NNF17	ExA's Third Written Questions – response from No Night Flights	
Noise		
NNF17.1	ExA 3WQ – Nd 3.8 ExA 2WQ – Applicant reply to Nd.2.13	The Applicant acknowledges that proposed new integrators at the airport would be expected to have a cluster of ATMs in the evening, then late in the evening, and also soon after the airport opens the following morning. This has a number of implications. 1. Scheduling ATMs late in the evening increases the likelihood of "late" arrivals coming in during the night period and increases the negative impact of the Applicant's proposals on the local population 2. The Applicant also intends to use part of the night period (0600-0700) for early departures. This also increases the negative impact of the Applicant's proposals on the local population 3. There is no confidence that the Applicant's night noise contours accurately reflect the current operational "plan" for the reopened airport. That plan has changed a number of times over the last few months in response to challenges from other parties. We request the ExA to instruct the Applicant to produce new noise contours that reflect the new fleet mix and the clustering of flights in the evening and night period 4. It is recognised that evening ATMs (like night ATMs) cause disproportionate detriment to the local population. There is a noise assessment metric that tries to reflect the additional "annoyance" caused by aviation noise in the evening and night - **L_{den}** or **CNEL**. The L_{den} (Day Evening Night Sound Level) or CNEL (Community Noise Equivalent Level) is the average sound level over a 24 hour period, with a penalty of 5 dB added for the evening hours of 19:00 to 22:00, and a penalty of 10 dB added for the night-time hours of 22:00 to 07:00. We request the ExA to instruct the Applicant to produce new contours that reflect the new fleet mix and the evening/night/early morning clustering of flights using the L_{den} metric. 5. The Applicant proposes no ATM limits for the number of night and evening flights the Applicant will inflict on the local population. Given this, the ExA is not in a position to assess the business rationale for these flights, or to weigh their possible benefits against the social, economic and environmental damage that they will create. This means that the ExA is not in a position to consider whether or not there is a balance in favour of the Applicant's night flight regime. It is clear from planning law and related legal judgements that a balancing exercise must be undertaken to assess the benefits of the Applicant's proposal against the harm that that proposal will cause. In our assessment, the ExA should ask the Applicant to set out clearly its likely schedule of evening and night operations and to commit to a clear ATM cap for 2300 to 0700. Without this clarity, the ExA will simply not be in a position to carry out the required balancing exercise. We say more about this in NNF17 para 2 below

NNF17.2	ExA 3WQ Ns 3.1	The Applicant in its response to ExA 2WQ Ns.2.7 states: *"There are no circumstances when an aircraft could take off between 2300-0600 other than humanitarian flights. An aircraft could land between 2300-0600 if it was scheduled, programmed or otherwise notified to the airport that it was originally to arrive before 2300 but is delayed or if it is a humanitarian or emergency flight."* The Applicant continues to wriggle over its night flight proposals, introducing terms not recognised in the UK aviation sector such as *"programmed or otherwise notified"* and *"timetabled"*. This is part of a long campaign of prevarication and misdirection on the part of RSP. RSP is clearly trying to secure a night flight regime whereby it can land as many "late" flights as it can handle under its oversized QC cap of 3028 points. The local population is well-versed in what this is like to live through. On 25th October 2011, Bickerdike Allen produced for Infratil a report to support Infratil's bid for scheduled night flights to be permitted at Manston. At paragraph 3.1 of that report, Bickerdike Allen said that: "*Night-time aircraft movements at Manston currently occur on an ad-hoc basis and involve aircraft of the type that are expected to fly in the future, for example the Boeing 747-400. The number of movements that take place currently vary from week to week and month to month but are typically around 1 or 2 per week at present*." 1 to 2 "ad hoc" night flights per week is 365 to 730 a year. In 2011, Manston had just 1,472 ATMs – 389 cargo ATMs and 1,083 passenger ATMs. This means that 24.8% to 50% of Manston's ATMs were "late". We urge the ExA to reject the night flight proposals put forward by RSP. We know from experience that a significant number of flights at Manston that are notionally scheduled day flights become "late" flights that are then landed during the night period. This is unacceptable. This is a stealth night flight schedule.
	ExA 2WQ Ns 2.4 – NNF's response	NNF has set out previously the fact that RSP's suggested QC budget is disproportionately large in comparison to Heathrow, given the far smaller number of total flights expected in any one year at Manston according to RSP's "forecasts". RSP has provided no justification for the outsized QC budget it is proposing and no assessment of what, if any, social, economic and environmental benefits would accrue should this QC budget be approved.
	NNF09 and the BV report at para 8.0.3 (previously submitted)	NNF has set out previously the fact that TDC commissioned independent advice to help it to weigh up the potential advantages and disadvantages of a previous night flight application at Manston. The independent advice by Bureau Veritas was that the potential disadvantages of the proposal far outweighed the potential advantages. *"… it is BV's view is* [sic] *that the predicted number of people likely to be exposed to significant levels of average night-time noise is not sufficiently justified by the number of passengers and freight activity that are forecast to benefit from the proposals."* The Applicant's plan is for an average (it says, but there is no mechanism for policing or controlling this) of around 7 to 8 flights a night (versions vary) with a noise budget of 3028 QC points. The previous application was for 7.7 flights a night on average with a noise budget of 1,995 QC points. It is unambiguously clear that, if RSP's assertions about how many flights this will translate into can to be trusted, RSP's night flight plans will create more noise nuisance for around the same number of flights. The Infratil application rejected in 2012 by TDC was for an average noise per ATM of 0.7 QC points. RSP's current proposal is for an average noise per ATM of 1.19 to 1.04 QC.

		RSP's proposals are noisier for the same number of flights. The Applicant has produced no business plan setting out the advantages of its plan to operate a night flight regime that has an unlimited number of night ATMs and a noisier fleet mix than a scheme that has already been assessed and rejected by the local planning authority as doing more harm than good. In our assessment, the ExA has been given no evidence that suggests that it should reach a different decision to the decision reached by TDC. RSP's night flight proposals are unjustified. In light of the balance that needs to be struck between the inevitable social harm, economic harm and environmental harm that its night operations proposals will cause, and the lack of any quantified benefit that its proposals could bring, we suggest that the ExA has no option but to reject them entirely and, if a DCO is to be awarded, insert into the DCO stringent conditions dictating that the only ATMs between 2300 and 0700 are genuine humanitarian and emergency flights.
NNF17.3	ExA 3WQ 3.1 and 3.11, and D6/2.4 Revised NMP section 1.6	RSP persists in seeking permission to operate flights as noisy as QC4 during the night period. Under its revised NMP in section 1.6, flights rated QC4 can take off and land between 2300 and 0700. NNF notes the D6 submission by TDC of a report by Ricardo dated 2nd May 2019. We support Ricardo when it says on page 14 that it is unclear why the Applicant is looking for the ability to operate QC4 aircraft at night. RSP's case is that any landing as part of its night operations will be "late" arrivals. A 747-400 is QC2 on arrival – there is no need for a QC4 rating to cover the eventuality of a 747-400 arriving "late". RSP's case is that there will be no take-offs between 2300 and 0600. (Of course, in claiming that it will introduce a *"night flight ban"* that would allow take-offs from 0600 it should not be ignored that RSP is recasting the period 0600-0700 as **day** when it is accepted in UK aviation that it is **night**.) Logically, if there are no take-offs between 2300 and 0600, RSP must be intending to operate its QC4 rated ATMs as departures between 0600 and 0700. A 747-400 is rated QC4 on departure. The logical conclusion is that RSP plans to have 747-400s taking off from 0600 in the morning. • If this is the plan, the independent assessment by Bureau Veritas calculates that a 747-400 taking off to the east over Ramsgate would create a noise level capable of disturbing over 30,000 residents. RSP has produced no assessment of the potential benefit that it claims would accrue if it were to be allowed to operate 747-400 departures over Ramsgate from 0600 in the morning. The significant disbenefit is already calculated and known. RSP has signally failed to make a credible or compelling case that its application to operate aircraft with a QC4 rating at night should be accepted. There is no evidence here that RSP has carried out an assessment of the potential benefits and weighed them against the known disbenefits. • If RSP is not intending to operate departures rated QC4 from 0600 in the morning, then it must be the case that RSP is planning to allow planes as noisy as the Antonov 225 to land at night. If this is the case then we urge the ExA to instruct RSP to produce LAmax footprints for the Antonov for easterly and westerly operations. When the airport was previously operational, Antonov flights produced a huge number of complaints from residents. Our position, drawn from past experience, is that 747-400 arrivals and departures during the night period generate a significant amount of disturbance for local residents and a significant number of complaints. From this we can see that allowing even QC2 ATMs at night would be allowing craft

		that are too noisy for the health and well-being of the local population. There must be a **complete ban on night flights**, and not an RSP "ban" that allows arrivals through the night and departures from 0600.
NNF17.4	ExA 3WQ 3.1 and 3.11, and D6/2.4 Revised Noise Mitigation Plan section 1.1	RSP persists in using out of date QC ratings. Its Noise Mitigation Plan would allow an unlimited number of night flights rated QC0.125 and QC Exempt. NNF has already commented on this in NNF09 but RSP has simply ignored this and has made no attempt to justify this decision to ignore the recent introduction in the UK of QC0.125. The DfT's Impact Assessment *"Night flight restrictions at the Designated Airports 2017-2022"*, dated July 2017 [provided by NNF as an email attachment with this response document], says: *"The biggest issue arising from night flights is the effect of night noise on residents in areas surrounding airports. In particular, the impact this has on the sleeping patterns of individuals. There has been growing evidence on the relationship between exposure to higher levels of aircraft noise at night, sleep disturbance, and adverse health effects.* *[…]* *But, over the next few years, several new quieter jet aircraft, such as versions of the Airbus A320neo, will come into service that will be quieter than the current QC/0.25 standard and therefore exempt from both the movement and the quota limits under the current restrictions. The largest airlines at Gatwick and Stansted, EasyJet and Ryanair respectively, have a large number of these aircraft on order. EasyJet will be introducing their first A320neos this summer season13 and expect about a third of their fleet to be comprised of Airbus A320neos by 202114 and Ryanair also have 100 confirmed orders for the Boeing 737-MAX, which may also fall into the currently exempt category once certified.* *Without changes to the existing QC system, there is therefore the possibility for commercial airlines to operate a potentially unlimited number of these aircraft during the night quota period. This could have significant impacts on the noise climate around airports, and result in adverse impacts on sleep quality and health. Additionally, there could be impacts on air quality and climate change, as well as other local impacts. This means it is necessary for the Government to consider what proportionate regulation of these aircraft would be. As it stands, the restrictions at these airports would not be transparent and would fail to reassure communities of the maximum level of night noise they could be expected to be exposed to in the night quota period."* The Government agreed to implement Policy Option 4 which includes: *"Introducing a new QC category (QC/0.125) to capture aircraft between 81 and 83.9 EPNdB and ensuring all aircraft quieter than this are counted within an airport's movement limits while remaining exempt from the noise quota limits."* The Impact Assessment noted that: *"As explained in Sections 6 and 7, these aircraft can still expose affected communities to noise levels that the WHO identify as being capable of causing sleep disturbance and it is therefore right that they are treated in a proportionate way to other aircraft. Extending the QC scale downwards by a further 3dB band to introduce a new QC/0.125 ('QC eighth') category, consistent with the fact that a 3dB increase represents a doubling of noise energy, would help prevent a proliferation of exempt aircraft and also provide incentives for the use*

		of even quieter aircraft at night (below 81 EPNdB).” **RSP has ignored this and continues to ignore this** despite this having been pointed out a number of times by NNF. There simply is no case for RSP to be allowed to operate a QC rating system that does not reflect the Government’s recognition that planes rated under QC0.25 can have adverse impacts on sleep quality and health. If a DCO is to be granted to RSP (and clearly, we think there is no case for doing so), and if RSP is to be allowed to operate a night flight regime (and clearly, we think there is no case for doing so), then this regime should reflect the Government’s 2017 Impact Assessment and insist that there is an ATM cap for night flights and that **all** ATMs, including planes currently rated as exempt, count towards this cap. The proposed night flight regime should also reflect the Government’s Impact Assessment and the CAA’s rating system and include the new rating of QC0.125.
NNF17.5	ExA 2WQ Ns 2.14	In answer to the ExA’s question, RSP says: *“Furthermore, the Applicant has committed to a noise contour area cap. This has been included into the latest Noise Mitigation Plan [APP-009]. Adherence to the Noise Mitigation Plan [APP-009] means that the noise effects of Manston Airport will not exceed those assessed in the ES.”* **This is patently untrue**. What is this *“noise contour area cap”*? Where is this *“noise contour area cap”* set out, described or drawn? How would RSP know if this *“noise contour area cap”* were ever to be breached given RSP plans to install just a few noise monitors, several kilometres away from the airport? What would happen if this *“noise contour area cap”* were breached – would RSP cease operation of the airport for the rest of the year? In truth, RSP has set out a cap on annual ATMs but, as far as NNF is aware, has set out **no sanctions** should that ATM cap be breached. RSP has also set out a QC cap for night operations but, as far as NNF is aware, has suggested **no sanctions** for the airport should that cap be breached. Moreover there are **no sanctions** for any number of “late” arrivals whether the QC budget is exceeded or not. There are therefore no disincentives to allowing or even encouraging a substantial number of “late” arrivals at night. RSP has said that, if any aircraft at the noise monitor 6.5km from start of take-off roll exceeds 90dB LAmax, then the operator of that craft will be fined. However, the amount of the fine that RSP suggests is tiny and is hardly a disincentive. In addition, 90dB LAmax at a point 6.5km away when a craft has already begun a climb suggests that there would have been extraordinarily high noise levels produced by this same aircraft at (say) the Nethercourt estate, which is under the flight path immediately after take-off and at a much lower height. This would appear to be the only noise event for which the developer would levy a fine, and it would pay no fine itself. We urge the ExA to reject this ploy by RSP. Like its mis-named *“night flight ban”* – which would allow flights through the night, many of which would not even count towards its QC budget – RSP’s *“noise area contour cap”* is no such thing. There is no cap on the total noise that would be generated by RSP’s operations and no sanctions that we can see that would prevent the total noise impact from being far, far higher than the (partial and unsatisfactory) noise impact the RSP has currently described.

NNF17.6	ExA 3WQ Ns 3.5 and D6 - Ricardo report 2nd May 2019	Ricardo comments on the Basner metric relied upon by RSP. Ricardo points out that RSP does not seem to have considered the potential for awakenings across the population overflown and appears to be only considering an awakening in an individual. We agree. In addition, in the face of the DfT's 2017 Impact Assessment (see para NNF17.4 above) that shows that the Government accepts that planes rated as low as QC0.125 have the potential to disturb sleep, it is beyond ludicrous for RSP to continue to claim that there will be no awakenings as a result of at least 18 flights a night each creating a noise level of more than 80dB LAmax. We note, again, that RSP has simply ignored the historical evidence that one flight a night caused awakening in the actual – not hypothetical – local population. We note, again, that RSP focusses attention on awakening and not on the damage that the noise from night flights causes to the populations exposed to it, regardless of whether people wake up or not. We note, again, that RSP has not produced a Noise Action plan from a UK airport that relies on this Basner metric to excuse significant night operations. There is no rationale whatsoever for the ExA to allow RSP to use the Basner theory in its calculation of the social, economic and environmental harm that RSP's proposed night operations proposals would cause. There is no rationale whatsoever for the ExA to allow RSP to use the Basner theory in its calculation of its noise mitigation measures. The ExA must reject this out of hand.
NNF17.7	ExA 3WQ Ns 3.3 and D6 submission from TDC	Both TDC and the ExA have identified the need for a cumulative noise assessment to be provided by RSP. NNF strongly supports this requirement. It is hard to see how the ExA can possibly assess the social, economic and environmental damage implicit in the Applicant's proposals without this information. For example, NNF is entirely unconvinced by the Applicant's airy assertions that its late traffic assessment, produced after the ES was submitted, is such that there will be no discernible impact on noise as a result of the road traffic created by this proposal. In addition, the Ricardo report submitted to D6 says: *"The IEMA Guidelines for Environmental Noise Impact Assessment recommend that the change in noise levels as well as the absolute noise levels are considered. At present the noise assessments do not consider the total noise level or the total change in noise levels and so the 'with development' and the 'without development' scenarios are difficult to fully consider. It is noted that without the consideration of the cumulative sources noise of air noise, ground noise, traffic noise and plant noise the predicted significance of the effect may be understated. It is understood the noise assessments of the for the Heathrow expansion DCO are using combined noise impact contours."* We agree. What RSP has set before the ExA is a suite of noise contours, the vast majority of which show average aviation noise spread out over an average day, averaged out between easterly and westerly operations. The contours average all movements and RSP says (answers to ExA 2WQ Ns 2.16) that the *"noise model was based on an evenly distributed timetable"*. The contours therefore bear no relation to the bunching that RSP now admits that it expects to see in ATMs each evening, night and morning. As RSP says: *"… as night ATMs will not be permitted, this will cause a higher than average demand during the hours immediately after opening in the morning and again in the*

		hours approaching closure in the evening." Given this bunching in the periods that people find most "annoying", RSP should be required to produce L_{den} contours which will reflect this. We have mentioned L_{den} in para NNF17.1 above. RSP's night contour at figure 12.9 is not clear. Is this the sum of westerly and easterly operations on one page or is it an average of the two? If it is the sum, it is hard to understand why the area around the airport itself is so small as it should include take-offs to the west, landings from the west, take offs to the east and landings from the east – each of which would have a noise impact along the runway. In addition to averages upon averages, the contours deal only with aviation noise and not with the other noise that an operational airport will produce. The Applicant should be obliged to produce noise contours that show the **actual total noise pollution** created by its suggested proposal.
NNF17.8	ExA 3WQ Ns 3.5	The local population is not habituated to aircraft noise. That is a fact. RSP claims that the local population will become habituated to aircraft noise. This ignores the evidence that communities living under flight paths and near airports are becoming "annoyed" at a lower level of noise than they were in the past. It is for this reason that the Government in its consultations about LHR R3 has accepted that the onset of community annoyance starts at a lower level of noise today than it did previously. The ExA is urged to recognise that the local population is not only **not** habituated to aircraft noise, but also that many local residents live currently in relatively tranquil areas. It is the impact of the **difference** between the current level of ambient noise and the future level of total noise under the developer's proposals that is important. RSP's assessment of the current level of ambient noise cannot be relied upon here given its use of airport supporters to host the monitors that captured this data. We urge the ExA to insist that RSP provides fresh, truly independent, data that assesses the current ambient noise level and that then shows the change predicted between this level of ambient noise and the complete noise environment that will be created as a result of the airport's operation.
NNF17.9	ExA 3WQ Ns 3.7	RSP's noise contours are so flawed as to be not fit for purpose: • RSP's contours include just one element of the noise pollution that the Applicant's proposal will generate – i.e. aviation noise. There are no contours that demonstrate the cumulative effect • As the ExA notes, in its Noise Mitigation Plan RSP has averaged the contours for both easterly and westerly operations, rather than using an actual day of westerly or easterly operation, which would be the typical mode of operation. We are dealing therefore with noise contours that has been averaged out over a 16 or 8 hour period and then averaged **again** for east and west operations • RSP's noise contours do not reflect the stream of changes made to the fleet mix during the examination • RSP does not provide L_{den} contours • RSP's contours do not reflect accurately the worst case as they are adrift from the proposed ATM caps. In the ES at 12.7.39 RSP says that: "*The forecast assumes that total aircraft traffic will grow from approximately 33 Air Transport Movements8 (ATMs) for a typical busy day in Year 2 to 79 ATMs per typical busy 24-hour day in Year 20. There will also be an average of approximately 16 non-ATMs per 24-hour day in all years*

		including general aviation and training flights." 16 non-ATMs per 24-hour day is 5,840 a year, yet RSP is now planning 38,000 General Aviaiton flights a year. Appendix 3.3, the Aircraft Forecast, gives a total of 26,469 ATMs. This does not seem to include any GA ATMs • RSP's noise contours assume that ATMs will be evenly spread throughout the day when RSP admits that they will not. RSP's contours therefore understate the ATM traffic likely in periods in which local populations are particularly sensitive to noise – the evening, night and very early morning.
NNF17.10	ExA 3WQ Ns 3.12	The ExA is considering whether it should be a requirement in the draft DCO that the authorised development should have an SOAEL daytime of 60 dB LAeq,16hr (free field). NNF welcomes the recognition by the ExA that the SOAEL suggested by the Applicant is too high. However, NNF is of the firm view that the SOAEL should be set at a lower level than 60 dB LAeq,16hr. We have set out in NNF16, in answer to ExA 2WQ Ns 2.13, the fact that the Government recognises that the onset of significant community annoyance now begins at 54 dB LAeq, 16hr. In addition, it must be remembered that the population under consideration here is a population that will be newly subjected to aviation noise. In any rational assessment, this means that this population will be more likely to experience this sudden change in its ambient noise environment as a significant negative change in the quality of life. It is uncontroversial that the onset of significant community annoyance for this population will begin at a level below 54 dB LAeq, 16hr. In addition, as we set out in NNF09, the socio-economic facts are that Thanet has a population that is likely to be <u>more</u> vulnerable to the damaging effects of aviation noise than the average population as a result of the local age and health profile. In NNF14 at paras 11 to 13, NNF quoted from the WHO's 2018 report[1] [previously submitted by NNF for D3]: "*For average noise exposure, the GDG [Guideline Development Group] strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as aircraft noise above this level is associated with adverse health* ***effects.****"* and *"For night noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft during night time below 40 dB Lnight, as aircraft noise above this level is associated with adverse effects on sleep."* At para 91 of NNF09, we continue the WHO 2018 quote above : *"To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure. […]* ***The GDG acknowledged that the guideline recommendation for Lnight [i.e. 40 dB Lnight] may not be fully protective of health, as it implies that around 11% (95% CI: 4.72–17.81) of the population may be characterized as highly sleep-disturbed at the recommended Lnight level. This is higher than the 3% absolute risk considered for setting the guideline level."*** [our bold]

1 "Environmental Noise Guidelines for the European Region"

		The WHO reports sleep disturbance at noise events measuring 45dB LAmax and under. The WHO concludes that the guidelines for maximum noise at night should therefore "*be based on a combination of values of 30dB LAeq,8hr and 45dB LAmax*." **RSP ignores these guidelines**. RSP ignores the fact that 40dB Lnight is not fully protective of health. CAP 1588, the CAA's February 2018 findings on Aircraft Noise and Annoyance (referred to by the ExA in Ns 2.13 below) says on page 7 that: "*the government decided to adopt the risk based approach proposed in their consultation, so that airspace decisions are made in line with the latest evidence and consistent with current guidance from the World Health Organisation*." RSP is not following the Government's line as its proposals do not follow the latest evidence and are not consistent with the WHO guidance. **This is unacceptable**. The WHO sets firm guidelines[2] for daytime and night-time aviation noise. Given that this will be a new airport, these guidelines should be observed from the outset. There is no rationale to support RSP in setting out deliberately to create a noise environment that ignores the WHO's clear recommendations given that we are not dealing here with an operation that already breaches those levels and that must therefore seek to achieve those levels over time. In 2018 the WHO *"strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as aircraft noise above this level is associated with adverse health effects."* RSP should be obliged to reflect this in its SOAEL.
NNF17.11	ExA 2WQ HE 2.2	In reply to this question, RSP says: *"Ramsgate Conservation Area comprises the historic core of a busy resort and port town. In the majority of the area, the existing soundscape is provided largely by traffic noise, with occasional noise from harbour and marina operations, which reinforce the area's historic and functional links with the sea. Aviation noise is not considered likely to give rise to any adverse perceptual change in the setting of the area and no adverse effects are anticipated. This asset was consequently scoped out of detailed further assessment."* The fact is that planes landing from the east and taking off into the east are at a few hundred feet over Ramsgate. The fact is that, when the airport was operating as a commercial airport, at a far lower level of activity than RSP is projecting, aviation noise did give rise to adverse perceptual change in the setting of the area and adverse effects were experienced. The above blithe assertion by RSP should tell the ExA all it needs to know about RSP's willingness to make unevidenced assertions and deny reality. If RSP's case is that its careful calculations demonstrate that there will be no adverse noise effects on the Ramsgate Conservation Area, even though it is known that a smaller airport operation in the past generated significant adverse noise effects, then it is clear that no reliance can be placed on RSP's calculations. The ExA has been given evidence about the noise impact on people in the Conservation Area in numerous personal submissions. NNF has also provided evidence in its answers to ExA 2WQ 2.12 that: *"In 2009, when the airport was operational, TDC gave planning permission for a two storey dwelling to be built in St Mildred's Road, Ramsgate. St Mildred's Road is in the centre of town towards the harbour and noticeably further from the runway than the Manston Green development will be. A condition was imposed that the St Mildred's developer should first submit for approval a noise attenuation scheme, reflecting the fact that the proposed dwelling would be*

2 WHO 2018 Environmental Noise Guidelines for the European region – previously submitted to the ExA

		affected by being in the 57-63dB LAeq 24hours contour for aircraft noise. RSP's theoretical contour maps do not reflect this reality. The developer was asked to provide a scheme that would achieve 20dB of attenuation. The officer's report is attached at the end of this document at Appendix One." We submitted the officer's report with that submission. It is absurd of the developer to suggest that, despite the fact that a new building in 2009 in central Ramsgate required noise attenuation as a result of the aviation noise generated by a much smaller airport operation, RSP's much larger operation will cause no adverse effects. We urge the ExA to insist that RSP undertakes a proper assessment of the negative environmental impacts of its proposals on Ramsgate. That assessment must consider fully the past evidence of the noise impact of airport operations on the town and its Conservation Area, as well as taking note of TDC's planning decisions made in response to the reality of the noise impact of previous airport operations.
Need		
NNF17.12	ExA 3WQ Nd 3.1 and ExA 2WQ Nd 2.2 and Nd 2.11	In answer to the ExA's questions, RSP explains the role of sector interviewees in the development of RSP's "forecasts". RSP says that *"Interviewees were not invited to express conclusions on the proposed scheme. Rather, they were asked to provide insight on current limitations and opportunities in the sector."* This further underlines the inadequacy of RSP's "forecasts". If interviewees were not asked to comment on the scheme, then logically they were not asked to comment on whether a dedicated freight airport at Manston would be viable, or even if they would be attracted to use it. In answer to the ExA's question, RSP says that: *"The use of indicative airlines does not affect the forecast in any way since the forecast is built from assessment of need by geographic area/country and product type. It is not dependent on any particular operator providing a service to meet the need identified."* These two answers could not make it clearer that RSP's "forecasts" are merely generalised market assessments. They are not what any normal business would recognise as a business case built on a careful assessment of market need and the likely behaviour of purchasers: • RSP has produced no evidence that air cargo operators will move business to Manston • RSP has produced no evidence that it could satisfy its target market's requirements for pricing and for night-time operations • RSP has produced no evidence that cargo operators would switch bellyhold cargo from another UK or European airport into dedicated cargo using Manston; or that they would switch trucked cargo from another UK or European airport to dedicated cargo using Manston; or that they would switch dedicated cargo from another UK or European airport to dedicated cargo using Manston. In short, RSP's case to the ExA is no more than one inexperienced (by her own admission) person's general research about the global air freight market. The ExA simply has no evidence before it that demonstrates that: • there is a national need for this airport in this location • there is any demand for this airport in this location

		• a dedicated freight airport in this location would be financially viable • a daytime dedicated freight airport in this location would have the effect of handling over 10,000 dedicated freight ATMs • or that RSP's proposal in any way constitutes a compelling case in the public interest for a CPO because the potential benefit clearly outweighs the potential harm that it will cause. RSP has simply failed to provide the necessary evidence. **We urge the ExA to recommend the SoS refuses RSP's DCO application.**
NNF17.13	ExA 3WQ Nd 3.11	The ExA asks what other errors/discrepancies there are between the ES and the Azimuth "forecasts". As the ExA heard in the March ISH that 4,310 of the Applicant's freighter ATMs will not be FedEx/DHL feeder flights using ATR-72 craft as originally asserted. This accounts for 25% of the original freighter "forecast". 1,827 freighter ATMs are listed in the ES as being Amazon flights. In the ISH in March, RSP's evidence about Amazon as a potential customer became increasingly confused and it has since been directly and robustly challenged by SHP. 4,002 freighter ATMs are listed in the ES as being FedEx/DHL (in addition to the feeder flights already mentioned above) but RSP seemed to be disavowing this potential line of business in the March hearings. It is entirely unclear what freight clients RSP is now saying that it will attract. It is therefore entirely unclear what freight aircraft RSP is now saying will use the airport. Given the constant changes that RSP is making to its "forecasts" in its attempt to deal with each challenge raised by SHP and each awkward question posed by the ExA, it is entirely unclear whether RSP's shifting "forecast" actually could deliver 10,000 freight ATMs at all. It is entirely unclear what the changes in RSP's night flight regime would mean to the freight business that RSP originally claimed it could attract when it was not intending to limit night flights. In its answers to ExA Q2 Nd 2.13, RSP says: "*Scheduling data relating to the operations of 'new' integrators is not easy to find, not least because their operations have only recently begun, are primarily in the USA (rather than in the UK or Europe) and because freight scheduling tends to be more flexible than for passenger aircraft*." Given this, it is clear that any forecasts that RSP has made in its shifting operational plan are little more than guesswork when it comes to assessing at what time of day or night these *"new integrator"* ATMs would happen and what craft might be flown. This casts further doubt on the fleet mix and operating assumptions in RSP's Appendix 3.3 in its ES. In turn, this makes RSP's noise contours even less reliable. Finally, the fact that RSP has so little data on the *"new integrators"* that it now says are a substantial part of its expected annual dedicated freight ATM numbers casts yet more doubt on whether this project meets the criteria for a DC at all. We urge the ExA to insist that RSP produces a new fleet mix for the ES that reflects all the various changes that it has made to its "forecast" on the fly in the last months. The entire assessment of the aviation and traffic noise nuisance created as a result of RSP's proposals hangs on the fleet mix in Appendix 3.3. RSP has admitted that that fleet mix has changed. Given the evidence produced by

		SHP it is also clear that some of the fleet mix that RSP says has not changed is not in any way a reliable indicator of the type of aircraft or customer that might use the reopened airport. Moreover, it is now crystal clear to all parties that the fleet mix that drives the noise and traffic assessments in the ES is based on Dr Dixon's high level assessment of where there might be generic opportunities in the global air freight market. It is a matter of public record that Dr Dixon at no time considered viability when she produced her *"forecasts"*, and that her fleet mix is intended to be *"indicative"* only. RSP has completely failed to produce a pricing model to demonstrate that any of Dr Dixon's broad opportunities can be translated into an offering at a reopened airport at Manston that the market can afford to a schedule that it would like. And, even if it were to clear that hurdle, RSP has still to produce the detailed financial assessment of revenue and costs that could satisfy the ExA that such an operation would be financially viable. There is clearly no compelling case in the public interest for taking private land (the plans for which offer social, economic and environmental benefits) and giving that land to a developer whose plans will bring a significant burden of economic and environmental costs in the interests of developing a commercial venture, and whose business plan does not deal with price, or identified clients, but is instead based on research into generic potential types of opportunity in a global market. This is a business venture that is doomed at the outset to fail.
NNF17.14	ExA 3WQ Nd 3.10 and Nd 3.21, and ExA 2WQ Nd 2.34	RSP makes a number of claims about Manston's *"uniqueness"* and its *"idiosyncratic"* nature. RSP says that the runway at Manston is unique in that it is long enough to deal with wide-body long-haul aircraft and it is unused. RSP fails to deal with the MoD sale of similar former military airfields with long runways. The Government plans to use some of these for housing. This makes it clear that it takes more than a long runway to make a successful airport. Otherwise, the Government would doubtless sell one of the military airfields of which it is disposing to an operator, such as RSP, keen to open a new dedicated freighter airport. As usual, RSP fails to acknowledge that the *"unique"* runway has been an ever-present feature throughout the 15 years in which Manston failed to attract business as a commercial airport. RSP persists in claiming that the London Airports *"are full or forecasting to be constrained by passenger operations thus prohibiting any material development of Dedicated Freighter services."* It has yet to provide persuasive evidence that this is actually the case at Stansted. RSP also consistently tries to scope out the UK's largest dedicated freight airport at East Midlands, and the largest bellyhold airport at Heathrow from its assessment of UK air freight capacity. With ample capacity at East Midlands and the likelihood of a new runway at LHR, RSP's assessment is clearly not a proper consideration of the competitive landscape. RSP says that *"Idiosyncratic in this context refers to the uniqueness of Manston airport in terms of geographical location, runway length and available capacity."* A fuller explanation would include Manston's repeated failure as a cargo airport in this very location at a time when there were twice as many cargo ATMs as there are today. It would also include an exploration of why Manston languished on the global market for 22 months before Ms Gloag bought it for £1 in 2013.
NNF17.15	ExA 3WQ Tr 3.19	RSP's "forecast" of the total tonnage is telling. Its forecast average freight tonnage per freighter ATM is completely out of kilter with both recorded reality at the former airport and with the previous operator's own medium and long term predictions. As the table below shows, the Infratil 2009 Master Plan (p51-52) worked on the basis of an average of 64 tonnes per freight ATM. RSP is

assuming just 20 tonnes per freight ATM. This marked discrepancy exists even though RSP claims that it will shift more tonnage per ATM than the airport previously shifted as (claims RSP) there will be a far greater level of exports than there were previously.

	Infratil forecast 2018	Infratil forecast 2033	RSP forecast Year 20
Pax	2,286,000	4,750,000	1,407,753
Pax ATMs	20,325	31,509	9,298
Pax per ATM	**112**	**151**	**151**
Freight (T)	167,500	401,200	340,758
Freight ATMs	2,619	6,251	17,171
Freight (T) per ATM	**64**	**64**	**20**
Other ATMs	23,195	36,137	38,000
Total ATMs	46,139	73,897	64,469

If we apply Infratil's average to RSP's "forecast" tonnage of 340,758 tonnes (more than ten times the average actually achieved by the airport previously), then RSP could shift its forecast tonnage with just 5,324 freight ATMs p.a. in Year 20. Of course, Infratil was basing its forecast on its experience of what the average freight tonnage actually was per ATM and, unlike RSP, Infratil had no need artificially to inflate its freighter ATM numbers.

RSP has so far produced no satisfactory evidence as to why there should be such a low tonnage per cargo ATM in its "forecasts". The inevitable conclusion is that the Year 20 freighter numbers have been significantly inflated in the hope of persuading the ExA that this proposal meets the criteria for an airport NSIP.

NNF17.16 — ExA 3WQ Se 3.9

The ExA asks: *"How does the proximity of Southend, Bournemouth and Southampton airports to their settlements and the orientation of their runways and location of flightpaths to the coastal tourism areas of the respective settlements compare to Manston Airport and Ramsgate?"*

NNF has provided this information at NNF11 p40-41, submitted for D3. This makes clear the differences between these airports and Manston.

Other topics

NNF17.17 — ExA3 Op 3.11

The ExA refers to the newly provided Public Safety Zones addendum which RSP says is an addition to the ES. The document provides an indicative 1 in 100,000 PSZ for Manston Airport which covers a significant area of Ramsgate to the east of the Airport. The addendum also notes that the principal feature of the 1 in 100,000 individual risk contour is that there will be no increase in the number of people living, working or congregating in the area.

At 2.1.3 of the addendum, RSP says *"In addition, at the time the ES was written it was not considered likely that a PSZ would need to be declared."* This is astonishing, as NNF has been telling RSP since the first consultations in 2017 that it would need a PSZ. We also mentioned it in our submission to the Select Committee on Smaller Airports in 2015. RSP's Directors Messrs Freudmann, Yerrall and Lawlor (then working for ROIC) were involved in that hearing.

At 2.4.5 of the addendum, RSP says: *"For the purposes of assessment, it is presumed that permission for new or replacement development within the PSZ will not be granted, particularly residential buildings (houses, mobile*

		homes and caravans)." At 2.4.8, RSP says: *"In line with Circular 01/20102 and PSZ restrictions at other airports, the principal feature of the 1 in 10,000 individual risk contour is that people should not be expected to live or have their workplace within such areas."* At 4.2.10, RSP says that: *"Any changes to the current commercial and communal use of historic buildings and open spaces within the proposed PSZ could give rise to harm to heritage significance, either as a result of the disruption of historic uses or through physical neglect arising from the inability to identify viable and sustainable reuse. The effect pathway is, however, complex and it is not possible to identify potential effects at the scale of individual listed buildings. Even understanding a more generalised effect is contingent on the exact nature of any restrictions and their implications in the context of the socio-economic situation of the wider area around the PSZ."* RSP admits that there will be a range of adverse effects, but then brushes them off in 4.2.11 saying that: "*the generally positive effects predicted for the local economy in the socio-economic chapter of the ES [APP-034) would support finding economically viable sustainable uses for these buildings. It is also anticipated that these effects could be minimised or avoided entirely through the consideration of PSZ policies that would align with existing controls on development in the Ramsgate Conservation Area and use and alteration of listed buildings. In addition, restrictions on replacement development could present a further incentive to retain and refurbish existing buildings*." RSP produces no evidence to support this claim that a 24/7 cargo airport will encourage the discovery of new uses for the buildings and spaces affected and constrained by the PSZs. It then tries to pretend that restrictions on replacement development will be an incentive to retain existing buildings. Again, there is no evidence to support this blithe assertion. At 5.3.3 RSP admits that a PSZ could affect future planning decisions and that this could have a significant effect on the Manston Green development, which is a strategic housing site. RSP then claims that the affected area of Ramsgate *"is already densely populated with little open space, it is unlikely that any permission would be sought for large scale alterations to these properties. As such, the introduction of a PSZ is considered to have no likely significant effect."* **This extraordinary claim is made entirely without any supporting evidence**. RSP admits in 5.3.19 that there are a number of commercial facilities that would be under the PSZ restriction. RSP brushes this off, saying: *"It is assumed that any future development within this area, would be of the same or similar nature as currently exists, either through expansion of the existing facilities or introduction of aligning facilities. As such the PSZ is unlikely to be a limiting factor and considered to have no likely significant effect. It should be noted that any future development of facilities of this nature would be at the discretion of TDC."* **This extraordinary claim is made entirely without any supporting evidence**. In short, RSP has been dragged kicking and protesting into recognising that a PSZ <u>will</u> be needed at the airport if a DCO is awarded. It is alarming that its expert team did not understand this when members of the general public did. RSP now seeks to tell the ExA that, apart from an unknown effect on Manston Green, the implementation of the required PSZs will have little or no effect. It is hard to see how RSP arrives at such a conclusion as it has not calculated what the Manston PSZs would look like. It simply overlays other airport PSZs on a map of the area. Of the example PSZs provided, the two most potentially

		relevant ones are those for EMA and Stansted as these airports are probably the closest airports in terms of operating model to the airport that RSP says it wishes to develop. Even using RSP's rather home-drawn picture here of other airports' PSZs, it can be seen that the PSZs for EMA and Stansted both extend over a considerable amount of Ramsgate. We urge the ExA to insist that RSP calculates what actual PSZs would look like for its proposed operation at Manston so that a proper assessment can be made of the potential harm that will be caused to the area as a result of the new development constraints that will be imposed on residents, businesses and on other property and spaces. The **actual** location of the PSZs must be specified, and the **actual** constraints imposed on local residents and businesses **must** be known to the ExA before a meaningful assessment of the "compelling case" can be made. Of course, it must be recognised that the issue of PSZs and their impact on the local economy and population has never been a topic as part of RSP's statutory consultation. This is a significant flaw.
NNF17.18	Funding	RSP claims that the land can be acquired for a total sum of under £5m. This is ridiculous. Mr P Binding has submitted that the Manston site is approximately 280 hectares, and that, according to government figures, residential land in Thanet was £2.5 million per hectare in 2017. So, he calculates, if just half of the site were allocated for residential development its value would be £350 million. NNF has arrived at a similar estimate using different sources. A senior Director at a major UK construction firm gave us a "finger in the wind" estimate of £1m an acre. From that, he said, we should deduct the land which the owners do not plan to develop and any remediation costs. His assessment was that the site would be worth around £350m at a cautious estimate. NNF has also been talking to a developer who has very recently been involved in negotiations over the bulk purchase of land for development in Thanet. He quoted a purchase price of £800,000 an acre. Again, we would need to deduct from that the cost of the land that would not be developed and any remediation costs. On any of these outline assessments we are looking at a value that is a significant multiple of what RSP is suggesting the site will cost per acre. It is clear that acquisition costs have **not** been assessed accurately by RSP. Given that RSP has shown little evidence of having **any** money, the idea that it could fund acquisition costs of hundreds of millions as well as similar levels of development costs is literally incredible. The ExA is urged to investigate the actual value of local land and the significant implications that this has for RSP's overall costs should a DCO be awarded. RSP has provided no evidence that it could begin to cover costs of this kind of size.

