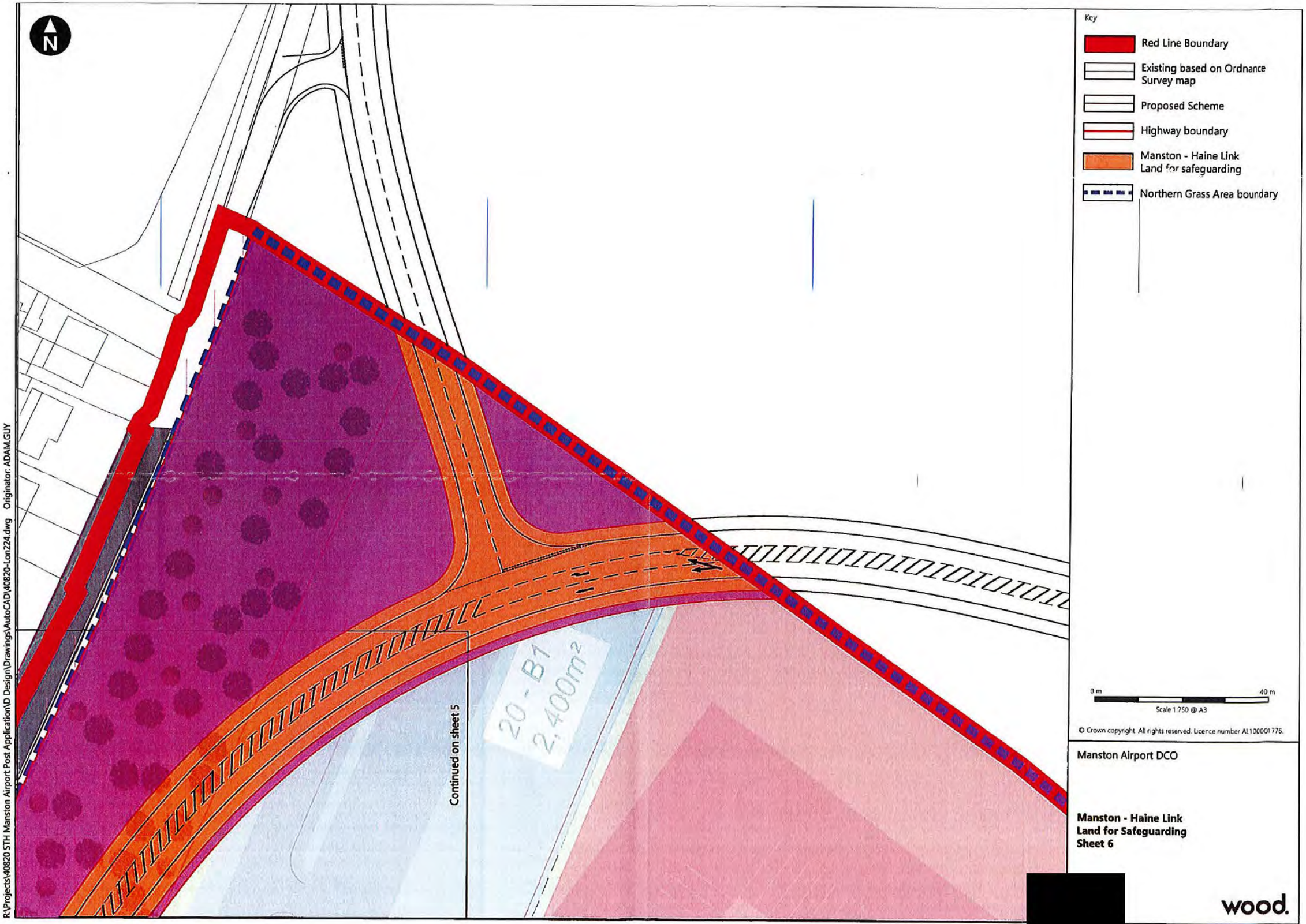

N
Continued on sheet 6
19 - B1
2,600m²
Continued on sheet 4
Key
Red Line Boundary
Existing based on Ordnance Survey map
Proposed Scheme
Highway boundary
Manston - Haine Link Land for safeguarding
Northern Grass Area boundary
0 m
40 m
Scale 1:750 @ A3
© Crown copyright. All rights reserved. Licence number AL100001776.
Manston Airport DCO
Manston - Haine Link
Land for Safeguarding
Sheet 5
wood.
[redacted]
R:\Projects\40820 STH Manston Airport Post Application\D Design\Drawings\AutoCAD\40820-Lon224.dwg Originator: ADAM.GUY



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Key

- Red Line Boundary
- Existing based on Ordnance Survey map
- Proposed Scheme
- Highway boundary
- Manston - Haine Link Land for safeguarding
- Northern Grass Area boundary

0 m 40 m

Scale 1:750 @ A3

Manston Airport DCO

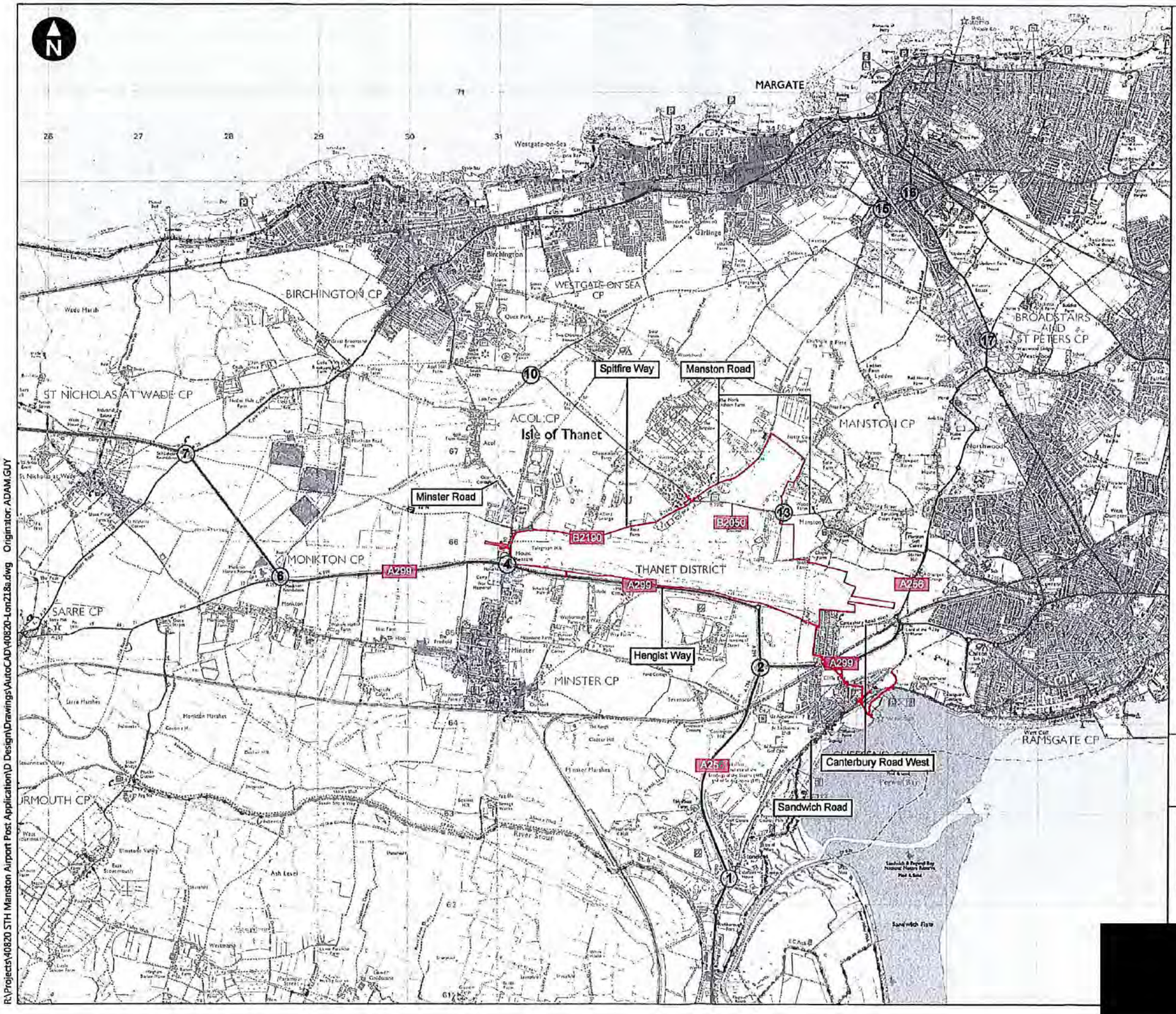
Manston - Haine Link
Land for Safeguarding
Sheet 6

[redacted]

wood.

ANNEX 4

OFF-SITE JUNCTIONS PLAN



Key

Order limits

1 Off site junction

1 A256/Sandwich Road
2 A256/A299/Cottingham Link Road
4 A299/B2190 (Minster Road)/B2190 (Tothill Street)
6 A253 (Canterbury Road)/A299/Willetts Hill/Seamark Road
7 A299/A28 (Canterbury Road)/ Potten Street Road
10 B2050 (Manston Road)/Shottendane Road/Margate Hill
13 B2050 (Manston Road)/Manston Court Road
15 B2052 Hartsdown Road/B2052 (Tivoli Road)/B2052 (College Road)/Nash Road/Empire Terrace/MarstonRoad (Coffin Corner)
16 A254 (Ramsgate Road)/B2052 (College Road)/B2052 (Beatrice Road)
17 A254 (Margate road)/A254 (Ramsgate Road)/Star Lane/Poorhole Lane

0 m 1000 m 2000 m
Scale 1:40000 @ A3

Client

RSP

Manston Airport DCO

TR5.9 - Offsite junction Improvements

[redacted]

2019

wood.