Title: Night Flight Restrictions at the Designated Airports, 2017-2022 **IA No:** DfT00370 **RPC Reference No:** RPC17-3554(2)-DfT **Lead department or agency:** Department for Transport **Other departments or agencies:** NA	**Impact Assessment (IA)** **Date:** 12/07/17 **Stage: Final** **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries:** David Hyde, night.flights@dft.gsi.gov.uk

Summary: Intervention and Options

RPC Opinion: fit-for-purpose

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANDCB in 2014 prices)	**One-In, Three-Out**	**Business Impact Target Status**
£-12.18m	£-10.91m	£2.2m	In scope	Qualifying provision

What is the problem under consideration? Why is government intervention necessary?

The biggest issue arising from night flights is the effect of night noise on residents in areas surrounding airports. In particular, the impact this has on the sleeping patterns of individuals. There has been growing evidence on the relationship between exposure to higher levels of aircraft noise at night, sleep disturbance, and adverse health effects. However, there is a need to balance these negative externalities on local residents with the economic benefits that night flights offer to the aviation industry and wider economy, including increased flight choice (allowing passengers to fly when convenient for them and to a wide range of destinations) and next-day deliveries of urgent or perishable products.

Currently there is no market process in place to ensure the benefits of night flights are balanced against the local impacts. Without Government intervention, the existing restrictions at Gatwick, Heathrow and Stansted would end in October 2017, and there could be an unlimited amount of flights operating in the night period. In this case, the Government considers that there would be a failure to protect communities from the noise impacts of night flights.

While at other airports in the UK night noise is managed locally, usually as agreements between the airport and local authorities, under the existing policy and legal framework the Secretary of State has responsibility for setting night flight restrictions at Heathrow, Gatwick and Stansted. The Government recently consulted on changes to this framework, which could see night flight restrictions set via other processes in the future. The outcome of that consultation is yet to be determined however and there are no alternatives to Government intervention. Therefore there is currently a rationale for the Government to intervene to address the problem under consideration, namely to strike a balance between the local impacts of night flights and the economic benefits they bring. A 'Do Nothing' option is not an appropriate baseline as it is not feasible for the Government to completely remove all regulation on night flights at the designated airports, reasons for this are given at Section 5.2. The impacts of the proposed policy options are therefore compared against a 'do minimum' option based on a continuation of the current regime.

What are the policy objectives and the intended effects?

The environmental objective we have set for these airports is to 'limit or reduce the number of people significantly affected by aircraft noise at night, including through encouraging the use of quieter aircraft, while maintaining the existing benefits of night flights'. Rules on the adoption of operating restrictions, such as the night flight regime, require them to be no more restrictive than is needed to achieve the environmental objectives for that airport. These rules however do not specify the exact restrictions that should be in place at an individual airport or airports and this is a domestic policy decision.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

In this final stage impact assessment, we have considered four options to achieve the objective outlined above. Based on consultation responses and further analysis, we have repackaged the options that were presented at consultation stage. These options are now:

1. Option 1: Do Minimum. The current regime continues beyond expiry in October 2017 with no changes.
2. Option 2. Incorporate QC/0 aircraft into movement limits for all three airports, and accommodate the number of currently exempt aircraft at Stansted by increasing their movement limit. These changes would take effect from the start of the next regime (Winter 2017). This option ensures the growing number of QC/0 aircraft are included in the regime and subject to the requirements.
3. Option 3: As option 2, but further implementing a new QC/0.125 category to be introduced in the second year of the regime (Winter 2018). This option ensures the noise impacts of aircraft are better reflected in the noise quota allowance of the regime.
4. Option 4: As option 3, but from Winter 2018 to also reduce noise quota limits at Heathrow and Gatwick to a level based on the current average QC per movement. This removes 'headroom' or inefficiency in the current policy (see section 5.4.2 for further detail on the methodology for calculating these reductions).

Our preferred option is Option 4, which builds on all the other options, and best achieves our objective as set out above. The changes to the QC system that this package would include would ensure communities are protected from the theoretically unlimited number of QC/0 aircraft movements that could otherwise occur (in a do minimum scenario, Option 1), and ensures that there is greater transparency so communities know how much noise they can expect to experience over the next five years of the regime. As a result of incorporating QC/0 aircraft into the movement limit, it is necessary to adjust Stansted's movement limits by the existing number of aircraft that will be brought into the restrictions to ensure the existing benefits of night flights are maintained. Finally, reducing noise quotas at Heathrow and Gatwick to a level based on current usage incentivises the continued use of quieter aircraft and 'locks-in' the benefits that have been delivered through the introduction of quieter aircraft in recent years. Option 4 reflects all of these changes. The results suggest a negative NPV based on the impacts that have been monetised. There are a number of non-monetised benefits that we believe warrant Option 4 being the preferred option, including the transparency and future certainty that this options provides communities.

A full analysis of all options is found in Section 8 and at Appendix C to this impact assessment.

Will the policy be reviewed? Yes	**If applicable, set review date: Restrictions expire in October 2022**			
Does implementation go beyond minimum EU requirements?		N/A		
Are any of these organisations in scope?	**Micro: Yes**	**Small: Yes**	**Medium : Yes**	**Large: Yes**
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)		**Traded: NQ**	**Non-traded: NQ**	

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

Signed by the responsible Minister: Rt Hon Chris Grayling MP Date: 12/07/2017

Summary: Analysis & Evidence — Preferred option (Option 4)

Description: From Winter 2017: Incorporating QC/0 aircraft into movement limits for all three airports, and accommodating the number of currently exempt aircraft movements at Stansted by increasing their movement limit. From Winter 2018: Implementing a new QC/0.125 category and reducing noise quota limits at Heathrow and Gatwick to a level based on the current average QC per movement.

FULL ECONOMIC ASSESSMENT

Price Base Year: 2015	PV Base Year: 2017	Time Period Years: 5	Net Benefit (Present Value (PV)) (£m)		
			Low: NQ	**High:** NQ	**Best Estimate:** -£12.18m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	NQ	N/A	NQ	**NQ**
High	NQ		NQ	**NQ**
Best Estimate	£0		£2.7m	**£12.4m**

Description and scale of key monetised costs by 'main affected groups'

Under Option 4, it is estimated that there would be fewer flights in the night quota period (NQP) at Gatwick and Stansted across the 5 year regime compared to the Do Minimum scenario. It is estimated that the direct costs to airports and airlines from the reduction in flights in the NQP would be around £1.2m per year at Gatwick and around £1.1m per year at Stansted on average over the 5 year regime (in constant prices); and that the reduction in flights in the NQP at both airports would also result in a total reduction in tax revenues of around £0.3m per year on average over the 5 year regime (in constant prices).

Other key non-monetised costs by 'main affected groups'

It is also expected that the reduction in flights in the NQP at Gatwick and Stansted would result in a number of other (non-monetised) costs to businesses, passengers and the government (see Section 8). However, it is estimated that there would be no change in the number of flights in the NQP at Heathrow and therefore no costs are expected at Heathrow.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	NQ	N/A	NQ	**NQ**
High	NQ		NQ	**NQ**
Best Estimate	£0		£0.0m	**£0.2m**

Description and scale of key monetised benefits by 'main affected groups'

Under Option 4, the total value of the reduction in sleep disturbance from flights in the NQP over the 5 year regime is estimated at around £0.01 million at Gatwick and around £0.2 million at Stansted (in constant prices).

Other key non-monetised benefits by 'main affected groups'

It is estimated that the population within the 48dBA $L_{Aeq,\ 6.5hr}$ night contour would be unchanged in 2017/18 at Gatwick and Heathrow, but be reduced by around 50 people at Stansted. By 2021/22, it is estimated that the number of people within the 48dBA LAeq, 6.5hr night contour would remain the same at Gatwick and Heathrow, but be around 300 less at Stansted. These impacts are relative to a world in which the current night flight restrictions continue. The non-monetised noise

benefits are therefore expected to be higher at Stansted than at Gatwick and Heathrow. Furthermore, at all three airports, introducing a new 0.125 QC category and counting all movements towards the limit, as well as reducing the noise quota limit at Gatwick and Heathrow, will increase the transparency of the regime and provide more certainty for communities on the number of flights and amount of noise that can be expected during the night quota period.

Key assumptions/sensitivities/risks	**Discount rate (%)**	3.5%

As mentioned in the main text, the analysis has a number of limitations, which means that the results of the quantitative analysis presented in this IA are subject to considerable uncertainty. This means that there is uncertainty around both the impacts of the policy options and any comparisons that are made between the policy options. All analysis has been subject to the Department's Quality Assurance processes. Please refer to the text in the IA for a full discussion of the limitations of the various strands of the analysis.

BUSINESS ASSESSMENT

Direct impact on business (Equivalent Annual) £m:			**Score for Business Impact Target (qualifying provisions only) £m:** £11.0m
Costs: £2.2m	Benefits: £0	Net: -£2.2m	

1 Background

The government recognises the need to protect local communities from the negative impacts of aircraft noise at night, such as the impact on the quality of sleep, while permitting the operation of services that provide a range of benefits to the aviation industry and wider economy. These benefits include increased flight choice (allowing passengers to fly when convenient for them, which is particularly important for business passengers), the opening up markets and fostering of international trade (including facilitating next day deliveries or urgent or perishable products), encouraging investment in the UK by domestic and foreign investors, improving business efficiency and raising productivity, and spurring growth in the tourism sector. However current Government policy, as set out in the 2013 Aviation Policy Framework (APF), also recognises that night noise is widely regarded as the least acceptable form of aircraft noise and, as a result, it is necessary to ensure that these economic benefits of night flights are balanced with the costs these can impose on communities, including on the quality of sleep.[1]

1.1 Current Regime

Night flight restrictions of some form have been in place at Heathrow since 1962, Gatwick since 1971 and Stansted since 1978. Please note the phrases night flights restrictions, night flights regime, 'the regime' are used interchangeably in this impact assessment.

The underlying principle of the restrictions has been to balance the benefits of night flights for the aviation industry and wider economy with the negative impacts of night noise on local communities.

Since 1993, the main elements of the night noise regime have been limits to the number of movements and amount of noise that can be emitted at an airport between the hours of 23:30 and 06:00, which is known as the night quota period, during a particular season (there are two seasons per annum, winter and summer, which coincide with the use of Greenwich Mean Time and British Summer Time).

The limits for the three airports for the current regime, which began in October 2014 and runs to October 2017, are shown in Figure 1 below:

Figure 1 - Seasonal night movement and noise quota limits for Heathrow, Gatwick and Stansted

	Heathrow	**Gatwick**	**Stansted**
Summer night movement limit	3,250	11,200	7,000
Summer noise quota limit	5,100	6,200	4,650
Winter night movement limit	2,550	3,250	5,000
Winter noise quota limit	4,080	2,000	3,310

The noise quota limits are based on the noise classification of aircraft. All aircraft are given a Quota Count (QC) number based on their noise during take-off and landing and those with higher QC classifications use a greater amount of an airport's noise quota (see Appendix B). The noise quota limit

[1] DfT 'Aviation Policy Framework', 2013
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/153776/aviation-policy-framework.pdf

is designed to encourage the use of quieter aircraft by allowing airports to maximise the number of movements during any season through the use of aircraft with a lower quota count. Currently the lowest QC category is QC/0.25, which applies to aircraft with and a noise level between 84 and 86.9 EPNdB[2]. Aircraft that are quieter than this are currently rated QC/0 and are exempt from the restrictions. This means they are not subject to either the movement or noise quota limits and can operate unrestricted in the night quota period.

There are also dispensations for certain types of movements that do not count towards the movement or noise quota limits, for example humanitarian or VIP flights, or in the event of emergencies or widespread and prolonged air traffic disruption. No changes to the rules regarding dispensations are being considered as part of this current review of the restrictions, though we will continue to monitor their usage. Therefore, the statistics and estimates presented in this impact assessment and the analysis described in this impact assessment do not cover flights that have been, or would be, granted dispensations.

1.2 Carry overs and Overruns

As airline seasons vary in length, airports are given flexibility to manage their allowance, and may carry-over unused movements or quota from one season to another, or may over-run in one season which leads to a deduction in the following season. The current rules for carry-overs and overruns are as follows:

- If required, a shortfall in use of the movements limits and/or noise quota in one season of up to 10% may be carried over to the next season;
- Conversely, up to 10% of an overrun in movements and/or noise quota usage in one season (not being covered by carry-over from the previous season) will be deducted from the corresponding allocation in the following season;
- An overrun of more than 10% will result in a deduction of 10% plus twice the amount of the excess over 10% from the corresponding allocation in the following season; and
- The absolute maximum overrun is 20% of the original limit in each case.

2 Problem under consideration / Rationale for intervention

The biggest issue arising from night flights is the effect of night noise on residents in areas surrounding airports. In particular, the impact this has on the sleeping patterns of individuals. There has been growing evidence, as set out in Section 6.1 of this Impact Assessment, on the relationship between exposure to higher levels of aircraft noise at night, sleep disturbance, and adverse health effects. There is a need therefore to balance these negative externalities on local residents with the economic benefits that night flights offer to the aviation industry and wider economy, including increased flight choice (allowing passengers to fly when convenient for them, particularly important for business passengers) and next-day deliveries of urgent or perishable products. There is currently no market mechanism in place to ensure this balance, which calls for a role for the Government.

The power for the Secretary of State to set night flight restrictions for designated airports is granted under section 78 of the Civil Aviation Act 1982. This allows action to be taken to avoid, limit or mitigate the impacts of noise from aircraft. Heathrow, Gatwick and Stansted airports have been designated for this purpose since 1971. These are the only three airports that the Government currently designates for these purposes. While the Government only sets night flight restrictions at these three airports, similar restrictions exist at some other airports – which are often the result of local planning conditions.

[2] Effective Perceived Noise level in decibels

Current Government policy, as set out in the APF in 2013, is that in general noise controls are best agreed locally. However, given the strategic importance of these airports to the UK economy, and that their future was being considered by the Airports Commission at the time, the APF stated that it was appropriate for the Government to continue to maintain the status of the designated airports. Therefore the Government currently sets noise controls at these airports, including night flight restrictions, to continue to balance the economic benefits these airports offer to the UK with the impacts they impose on communities.

The current night flight restrictions are due to expire in October 2017. Therefore, on 12th January 2017 the Government launched its consultation on replacement restrictions for the regime. Following the publication of this consultation, on 2 February 2017 the Government launched a consultation, '*UK Airspace Policy: a framework for balanced decisions on the design and use of airspace*'. This latter consultation includes proposals for how noise should be managed at all airports in the future, and contains proposed measures to bring the system for managing noise at the currently designated airports in line with those at other airports. This consultation was due to close on 25 May and responses are being considered by the Department for Transport before final policy decisions on these policies are made. Without prejudice to the outcome of that process, this could see night flight restrictions no longer being set by the Government at these airports in the future if restrictions can be agreed through some other means such as through the planning process or through engagement with local communities. Given however that the restrictions expire in October 2017, there is a need for the Government to provide certainty on the night flights rules which will apply at the three airports when the current regime lapses. The regime therefore needs to be set before any decisions have been made on the future of the Government's role and will therefore be done so under the existing framework.

In impact assessments it is customary to consider whether any alternatives to Government intervention exist. Besides from the reasons set out above referring to the rationale for Government's current role at these airports, there are also legal rules governing the introduction of operating restrictions – even voluntary ones. Even if the Government had reached a decision on its proposals in the UK Airspace Policy consultation, there would not be sufficient time for another body to be appointed as the competent authority, consult on and agree restrictions before the current regime lapsed[3]. At this moment in time therefore, Government regulation is the only option to ensure the impacts of night flights are adequately managed.

A failure to act by the Government could lead to a substantial increase in the number of night flights at any of the three airports. Given the noise impacts of these flights, this is not considered a viable option. Additionally, intervention is required in this market as an unregulated market would almost certainly impose a disproportionate negative noise impact on communities around an airport.

3 Policy Objective

The night flight restrictions set by the Government are an example of noise-related operating restrictions and there are European rules governing the introduction of these at airports, based on the International Civil Aviation Organisation's (ICAO) balanced approach. On 23 June, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. Until exit negotiations are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will continue

[3] New Regulations concerning the introduction of operating restrictions (Regulation (EU) 598/2014) apply from 13 June 2016 where consultation on those restrictions began after this date.

to negotiate, implement and apply EU legislation. The outcome of these negotiations will determine what arrangements apply in relation to EU legislation in future once the UK has left the EU.

One of the requirements of these rules is for any action taken by a competent authority (the Secretary of State in this instance), to be no more restrictive than is needed to achieve the environmental objectives for the airport in question. The Government must therefore give consideration to what are appropriate environmental objectives for each airport. These rules do not however specify what action should be taken at an individual airport of airports and these are **domestic policy decisions.**

When the regime was last reviewed the Government decided it should maintain a stable regulatory regime and allow growth within the existing movement limits and noise quotas, pending a decision on airport capacity. No significant changes were therefore made to the current regime that began in October 2014.

Given the Government's announcement on 25 October 2016 that a new north west runway at Heathrow was its preferred scheme for delivering new capacity in the south east, and that the Government expects there to be new night flight restrictions associated with a new runway, the Government agrees with the Airports Commission's recommendation that there is no case for further restrictions on the number of night flights at a capacity constrained Heathrow[4]. The next night flights regime at Heathrow should ensure therefore that the existing benefits of night flights at Heathrow are maintained, but also deliver the best improvement in the noise climate possible in the period before a new runway is in place - through incentives to encourage the use of the quietest aircraft in the night quota period.

In our consultation document, we also considered that given the capacity constraints in the south east and the business models of the airlines based at Gatwick and Stansted, it was important to maintain the benefits offered by night flights so that capacity in the south east is not constrained further before a new runway at Heathrow is operational.

We therefore proposed that the next regime should ensure that the existing benefits of night flights were maintained while delivering the best possible improvements in the noise climate. As a result, the environmental objective proposed in our consultation document was to **'encourage the use of quieter aircraft to limit or reduce the number of people significantly affected by aircraft noise at night, while maintaining the existing benefits of night flights'**.

There are also potential opportunities for both Heathrow and Stansted to agree night flight restrictions through other means in the coming years. This objective would therefore ensure that alongside improvements in the noise climate around these airports, the next regime would leave scope for local decisions to be made on night flights in the future.

The majority of responses to our consultation disagreed with our proposed objective. A large number of responses argued that quieter aircraft would not prevent disturbance for those living around airports, and that the objective should therefore be to prevent any flights from operating at all during the night, or to gradually phase them out– with various differing suggestions for the length that should be, most commonly 8 hours.

There was also a large number of responses, including from one campaign that was resubmitted around 800 times, that suggested the wording of the objective prevented measures being taken that that would reduce the number of night flights and that the benefits of night flights were not defined. A range of benefits as a result of a reduction in the number of night flights has been clearly outlined

[4] Airports Commission. Final Report (2015).

in this impact assessment in Section 6.2, and where possible, some of the impacts as a result of a reduction in the number of flights are monetised.

Other responses from communities argued that the way the objective was worded represented a weakening from one of the environmental objectives from the 2014 regime, to 'limit and where possible reduce the number of people significantly affected by aircraft noise at night' and was focused solely on encouraging quieter aircraft rather than reducing the negative impacts of noise.

On the other hand, some responses from industry suggested that rather than focusing on reduction of noise at source, other pillars of the balanced approach, especially land-use planning, needed to be considered. Having considered consultation responses on the environmental objective, the Government continues to believe the proposed approach remains the correct one and that for the reasons described at the beginning of this section the next regime should focus on reducing the impacts of noise while maintaining the existing benefits of night flights – which are identified in Section 6 of this document. We do recognise however that the focus of the objective should be on limiting and, where possible, reducing the harmful impacts of night noise rather than solely encouraging the use of quieter aircraft. For our final environmental objective, we have therefore decided to alter the wording slightly from that proposed at consultation stage to: '**limit or reduce the number of people significantly affected by aircraft noise at night, including through encouraging the use of quieter aircraft, while maintaining the existing benefits of night flights'**.

4 Considerations for the Policy Options

4.1 The growth and potential future increase in the number of exempt aircraft under the current regime

As explained above in Section 1.1, some aircraft fall outside of the current regime and are therefore exempt from both the movement and noise quota limits. When the regime was first set in its current format in 1993, it was originally proposed that aircraft below QC/1 (90EPNdB[5]) should be exempt from the regime. A Department of Transport sleep study[6] had suggested that noise below 80 dB L_{max} (90 EPNdB equates to roughly 75 dB L_{max}[7]), was unlikely to cause sleep disturbance[8]. After consultation, it was decided that a QC/0.5 category should be adopted, with aircraft quieter than this exempt from the restrictions.

Since 1993, evidence of the relationship between noise exposure, sleep disturbance and health impacts has increased. This evidence informed the 1999 World Health Organization (WHO) Guidelines for Community Noise[9], stating that noise events exceeding 45 dBA[10] L_{max} indoors should be limited if possible. It noted that people should be able to sleep with a bedroom window slightly open (a reduction from outside to inside of 15 dB[11]), therefore equating to an outdoor L_{max} of 60 dBA.

[5] EPNdB; Effective Perceived Noise Decibels. A specialised noise unit used for aircraft noise certification tests. Figures based on average of flyover and sideline for departures, and after 9 EPNdB subtraction from approach value.
[6] Ollerhead J B et al, Report of a Field Study of Aircraft Noise and Sleep Disturbance, Department of Transport, December 1992.
[7] Lmax; The maximum A-weighted sound level (in dBA) measured during an aircraft flyby
[8] Survey of attitudes to aviation noise. SONA Analysis completed for Department for Transport, 2017. Available at https://www.gov.uk/government/publications/survey-of-attitudes-to-aviation-noise
[9] World Health Organisation. WHO Guidelines for Community Noise, 1999. http://www.who.int/docstore/peh/noise/guidelines2.html
[10] dBA; A-weighted decibels. Unit of sound pressure level measured on the A-weighted scale i.e. as measured on an instrument that applies a weighting to the electrical signal as a way of simulating the way a typical human ear responds to a range of acoustic frequencies.
[11] dB; Unit of relative sound level or changes in sound level

Although currently exempt aircraft are quieter than those included in the limits, they do create noise that could result in sleep disturbance. There is a risk therefore that by exempting aircraft, movements and associated noise can increase. However, since the introduction of the QC/0.25 category in winter 2006/07, the existence of this exempt category did not result in a significant difference between the total number of movements in the night quota period compared to the number allowed under the regime for much of the following period. In other words, despite the exemption, noise did not increase.

This has begun to change in recent years at Stansted (see Figure 2 and Figure 3 below). In summer 2016, the number of exempt operations would not have been accommodated in the current movement limits, even with the use of carry-over and a 10% overrun[12]. Additionally, at Gatwick, the issue has potential to become more important during the next regime. Currently the majority of exempt aircraft are small freighters and business jets. But, over the next few years, several new quieter jet aircraft, such as versions of the Airbus A320neo, will come into service that will be quieter than the current QC/0.25 standard and therefore exempt from both the movement and the quota limits under the current restrictions.

The largest airlines at Gatwick and Stansted, easyJet and Ryanair respectively, have a large number of these aircraft on order. EasyJet will be introducing their first A320neos this summer season[13] and expect about a third of their fleet to be comprised of Airbus A320neos by 2021[14] and Ryanair also have 100 confirmed orders for the Boeing 737-MAX, which may also fall into the currently exempt category once certified.[15]

Without changes to the existing QC system, there is therefore the possibility for commercial airlines to operate a potentially unlimited number of these aircraft during the night quota period. This could have significant impacts on the noise climate around airports, and result in adverse impacts on sleep quality and health. Additionally, there could be impacts on air quality and climate change, as well as other local impacts. This means it is necessary for the Government to consider what proportionate regulation of these aircraft would be. As it stands, the restrictions at these airports would not be transparent and would fail to reassure communities of the maximum level of night noise they could be expected to be exposed to in the night quota period.

[12] This is the maximum percentage overrun an airport can use without facing a penalty (losing two movements for every one over this level). Therefore, we assume airports will not exceed a 10% overrun.

[13] Easyjet presentation, available at http://www2.westsussex.gov.uk/ds/cttee/gat/gat260117i12.pdf

[14] Easyjet. Press Release. 7th November 2015. http://www.airbus.com/presscentre/pressreleases/press-release-detail/detail/easyjet-orders-an-additional-36-a320-family-aircraft/

[15] Boeing. Press Release. 8th September 2014. http://boeing.mediaroom.com/2014-09-08-Boeing-Launches-737-MAX-200-with-Ryanair

Figure 2 - Number of exempt movements in the winter season

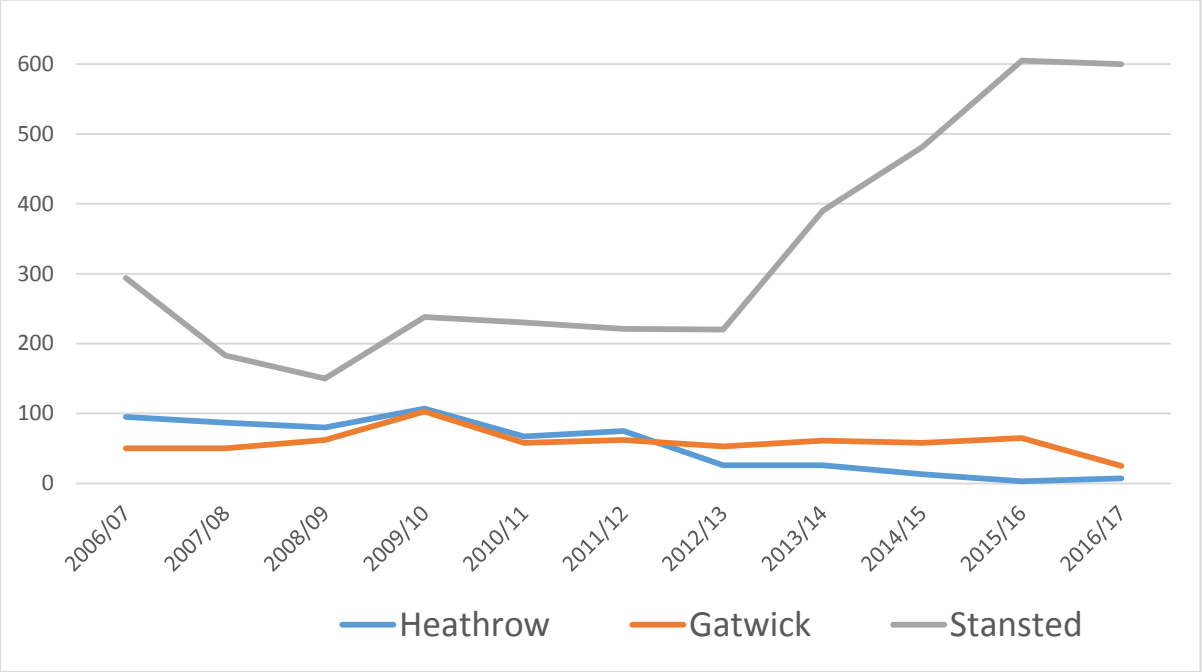
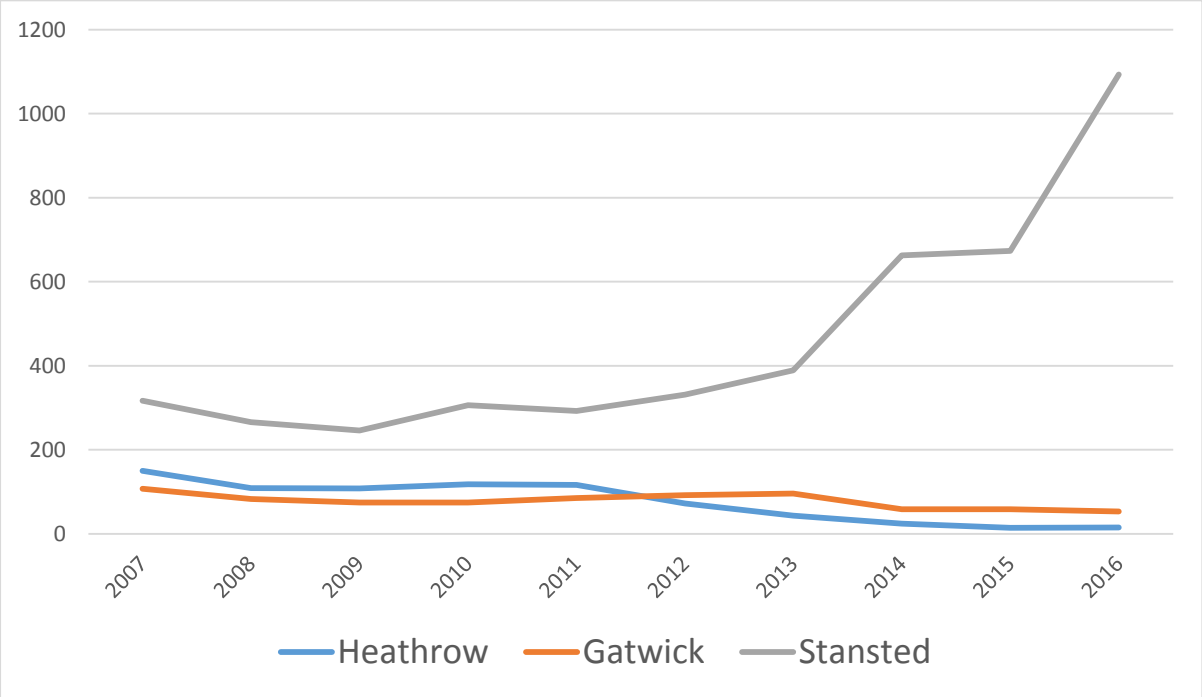


Figure 3 - Number of exempt movements in the summer season



As can be seen from Figure 2 and Figure 3, Gatwick and Heathrow currently have a far smaller number of exempt movements compared to Stansted. However, the increase in exempt movements from the introduction of these new aircraft could be particularly noticeable at Gatwick since existing A320s make up a significant proportion of night movements[16].

[16] CAA data

4.2 Whether the airports' movement limits remain appropriate

Along with the noise quota limits, the movement limit for each airport is the key element of the restrictions. When the regime was last reviewed, it was decided to make no changes to the movement limits in order to 'maintain a stable regulatory regime pending decisions on future airport capacity'. As mentioned above, the Government has now indicated that its preferred scheme for consulting on new runway capacity in the south east is Heathrow. It is therefore appropriate to consider when setting the new regime whether the movement limits at these airports are still appropriate. However, as outlined in Section 3, part of our environmental objective required under the Balanced Approach is to maintain the existing benefits of night flights at these airports.

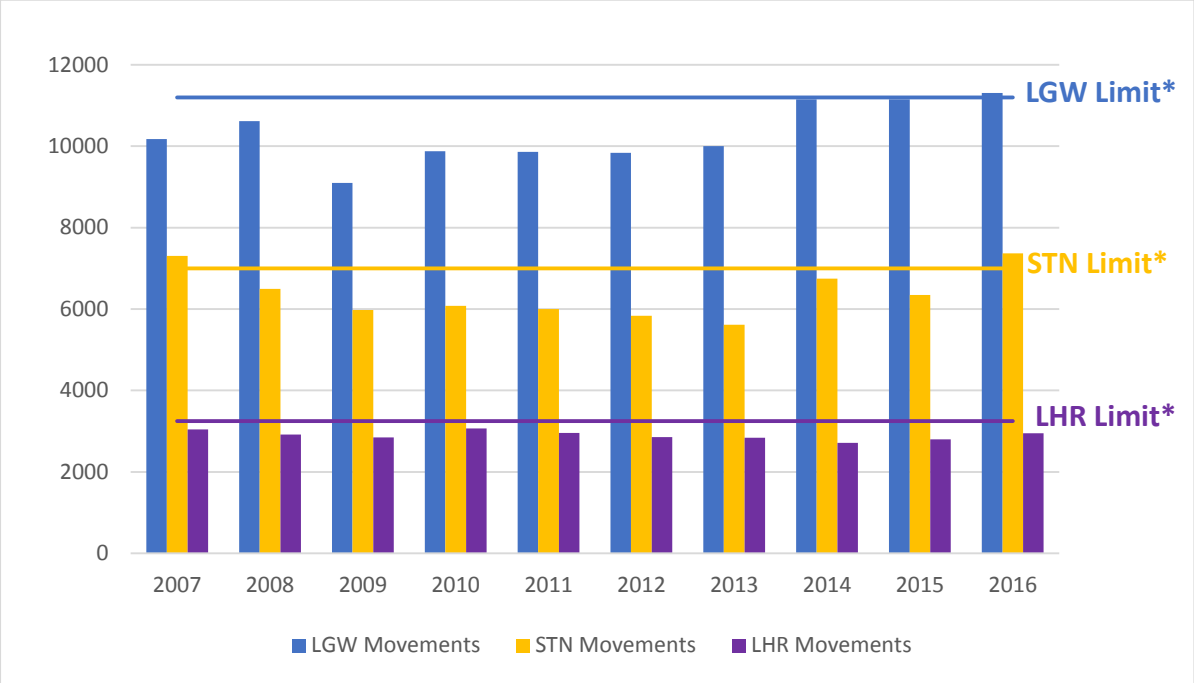
4.3 Whether the airports' noise quota limits remains appropriate

As with the movement limits, it was decided in July 2014, when the regime was last reviewed, to make no changes to the airports' noise quota limits. The purpose of a noise quota limit alongside a movement limit is to incentivise the use of quieter aircraft to maximise the number of flights that can take place during the night quota period. Improvements in aircraft's noise performance over recent years has meant that at Heathrow and Gatwick, proportionally less of the airports' noise quotas are being used compared to movement limits. For instance in Summer 2016, Heathrow used only 45% of its noise quota limits and Gatwick 79%, whilst 91% and 101%[17] of movement limits were used respectively[18]. Thus, the regime is not incentivising the use of quieter aircraft as much as it could do, and nor is it preventing airlines from hypothetically replacing an aircraft with a noisier one. Reviewing the noise quota limits will allow the Government to consider how it can ensure the benefits of new aircraft technology are shared to limit and, where possible, reduce the number peoples significantly affected by aircraft noise at night and that communities are given more certainty as to the level of noise they will experience in the night quota period.

Figure 4, Figure 5, Figure 6 and Figure 7 below show the movement and noise quota (QC) usage at all three airports in recent years, split by season. They show how close each airport is to their limit in any given season (excluding any carry over from previous season and any over-run).

[17] With carryovers from the previous season.
[18] Based on monthly monitoring data submitted to the Department by airports.

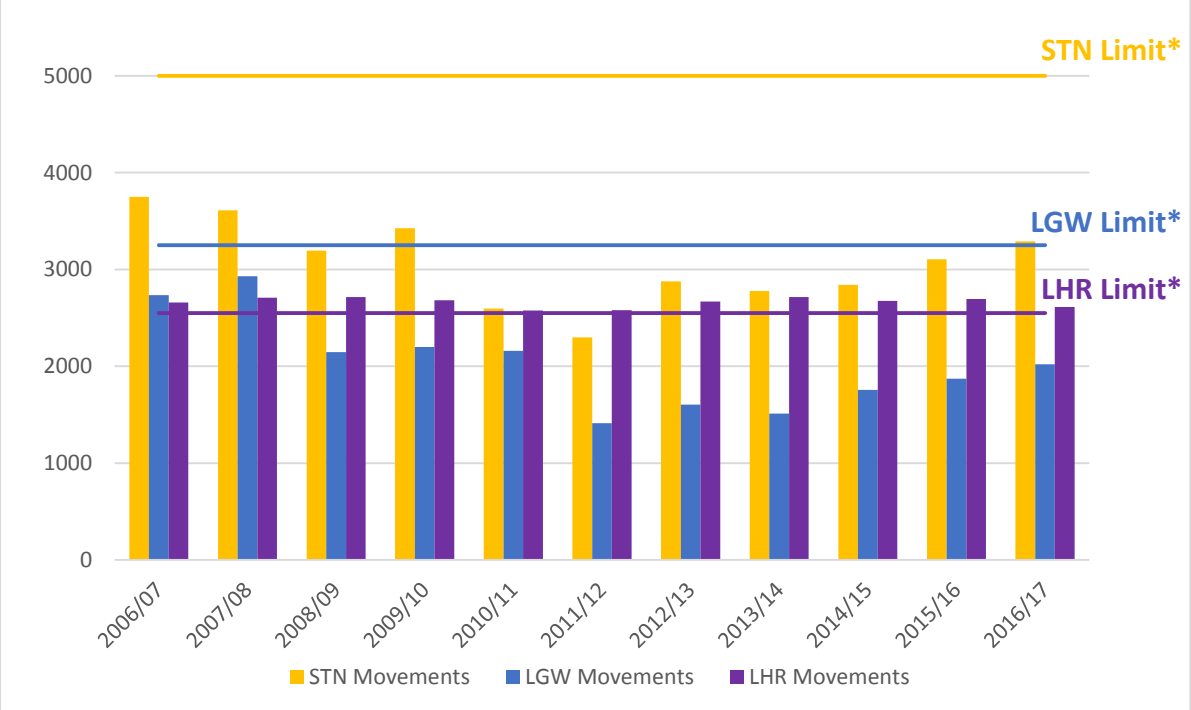
Figure 4 - Summer movement usage



* Refers to seasonal movement limit excluding any carry over from previous season and any over-run

Source: Based on monthly monitoring data submitted to the Department by airports.

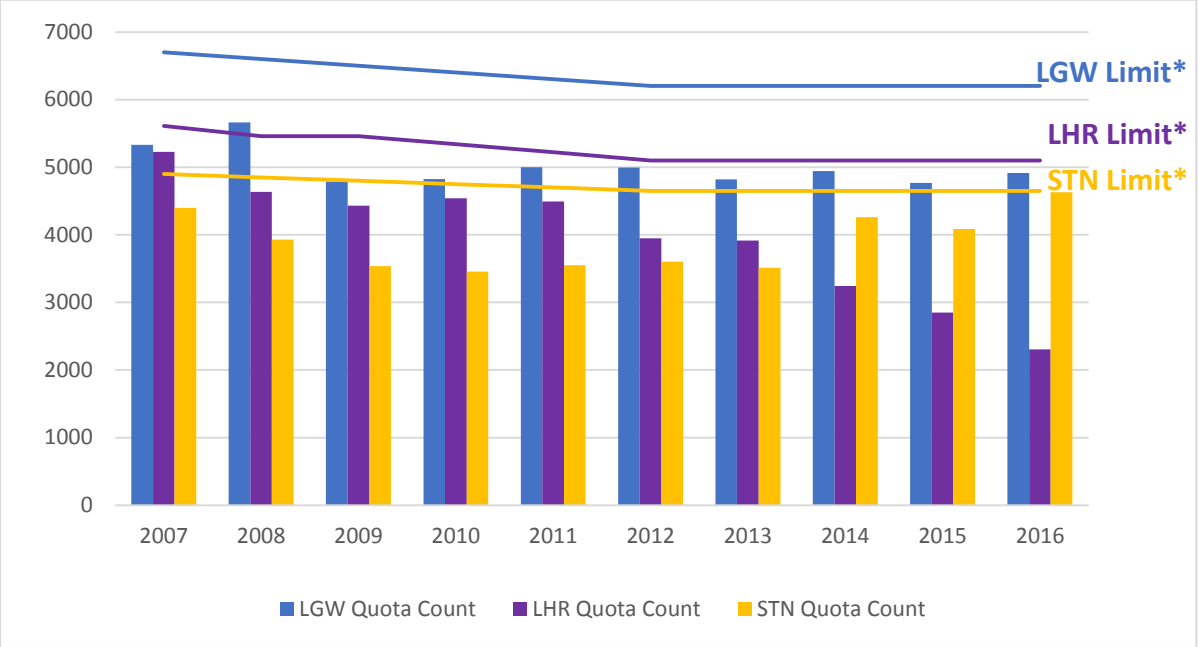
Figure 5 - Winter movement usage



* Refers to seasonal movement limit excluding any carry over from previous season and any over-run

Source: Based on monthly monitoring data submitted to the Department by airports.