R:\Projects\40820 STH Manston Airport Post Application\D Design\Drawings\AutoCAD\40820-Lon218a.dwg Originator: ADAM.GUY

EXECUTED AS A DEED by **RIVEROAK MSE LIMITED** acting by a Director in the presence of:

[redacted]

Director

Witness Signature

Witness Name
(block capitals)

Witness Address

[redacted]

EXECUTED AS A DEED by **RIVEROAK FUELS LIMITED** acting by a Director and Secretary of two Directors

[redacted]

Director

Witness Signature

Witness Name
(block capitals)

Witness Address

[redacted]

From: Emma Montlake [redacted]]
Sent: 19 June 2020 16:40
To: TRANSPORTINFRASTRUCTURE <TRANSPORTINFRASTRUCTURE@dft.gov.uk>; Susan Anderson <Susan.Anderson@dft.gov.uk>; Rob Pridham <Rob.Pridham@dft.gov.uk>
Cc: 'Samara Jones-Hall' [redacted]>; 'Jason Jones-Hall' [redacted]
Subject: FILED: Action Required: Manston Airport DCO - Legal Opinion.
Importance: High

For the attention of the Secretary of State for Transport,

The Environmental Law Foundation has been assisting local people in the Manston Airport DCO process and we are submitting the attached on their behalf. We are copying in Samara and Jason Jones Hall who we have been particularly assisting.

We attach a Legal Opinion and a letter of support of the contents of the Opinion, from some of the community who have been involved with the Manston Airport DCO process. We are submitting the same as new evidence for the Examination to urgently consider, in light of on-going delays to the DCO decision.

We would be grateful for confirmation of receipt of the attachments.

Yours sincerely,

Emma Montlake
Environmental Law Foundation

19 June 2020

The Rt Hon Grant Shapps
Secretary of State for Transport
Department for Transport Zone
1/18, Great Minster House
33 Horseferry Road, London, SW1P 4DR

BY EMAIL:
transportandworksact@dft.gov.uk; cc. Susan.Anderson@dft.gov.uk; Rob.Pridham@dft.gov.uk

Dear Sir

RiverOak Strategic Partners ("the Applicant). Proposed Manston Airport Development ("Manston") Development Consent Order ("DCO")

We hereby respectfully submit and fully support as new evidence for the Examination the attached legal opinion, which we have collectively obtained through the Environmental Law Foundation.

The organisations named below represent 21 local organisations, groups, residents' associations, and District and Town Councillors across Ramsgate and the surrounding area. All of these groups, organisations and individuals have previously registered as Interested Parties and submitted a significant body of detailed evidence during the DCO Examination as well as personal testimonies as Relevant Representations.

Signed

Peter Campbell	**Councillor and Chairman, Ramsgate Town Council** and **Councillor, Thanet District Council**
Anne-Marie Nixey	**Councillor and Vice-Chair, Ramsgate Town Council**
David Green	**Councillor, Ramsgate Town Council**
Liz Green	**Councillor, Thanet District Council**

Five10Twelve Ltd
Grange Road Residents
Guildford Lawn Residents Against DCO Group
Holiday Homes Against Manston
Nethercourt Action Group
No Night Flights
PATCH - Plotholders Against the Cargo Hub
Plains of Waterloo Community Group
Ramsgate Airport Sceptics
Ramsgate Coastal Community Team
Ramsgate Neighbourhood Plan Group
Ramsgate Heritage and Design Forum
Ramsgate Town Team
Thanet Green Party
The Ramsgate Society
WITH Public Relations Ltd

Attached: Manston Airport Development Consent Order Legal Opinion, Gethin Thomas, 39 Essex Chambers

Manston Airport Development Consent Order

OPINION

A. INTRODUCTION AND OVERVIEW

1. I am instructed by the Environmental Law Foundation ("ELF") on behalf of Five10Twelve Limited, an interested party in respect of the Manston Airport Development Consent Order ("DCO"). The application concerns the existing site of the disused Manston Airport, west of the village of Manston and north east of the village of Minster, in Kent.

2. By way of brief background:
    a. The application: RiverOak Strategic Partners Ltd ("the Applicant") submitted its application for a DCO for a nationally significant infrastructure project ("NSiP") under the Planning Act 2008 ("the 2008 Act") to re-open Manston airport in July 2018.[1] In short, the Applicant plans to '*reopen and develop Manston Airport into a dedicated air freight facility able to handle at least 10,000 air cargo movements per year whilst also offering passenger, executive travel, and aircraft engineering services*.'[2]
    b. The examination: On 14 August 2018, the Planning Inspectorate ("PINS"), on behalf of the Secretary of State, formally accepted the DCO application for examination. The timetable for hearings and deadlines for the submission of information was published by PINS in December 2018. The examination formally closed at 23:59 on Tuesday 9 July 2019.
    c. PINS recommendations: On 18 October 2019, recommendations on the DCO application were given in a report by PINS to the Secretary of State. The

[1] This followed something of a false start. As set out further below, the Applicant had initially lodged its application in April 2018, but withdrew it in May 2018, before re-submitting in July 2018.
[2] Application for Development Consent, (5) Non-technical description of the Development Proposal (17 July 2018).

recommendations have not been made publicly available. Pursuant to section 107(1) of the 2008 Act, the Secretary of State is required to make his decision within 3 months of receipt of the report, and as such, the deadline for a decision on the DCO was 18 January 2020.

d. First deadline extension and request for comments further information: On 16 January 2020, the Secretary of State extended the deadline by 4 months to 18 May 2020 pursuant to section 107(7) of the 2008 Act, on the basis that further information on a range of issues was required to be provided by the Applicant and other Interested Parties before determination of the application by the Secretary of State.[3] On 17 January 2020, the Secretary of State issued a request for comments and further information on a broad range of issues, including climate change, to be submitted by 31 January 2020.[4]

3. On 20 May 2020, a written statement was made in the House of Commons by the Minister of State for Transport formally extending the deadline again. The deadline was extended to 10 July 2020 to '*enable further work to be carried out before determination of the application*.'[5]

4. I am asked to advise as to the legal implications of the delay to the DCO decision, particularly in light of the ongoing severe impact of the Covid-19 pandemic on the aviation industry.

[3] House of Commons Written Statement (HCWS40), Written Statement made by Parliamentary Under Secretary of State for Transport (Ms Nusrat Ghani) on 16 Jan 2020, available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005169-200117%20Manston%20Airport%20DCO%20Deadline%20Extension%20Written%20Ministerial%20Statement%20.pdf.

[4] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005170-200117%20Manston%20Airport%20DCO%20Request%20for%20Further%20Information%20letter.pdf.

[5] House of Commons Written Statement (HCWS247), Written statement made by Minister of State for Transport (Andrew Stephenson) on 20 May 2020, available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005335-Written%20Statement%20Report%2020200520.pdf.

B. SUMMARY OF ADVICE

5. The implications of the delay are potentially extremely significant. The length of this delay has meant that significant matters of fact have arisen, and overtaken in material respects, the evidence upon which the examining authority's recommendations were based in October 2019. In particular, the Covid-19 pandemic has had an unprecedented impact on the aviation sector generally, and is likely to have significantly affected the Applicant's DCO application in particular.

6. There is provision under the Infrastructure Planning (Examination Procedure) Rules 2010 SI No 103 for the Secretary of State to give all interested parties the opportunity to make representations in writing in respect of any new evidence or new matters of fact that have arisen since the examining authority issued its recommendations, where he intends to differ from the facts found, or indeed the recommendations, of the examining authority. This means that there is, within the procedural rules, a mechanism for evidence to be updated by all parties without the Applicant being required to re-submit a DCO application from scratch. The Secretary of State has not indicated that he will afford interested parties this opportunity in respect to the impact of the Covid-19 pandemic.

7. However, the pandemic plainly has a material and significant impact on the viability and cogency of the proposed development that will need to be assessed. A failure to undertake that assessment would, in my view, likely constitute an error of law for failing to take account of a material consideration, and render the DCO decision vulnerable to challenge by way of a judicial review claim.

C. FACTUAL BACKGROUND

The site

8. The application site is on the existing site of the disused Manston Airport, on the Isle of Thanet in Kent. The area within the DCO application site boundary is 311.7 hectares

(770 acres) of land predominantly inside the existing airport boundary. It includes the the 2,748m long, 60m wide runway, which is orientated in an east-west direction across the southern part of the site.

9. Most of the land within the existing airport perimeter was owned by Stone Hill Park Limited ("SHP") until July 2019, when all of the land owned by SHP was purchased by a subsidiary company of the Applicant.[6] Prior to that voluntary acquisition of the land, SHP had sought planning permission for 3,700 homes, a business park, sports facilities, and heritage runway on the site. This is understood to be withdrawn. However, it is understood that SHP has retained a contract with the Department for Transport, as part of the government's contingency planning for cross-channel disruption, to manage the site as a holding area for lorries. This contract is due to expire on Dec 31 2020.[7]

10. The airport is a former RAF base. In 1989, a civilian airport, Kent International Airport, was established within the RAF facility. All RAF operations ceased at the site in 1999. It was used intermittently as a cargo airport, then a passenger airport. It has been disused since it was formally closed on 15 May 2014, and its commercial aerodrome licence was returned to the Civil Aviation Authority ("CAA").[8]

11. The site is located west of the village of Manston and north east of the village of Minster. The town of Margate lies approximately 5km to the north of the site and the continuous built up area of Ramsgate is from 1.4km to the east. Sandwich Bay is located approximately 4-5km to the south east. The northern part of the site is bisected by the B2050 (Manston Road), and the site is bounded by the A299 dual carriageway to the south and the B2190 (Spitfire Way) to the west.

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[6] https://rsp.co.uk/documents/rsp-documents/bdb-pitmans-purchase-of-manston-airport-2-july-2019/.

[7] https://www.shp-manston.co.uk/.

[8] The history of Manston Airport is summarized in the Applicant's application documents. The House of Commons Transport Committee report, *Smaller Airports*, Ninth report of Session 2014-15 (9 March 2015) also provides a detailed history. It is available online here: https://publications.parliament.uk/pa/cm201415/cmselect/cmtran/713/713.pdf.

12. The Applicant's development proposal is located entirely within the National Landscape Character Area: North Kent Plain and the Thanet Landscape Character Area: Central Chalk Plateau. The conservation areas of Acol and Minster in Thanet are within 2km of the site. The Ramsgate Conservation Area covers much of the historic town of Ramsgate. It extends to 12.2 km^2 and is the largest conservation area in Kent.[9] It is within 3km of the site. Ramsgate was designated as a Heritage Action Zone (HAZ) in April of 2017 to encourage economic growth using the historic environment as a catalyst.[10]

The DCO application

13. In short, the Applicant's development proposal is to:

> *The aims and purpose of the Proposed Development are to reopen and develop Manston Airport as a dedicated air freight facility, which also offers passenger, executive travel, and aircraft engineering services. The facilities for air freight and cargo operations would be able to handle a minimum of 10,000 air freight air traffic movements per year, and the airport and facilities at the airport would be compliant with European Aviation Safety Agency (EASA), or other relevant licensing organisation standards.*[11]

14. A Scoping Report was prepared in June 2016, and a period of non-statutory consultation took place from June 2016 to September 2016. A statutory consultation then took place from June to July 2017.[12]

15. Initially, there was an aborted submission of the Applicant's DCO application:
    a. On 10 April 2018, the Applicant submitted a DCO application to PINS.
    b. On 1 May 2018, PINS expressed its principal concerns in respect of the

[9] See, for example: Colliers International, *Creative Industries in Historic Buildings and Environments: Conservation Area Case Studies* (October 2018), p 76. Available online here: https://historicengland.org.uk/content/docs/research/creative-industries-case-studies/.
[10] Historic England, Latest News from Ramsgate's Heritage Action Zone (April 2020): https://historicengland.org.uk/whats-new/in-your-area/south-east/ramsgate-haz-news/.
[11] Statement of reasons, para 3.3: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002386-3.1%20-%20Statement%20of%20Reasons.pdf.
[12] It is important to note that Thanet District Council have cast serious doubt on the adequacy of the consultation in its Representation of Adequate Consultancy, available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002527-AoCR_Thanet%20District%20Council.pdf.

application documents to the Applicant's legal representatives. On 3 May 2018, a teleconference was held between the legal representatives, the Applicant and PINS.

c. On 4 May 2018, the Applicant's application was formally withdrawn by letter.[13]

d. On 11 May 2018, an in-person meeting was held between PINS and the Applicant. PINS provided detailed advice in respect of its three principal concerns:

   i. There was considered to be an absence of sufficient information within the application documents upon which to base a decision about whether the Proposed Development constitutes a Nationally Significant Infrastructure Project (NSIP) within the meaning in section 23 of the 2008 Act.

   ii. There were gaps in the ecological, archaeological and ground investigation survey data presented within the Environmental Statement (ES) accompanying the application.

   iii. It was considered that the Funding Statement did not fulfil the requirements of Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 SI No 2264 and statutory guidance.[14]

16. The application was re-submitted on 17 July 2018. The Applicant contended that the proposed development constituted a nationally significant infrastructure project, requiring development consent under the 2008 Act on the basis that: (i) the current capability of the airport is zero, (ii) increase in capability, on the basis of the theoretical maximum capability figure, is 83,220 movements per year of cargo aircraft, which exceeds the minimum threshold of 10,000.[15]

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[13] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-002133-Bircham%20Dyson%20Bell%20for%20RiverOak%20Strategic%20Partners.pdf.

[14] PINS, Meeting note (11 May 2018), available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-Advice-00327-1-180511%20Manston%20Airport%20project%20update%20meeting%20note_FINAL.pdf.

[15] TR020002/APP/2.3.

17. The Applicant's proposals involve both the use of the existing airport infrastructure and the introduction of new facilities. In summary, they include:
    a. an area for cargo freight operations, including 19 cargo stands; and
    b. facilities for other airport-related development, including:
        i. a passenger terminal and associated facilities;
        ii. an aircraft teardown and recycling facility;
        iii. a flight training school;
        iv. a base for at least one passenger carrier;
        v. a fixed base operation for executive travel; and
        vi. business facilities for aviation related organisations.

18. The Applicant has stated that this would involve, *inter alia*:
    a. The upgrade of Runways and re-alignment of the parallel taxiway to provide European Aviation Safety Agency compliant clearances for runway operations;
    b. Construction of 19 European Aviation Safety Agency compliant Code E stands for air freight aircraft with markings capable of handling Code D and F aircraft in different configurations;
    c. Installation of new high mast lighting for aprons and stands; - Construction of 65,500m² of cargo facilities;
    d. Construction of a new air traffic control tower;
    e. Construction of a new airport fuel farm;
    f. Construction of a new airport rescue and firefighting service station;
    g. Highway improvement works; and
    h. Extension of passenger service facilities including an apron extension to accommodate an additional aircraft stand and increasing the current terminal size.

19. For completeness, it is noted that the Applicant also sought compulsory acquisition powers, for the primary purpose of purchasing the land owned by SHP. However, the

voluntary acquisition of SHP's land by the Applicant has meant that the land required to be subject to compulsory acquisition powers had reduced from 300 hectares to less than 1.5 hectares.[16]

20. In support of its application, the Applicant relies on the following matters:

    a. First, the Applicant contends that the proposed development would meet an identified need for increased capacity for airfreight and for dedicated air freighters in the UK aviation sector. In short, the Applicant states that '[*w]hilst some additional capacity can be provided at existing passenger focused airports, including the 6 main London airports, there is insufficient capacity to meet both the existing forecast demand, or to allow the UK aviation sector and wider UK economy, to grow and to capture new market share.*' It relies upon a report prepared by Sally Dixon of Azimuth Associates, an aviation and business research consultant, dated July 2018 ("the Azimuth Report"). The most recent data set used in assessing airport capacity was for the year 2017.[17]

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[16] The Applicant's Overall Summary of Case, para 27.

[17] Statement of Reasons, para 9.40. The Azimuth Report refers frequently to an unpublished report for Transport for London that was prepared by York Aviation (a firm of air transport consultants), dated 2013, and a study carried out by York Aviation in respect of airport capacity in 2015. York Aviation itself submitted evidence to the DCO examination, which was highly critical of Azimuth's analysis. See, for example Appendices 4 and 5 to SHP's written representations (dated 15 February 2019), available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf. Moreover, York Aviation responded to the Secretary of State request for Comments and Further Information on 28 January 2020 and in its final paragraph strongly reiterated that:

> *It remains of concern to us that the Applicant, in its Overall Summary of Need Case (REP11-013, paras 4.2-4.4, Appendix 1, para 2.7), continues to misrepresent our earlier reports from 2013 and 2015 which do not, as was made clear in our subsequent reports, support the case for a new dedicated freight airport in Kent. We specifically refute the suggestion by the Applicant in its Overall Summary of Case (REP11-014, para 45) that the views expressed in reports produced before our engagement by Stone Hill Park are at variance with those produced subsequently. Indeed, our engagement by Stone Hill Park was a direct result of our concern over the misuse and misrepresentation of our work for TfL and the FTA by the Applicant and we set out clearly the proper interpretation of our earlier work in our reports of November 2017 and February 2019. Our standards of professional integrity require us to provide consistent advice to all of our various clients within the aviation industry. Hence, we must stress again that our earlier work, properly interpreted, is entirely consistent with our more recent reports as submitted to the Inquiry, which effectively supersede these earlier reports in presenting a more up to date analysis of the UK air freight market.*

Its response is available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005226-York%20Aviation%20LLP%20lt%20Manston%20DfT%2028.1.20.pdf.

b. Secondly, in its Statement of Reasons, the Applicant claimed that the proposed development would create '4,*000 direct jobs and a total of 30,000 jobs (direct, indirect, induced and catalytic) to the local and national economy by year 20.*'[18] In its Overall Summary of Case, it explains that '*the number of jobs forecast by Azimuth in its report [APP-085] is 3,417 direct jobs by year 20, 6,151 indirect or induced jobs, and 13,668 catalytic jobs, totalling 23,235*.'[19]

c. Thirdly, the Applicant contends that the development of the site as an airport is its only viable use.

d. Fourthly, it contends that the airport infrastructure at the site is a '*significant national asset*', and should not be lost.[20] It claims that making use of existing runways fulfils government policy, in '*circumstances where airport expansion is in the national interest and yet difficult to achieve and the creation of a new airport almost impossible*.'[21]

e. Finally, it contends that the proposed development would result in a '*valuable increase in the currently constrained capacity to trade internationally in the south-east of England, at a time when this is particularly important*.'[22]

21. The Applicant submitted an environmental statement prepared by AMEC, dated July 2018.[23]

The DCO timetable

22. The application was accepted for examination by PINS on 14 August 2018. The examination began on 9 January 2019. Between 10 January 2019 and 9 July 2019, there

[18] Statement of Reasons, para 9.48.
[19] Overall Summary of Case, para 9a.
[20] Statement of Reasons, paras 9.56 to 9.57.
[21] Overall Summary of Case, para 9b.
[22] Overall Summary of Case, para 9c.
[23] Available online here: https://infrastructure.planninginspectorate.gov.uk/projects/south-east/manston-airport/?ipcsection=docs&stage=app.

were a series of hearings, and deadlines for the receipt of comments and further information from the Applicant and interested parties. This opinion does not attempt to distil the significant representations and evidence submitted to PINS during the course of the examination.