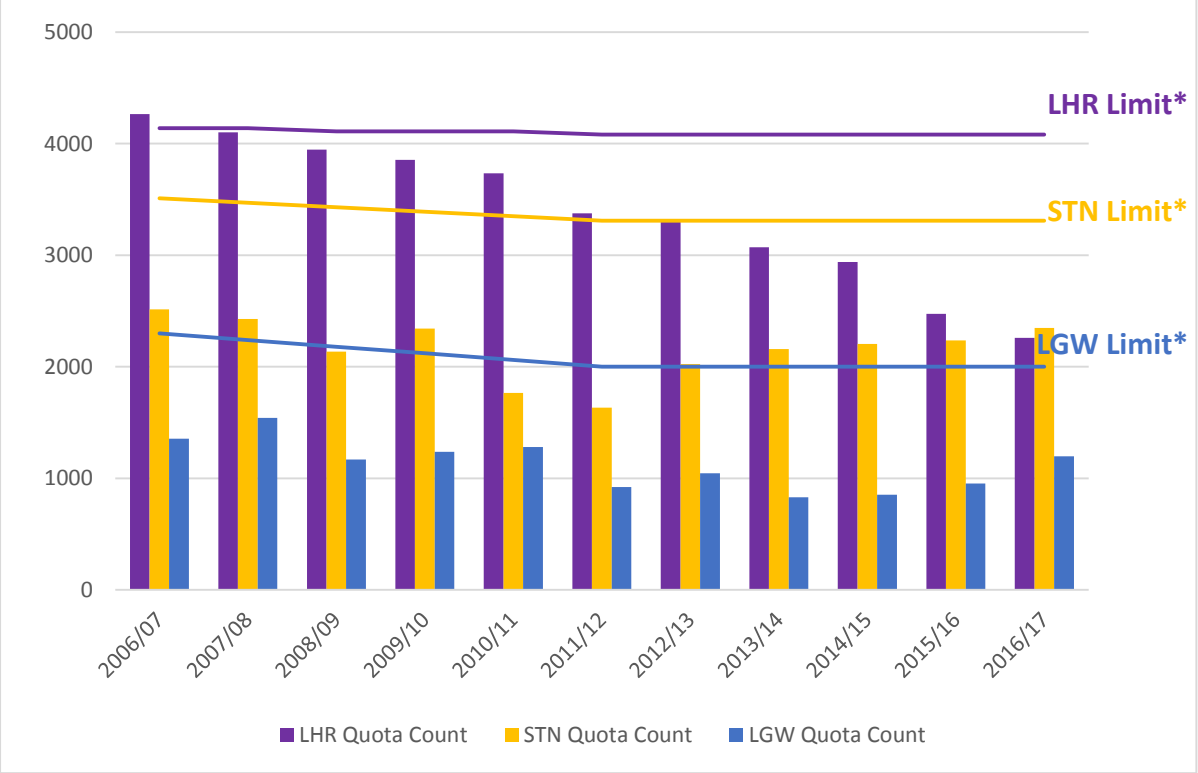
Figure 6 - Summer noise quota usage



* Refers to seasonal noise quota limit excluding any carry over from previous season and any over-run

Source: Based on monthly monitoring data submitted to the Department by airports.

Figure 7 - Winter noise quota usage



* Refers to seasonal noise quota limit excluding any carry over from previous season and any over-run

Source: Based on monthly monitoring data submitted to the Department by airports.

5 Description of options considered

Given the considerations outlined above and the overarching environmental objective, the policy options we proposed in our consultation stage impact assessment were:

1. Do Minimum. The current regime continues beyond expiry in October 2017 with no changes (referred to as Option 1 in the consultation)
2. Implementation of a new QC/0.125 category, and incorporating QC/0 aircraft into movement limits for all three airports (referred to as Option 2 in the consultation)
3. As 2, plus uplift movement limits at Stansted by the current number of QC/0 movements to accommodate the number of currently exempt aircraft movements (referred to as Option 3 in the consultation)

4a. As 3, but also reducing noise quota limits at Heathrow and Gatwick to a level based on the current average QC per movement (referred to as Option 4a in the consultation)

4b. As 4a, but also further reducing the noise quota limits at all airports gradually over the 5 year regime period, for example by 5% per year (referred to as Option 4b in the consultation)

We asked for evidence on the expected impacts of these options in our consultation in order to help us reach a decision on the final option and to inform what noise reductions under Options 4a and 4b would realistically be achievable while maintaining the existing benefits of night flights. Based on consultation responses, we have repackaged the above options at this final stage and analysed the cost and benefit impact of each of these. We have therefore considered the following options in reaching our final policy decision:

- Option 1: Do Minimum. The current regime continues with no changes.
- Option 2. Incorporate QC/0 aircraft into movement limits for all three airports, and accommodate the number of currently exempt aircraft movements at Stansted by increasing the movement limit. These changes would take effect from the start of the next regime (Winter 2017).
- Option 3: As option 2, but further implementing a new QC/0.125 category to be introduced in the second year of the regime (Winter 2018).
- Option 4: As option 3, but from Winter 2018 to also reduce noise quota limits at Heathrow and Gatwick to a level based on the current average QC per movement. This removes 'headroom' or inefficiency in the current policy (see Section 5.4.2 for further detail on the methodology for this).

Based on analysis of these options, see Section 8 and 13.1Appendix C, we have reached the conclusion that Option 4 is best suited to achieve the environmental objective as it incorporates all of the components of the other options.

5.1 Alternatives to regulation

As stated in earlier sections, current Government policy is Gatwick, Heathrow and Stansted airports are strategically important to the UK economy and it is therefore right that Government balances the benefits of night flights with the costs they have on communities. While the Government is currently reviewing its role at these three airports following the UK Airspace Policy consultation, it is not possible for any changes to be made without proper public consultation. Our consultation on the next night flights regime made clear however that if changes to the Government's role are made at these airports, then the Government would allow more airport-specific bespoke arrangements to be made

at the designated airports in the future, provided there has been appropriate consultation and all legal requirements have been followed. The consultation made clear that it would be possible for these changes to take effect before the end of the regime currently being considered. In purely practical terms, the legal requirements governing the introduction of operating restrictions would prevent alternatives to Government regulation taking effect from the beginning of the next regime, as there would not be sufficient time for another competent authority to give the required notice for any voluntary operating restrictions before the regime lapses.

There are several opportunities for more bespoke arrangements to be agreed in coming years in parallel to or as a replacement for the night flights regime if these changes to policy are made. At Heathrow, the Government has announced it expects a ban on scheduled night flights for a period of six and a half hours, between the hours of 11pm and 7am, as a condition on new runway capacity. The rules around its operation, including the exact timings of such a ban, should be defined in consultation with local communities and relevant stakeholders, in line with the requirements of EU Regulation 598/2014. Stansted has also announced it intends to seek planning permission to increase their current passenger cap this year and it could therefore agree restrictions at a local level as part of this agreement. While we are not aware of any intention for Gatwick to agree local planning conditions over the course of the regime, the proposals made in the UK Airspace Policy consultation do offer the opportunity for restrictions to be agreed outside of the planning process and pending the outcome of that consultation this may offer Gatwick the opportunity to agree local restrictions.

The next night flights regime will be adopted in line with rules that require noise to be managed in line with ICAO's Balanced Approach. Therefore, action to address noise should be airport specific and address noise in the most cost-effective way, with operating restrictions that limit the number of flights, such as the night flights regime, only being introduced if the environmental objective for an airport cannot be achieved by any other means. In addition to operating restrictions, the Balanced Approach identifies three other mechanisms for addressing noise; reduction of noise at source, land-use planning, and operational procedures. These alternative measures are discussed below.

5.1.1 Reduction of noise at source

Noise certification of aircraft aims to ensure the latest technology to reduce noise is incorporated in to the design of aircraft. Modern aircraft are considerably quieter than previous generations, with this improvement driven primarily by quieter engines. As a result the noise emissions of modern jet aircraft have reduced considerably since the first models.

The Government expects industry to continue the good progress already made in addressing the problems caused by aircraft noise. The UK was instrumental in securing an agreement on a tougher international noise standard in the ICAO Committee on Aviation Environmental Protection (CAEP). This requires new types of large civil aircraft, from 2017, to be at least 7dB quieter in total, across the three test points, than the current standard. Standards for smaller aircraft will be similarly reduced in 2020.

Several new types of aircraft will also come into service at the designated airports over the next few years that will be quieter than the aircraft they will gradually replace. This includes the introduction of the Airbus A320neo, Airbus A350, Boeing 737 MAX and Boeing 777X. While no aircraft can be completely silent, the new generation of aircraft coming into service have a noise footprint that is typically 50% smaller on departure, and at least 30% smaller on arrival, than that of the aircraft they are replacing.

In addition to the introduction of quieter aircraft at the designated airports, modifications to the existing Airbus A320 family of aircraft, which are known to emit a high-pitched 'whine' 7 to 15 miles from the airport, are also expected during the period covered by the current and next night flight regimes. All new A320s produced by Airbus will have flow detectors installed to suppress this distinctive sound created by these aircraft, and two airlines with a significant number of night operations at Gatwick, British Airways and easyJet, have agreed to retro-fit these modifications to existing aircraft by the end of 2017 and early 2018 respectively. Gatwick have also raised landing charges for non-retrofitted aircraft as of April 2017, as part of the airport's response to the Independent Arrivals Review.

Heathrow are also working to encourage airlines to retrofit noise reducing technology to the A320 family of aircraft that use the airport. While none of these models are scheduled in the night quota period, this could lower noise from unscheduled movements that arrive between 2330 and 0600.

While aircraft have become quieter in recent years and new quieter aircraft will continue to come into operation over the next few years, as Appendix E demonstrates, even the quietest commercial aircraft that will operate in the next five years of the regime will still produce noise levels which could lead to sleep disturbance and this measure alone is not sufficient to address the noise impacts that would result from unrestricted night flights over the course of the next regime.

5.1.2 Land-use planning

The second pillar of the Balanced Approach is land-use planning. Primarily this aims to ensure that new airport developments are located away from noise-sensitive areas and that only compatible land-use development takes place in areas affected by aircraft noise. Other measures include mitigating the effects of noise on development, for example through building codes and noise insulation, and making use of financial instruments such as capital improvements, tax incentives and noise-related airport charges for revenue generation to assist in funding noise mitigation efforts.

The Balanced Approach does recognise, that in some situations, such as locations lacking available land, the opportunity to incorporate all of the land-use planning principles that could prevent aircraft noise problems arising may be limited, but urges states to do so where possible.

The Government's National Planning Policy Framework (NPPF) aims to prevent development where noise can give rise to adverse effects. Research recently carried out by the CAA[19], suggests Government policy, along with regulatory levers, has had success in preventing inappropriate residential development in the areas subjected to the highest noise impacts. Furthermore, planning guidance has ensured that appropriate protection is incorporated into developments experiencing lower levels of noise.

Noise insulation schemes are also in place at all three of the designated airports. While these reduce the noise levels experienced from aircraft, the WHO recommended that people should be able to sleep with a bedroom window slightly open, and as Appendix E demonstrates, even the quietest aircraft can cause sleep disturbance in these instances.

In addition, several local authorities around the designated airports have taken steps to ensure that the development that takes place around airports is appropriate. Crawley Borough Council, in which Gatwick is located, adopted its local plan in 2015 which included its own noise policy that sets specific

[19] Study on the population trends in the vicinity of ten UK civil airports, 2017.
http://publicapps.caa.co.uk/docs/33/CAP%201204%20FEB17.pdf

standards for development in noise sensitive areas and preventing noise sensitive development above certain noise levels. Around Heathrow, the London Boroughs of Richmond, Hounslow and Hillingdon are also developing a joint strategic planning policy document for noise.

Several responses to our consultation, from industry as well as local authorities, raised the issue of land-use planning. Arguments on this subject included that local authorities lacked sufficient powers to prevent development in noise-sensitive areas, and that recent house building in high-noise contours has reduced some of the improvements that have been brought about by new technology. The Government does appreciate the role that land-use planning can play in addressing noise problems and part of the work on the upcoming aviation strategy will explore the theme of sustainable growth and will be an opportunity for stakeholders to feed in views on these matters. Land-use planning will not however address the noise impacts that already exist or that will be present over the course of the next regime.

5.1.3 Operational procedures

Noise can also be reduced by ensuring aircraft are flown in a particular way. Examples of operating procedures include:

- the use of noise preferential routes or runways to direct the flight paths of aircraft away from noise-sensitive areas (or to provide periods of respite for certain areas at certain times of day);
- the use of specific take-off or approach procedures (such as Continuous Descent Operations, or steeper landing trajectories) to optimize the distribution of noise on the ground;

The Government already sets various operational procedures at these airports that are designed to minimise the impact of noise on communities. These include continuous climb and descent operations and minimum heights at which aircraft must join the instrument landing system (ILS). There may be further opportunities to reduce noise for communities through the modernisation of airspace and other new operational procedures over the next few years. For instance, Heathrow recently trialled a steeper angle of descent for arriving aircraft. The results of this trial indicate these steeper approaches would have minimal, if any, negative effect on Heathrow's operation whilst exposing local residents to less aircraft noise. Heathrow plan to undertake further trials later this year with the view to making these changes permanent.

Following the Independent Arrivals Review published in 2016, Gatwick Airport has also agreed to several recommendations that will address noise impacts, including at night, and which have either been implemented or in the process of being so.

Further benefits of airspace modernisation may also include those that come through more accurate satellite-based navigation that enables aircraft to better avoid populated areas. The Government's consultation on UK Airspace Policy set out various proposals to ensure that the benefits of airspace modernisation are fully realised in the coming years and the Government will continue to support the designated airports in potential changes to operational procedures that could offer noise benefits in the future.

<u>Other Alternatives</u>

While these measures can all offer benefits for the noise environment, failure to set limits on the number of flights and noise energy that can be emitted would mean aircraft would be allowed to operate without any restrictions during the night. Even with the developments described above and those expected in the next few years, failure to set appropriate limits would not adequately protect

communities with the negative consequences of aircraft noise at night. This would also mean a failure to achieve the environmental objective.

It is however customary in impact assessments to consider whether there are any measures which could be taken as an alternative. The Government is currently consulting on the possibility for restrictions to be decided in the future by an alternative regulatory body as per the proposals in our UK Airspace Policy consultation. However the Secretary of State is currently the competent authority for decisions on operating restrictions at these airports and any changes to the process by which these decisions are made will have to wait for the outcome of that consultation process. As explained earlier in this section, even voluntary restrictions would be caught by Regulation (EU) 598/2014 and it would not therefore be possible for these to be introduced before the current restrictions lapsed.

There are potentially other indirect means for controls to be set at these airports under existing legislation. For instance, Section 39 of the Transport Act 2000 allows the Secretary of State to give a holder of a licence to provide air-traffic control services directions:

(a) to prevent or deal with noise, vibration, pollution or other disturbance attributable to aircraft used for the purpose of civil aviation;
(b) to limit or mitigate the effects of such noise, vibration, pollution or disturbance.

However as with the other options above, the Government would have to consult before using any of these powers and any subsequent restrictions would still be classified as operating restrictions and subject to EU rules on their introduction. Furthermore, if these were to be successful in delivering the environmental objectives the Government has set for these airports, the Government would have to direct an air-traffic control licence holder to limit the number of flights. There would therefore be little difference between setting restrictions via this or the existing method, though the current framework provides greater certainty to stakeholders as to who is responsible for the restrictions. There is therefore no other alternative at this moment that would offer communities sufficient protection from the harmful effects of unregulated night flights before the current regime expires.

The Government also asked the CAA to update its 2013 review of the impact of environmental charges at airports, to examine how the use of these charges has evolved in recent years. The original review found that 'environmental charges are unlikely to be the decisive factor upon which airport users (airlines) base their fleet replacement decisions.' The recommendation was also made that the differentials between charges for noise categories should be increased to act as a greater encouragement to shift to quieter aircraft.

Finally, there is also the possibility that restrictions on night flights or other operating restrictions in other countries could affect the number and noise levels of arrivals and departures in the night quota period at these airports. However, given the range of locations that airlines operate to or from in the night quota period this is not a realistic approach to the regulation of night flights in the UK and would not provide certainty to either communities or industry on the number of flights that would operate or the total amount of aircraft noise that would be produced at night. Relying solely on this approach would almost certainly mean that the Government would fail to meet its stated environmental objective.

5.2 Do Nothing

In the absence of Government intervention, the existing night flight restrictions at Gatwick, Heathrow and Stansted would end in October 2017. Unlike at other airports, where such restrictions are agreed locally, the Secretary of State has responsibility for ensuring there are suitable mechanisms in place at these airports to protect communities from the harmful impacts of aircraft noise, while also considering the economic benefits of night flights. A 'Do Nothing scenario would result in no night flying restrictions at these airports beyond October 2017. This would be considered a failure of meeting the Government's long term policy to limit and, where possible, reduce the number of people significantly affected by aircraft noise, as well as the environmental objectives set. Thus, we do not consider this a viable option for our baseline scenario.

5.3 Do Minimum

For the purpose of assessing policy options, the effective 'Do Minimum' scenario is considered to be a continuation of the current regime, which we define for the purposes of this IA, as maintaining the current movement and noise quota limits at all three airports with no changes to the structure of the regime.

We feel that this is the most appropriate 'Do Minimum' scenario. It was considered appropriate by most consultees and also recognised by the Regulatory Policy Committee[20] as the appropriate 'Do Nothing' for the purposes of the Impact Assessment. It reflects the Secretary of State's responsibility for ensuring there are suitable mechanisms in place at these airports to protect communities from the harmful impacts of aircraft noise, which could not be delivered through 'Do Minimum'. It also helps to make the IA as easily understandable as possible.

Firstly, previous legal judgments[21] on the night flights regime have also ruled that night flights adversely affect the rights of people living near airports; and that the Government has an obligation to balance the rights of those persons with the economic interests of those operating and benefiting from those flights.

Secondly, using this scenario will help to ensure communities and industry can better interpret and consider the impacts of the policy options proposed as all comparisons are being made relative to the current situation. The current regime is largely a continuation of that first set in 2006 – the last time there was a change to movement limits - and is therefore regarded as the status quo by affected parties.

While we are using this scenario as the 'Do Minimum' option for our analysis due to the lack of viability of a 'Do Minimum' scenario, we do not believe continuing the current regime in its existing form is appropriate at this time. The rationale that the previous regime was set under is no longer valid due to the Government's announcement of a preferred scheme for increasing airport capacity in the south east. Other developments such as the increase in existing exempt aircraft, as well as the anticipated introduction of new exempt aircraft, also necessitate changes from the existing regime. We received feedback from affected populations around the airports stressing this point.

[20] Regulatory Policy Committee Case Histories December 2016. Available at http://regulatorypolicycommittee.weebly.com/case-histories.html

[21] Hatton and Others v. United Kingdom (Application no. 36022/97) European Court of Human Rights http://www.richardbuxton.co.uk/transcripts/hatton-and-others-v-united-kingdom

5.4 Final Policy Option

5.4.1 Description of final option and rationale

As explained above, the Final Policy Option (Option 4 in this IA) involves 4 main changes, including:

1. **Introducing a new QC category (QC/0.125) to capture aircraft between 81 and 83.9 EPNdB and ensuring all aircraft quieter than this are counted within an airport's movement limits while remaining exempt from the noise quota limits.**

Most responses to our consultation agreed with these changes. It was generally regarded that these changes would make the system more transparent and communities in particular felt all aircraft they heard could cause disturbance, regardless of their noise rating.

Most industry responses too agreed that there was an argument for including these aircraft within the movements for the sake of transparency. Many however challenged the scientific evidence to justify a new QC category and argued that 'moving the goalposts' could have unintended consequences.

After the consultation had ended, there were also representations from the business and general aviation community about the impact this would have on their ability to use the London airports. However no evidence was provided in time to inform this impact assessment that would enable us to estimate the impact on this group of stakeholders. There were calls from the business aviation community to ensure that if these changes were made, the existing movement usage by these operators should be 'grandfathered'. However, the government has no powers to determine which operators an airport's available capacity is assigned to. Our changes would not prevent these operations from operating during the night quota period and there are already other non-scheduled aircraft which are not currently exempt that count towards both an airport's movement and noise quota limits. In this regard the government would expect business aviation operators and representatives of other non-scheduled services that operate at Stansted to continue to work with the designated slot co-ordinator and the airport operator to determine their operations during the night quota period.

As explained in Sections 6 and 7, these aircraft can still expose affected communities to noise levels that the WHO identify as being capable of causing sleep disturbance and it is therefore right that they are treated in a proportionate way to other aircraft. Extending the QC scale downwards by a further 3dB band to introduce a new QC/0.125 ('QC eighth') category, consistent with the fact that a 3dB increase represents a doubling of noise energy, would help prevent a proliferation of exempt aircraft and also provide incentives for the use of even quieter aircraft at night (below 81 EPNdB).

Following publication of our consultation, some issues were raised about the effect our proposed changes would have on the small number of instrument landing system (ILS) calibration flights and on other light prop movements that take place in the night quota period. ILS calibration flights are carried out to ensure that the ILS is functioning properly and currently, any landings or take offs by ILS calibration aircraft that are classified QC/0 are exempt from the restrictions. Following consideration of this matter, we have decided that all flights that are required for essential airport safety checks should continue to be exempt from the restrictions and should not count towards the movement limits.

With regards to light prop movements in general, there is no formal process for classifying these types of aircraft. The reason for this is twofold. Firstly, the noise certification levels of these aircraft

can differ due to the different test demonstration procedures required by the older ICAO Chapter 6 and current Chapter 10 standards, and this can alter the assigned QC classification. Secondly, the Chapter 6 and Chapter 10 noise levels are L_{max} values measured in A-weighted decibels (dBA) whereas the metric used for the QC classification scheme is Effective Perceived Noise Decibels (EPNdB), since it was designed to be compatible with the Chapter 3 noise standard that applies to jet and large propeller-driven aircraft (which is measured in EPNdB). There is no straightforward way of accounting for both of these factors and although the CAA has to date taken a pragmatic approach and based the classifications for light props on their unadjusted dBA levels, this can lead to inconsistent classifications.

Given the small number of these aircraft in operation (see Figure 8 below), the Government does not believe it is proportionate to devise a separate classification system, but we do want to ensure these aircraft are treated consistently under the restrictions. We have therefore decided that while these aircraft should count to the movement limits under the restrictions, they should remain exempt from the QC limits. Light propeller-driven aircraft certificated to Chapter 6 or Chapter 10 will now fall outside the scope of the QC classification scheme.

The small number of both types of these movements means the impact of these exclusions are of a very small magnitude and it has been deemed proportionate to not include these in the quantitative analysis in this impact assessment.

Figure 8 – Number of light prop movements during the night quota period in winter 2015/16 and summer 2016

LHR	LGW	STN
2	18	46

2. **Adjusting Stansted's movement limits by 1700 movements (1100 in Summer and 600 in Winter) to reflect that exempt aircraft will now count towards these limits.**

More people disagreed than agreed with this proposal in our consultation, with responses from communities suggesting that there was already too much night time activity and that the number of flights should be reduced. The Government continues to consider that this is the correct approach as without this adjustment Stansted would not be able to accommodate the activity that is already taking place. This adjustment is therefore necessary to ensure that the existing benefits of night flights are maintained, as per our environmental objective. The number of currently exempt movements is much smaller at Heathrow and Gatwick and adjustments are therefore not needed to achieve the environmental objective.

3. **Reducing noise quota limits at Heathrow and Gatwick to a level based on the average noise of an aircraft – our methodology for calculating this is explained further in Section 5.4.2.**

Significantly more responses to our consultation agreed than disagreed with our proposals for noise quotas in our consultation, which were to reduce noise quota usage to a level based on current usage as a starting point, before looking at what further reductions could be made. Some communities emphasised we should go further, as for instance, the proposed limit for Gatwick in the winter was significantly above their usage due to the existing spare movement capacity. Most

industry responses argued that even the minimum changes we were proposing, that would prevent an average aircraft from getting louder than at present if an airport wanted to maximise their movement limits, were too severe and would have unintended consequences. Arguments for this included; that there needed to be operational flexibility for airlines to change the type of aircraft that were used on individual routes which could potentially result in larger and noisier aircraft, that airlines fleet plans were based on long term views and the five year horizon of the regime would not be able to incentivise changes, and that removing all headroom could disincentivise further reductions in noise as airlines would not expect to benefit from these in the future. Despite the concerns raised by industry, the government has received no evidence to suggest that reducing limits at Heathrow and Gatwick to reflect current noise quota usage would not be achievable. We therefore continue to think it is appropriate to make these changes to ensure that the benefits that have resulted from quieter aircraft over recent years are locked in, and give confidence to communities that the average noise from an aircraft will not increase compared to current levels.

While we have decided to go ahead with these reductions, after receiving feedback from stakeholders as part of the consultation, there was insufficient evidence to suggest that Option 4b (reducing noise quotas above and beyond current usage, for example a hypothetical 20% further reduction) as proposed in the consultation stage impact assessment was achievable without impacting airlines and airports significantly. For such changes to be achievable, there would need to be significant changes in the fleet over the course of the next regime to reduce the QC level to these levels. Due to the long timeframes associated with ordering new aircraft, the retirement ages of current aircraft in the fleet mix, and the available technology, this level of reduction (e.g. 20%) would not be achievable over the five year regime. It is also not possible to simply extrapolate based on previous trends as fleet mix changes are not linear (particular carriers tend to replace a large number of their fleet in one go e.g. there have been major changes to fleet at British Airways between 2006 and 2017). As a result, we requested evidence through our consultation on the anticipated fleet mixes of airlines in coming years to inform what would be realistic reductions in noise quotas at Heathrow and Gatwick. Based on the evidence received, we are not able to guarantee with any certainty whether further reductions in the noise quota limits beyond those based on current QC usage would be achievable without significant and prohibitive costs being incurred. As a result, in order to meet the environmental objective and maintain the existing benefits of night flights, including 'locking in' any technological improvements that have already been made to aircraft, we have decided to reduce the noise quota limits to a value based on how much noise the aircraft using the airports currently produce.

5.4.2 **Implementation of changes**

While we have decided that the above changes should go ahead, we have also decided however that some of these should be delayed until the second year of the regime (October 2018).). Given that our proposals on changes to the night flight restrictions came after the point at which airlines would begin planning their schedules, it has not been possible for them to do so with certainty of what exact restrictions will be in place. In order to maintain the existing benefits of night flights we want to ensure that airlines have sufficient time to adapt how their fleets are utilised and plan their schedules accordingly and we therefore propose some aspects of our changes are delayed until the winter 2018 season.

As a result, for the first year of the regime, the only changes will be that all aircraft less than 84 EPNdB will count towards an airport's movement limits and Stansted's movement limit will be adjusted

accordingly. All aircraft below 84 EPNdB will remain exempt from the noise quota limits until October 2018 (i.e. they will stay QC/0 while counting towards movement limits).

From October 2018, those aircraft between 81 and 83.9 EPNdB will be included within a new QC/0.125 category while those aircraft and aircraft quieter than this will continue to count towards the movement limits. From October 2018, noise quota limits at Heathrow and Gatwick will also be reduced to a level based on the average noise of aircraft currently used at those airports. Delaying these changes until October 2018 will ensure airports and airlines have time to adapt their operations to ensure they can accommodate all of their existing planned flights within the new stricter noise limits.

The new noise limits are set out in Figure 9. The noise limits will be 1,785 (an 11% reduction from the existing limit) in winter and 5,150 (17% reduction) in summer at Gatwick, and 2,415 (41% reduction) in winter and 2,735 (46% reduction) in summer at Heathrow. These noise limits are marginally higher (i.e. the reductions are slightly lower) than those proposed in our consultation (these were 17% and 21% reductions for winter and summer respectively at Gatwick, and 43% and 50% reductions for Heathrow). This is because in response to feedback received through our consultation, we have reviewed the methodology for calculating these reductions. The intention behind these reductions remains the same however, namely to prevent the average noise from aircraft from becoming any louder than at present if an airport wanted to maximise their movement limits.

Figure 9 – Comparison of proposed and final noise reductions

	Season	Current QC Limit	Consultation proposal (% reduction)	Final (% reduction)
Heathrow	Winter	4080	2340 **(-43%)**	2415 **(-41%)**
	Summer	5100	2540 **(-50%)**	2735 **(-46%)**
Gatwick	Winter	2000	1655 **(-17%)**	1785 **(-11%)**
	Summer	6200	4870 **(-21%)**	5150 **(-17%)**

Our previous approach outlined in the consultation stage impact assessment used an average QC to calculate noise quota limits based on the QC per movement of aircraft that operated in the most recent year of data available at the time (winter 15/16 and summer 16). Our new approach, which considers feedback received as part of the consultation, calculates limits using the average scheduled QC per movement over part of the current regime – the three years between winter 14/15 and summer 17. Having considered different methodologies for calculating these reductions and consultation responses, theoretically this is the most appropriate methodology to use because:

- Using three years' worth of data means that we can be more certain that any proposed limits are not based on an unrepresentative year. Industry responses to our consultation suggested that one year of data was not an appropriate methodology for basing limits on

because the aircraft used in our chosen year for analysis may not be representative of aircraft used in other years which could be used over the course of the next regime;

- The purpose of the restrictions are to incentivise airlines to use the quietest aircraft available so our decisions on noise quotas should therefore be based on the aircraft they actually plan to operate. Scheduled data is therefore preferable. A number of consultation responses mentioned that the quota reduction should be based on scheduled as opposed to actual flight data for such reasons;
- Whilst we do not have data of aircraft that will operate in the entire current summer 2017 season, we do have scheduled data which allows us to consider the most recent aircraft that are likely to be operating just before the regime starts.

6 Costs and Benefits Overview

As well as creating noise and other negative impacts, night flights also bring a number of benefits. To better understand these impacts, the Department for Transport published the Night Flights Evidence review", in Night Flying Restrictions at Heathrow, Gatwick and Stansted (2013) [22] which analysed the types of costs and benefits that may be generated by night flights. These impacts include a range of costs and benefits, as outlined below.

Costs:

- Noise
- Air quality
- Climate change (including impacts on CO_2 emissions)

Economic benefits to:

- Airlines
- Airports
- Air transport users
- Public accounts
- Wider economic impacts

In addition, the Department for Transport held focus groups in June 2016 with industry and community stakeholders and also sought additional evidence as part of the consultation. The papers issued for these events were published alongside our consultation.

The available evidence on the costs and benefits of night flights is summarised in Section 6.1 and Section 6.2 below respectively. As at consultation stage, we have taken a proportionate approach to assessing the impacts of the policy options under consideration on these costs and benefits. As a result we have only monetised the change in the value of the impact of night noise on sleep disturbance, the direct costs to business and the impacts on the public accounts.

In addition, having taken on board requests made in consultation responses, we have provided illustrative estimates of the total change in the value of the other impacts of night noise on health where possible to illustrate the **potential scale of these impacts**. However, as discussed below, the Department's Transport Analysis Guidance[23] does not contain an approved methodology for

[22] DfT (2013) 'Night Flight restrictions at Heathrow, Gatwick and Stansted: Stage 1 Consultation' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66837/consultation-document.pdf
[23] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015

estimating these impacts. For this reason, whilst we have provided estimates to illustrate the **potential scale of these impacts**, we have not included these in the net present value calculation.

In addition, at consultation stage we welcomed further evidence from stakeholders on the impacts of the policy options under consideration. We have considered all the responses we received and have incorporated relevant and robust evidence in to the analysis below.

6.1 Evidence on costs of night flights

This section summarises the available evidence, taking on board those submitted during the consultation and at focus groups, on the costs of night flights. For all of these costs, it is expected that more flights would lead to an increase in costs, and fewer flights would lead to a reduction in these costs.

6.1.1 Noise impacts: Sleep disturbance

Although local communities are exposed to greater levels of aircraft noise during the day-time, night noise is of particular concern due to its interference with normal sleeping patterns. In particular night noise can affect the number of awakenings, the time spent in different stages of sleep and also the quality of sleep. Furthermore, compared to other forms of traffic noise, aircraft noise is intermittent in nature, making it more likely to disturb sleep and elicit stress responses in the body. There has been growing evidence that exposure to higher levels of aircraft noise can adversely affect people's health. In 2009, the World Health Organization (WHO) published their Night Noise Guidelines for Europe[24]. These state that between 40 to 55dB $L_{Aeq\ 8\ hour}$[25], adverse health effects can be observed among the exposed population, and that above 55dB the situation is considered increasingly dangerous for public health, with frequently observed health effects and a sizable proportion of the exposed population highly annoyed and sleep-disturbed. The noise levels in the WHO guidelines do not refer solely to aviation however, and are based on the level of outside noise from all sources – including other modes of transport. The WHO is expected to shortly publish new guidelines for noise and it is possible these may include specific guidelines for different sources, though at the time or writing no specific details are known[26]. Since we have been unable to complete analysis below 48 dB $L_{Aeq\ 6.5hr,}$ for the reasons outlined in Section 7.2, we have not monetised the benefits of the changes to all exposed populations.

When the night flight restrictions were reviewed in 2013, we acknowledged that the monetisation of health impacts associated with aircraft noise at night represented an important evidence gap. As a result of this evidence gap, the Department for Transport commissioned the Civil Aviation Authority (CAA) to undertake a literature review[27] regarding the effects of night time aircraft noise on local residents. The CAA's review, which was published alongside the stage one consultation document, concluded that chronic sleep disturbance as a result of night flights was regarded as a health effect in its own right with a measurable impact on quality of life.

In contrast, we have reviewed various studies received as part of the consultation that found the impact night flights have on sleep is minimal. This includes the July (2014) paper published by the German Aerospace Centre, Effects of Nocturnal Aircraft Noise. We have reviewed these studies and concluded that night flights do have an impact on the quality of sleep of local communities and therefore this impact should be quantified. We have therefore monetised the change in the value of the impacts of night flights on sleep disturbance in the night quota period in this impact assessment

[24] World Health Organization (2009) 'Night Noise Guidelines for Europe' http://www.euro.who.int/__data/assets/pdf_file/0017/43316/E92845.pdf
[25] LAeq 8 hour: equivalent continuous noise level over the 8 hour night period.
[26] There is the possibility these guidelines will be published before this Impact Assessment is published, but due legal deadlines and the time required for necessary clearances we have not been able to delay the analysis and wait for these.
[27] CAA (2013a) 'ERCD Report 1208: Aircraft Noise, Sleep Disturbance and Health Effects: A Review' http://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=5360

using an approach consistent with the CAA's review (see Section 7.3 for a full description of the methodology and key limitations of this analysis) to give an estimate of the impact of our proposals on this. Although new studies have been produced to estimate the impact of noise on sleep disturbance, the approach we have used still remains the most applicable and robust approach for estimating the impact of aviation night noise.

6.1.2 Noise impacts: Other Health impacts

There has been growing research on the link between exposure to aircraft noise and health impacts over the years. For example, the NORAH (Noise-Related Annoyance, Cognition, and Health) study[28], studied the impact of aviation noise (and noise from other transport modes) on health (including cardiovascular disorders), blood pressure and sleep, among other factors.

The CAA's review, mentioned above, also found evidence that night noise exposure (above 55 dB $L_{Aeq, 8hr}$ night) results in increased risk of myocardial infarctions (heart attacks) and proposed an approach for monetising this.

In addition, there has also been other evidence showing a correlation between noise exposure from night flights and hypertension, which can lead to an increased risk of stroke or dementia. This correlation is from long-term exposure to night noise, for people repeatedly experiencing the immediate stress responses of sleep disturbance[29].

It is worth noting the impacts mentioned could have distributional impacts as they could be more likely to affect certain vulnerable members of society that may be more sensitive to noise, such as the elderly or those suffering from mental health issues. See Section 11.3 for further details.

For stress and mental health effects, the evidence is inconclusive or limited, showing a possible correlation between noise exposure and mental health symptoms (e.g. depression, anxiety), but not problems such as clinically defined psychiatric disorder.

The Aviation Environment Federation (AEF) last year also published a paper[30] which synthesised the latest evidence and analysed the Government's current policy with regards to aviation noise.

Given the demand that has been expressed through consultation responses and discussions with stakeholders for these other health impacts to be quantified, we have provided illustrative estimates of the change in the value of the other impacts of night noise on health as a result of our proposals where possible using methodologies for assessing the impacts of changes in daytime noise (see Section 7.4 for details of the methodology used) to illustrate the **potential scale of these impacts.** However, the Department's Transport Analysis Guidance[31] does not contain an approved methodology for estimating the change in the value of the other impacts of night noise on health. For this reason, whilst we have provided estimates to illustrate the **potential scale of these impacts,** we have not included these estimates in the net present value calculation. These health impacts included covers AMI (acute myocardial infarction), stroke and dementia. The monetised estimates of the impact of a change in noise on these health impacts could be an underestimate since the methodology uses daytime noise effects to make estimates.

It should be noted that these figures cannot be used to represent the value the government places on the impacts of these health conditions to individuals or society. This impact assessment solely

[28] NORAH Knowledge No. 5 and No. 10, http://www.laermstudie.de/en/
[29] 'Hypertension and Exposure to Noise near Airports (HYENA) Study' by Larup et al (2007) & Babisch and van Kamp (2009)
[30] Aviation Environment Federation (AEF) (2016) 'Aircraft Noise and Public Health - The evidence is loud and clear', Commissioned by HACAN and the Aviation Environment Trust
[31] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015

covers the potential scale of these impacts as a result of the changes in noise impacts of our final policy option i.e. compared with a baseline in which the current regime continues, hence these impact may be smaller than stakeholders might expect.

6.1.3 Noise impacts: Other impacts

For next day effects, there is some evidence to suggest that the night noise resulting from night flights has an effect on heart rate, subjective sleep quality and mood the next day, but there is no consistent scientific evidence of chronic objective effects on stress hormone levels, immune system or performance and productivity of individuals the next day.

In relation to the impact on children, the evidence on the impact of these flights is also inconclusive. There has been a growing amount of research, including from the NORAH study previously mentioned and the RANCH (Road traffic and Aircraft Noise and children's Cognition and Health) study[32], that noise exposure from aircraft has an effect on cognitive development (particularly on reading and memory skills) and chronic noise may affect children's stress levels, blood pressure and mental health. There is also evidence to suggest that aircraft noise may be associated with poorer reading comprehension and recognition memory. However, it is unclear whether the effects are attributable to daytime or night time aircraft noise, and there is no evidence for long-term persistent effects on cognitive development. The Department's Transport Analysis Guidance[33] also does not specify an approach for analysing situations where noise impacts on potentially noise sensitive groups, such as schools.

Other recent evidence includes a review[34] by Dr Charlotte Clark from Queen Mary University of London, which was undertaken for the Airports Commission. This concluded that there is increasing evidence on adverse health effects to support the use of prevention measures such as insulation, preventative policy, guidelines, and limit values. The report highlighted the need to improve learning environments for children, and lower the prevalence of cardiovascular risk factors and cardiovascular disease.

6.1.4 Air Quality

Aircraft fuel emissions from all flights, including night flights, cause a negative impact on air quality. This in turn can have negative impacts on human health, as well as on the natural and man-made environment. The key pollutants emitted by aircraft and affecting local air quality are particulate matter (PM10) and oxides of nitrogen (NOx). In general terms, the atmosphere is more stable at night which means that pollutants are dispersed less easily and thus air pollution emission at night can have a greater impact on local air quality. More flights would lead to a worsening of these impacts, and fewer flights would lead to a reduction of these impacts. But, if a reduction of night flights leads to an increase in the number of flights during the day, the impacts on air quality would be lower compared to if the flight took place during the night. We have not attempted to quantify these impacts since it would not be proportionate as we expect these impacts to be minimal given the relatively small change in the overall number of flights at these airports. We received no consultation responses or evidence to counter this approach, which was also taken at consultation stage.

6.1.5 Climate Change

Aviation's most significant contribution to climate change is through emissions of carbon dioxide (CO_2). The sector's share of the UK's overall greenhouse gas emissions has been increasing and is

[32] Aircraft and road traffic noise and children's cognition and health: a cross-national study. RANCH study team. 2005
[33] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015
[34] Dr Charlotte Clark (2015) 'Aircraft noise effects on health', Prepared for the Airports Commission https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/446311/noise-aircraft-noise-effects-on-health.pdf

expected to rise further in the coming years. Night flights at Heathrow, Gatwick and Stansted contribute to greenhouse gas emissions. However, we have not attempted to quantify the impacts of the policy options under consideration on greenhouse gas emissions since it would not be proportionate as we expect these impacts to be minimal given the relatively small change in the overall number of flights at these airports. We received no consultation responses or evidence to counter this approach, which was also taken at consultation stage.

6.2 Evidence on the benefits of Night Flights

This section discusses the benefits of night flights. For all of these benefits, it is expected that more flights would lead to an increase in these benefits whilst fewer flights would lead to a reduction in these benefits. None of the impacts of the policy options under consideration at consultation-stage on these benefits were monetised in our consultation-stage IA. However, in this final-stage impact assessment, the direct impacts of our proposals on airlines and airports, and the impacts of our proposals on the public accounts, have been separately monetised (see Section 0 for a detailed description of the methodology we have used to do this).

6.2.1 Airlines and airports

Night flights have a direct impact on airlines profits from increased ticket sales and cargo revenue, as well as ancillary revenues such as charging for food and baggage. However, night flights also incur costs, which include capital costs of an aircraft, maintenance, fuel, staffing and airport charges.

Night flights can allow low cost airlines, particularly at Gatwick and Stansted, to have a more flexible business model – allowing for further rotations and being able to absorb the impacts of any delays. In 2014/15[35], it is estimated that low cost airlines made up around 46% of Gatwick's movements in the night quota period and around 45% of Stansted's movements. Some responses from the consultation stated that a reduction in the ability of low cost carriers to operate a minimum number of rotations per day could make the current business models of some airlines unviable. Placing too large a constraint on night flights could reduce the ability for these airlines to operate viable schedules and could lead to airlines choosing to base their aircraft elsewhere.

Night flights can also be used for full service flights. This is evident at all three airports, but makes up a much higher proportion of Heathrow's flights (estimated to be around 99% in 2014/15). At Heathrow, it is estimated that around 95% of full service flights were arrivals.

In 2014/15, in the night quota period, it is estimated that there were around 2,893 charter flights at Gatwick and around 803 at Stansted. Night flights represent an opportunity for charter airlines to increase their number of flights and utilisation of their aircraft.

Finally, dedicated freight flights operate in the night quota period. It is estimated that there were around 2 at Gatwick, 8 at Heathrow and around 3,634 at Stansted in 2014/15. Where night flights are permitted, dedicated freight flights can support the express delivery business model. Stansted is an important freight hub and a base for several companies such as FedEx, Titan and TNT, for whom night flights are essential to their business. In the 14/15 season, it is estimated that around 35% of movements at Stansted were dedicated freight flights, compared to less than 1% at Heathrow and Gatwick.

[35] 2014/15 is the latest full season for which the Department has full data at this level of detail. Based on DfT analysis of CAA Statistics, 2017.

Night flights contribute to airports' profits through landing fee charges and also commercial revenues (for example, through shops and restaurants). They also incur costs which include the fixed costs of keeping the airport open as well as passenger and cargo handling costs.

6.2.2 Air Transport Users

Night flights can benefit air transport users (i.e. business and leisure passengers and air freight service users) in various ways, including by reducing costs to passengers via increasing supply. Passengers would also benefit from the increased flexibility in flight times, allowing them to fly when it is more convenient, which is particularly important for business passengers. For example, at Heathrow, early morning arrivals from the Far East allow business passengers to fly overnight to arrive in the UK for the business day, or to depart on an early morning connection into Continental Europe, despite the hour time difference. The Airports Commission's Final Report[36] highlighted that arrivals at Heathrow before 6:00am 'are broadly used to support connectivity to high value long-haul destinations', such as Hong Kong or Singapore. For example, in 2014, over half of the capacity for arrivals from Hong Kong and Singapore are scheduled during the 6.5 hour night quota period.[37]

6.2.3 Public Accounts

Night flights can affect the public accounts directly, through the tax receipts from taxes directly levied on aviation. They can also affect the public accounts indirectly, by altering indirect taxation receipts from goods consumed across the rest of the economy. For example, the APD paid by UK-resident leisure passengers travelling on night flights reduces the amount of income these leisure passengers have to spend on other goods and services in the UK economy, thereby affecting indirect tax revenues. In the leisure market, the direct and indirect public account affects therefore partially offset each other.

6.2.4 Wider Economic Impacts

Night flights have wider impacts on the UK economy. The nature of these impacts are not clear-cut and are a source of debate[38]. For example, Oxford Economics' (2011) identify a range of ways in which night flights benefit the wider economy including: opening up markets and fostering international trade; encouraging investment in the UK by domestic and foreign investors; improving business efficiency and raising productivity; and spurring growth in the tourism economy.

Night flights also affect employment levels, both directly through changes in employment by airlines, airports and other companies operating at the airport, and indirectly via the impact on companies in the supply chain (e.g. aircraft parts/equipment by airlines) and the wider economy. Therefore night flights are likely to increase employment. Night shifts are also likely to entail a wage premium, providing a further injection into the local economy, these incomes can be spent on consuming goods in nearby markets – which could generate growth around the airports.

In order to provide next-day and express delivery services, airlines need to operate at precise times during the night to fit in with complicated distributional networks. According to the Association of International Courier and Express Services (AICES), the express delivery sector contributed £2.3 billion to UK GDP and facilitated £116 billion to UK exports in 2010.[39] Firms pay a premium to use these

[36] Airports Commissions: Final Report, July 2015. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf
[37] CAA analysis of OAG data. This data includes flights with more than 10,000 seats annual scheduled capacity only. OAG data includes passenger flights only.
[38] See the various attempts to define the wider economic impacts of night flights in CE Delft (2011), 'Ban on night flights at Heathrow Airport, http://www.aef.org.uk/downloads/CEDelft_report_Heathrow_nightflights_Jan2011.pdf ; Oxford Economics (2011) 'The Economic Value of Night Flights at Heathrow', http://www.oxfordeconomics.com/my-oxford/projects/245739;
[39] Taken from consultation response to DfT from the Association of International Courier and Express Services (2016)

services even though they could pay less for a slower delivery, demonstrating their preference for fast delivery. A report by the Aviation and Travel Consultancy found that around 40% of businesses would have to increase their inventories if next-day services were unavailable[40], which gives an idea of the scale of these efficiency savings to the UK economy as a whole. Higher profits for businesses, through cost savings and efficiency gains, can increase investment, a key driver of long-term productivity. However, these statistics consider the express delivery service sector as a whole, not just aviation, therefore the direct impact that express delivery by air has on the economy would be lower.

Wider economic impacts are difficult to monetise due to the issues with identifying the impacts as a direct, or even indirect result of night flights. However, due to the evidence demonstrating their existence, we have categorised them to add context to our qualitative analysis.

6.2.5 Airline and Passenger Responses

At consultation stage we identified a wide variety of potential passenger and airline responses to the policy options under consideration. These indicated that how passengers and airlines responded would have an important influence on the impacts of the policy options under consideration. For example, if a particular night flight no longer took place, passengers may reschedule to a later flight, fly to another UK airport, fly to another non-UK airport, or choose not to fly. As part of the consultation we welcomed any evidence from stakeholders on the likely responses of airlines and passengers to the policy options under consideration. There has been no substantial or robust evidence to suggest what the most appropriate airline and passenger response would be, but several indicated that rescheduling flights would be extremely difficult for a number of reasons, including limited day time slot availability.

6.2.6 Consumer Choice and competition

It is likely that when there are more slots available, there is a wider range of options for consumers regarding choice of destination and flight times. Plus, as mentioned in Section 6.2.1, if a reduction in the number of flights meant that an airline's business model is no longer viable, there could be a reduction in the provision of low-cost flights at these airports. This could impact upon consumer choice if certain destinations or flight times were no longer available from these airports. Given the existing capacity constraints within the south east, there is limited scope for existing night flights to be retimed to other parts of the day, meaning that a very large reduction or a night flight ban could have a material impact on choice for customers of low-cost airlines.

Since there has been no substantial or robust evidence to suggest what the most appropriate airline and passenger response would be to reductions in the number of night flights, it is not possible to quantify and monetise the impacts on consumer choice and competition.

7 Methodology

This section summarises the methodology used for the quantitative analysis of the impacts of the policy options that is presented in this IA.

Where quantitative analysis is presented for a policy option, this analysis has four key parts.

1. Estimating the number of night flights that would occur in the night quota period at each airport under the Do Minimum scenario and the policy option.
2. Estimating the number of people affected by night noise in the night quota period at each airport under the Do Minimum scenario and the policy option.

[40] 'The Economic Impact of Express Carriers for UK plc' by The Aviation and Travel Consultancy and Oxford Economic Forecasting, (June 2002)

3. Estimating the value of the impact of night noise changes on sleep disturbance (and other health impacts) in the night quota period at each airport for the policy option compared to the Do Minimum scenario.
4. Estimating the value of the economic impacts of a change in the number of flights in the night quota period for the policy option compared to the Do Minimum scenario, specifically the direct impacts on airlines and airports, and the impacts on the public accounts, which are estimated separately.

The analysis has a number of limitations, which means that the results of the quantitative analysis are subject to considerable uncertainty. This means that there is uncertainty around both the impacts on the policy options and any comparisons that are made. .

It should be noted that where estimates are presented for a full year (e.g. 2017/18), seasons are aggregated as follows: 2017/18 is the total for the 2017/18 winter and the 2018 summer seasons.

For any estimates presented in present value terms, the present value base year is 2017. All monetary estimates produced by this analysis are presented in constant prices and have a price base year of 2015. The appraisal period is 5 years, since the policy only exists for this time period. Where relevant, the discount rate is 3.5% per year over this period. This is consistent with the guidance in the Better Regulation Framework Manual.

7.1 Estimating the number of night flights

7.1.1 Summary

In order to estimate the number of night flights that would take place in the night quota period at each airport under the Do Minimum scenario and the policy option, the Department has developed a suite of spreadsheet models. For each scenario, these models estimate the following outputs for each year of the night flights regime split between the summer and winter seasons:

- the total number of movements in the night quota period at each airport;
- the total number of movements in the night quota period at each airport excluding any movements by aircraft with a QC of 0; and
- the total noise quota usage at each airport.

The key outputs for the Do Minimum scenario, the final policy option and the other policy options considered are presented in Appendix C.

In addition, the models produced can provide more disaggregated outputs. We have therefore used them to estimate the total number of movements in the night quota period at each airport in the first and last years of the next night flights regime (2017/18 and 2021/22) by aircraft type. This information was provided to the CAA in order to estimate the number of people affected by night noise where relevant.

7.1.2 Approach

The first stage of the analysis is to develop an unconstrained scenario for each airport. This scenario estimates what would happen in the night quota period at each airport in the absence of any night flight restrictions. At a high level, this has been undertaken as follows:

- The starting point for the analysis is CAA data on air transport movements during the night quota period at each airport in the 2015/16 winter and 2016 summer seasons. Included in this data is the type of aircraft and the QC assigned to each movement;

- Assumptions about the future growth of night flights in the Night Quota Period (NQP) at each airport in each year of the next night flights regime in the absence of any night flight restrictions have been made based on information from or discussion with each of the airports. These are then used to estimate the total number of movements during the night quota period;
- Use DfT model to estimate the future fleet mix used during the NQP at each airport in each year of the next night flights regime. This modelling is used to split the total number of movements in the night quota period in each year of the next night flights regime between aircraft types; and
- Finally, CAA data and assumptions on the average QC per movement for each aircraft type are then used to estimate total QC in each year of the next night flights regime.

The second stage of the analysis is to model the policy scenario. The models allow us to model the movement and noise quota limits separately for each season, and to model the system of carryovers and overruns separately for movements and noise quota. However, given the complexity of the night flights regime, the models necessarily adopt a number of simplifying assumptions about industry behaviour. The key assumptions are as follows:

- Based on existing traffic patterns at each airport, we have assumed that Stansted and Gatwick will seek to maximise the total number of movements in the night quota period in the summer season and that Heathrow will seek to maximise the total number of movements in the night quota period in the winter season;
- Where it is necessary in order to maximise the number of movements in the above season, it has been assumed that the airport will use their option to carry over up to 10% of their movement limit and/or noise quota limit from the previous season, and their option to over-run their movement limit and/or noise quota limit in this season by up to 10%;
- Whilst the airports also have the option to over-run their movement limit and/or noise quota limit in this season by up to 20%, we have used a simplifying assumption that industry will not use this due to the higher penalty that results from this (see Section 1.2); and
- Where the total number of movements and / or noise quota usage in any season would still be above the maximum allowed under the policy scenario even after carryovers and overruns are taken into account, we have adopted the simplifying assumption that the number of movements by each aircraft type will be reduced by an equal percentage until this is achieved.

It should be noted that the results of this analysis are very sensitive to these assumptions.

The input data used in this analysis and the key limitations of this data are described in more detail in the following sections.

7.1.3 CAA data and assumptions

A general limitation is that this analysis is based on the data provided to the DfT by the CAA on the 2015/16 winter and 2016 summer seasons, which was the latest full year of data available at the time the models used for this analysis were developed. It is possible that this data may have small inaccuracies within it such as the wrong aircraft name, assigned quota value to that flight or age of the aircraft. In addition, no analysis has been conducted to determine if that year's data was typical in comparison to other year's data.

An example of the importance of this data is when determining the total noise quota usage at each airport, in each year of the next night flights regime. This was completed separately for arrivals and departures, with the approach used to assign a quota count to each aircraft type depending on whether the aircraft type was used for arrivals and/or departures in 2015/16.

- Where possible, we used the average quota count for that aircraft type for that specific airport and split by arrivals and departures using CAA's data for the 2015/16 winter and 2016 summer seasons (e.g. the average QC for an Airbus A319 at Heathrow in the winter season on arrival being 0.25);
- Where this information was not available for that specific category (e.g. an aircraft type was used at a different airport), then a standard set of QC assumptions were used based on the average QC across all three airports but split between arrivals and departures; and
- Where an aircraft type was not used for any arrival or departures in the 2015/16 winter and 2016 summer seasons (e.g. new aircraft types such as the A320neo), we used assumptions from the CAA about the QC that would be assigned to these aircraft types. Where an aircraft has already been certified, it should be noted that the CAA's assumptions represent the highest QC that an aircraft could be (e.g. the A320neo is assumed to be QC/0.25 on departure). In addition, where new aircraft types have not been certified yet, it should be noted that the CAA's assumptions represent their worst-case estimates of the QC that could be assigned to these aircraft.

7.1.4 DfT modelling of the future fleet mix

This section provides further details of the DfT Fleet Mix Modelling in order to understand composition of future aircraft types and their impact on future quota count usage at each airport during the years of the night flights regime.

Using winter 2015/16 and summer 2016 data supplied to us by the CAA on night flight movements described in Section 7.1.3, we have undertaken a bespoke fleet modelling exercise as part of our aviation modelling framework to forecast the future composition of night flights at each of the three airports. The data received from the CAA was further processed to remove air traffic movements deemed insignificant for the purpose of this exercise.

The model estimates the proportions of night flights being carried out by each aircraft type for four carrier types (Scheduled, Chartered, Low cost carrier or Freighter) and six seat classes (c1: 0-70 seats, c2: 71-150 seats, c3: 151-250 seats, c4: 251-350, c5: 351–500 seats and c6: 500+ seats). During the forecasting process for subsequent years, the model retires old aircraft and replaces them with new aircraft types.

The models use data on existing age of the aircraft and assumes default retirement ages of 22 for full service flights, 22 for low cost flights, 25 for charter flights and 35 for freighters (except when aircraft specific data is available). We split the data by airport, season and by arrivals/departures, resulting in a different model for each (for example, Heathrow Winter Arrivals). The models further split aircraft into seat band categories and carrier type (for example, 'Low cost seat class 3').

When an aircraft is retired, it is replaced by aircraft from the supply pool. Supply pools were reviewed and updated for this exercise, including incorporating evidence received through the consultation. The model allows us to forecast fleet mix changes until 2028, including the introduction of new aircraft models in that period. Non-commercial aircraft were not forecast due to often incomplete data, nor were freighters at Heathrow and Gatwick since there were extremely low numbers at these airports; instead, the fleet mix for these movements was assumed to remain constant over time.

It is important to recognise that our fleet mix model is a national level model and so the underpinning assumptions in this model are not tailored to the individual airports. A particular limitation of this modelling is that it assumes that aircraft are flown until an assumed retirement age at which point they are replaced by new aircraft from the supply pool. This means that new aircraft types only enter the fleet when existing aircraft retire. However, in practice, given that night flights represent a small subsection of total flights, airlines could reallocate or rebase their aircraft to avoid certain aircraft

flying in the night quota period and bring alternative aircraft into the night quota period. In addition, where demand for night flights is growing, airlines could purchase new aircraft types to cater for this demand. As a result, for a given amount of night flights, this analysis may underestimate the proportion of night flights in the night quota period that will be performed by new aircraft types such as the Airbus A320neo and the Boeing 737 Max.

The Airbus A320neo entered worldwide service in January 2016. We estimate that easyJet accounted for around 72% of all night-time Airbus A320 movements at Gatwick in 2015/16[41] and have also placed a firm order for 130 A320neos for delivery between 2017 and 2021/22. Based on current information available and assuming easyJet retire no current aircraft, that would result in more than a third of easyJet's fleet being comprised of the A320neo by 2021/22[42]. In contrast, our modelling estimates that the proportion of A320neos used at Gatwick during the next night flights regime is negligible.

The A320neo is currently certified as QC/0 on arrival and can be QC/0 or QC/0.25 on departure depending on the engine manufacturer. This means, in our Do Minimum scenario, there could potentially be a large number of QC/0 movements by A320neos that are not being accounted for, particularly at Gatwick. Furthermore, a number of other new aircraft types are yet to be certified but could potentially also be certified as QC/0. Other things being equal, this could mean that our estimates of the Do Minimum scenario represent an underestimate of the night noise under a continuation of the current regime scenario. Consultation evidence from airlines confirmed that more of these new aircraft types such as the A320neo and the Boeing 737 Max are going to be introduced into the fleet over the course of the next regime. Some stakeholders provided detail on how they plan on introducing these aircraft into their fleets, which has been incorporated into the DfT fleet mix model.

It should also be noted that this is the first time that the DfT's fleet mix model has been applied to freighters. As a fleet, there are differences compared to passenger aircraft in terms of retirement ages and the range of planes, meaning it was a challenge to draw up the new supply pools to include in this model. This means these forecasts are not as robust as the forecasts for passenger aircraft. In particular, the results are very sensitive to the default retirement age of 35 years for freighters, which has been assumed for the purposes of this analysis and was confirmed through discussions with industry.

7.1.5 Assumptions about the future growth of night flights

There is significant uncertainty around what the future growth of night flights in the night quota period would be in the absence of any restrictions in future years. However, it is necessary to make assumptions about this in order to estimate the number of night flights that would take place under each of the policy scenarios.

Since the Department's aviation model does not produce forecasts of night flights, we have consulted with Heathrow, Gatwick and Stansted and the latter two have provided growth rate forecasts on their forecast movements for the coming years[43]. The impact assessment therefore assumes that the number of night flights in the night quota period would grow over time in line with forecasts provided to us by Gatwick and Stansted in the absence of any night flight restrictions. In addition, Heathrow is operating at virtually the maximum capacity permitted under the Terminal 5 planning conditions (480,000 movements per year), and it was agreed with Heathrow that it was reasonable to assume that there would be no growth in the night quota period in future years for the purposes of this impact assessment.

[41] DfT analysis of CAA Statistics, 2017
[42] CAA Data
[43] ICF. Night Jet Movement Consultation Support, Commissioned by Gatwick Airport Limited. 2016

It should be noted that Gatwick and Stansted's night flights forecasts are higher than the overall growth estimated by the DfT Aviation Model for these airports. Where the actual growth in night flights differs in practice from the assumptions we have made for the purposes of this impact assessment, this could potentially significantly alter the impacts of the policy options that have been estimated. In particular, if our assumptions overestimate the growth in night flights, this could reduce the impacts of the policy options that have been estimated; whereas, if our assumptions underestimate the growth in night flights, this could increase the impacts of the policy options that have been estimated.

7.2 Estimating the number of people affected by night noise

In 2016, the CAA published a paper, 'Aircraft noise and health effects: Recent findings'[44] which examines evidence on the relationship between aircraft noise and health that has been published since 2009. The report concluded that with regards to night noise, sleep disturbance and health impacts, there has been growing recognition that average indicators, such as L_{night}, are insufficient to fully predict sleep disturbance, sleep quality and impact on health; this was also emphasised in numerous consultation responses we received and highlights the uncertainty around the monetisation of impacts of changes to the night flights regime. At this time, however, no alternative metrics exist that can be monetised and no robust alternative that could be applied to estimate the impacts of the regime were submitted as part of the consultation. Given these limitations, to supplement the monetised estimates, changes in the number of flights and quota usage are also presented with the assessment of the policy options.

Some consultation responses requested for impacts to be modelled at contours below 48 dB $L_{Aeq\ 6.5hr}$. We are unable to produce contour maps below 48 dB $L_{Aeq\ 6.5hr}$ however as it becomes more difficult to measure aircraft noise levels at these greater distances from airports. The reason for this is that at these distances, aircraft noise levels are much closer to those of other noise sources. Since the CAA use real measurements to validate their noise model (ANCON model, see below) that is used to create noise contours, the ability to validate the model reduces with increased distance, leading to increased uncertainty in the position of the contours lines. There is also greater variability in the position of aircraft at these distances from the airport, which further increases the uncertainty of the noise from an individual aircraft at a specific location.

As a means of comparison between options however, it is possible to monetise the impacts on communities down to 45dB $L_{Aeq\ 6.5hr}$ and this has been carried out as part of this assessment. This lower level contour is relevant only for sleep disturbance based on the dose-response function. Current evidence which informs the Department for Transport's noise assessment methodology assumes that health impacts on stroke and dementia are only expected to occur from 50dB $L_{Aeq\ 6.5hr}$ and on acute myocardial infarctions (AMI) from 58dB $L_{Aeq\ 6.5hr}$ based on dose-response functions – both adapt day-time noise impacts to night time noise impacts for the purposes of this impact assessment (see Section 7.4 for more details).[45]

The level of 40dB L_{night}, which many consultation responses referred to as the necessary level for analysing impacts, is the level at which the World Health Organization states adverse health effects can be observed in the exposed population. There is however no recommendation (by the WHO) for noise contours to be produced to this level. It is also worth noting that whilst some adverse effects can be observed as low as 40dB L_{night}, exposure levels below 45dB L_{night} were subsequently excluded

[44] Civil Aviation Authority. Aircraft noise and health effects: Recent findings. March 2016 http://publicapps.caa.co.uk/docs/33/CAP%201278%20MAR16.pdf

[45] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015

from the WHO analyses that contributed to the exposure-response relationships in the WHO's 2011 'Burden of disease from environmental noise'. The reason for this was because 'the assessment of those noise levels was relatively inaccurate and other sources may be more important in situations with these low levels'.

All estimates of the number of people affected by night noise in the night quota period at each airport under the Do Minimum scenario and the other policy options were produced by the Civil Aviation Authority (CAA) and comply with the requirements on noise mapping under the rules governing the introduction of operating restrictions. It is worth noting we assume a fixed number of households in a contour over time i.e. no population growth, as recommended in the Department's Transport Analysis Guidance[46]. The estimates of the number of people affected were generated by calculating noise contours using the UK Civil Aircraft Noise Contour model ANCON (version 2.3), which is developed and maintained by the CAA on behalf of the Department and which the Department's Transport Analysis Guidance[47] suggest is most appropriate for modelling the impacts of aviation noise. ANCON is fully compliant with the latest international guidance on noise modelling from ECAC (ECAC.CEAC Doc 29 (4th edition), published in December 2016)[48] and ICAO (ICAO Doc. 9911, published 2008)[49]. These guidance documents represent internationally agreed best practice as implemented in modern aircraft noise models. However, since the DfT's analysis is used as an input to ANCON, the results are also subject to the limitations described above on the models in Section 7.1.

7.3 Estimating the value of the impact of the change in night noise on sleep disturbance

Where monetary estimates of the impact of the change in night noise on sleep disturbance in the night quota period are presented in this impact assessment, we have calculated these estimates using the latest environmental guidance published by the Department's Transport Analysis Guidance (TAG) unit. This guidance reflects the latest Defra guidance on the valuation of transport-related noise. This uses noise contour and population estimate results to consider the costs associated with sleep disturbance. The TAG methodology on sleep disturbance is consistent with the methodology developed previously by the CAA on behalf of the Department and reported in Environmental Research and Consultancy Department (ERCD) Report 1209[50].

For sleep disturbance, the TAG methodology uses WHO-recommended relationships for estimating the number of people said to be Highly Sleep Disturbed (HSD), based on studies of self-reported sleep disturbance. These are based on 8 hour L_{night} (2300-0700) noise exposure. A limitation of our analysis is that we have used data for the $LA_{eq,\ 6.5\ hour}$ night period in place of data on the 8 hour L_{night} period to implement this methodology. As explained in ERCD Report 1209, arguments can be put forward that the dose-response function for the $LA_{eq,\ 6.5\ hour}$ night period will be different to the 8 hour L_{night} period. On balance however, and in the absence of data to the contrary, the ERCD report concluded there was no strong evidence to alter the dose-response functions and that data on the $LA_{eq,\ 6.5\ hour}$ night period could be substituted for 8 hour L_{night} data as required without further adjustment. We have therefore adopted this approach in this impact assessment. However, to the extent that there are any

[46] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015
[47] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015
[48] European Civil Aviation Conference. Report on Standard Method of Computing Noise Contours around Civil Airports ECAC.CEAC Doc 29, 4th edition, Volumes 1 & 2, December 2016
[49] International Civil Aviation Organization (ICAO): Recommended Method for Computing Noise Contours Around Airports. ICAO Doc 9911, 1st Edition (2008)
[50] ERCD Report 1209: Proposed methodology for estimating the cost of sleep disturbance from aircraft noise, January 2013. https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=5361

differences in the dose-response functions[51] between the $LA_{eq,\ 6.5\ hour}$ night and periods in practice, this would introduce uncertainty surrounding the results of this analysis.

An alternative to using $LA_{eq,\ 6.5\ hour}$ night exposure results would have been to model future changes in noise exposure over the 8 hour L_{night} caused by forecast changes in night restrictions that apply to the $LA_{eq,\ 6.5\ hour}$ night period. This approach would require assessment of the possible displacement of flights from the 6.5 hour night quota period (NQP) into the shoulder hours. However, because there are approximately three to four times as many flights in the shoulder hours compared to the NQP, any changes during the NQP will be averaged over the full 8 hour night. In addition, because the daytime period is capacity constrained at both Heathrow and Gatwick, the extent to which flights could be displaced into the shoulder periods would be subject to greater uncertainty than using the $LA_{eq,\ 6.5\ hour}$ night noise exposure results directly. Therefore we have used the $LA_{eq,\ 6.5\ hour}$ night approach, but any monetised noise estimates in this impact assessment could be considered to be an underestimate of the actual impact since, typically, a $LA_{eq,\ 6.5\ hour}$ night level is slightly lower than an 8 hour L_{night} level at a given location around an airport[52].

Given the size of the expected impacts for these policy scenarios, to keep the analysis proportionate, the noise impact analysis described in Section 8 has only been undertaken using the ANCON model for the first and the last years of the next night flights regime, 2017/18 and 2021/22. For the years modelled, we have used the results of the ANCON modelling directly to estimate the monetary value of the impact of the change in night noise on sleep disturbance.

Monetary valuation of changes in noise is based on estimation of the number of Disability-Adjusted Life Years (DALYs) lost (or gained) under each scenario, assuming a value of £60,000 per DALY. This valuation is based on the recommendations of the study: Environmental noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet (Defra, 2014)[53] and their accompanying noise modelling tool. More detail on the derivation of the values and underlying research is given in that report.

For other years, we have adopted a simplified approach and interpolated the monetary value of the impact of the change in night noise on sleep disturbance using the 2017/18 and 2021/22 results. In order to do this, the key simplifying assumption that was made is that the monetary value of the impact of the change in night noise on sleep disturbance is linearly related to the change in the total noise quota usage under the policy option compared to the Do Minimum scenario[54]. However, it should be noted that the use of this simplifying assumption results in these estimates being subject to additional uncertainty.

No analysis has been undertaken on any impacts on noise outside the night quota period. The impact of a reduction in night flights in the night quota period depends on whether flights are rescheduled or cancelled. Plus, if rescheduled, the time to which a flight is moved would change the impact. It has not been possible to predict the time to which a flight is rescheduled or if it would be cancelled using our available evidence base at this time. Whilst we sought additional evidence as part of the consultation to facilitate this, we did not receive any robust evidence to inform what would happen to noise impacts outside the night quota period.

[51] A dose response function describes, at different noise levels, the proportion of the population affected (for sleep disturbance) or the increased risk of adverse health outcomes (for AMI, stroke and dementia).
[52] In addition, these estimates do not cover flights that would be granted dispensations (see Section 1.1 for more details on such flights).
[53] Available at http://www.programmeofficers.co.uk/Cuadrilla/Inquiry/CUA/CUA_INQ14.pdf
[54] Given that there are changes to the quota count system under our proposals, for the purposes of this interpolation, the change in noise quota usage in each year under our proposals in comparison to the Do Minimum scenario has been calculated on a consistent basis by calculating the change in noise quota usage as a result of the estimated change in the number of flights in the NQP under our proposals based on the QC that aircraft would be assigned under the Do Minimum scenario.

7.4 Estimating the scale of other noise impacts on health

At consultation stage, we did not estimate the value of any other impacts of night noise on health since the Department's Transport Analysis Guidance[55] does not include an approved method for the monetisation of the risk of myocardial infarctions, stroke or dementia for noise at night. However, consultation responses from communities and local authorities and discussions with stakeholders stated that excluding these resulted in an underestimate of the health impacts associated with night noise.

In response, we have therefore provided illustrative estimates of the change in the value of these other health impacts of night noise to illustrate the **potential scale of these impacts**. As there is no approved methodology for estimating changes in the risk of these health outcomes as a result of night noise exposure, we have assessed it using the approved methodology for day time noise. This approach has been agreed by the CAA. Given that night noise levels are generally lower however, the results of this monetisation are small and are likely an underestimate of costs associated with changes in night noise. These estimates may also appear small given our approach illustrates the scale of impact of a change in policy **relative** to the current regime. Given these reasons we have combined the results of the monetisation of these impacts when assessing the impact of different policy options.

These illustrative estimates of the change in the value of the other impacts of night noise on health as a result of our proposals were estimated using methodologies in the Department's Transport Analysis Guidance for assessing the impacts of changes in daytime noise. This methodology was implemented based on a similar approach as for estimating sleep disturbance impacts. For the years modelled using the CAA's ANCON model (2017/18 and 2021/22), we have used the results of the ANCON modelling directly to estimate the monetary value of these impacts; and for other years, we have adopted the same simplified approach as for the sleep disturbance impacts and interpolated the monetary value of the impacts for the intervening years using the 2017/18 and 2021/22 results (see Section 7.3 for further details).

Whilst we have provided estimates to illustrate the **potential scale of these impacts**, we have not included these estimates in the net present value calculation given the limitations in the methodology described above.

7.5 Estimating the value of the economic impacts of a change in the number of flights in the night quota period

In order to inform this impact assessment, the Department commissioned SYSTRA to undertake a research project to improve our ability to estimate the economic impacts of potential changes to the night flights regime. A report outlining the methodology and findings of this research project will be published shortly, alongside an independent peer review of the project by Leeds ITS. The Department has carefully considered how the findings of this research project should inform this impact assessment, and adapted the methodology developed by SYSTRA in order to separately estimate the direct impacts on airports and airlines, and the impacts on the public accounts, where the policy option under consideration changes the number of flights in the NQP at an airport in comparison to the Do Minimum scenario.

[55] Department for Transport (2015) WebTAG: TAG unit A3 environmental impact appraisal, December 2015 https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015

The analysis of the economic impacts of a change in the number of flights in the NQP has been undertaken separately for each airport. For the purposes of this analysis, flights in the NQP at each airport have been grouped together into 'flight groups' on the basis of the following dimensions: carrier type, seat class, season (summer or winter), direction (arrival and departure) and QC. This is felt to be a proportionate level of disaggregation given the evidence available from the research project and the need to reconcile this with our analysis of the change in the number of flights in the NQP at each airport.

7.5.1 Common step

A common step for both strands of the analysis of the economic impacts of a change in the number of flights in the NQP is to aggregate the estimates of the change in the number of flights in the NQP for the policy option under consideration compared to the Do Minimum scenario, which have been estimated using the approach described in Section 7.1, into the flight groups described above.

It should be noted that the estimates of the economic impacts presented in the impact assessment are therefore sensitive to the assumptions made when estimating the change in the number of flights in the NQP.

A key example of this is that, where the total number of movements and / or noise quota usage in any season would still be above the maximum allowed under the policy scenario even after carryovers and overruns are taken into account, we have adopted the simplifying assumption that the number of movements by each aircraft type will be reduced by an equal percentage until this is achieved (see Section 7.1.2). In reality, this percentage would be expected to vary between different aircraft types and is subject to uncertainty. So, this is an important factor that contributes to the uncertainty around these results.

7.5.2 Impacts on business

Direct impacts

When seeking to identify the direct impacts of this measure on business, the Department has carefully considered the relevant guidance from the RPC[56] and the guidance in the Better Regulation Framework Manual. A direct impact on business is defined as "an impact that can be identified as resulting directly from the implementation or removal/simplification of the measure". Taking this into account and given the nature of the changes to the night flights restrictions that are being considered, the Department considers that only airlines and airports will be directly impacted by this measure; and that the direct impacts on airports and airlines are the impacts on their profitability that are a direct consequence of the change in the number of flights that are allowed in the NQP as a result of our proposals. Furthermore, for the purposes of this impact assessment, the Department considers that any impacts on the prices that are charged by airports and airlines, any impacts on the load factors on other flights or any rescheduling, and any knock-on impacts on business passengers should be treated as indirect impacts of this measure.

In order to estimate the direct impacts on business, the next consideration is therefore how best to estimate the impacts on airports and airlines profitability that are a direct consequence of the change in the number of flights that are allowed in the NQP under our proposals in comparison to the Do Minimum scenario. Having considered the evidence at our disposal, the Department has

[56] In particular, RPC (2016) Impact Assessment Case Histories - A practical guide on how to interpret better regulation framework principles and rules.

decided that this should be estimated for each flight group used in the analysis by multiplying the estimated average profitability for airports and airlines per flight in the NQP for each flight group, by the estimated change in the number of flights in the NQP for the policy option under consideration compared to the Do Minimum scenario for the flight group. The results are then aggregated for all flight groups to produce the estimates quoted in Section 8 of this impact assessment.

For the purposes of this impact assessment, the Department has estimated the average profitability for airlines per flight in the NQP for each flight group as the average airline operating margin per flight in the NQP for the flight group on the basis of the definition of the airline operating margin used by SYSTRA in the research project, which is reproduced below[57]. The Department has estimated this using the estimates of these costs and revenues in the 2014/15 base year (in 2015 prices) included in the models developed by SYSTRA as part of the research project, which are in turn based on SYSTRA's analysis of data obtained from RDC Aviation.[58] In the absence of any robust evidence on how these revenues and costs would change in real terms over time, it has been assumed that the value of these revenues and costs would remain constant in real terms over time.

> "*Airline Operating Margin* = $(R_P + R_C) - C_O$
>
> where
>
> R_P = Revenue from Passengers (including ancillary revenue)
>
> R_C = Revenue from Cargo
>
> C_O = Direct Operating Costs of the Flight"

Furthermore, for the purposes of this impact assessment, the Department has estimated the average profitability for airports per flight in the NQP for each flight group as the average airport operating margin per flight in the NQP for the flight group on the basis of the definition of the airport operating margin used by SYSTRA in the research project, which is reproduced below[59]. Again, the Department has estimated this using the estimates of these costs and revenues in the 2014/15 base year (in 2015 prices) included in the models developed by SYSTRA as part of the research project, which are in turn based on SYSTRA's analysis of published airport accounts and airport charges. In the absence of any robust evidence on how these revenues and costs would change in real terms over time, it has been assumed that the value of these revenues and costs would remain constant in real terms over time.

> *"Airport Operating Margin* = $(R_{LC} + R_{TC} + R_{SP}) - C_O$
>
> Where
>
> R_{LC} = Revenue from Landing Fees (levied on the airlines)
>
> R_{TC} = Other Airport Charges (levied on airlines)
>
> R_{SP} = Passenger Spending at the Airport

[57] The direct operating costs include fixed costs, fuel costs, airport charges and crew costs.
[58] The estimates for the 2014/15 base year included in the models developed by SYSTRA as part of the research project are further disaggregated by flight time and length of haul, so in producing these estimates, the Department has aggregated these estimates for the flight groups used in this analysis.
[59] Fixed costs are not included in this.

C_O = Operating Costs"

Where there were no flights in a given flight group in the 2014/15 base year in SYSTRA's models and hence no estimates of these costs and revenues are available specifically for the flight group, the Department has adopted a similar approach to SYSTRA in dealing with this issue, and estimated the average profitability for airports and airlines per flight in the NQP for the flight group at a more aggregate level. In implementing this, the level of aggregation has been increased progressively by dropping one of the dimensions (in the same order as SYSTRA) until aggregated estimates of these costs and revenues are available to produce an estimate of the average profitability per flight in the NQP for the flight group as follows:

- level 1: carrier type, seat class, direction and QC (season has been dropped);
- level 2: carrier type, seat class and QC (direction has been dropped);
- level 3: seat class and QC (carrier type has been dropped); and
- level 4: QC only (seat class has been dropped).

A key exemption to this is for "non-commercial" flights, such as government flights and general aviation. SYSTRA's models do not include any estimates for "non-commercial" flights which enable the average profitability per flight in the NQP to be estimated for these flights, and hence the Department has excluded these flights from this aspect of the analysis. Non-commercial flights make up around 1% of movements at Gatwick and Heathrow and around 8% at Stansted.

In addition, it should be noted that the estimated average profitability for airports and / or airlines per flight in the NQP for a flight group is negative in some cases. That is, it is estimated that costs are greater than revenues for airports and / or airlines on the basis of the estimates included in SYSTRA's models. Where this is the case, the Department has taken a conservative approach in this analysis, and set the average profitability for airports and / or airlines per flight in the NQP for the flight group to zero. This is conservative because it has the effect of increasing costs.