23. Five10Twelve Limited has participated in the examination, by attending hearings and submitting written representations. In short, it objects to the development on the basis that there is no need for the proposed development, and it would have significant adverse environmental impacts.

24. On 18 October 2019, recommendations on the DCO application were given in a report by PINS to the Secretary of State. The recommendations have not been made publicly available. Pursuant to section 107(1) of the 2008 Act, the Secretary of State is required to make his decision within 3 months of receipt of the report, and as such, the deadline for a decision on the DCO was 18 January 2020.

The first deadline extension, and the Secretary of State's request for comments and further information

25. On 16 January 2020, the Secretary of State extended the deadline by 4 months to 18 May 2020 pursuant to section 107(7) of the 2008 Act, on the basis that further information on a range of issues was required to be provided by the Applicant and other Interested Parties before determination of the application by the Secretary of State.[24]

26. On 17 January 2020, the Secretary of State issued a request for comments and further

[24] House of Commons Written Statement (HCWS40), Written Statement made by Parliamentary Under Secretary of State for Transport (Ms Nusrat Ghani) on 16 Jan 2020, available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005169-200117%20Manston%20Airport%20DCO%20Deadline%20Extension%20Written%20Ministerial%20Statement%20.pdf.

information on a broad range of issues, be submitted by 31 January 2020:[25]

a. Unilateral undertakings;

b. Transport/engagement with public transport operators;

c. Transport/controlled parking zones;

d. Transport/public rights of way;

e. Compulsory acquisition;

f. Draft development consent order;

g. Habitats Regulations assessment;

h. Climate change, and;

i. Late representations.

27. In particular, the request in respect of climate change was made following the implementation of the Climate Change Act 2008 (2050 Target Amendment) Order 2019 SI No 1056, which amended the Climate Change Act 2008 so as to set the Net Zero target, following the UK's ratification of the Paris Agreement. The request provided as follows:

> *The Secretary of State invites further clarification from the Applicant on its assessment of the carbon emissions contribution from Manston Airport representing 1.9% from the total UK aviation emissions of 37.5 Mt CO2 for 2050. The Climate Change Act 2008, as amended through the Climate Change Act 2008 (2050 Target Amendment) Order 2019, established a net-zero greenhouse gas emissions target in law. The Committee on Climate Change is accordingly advising that the planning assumptions for international aviation should be to achieve net-zero emissions and its emerging advice to the UK Government is that this should be reflected in the UK emerging Aviation Strategy, which means reducing actual emissions in the aviation sector. While the Secretary of State notes that the Aviation Strategy has not yet been published, he would welcome comments on what the implications of the Committee on Climate Change's recommendation on international aviation being adopted might be for the Development, and on that basis what further mitigation measures might be considered in relation to the Development, so as to ensure the Government would be able to meet its 2050 net-zero emissions target.*

[25] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005170-200117%20Manston%20Airport%20DCO%20Request%20for%20Further%20Information%20letter.pdf.

28. The Applicant's response to the Secretary of State's request is dated 31 January 2020.[26]

29. Five10Twelve Limited submitted its response on the same date, focusing on climate change.[27]

The second deadline extension

30. On 20 May 2020, a written statement was made in the House of Commons by the Minister of State for Transport formally extending the deadline again. The deadline was extended to 10 July 2020 to '*enable further work to be carried out before determination of the application*.'[28]

The Covid-19 pandemic

31. It has been widely reported that the impact of the Covid-19 pandemic on the aviation industry has been catastrophic.[29] The sector has been plunged into an unprecedented crisis. As Airlines UK, the trade association for UK airlines, have summarised, in written evidence to the House of Commons Transport Committee:

> *Aviation, as an international industry, has sat at the forefront of the economic impact of the COVID-19 crisis, affected by complicated networks of border closures, travel restrictions, drops in passenger demand and the wider economic downturn.*
> *It would be no exaggeration to say that the impact of this crisis will, in the long term, be worse felt than that of the 2008 economic crisis, or the knock-on economic impact of 9/11. The projected economic fallout has changed week on week, with [the International Air Transport Association ("IATA")] latest projection in April forecasting a drop in global airline passenger revenues of $314 billion in 2020 – a 55% decline compared to 2019.*
> *The impact will be particularly acute for the UK, which IATA shows will be the worst revenue hit country in Europe:*

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[26] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005296-Applicant's%20cover%20letter%20and%20responses%20and%20enclosures.pdf.

[27] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005295-Five10Twelve%20Limited%20FINAL%20SOS.pdf.

[28] House of Commons Written Statement (HCWS247), Written statement made by Minister of State for Transport (Andrew Stephenson) on 20 May 2020, available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-005335-Written%20Statement%20Report%2020200520.pdf.

[29] See, for example, https://edition.cnn.com/2020/05/01/business/airlines-job-cuts-coronavirus/index.html.

the UK industry is facing a $26.1bn revenue loss and over 660,000 jobs at risk.[30]

32. IATA, the trade association for the world's airlines, has projected that air passenger volumes will lag behind economic activity, and are unlikely to return to the level of 2019 until 2023.[31]

33. In response to the damage inflicted to their businesses by the pandemic, airlines and airport operators are making significant job cuts. For example, British Airways have announced that it plans to cut 12,000 of its 42,000 strong workforce, Ryanair is making 3,000 workers redundant and easyJet is cutting approximately 30% of its staff.[32]

34. The New Economics Foundation, in consultation with the Trade Union Congress ("TUC") and aviation unions, have recently published a report analysing the impact on the sector. It warns that up to 124,000 jobs could be at risk (including indirect jobs dependent on the aviation supply chain).[33]

35. This all has obvious implications for airport expansion generally, as well as for the proposed redevelopment of Manston airport in particular. Indeed, the chief executive of Heathrow Airport Limited ("HAL") made the following observations in oral evidence to the House of Commons Transport Committee on 6 May 2020, in respect of Heathrow's expansion plans:

> *In terms of the third runway, my focus is solely on protecting jobs, protecting our business and serving the country at the moment. I am not thinking about the third runway. However, in 10 or 15 years' time, if we are successful in rebooting the UK economy and getting us back to full strength, we will need the third runway at that point…*
> *As to when and whether it will be needed, we will have to see how things turn out over the next few years. If we are successful in rebuilding the UK economy, we will need it*

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[30] Available online here: https://committees.parliament.uk/writtenevidence/3602/html/.
[31] https://www.iata.org/en/iata-repository/publications/economic-reports/recovery-in-air-travel-expected-to-lag-economic-activity/.
[32] The Independent, *124,000 aviation jobs could go within months unless government provides support, says report* (11 June 2020), available online here: https://www.independent.co.uk/news/business/news/airline-job-cuts-losses-aviation-flights-cancelled-coronavirus-bailout-a9558931.html.
[33] New Economics Foundation, Crisis Support to Aviation and the Right to Retrain (10 June 2020), available online here: https://neweconomics.org/uploads/files/aviation-workers.pdf.

in 10 to 15 years' time. If we are not, we are all in a very different world.[34]

36. With regard to cargo freight in particular, approximately 50% of global cargo volumes are flown in the belly of passenger aircraft. The IATA have explained that, although a number of airlines have converted some of their passenger aircraft to cargo-only flights, the grounding of most of the world's passenger fleet meant international belly cargo capacity declined significantly, by 43.7% year-on-year in March. The IATA projects that:

    Overall, based on the [World Trade Organisation's] latest scenarios for world trade, we estimate that cargo volumes (CTKs) could decline by between 14-31% in 2020.[35]

37. As such, it is plain that there has been an enormous impact on the sector, which it will continue to suffer in the short to medium term. The full impact on the sector and mitigation strategies are still being explored, as detailed in the House of Commons Transport Committee Second Report of Session 2019-2021 on the impact of the coronavirus pandemic on the aviation sector. The House of Commons Transport Committee have recommended that, until the end of 2020, the Department for Transport commits to making a monthly written statement to Parliament, to update Members of both Houses on the work and key outcomes of the Aviation Restart, Recovery and Engagement Unit.[36]

D. LEGAL FRAMEWORK

Planning Act 2008: Development consent orders for Nationally Significant Infrastructure Projects

Eligibility for DCO process

38. Consent under the 2008 Act is required for development to the extent that the

[34] https://committees.parliament.uk/oralevidence/348/pdf/.
[35] https://www.iata.org/en/iata-repository/publications/economic-reports/cargo-capacity-contracts-sharply-despite-higher-freighter-utilization/.
[36] https://committees.parliament.uk/publications/1452/documents/13275/default/.

development is, or forms part of, a nationally significant infrastructure project.[37] A "nationally significant infrastructure project" is defined, insofar as relevant, under sections 14(1)(i) and 23 as:

a. The construction of an airport which will be in England or in English waters, and is expected to be capable of providing: (i) air passenger transport services for at least 10 million passengers per year, or (ii) air cargo transport services for at least 10,000 air transport movements of cargo aircraft per year (as per subsection 23(2)-(3).

b. The alteration of an airport which will be in England or in English waters, and is expected to: (i) increase by at least 10 million per year the number of passengers for whom the airport is capable of providing air passenger transport services, or (ii) increase by at least 10,000 per year the number of air transport movements of cargo aircraft for which the airport is capable of providing air cargo transport service. *"Alteration"* in relation to an airport, includes the construction, extension or alteration of: (a) a runway at the airport, (b) a building at the airport, or (c) a radar or radio mast, antenna or other apparatus at the airport (subsections 23(4)-(6)).

c. The increase in the permitted use of an airport which is in England or in English waters, and (i) it is an increase of at least 10 million per year in the number of passengers for whom the airport is permitted to provide air passenger transport services, or (ii) it is an increase of at least 10,000 per year in the number of air transport movements of cargo aircraft for which the airport is permitted to provide air cargo transport services (subsections 23(7)-(8)).