Finally, it should be noted that the estimates generated by this approach are sensitive to the inputs that have been used (particularly the estimates of costs and revenues in the 2014/15 base year (in 2015 prices) included in the models developed by SYSTRA as part of the research project), the assumptions described above and the other methodological choices that have been made. Therefore, the estimates of the direct impacts on airports and airlines presented in the impact assessment are subject to considerable uncertainty. Nevertheless, given the scale of the changes to the night flights regime under consideration and the evidence at our disposal, the Department considers that the approach taken is a proportionate approach for estimating these impacts in Section 8, and for estimating the equivalent annual net direct cost to business (EANDCB) in Section 10.

Indirect impacts

As noted above, for the purposes of this impact assessment, the Department considers that any impacts on the prices that are charged by airports and airlines, any impacts on the load factors on other flights or any rescheduling, and any knock-on impacts on business passengers should be treated as indirect impacts of this measure. The Department has not sought to estimate the value of any of these indirect impacts of our proposals on business in this impact assessment. The reasons for this are explained below.

Firstly, regarding any impacts on the prices that are charged by airports and airlines, it should be noted that the approach used to estimate the direct costs to business above implicitly assumes that prices remain the same under the policy option as under the Do Minimum scenario. As part of the research project, SYSTRA developed an approach for estimating how changes to the night flights regime could impact on air fares. For example, airlines may have the ability to charge higher air fares for flights in the NQP where the number of flights allowed in the NQP under the night flights regime is reduced. However, the Department considers that this aspect of SYSTRA's approach is particularly innovative. So, the Department has decided that further review would be required before making use of this in our work, and it has not therefore been utilised for the purposes of this impact assessment.

Secondly, regarding any impacts on the load factors on other flights or any rescheduling, it should be noted that the approach used to estimate the direct costs to business above implicitly assumes that load factors on both flights in the NQP and flights outside the NQP remain the same under the policy option as under the Do Minimum scenario, and also implicitly assumes that there is no rescheduling of flights. This would not necessarily be the case in practice and such indirect impacts could potentially mitigate some of the direct impacts on airports and airlines. For example, where the number of flights in the NQP allowed under the policy option is lower than under the Do Minimum scenario, it is likely that load factors on the remaining flights in the NQP or flights that take place during the day would increase as some passengers switch to travelling on these flights. However, given the limitations of our available evidence, these indirect impacts are subject to considerable uncertainty. For this reason, the Department has not sought to estimate these impacts in this impact assessment.

Thirdly, regarding any knock-on impacts on business passengers, it should be noted that a consequence of not using SYSTRA's approach for estimating how changes to the night flights regime could impact on air fares is that it has not been possible to estimate the impacts on passengers, neither leisure nor business, in this impact assessment since the approach that SYSTRA developed as part of the research project for estimating these impacts requires the change in air fares to first be estimated.

Finally, given the limitations of our available evidence base, this approach does not take account of any other potential indirect impacts that changes to the number of flights in the NQP at an airport could have on airlines and airports.

7.5.3 Public accounts

The Department considers that the direct impacts on the public accounts are the impacts on the public accounts that are a direct consequence of the change in the number of flights that are allowed in the NQP under our proposals. Following the approach taken by SYSTRA in the research project, the Department has taken into account the impacts on both Air Passenger Duty (APD) and VAT on retail purchases at the airports that arise as a direct consequence of the change in the number of flights that are allowed in the NQP. So, a first step in estimating the direct public accounts impacts is to estimate the average APD and VAT on retail purchases at the airport per flight in the NQP for each flight group.

The average APD and VAT on retail purchases at the airport per flight in the NQP for each flight group are estimated using the estimates of APD and VAT on retail purchases in the 2014/15 base year (in 2015 prices) included in the models developed by SYSTRA as part of the research project,

which are in turn based on SYSTRA's analysis. In the absence of any robust evidence on how these values would change in real terms over time, it has been assumed that these values would remain constant in real terms over time. In addition, where there were no flights in a flight group in the 2014/15 base year in SYSTRA's models and hence no estimates of APD and VAT on retail purchases are available specifically for the flight group, the Department has adopted the same approach as in Section 7.5.2 and estimated the average APD and VAT on retail purchases per flight in the NQP for the flight group at a more aggregate level. Finally, "non-commercial flights" are also excluded from this analysis for the same reasons outlined in Section 7.5.2.

The Department has also decided that the impact that changes to the level of tax receipts from taxes directly levied on aviation due to changes to the number of flights in the NQP can have on indirect taxation receipts from goods consumed across the rest of the economy should also be taken into account. For example, changes to the amount of APD paid by UK-resident leisure passengers affect the amount of income these passengers have to spend on other goods and services in the UK economy, thereby affecting indirect tax revenues. Drawing on the approach taken in the research project and adapting this where required, the average net impact on the public accounts per flight in the NQP taking this into account has been estimated using the following formula for each flight group:

*(1+t) * (average APD and VAT per flight in the NQP for the flight group) – t * %Leisure * %UK * (average APD and VAT per flight in the NQP for the flight group)*

Where:

- *t* is the average level of indirect taxation in the economy;
- *%Leisure* is the proportion of passengers travelling for leisure; and
- *%UK* is the proportion of leisure passengers that are UK residents.

The final step is then to estimate the total impact on the public accounts under the policy option in comparison to the Do Minimum scenario for the flight group. This is estimated by multiplying the estimated change in the number of flights in the NPQ for the policy option compared to the Do Minimum scenario for the flight group, by the estimated average net impact on the public accounts per flight in the NQP for the flight group as defined above. The results are then aggregated for all flight groups to produce the estimates quoted in Section 8 of this impact assessment.

It should be noted that the estimates generated by this approach are sensitive to the inputs that have been used (particularly the estimates of APD and VAT on retail purchases in the 2014/15 base year (in 2015 prices) included in the models developed by SYSTRA as part of the research project), the assumptions described above and the other methodological choices that have been made.

In addition, it should be noted that this does not take the impact of any changes to UK-resident leisure passengers' expenditure on aviation on the indirect taxation receipts from goods consumed across the rest of the economy into account. This is due to the uncertainty surrounding how passengers would respond to the change in the number of flights that are allowed in the NQP under our proposals; and the Department's decision to not use SYSTRA's approach for estimating how changes to the night flights regime could impact on air fares.

Finally, given the limitations of our available evidence base, it should be noted that this approach does not take account of any other potential indirect impacts that changes to the number of flights in the NQP at an airport could have on the public accounts.

Therefore, it should be noted that the estimates of the public accounts impacts presented in the impact assessment are subject to considerable uncertainty, and that there is also considerable uncertainty surrounding the level and direction of the overall public accounts impacts. Nevertheless, given the scale of the changes to the night flights regime under consideration and the evidence at our disposal, the Department considers that the approach taken is a proportionate approach for estimating these impacts in Section 8.

For the purposes of this analysis, the average level of indirect taxation in the economy is assumed to be 19% in line with the Department's transport analysis guidance[60]; and the Department has estimate the proportion of passengers travelling for leisure and the proportion of leisure passengers that are UK residents by carrier type and airport using data for all passengers using these airports in 2014 from the Civil Aviation Authority (CAA) as follows (Figure 10).

Figure 10 – Proportion of passengers travelling for leisure, and of which are UK residents

Gatwick	**Chartered**	**Scheduled**	**Low cost carrier**
Proportion of passengers travelling for leisure	99%	86%	83%
Proportion of leisure passengers that are UK residents	98%	71%	70%

Stansted	**Chartered**	**Scheduled**	**Low cost carrier**
Proportion of passengers travelling for leisure	99%	65%	85%
Proportion of leisure passengers that are UK residents	99%	57%	58%

8 Costs and Benefits of Final Policy Option

8.1 Do Minimum scenario

This section provides a brief overview of the analysis for the Do Minimum scenario. Further results for this scenario are presented in Appendix C.

A particular limitation of our analysis at consultation stage was our estimates significantly under-estimating the number of movements in the night quota period by QC/0 aircraft at Stansted and to a lesser extent at Heathrow and Gatwick under the Do Minimum scenario. The reasons for this were:

- The fleet mix modelling of freighters at Stansted suggested that there would be a significant decline in the number of QC/0 movements by freighters. This result appeared counterintuitive given that the number of night flights at Stansted (excluding those by QC/0 aircraft) would be constrained by the night flights regime, and arose purely as a result of the lifetime of freighters that has been assumed, which was subject to considerable uncertainty.

[60] https://www.gov.uk/guidance/transport-analysis-guidance-webtag

- Our analysis, which was based on data for 2014/15, significantly under-estimated the actual growth in movements by QC/0 aircraft at Stansted between 2014/15 and 2015/16.

- Due to the limitations of our fleet mix modelling, our analysis also likely underestimated the take up of next generation QC/0 aircraft at all airports.

- For new aircraft types, the QC categorisation we assumed were intended to represent the highest QC ratings that could be assigned to these aircraft (see Section 7 for more details), which was likely to further under-estimate the number of movements by next generation QC/0 aircraft.

- Finally, the simplifying assumptions in our analysis led to the growth in QC/0 movements being under-estimated under our Do Minimum scenario in situations when the number of night flights at an airport (excluding those by QC/0 aircraft) would be constrained by the movement or noise quota limits[61].

Holding all other assumptions constant, this meant that our analysis at consultation stage was likely to significantly under-estimate the impacts of a policy option on the number of night flights in the night quota period at Stansted and to a lesser extent at Gatwick under some scenarios. But, in other circumstances, these limitations meant the analysis over-estimated the impacts of a policy option on the number of night flights in the night quota period (such as where the noise quota limit is constraining movements at an airport under a policy option but not the Do Minimum scenario). Given the no growth assumption at Heathrow, it was expected that the analysis for Heathrow would be unaffected.

The above points were a key cause of the uncertainty surrounding the costs and benefits that were estimated at consultation stage. In response to this, for the final Impact Assessment we have:

- Sought additional evidence and information through the consultation on the appropriate assumption regarding fleet mix changes, including the retirement age of freighters. As a result of some useful discussion on future fleet plans and evidence on current freighter ages[62], we extended the freighter lifetime assumption used in this analysis from 30 to 35 years. The rationale for this includes the lower utilisation of express freighters following conversion from passenger aircraft at a typical age of 15-25 years, meaning the lifetime of these aircraft can be extended to 40 years plus as they have more infrequent flight cycles. Based on discussions with industry, this update reflects a conservative estimate for freighter retirement age.
- We have updated the base data on actual movements at all three airports from 2014/15 data to 2015/16, the latest full regime year available. This has provided a more realistic picture of the current fleet mix, including the relative proportion of aircraft in different QC categories.

[61] This is because the simplifying assumptions in our analysis mean that the growth in QC/0 movements is reduced in situations when the number of night flights at an airport (excluding those by QC/0 aircraft) would be constrained by the movement or noise quota limits, but in reality, the growth in QC/0 movements would be unaffected under the Do Minimum scenario.
[62] CAA data on actual flight movements at all three airports.

- Further information on the next generation of fleet and in particular the take up of QC/0 aircraft was requested as part of the consultation. We have reviewed evidence submitted by consultees and revised assumptions on the future fleet mix to reflect this evidence. The proportion of next generation aircraft at, for example, Stansted grows by around 35% between 2017 and 2022[63].

By making these changes, the analysis in this Impact Assessment is likely to underestimate the growth in QC/0 aircraft to a lesser extent than at consultation stage, and now better reflects the current market and future plans of the industry regarding fleet mix. The following limitations of the analysis remain;

- For new aircraft types, the QC categorisation we assumed were intended to represent the highest QC ratings that could be assigned to these aircraft (see Section 7 for more details), which was likely to further under-estimate the number of movements by next generation QC/0 aircraft.
- Finally, the simplifying assumptions in our analysis led to the growth in QC/0 movements being under-estimated under our Do Minimum scenario in situations when the number of night flights at an airport (excluding those by QC/0 aircraft) would be constrained by the movement or noise quota limits.

8.1.1 Gatwick: Do Minimum scenario

During the 5 years of the next night flights regime, it is estimated that the number of night flights in the night quota period at Gatwick (excluding those by QC/0 aircraft) would be constrained by the movement limits in 2019/20 to 2021/22. There would be a significant amount of unused noise quota in each season. It is estimated that Gatwick would carry-over 10% of its movement limit from the winter season to the summer season in all 5 years and over-run its movement limit in the summer season by 5% and 8% in the first 2 years, followed by 10% between 2019/2020 to 2021/22.

8.1.2 Heathrow: Do Minimum Scenario

It is estimated that the number of night flights in the night quota period at Heathrow during the 5 years of the next night flights regime (excluding those by QC/0 aircraft) would not be constrained by the movement limits in any season and that there would be a significant amount of unused noise quota in each season. It is estimated that Heathrow would carry-over between around 2% and 4% of its movement limit from the summer season to the winter season in each year.

8.1.3 Stansted: Do Minimum scenario

During the 5 years of the next night flights regime, it is estimated that the number of night flights in the night quota period at Stansted (excluding those by QC/0 aircraft) would be constrained by the movement limits in the summer season from 2019 until the end of the regime. The number of flights in the night quota period would be constrained by the limits in the 2020/21 and 2021/22 winter seasons. It is estimated that Stansted would carry-over 10% of its movement limit and 10% of its quota limit from the winter season to the summer season in each year. We also estimate Stansted will over-run its movement limit in the summer season by between around 9% in 2017/18 and 10% in each subsequent year and over-run its quota limit in the summer season in some years by between around 4% and 5%.

[63] DfT analysis of fleet mix forecasts 2017

8.1.4 Estimated number of people affected by night noise

As explained earlier, the 48dB $L_{Aeq, 6.5hr}$ is the lowest level night noise contour at which it is possible to produce robust noise contours.[64] Given that this is broadly similar to the lowest level at which the Department for Transport's Transport Appraisal Guidance identifies health costs for noise from night flights, it is proposed that this contour is used to measure progress against the proposed environmental objective. The estimated populations within this contour in the 6.5 hour night quota period at all three airports in the first and last years of the next night flights regime under the Do Minimum scenario can be found in Figure 11 below. The reason for the population reducing in this contour at Heathrow, whilst not at Gatwick and Stansted, is due to natural predicted improvements in the QC performance of aircraft over the course of the regime coupled with the assumption of zero growth in night flights. A summary of the populations within the dBA LAeq, 6.5 hour night contours up to 63dBA under the Do Nothing and the Final Policy Option can be found in Appendix F.

Figure 11– Number of people affected at Heathrow, Gatwick and Stansted[65]

Summary of populations within 48 dBA LAeq, 6.5 hour night

	Year	Heathrow*	Gatwick	Stansted
Policy Scenario: Do Minimum	**2017-18**	89,600	4,600	4,250
	2021-22	80,300	4,600	4,350

***** The decision to announce the north-west runway at Heathrow as the Government's preferred scheme for delivering new runway capacity does not change these figures, since any extra capacity would be delivered after 2022.

8.2 Final Policy Option

As mentioned in Section 5, our preferred policy option is Option 4. This combines the changes considered under the other options. Analysis of all options suggests there would be no difference in impact between options 2, 3 and 4. However for the reasons set out in this impact assessment, option 4 meets the environmental objective whilst also providing additional certainty to communities around all airports and locks in the benefits already delivered at Heathrow and Gatwick. Further detail on the impact of options 2, 3 and 4 on the number of night flights and QC usage at all three airports can be found in Appendix C.

8.2.1 Gatwick: Final Policy Option

Impact on the number of night flights

It is estimated that there would be around 465 fewer night flights (-5%) in the night quota period in total at Gatwick under our Final Policy Option compared to the Do Minimum scenario across the 5 year regime. This is due to both existing QC/0 movements and the increasing number of QC/0 aircraft expected in the future. Under the Final Policy Option, we estimate that Gatwick's growth is constrained in the 2019/20 to 2021/22 seasons. This is unchanged from the Do Minimum.

Benefits

[64] K. Jones, Environmental Research and consultancy Department, CAA. Aircraft Noise and Sleep Disturbance: A Review (2009) https://publicapps.caa.co.uk/docs/33/ERCD0905.pdf
[65] CAA Data

Compared to the Do Minimum scenario, the key benefit of the Final Policy Option is the reduced night noise that would be experienced by local residents that live near Gatwick airport in the night quota period. This is a result of the estimated reduction in the number of night flights in the night quota period at these airports. This could be an underestimate since the methodology used (48dB $L_{Aeq, 6.5hr}$) does not monetise the impacts on all affected populations.

At Gatwick, compared to the Do Minimum scenario, it is estimated that:

- In 2017/18, there is no change in the number of flights in the night quota period and no change in the number of people affected in the 48dB $L_{Aeq, 6.5hr}$ night contour (around 4,600) and no reduction in the size of the contour area (around 37.6 sq km)
- In 2021/22, the reduction in the number of flights in the night quota period would lead to no change in the number of people affected in the 48dB $L_{Aeq, 6.5hr}$ night contour (around 4,600) and a reduction in the size of the contour area by around 0.5 sq km (around 37.9 sq km compared with around 38.5 sq km).

Estimates of the value of the reduction in sleep disturbance from flights in the NQP at Gatwick under the Final Policy Option compared to the Do Minimum scenario are presented in Figure 12 below. The total value of the reduction in sleep disturbance from night flights in the NQP at Gatwick over the 5 year regime is estimated at around £11,690 (in present value terms and constant prices[66])[67] [68].

The illustrative estimates of the scale of the reduction in the costs of other night noise impacts from flights in the NQP at Gatwick is presented in Figure 13; the potential scale of these impacts over the 5 year period is estimated at around £1,700 in total (in present value terms and constant prices[69]). It should be noted that these figures cannot be used to represent the value the government places on the impacts of these health conditions to individuals or society. This impact assessment solely covers the potential scale of these impacts as a result of the changes in noise impacts of our final policy option (compared with the current regime).

Figure 12 - Value of the reduction in sleep disturbance from night flights at Gatwick (Final Policy Option Vs Do Minimum) (Constant prices and not discounted)[70]

	2017/18	2018/19	2019/20	2020/21	2021/22
Sleep disturbance	£0	£0	£4,440	£3,290	£5,250

[66] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[67] Figures may not sum due to rounding
[68] This IA assesses options for the night flights regime that will apply from October 2017. Each year of the regime (comprising a winter season and the following summer season) therefore covers two calendar years. As a simplifying assumption, our monetised analysis values the impacts in each year of the regime as though they occurred in the first of these calendar years (e.g. the impacts in 2017/18 are valued as though they occurred in 2017). Holding all other assumptions constant, this simplifying assumption is expected to result in our estimates slightly overestimating the value of these impacts when they are expressed in present value terms.
[69] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[70] The Price Base Year is 2015.

Figure 13 - Estimate of the total value of the reduction in other noise impacts from night flights at Gatwick over the 5 year period (Final Policy Option Vs Do Minimum) (Constant prices and not discounted)[71]

	Total reduction
Monetised non-sleep disturbance health impacts	£1,900

There are also expected to be a number of other benefits from the reduction in night flights in the night quota period at Gatwick, including a reduction in the other costs of night noise; improved air quality and reduced greenhouse gas emissions. For the reasons outlined in Section 6.1, these benefits are not monetised in this IA.

The reduction in the number of flights that are allowed to take place in the NQP at Gatwick under the Final Policy Option compared to the Do Minimum scenario could give rise to indirect benefits to businesses by giving airlines the possibility to charge higher air fares. These indirect benefits have not been estimated for the reasons explained in Section 7 of this impact assessment.

There is no change in the number of flights forecast under the Final Policy Option (Option 4) compared to Option 2. This is because it is estimated that there would be a significant amount of unused noise quota at Gatwick under the Do Minimum scenario, and so the proposed reductions in the noise quota (in Option 4) are estimated to have no further impact on the number of movements compared to the Do Minimum scenario than Option 2 (in which QC/0 aircraft count to the movement limit at all three airports and Stansted's movement limit is increased to accommodate the number of currently exempt aircraft). This is also because it is estimated that Gatwick can accommodate the noise quota from the new QC/0.125 aircraft in their limits. However, the changes in the Final Policy Option (Option 4) compared with Option 2 should increase the transparency of the regime and provide more certainty to populations living around the airport that the average flight should not get any louder than it currently is. Plus, the changes could have impacts on industry behaviour that lead to long term benefits for communities outside of our appraisal period of 5 years.

Costs

The direct costs to business as a result of the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario would be felt by Gatwick airport and the airlines operating flights in the NQP; as context, it is estimated that there were around 101 airlines operating flights in the NQP at Gatwick in 2015/16 that could be affected by our proposals. Using the methodology described in Section 7.5.2, the total direct costs to business from the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime are estimated to be around £5.6 million (in present value terms and constant prices[72]). Figure 14 below shows the estimated direct costs to business in each year of the regime.

[71] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[72] The Present Value Base Year is 2017 and the Price Base Year is 2015.

Figure 14 - Estimated direct costs to business from the reduction in flights in the NQP at Gatwick (Final Policy Option Vs Do Minimum) (Constant prices)[73]

	2017/18	2018/19	2019/20	2020/21	2021/22
Direct Costs to Airlines	£0	£0	£2.15m	£1.54m	£2.45m
Direct Costs to Gatwick Airport	£0	£0	£0.03m	£0.03m	£0.04m
Total Direct Costs to Business	£0	£0	£2.18m	£1.57m	£2.49m

It is separately estimated that the Government would also experience a reduction in tax revenues as a result of the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario. Using the approach explained in Section 7.5.3, the total reduction in tax revenues as a result of the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime is estimated to be around £0.2 million (in present value terms and constant prices[74]). Figure 15 below shows the estimated reduction in tax revenues in each year of the regime.

Figure 15 - Estimated reduction in tax revenues from the reduction in flights in the NQP at Gatwick (Final Policy Option Vs Do Minimum) (Constant prices)*[75]

	2017/18	2018/19	2019/20	2020/21	2021/22
Reduction in tax revenues	£0	£0	£0.1m	£0.1m	£0.1m

*Note – For the avoidance of doubt, the estimates of the reduction in tax revenues shown in this figure are not included in the estimates of the "Business Net Present Value" and the "Net cost to business per year".

Finally, the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario could also give rise to a number of other indirect costs to businesses, including through the knock on impacts this would have on business passengers, the air freight sector and the wider economy; and leisure passengers. These indirect costs have not been estimated for the reasons explained in sections 6 and 7 of this IA.

8.2.2 Heathrow: Final Policy Option

It is estimated that there would be no change in the number of night flights in the night quota period at Heathrow under our Final Policy Option (Option 4) compared to the Do Minimum scenario. This is because Heathrow's flights mainly consist of full service flights (with few QC/0 movements), there is spare capacity within the movement limits, and Heathrow is assumed not to grow over the forecast period.

As it is estimated that there would be no change in the number of night flights in the night quota period at Heathrow under our Final Policy Option compared to the Do Minimum scenario, no

[73] The Price Base Year is 2015.
[74] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[75] The Price Base Year is 2015.

monetised costs or benefits are expected at Heathrow during our appraisal period of 5 years. There is no change in either the number of people within the 48 dB contour in 2017/18 (89,600) or 2021/22 (80,300) compared to the Do Minimum, or in the area of the contour (28.8 sq km in 2017/18 and 24.7 sq km in 2021/22). However, there could be benefits in the form of greater certainty to populations around Heathrow that the average flight cannot get any louder than it currently is. Plus, the number of flights and composition of the fleet could change in the longer term due to the incentives we are providing to encourage quieter aircraft in the night period. More generally, introducing a new QC category and counting all movements towards the limit has the benefits of increasing the transparency of the regime at Heathrow, as is the case at all airports.

8.2.3 Stansted: Final Policy Option

Impact on the number of night flights

It is estimated that there would be around 2,475 fewer night flights (-11%) in the night quota period at Stansted in total under the Final Policy Option (Option 4) compared to the Do Minimum scenario across the 5 year regime. The estimated impact on the number of night flights at Stansted is larger than at Gatwick because of the greater number of movements by QC/0 aircraft at Stansted. Growth is estimated to be constrained in 2018/19 to 21/22 in winter and in all years of the regime in the summer seasons. This is a change compared to the Do Minimum, since growth is now estimated to be constrained in winter 2018/19 and 2019/20 and in summer 2017/18.

Benefits

The key benefit of the Final Policy Option (Option 4) compared to the Do Minimum is the reduced night noise that would be experienced by populations surrounding Stansted airport as a result of the reduction in the number of movements in the night quota period. This could be an underestimate since the methodology used (48dB LAeq, 6.5hr) does not monetise the impacts on all affected populations.

At Stansted, compared to the Do Minimum scenario, it is estimated that:

- In 2017/18, the reduction in the number of flights in the night quota period would lead to around 50 fewer people affected in the 48dB $L_{Aeq,\ 6.5hr}$ night contour (around 4,200 compared to around 4,250), and a reduction in the size of the contour area by around 0.3 sq km (around 36.4 sq km compared with around 36.7 sq km);
- In 2021/22, the reduction in the number of flights in the night quota period would lead to around 300 fewer people affected in the 48dB $LA_{eq,\ 6.5hr}$ night contour (around 4,050 compared to around 4,350), and a reduction in the size of the contour area by around 1.6 sq km (around 35.8 sq km compared with around 37.4 sq km).

Estimates of the value of the reduction in sleep disturbance from flights in the NQP at Stansted are presented in Figure 16 below. The total value of the reduction in sleep disturbance from night flights in the NQP at Stansted over the 5 year regime is estimated at around £204,900 (in present value terms and constant prices[76]). The illustrative estimates of the scale of the reduction in the costs of other night noise impacts from flights in the NQP at Stansted is presented in Figure 17; the potential scale of these impacts over the 5 year period is estimated at around £23,300 in total (in present value terms and constant prices[77]). It should be noted that these figures cannot be used to represent

[76] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[77] The Present Value Base Year is 2017 and the Price Base Year is 2015.

the value the government places on the impacts of these health conditions to individuals or society. This impact assessment solely covers the potential scale of these impacts as a result of the changes in noise impacts of our final policy option (compared with the current regime).

Figure 16 - Value of the reduction in sleep disturbance from flights in the NQP at Stansted (Final Policy Option Vs Do Minimum) (Constant prices and not discounted)[78]

	2017/18	2018/19	2019/20	2020/21	2021/22
Sleep disturbance	£6,340	£41,980	£52,840	£60,280	£62,320

Figure 17 - Estimate of the total value of the reduction in other noise impacts from flights in the NQP at Stansted over the 5 year period (Final Policy Option Vs Do Minimum) (Constant prices and not discounted)[79]

	Total reduction
Monetised non-sleep disturbance health impacts	£25,400

There are also expected to be a number of other benefits from the reduction in flights in the NQP at Stansted, including a reduction in the other costs of night noise; improved air quality and reduced greenhouse gas emissions. For the reasons outlined in Section 6.1**Error! Reference source not found.**, these benefits are not monetised in this IA.

As at Gatwick, the reduction in the number of movements under the Final Policy Option (Option 4) is unchanged compared to Option 2. This is because our modelling does not expect the introduction of the new QC/0.125 category to result in a binding QC limit after allowing for overruns and carryovers. However, there could be benefits in the form of greater certainty to populations around Stansted that the average flight cannot get any louder than it currently is. Plus, the number of flights and composition of the fleet could change in the longer term due to the incentives we are providing to encourage quieter aircraft in the night period. More generally, introducing a new QC category and counting all movements towards the limit has the benefits of increasing the transparency of the regime at Stansted, as is the case at all airports.

Finally, the reduction in the number of flights that are allowed to take place in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario could give rise to indirect benefits to businesses by giving airlines the possibility to charge higher air fares. These indirect benefits have not been estimated for the reasons explained in Section 7 of this IA.

Costs

The direct costs to business as a result of the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario would be felt by Stansted airport and the airlines operating flights in the NQP at Stansted; as context, it is estimated that there were around 141 airlines operating flights in the NQP at Stansted in 2015/16 that could be affected by our proposals. Using the methodology described in Section 7.5.2, the total direct costs to

[78] The Price Base Year is 2015.
[79] The Present Value Base Year is 2017 and the Price Base Year is 2015.

business from the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime are estimated to be around £5.3 million (in present value terms and constant prices[80]). Figure 18 below shows the estimated direct costs to business in each year of the regime.

Figure 18 - Estimated direct costs to business from the reduction in flights in the NQP at Stansted (Final Policy Option Vs Do Minimum) (Constant prices)[81]

	2017/18	2018/19	2019/20	2020/21	2021/22
Direct Costs to Airlines	£0.36m	£0.97m	£1.10m	£1.19m	£1.20m
Direct Costs to Stansted Airport	£0.06m	£0.18m	£0.21m	£0.23m	£0.24m
Total Direct Costs to Business	£0.42m	£1.15m	£1.32m	£1.43m	£1.44m

It is separately estimated that the Government would also experience a reduction in tax revenues as a result of the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario. Using the approach explained in Section 7.5.3, the total reduction in tax revenues as a result of the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime is estimated to be around £1.3 million (in present value terms and constant prices[82]). Figure 19 below shows the estimated reduction in tax revenues in each year of the regime.

Figure 19 - Estimated reduction in tax revenues from the reduction in flights in the NQP at Stansted (Final Policy Option Vs Do Minimum) (Constant prices)*[83]

	2017/18	2018/19	2019/20	2020/21	2021/22
Reduction in tax revenues	£0.1m	£0.3m	£0.3m	£0.4m	£0.4m

*Note – For the avoidance of doubt, the estimates of the reduction in tax revenues shown in this figure are not included in the estimates of the "Business Net Present Value" and the "Net cost to business per year".

Finally, the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario could also give rise to a number of other indirect costs to businesses, including through the knock on impacts this would have on business passengers, the air freight sector and the wider economy; and leisure passengers. These indirect costs have not been estimated for the reasons explained in Sections 6 and 7 of this impact assessment.

8.2.4 Familiarisation costs

It is possible that stakeholders could also face costs when familiarising themselves with the updated regulations, regardless of the policy option selected. Given the longstanding nature of the night flights restrictions, we expect the time required for familiarisation will be limited. We invited views through

[80] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[81] The Price Base Year is 2015.
[82] The Present Value Base Year is 2017 and the Price Base Year is 2015.
[83] The Price Base Year is 2015.

the consultation on the time required for stakeholders, largely airports, airlines and communities, to read and understand the updated regulation and received no substantial evidence that there would be familiarisation costs to business of these new restrictions.

9 Rationale and evidence that justify the level of analysis used in the IA (proportionality approach)

Although these estimates are subject to considerable uncertainty), DfT's estimates of the change in the number of night flights in the night quota period that are presented in this impact assessment make use of the best evidence available at the time of developing the models.

The estimates of the change in the level of night noise experienced by local residents in the night quota period presented in this impact assessment have been produced using the ANCON model, which is fully compliant with internationally agreed best practice. However, since DfT's analysis was used as an input to this, the results are also subject to the limitations described previously.

The estimates of the value of the impact of the change in night noise in the night quota period on sleep disturbance presented in this impact assessment were estimated using the results of the ANCON model for the first and last years of the regime. However, given the scale of the expected impacts and the resources required to run the ANCON model, estimates for the intervening years were calculated using a simplified approach on proportionality grounds (see Section 7.3). Other noise impacts on health have been presented in this IA to give an indication of their scale, however, whilst we have provided estimates to illustrate the potential scale of these impacts, we have not included these estimates in the net present value calculation since the Department's Transport Analysis Guidance does not contain an approved methodology for estimating the change in the value of the other impacts of night noise on health (see Section 7.4). Due to inconclusive and limited evidence, we have not quantified other noise impacts on amenity.

Given the scale of the changes to the night flights regime under consideration and the evidence at our disposal, the Department considers that the approaches taken to produce the estimates of the direct economic impacts on airports and airlines, and the estimates of the public accounts impacts, presented in the impact assessment, are proportionate approaches for estimating these economic impacts, and that the former is a proportionate approach for estimating the equivalent annual net direct cost to business (EANDCB). The changes to the night flights regime under consideration could also give rise to other indirect impacts to businesses, passengers and the public accounts; these indirect impacts have not been estimated in this impact assessment for the reasons explained in Sections 6 and 7. In addition, due to the inconclusive and/or limited evidence, we have not quantified or monetised any other wider economic impacts.

We have not conducted any sensitivity analysis for this impact assessment as it was not considered proportionate to do so.

Finally, the impacts on air quality and greenhouse gas emissions have not been monetised on proportionality grounds given the relatively small change in the overall number of flights at these airports.

10 Direct costs and benefits to business calculations (following BIT methodology)

Whilst the process for renewing the current night flights regime stems from EU legislation, the night flights restrictions at Gatwick, Heathrow and Stansted are domestic rules that are implemented through domestic, not EU, law. In other words, there is and can be no gold plating.

Since the night flights restrictions at Gatwick, Heathrow and Stansted are domestic rules that regulate business, the Government considers that the night flights regime is in scope of the One-In, Three-Out (OITO) rule and is a qualifying provision for the purposes of the Business Impact Target (BIT).

Given the nature of the changes to the night flights restrictions that are being considered, the Government considers that this measure only directly impact airlines and airports (see Section 7.5.2 for further details)[84]. Therefore, the Department considers that this measure will need to be scored for the purposes of the BIT on the basis of the estimated Equivalent Annual Net Direct Cost to Business (EANDCB)[85] for airlines and airports.

The expiry of the existing restrictions will score as a benefit to business and this offsets the costs to business associated with the continuation of the existing restrictions under the Do Minimum scenario. Therefore, the Department considers that the Do Minimum scenario is the appropriate counterfactual for estimating the EANDCB of the Final Policy Option compared against.

On the basis of the methodology described in Section 7.5.2 and the results of this analysis presented in Section 8 of this IA, the present value of the total net direct costs to airlines and airports under Final Policy Option compared to the Do Minimum scenario over the 5 year regime is estimated at around £10.9 million (Present Value Base Year 2017, Price Base Year 2015). This comprises the following estimates from Section 8 of this IA:

- the total direct costs to business from the reduction in the number of flights in the NQP at Gatwick under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime are estimated to be around £5.6 million (in present value terms and constant prices); and
- the total direct costs to business from the reduction in the number of flights in the NQP at Stansted under the Final Policy Option (Option 4) compared to the Do Minimum scenario over the 5 year regime are estimated to be around £5.3 million (in present value terms and constant prices).

Therefore, using the Business Impact Target Assessment Calculator, the EANDCB is estimated at around £2.2 million per year (Present Value Base Year 2015, Price Base Year 2014).

It should be noted that some of the costs to business will fall on non-UK airlines. However, there are considerable difficulties in apportioning the costs to airlines between UK and non-UK airlines (e.g. a comprehensive determination of the nation of ownership of airlines is in most cases unavailable). So, any estimates of this would rely heavily on assumptions and be no more than indicative. Therefore, for the purposes of this impact assessment, the Department has adopted a conservative approach, and used the full estimate of the present value of the total net direct costs to airlines and airports when estimating the EANDCB above.

11 Wider impacts

The wider social, environmental and economic impacts of the proposed policy options not already discussed within this IA have been considered, together with possible unintended consequences. Where we have identified potential impacts, they are described in the following sub-sections.

We asked for further evidence on these impacts as part of our consultation. We have reviewed the evidence submitted regarding these wider impacts and have incorporated relevant changes where applicable.

[84] The Government considers that all other impacts on business are indirect

[85] As night flight restrictions are currently in place, the EANDCB should measure the change in the net average direct costs to these businesses under the final policy option compared to the Do Minimum scenario.

11.1 Competition assessment

It is estimated that the final policy option under consideration in this impact assessment would alter the number of night flights in the night quota period at Gatwick and Stansted airports during the next night flights regime compared to the Do Minimum scenario, but would have no impact on the number of night flights in the night quota period at Heathrow. This illustrates the potential for this policy options to impact on competition.

The significance of any impacts on competition in practice will depend on the magnitude of the change in the number of night flights at these airports under our final policy option compared to the Do Minimum scenario and is therefore subject to the significant uncertainty surrounding our analysis.

Having reviewed the consultation responses, we do not have sufficient information to provide a robust methodology to capture the impacts on competition. Instead we have identified the potential impacts on competition which are discussed in more detail below. It is worth noting that despite this limitation of the analysis however, the very small reduction in the number of night flights that would occur under the final policy option would suggest there would also be a very small impact on competition.

- Where a policy option reduces (increases) the number of night flights that can take place at one of these airports, it is possible that this may reduce (increase) the competitiveness of the airport compared to competing airports that serve the same markets (which could be in the UK or overseas), and could, for example, impact on the airport that airlines choose to base their aircraft at.
- It may also have broader impacts on the competitiveness of airlines that operate night flights at these airports compared to competitors that operate night flights at other airports (which again could be in the UK or overseas); or on the competition within the markets for night flights between UK and some destinations (such as if this reduces or increases the number of night flights to / from a given destination).
- In addition, there may be knock-on impacts on other businesses that make use of night flights at these airports. For example, businesses in the freight industry using night flights at these airports for express deliveries as highlighted in Section 6.2.4. To the extent that their competitors make use of night flights at other airports, this could have impacts on their competitiveness. Lower profits for UK businesses may further result in lower levels of investment in the UK which could potentially harm the international competitiveness of the UK.

11.2 Small and Micro Business Assessment (SaMBA)

Small businesses (up to 49 FTE employees) and micro-businesses (up to 10 employees)[86] are not currently exempt from the night flights regime. In reaching a final policy decision consideration has therefore been given to how the policy options may impact on small and micro businesses.

The businesses on which the night flight regime has direct impacts are airports and airlines.

Gatwick, Heathrow and Stansted are the primary airports affected by the regime and have more than 50 employees, meaning they do not meet the Small and Micro Business Assessment (SaMBA) criteria.

Whilst we do not have access to a consistent data source on the number of employees of airlines that operate night flights, e.g. some of these airlines are not UK businesses, we have completed analysis that suggests nearly all commercial airlines operating during the night period would have more than 50 employees. Furthermore given the scale of operations required to run an airline, including pilots

[86] Better Regulation Framework

and flight crew, maintenance crew, HR etc., it would be reasonable to assume nearly all commercial airlines would require more than 50 employees to operate.

Analysis of CAA data (on night flights during the period 2014/15 at Gatwick, Heathrow and Stansted, combined with CAA data on aircraft registration and ownership) suggests that, even for night flights not operated by commercial airlines e.g. private business jets, small and micro businesses are unlikely to be directly affected. The analysis revealed these types of aircraft were typically owned by large corporations or subsidiaries of large corporations which can be assumed to have more than 50 employees.

It is theoretically possible that there could be small or micro businesses that operate night flights which may be affected by the proposals in this Impact Assessment. However, the CAA have estimated that this would only affect a handful of airline operators, thus it would not be proportionate to analyse the impacts for this Impact Assessment. As mentioned above, we also did not receive any evidence from the consultation which we were able to incorporate in to this impact assessment on what the impact would be on smaller airlines or night flights operators, for example from those involved in business or general aviation.

11.3 Equalities Impact Assessment

The policy options referred to in this impact assessment have been reviewed for relevance, but since the reduction in noise impacts of the policy options **relative to the baseline** are not expected to have any variation in impacts on different groups, an Equalities Impact assessment is not required. All options, including the preferred option, place restrictions on the number and noise levels of night flights but do not fully ban operations. Whilst it can be expected on an aggregate level that, for a given airport, the least profitable routes will be dropped before others, it is not possible to forecast how this will be split between different airlines nor is there any evidence that specific groups of society will be affected more than others.

However, based on consultation responses we have considered the impact night flights could have on different groups of society. For instance, night flights may have a disproportionate impact on those sensitive to noise and those already severely impacted. As explained in Section 6.1.3 (Noise Impacts: Other Impacts), the impact on children has been assessed in the NORAH and RANCH studies. These studies acknowledge that noise exposure from these flights may affect cognitive development, but the reports are unclear whether the effects are attributable to daytime or night time noise. Furthermore, there is no evidence for long-term persistent effects on cognitive development. Dr Charlotte Clark's paper[87], undertaken for the Airports Commission concludes that there is increasing evidence to support the use of prevention measures such as insulation, preventative policy, guidelines and limit values.

Whilst night flights may disproportionately affect those that are more sensitive to noise, the noise impacts as a result of particular policy options considered in this Impact Assessment are not expected to, given the baseline used for comparison of these options.

[87] Dr Charlotte Clark (2015) 'Aircraft noise effects on health', Prepared for the Airports Commission https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/446311/noise-aircraft-noise-effects-on-health.pdf

12 Summary and preferred option with description of implementation plan

There is a need to protect local communities from the negative impacts of aircraft noise at night, while permitting the operation of services that provide benefits to the aviation industry and wider economy. Option 4 within this impact assessment is our preferred measure of doing so as it enables us to achieve the environmental objective.

Introducing a new QC category and ensuring all flights are included in the restrictions will give more certainty to communities about the level of noise they can expect to experience and prevent a potentially unlimited number of currently exempt flights from operating during the night period. As a result of these changes to the QC system it is also necessary to adjust Stansted's movement to ensure the existing benefits of night flights at the airport are maintained. Setting noise quota limits as we have decided will also help to lock-in the benefits that have been derived from new quieter aircraft in recent years and reassure communities that existing aircraft should not be replaced by louder ones. These limits will ensure industry have clear direction and incentives to adopt the quietest technology whilst communities have more certainty over the future noise exposure.

These restrictions will be reviewed again to ensure decisions on what should replace them can be taken before they expire in October 2022. As set earlier in this document, we are also reviewing the Government's role in setting these restrictions at these airports, and pending the outcome of our consultation on these matters, there may be opportunities for these restrictions to be replaced by alternatives before they expire and for the Government to no longer set them in this way.

13 Post Implementation Review Plan

1. **Review status:** Please classify with an 'x' and provide any explanations below.

X	**Sunset clause**		**Other review clause**		**Political commitment**		**Other reason**		**No plan to review**

The next night flights runs for 5 years and will expire in October 2022.

2. Expected review date (month and year, xx/xx):

1	**0**	**/**	**2**	**2**

13.1 Rationale for PIR approach:

Rationale for PIR approach:

We currently estimate the net impacts to be below £50m, however, there are more impacts that the Department is unable to monetise currently, but that are likely to have an impact. However due to limited data and evidence reasons, we expect the evidence sought to be Medium.

This is a high profile and contentious area of policy. When reviewing restrictions before 2022, we will conduct robust analysis wherever it is proportionate to do so. However, given the current availability of evidence, the Department is in no position to quantify all impacts and use bespoke monitoring and evaluation data to address evidence gaps. We welcome new evidence to support further monetisation of the impacts of changes to the regime, and will review and incorporate new robust evidence into analysis where it is relevant.

This data collected (outlined below) is already produced by the airports on a weekly basis and can be produced very quickly, allowing the Department to monitor the policy with little resource. However, any further impact evaluation that may be completed as a result of new evidence may require a higher level of resource to complete.

Process evaluation will be completed, using monitoring data to check whether the number of flights and noise level emitted is being reduced compared to a continuation of the regime, as expected. This will be used to check if the airports are following the regulations as expected. Throughout the course of the current regime, each airport will provide a detailed weekly breakdown of the:

- Number of total runway movements
- Number of movements in each QC category
- Number of movements exempt from restrictions
- Total number of arrivals and departures
- Number of not counted delays, government and emergency flight movements.
- Amount of QC usage and movements carried over from the previous season.

Eight (8) hour Lnight contours will also be produced annually for each airport.

A light-tough impact evaluation will also be used, making use of the monitoring data available (8hr Lnight contours) to check whether the reduction in the noise level of flights has had the desired impact of reducing the number of people significantly impacted by noise in the night period, while maintaining the economic benefits of night flights.

It is not possible to evaluate the impact of the restrictions on the level of night noise compared to a deregulated market. The details outlining why we cannot accurately estimate a deregulated market are explained in the IA.

We will consider the change in local circumstances at these airports to check the necessity for central government regulations. For example, Stansted may agree restrictions as a part of local planning conditions as Heathrow has. This could necessitate a more light touch approach to restrictions in the future.

Appendix A

Exempt aircraft expected to be covered under a new QC/0.125 category (81.0-83.9 EPNdB):

Arrivals	Departures
Airbus A320-251n	Airbus A320-251n
Airbus A320-271n	Airbus A320-271n
Beechcraft Premier I (Raytheon 390)	BAe ATP
Boeing 717-200	Bombardier Challenger 300 (BD-100-1A10)
Bombardier Challenger 601-3A (CL-600-2A12)	Bombardier Challenger 604 (CL-600-2B16)
Bombardier Challenger 604 (CL-600-2B16)	Bombardier Challenger 605 (CL-600-2B16)
Bombardier Challenger 605 (CL-600-2B16)	Bombardier Challenger 850 (CL-600-2B19)
Bombardier Challenger 870 (CL-600-2C10)	Bombardier CRJ-100LR (CL-600-2B19)
Bombardier CRJ-200ER (CL-600-2B19)	Bombardier CRJ-200ER (CL-600-2B19)
Bombardier CRJ-200LR (CL-600-2B19)	Bombardier CRJ-200LR (CL-600-2B19)
Bombardier Learjet 35A	Bombardier DHC-8-311 Dash 8
Bombardier Learjet 36A	Bombardier DHC-8-402 Q400
Bombardier Learjet 55ER Winglets	Bombardier Learjet 35A
Cessna 525A Citation CJ2	Cessna 525A Citation CJ2
Cessna 550 Citation Bravo	Cessna 550 Citation II
Cessna 550 Citation II	Dornier 328-110
Cessna 560XL Citation XLS	Dornier 328JET-310
Cessna 650 Citation VII	Embraer 120ER Brasilia
Cessna 680 Citation Sovereign	Embraer 120FC Brasilia
Dassault Falcon 2000EX EASy	Embraer 120RT Brasilia
Dassault Falcon 2000EX EASy Winglets	Embraer ERJ-135ER
Dassault Falcon 2000LX	Embraer ERJ-145EP
Dassault Falcon 2000S	Embraer ERJ-145MP
Dassault Falcon 7X	Embraer Legacy 600 (ERJ-135BJ)
Dassault Falcon 900C	Embraer Legacy 650 (ERJ-135BJ)
Dassault Falcon 900EX	Fokker 50
Dassault-Breguet Mystere Falcon 900	Gulfstream G280
Dornier 328JET-300	Gulfstream G300 (GIV)

Dornier 328JET-310	Gulfstream G450 (GIV-X)
Embraer ERJ-135ER	Gulfstream GIV
Embraer ERJ-145EP	Gulfstream GIV-SP
Embraer ERJ-145MP	Gulfstream G650 (G-VI)
Embraer ERJ-190BJ Lineage	Hawker 800B (BAe 125-800B)
Embraer ERJ-190SR	Hawker 800XP (Raytheon Hawker 800XP)
Embraer ERJ-195LR	Hawker 800XPi (Raytheon Hawker 800XP)
Embraer Legacy 600 (ERJ-135BJ)	Hawker 900XP (Hawker Beechcraft 900XP)
Embraer Legacy 650 (ERJ-135BJ)	Saab 2000
Gulfstream G280	Saab 340A Cargo
Gulfstream G450 (GIV-X)	
Gulfstream GIV	
Gulfstream GIV-SP	
Gulfstream GV	
Gulfstream GV-SP (550)	
Hawker 4000 (Hawker Beechcraft 4000)	
Hawker 400XP (Raytheon 400A)	

Appendix B

Aircraft noise classifications under the current quota count (QC) system

Noise Classification (EPNdB) [88]	Quota Count
More than 101.9	**16**
99 - 101.9	**8**
96 - 98.9	**4**
93 - 95.9	**2**
90 - 92.9	**1**
87 - 89.9	**0.5**
84 - 86.9	**0.25**
Less than 84	**0 (Currently exempt)**

[88] Effective Perceived Noise Decibels, a specialised noise unit used for aircraft noise certification tests. Figures based on average of flyover and sideline for departures, and after 9 EPNdB subtraction from approach value.

Appendix C

The tables below provide further details on the estimated total movements in the night quota period and noise quota usage (QC) under the Do Minimum options and policy options. These tables also show the movement and noise quota limits for each season that were assumed in this analysis.

The boxes highlighted in blue show when an airport exceeds the assumed limit for that season. The airport is allowed to do this through the use of carryovers and overruns. The estimates of total movements and noise quota are rounded to the nearest 5.

Figure 20 – Gatwick forecasts – Policy Option 1 (Do Minimum)

Season	**Total movements excluding current exempt QC/0 aircraft** Movement limits (no carryovers/overruns): Winter = 3250 Summer = 11200	**Total movements including current QC/0 aircraft**	**Total QC** QC limits (no carryovers/overruns): Winter = 2000 Summer = 6200
Winter 2017/18	2035	2085	1,065
Winter 2018/19	2085	2135	1,090
Winter 2019/20	1980	2030	1,030
Winter 2020/21	1805	1855	930
Winter 2021/22	1805	1885	920
Summer 2018	12060	12110	5,210
Summer 2019	12470	12520	5,385
Summer 2020	12645	12700	5,460
Summer 2021	12645	12715	5,460
Summer 2022	12645	12755	5,445

Figure 21 – Gatwick forecasts – Policy Options 2-4

Season	**Total movements including QC/0.125 and QC/0 aircraft:** Movement limits (no carryovers/overruns): Winter = 3250 Summer = 11200	**Policy Option 2 & 3** **Total QC** QC limits (no carryovers/overruns): Winter 2017/18 = 2000 Summer 2018 = 6200	**Policy Option 4** **Total QC** QC limits (no carryovers/overruns): Winter 2017/18 = 2000 (followed by a reduction to 1785 in 2018/19) Summer 2018 = 6200 (followed by a reduction to 5150 in 2019)
Winter 2017/18	2085	1065	1065
Winter 2018/19	2135	1090	1090
Winter 2019/20	1930	975	975
Winter 2020/21	1805	905	905
Winter 2021/22	1805	880	880
Summer 2018	12110	5210	5210
Summer 2019	12520	5385	5385
Summer 2020	12645	5435	5435
Summer 2021	12645	5430	5430
Summer 2022	12645	5395	5395

Figure 22 - Heathrow Forecasts – Policy Option 1 (Do Minimum)

Season	**Total movements excluding current exempt QC/0 aircraft** Movement limits (no carryovers/overruns): Winter = 2550 Summer = 3250	**Total movements including current QC/0 aircraft**	**Total QC** QC limits (no carryovers/overruns): Winter = 4080 Summer = 5100
Winter 2017/18	2,675	2,690	2,010
Winter 2018/19	2,670	2,690	1,720
Winter 2019/20	2,635	2,690	1,480
Winter 2020/21	2,615	2,690	1,450
Winter 2021/22	2,605	2,690	1,435
Summer 2018	2,950	2,980	2,075
Summer 2019	2,945	2,980	1,945
Summer 2020	2,905	2,980	1,800
Summer 2021	2,885	2,980	1,755
Summer 2022	2,870	2,980	1,730

Figure 23 - Heathrow forecasts – Policy Options 2- 4

Season	**Total movements including QC/0.125 and QC/0 aircraft:** Movement limits (no carryovers/overruns): Winter = 2550 Summer = 3250	**Policy Option 2 & 3** **Total QC** QC limits (no carryovers/overruns): Winter 2017/18 = 4080 Summer 2018 = 5100	**Policy Option 4** **Total QC** QC limits (no carryovers/overruns): Winter 2017/18 = 4080 (followed by a reduction to 2415 in 2018/19) Summer 2018 = 5100 (followed by a reduction to 2735 in 2019)
Winter 2017/18	2,690	2,010	2,010
Winter 2018/19	2,690	1,680	1,680
Winter 2019/20	2,690	1,430	1,430
Winter 2020/21	2,690	1,400	1,400
Winter 2021/22	2,690	1,385	1,385
Summer 2018	2,980	2,075	2,075
Summer 2019	2,980	1,935	1,935
Summer 2020	2,980	1,785	1,785
Summer 2021	2,980	1,740	1,740
Summer 2022	2,980	1,715	1,715

Figure 24 - Stansted Forecasts – Policy Option 1 (Do Minimum)

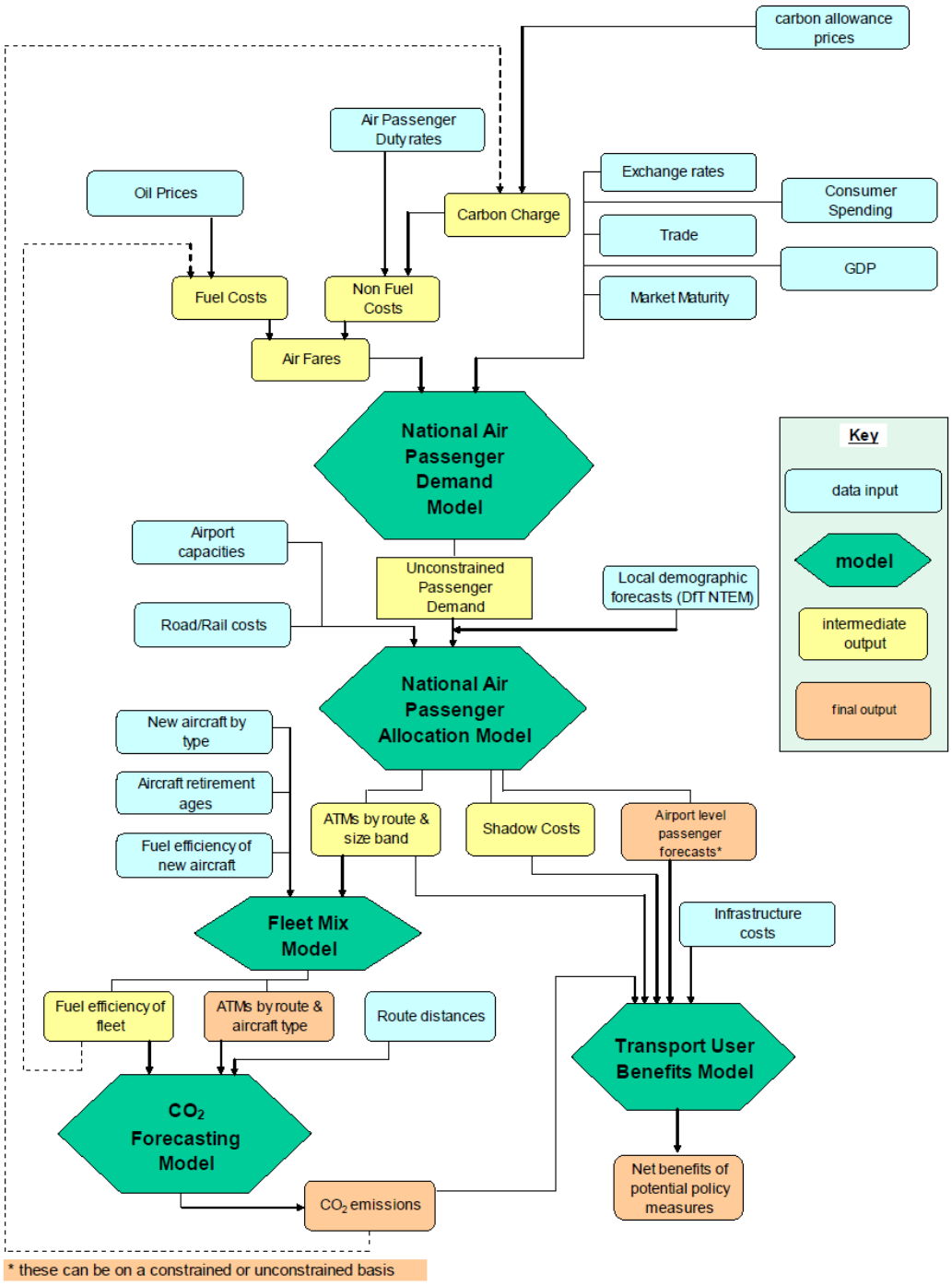
Season	**Total movements excluding current exempt QC/0 aircraft** Movement limits (no carryovers/overruns): Winter = 5000 Summer = 7000	**Total movements including current QC/0 aircraft**	**Total QC** QC limits (no carryovers/overruns): Winter =3310 Summer = 4650
Winter 2017/18	3,575	4,410	2,605
Winter 2018/19	3,650	4,505	2,660
Winter 2019/20	3,730	4,605	2,720
Winter 2020/21	3,780	4,665	2,755
Winter 2021/22	3,790	4,675	2,760
Summer 2018	8,135	9,595	5,165
Summer 2019	8,200	9,670	5,205
Summer 2020	8,200	9,675	5,205
Summer 2021	8,200	9,675	5,200
Summer 2022	8,200	9,675	5,200

Figure 25 - Stansted forecasts – Policy Options 2- 4

Season	**Total movements including QC/0.125 and QC/0 aircraft:** Movement limits (no carryovers/overruns): Winter = 5600 Summer = 8100	**Policy Option 2 – 4** **Total QC** QC limits (no carryovers/overruns): Winter 2017/18 = 3310 Summer 2018 = 4,650
Winter 2017/18	4,410	2,605
Winter 2018/19	4,230	2,505
Winter 2019/20	4,230	2,505
Winter 2020/21	4,230	2,505
Winter 2021/22	4,230	2,505
Summer 2018	9,470	5,095
Summer 2019	9,470	5,120
Summer 2020	9,470	5,120
Summer 2021	9,470	5,115
Summer 2022	9,470	5,115

Appendix D

UK aviation forecasting framework[89]



[89] Department for Transport. UK Aviation Forecasts. January 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223839/aviation-forecasts.pdf

Appendix E

To provide an indication of the likely noise impact of the exempt-rated (QC/0) A320neo, the table below illustrates the size and extent of the 60 dBA L_{max} arrival noise footprint for a typical westerly arrival to runway 26L at Gatwick. An outdoor L_{max} level of 60 dBA corresponds to an indoor noise level of approximately 45 dBA, in accordance with the WHO recommendation that individual noise events at night exceeding 45 dBA should be avoided.

For comparison, the equivalent footprint for the current model of the A320 (QC/0.25) is shown, which is the most common aircraft type currently operating at Gatwick during the night quota period.

Results indicate that whilst the noise footprint of the new A320neo is significantly smaller than the current A320, the impacts of a QC/0 rated aircraft are not insignificant.

A320neo L_{max} arrival footprint areas[90]

Aircraft	Arrival footprint	Area, sq km	Population	Households
A320neo	Westerly, 60dBA	49.6	7,800	3,000
	Easterly, 60dBA	48.1	2,700	1,100
A320	Westerly, 60dBA	85.4	20,300	8,300
	Easterly, 60dBA	78.3	9,900	4,200
Differences	Westerly, 60dBA	-42%	-62%	-64%
	Easterly, 60dBA	-39%	-73%	-74%

[90] CAA Data, 2016

Appendix F

A summary of the LAeq, 6.5 hour night contours at Heathrow and Gatwick from 48dBa to 63dBa in the Do Nothing scenario and the Final Policy Option.

LHR Do Nothing 2017/18

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	28.8	89.6	33.9
51	14.2	44.4	16.7
54	7.1	14.6	5.4
57	3.6	2.4	0.9
60	2.0	0.6	0.2
63	1.3	<0.1	<0.1

LHR Do Nothing 2021/22

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	24.7	80.3	30.2
51	11.8	37.6	14.2
54	5.7	10.2	3.7
57	2.9	2.2	0.8
60	1.7	<0.1	<0.1
63	1.2	0.0	0.0

LGW Do Nothing 2017/18

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	37.6	4.6	1.7
51	19.0	1.3	0.5
54	9.5	0.5	0.1
57	4.8	0.3	0.1
60	2.4	0.1	<0.1
63	1.3	0.0	0.0

LGW Final Policy Option 2017/18

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	37.6	4.6	1.7
51	19.0	1.3	0.5
54	9.5	0.5	0.1
57	4.8	0.3	0.1
60	2.4	0.1	<0.1
63	1.3	0.0	0.0

LGW Do Nothing 2021/22

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	38.5	4.6	1.7
51	19.4	1.3	0.5
54	9.7	0.5	0.1
57	4.9	0.3	0.1
60	2.4	0.1	<0.1
63	1.3	0.0	0.0

LGW Final Policy Option 2021/22

Contour (dBA)	Area (sq km)	Population (1000s)	Households (1000s)
48	37.9	4.6	1.7
51	19.1	1.3	0.5
54	9.5	0.5	0.1
57	4.8	0.3	0.1
60	2.4	0.1	<0.1
63	1.3	0.0	0.0

Manston

Kent International Airport

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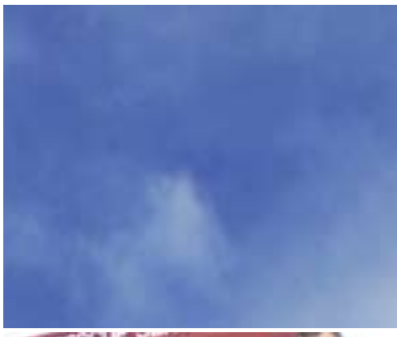

November 2009

MASTER PLAN

KENT INT

Kent International Airport – Manston

Master Plan

November 2009

Foreword from our CEO

Kent International Airport, known to many as Manston Airport, has a rich and important history dating back to 1915. The legacy of location and infrastructure from its former military uses and more recent civilian upgrades provides the platform for a very exciting future. This Master Plan sets out our vision of that exciting future for the consideration of all those with an interest in this significant community asset.

Throughout this Master Plan we will refer to ‘our airport’. This terminology acknowledges that the airport is a part of the local environment and that everyone in the community is a stakeholder in the airport.

Kent is the UK’s most populous county, with 1.4 million inhabitants. It is also home to some of the UK’s best and most popular tourism attractions. Kent is a gateway to mainland Europe and adjacent to London, one of the world’s leading large cities. Despite all of this, Kent does not currently have an airport that provides scheduled flights that meet the needs of its population or visitors. The 3.4 million flights taken by Kent residents in 2007 were mostly through the large London airports. It is clear that these airports do not have the capacity to accommodate the growing needs of the South East of England. For this reason, our airport has been identified in local, regional and national planning documents to grow to meet the needs of the local area and to provide an alternative for people in surrounding areas. Around 9 million people live within 2 hours travel time of our airport. Our airport has demonstrated its strength

and competitiveness during the current economic recession, achieving growth in cargo volumes during a time described by many as a period of crisis for aviation. We are confident given the advantages of using our airport and the growth constraints on other airports that we will continue to see sustained growth at Manston. We predict that we will serve around 4.7 million passengers and cater for around 400,000 tonnes of freight by 2033. This growth would sustain over 6000 jobs and stimulate and support substantial economic development in Thanet and East Kent. The South East Plan envisages that the our airport could accommodate up to six million passengers within the plan period and Thanet District Council's 2020 vision statement suggested that 10 million passengers could be accommodated by 2020. Support for the vision of our airport is critical to our future and we will continue to work closely with our stakeholders to make this vision a reality.

This growth must occur in an environmentally responsible and sustainable manner. As well as the very positive economic impacts, this Master Plan addresses the potential negative environmental impacts, including noise and emissions. The Department for Transport (DfT) publication, Aviation Emissions Cost Assessment (2008), notes that UK air travellers already pay environmental taxes that could fully offset the production of carbon by aviation, if the taxes were applied for this purpose. Consultation with the local community and other stakeholders has been a key component in the production of this document. We received responses and comments from a range of contributors during our draft Master Plan consultation. Over 300 people made comments either online via the web form, at public meetings, at drop in sessions in the terminal, or through written representations. Feedback was also received from local businesses, organisations and a range of statutory consultees. All the feedback received has been carefully considered during the production of this final Master Plan.

This document will be the blueprint for the future development of our airport and will be reviewed once every five years. I would like to personally thank all those who contributed to the Master Plan process. Together we can look forward to playing a part in these exciting developments as our airport enters the next phase of its dynamic evolution.

Matt Clarke
Chief Executive Officer
Kent International Airport

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1. Introduction to Our Airport

Kent International Airport

We have prepared this Master Plan to identify and substantiate development in and around our airport, and we have received and incorporated our community's and key stakeholders' feedback. This Master Plan sets out our vision for the future of our airport and our plans for achieving that vision.

Our plans are based around a realistic, achievable and sustainable growth scenario. At the national, regional and local levels there is a positive framework and support for growth at our airport. The airport has the ability to grow well beyond the forecast passenger and freight demand considered in the current Master Plan period. Through developing proposals for facilities for our airport, we have kept in mind the long term possibility of further expansion.

Who We Are

Kent International Airport is owned by Infratil Airports Europe Ltd (IAEL), a UK registered company that has already invested over £30 million in the past four years into the development and growth of our airport. IAEL also owns Glasgow Prestwick Airport in Scotland and remains active in seeking out further airport investment opportunities in the UK and throughout Europe.

Our group office provides a range of support functions, which include finance, business development, major commercial projects and property development, operations and project management, airport planning, sustainability and aviation policy management.

IAEL is a wholly owned subsidiary of Infratil Limited, a company listed on the New Zealand Stock Exchange. Infratil was established in 1994 with NZD50 million[1] of capital, which was mainly invested in electricity distribution and ports. The organisation's primary investment focus is now energy (primarily renewable) generation and retailing, public transport and airports. As of March 2008, our parent company had influence or control over assets in excess of NZD4.4 billion[2].

In the airports sector, in addition to IAEL, Infratil has a 66% share of Wellington Airport and has an investment in Auckland Airport, as well as Board representation. It also has a number of listed airport investments and co-invests with the New Zealand Government Superannuation Fund in a range of infrastructure related investments.

1 Approximately £18 million Sterling.
2 Approximately £1.7 billion Sterling.

Background to Our Master Plan

In December 2003, the UK Government published a White Paper, the Future of Air Transport (hereafter referred to in this Master Plan as the White Paper). This was released following a wide-ranging and extensive consultation process across the UK.

The White Paper stressed the importance of air travel in improving the economic competitiveness of UK businesses and attracting investment, as well as serving the main population centres and the more remote communities. Importantly, it identified that under-utilised airports such as ours have an important role to play in meeting local demand and can contribute to regional economic development.

The aspirations of the White Paper are recognised by the South East Plan (published May 2009), which under the new planning system replaces the strategic policy framework previously provided by the Kent and Medway Structure Plan. It recognises that our airport has the potential to become an airport of regional significance.

This Master Plan provides our vision for the future and explains how we propose to meet the aspirations of the White Paper and the South East Plan. The Master Plan process provides an excellent opportunity for us to communicate our vision with a wide range of stakeholders and the community, whilst considering the impact of the developments from an economic, environmental, social and sustainability perspective.

Purpose of Our Master Plan

The purpose of a Master Plan, as outlined by the UK Government, is to:

- Provide an indication of our plans for infrastructure development in the light of the high level strategic policy framework for the airport in the White Paper, and therefore bring greater clarity and certainty for all those affected or with an interest;
- Inform long term resource planning for local and regional planners (especially those charged with the delivery of land transport infrastructure), particularly in the preparation of strategies and plans;
- Provide a useful tool for communicating to a range of stakeholders, including airlines, funding institutions, local authorities and other local interests, to allow them to make well informed investment decisions;
- Help us make clear at an early stage the key milestones of airport development such as the submission of planning applications, construction and operational opening;
- Provide a consistent and publicly recognised vehicle for the UK Government and its agencies, to assess progress being made in delivering the White Paper as it relates to our airport;
- Demonstrate the range of costs and benefits of airport growth; and
- Enable our airport and others to assess local social and environmental impacts and provide an opportunity to develop preliminary proposals on how those impacts could be mitigated.

This Master Plan's primary purpose is to consider the growth at the airport between now and 2018, where airport developments are considered in detail. The Master Plan also identifies developments to 2033 and considers these to a lesser degree of detail [3].

3 The Department for Transport Guidance on the Preparation of Airport Master Plans (2004) indicates that forecast growth for airports should be presented for 2015 and 2030. These growth periods have been applied to this Master Plan but for 10 and 25 year time horizons from the commencement of our process in 2008 (2018 and 2033).

Key Objectives of Our Master Plan

This Master Plan sets out a strategy for the sustained and responsible growth of our airport in line with the White Paper. It outlines key terminal and airfield developments and supporting facilities to the year 2018, with an indicative plan for development to 2033.

Key objectives are to:

- Set out prospects for air traffic growth to 2033;
- Assess facilities required to accommodate growth at our airport, such as passenger terminals, freight handling areas, airport operational buildings and additional taxiways, aprons and car parking;
- Clearly identify areas of land currently outside our airport's boundaries which need to be safeguarded in order to allow our airport to expand with its development proposals;
- Set out approximate timescales for phasing of additional facilities;
- Ensure that development around our airport is consistent with the current and future operations of the airport;
- Identify key improvements to ground access and associated infrastructure provided by us and others;
- Remain fully compliant with Civil Aviation Authority (CAA) requirements and safety objectives;
- Communicate to policy makers changes in policy that will support the development of our airport;
- Inform the Thanet District Council Local Development Framework (LDF); and
- Identify environmental impacts of proposed developments and identify mitigation measures.

Our Master Plan Process

The process that we have followed in the production of the Master Plan is summarised below:

- We have identified key areas of development;
- We have taken account of the guidance contained within the DfT's Guidance on the Preparation of Airport Master Plans;
- We have developed the Master Plan in line with the White Paper, current development plans and corporate objectives;
- We sought the views of key stakeholders and the local community in the preparation of the draft Master Plan and these views have been incorporated into the Master Plan where appropriate;
- We will review the Master Plan, report on its implementation and repeat this process again in 2013.

2. The Legal Framework in Which We Work

The Law

Airports operate in a complex legal and policy environment. Historically, the operation of airports such as ours has been subject to international and national laws and standards and local planning controls. Increasingly, European law is governing airport operations in a wide range of areas from noise to security, although these are still given primary effect via national laws. This section of the Master Plan outlines the principal policies, legislation and controls that apply to our airport's operations and development.

UK Airports Policy

As highlighted previously, the White Paper sets out the strategic framework for the development of airport capacity in the UK over the period to 2030, against the background of wider developments in air transport. This document makes clear that "small airports have an important role to play in the future provision of airport capacity in the South East" (paragraph 11.93). Specifically in respect of Manston, the White Paper considers that our airport "could play a valuable role in meeting local demand and could contribute to regional economic development" and that there could be support for development at our airport "subject to relevant environmental considerations" (paragraph 11.99). The White Paper also makes clear that regional and local planning frameworks should take account of the benefits that development at smaller airports such as ours could provide and consider policies which facilitate the delivery of growth (paragraph 11.95).

The Government reaffirmed its policy stance towards aviation in The Future of Air Transport Progress Report [4] published in December 2006. The report acknowledges the benefits that meeting the demand for air travel brings to businesses and individuals across the UK. It also demonstrates the progress that has been made in delivering a sustainable future for aviation since the White Paper and recognises that "growth and developments at regional airports, without the need for new runways, give people across the country improved access to air travel from modern airports" (paragraph 1.12).

It is acknowledged that demand for air travel is forecast to grow to 490 million passengers passing through UK airports per year by 2030. However, it is evident that "the additional airport development supported by the White Paper would not be sufficient to support all of this unconstrained demand" (paragraph 4.11).

The Progress Report reiterates that pressures on the existing capacity of airports in the South East still stand and that "while making best use of the existing runways in the South East and supporting increased routes and services in other regions could reduce pressure on the major South East airports, this would still fall short of a sustainable long-term solution if trends continued" (paragraph 5.5). Government supports the development of two new runways in the South East to help alleviate this pressure; however, the Progress Report recognises the role of regional development in relieving overcrowded airports and the positive benefits it can have for local economies.

4 Department for Transport, December 2006, The Future of Air Transport Progress Report.

It is clear that other airport development in the South East is taking longer than the White Paper anticipated. This is reflected through the Progress Report and ongoing feedback from the aviation industry in general. Our airport has the potential to become a significant regional airport and to assist in reducing pressures on other South East airports. It also offers a substantial opportunity to have a positive impact on the economy of East Kent and Thanet.

Our Master Plan takes full account of other key national planning policies. The relevant planning policy guidance (PPG) and planning policy statements (PPS) are listed below and addressed in the context of our airport in sections 5 and 6 of this Master Plan:

- Transport (PPG13);
- Planning and Noise (PPG24);
- Planning and the Historic Environment (PPG15);
- Archaeology and Planning (PPG16);
- Delivering Sustainable Development (PPS1);
- Biodiversity and Geological Conservation (PPS9);
- Planning and Pollution Control (PPS23); and
- Industrial Development (PPG4 and draft PPS4).

The Master Plan has been produced having regard to other legislation such as the Civil Aviation Act 2006, the Emissions Trading Scheme, the European Noise Directive and the advice of the European Aviation Safety Agency.

Regional Planning Guidance

Under the Planning and Compulsory Purchase Act 2004, Regional Planning Guidance is being replaced by Regional Spatial Strategies (RSS) that will form part of the statutory development plan framework. The Regional Spatial Strategy for the South East is known as the South East Plan and provides a framework for the region for the time up to 2026.

The South East Plan (published in May 2009) recognises that Kent International Airport could become an airport of regional significance, handling up to six million passengers per annum (mppa). Policy T9 Airports states that the "Relevant regional strategies, Local Development Documents and Local Transport Plans will include policies and proposals that:

i) Support the development of Gatwick and Heathrow airports and safeguarded land at Gatwick for a possible new runway after 2019 as set out in the 2003 Air Transport White Paper and subsequent Government statements;

ii) Encourage Southampton Airport to sustain and enhance its role as an airport of regional significance; and

iii) **Support an enhanced role for Kent International Airport as an airport of regional significance.** [5]

iv) Take account of airport operator masterplans produced in accordance with the Air Transport White Paper."

5 This text is not in bold in policy T9 and is only highlighted for emphasis in this Master Plan.

Policy T9 also seeks to achieve reductions in the environmental impact of surface access and increased public transport used through Surface Access Strategies.

Policy EKA5 of the South East Plan recognises that gateways such as our airport, serve as catalysts for economic development (including growth associated with freight handling and tourism) and should be supported. It states that "the growth of Kent International Airport as a regional airport with up to six million passengers per annum is supported provided proposals satisfy policy criteria for the environment, transport and amenity."

The growth potential of the airport and the economic benefits that it can bring to the sub-region are recognised by the plan, together with the reserves of land located within, and adjacent to the airport, which could be used for ancillary uses and related activity (paragraph 18.31). When considering development at the airport potential environmental impacts must be addressed.

Regional Transport Strategy

The Regional Transport Strategy is an important component of the South East Plan. Although it does not discuss our airport in detail, it acknowledges the potential for our airport to help meet local demand and that further development is "supported in principle subject to relevant environmental considerations" (paragraph 9.35).

Local Transport Plan (LTP) for Kent 2006-2011

The Kent LTP sets out the transport vision for the county for 2025 and the strategy to take the County towards this vision. Aviation and the role of KIA is a core element of the LTP and policy UKG 5 states that the county council will support the sustainable development of Kent's airports.

The LTP identifies that KIA has the potential to develop into a regional airport and become one of "the largest single generators of economic activity within the county" (paragraph 5.58). It also states that the county council will support the development of KIA with a capacity of up to 6 million passengers by 2021 and that proposals for further expansion should address surface access, noise impact and air quality.

Local Planning Policy

The Planning and Compulsory Purchase Act 2004 introduced Local Development Frameworks (LDF), which will eventually replace Local Plans, while Structure Plans will be phased out. The airport is located within the administrative area of Thanet District Council in the County of Kent. Thanet District Council is in the early stages of preparing its LDF under the new system with consultation on the Core Strategy Development Plan Document expected to commence in late 2009.

The LDF Core Strategy Discussion Document on Issues and Options (May 2005) indicated that future growth at Kent International Airport

was supported and asked stakeholders and members of the public whether it struck the right balance between supporting growth at our airport and protecting the environment. The feedback received through this process will be contained within the Core Strategy Preferred Options Document that is scheduled for consultation in Winter 2009.

Following the publication of the South East Plan, the relevant development plan documents are:

- The South East Plan (May 2009); and
- The Thanet District Local Plan, adopted June 2006.

Under Schedule 8 of the Planning and Compulsory Purchase Act 2004, planning policies will be saved for a period of three years from the adoption of the plan. During this period the planning authority must bring forward their Local Development Documents (LDDs) to replace planning policies in accordance with their Local Development Scheme (LDS). If the LDD are not adopted by the end of this three year period the local planning authority must apply to the Secretary of State to save the policies for a further period.

The LDS (revised April 2007) identified that an LDD could be produced specifically for our airport [6], however, this is not included within the third revision of the LDS (February 2009). There is potential for the growth proposals outlined in the Master Plan to be included within a supplementary planning document once the core strategy has been adopted.

In June 2009 policies within the Local Plan expired and, those policies not saved by the Secretary of State, were deleted and are no longer material planning considerations. A number of these policies were relevant to our airport and they included:

- Policy EC3 'Kent International Airport, surface transport issues';
- Policy CC3 'Local landscape features';
- Policy CC4 'Island approach routes';
- Policy HE1 'Listed buildings of special architectural or historic interest';
- Policy HE10 'Protection of scheduled ancient monuments';
- Policy D4 'Design statements';
- Policy NC1 'Habitats'; and
- Policy NC2 'Nature reserves and SSSI'.

Until such time that the Core Strategy is adopted, decisions relating to planning matters formerly covered by these policies will be made in accordance with the relevant policies of the South East Plan and applicable PPG / PPS. The saved Thanet Local Plan policies remain part of the development plan.

Full details of the relevant South East Plan and Local Plan policies are provided as appendix A to the Master Plan.

Both the South East Plan and Local Plan contain policies that support the expansion of aviation activities at our airport. The potential to develop into a regional airport and become one of the largest single generators of economic activity within the county is acknowledged by South East Plan policy T9 and Local Plan policy EC2.

6 The LDS sets out the details of and a programme for the various LDF documents that the council proposes to prepare for its area.

The South East Plan recognises that our airport could handle up to 6 mppa provided proposals satisfy criteria for the environment, transport and amenity. It is also acknowledged that the expansion of our airport will have a significant impact on the regeneration of Kent's economy (the economic impact of the airport is addressed later in this chapter).

The Local Plan estimates that passenger throughput at our airport will be between "500,000 and 5 million passengers per annum by 2011". Freight throughput is estimated to be between "65,000 and 300,000 tonnes per annum" (paragraph 2.64). In light of this range, the council has adopted a cautious approach to planning at our airport stating that it "should plan for 1 million passengers and 250,000 tonnes of freight per annum by the end of the plan period [i.e. 2011]" (paragraph 2.65), albeit that a review of these numbers will be undertaken in 2005-2006 [7].

Our forecasts envisage that there will be a passenger throughput of 100,000 passengers per annum by 2011. The Local Plan envisages that significantly greater passenger numbers (up to 1mppa) could be accommodated at the airport during the same period and that the 1 mppa level stated in the Local Plan should in no way place a ceiling on the development of the airport (paragraph 2.66).

Thanet District Council's 2020 Vision statement (January 2000) suggests that by 2020 our airport could be handling approximately 10 mppa and given the right investment opportunities and market conditions, passenger movements of this order could be achieved (paragraph 2.62). However, the Local Plan only sets policy until 2011 and Kent County Council, as the strategic planning authority, will need to make its own assessments for the implications of growth beyond this period.

The Local Plan recognises that development at Kent International Airport is "likely to have significant implications in terms of surface transport both within the district and in the wider area of East Kent" (paragraph 2.67). A dedicated rail link to our airport, and Green Transport Strategy will encourage more sustainable passenger and freight movements which are identified as key objectives.

These objectives also complement the East Kent Access Study, which involves a number of improvements to the road network near our airport. Consequently, proposals at our airport must demonstrate that measures have been taken to reduce car based travel in favour of sustainable alternatives and provide highway improvements / management to accommodate particular thresholds of development at the airport (former policy EC3).