39. Provided that the terms of section 23 are satisfied by way of any of these three available pathways, then the airport development will be an NSIP and must be considered as such by the Secretary of State.

[37] Planning Act 2008, s 31.

40. In *R. (on the application of Ross) v Secretary of State for Transport* [2020] EWHC 226 (Admin), Dove J held that, on a proper construction of the statutory provisions, it was necessary for the Secretary of State to consider what increase in capacity could be realistically achieved, and not what might technically or arithmetically be possible (as at para 101):

> *The language of the statute in relation to whether the alteration will "increase by at least 10 million per year the number of passengers for whom the airport is capable of providing air passenger transport services" requires the Defendant to form a judgment in relation to that question. In my view that judgment is to be formed by asking what increase in capacity could realistically be achieved, not what might technically or arithmetically be possible. It requires an analysis based on how the infrastructure is likely to perform, not a hypothetical approach assuming speculative figures in relation to each aspect of the calculation of capacity to show what might be possible rather than what is likely to occur in practice. I do not consider that the use of the wording "is capable" endorses the Claimants' contentions: it is important that these words are to be read in the context of the language of section 23(4) which speaks of the alteration being "expected to have the effect specified in subsection (5)". The use of the word "expected" is an important qualification which imports the requirement for an assessment which is grounded in the reality of the capacity which might be achieved, rather than one which takes a speculative arithmetical approach to all of the inputs to the calculation. It is clear on this basis that the Defendant's interpretation of the statutory test was one which was sound and a reliable basis for taking the decision as to whether or not the proposal was an NSIP.*

41. In any event, even if the terms of section 23 are not satisfied and the project is not an NSIP as therein defined, the Secretary of State may, subject to certain limitations, give a direction under section 35 of the 2008 Act for development to be treated as development for which development consent is required. Section 35(2)(a)(i) enables the Secretary of State to give such a direction in respect of transport projects within England.

42. Crucially, section 35(2)(c)(i) requires that, in relation to transport projects, the Secretary of State must think the project (or proposed project) is of national significance, either by itself or when considered with one or more other projects (or proposed projects) in the same field.

The DCO decision-making process

43. Part 6 of the 2008 Act deals with the decision-making process for DCO. It provides, in

summary, as follows:

a. An application for an order granting development consent must be made to the Secretary of State, in the form prescribed by the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 SI 2264 (see also, section 37 of the 2008 Act).

b. The Secretary of State must, by the end of the period of 28 days beginning with the day after the day on which the Secretary of State receives the application, decide whether or not to accept the application (section 55(2) of the 2008 Act.)

c. The Secretary of State may accept the application only if he or she concludes that:
    i. that it is an application for an order granting development consent,
    ii. that development consent is required for any of the development to which the application relates,
    iii. that the applicant has, in relation to a proposed application that has become the application, complied with Chapter 2 of Part 5 (pre-application procedure), and
    iv. that the application (including accompaniments) is of a standard that the Secretary of State considers satisfactory (section 55(3) of the 2008 Act).

d. Once accepted, an examining person or panel is appointed. A preliminary meeting is held to enable invitees to make representations about how the proposal should be examined (section 88).

e. The process of examination is essentially a written one, but the procedure provides for issue specific hearings (under section 91) or open floor hearings (under section 92), if the panel considers appropriate.

f. Under Section 98(1), the panel is under a duty to complete its examination of the proposal within 6 months from the start day. The panel is then required to

make its report within 3 months from the completion of the examination of the application (or from the deadline for completion of its examination of the application).

44. The Infrastructure Planning (Examination Procedure) Rules 2010 SI No 103 make further provision in respect of the examination procedure. Reg 19 prescribes that, after the competition of the examination, the examining authority must make a written report to the Secretary of State, including its recommendation as to the decision to be made on the application.

45. Reg 19(3) further states that, if after the completion of the examining authority's examination, the Secretary of State:
    a. differs from the authority on any matter of fact mentioned in, or appearing to the Secretary of State to be material to, a conclusion reached by the Examining authority; or
    b. takes into consideration any new evidence or new matter of fact, and is for that reason disposed to disagree with a recommendation made by the examining authority, the Secretary of State shall not come to a decision which is at variance with that recommendation without:
        i. notifying all interested parties of the Secretary of State's disagreement and the reasons for it; and
        ii. giving them an opportunity of making representations in writing to the Secretary of State in respect of any new evidence or new matter of fact.

46. Accordingly, the regulations envisage circumstances in which new evidence or new matters of fact militate against following the examining authority's recommendation, and provide the participating parties an opportunity to address the new evidence or fact before making a decision.

47. Sections 104(2)(a) and (3) of the 2008 Act provide that the Secretary of State must

decide an application in accordance with any "relevant policy statement" ("NPS") that 'has effect' in relation to the development. The Airports NPS does not have effect in relation to an application for development consent for an airport development not comprised in an application relating to the Heathrow Northwest Runway, '*the contents of the Airports NPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the South East of England*'.[38] The Airports NPS has recently been held to be unlawful by the Court of Appeal, on the basis that the Secretary of State failed to take the 2015 Paris Agreement into account when designating it (*R. (on the application of Plan B Earth) v Secretary of State for Transport* [2020] EWCA Civ 214).[39]

48. In respect of cases where no national policy statement has effect, section 105 of the 2008 Act applies. Section 105(2) provides that, in deciding the application the Secretary of State must have regard to:

> *(a) any local impact report (within the meaning given by section 60(3)) submitted to the Secretary of State before the deadline specified in a notice under section 60(2),*
> *(b) any matters prescribed in relation to development of the description to which the application relates, and*
> *(c) any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision.*

49. It is important to note that the proposed development has not been examined pursuant to the process prescribed by the 2008 Act for making a national policy statement, as is generally the case for NSIP. Therefore, the significant procedural safeguards that apply by virtue of that process are not present.

50. Usually the strategic need for the infrastructure project would be determined at that preliminary stage. The Court of Appeal have made clear that where there are changes of circumstances in respect of a development to which an NPS applies, then it is open to a person to approach the Secretary of State to review and reconsider the NPS. However, where there is no NPS, the need for the project must be determined pursuant

[38] Airports NPS, para 1.41.
[39] The Defendant has been granted permission to appeal to the Supreme Court.

to the DCO process.[40]

51. The Secretary of State must, in determining the strategic need for the proposed development, and making the DCO decision, take into account all material considerations. In *R (Samuel Smith Old Brewery (Tadcaster)) v North Yorkshire County Council* [2020] PTSR 221, the Supreme Court endorsed the legal tests in *Derbyshire Dales District Council* [2010] 1 P & CR 19 *and CREEDNZ Inc v Governor General* [1981] 1 NZLR 172, 182 which must be satisfied where it is alleged that a decision-maker has failed to take into account a material consideration. In short:
    a. It is insufficient for a claimant simply to say that the decision-maker did not take into account a legally relevant consideration.
    b. A legally relevant consideration is only something that is not irrelevant or immaterial, and therefore something which the decision-maker is empowered or entitled to take into account.
    c. But a decision-maker does not fail to take a relevant consideration into account unless he was under an obligation to do so.
    d. Accordingly, for this type of allegation it is necessary for a claimant to show that the decision-maker was expressly or impliedly required by the legislation (or by a policy which had to be applied) to take the particular consideration into account, or whether on the facts of the case, the matter was so "obviously material", that it was irrational not to have taken it into account.[41]

52. Under section 107 of the 2008 Act, the Secretary of State is under a duty to decide an application for an order granting development consent by the end of the period of 3 months beginning with either: (i) the expiry of the examining authority's deadline to report to him or her, or (ii) if earlier, the end of the day on which the Secretary of State received a report on the application. However, the Secretary of State may extend the deadline by making a statement to the House of Parliament of which that Secretary of

[40] See, by contrast: *R. (on the application of Thames Blue Green Economy Ltd) v Secretary of State for Communities and Local Government* [2015] EWCA Civ 876.
[41] See *R. (on the application of Clientearth) v Secretary of State for Business, Energy and Industrial Strategy* [2020] EWHC 1303 (Admin), para 99.

State is a member, announcing the new deadline. The power may be exercised: (i) more than once in relation to the same deadline, and (ii) after the date for the time being set for the deadline.

53. The Secretary of State has issued guidance with regard to the 2008 Act. It notes that any extension to the overall statutory timetable would require the Secretary of State to make a statement to the Houses of Parliament and '*would not be a decision which would be taken lightly*.'[42]

54. Under section 114, when the Secretary of State has decided an application for an order granting development consent, the Secretary of State must either: (a) make an order granting development consent, or (b) refuse development consent. Under section 116, the Secretary of State must prepare a statement of reasons for his or her decision.

E. ANALYSIS

55. The examining authority issued its recommendations to the Secretary of State in October 2019, which was based on an examination of the proposed development which concluded in July 2019. The evidence submitted by the Applicant with its application was produced in July 2018.

56. The Secretary of State was required to make his decision by 18 January 2020. This deadline has now been extended twice, by some 6 months to 10 July 2020.