Land to the north of the runway (including the land north of the B2050) is currently reserved for airside development purposes. Defined uses for this area include passenger handling services, freight operations, aircraft maintenance and manufacturing

7 Conversations with Thanet District Council Strategic Planning Team have confirmed that a review of these numbers was not undertaken by the council in the 2005-2006 period.

and services ancillary to the airport. Currently, other proposals will not generally be permitted in this area; however, we are seeking a greater flexibility of land uses through the planning policy framework review process.

Land to the east of the existing passenger terminal is safeguarded for "terminal-related" activities such as car parking, or the physical expansion of the terminal itself. This allocation also retains a reasonable buffer between our airport and Manston village. The Local Plan establishes that should an airport terminal be built "other airport-related development will be permitted on this allocated site" and that planning conditions and / or a Section 106 agreement will be applied to limit any development granted (policy EC5).

We understand the development, expansion and diversification of our airport must be subject to an assessment of its visual, landscape, noise, air quality and ground water impacts. We recognise that the current section 106 agreement (Local Plan policy EC2) needs to be renegotiated and this document will help further define our development opportunities.

Policy EC2 also states that development, which has the potential to generate significant surface traffic, must meet requirements for surface travel demand in compliance with former policy EC3. Development will also not be permitted in the airport complex to the south of the airside development site unless it has been demonstrated that the development is necessary for air traffic management.

Plan 1 identifies the Local Plan land use designations at our airport.

In summary, both the South East Plan and Local Plan stipulate the following requirements in relation to the growth of Kent International Airport:

- Development must be associated with the operation of the airport;
- Environmental designations must be safeguarded;
- Local amenity should not be adversely impacted upon;
- Appropriate mitigation measures must be proposed to address noise / air / light / water pollution, sewerage disposal, landscape, species and habitat management;
- The local transport network must not be adversely affected (surface access strategy required);
- There must be adequate public transport provision; and
- A direct rail link should be provided when 3 mppa is exceeded.

These requirements have been taken into consideration in the preparation of this Master Plan. The airport is also entitled to undertake various forms of "permitted development" related to its operations, subject to the prior submission of details to, and agreement with, the local planning authority. All airports must operate in accordance with the requirements of the Civil Aviation Authority (CAA), which is responsible for ensuring that safety standards are adhered to. Airports

must obtain a licence from the CAA and demonstrate that they are able to continually adhere to a range of safety related standards. CAA publication CAP168 [8] deals specifically with the design of airports, including physical characteristics, assessment and treatment of obstacles, visual aids, rescue and fire fighting services and medical services. Its standards have been taken into account within this Master Plan.

Airport Master Plans

The DfT document Guidance on the Preparation of Airport Master Plans provides guidance for the development of airport master plans. This guidance follows publication of the White Paper in 2003, which recommends that airport operators develop and maintain a master plan for their airport. The guidance suggests any airport expected to be handling 20,000 air transport movements by 2030 should produce a master plan.

An airport master plan should include an indication of the airport operator's plans for infrastructure to support growth at the airport and to inform long term planning policy.

The guidance document recognises that surface access to an airport is likely to be a major issue during the lifetime of an airport master plan and could be a significant consumer of land and finance. Therefore airports should carefully plan the provision of transport and access infrastructure that would be required to deliver the master plan. However, it is recognised by the guidance that forecasting surface access requirements is complex and during the initial master plan stages, would probably be limited to discussing broad principles.

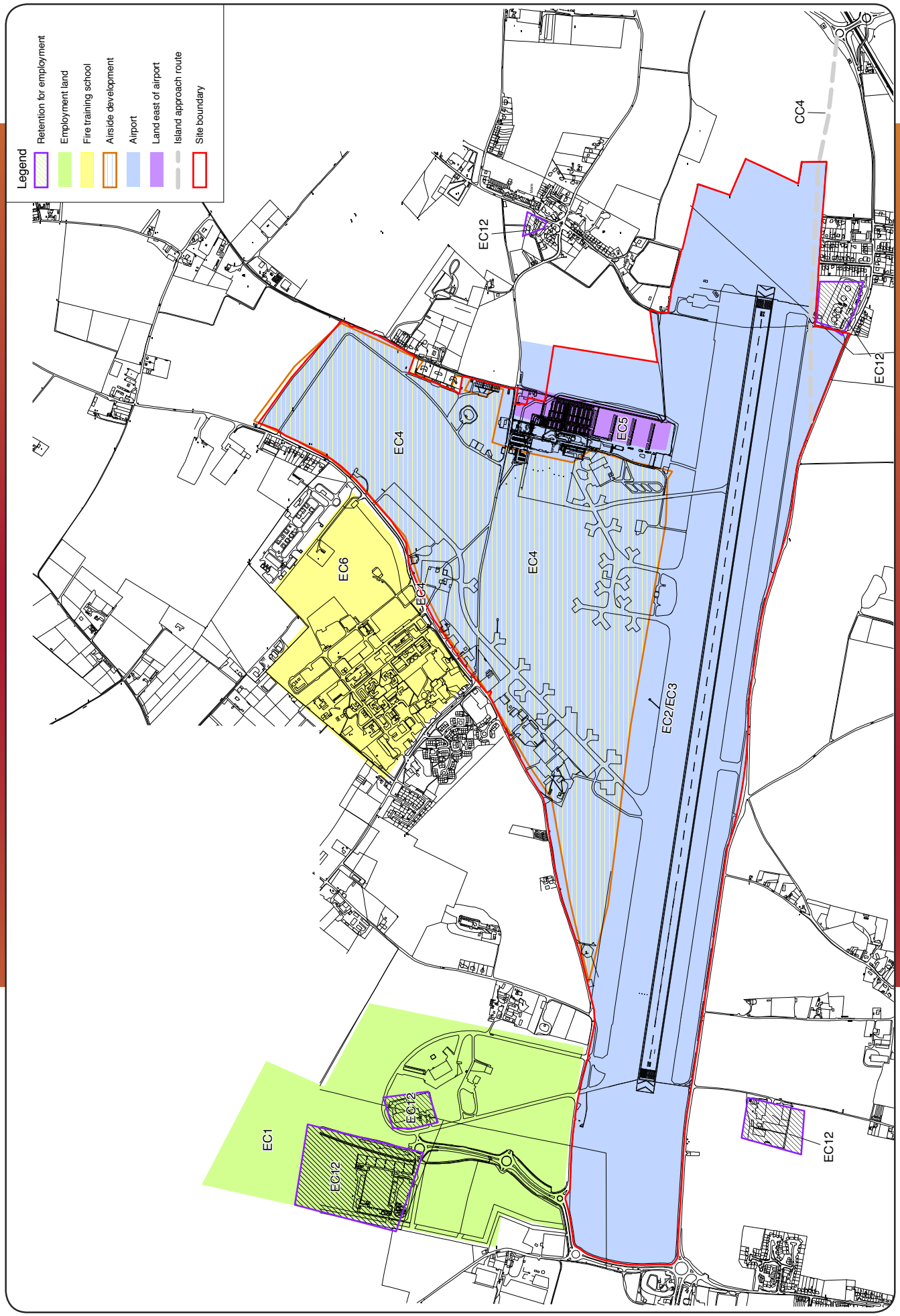
Airport Transport Forum

The Transport White Paper A new deal for transport: better for everyone states that all airports in England with scheduled passenger services should establish and lead an Airport Transport Forum (ATF). This has now been revised to apply to airports with greater than 1,000 scheduled and charter passenger air transport movements per annum.

An ATF would encourage partnership between airport operators, local authorities, passenger transport operators, local people and business and other interested parties. The objectives of an ATF would be to agree targets for increasing sustainable travel mode share amongst passengers and employees, a strategy for delivering against these targets, and to oversee the implementation of the strategy.

Operators of qualifying airports are responsible for taking the lead in setting up an ATF and preparing an Airport Surface Access Strategy. As passenger movements increase at our airport it is proposed that an ATF will be established in accordance with the guidance referenced above.

8 Published by the Stationary Office on behalf of the CAA



Plan 1 – Thanet Local Plan Land Use Designations

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Planning Policy – Issue by Issue

Sustainability

In terms of an overarching sustainable aviation growth strategy, we subscribe to the strategy set out in the Strategy Towards Sustainable Development of UK Aviation report published by Sustainable Aviation. It provides a coordinated industry response to the challenges outlined by the UK Government in the ATWP and the joint industry and government report of the Aerospace Innovation and Growth Team (AeIGT). These reports make clear that the long-term sustainable development of the aviation industry is essential to the environmental, economic and social wellbeing of the UK.

The strategy establishes the mechanisms for monitoring and reporting progress towards a series of goals and commitments including improving aircraft fuel efficiency, practical solutions for the inclusion of aircraft CO2 emissions in the EU Emissions Trading Scheme, plans for community related mitigation of noise, improvements to local air quality and reductions in traffic congestion.

Consistent with the UK Aviation industry's vision for 2020 and beyond, we will seek where possible to meet the needs of society for air travel, while removing or minimising any negative impacts on local and global environments.

At the local level, the future sustainable development of our airport is specifically addressed in the Local Plan, which identifies that Thanet Council and adjoining district councils wish to see our airport develop as a regional airport, as the airport offers very significant economic and employment benefits for Thanet and East Kent.

The Local Plan highlights that development will also have significant transport implications arising from passengers, freight and employees, which will need to be addressed. It states that "in the Council's vision for the future, Thanet remains an attractive place and quality employment, housing and leisure opportunities are accessible to all. Kent International Airport balances economic success with environmental concerns."

Specific sustainability objectives are detailed within the Local Plan's chapter on design. Policy D1 of this section identifies a series of design principles that seek to address the requirements for sustainable building. It states that "all new development is required to provide high quality and inclusive design, sustainability, layout and materials."

Policy D1 states that development proposals will only be permitted if they meet a range of criteria which include:

- Compatibility with local landscape, character and neighbours;
- Public transport and accessibility provisions;
- Biodiversity protection and enhancement; and
- Safety and security measures.

These sustainability principles will be applied to all future development at our airport.

Our approach to sustainable development at the airport will be consistent with the requirements set out by PPS1 Delivering Sustainable Development and is addressed further in section 6.

Surface Transport

The development of a dedicated rail link to our airport with a station near the terminal and a possible freight interchange serving the airport and the Central Island Area is strongly supported by the Local Plan. A series of strategic road improvements near the site are proposed through the East Kent Access major road improvement scheme (EKA). The primary objectives of this scheme are to improve access between the main settlement areas and support the development of our airport as a regional airport.

The improvements are split into two main phases, with Phase 2 expected to commence in 2009 and be complete by 2011. The improvements are necessary for future growth at our airport and the adjacent Manston Park employment area. The EKA has been a key consideration during the development of the Master Plan, together with the need to safeguard land for its construction (Local Plan policy TR4). A framework for a travel plan, which implements Thanet District Council's Green Transport Strategy (June 2002), will be developed to support planning applications at the airport. A traffic impact assessment will also be provided to support future applications. Our approach will be consistent with the requirements set out in PPG13 Transport.

Controls of Aircraft Emissions

Planning policy controls exist to resist proposals that would result in national air quality levels being exceeded (PPG23 Planning and Pollution Control and Thanet Local Plan policy EP5). The Master Plan has been informed by an assessment of air quality impacts. This is explained further in section 6 of the Master Plan.

Control of Aircraft Noise

The development plan generally supports the growth of our airport but adopts a precautionary approach to aircraft noise. It applies the 1996 (dBLAeq 16 hour) contour predictions, but acknowledges that alternative contour scenarios will be considered as the airport grows (Thanet Local Plan policy EP7). The Local Plan also requires a cumulative noise assessment to be produced where aircraft movements are increased (policy EC2). It confirms that where proposals are likely to be affected by aircraft noise, an assessment should be made in relation to the latest accepted prediction of existing and foreseeable ground noise measurement of aircraft noise.

This approach accords with PPG24 Planning and Noise. Noise issues at the airport are considered further in section 6 of this Master Plan.

Public Safety Zones

To safeguard against the risk of injury or death to people on the ground in the event of any aircraft accident on take-off or landing, the DfT has mandated public safety zones (PSZs) at the busiest UK airports.

They are a planning policy tool to control development in the specified risk contour areas. The types and level of development affected are set out in DfT Circular 1 / 2002.

PSZs are areas of land at the end of the runways within which development is restricted in order to control the number of people on the ground at risk of death or injury. The basic policy objective underpinning PSZs is that there should be no increase in the number of people living, working or congregating in PSZs and that, over time the number should be reduced as circumstances allow.

It is the responsibility of the local planning authority to ensure that the directions within the PSZ planning circular are adhered to.

As identified in section 2 of this Master Plan, it is acknowledged by the Local Plan that a PSZ assessment was scheduled for our airport in 2006. The assessment was not undertaken as the anticipated growth of the airport at that time did not occur. The DfT may review this in the future and we will welcome its provision.

Airport Security

The Airport Security Act 1982 and subsequent related legislation sets out requirements for airports. These regulations have influenced the design and layout of the Master Plan and will continue to influence development proposals at our airport.

Airport Health & Safety

Health and safety at our airport is regulated by a number of enforcing authorities including the CAA, Health and Safety Executive, Thanet District Council and the Kent Fire and Rescue Service.

The requirements of these authorities have been adhered to by the Master Plan and will be present in all new development at the airport.

Ground Water & Water Environment

A portion of our aerodrome is located on a freshwater aquifer and the airport is wholly contained in various source protection zone (SPZ) catchments. Groundwater beneath the site is therefore considered to be very sensitive to potential pollution as major aquifers and SPZs represent areas of groundwater resources that are critical to existing or future water supplies.

The Environment Agency (EA) seeks to ensure that new development does not present an unacceptable risk to groundwater resources. New development will meet, where appropriate and feasible, the requirements of the EA to ensure that it will not lead to a material deterioration in the quality of surface or groundwater. Development is not permitted in groundwater protection zones where there would be a risk of contamination of groundwater, unless adequate mitigation measures can be incorporated (Local Plan policy EP13).

A primary objective of the Master Plan process has been to ensure that groundwater is adequately protected. Pollution control measures will be adhered to during the design and construction of all new airport infrastructure and, where necessary, mitigation measures have been proposed to prevent groundwater pollution occurring. Further detailed information on groundwater impacts will be made available in due course.

Landscape Impact

Our airport is located in a Landscape Character Area (LCA) defined as the Central Chalk Plateau. Within this LCA particular care must be taken to avoid skyline intrusion and the loss or interruption of long views of the coast and the sea (Local Plan policy CC2). Although policy CC3 'Local landscape features' has been deleted, consideration should still be given to safeguarding valuable landscape character and features. Where development proposals conflict with these principles it must be demonstrated that it is essential for the economic or social well-being of the area.

Our airport is an existing feature within the Central Chalk Plateau LCA and as such, a certain amount of development is to be expected through the airport's permitted development rights. Nevertheless, the quantum and form of development proposed is likely to be significant and should be assessed in terms of its impact on the surrounding landscape setting.

It is envisaged that development at our airport will respect the existing landscape character of the area, whilst being sufficient in form, scale and mass to meet our existing and anticipated operational requirements. The layout and design of development will take into consideration the topography of the site and surroundings to minimise any adverse visual impact.

The landscape impacts of development at our airport will be assessed as planning applications are submitted in the future.

Other Planning Policies Related to Our Airport

Island Approach Routes

An Island Approach Route designation runs through the south east section of the our airport, parallel with the A299. While now deleted, planning policy CC4 'Island approach route' sought to protect the visual and environmental quality of major approach routes and generally resist development that was unable to make a positive contribution to the environment of these routes.
The principles of this former policy continue to be considered through the Master Plan.

Built Heritage & Archaeology

There are no listed buildings or scheduled ancient monuments (SAMs) located within our boundary, however, there are both in close proximity. The Laundry Road SAM is located on open agricultural land to the south of Canterbury Road West and an Anglo-Saxon cemetery is located to the east of the roundabout junction between

the A299 Canterbury Road West and the A253 Canterbury Road. Six buildings in the village of Manston are listed. There are also a number of military structures located within the airport boundaries that are referred to in the Defence of Britain database. None of the airfield buildings are currently listed.

Although local plan polices HE1 'Listed buildings of special architectural or historic interest' and policy H10 'Protection of scheduled ancient monuments' have been deleted, subject to the requirements of PPG15, PPG16 and the South East Plan, built heritage features must be safeguarded and their special character or setting protected.

The Master Plan has taken into consideration the built heritage environment and development proposals will seek to ensure that they do not have an adverse impact on any protected features. Where necessary, development proposals will provide mitigation measures to safeguard significant below ground archaeological sites within the airport boundary. Measures will be taken to minimise impacts on designated sites beyond the site boundary in terms of vibration and noise. Cultural and built heritage features are considered further in section 6 of our Master Plan.

Wildlife & Natural Habitats

Our airport is not subject to any statutory environmental designations. The nearest area of major environmental significance is Pegwell Bay, which is subject to a number of European designations (Special Protection Area, Site of Scientific Interest, Ramsar site, National Nature Reserve and Important Bird Area). The Thanet Bay Ramsar site, the Thanet Coast and Sandwich Bay Special Protection Area (wild birds and their habitat), the Sandwich Bay Special Area of Conservation (rare and endangered species) and the Sandwich Bay to Hacklinge Marshes Site of Special Scientific Interest are also designations of significance which have been considered.

While there are no statutory designations present at our airport, the impact of development on local biodiversity features and the European designations at Pegwell Bay has been considered in the Master Plan. Development proposals will seek to minimise adverse impact on environmental features of significance and, where necessary, mitigation measures will be proposed to offset any adverse impacts.

This approach is consistent with guidance provided by PPS9 Biodiversity and Geological Conservation. Further information on this issue is provided within section 6 of our Master Plan.

Renewable Energy

PPS22: Renewable Energy identifies that there are opportunities to incorporate small scale renewable energy technologies in new development and existing developments. Potential technologies include solar panels, biomass heating, small scale turbines, photovoltaic cells and combined heat and power schemes. Thanet Local Plan policy EP14 sets a positive policy framework for the development of renewable energy schemes, subject to balancing environmental impacts,

however there are no policies requiring a proportion of a new development's energy needs to be meet through on site renewable energy technologies. Despite this, the airport will seek to incorporate onsite renewable energy technologies for new development proposals where feasible and appropriate to do so.

Sustainable Development in Rural Areas

PPS7: Sustainable development in rural areas provides broad support for economic activity in rural areas, such as the growth of the airport and associated development. It seeks to establish a positive policy framework for the future expansion of business premises, to facilitate healthy and diverse economic activity in rural areas. The growth of our airport will act as a catalyst for the growth of the local and sub-regional economy.

Economic Growth

PPG4: Industrial, commercial development and small firms acknowledges that industry and commerce have always sought locational advantage in response to various external factors and that businesses give high priority to "good access to roads, and sometimes rail, airports and ports". Draft PPS4 (December 2007), which will eventually supersede PPG4, identifies that local planning authorities should "encourage economic growth". Transport uses such as airports are included in the list of economic development and both development plans and development proposals should take into consideration the benefit of co-locating these developments.

The development plan recognises that aviation related growth at our airport will bring positive benefits to the local, and wider Kent economy. This is further reflected in the Regional Economic Strategy 2006-2016.

A Framework for Sustainable Prosperity (RES). While the RES does not make specific reference to our airport, it acknowledges that it is both a "gateway" and "regional airport" (RES, p43). It also states that major airports in the South East, such as Southampton, Gatwick and Heathrow, make a major contribution to the region's economy.

Our airport is located within an area broadly defined by the RES as "The Coastal South East". This area is characterised by concentrations of economic inactivity, more traditional industrial activities, a low proportion of employment in the knowledge based sectors and relatively poor infrastructure and connectivity. To maximise the economic potential of The Coastal South East the RES establishes a number of key priorities, which will underpin a coastal strategy in due course. A number of these objectives are listed below:

- To support enterprise and stimulate the creation of a wide variety of business;
- To provide employment land through the redevelopment of brownfield land and refurbishment of existing stock to provide flexible employment space;
- To invest in the long-term sustainable growth of key ports; and
- To improve connectivity along the coast with key hinterlands and London.

The role of the South East regional as a main gateway to Europe and the global economy is further strengthened through the RES Annual Monitoring Report (October 2008), which states that the South East's transport network requires "significant investment in order to maintain the competitiveness of both the regional and national economies" (Box T4: Key Messages).

Growth at our airport will contribute towards meeting these objectives and maximise the economic potential of the Coastal South East. Job opportunities will be created in a range of aviation related sectors, many of which will be available to people living in the surrounding area, or within reasonable commuting distance.

Development proposals will provide new skilled jobs and are well placed to capitalise on the expanding employment linkages located nearby. Significantly, growth at our airport will enhance its role as a key facility and improve road, rail and air connectivity in this part of Kent.

Manston Business Park employment area is located immediately to the north of our airport and has been a consideration in the assessment of the future growth potential of the airport. Kent County Council and Thanet District Council have identified Manston Park as a primary inward investment site for the district where employment uses could provide a focus for retaining skills within Thanet.

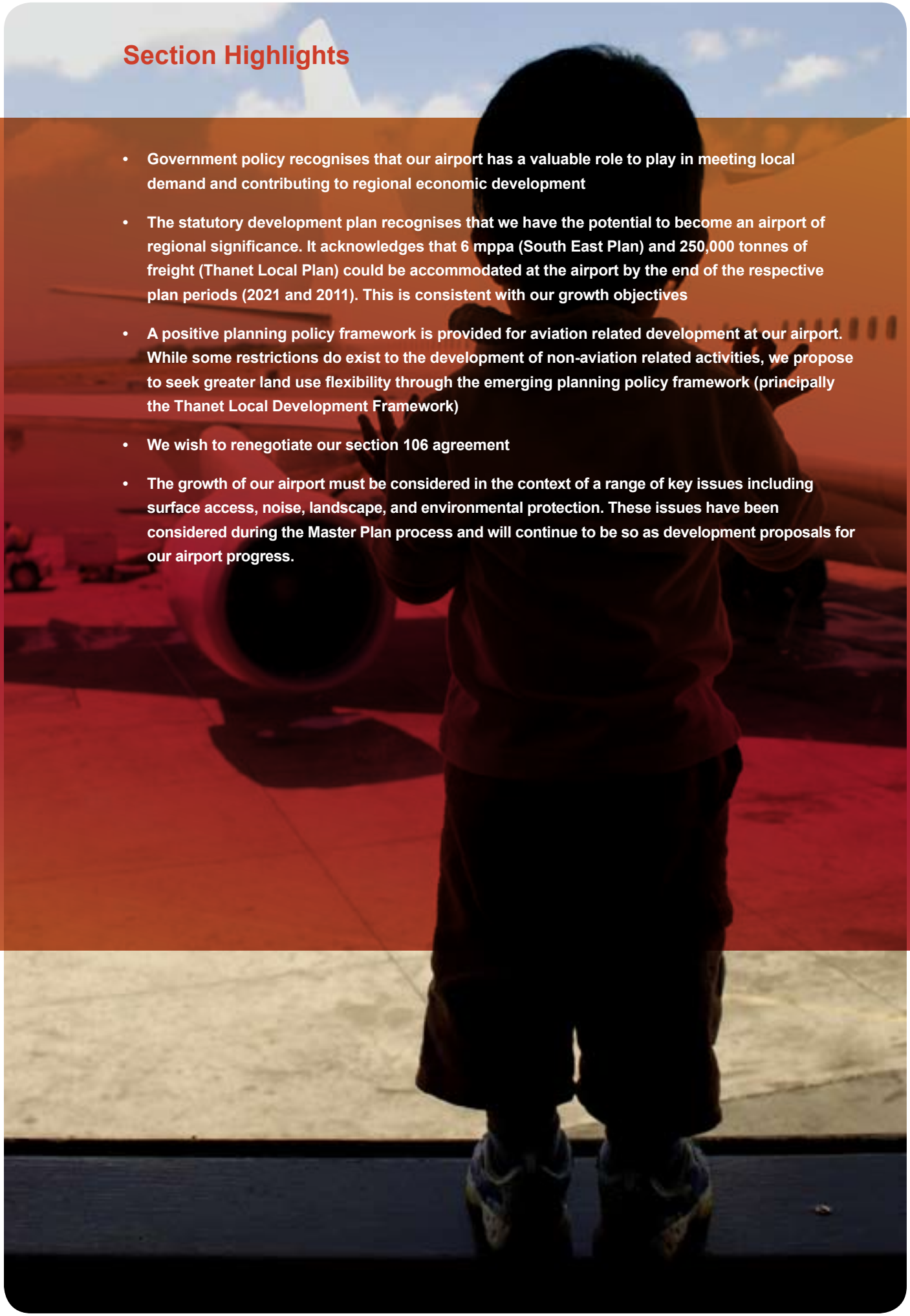
Development at our airport has the potential to stimulate employment growth at Manston Park, particularly through the growth of freight processing, storage and distribution uses.

In March 2008 a planning application (including indicative master plan) was submitted to Thanet District Council by Chinamex and CGP for the development of a significant part of the Manston Park site. The phased proposal, known as China Gateway, includes 325,158m^2 of B1, B2 and B8 commercial floorspace and aims to provide high quality commercial development in a manner that respects the surrounding area whilst providing substantial economic benefits to the local, regional and national economy.

Our airport is a key transport hub in this part of Kent and its role is set to increase as planned growth occurs. It is acknowledged that Manston Park and our airport have the potential to develop at a much more substantial rate than previously envisaged [9] and that synergies between the two uses exist.

Our Master Plan considers these synergies, primarily in terms of new road infrastructure and development layout and recognises that together our airport and Manston Business Park have the potential to form a regional transport hub and significantly stimulate economic growth in the region.

9 Thanet District Adopted Local Plan, adopted 17th June 2006



Section Highlights

- Government policy recognises that our airport has a valuable role to play in meeting local demand and contributing to regional economic development
- The statutory development plan recognises that we have the potential to become an airport of regional significance. It acknowledges that 6 mppa (South East Plan) and 250,000 tonnes of freight (Thanet Local Plan) could be accommodated at the airport by the end of the respective plan periods (2021 and 2011). This is consistent with our growth objectives
- A positive planning policy framework is provided for aviation related development at our airport. While some restrictions do exist to the development of non-aviation related activities, we propose to seek greater land use flexibility through the emerging planning policy framework (principally the Thanet Local Development Framework)
- We wish to renegotiate our section 106 agreement
- The growth of our airport must be considered in the context of a range of key issues including surface access, noise, landscape, and environmental protection. These issues have been considered during the Master Plan process and will continue to be so as development proposals for our airport progress.

3. Our Past and Present

Our History

Aircraft activity began at Manston in 1915 when military aircraft used the site for emergency landings, and shortly after it was established as an Admiralty Aerodrome. Soon after this the Operational War Flight Command and the Handley Page Training School were established.

Our airfield was extensively used during World War II, notably to test bouncing bombs at Reculver and by Hawker Typhoon and Meteor squadrons. The airport was also the set off point for the famous Channel Dash mission. Its location in East Kent meant it was critical during wartime operations as the first airport available for damaged aircraft returning home from Europe.

In the 1950s the United States Air Force (USAF) used Manston as a Strategic Air Command base for its fighter and fighter-bomber units. The USAF withdrew from Manston in 1960 and the airfield became a joint civilian and RAF airport.

From 1989 Manston became known as Kent International Airport and a new terminal was officially opened that year. In 1998 the Ministry of Defence announced plans to sell off RAF Manston.

In 2004 works began to make our airport a low cost airline hub and Irish airline EUJet began scheduled flights in September 2004 to a number of destinations across the UK. EUJet operated flights from Sept 2004 until July 2005 and in their busiest month carried 62,709 passengers. If the airline's operations had been continued, this would have equated to approximately 753,000 passengers per annum. Importantly these relatively high passenger numbers were achieved over the winter period, which is normally quieter than the summer period.

Infrastructure was developed at the airport to support this growth; however, in July 2005 all EUJet operations were suspended along with all non-freight operations because of financial difficulties with the airport and airline's operating company.

The airport was purchased by Infratil in August 2005 and since then we have been actively improving basic infrastructure and facilities. Our airport is now equipped with safe, compliant and reliable systems and equipment.

Our airport is equipped with a range of facilities. Upgrades have been made to a number of these including airfield radar, high and low voltage electricity systems, back-up electricity generators, airfield ground lighting, rescue fire equipment and others. Flight path monitoring and recording is not a requirement but is likely to be introduced as traffic volumes increase.

Current Passenger and Freight Volumes

Our airport has not had significant passenger traffic since EUJet flew over 400,000 passengers from Kent in 2004 / 2005. Flybe, Europe's largest regional airline launched

its inaugural service from Manston in 2009 and currently operates scheduled flights between our airport and the channel island of Jersey. Charter flight destinations include Malta, Italy, Austria and Croatia with services to these holiday hotspots offered during the summer months. Passenger numbers have varied in recent years and currently do not exceed 10,000 per annum.

Our airport is a highly specialised freight handler, processing around 32,000 tonnes of freight per year (approximately 435 freight aircraft movements per year). The majority of freight handled consists of imported perishable produce from Nairobi in Kenya and Accra in Ghana. These time sensitive shipments utilise aircraft such as the Boeing 747-400 and the Airbus A300.

This Master Plan explains how we plan to develop our airport to meet the exciting growth opportunities within both freight and passenger markets.

Other Aviation Activities

General aviation aircraft regularly operate from our airport with several privately owned aircraft based at Manston. These offer pilot training, local sightseeing flights and are used for private operations. A range of privately owned larger aircraft and small to medium sized jet aircraft also frequent our airport. The airport provides users of these aircraft with a gateway to Kent and beyond. Commercial airliners also use our airport for crew validation flights, often referred to as training flights.

In addition to regular air freight, we often handle equipment for large concerts and other time critical airfreight consignments. Recent examples include stage equipment for the Spice Girls Reunion Tour, Sting and Bruce Springsteen. Bob Geldof's equipment took off from our airport to help the Band Aid Famine effort in Africa in the mid 1980s.

Our Airport Today

This section outlines the current aspects of the airfield and operational facilities of our airport. The existing layout of our airport is provided in Plan 2.

Runway and Taxiways

Our airport has a single runway. It is 2,752 metres long and 61 metres wide and was recently resurfaced and remarked. It has a general west / east orientation. Our runway has sufficient capacity for the number of aircraft movements anticipated for the duration of this Master Plan.

A total of five taxiways connect to the runway, designated alphabetically as Alpha, Bravo, Charlie, Delta and Echo. Alpha taxiway is incorporated into the northern edge of the runway, taxiways Bravo, Charlie and Delta provide access to / from the passenger apron, and taxiway Echo provides access to / from the runway and the freight apron.

Aprons

There are two main aprons at our airport. The first is the passenger apron, capable of accommodating four Code C aircraft [10] or three Code E aircraft [11]. The freight terminal

10 Examples being Boeing 737 and Airbus A320 type aircraft.
11 Examples being Boeing 747 and Airbus A340 type aircraft.

apron and standing is located adjacent to the B2050 and is capable of holding a number of aircraft in different configurations depending on aircraft type. It is also possible for freight aircraft to share the apron adjacent to the passenger terminal.

Passenger Terminal Facilities

There is one passenger terminal facility at our airport. This is located to the west of the main car park and to the south of the B2050. The terminal contains check-in, security, waiting areas, customs and immigration inspection services and the arriving and departing passenger baggage processing facilities.

Flights to our airport currently occur on an infrequent basis and the existing passenger terminal has capacity to accommodate all of the scheduled flights.

Although our passenger terminal has accommodated over 60,000 passengers per month, as passenger throughput increases it will be necessary to incrementally expand the passenger terminal facilities. The capacity of the existing terminal is around 1mppa subject to the aircraft used and scheduling arrangements.

Aircraft Maintenance

The airport hosts two aircraft maintenance hangars which service MD80, DC10, DC8 and general aviation aircraft. Other aircraft types also use our airport from time to time for ad hoc maintenance activity.

Airspace

Our airspace is outside the London Control Zone, but due to our geographical location, aircraft often pass high over the airport on their way to / from the UK and Europe.

Our airport operates in Class G [12] airspace. As passenger services increase this airspace category will be reviewed and will eventually be designated controlled airspace when appropriate. Controlled airspace will be applied for once scheduled passenger operations become established. The availability of controlled airspace is not an impediment to the proposals outlined in the Master Plan.

We control the airspace 2.5 nautical miles around our airport and up to a height of 3000 feet. As the airport grows we envisage that the controlled airspace area will be extended.

Our air traffic control tower is located on the airfield near the intersection of taxiway Charlie and the runway.

A Category 1 Instrument Landing System (ILS) is installed on Runway 28. Runway 10 is serviced by a localiser facility and non-directional beacon (NDB). There is no minimum requirement for ILS systems. ILS systems will be upgraded on both runways when required.

A Direction Finder (DRDF) [13] operated by the Ministry of Defence is located to the south west of the existing freight facilities and is used by Air Traffic Control as an additional aid to indicate the direction of an aircraft's location relative to the airfield.

12 Class G airspace is uncontrolled airspace. It is the least restrictive and least controlled type of airspace and the pilot has a high degree of responsibility for maintaining aircraft separation.

The Digitally Resolved Direction Finder (DRDF) receives signals in the UHF and VHF frequency band ranges and uses the Doppler effect to determine the bearing of the transmitting station or aircraft relative to the facility position. The calculated bearing is then displayed to the Air Traffic Controller for use in establishing the position of an aircraft.

Aviation Fuel Storage

Our primary aviation fuel depot is located to the north of the passenger terminal and the B2050. The secondary aviation fuel depot is located to the northwest of the B2190.

Fuel is currently transported from the nearby Isle of Grain facility to the airport by road tanker. Fuel is transported to the aircraft by fuelling vehicles from our fuel compounds.

There is not sufficient capacity, nor is there sufficient environmental protection, at our existing fuel compound to accommodate the anticipated fuel storage requirements for our Master Plan period. Upgrade options and alternative sites are being investigated for a new, purpose built, fully bunded facility.

Fire Station

Our airport has a fire station located to the east of the Air Traffic Control Tower.
The requirements for Rescue Fire Fighting capability have been developed and are stipulated by the International Civil Aviation Organisation (ICAO). The required standard is based upon the largest aircraft size operating at the airport and is known as the Aerodrome Rescue and Fire Fighting (RFF) Category.

The airport fire service currently operates up to Category 9 capability (available upon request). Category 9 Rescue Fire cover meets the standard required for the hosting of large wide bodied passenger aircraft such as the Boeing 747-400.

Existing Surface Access

Roads

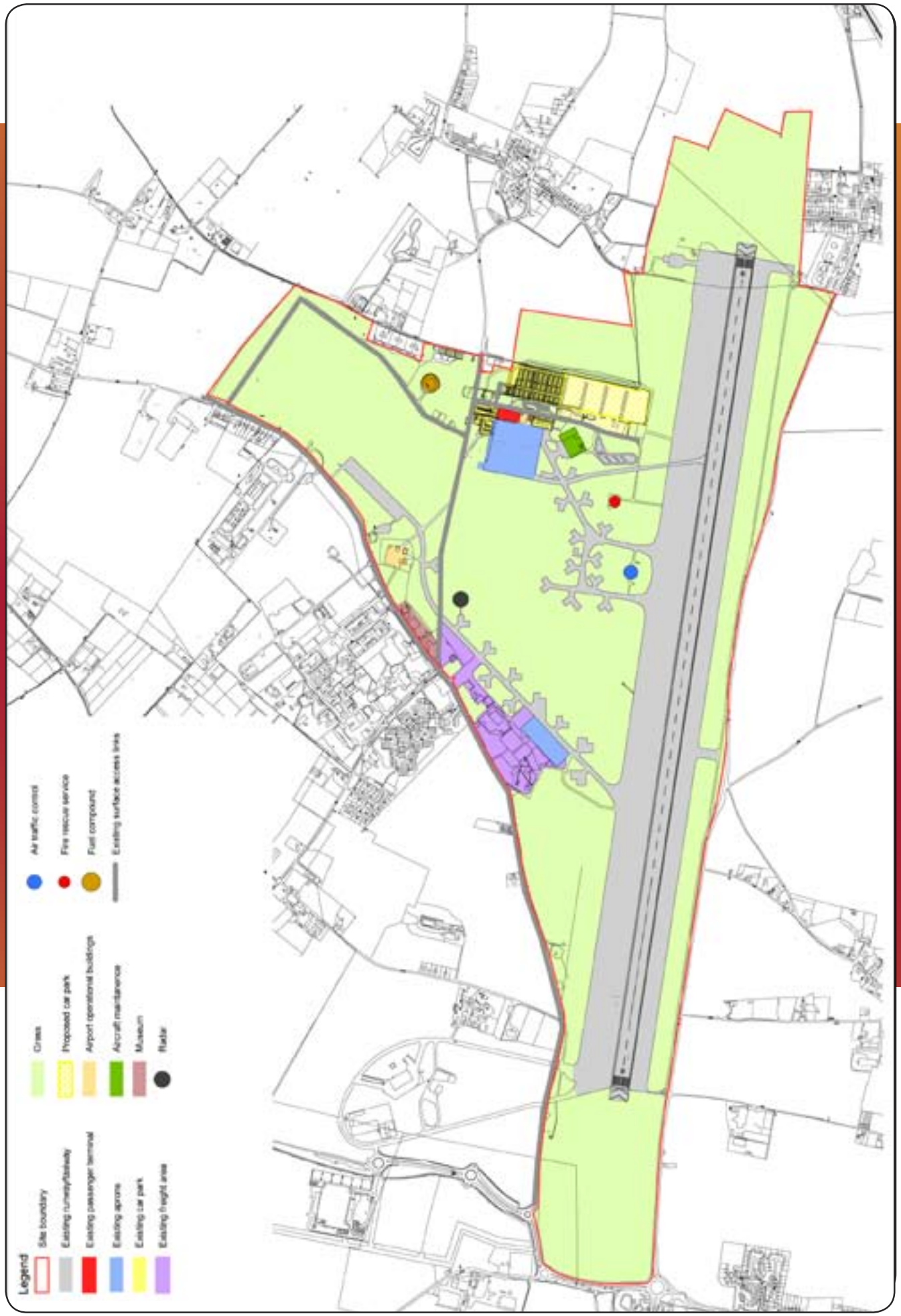
Strategic highway access to our airport is gained from the A299 corridor which connects the M2 motorway, approximately 30km west of the airport, with Ramsgate, approximately 5km east. The A299 is a dual carriageway with two lanes in each direction to the west of the airport providing a direct link to the M2 / M25, and single carriageway to the east towards Ramsgate.

The M2 provides onwards access to Medway, the M25 and thereafter London via the A2 corridor. It also provides good links to the M20 motorway at Maidstone via the A299 and A249 dual carriageways.

Further links are established between our airport and Canterbury via the A28 which continues to Ashford and the M20, and also to Dover via the A256 bypassing Sandwich en route. The A256 is currently a mix of dual and single carriageway and is the subject of a programmed upgrade in the vicinity of the airport. To the north east the A256 provides access to Broadstairs and Margate.

At a more local level direct access is gained to our existing airport car park and terminal from the B2050 Manston Road. This route

13 The DRDF will need to be relocated in due course as it is close to the location of a safeguarded future parallel taxiway (see plans on page 58 and 59).