Implications of the delay

57. The length of this delay has meant that significant matters of fact have arisen, and overtaken, in material respects, the evidence upon which the examining authority's recommendations were based in October 2019. In particular, the Covid-19 pandemic has had the following effect on the Applicant's case for the proposed development:

[42] DCLG, *Planning Act 2008: Guidance for the examination of applications for development consent* (March 2015), para 108.

a. First, the dramatic fall in passenger flights, and corresponding belly-hold freight, has undermined the Applicant's contention that the proposed development would meet an identified need for increased capacity for airfreight and for dedicated air freighters in the UK aviation sector due to the prioritisation of passenger flights by operators.[43] Airports in the south-east of England have increased capacity as a direct result of the pandemic, and further additional capacity beyond that existing now may be unnecessary, or at the very least, needs to be re-assessed in light of the current circumstances. The data on which the alleged need has been based has been dramatically surpassed.

b. Secondly, the socio-economic benefits that the Applicant contends the proposed development would bring are now likely rendered wholly unrealistic, or again, at the very least, cast into significant doubt.

c. Thirdly, the Applicant claims that making use of existing runways fulfils government policy, in '*circumstances where airport expansion is in the national interest and yet difficult to achieve and the creation of a new airport almost impossible*.'[44] The emerging implications of the pandemic suggest that the national interest is best served by prioritising support for existing or currently operational airports rather than approving development of a new competitor airport, or airport expansion.

58. The impact of the pandemic on the proposed development's viability, and the cogency of the Applicant's case, will need to be properly assessed. It is plainly incumbent on the Secretary of State to take account of the updated position, and a failure to do so would, in my view, constitute an error of law (as per *R (Samuel Smith Old Brewery (Tadcaster)) v North Yorkshire County Council* [2020] PTSR 221). The impact of the

[43] Statement of Reasons, para 9.40.
[44] Overall Summary of Case, para 9b.

pandemic is so obviously material that it would be irrational not to take it into account.

59. As there is no NPS which has effect in relation to this proposed development, it is not possible for the changes in circumstances to be catered for by going back to the NPS stage, and revisiting the strategic need in accordance with the procedural protections which apply in relation to the formation of an NPS. Unlike *R. (on the application of Thames Blue Green Economy Ltd) v Secretary of State for Communities and Local Government* [2015] EWCA Civ 876, it is not open to a person to approach the Secretary of State to revisit the NPS because a relevant NPS does not exist in the first place. In my view, the clear corollary of this is that the Secretary of State has to ensure proper consideration of the change of circumstances, and the impact upon the development, is undertaken now at the DCO stage.

60. The Secretary of State should, under regulation 19(3) of the Infrastructure Planning (Examination Procedure) Rules 2010 SI No 103, invite all interested parties to provide representations in writing in respect of this matter, if as a result he intends to differ from the authority on any matter of fact mentioned in, or appearing to the Secretary of State to be material to, a conclusion reached by the examining authority; or takes into consideration any new evidence or new matter of fact, and is for that reason disposed to disagree with a recommendation made by the examining authority. It is noted that in issuing the extension to the deadline, no such invitation was made.

61. Moreover, and considered further below, in the intervening period since the examining authority issued its report to the Secretary of State, the Airports NPS, which is on its own terms an '*important and relevant consideration*' in determining the DCO application, has been declared unlawful.

62. Accordingly, without (i) evidence as to the updated position in respect of the need for the proposed development, nor (ii) a lawful policy addressing airport development in the South East of England, it would be unsafe to determine the DCO as the Secretary of State would seriously risk failing to take account of material considerations.

NSIP Criteria

63. Further, in February 2020, the High Court handed down judgment in *Ross*, in which, as set out above, Dove J made clear that on a proper construction of the statutory provisions, it was necessary for the Secretary of State to consider what increase in capacity could be realistically achieved, and not what might technically or arithmetically be possible.

64. The Applicant's DCO application relied, expressly, on a technical capability, rather than what was likely to be realistically achieved. It contended that the *'theoretical maximum'* of aircraft movements was some 83,220 movements per year. It is now settled that this is not the appropriate basis for determining whether the proposed development qualifies as a NSIP.

65. Whether or not the application was an NSIP was a live and contested issue in the examination. In particular, in its written representation, SHP contended that the proposed development did not meet the threshold requirements for a DCO application, and that granting DCO consent would be unlawful.[45]

66. Accordingly, in resolving this issue, and determining whether the application met the threshold prescribed by sections 23 and 14(1)(i) of the 2008 Act in order to constitute a nationally significant infrastructure project, the Secretary of State must apply the updated legal position.[46]

The assessment of the environmental impacts of the proposed development

67. Finally, and for completeness, it is noted that the Secretary of State has sought further information and comments in January 2020 following the implementation of the Net Zero target, which requires that the Secretary of State ensures that the net UK carbon

[45] Available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-003137-Stonehill%20Park%20Limited%20-%20Written%20Representation.pdf.

[46] This has been addressed in correspondence from Five10Twelve Limited to the Secretary of State, dated 15 February 2020.

account for the year 2050 is at least 100% lower than the 1990 baseline.[47]

68. This was, respectfully, the correct approach to assessing the environmental impacts of the proposed development in light of the Net Zero target. The Secretary of State must be satisfied that the scheme would not have a material impact on the Government's ability to meet the Net Zero target. If the totality of evidence upon which the Applicant relies does not satisfactorily demonstrate that, then development consent should be refused.

69. However, since the deadline for that request passed on 31 January 2020, the Court of Appeal handed down its judgment in the judicial review challenge to the Airports NPS, declaring it unlawful on climate change grounds. The implications of this in respect of the assessment of the environmental impact of the proposed development have been addressed in detailed submissions made by the ELF, on behalf of Five10Twelve Limited (dated 15 May 2020).

70. In short:

    a. The quashed Airports NPS favoured expansion at Heathrow. It was deemed unlawful for failing to take account of the Paris Agreement. The consequence of this, and indeed of the Net Zero target, is that the Secretary of State is required to have regard to the carbon emissions generally available, in determining the policy for airport development in the South East of England. There is only one 'pot' from which to take the emissions. If the Airports NPS favours expansion at Heathrow, it therefore necessarily views, without favour, expansion elsewhere if that would reduce the available overall carbon budget.

    b. In order to meet the Net Zero target, and the commitments made in the Paris Agreement, there is a finite capacity for aviation growth. Expansion must be limited, and carefully managed, if the overall carbon emissions target is to be met.

[47] Climate Change Act 2008 (2050 Target Amendment) Order 2019 SI No 1056, art.2(2) (June 27, 2019).

c. The Court of Appeal held that there was a failure to have regard to a commitment to reduce emissions by 2050, and if that is to be a real, rather than a fanciful commitment, one has to know what is happening in terms of development elsewhere in order to decide whether what is proposed at any particular site can be justified. The determining authority needs to understand what the eventual government policy is, and how much spare capacity there is by way of carbon credit available to other expansions. Otherwise, the authority would fail to take into account a material consideration.

71. This problem cannot be remedied until after the Supreme Court hearing, and indeed if the Court of Appeal's judgment is upheld, after the Government designates a lawful Airports NPS which is compliant with the PA 2008. This has the concomitant problem of resulting in the evidence relied upon by the Applicant becoming even more outdated.

F. CONCLUSION

72. The Covid-19 pandemic plainly has had a material and significant impact on the viability and cogency of the proposed development that will need to be assessed. A failure to undertake that assessment would, in my view, provide a compelling ground of challenge and render a decision to grant the Applicant's DCO application vulnerable to being quashed.

73. The Applicant's evidence was outdated even before the pandemic, and the implications of this in respect of the assessment of the environmental impacts of the proposed development have been addressed in separate submissions.

74. It is particularly important that the DCO decision is taken lawfully, as this is the first DCO process for an airport expansion, and may be likely to set a precedent to be followed by others.

Gethin Thomas

[redacted]

18 June 2020

From: Rob Pridham
To: Manston Airport
Subject: [redacted] Norman Thomas, South Thanet Constituency Labour Party 060620, [redacted]
Date: [redacted]
Attachments: image001.png

Rob Pridham | Senior Planning Manager, Transport Infrastructure Planning Unit, Department for Transport
East Wing | 07971 143813 |
Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: Rob Pridham
Sent: 23 June 2020 08:32
[redacted]
Subject: FILED: Manston Airport DCO

Dear Mr Thomas,

Thank you for your recent emails to the Secretary of State regarding the extension to decision deadline for the Manston Airport Development Consent Order planning application. I have been asked to reply.

I appreciate your frustration at the further delay and can confirm that your emails will be taken into account in the decision on the application. However, as a live planning application, I hope you will also appreciate that the Department is unable to comment on the findings and recommendation in as the Examining Authority's report in advance of its publication with decision. Similarly, for the same reason, the Department is also unable to comment on the merits of the application or to provide details of the further work currently being carried out before the decision is issued.

Details of any further developments on the application will be published on the Planning Inspectorate's National Infrastructure Planning Portal at: https://infrastructure.planninginspectorate.gov.uk/projects/south-east/manston-airport/ .

Yours sincerely,

Department for Transport

Rob Pridham
Senior Planning Manager, Transport Infrastructure Planning Unit
East Wing, Albany House
94-98 Petty France
Westminster, London, SW1H 9EA
[redacted]
Follow us on twitter @transportgovuk
Post to: Great Minster Hse, 33 Horseferry Rd, London, SW1P 4DR

From: NORMAN THOMAS <[redacted]
Sent: 21 June 2020 22:33
To: Grant.Shapps@dft.gov.uk; kelly.tolhurst@dft.gov.uk; SHAPPS, Grant <grant.shapps.mp@parliament.uk>
Subject: Manston Airport DCO

I sent the below on June 6 but received no reply.
Could you please acknowledge?

Norman Thomas

South Thanet Constituency Labour Party
[redacted]

To the Secretary of State for Transport
Grant Shapps
House of Commons,
Parliament.

Dear Mr Shapps
Reference : Manton Airport DCO

We have been informed that there is to be a further delay in the timescale for resolving this longstanding problem. Notwithstanding the planning blight that this has caused, because it is such a major site, it affects more than just the site but the whole of the area.
The further delay raises a number of issues that we would like explained to us as the process to date has been open and impartial as it was controlled by planning procedures and the inspectorate.

We assume that you asked for further work.
For that reason we wish to ask a series of questions that flow from your decision and consequent issues that we, on behalf of our constituency , wish to be considered.

What prompted the decision that further work is required?
What is the further work that is to be carried out and what questions have you raised. Will the planning inspectorate be carrying out this further work, if not, who will and with what remit?

If the further work substantially alters the recommendations of the Inspectorate then we put to you that there are possibly two main reasons for this. Either the recommendations granted the application for a cargo airport or refused it . A third option is that it is a fudge which needs to be examined in detail locally.
Taking the first option, it would seem totally unreasonable for you to approve a new airport in the light of Covid 19 and the major contraction of the airline industry, operators and airports, especially in the south east. This means that there is substantial existing south east England capacity and infrastructure available for cargo. All the evidence points to a sustained change of circumstance for the sector which was already becoming obvious through climate change. Any thought that BREXIT requires a local cargo airport cannot be justified without wide consultation. We are sure you recall the Ramsgate ferry issue.

Given the transparency referred to above , we suggest that Interested Parties be invited to make submissions on whatever further work is undertaken.
In this context, has the Applicant been asked or invited to submit further work and/or comments? And finally, what contact and/or communications has there been between the Applicant and the Department for Transport since the Applicant submitted its responses in January 2020 to the questions raised by the Secretary of State at that time?

If the recommendation was to reject the DCO then the current situation can only reinforce the Inspectorate advice. and the decision should be approved without delay.
There are several reasons for the urgency . Thanet is a classic coastal community that is in decline . The South Thanet Constituency Labour Party already took the view that reopening Manston as an airport was not in the area's future economic interest. This was based on sound evidence. The Local Plan is distorted by Manston and the area cannot go on discussing possibilities that may or may not materialise as per the ferry debacle.

Regards
Norman Thomas

Chair, South Thanet Constituency Labour Party
[redacted]

From:	[redacted]
To:	Grant shaaps
Cc:	Manston Airport; kelly.tolhurst.mp@parliament.uk
Subject:	Manston Airport DCO
Date:	24 June 2020 18:08:29

Dear, Mr Shapps,

I note that the decision regarding the above DCO application, which has now been going on for several long years has been delayed once again until 10 July in order for further investigations to be carried out. As a registered interested party can I please ask what further information is being provided by either the sponsor or any other party and when I will be able to review and comment on its content please.

Yours sinserely.

Adem Mehmet

From:	[redacted]
To:	transportandworksact@dft.gov.uk
Cc:	Susan.Anderson@dft.gov.uk; Rob.Pridham@dft.gov.uk; Manston Airport
Subject:	Representation relating to: NSIP: TR2020002 Proposed Manston Airport
Date:	25 June 2020 10:27:45
Attachments:	ICCAN - Manston involvement June 2020 v2.odt

From: Chris Lowe. Interested party: 20014275

For the Attention of : The Rt. Hon. Grant Shapps,
The Secretary of State for Transport,Department for Transport,Zone 1/18, Great Minster House, 33 Horseferry Road, London SW1P 4DR

Copy to:
Planning Inspectorate, Nationally Significant Infrastructure Projects

Rob Pridham, Senior Planning Manager, Transport Infrastructure Planning Unit, East Wing, Albany House, 94-98 Petty France, Westminster, London, SW1H 9EA

Susan Anderson, Department for Transport.

Dear Sir

RiverOak Strategic Partners (RSP, the Applicant). Proposed Manston Airport Development ("Manston") Development Consent Order ("DCO")

I have sent the Attached Letter to Howard Simmonds , Head Commissioner, Independent Commission on Civil Aviation Noise, relating to misleading information from RSP, the Applicant, about ICCAN's views of the noise impacts from the proposed Manston airport.

Your attention both to the misleading information and to the absence of seeking ICCAN's views would be very much appreciated.

I hope that this is helpful to you.

Chris Lowe

[redacted]

Howard Simmonds,
Head Commissioner,
Independent Commission on Civil Aviation Noise

From: Chris Lowe.
Interested party: 20014275

By Email only

Dear Mr Simmonds,

NSIP: TR2020002 Proposed Manston Airport

As you can imagine those opposing the proposed Manston Airport, were interested in your news item, and your update on ICCAN's Corporate Plan 2019-2021, provided on:
https://iccan.gov.uk/engagement-must-continue/?utm_source=emailmarketing&utm_medium=email&utm_campaign=iccan_june_2020_enewsletter&utm_content=2020-06-19

In particular we are very concerned to note that on page 17 of the Corporate Plan Update you say:

Where appropriate, provide advice to The Planning Inspectorate on airport expansion proposals	Provide expert guidance as appropriate	When required	We were invited and attended the Planning Inquiry for Manston Airport's expansion application, but **have not yet been required to provide advice or guidance**

This is not what the Applicant, RSP, said in their reply to the Inspector's Fourth Written Questions:
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR020002/TR020002-004443-Applicant's%20Responses%20to%20the%20Fourth%20Written%20Questions.pdf

In Question 4.3, the Inspector asked:
"ICCAN Corporate Strategy 2019-2021 Consultation
Page 5 of the above Strategy states that:

"Disturbance from aviation noise is an inherently personal experience. We know from our early engagement that the effects can be deeply disturbing and have a detrimental effect on people's quality of life and health. How much – and in what way – an individual is affected by aviation noise cannot be explained or described by any graphs, metrics, maps or other data.

Nor can the bigger-picture benefits to the economy realistically be expected to compensate those who suffer from aviation noise3.

What is the Applicant's view?"

RSP replied, with my highlight:

"Applicant's Response:

The extract from ICCAN set out above does not relate to the Manston project. ICCAN representatives attended the first Noise hearing in March 2019 and raised no objections to the project.

The Applicant agrees that responses to aviation noise are inherently personal and can have a detrimental effect on quality of life and health which are difficult to quantify using graphs, metrics, maps or other data. Nonetheless, the Applicant is required to assess the impacts of aviation noise and can only use the standard guidelines and tools to do so. It has sought through the Noise Mitigation Plan to avoid, mitigate and minimise adverse impacts associated with noise as much as possible, consistent with the operation of a successful airport which accords with the aims of government policy in the Noise Policy Statement for England (NPS).

The Applicant recognises that individuals experiencing adverse noise impacts will not necessarily feel that the bigger picture benefits to the economy compensate them as individuals for the noise disturbance. However, it

will be for the ExA in the first instance and ultimately the Secretary of State to determine where the balance lies and whether benefits of this nationally significant infrastructure project outweigh the limited harm to a very small percentage of the population.

Government policy in the Airports NPS and Aviation 2050 recognises that there is a balance to be struck between growth in aviation and environmental impacts including noise. It will not be possible to achieve the growth which the government desires without some adverse noise impacts. In the context of this application, the growth includes making best use of existing infrastructure which is another objective of government policy.

The Applicant considers that taking account of the proposed mitigation measures, the significant benefits associated with the project overwhelmingly outweigh any adverse impacts that may occur. ”

This surprised and worried us, because the first part of the Answer is a totally misleading answer.

In fact you were not asked if you supported or opposed the proposals.

Indeed your representative at the Noise Hearing, said that as you were in the midst of setting up the organisation, you did not, at that time, have the capability to provide an independent view on the proposals.

As we have only now heard that you have not been asked by the Inspectorate, nor by the Secretary of State for a view it would be very helpful if you could write to the Secretary of State for Transport, on this issue.

As you were invited to the the Noise Hearing, this would be within your remit, as described in the Corporate Plan, quoted above.

Of course, as Objectors, RSP's answer seems totally inadequate. Their last sentence in particular ignores the Inspector's highlighted part of the Question, and so provides no succour to the 80,000 people who live in Ramsgate and Herne Bay who would suffer from the cargo aircraft flying very low above them.

It would also be helpful to also advise the Secretary of State of this aspect.

It is surprising that the Secretary of State himself has not asked for your advice, as also mentioned in your Corporate Plan.

As the Decision is now due on 10 July, 2020, we are very concerned that this does not give you much time to advise on this very intrusive new cargo airport.

This letter is being copied to the Secretary of State to ensure that he is aware of the Applicant's misleading answer and also the great importance of the Noise issues raised by this Application.

Yours sincerely,

Chris Lowe

From: Stan Vines [redacted]
Sent: 29 June 2020 13:36
To: TransportSecretary <TransportSecretary@dft.gov.uk>
Subject: Fwd: Royal Ramsgate Freeport - Project Proposal and News Bulletin

Dear Mr Secretary

Please find attached a copy of an email sent to your parliament e-mail address on the 10th June along with its attachments.

I wondered if you have had sight of and what thoughts you have for our vision: topically fitting due to the coming exit from the EU, environmentally friendly and infinitely better use of the Manston site for a far-reaching Thanet regional development, all described in the proposals first section 'Executive Summary'.

I look forward to hearing from you and particularly for any detail you wish in further explanation for consideration of this scheme as an alternative to the carbon-rich 'air freight hub' application waiting for a decision on July 10th. As far as I am aware, no one else has tabled the idea and if they have, it is only a copy of our most original concept, an efficient and strikingly fitting component for the government's manifesto and task in securely building beyond these trying times. Not that I am averse to private speculation but our vision and method are future-proofing an asset: under 'Trust Port' governance, our legal team assure the proposed whole site to provide much-needed long term revenue.

With kind regards
Stan Vines

Stan Vines i4c Ltd
https://gbr01.safelinks.protection.outlook.com/?url=https%3A%2F%2Furldefense.proofpoint.com%2Fv2%2Furl%3Fu%3Dhttp-3A__www.i4c.ch%26d%3DDwICAg%26c%3DtroKkvwivNn_CddsvWCHHPiPoFoTgTGIbXJULvYU158%26r%3DraIvgRoZTIq0wH2B9L9D8-HZXMwJSeU5WQClh4AbY9w%26m%3DwBTmtWSxJXOxiA9WEADkpv1HpPWTXoQpIMPxq3JLj28%26s%3DbrLvbe0D-X_qwG2AHehUd-u3g2QdX9t_sP_rQgfaQwE%26e%3D&data=02%7C01%7CManstonAirport%40planninginspectorate.gov.uk%7C20e126a413a044a8b74a08d821895d27%7C5878df986f8848ab9322998ce557088d%7C1%7C0%7C637296221154966928&sdata=tIS9z4goScJv6%2B8fMsrMyrs3rW3A7PbyL82v00dyhzM%3D&reserved=0

International House

24 Holborn Viaduct

London EC1A 2BN

[redacted]

+44 207 7193 9856

-------- Original Message --------
Subject: Royal Ramsgate Freeport - Project Proposal and News Bulletin
Date: 10/06/2020 14:11
From: Stan Vines [redacted] >
To: shappsg@parliament.uk
Cc: nathaniel.chapman@parliament.uk

Dear Mr Secretary

Please find attached our Project Proposal and News Bulletin for Royal Ramsgate Freeport and Combined Regional Development including in part an EU exit plan component.

I have sent this to you at your parliamentary address because on first glance I didn't find the exact e-mail address for your Secretary of State office. Maybe it is not available. I know this to be different as my MP, Ben Wallace already has a copy of the scheme as, a) he is my MP and, b) I was under the impression that Manston was under the control of the MOD him having authority there and, c) I have met and spoken to him before of other projects. I did try to no avail find your itinerary on your visit to Fleetwood and the Fylde to speak of this to you.

I understand the decision on usage of Manston, subject also to the Planning Inspectorate ultimately rests with your good self. I further understand that there are other schemes under consideration for the use of the site, one of which is for it to be returned to use as an airport freight hub. As you can see we have a different, we think a more comprehensive and beneficial idea for its use, all of which is detailed in the proposal. There will be a decision, albeit has been delayed several times, due on the 10th July and we sincerely hope our idea will have a bearing on that decision, possibly to our favour.

The core differences of our proposal are, 1) we see the site better utilized as a 'Technology Freezone' and extension to the port with Freeport status (consultation period application closes 13th July) connected via an extension of the existing tunnel and 2) as part of the EU exit strategy to provide the port capacity to spread the risk of catastrophes which may arise from delays through customs etc., under and a new and extrapolated processes at Dover through new EU rules.

Our development proposal has been prepared in co-operation with Architects ORMS and The Crawford Partnership, Alan Crawford being the chair of RIBA London and MD of ORMS, John McRae the vice-chair, Tony Gee Engineers and the city law firm Temple Bright: their experience serves to build strength and stability into our unique development's origin and host of merits. We believe the needs of the region and the timing at this political juncture are suited to this new and radical course change to overcome the impasse endured to date.

I very much look forward to hearing from you for consideration and discussion before the decision dates.

With kind regards
Stan Vines

Stan Vines i4c Ltd
https://gbr01.safelinks.protection.outlook.com/?url=https%3A%2F%2Furldefense.proofpoint.com%2Fv2%2Furl%3Fu%3Dhttp-3A__www.i4c.ch%26d%3DDwICAg%26c%3DtroKkvwivNn_CddsvWCHHPiPoFoTgTGIbXJULvYU158%26r%3DraIvgRoZTIq0wH2B9L9D8-HZXMwJSeU5WQClh4AbY9w%26m%3DwBTmtWSxJXOxiA9WEADkpv1HpPWTXoQpIMPxq3JLj28%26s%3DbrLvbe0D-X_qwG2AHehUd-u3g2QdX9t_sP_rQgfaQwE%26e%3D&data=02%7C01%7CManstonAirport%40planninginspectorate.gov.uk%7C20e126a413a044a8b74a08d821895d27%7C5878df986f8848ab9322998ce557088d%7C1%7C0%7C637296221154966928&sdata=tIS9z4goScJv6%2B8fMsrMyrs3rW3A7PbyL82v00dyhzM%3D&reserved=0

International House

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[redacted]

+44 207 7193 9856

From: [redacted]
To: Grant shaaps
Cc: Manston Airport; kelly.tolhurst.mp@parliament.uk
Subject: Re: Manston Airport DCO
Date: 03 July 2020 09:50:37

Grant, planning inspectorate,

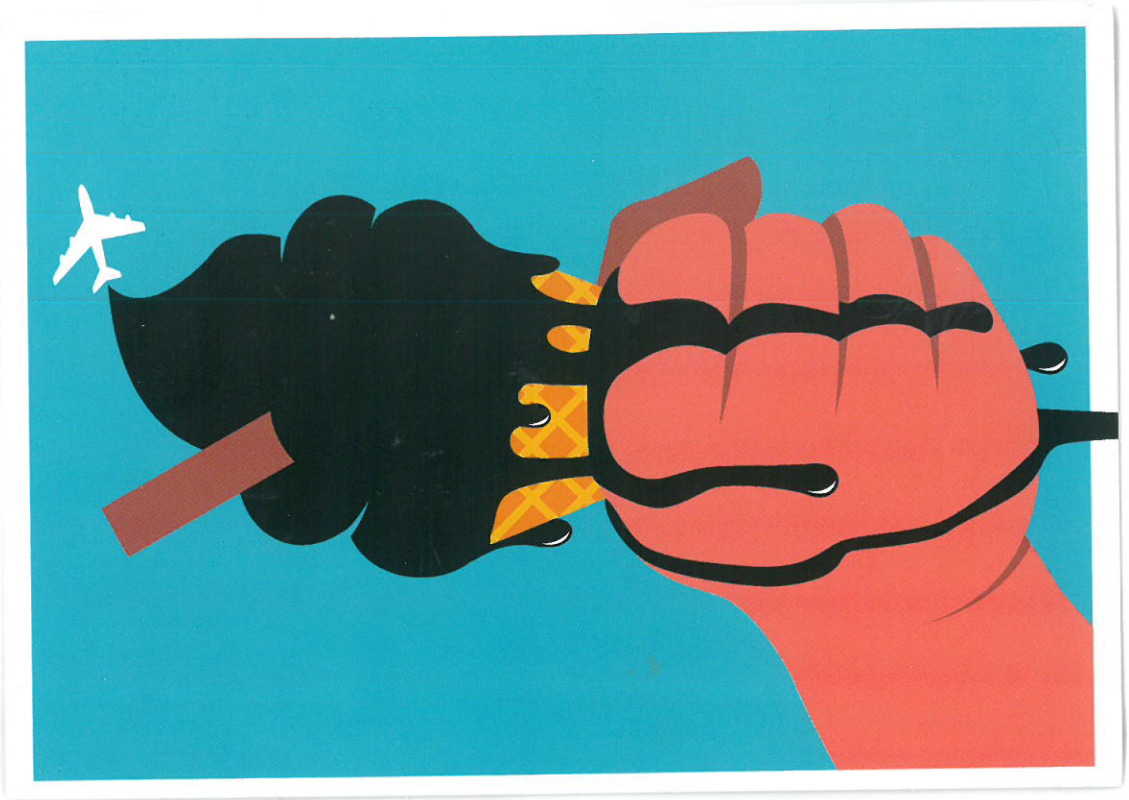
I haven't had a response to my request below to see the further evidence, research or other additional information which has been requested following the recent delay to the DCO decision announcement. The decision is due on 10th July and it's the 3rd today. Can I please ask again that in accordance with the statutory provisions under the Planning Act 2008 you present any and all additional information in order that interested parties can review and comment upon it before any decision is made.

Adem Mehmet

[redacted]

On Wednesday, June 24, 2020, 6:08 pm, [redacted] wrote:

> Dear, Mr Shapps,
>
> I note that the decision regarding the above DCO application, which has now been going on for several long years has been delayed once again until 10 July in order for further investigations to be carried out. As a registered interested party can I please ask what further information is being provided by either the sponsor or any other party and when I will be able to review and comment on its content please.
>
> Yours sinserely.
>
> Adem Mehmet



Dear Mr Schapps,

I write regarding the Development Consent Order on Manston airport. Your decision is crucial.

I am opposed to the creation of a major cargo airport in an area of heavy population. The damage this would cause to our health, wellbeing, environment and local economy is insupportable. On a global level there is also the damaging effect this would have on our climate.

Evidence submitted to the DCO examiners has clearly demonstrated that this proposal is not viable, not needed, NOT in the local, national or global interest, and that the mitigation proposed will in no way address the harm caused.

For all of the above reasons, I urge you to reject this application.

Yours sincerely,

Signature [redacted] Date 24.9.19

Name JESSICA

Address [redacted]

Email [redacted]

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To:

Rt Hon Grant Schapps MP,

Secretary of State for Transport

House of Commons

London

SW1A 0AA