Plan 2.: Manston Airport Existing Context

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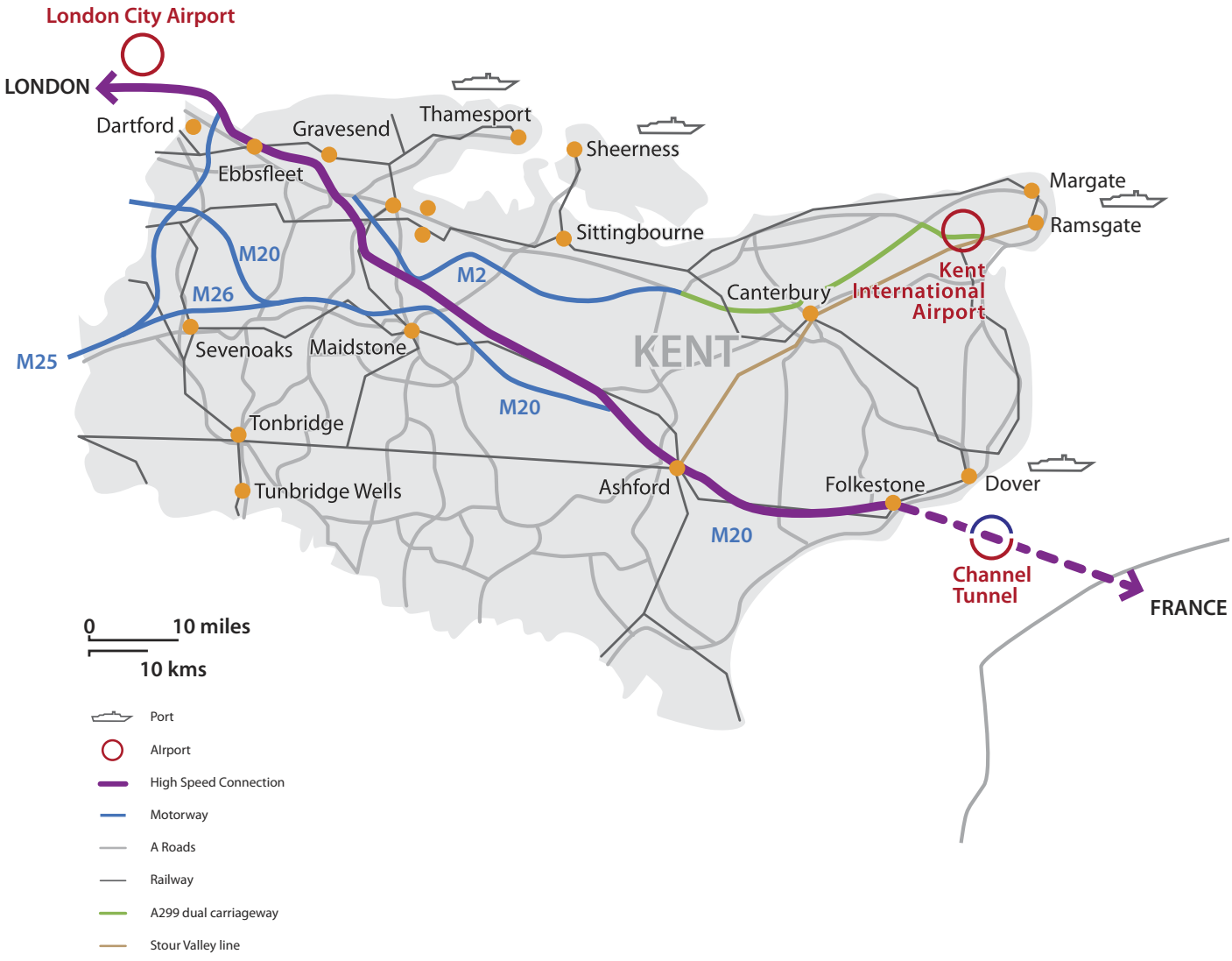
provides a connection to the A299 corridor via the B2048 Minster Road and also serves Manston Business Park.

Whilst access to the airport is possible from the east via Manston Road, this is discouraged through the use of traffic calming features within Manston village. Further local routes provide means of access to the airport although their use would generally rely upon local knowledge.

In summary, our airport has established links with the local and strategic highway network. The airport is highly accessible from local settlements within Thanet using local routes and further afield within Kent and beyond using the strategic links available.

Diagram 1: Local Transport Network Diagram



Car Parking

Existing parking provisions at our airport have been increased in recent years and now approximately 1,100 parking spaces are available to both staff and passengers. The parking area is located to the east of the airport and is directly accessed from the B2050 Manston Road. A second phase of car park expansion for approximately 1,000 spaces is proposed subject to meeting the requirements of the planning permission, which was gained in January 2003.

Buses

Our airport is served directly by bus services operated by Eastonways, which pick up and drop off immediately outside the terminal building. A bus turnaround facility is provided on site.

The number 38 / 38A / 38B bus services call at the airport on an hourly basis between 0700 and 1700 during Monday to Friday.

These services operate between Margate and Birchington and include direct links to Broadstairs and Ramsgate rail station in addition to many of the other settlements en route. On Saturdays the services are hourly between 10am and 2pm.

Taxis

There is currently a dedicated taxi drop off area near to the front of the terminal building and this is provided on the same loop road as the general public drop off point. Our website provides information with respect to local taxi services.

Rail

There are two primary rail routes into Thanet, both terminating at Ramsgate. The first originates from Victoria Station and the second originates from Waterloo East and Charing Cross Stations.

Ramsgate station is located approximately 5km to the east of the airport. This station has two covered platforms and offers approximately 75 parking spaces and covered cycle racks. An Eastonways bus service provides a connection between the station and the airport with a journey time of approximately eight minutes.

Rail services to and from Ramsgate are operated by Southeastern Trains with existing services to London taking approximately 1 hour and 45 minutes. Trains from London arrive at Ramsgate approximately every 15 to 30 minutes during the day.

Further rail stations are located at Minster, approximately 2km to the south, and Birchington, approximately 5km to the north. Services from London to Birchington take approximately 1 hour and 30 minutes and arrive at Birchington approximately every half hour during the day. Train services from London to Minster are less convenient and vary in duration from approximately 1 hour and 45 minutes to 2 hours and 15 minutes. Trains arrive at Minster approximately every half hour throughout the day.

Rail services to our airport will benefit from the commencement of the UK's first high speed domestic rail service by the end of

2009. The new service, dubbed High Speed 1 (HS1) will utilise track improvements and new fast trains to significantly reduce journey times. The HS1 project is primarily targeted at reducing the journey times on the London to Dover route and will benefit services to Ramsgate with track upgrades on the London to Ashford section of the journey. The high speed trains will be maintained overnight at the Ramsgate depot, and this has led to further improvements to Ramsgate services and additional track upgrades on the Ashford to Ramsgate section of track.

The high speed services will reduce journey times by a third, with the Ramsgate to London trip length reduced from an average of 128 minutes to 75 minutes. This service will be a huge step forward and will be significant for the long term development of passenger services from our airport. There is further potential for service improvement on the Ashford – Ramsgate section of track and in time, we expect that the journey from our airport into London by train will be made in less than an hour.

Cycle Access

Our airport is not currently served by dedicated cycle routes and therefore cyclists wishing to access the airport do so using the local highway network. However, the Thanet Cycling Plan identifies a series of proposals to provide cycle links within Thanet that would link our airport with neighbouring settlements.

Our Contribution to the Economy

With some 1.4 million inhabitants, Kent is the UK's most populous county. It is also a prosperous area with a workforce of 780,000 and an unemployment rate of 2% [14]. Its economic success can be attributed to its ability to attract world class companies and also its thriving tourism industry. Kent also has significantly lower office rental costs than London. However, despite these positive attributes, only four of Kent's districts are amongst the top 25% in the UK for average earnings and unfortunately pockets of deprivation do exist [15]. A diverse range of existing businesses provide the county with external economies of scale, which are capable of supporting future business growth.

Policy EKA6 of the South East Plan identifies that local planning authorities should give priority to the completion of major employment sites at locations within Kent, including Thanet and that, while major new employment locations are not currently needed within Thanet, any major investment proposals that come forward should not be ruled out (paragraph 18.38). Our airport has the potential to function as a gateway and catalyst for economic growth, with manufacturing, transport, aviation and marine engineering identified as key sectors for inward investment during the plan period.

Thanet has an unemployment rate of 3.6% [16], which compares poorly with the overall Kent average. In addition 12% of Thanet's Super

14 Locate in Kent, www.locateinkent.com
15 Former Kent and Medway Structure Plan, adopted July 2006.
16 Thanet Economic Growth and Regeneration Strategy, Thanet District Council.

Output Areas [17] fall within the top 10% of the most deprived of such areas in England.

Key economic growth objectives for East Kent and Thanet are set out in the Regional Economic Strategy 2006-2016 A Framework for Sustainable Prosperity. Similar objectives are also contained within the Local Plan. The South East Economic Development Agency (SEEDA), Kent Partnership and the East Kent Partnership, in conjunction with the County and Local Councils, are responsible for delivering these objectives.

As highlighted in section 2 of this Master Plan, the main objectives of the Regional Economic Strategy are to:

- Support enterprise and stimulate the creation of a wide variety of business;
- Provide flexible employment space;
- Invest in the long term sustainable growth of key ports; and
- Improve connectivity within the region and with London.

Similar objectives are promoted through the Kent Partnership and East Kent Partnership. These include:

- Securing infrastructure investment for better road, rail and aviation use;
- Promoting investment, business and job opportunities at Kent's main airports;
- Creating a competitive and diverse economy;
- Attracting high quality business and investment opportunities; and
- Establishing Kent's global and European profile as an international gateway, visitor destination and county of enterprise.[18]

The development plan promotes similar objectives to the Thanet and East Kent Partnerships. There is a specific focus on improving the prosperity of the area, attracting inwards investment and improving connectivity. Capitalising on tourism is also a key objective.

The development plan provides a positive policy framework, recognising that the growth of the airport has the potential to boost the economy [19]. Given this positive framework, the proposals for growth at our airport should balance against the potential impacts on surface access and other local environmental features.

The growth of our airport through the Master Plan period will contribute towards the economic development objectives outlined above primarily in terms of employment generation, enhanced business opportunities and improved connectivity within the region and the wider UK.

17 A geographical hierarchy designed to improve the reporting of small area statistics in England and Wales.

18 Kent Prospects 2007 to 2012, Kent Partnership and East Kent Partnership Strategy 2005-2015.

19 South East Plan policy EKA5 and paragraph 18.31 and Local Plan policy EC2.

Employment Opportunities

When forecasting employment growth that may be generated by the proposals it is necessary to consider four employment categories:

- Direct: employment directly related to the operational airport;
- Indirect: employment resulting from the local chain of suppliers to firms directly involved in the airport's operation;
- Induced: employment arising locally through the personal expenditure of those employed either directly or indirectly; and
- Catalytic: employment created by opportunities for influencing business location decisions and attracting inbound tourism, both businesses and leisure, to the region.

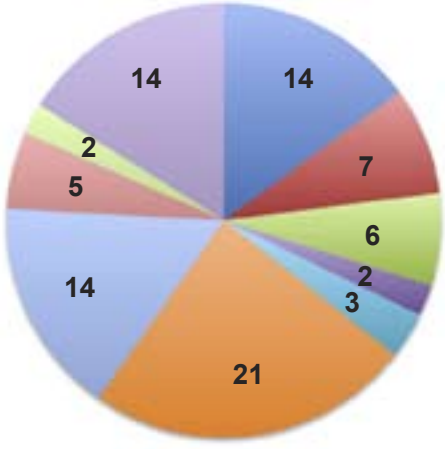
We currently employ around 100 people on a full time (FTE) and part time (PTE) basis to manage and operate our airport. The majority of our employees live in Thanet. The breakdown of employment sectors and employee numbers at our airport is provided in table 1 and chart 1.

Employment opportunities at our airport include a range of highly trained airside staff such as Electrical Engineers, Air Traffic Controllers, Rescue Fire Fighters, Aircraft Ground Handlers and Airport Operations Staff. The business also supports Administrative staff in all areas such as Finance and Human Resources, Customer Services Professionals and the Airport Management Team.

Our total gross payroll is approximately £2,350,000 per annum. The number of people employed at the airport will increase as growth occurs and operations intensify. The following graph shows the general trend between airport passenger numbers and staff employment observed at other UK airports.

Table 1 & Chart 1: Breakdown of existing full time direct employment at KIA

Department	Employees
Air Traffic Control	14
Engineering	7
Airfield Operations	6
Customer Services	2
Management / Administration	3
Fire Service	21
Aircraft Handling	14
Fuel Services	5
Motor Transport	2
Security	14



People are also indirectly employed at our airport. We currently contract services from approximately 120, mostly local, companies. Ten of these are aviation specific and the remainder include services such as coach and taxi firms, general maintenance supplies, administrative and information technology support and accommodation.

We lease land within the airport to both aviation and non-aviation related businesses. The names of these companies and the number of full time and part time employees are provided in table 2. There are some companies that operate at our airport with no full time staff based on site.

A number of these aviation businesses rely on our airport to operate. As the airport grows these businesses may also wish to expand to take advantage of the new opportunities that exist. Other aviation related companies might also wish to establish themselves at our airport.

These companies are likely to employ people who live locally and will potentially offer a range of semi and skilled employment opportunities.

Further employment opportunities at our airport could contribute towards reducing the unemployment rates within East Kent and Thanet.

Table 2: Companies at our airport

Company name	FTE	PTE
Brockmans Travel	3	0
Avman Aircraft Engineering	15	0
HM Revenue and Customs	4	0
RAF History Museum	20*	0
Snax Group	2	1
Special Branch Police	1	0
Spitfire and Hurricane Museum	4	2
T G Aviation Ltd	12	0
Polar Helicopters	2	0
Church Communities	0	0
Kent Ambulance	0	0
Met Office	0	0
Sky Charter UK Ltd	0	0
Taft International Transport	0	0
TOTAL	**79**	**3**

(* voluntary)

Indirect, off-site businesses, such as haulage companies, taxi firms and bus / coach companies will benefit as demand for their services increases in line with forecast passenger and freight growth.

As demand for these services further increases, local employment opportunities will become available and people will move to the area. A significant influx of people will support services and facilities within the nearby settlement areas.

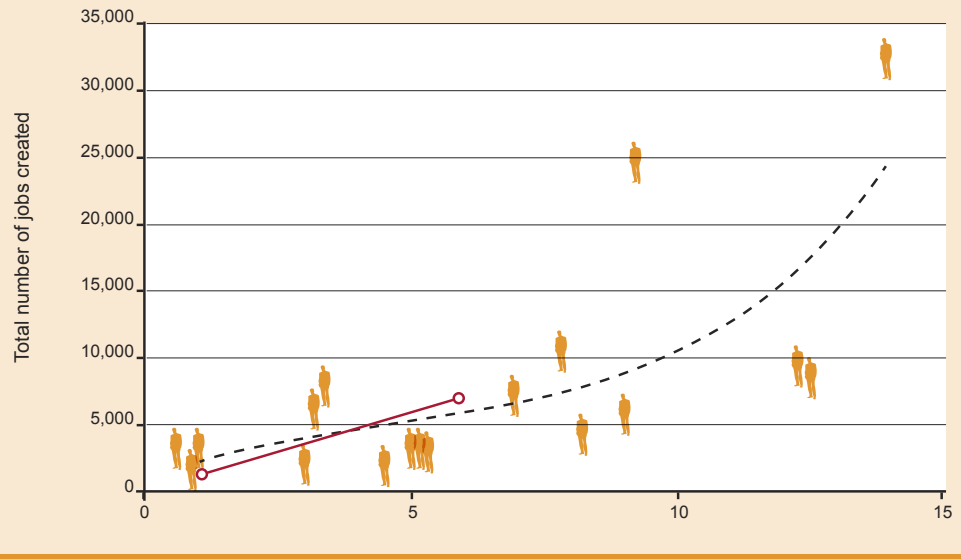
Contribution to the Local Economy

We currently pay typical business rates to the council to operate our airport. These rates contribute towards the cost of local authority services such as the police and fire service.

Business rates are calculated in terms of a rateable value. This value is based on factors such as the size of the premises and how they are used. As throughput at our airport grows and the size of our airport facilities increase, we expect to pay higher business rates. These payments contribute towards the provision of essential services within Thanet.

Our airport contributes towards the local economy in terms of Gross Value Added (GVA) [20]. Each business that is directly and indirectly employed by our airport also contributes in terms of GVA. As activity at our airport increases the GVA contribution will also increase.

Number of passengers vs number of jobs created 2002–2030

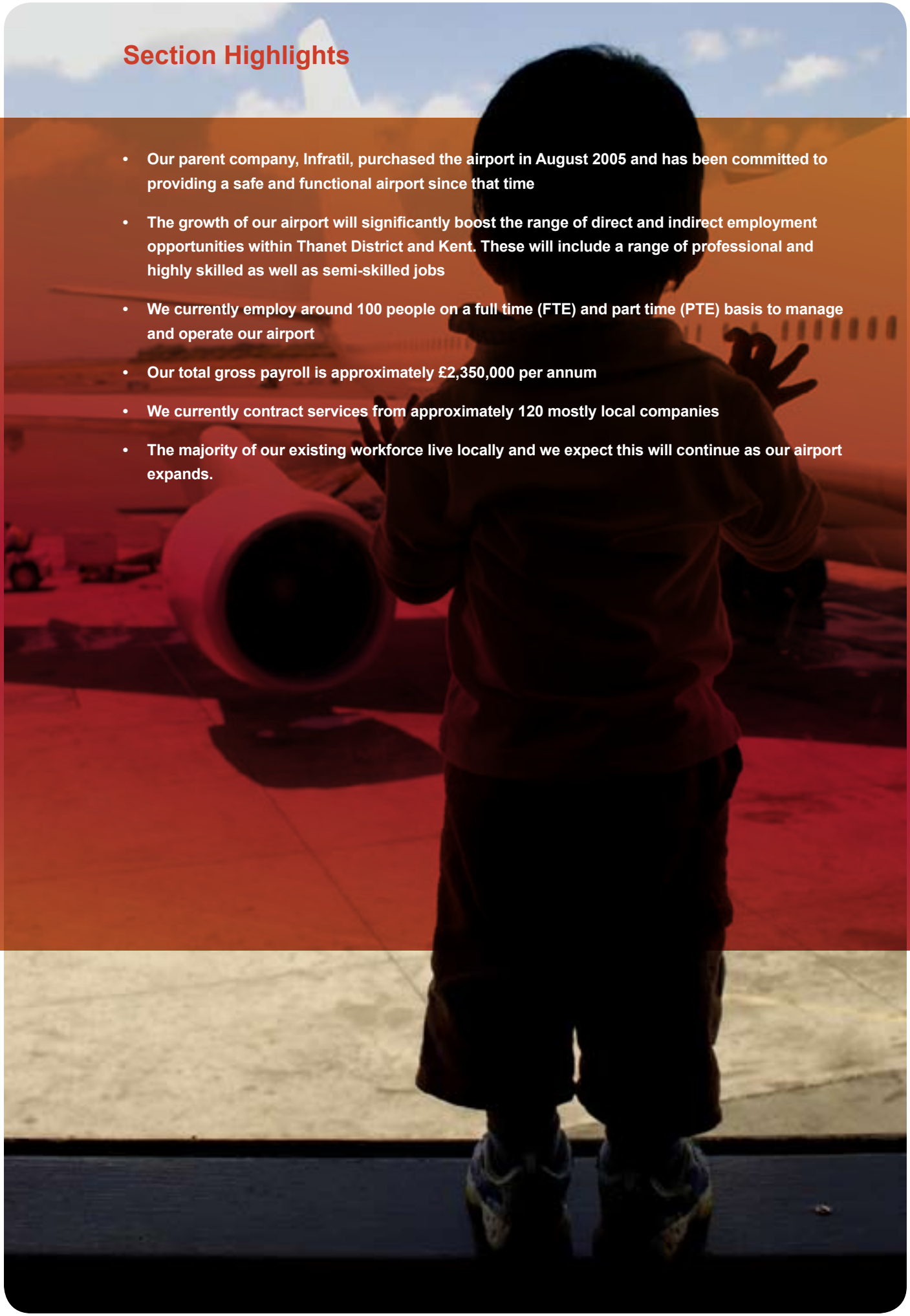


Number of Staff Employed at other UK Airports

Number of Staff Employed at our Airport

Trend of Number of Staff Employed at other UK Airports

20 GVA measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom.



Section Highlights

- Our parent company, Infratil, purchased the airport in August 2005 and has been committed to providing a safe and functional airport since that time
- The growth of our airport will significantly boost the range of direct and indirect employment opportunities within Thanet District and Kent. These will include a range of professional and highly skilled as well as semi-skilled jobs
- We currently employ around 100 people on a full time (FTE) and part time (PTE) basis to manage and operate our airport
- Our total gross payroll is approximately £2,350,000 per annum
- We currently contract services from approximately 120 mostly local companies
- The majority of our existing workforce live locally and we expect this will continue as our airport expands.

4. Our Vision for Growth

Our vision for our airport is to develop passenger and freight throughput and to establish the airport as an important regional transport hub within the South East of the UK.

We envisage that the growth of our airport will develop wider economic growth within East Kent and Kent, acting as a key transport hub to destinations across the UK and Europe.

Growth will occur in a planned and environmentally considerate manner and will take into consideration the views of the surrounding community and key stakeholders and decision makers. The Master Plan represents the likely future of the airport having taken the relevant risks and opportunities into account.

This Master Plan seeks to establish the framework for growth at our airport and a number of planning applications will be submitted in due course.

Our Passenger Growth Vision

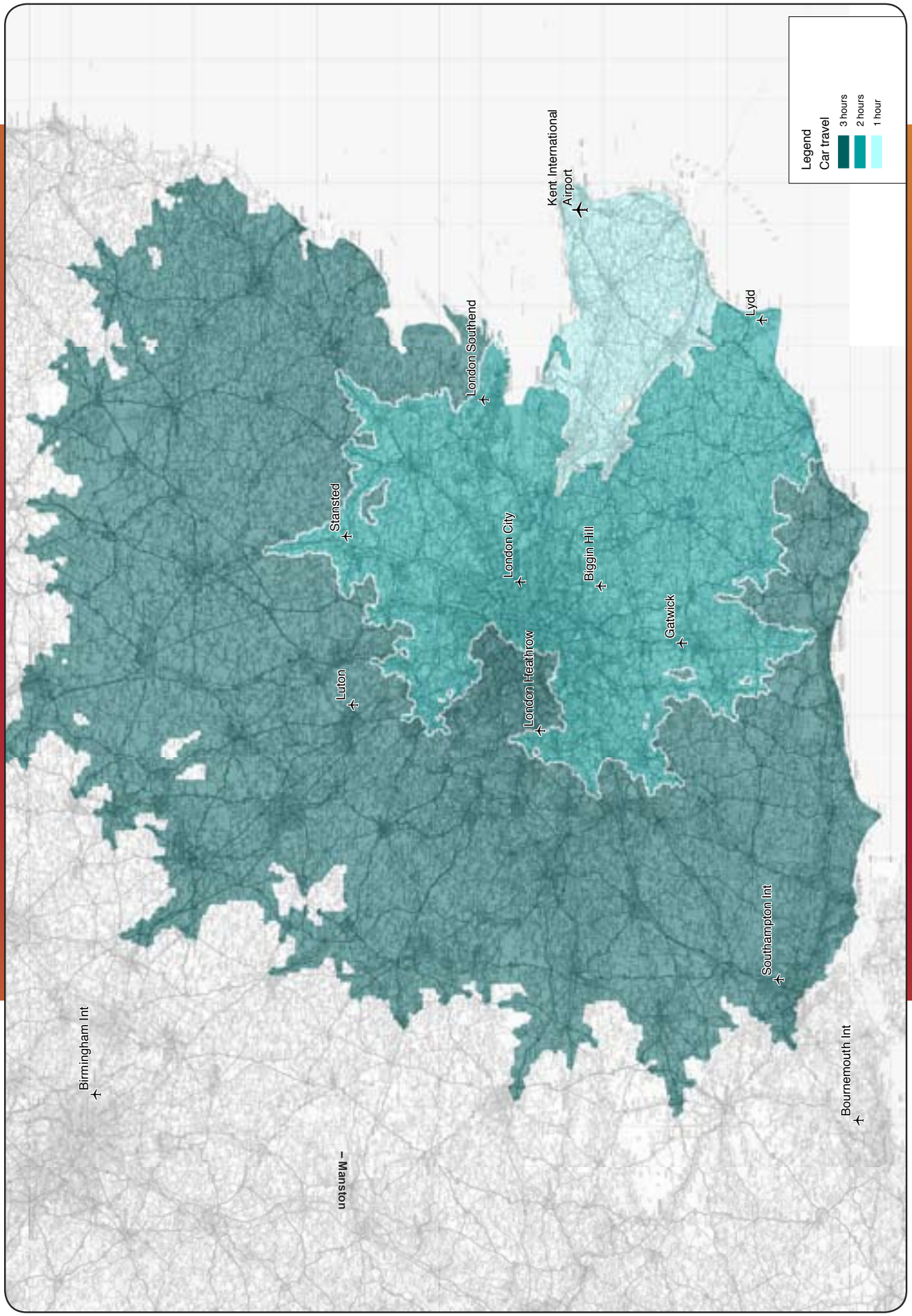
Kent, the most populous county in the UK with 1.4 million inhabitants, does not currently have an airport with regular scheduled passenger services.

Our vision is for our airport to have regular services linking it to key business and leisure markets. A network of services to key destinations will stimulate the growth of Kent businesses, bring tourists directly into the county and enhance the quality of life of residents by providing more convenient connections for business, holidays and for visiting friends and family elsewhere.

Our airport has not been successful to date in attracting airlines to offer year round scheduled services. We have considered, however, the following factors in forming the view that the growth indicated in this Master Plan is realistic and achievable:

- The catchment for our airport is large;
- People within out catchment travel regularly using other airports in the South East;
- The South East has insufficient capacity to accommodate predicted growth over the forecast period;
- Our airport will provide an increasingly attractive alternative for airlines and passengers as congestion increases;
- The predicted growth is similar to demonstrated patterns at other airports serving similar size regions; and
- Although EU Jet was commercially unsuccessful, it provided valuable insight into the potential of the market.

Plan 3 : Manston Airport Catchment Area Plan



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Catchment Area

The catchment area is the zone or region where an airport's passengers originate, or terminate their journey.

The total catchment area for our airport is based upon an approximate two hour travel time to the airport by car or train. The resultant area includes parts of London, Essex, Hertfordshire and other parts of the South East. It incorporates Gatwick and Stansted airports.

Travel times to our airport either by car or train have been categorised into 30, 60 and 120 minute sectors. Within the 60 minute sector, the catchment area for our airport is broadly the population of Kent. Between 60 and 120 minutes, it expands to cover the South East and north London, which includes Gatwick and Stansted airports.

Approximately 1.3 million people live within a one hour travel zone (car and train) of our airport (Public Census 2001). A further eight million people live within the two hour travel zone, which includes London, Medway, East Sussex and Essex. This would increase to 17.3 million people if London and large parts of the South East were included.

On balance a reasonable catchment figure is deemed to be approximately 9 million people. Plan 3 provides details of the catchment area with travelling times for car and train.

Current Travel Patterns

This very large catchment naturally must be considered in the context of the other airport options for the people within it. Currently, almost all of the potential demand for services from our airport is captured by the other airports in the South East.

CAA data [21] reveals that the people within our immediate catchment made 3.4 million flights in 2006. Not surprisingly, the majority of these flights were taken using Gatwick Airport, followed by Heathrow and Stansted. This data does not capture the demand from inbound visitors whose intended destination was Kent but who entered the UK through other airports, although a similar pattern is likely.

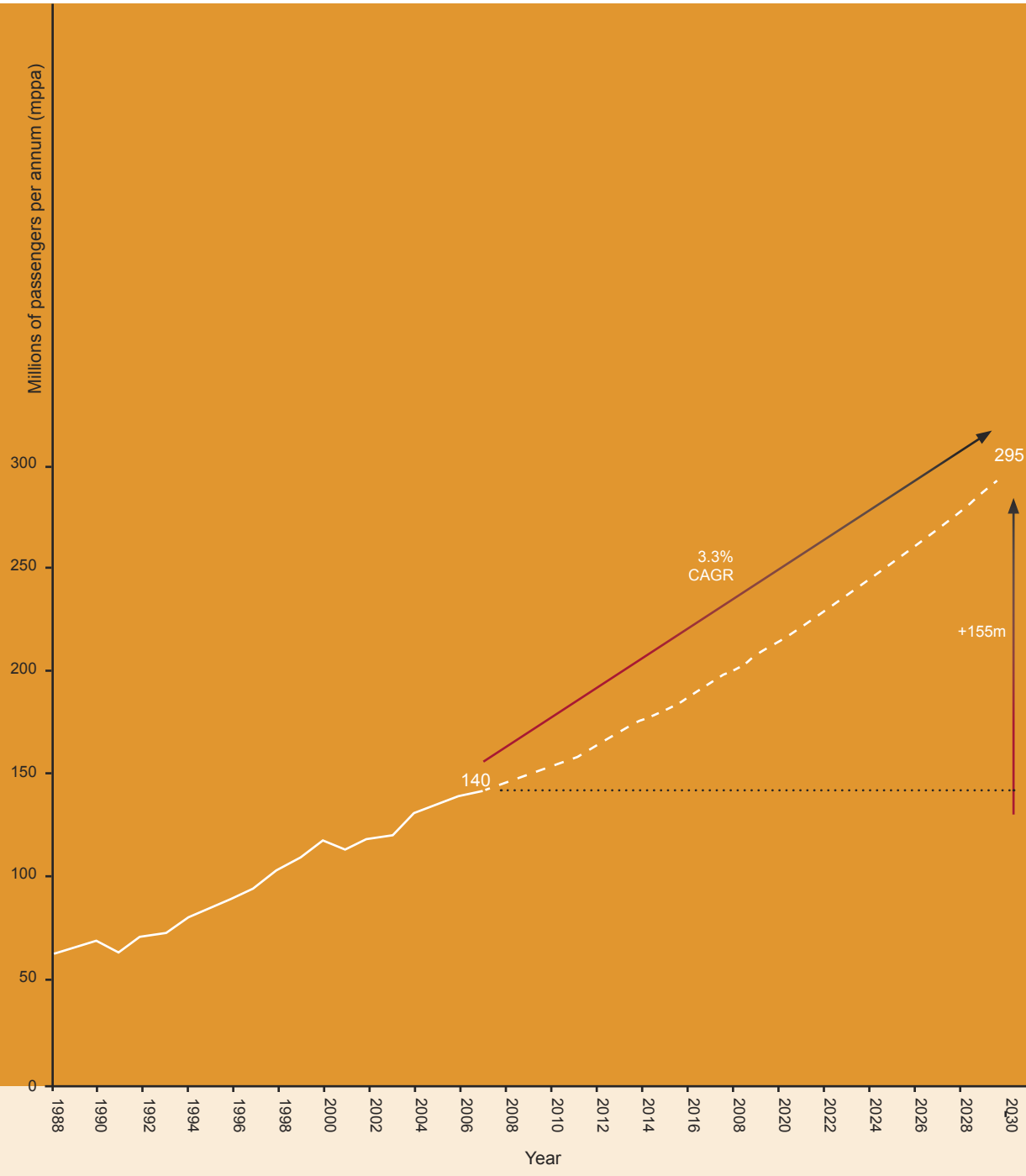
Extrapolating from this data and using the assumption that propensity to travel is similar for people within our immediate and wider catchments, it is likely that around 20 million flights would have been taken during 2006 from residents of our wider catchment. Given that the major South East airports have total traffic of around 136 mppa [22], this number for the wider catchment appears realistic.

As our airport will never realistically duplicate every destination offered from all South East airports, the ability to draw travellers to our airport has some constraints.

It is clear, however, that travel patterns are relatively strongly concentrated around 20 to 30 destinations, and leisure destinations are often substitutable, so realistic potential to

21 CAA Passenger Survey (2006)
22 CAA Summary of Activity at UK Airports 2006. Heathrow 67 mppa, Gatwick 34 mppa, Stansted 24 mppa, Luton 9 mppa, London City 2 mppa.

Historic Passenger Volumes and Forecast Demand at London Airports : 1988-2030



Note 1: London Airports defined as LHR, LGW, STN, LTN, LCY. Does not include London market demand captured by other regional airports such as Southampton (which is forecast to grow from 2 mppa to 6 mppa by 2030).

Note 2: Forecast based on DfT 2003 White Paper unconstrained demand forecast for London, adjusted for DfT's 2007 updated UK forecast

Note 3: CAGR – Compound Annual Growth Rate

Source: UK CAA (historical); UK DfT (forecasts)

compete remains strong with a modest network. Analysis of flights taken from people within our catchment indicates that the most popular domestic routes are; Edinburgh, Glasgow, Belfast, Newcastle and Manchester. Favoured European leisure destinations are; Dublin, Alicante, Malaga, Palma and Tenerife [23].

Capacity Constraints at other Airports

Using DfT forecast growth rates of 3.3% per annum [24], demand for airport services in the South East region will increase to around 295 million annual passenger journeys by 2030. This is shown in the graph on the following page.

Growth to date has largely been accommodated by the five London airports; Heathrow, Gatwick, Stansted, Luton and London City.

However, this increase of over 150 million passengers on current volumes appears unlikely to be able to be accommodated by current airport infrastructure expansion plans [25].

Plans exist for expansion at a number of South East airports, including potential new runways at Heathrow and Stansted.

Gatwick, however, has an agreement with the West Sussex County Council not to construct a second runway at its airport before 2019 [26].

This is reflected through policy T9 of the South East Plan and there is support to safeguard land for a possible new runway.

Gatwick currently provides most of the travel options for residents of Kent and the people in the close catchment of our airport. As it nears capacity, Gatwick's congestion will make our airport an even more attractive option for airlines and passengers.

Congestion creates costs (both financial and in terms of time) in many areas of a journey [27]:

- Surface access congestion may result in longer travel times to and from an airport (or uncertainty which requires people to allow more time in any event);
- Airport precinct congestion can cost time and, as capacity is often rationed using price, prices for convenient car parking and other travel options can increase;
- Terminal congestion can result in greater time taken for processes including check-in, security, boarding, border processes, baggage etc and also creates a less pleasant environment. Highly complex environments also create costs in terms of communications and transfers often leading to reliability issues such as lost baggage which create costs for airlines and passengers;
- Airfield congestion can create delays on aprons and taxiways, reducing on time performance and / or reducing aircraft utilisation and increasing fuel burn, crew costs etc; and
- Airspace congestion has similar impacts as airfield congestion, although fuel burn costs can be very material for aircraft holding in the air.

23 The CAA Passenger Survey (2006)
24 Extracted from the White Paper.
25 Extracted from the White Paper.
26 Gatwick Airport has noted in its Master Plan that it remains fully committed to the legal agreement precluding the construction of a second runway before August 2019.
27 Competition Commission BAA Airports Market Investigation – Preliminary Findings

The White Paper acknowledges that our airport has an important role to play in meeting local demand and contributing to wider regional economic development objectives. It recognises that the development of our airport will contribute towards the future airport capacity in the South East.

Comparable Airport Growth

As well as the issues of South East capacity, our airport has many of the characteristics of other regional airports that have experienced rapid growth in recent years. These airports, including Glasgow Prestwick, Liverpool, East Midlands, Beauvias, Girona and Bergamo, have grown strongly from the presence of airlines offering low cost point to point services. These airports also have large competitors nearby, but have been successful through offering value for money, attractive destinations and convenient services.

In the South East, Stansted and Luton Airports have sustained compound annual growth rates of 16% and 12%, respectively, over the last 10 years [28]. This has likely been the result of a combination of the growth in popularity of low cost services and the increasing capacity constraints of Heathrow and Gatwick airports.

The launch of EUJet from our airport in 2004 by the then owners of the airport and airline demonstrated a strong belief in the demand for services from the Kent population. Despite its failure on 29 July 2005, the brief existence of EUJet in many ways confirmed that demand exists for services from our airport.

With the benefit of hindsight, it is relatively easy to point out the mistakes made. Without wanting to appear critical of those involved, it is important to recognise the factors that contributed to the failure – as well as the positive response of the market – in order to plan for future sustainable growth.

Key weaknesses of the EUJet approach appear to have been:

- Aircraft size not right for target markets. 108 seat Fokker F100 jets were too large to apply to high frequency business-based routes such as Manchester, Edinburgh, Glasgow, Amsterdam and Belfast. They were also too small to deliver seat cost efficiency on longer leisure routes to Spain and Italy;
- Insufficient marketing to support new brand. Launching a new brand into a competitive market requires substantial marketing. EUJet did not appear to have sufficient financial resources to market strongly in both the local catchment and at each destination;
- Too much capacity too quickly. Given the unknown branding, launching immediately with 30 routes using 5 aircraft may have saturated a market that could have been grown over time; and
- Reputation for reliability. A number of service failures, and later rumours about financial strength, may have resulted in many people becoming wary about using the airline. Despite these apparently fundamental weaknesses, EUJet flew 402,000 passengers in its 9 months of existence. The 30 routes flown included the business routes mentioned above and popular leisure destinations such as Dublin, Zurich, Madrid, Prague and Salzburg.

28 CAA UK Airport Activity Summary 1997 – 2007

Our vision for passenger growth takes into account the learning's from EUJet. The forecasts in this Master Plan assume that the services will be provided by established airlines, with proven systems and reputations for reliability, matching the appropriate aircraft size to selected routes. Routes will be backed by marketing, potentially with a partnership of the airline, airport and local bodies at both ends of routes. Our forecasts assume that services will be phased in over a period of several seasons [29].

Forecast Methodology

Our vision for growth has looked separately at the forecasting for:

- Specific achievable development in the first eight years (2010-2018); and
- Growth rates over the medium to long term (2018 to 2033).

Given the factors discussed earlier in this section, including the current lack of scheduled services in Kent, congestion in the South East and comparable growth of other airports, the initial phase of growth does not lend itself to macro-economic forecasting methods. Because "top down" macro-economic methods are unsuitable, we have used detailed "bottom up" forecasting to estimate traffic growth over the initial eight-year period.

Once a critical mass of initial services is established, which is expected in the first eight years, a more general rate of growth can be logically applied. Accordingly, the forecasts include growth for the medium to long term consistent with macroeconomic air travel forecasts. Consistent with the guidance provided by the DfT for the preparation of Master Plans we have then focussed our planning on cumulative forecasts looking forward eight and 23 years (2018 and 2033).

Stepped changes in activity will occur as the capacity of other London airports is reached and traffic spills into surrounding airports like Manston. This feature of the South East market is likely to result in periods of sudden growth when the percentage increase in passenger and freight movements per annum at our airport exceeds the rate of growth of the general market.

First Eight Years

As airport operators we have gained experience by observing the growth patterns of other developing airports. In line with historical development at other UK airports such as Glasgow Prestwick, Luton and East Midlands, we recognise that our airport will experience step changes in both passenger and freight traffic.

We have based the forecast scenario on the relationships and knowledge that we have developed with airlines, overlaid with the experiences of similar markets and the short term affects of the global economic downturn. We believe that over the long-term time horizon growth will return and stabilise to levels consistent with the long term forecasts. It is realistic to assume that airlines will begin operating daily scheduled services from our airport by 2014 or sooner.

29 Airlines operate a winter and summer schedule to cater for seasonal variations in travel preferences. Changes to capacity are usually aligned with the switchover between schedules.

The eight year forecasts focus specifically on services provided by a regional airline [30] and a low cost airline [31]. These airlines will significantly enhance the accessibility of destinations across the UK and Europe and are likely to appeal to a large proportion of people within our catchment area.

We anticipate that initial growth at our airport will come in steps. Initially, passenger flights will be offered by aircraft based at other airports and operating single daily return flights to various destinations from our airport.

As the market grows, additional services will be offered and aircraft operators will look to base aircraft and crews at our airport. Our airport is not the first to predict growth based on this model and many regional UK and mainland Europe low cost airports have developed in this way.

The Master Plan is a predictive document containing forecasts. Details of the flight numbers and destinations will not be finalised until they are due to commence. The forecasts have been based upon growth patterns experienced at other airports in similar circumstances combined with local catchment analysis.

Low cost passenger airlines tend to operate Code C aircraft carrying between 150 and 189 passengers. Typical aircraft in use are Airbus A320 and Boeing B737. Q300, Q400 and ATR 42 and 72 aircraft types (approximately 50-70 seats) are likely to be used by the regional airline operators serving domestic, common travel and shorter European destinations.

Medium to Long Term Growth

It is very difficult to specifically forecast medium to long term growth for our airport. As well as the usual general economic growth factors, capacity outcomes at other airports as well as road and rail investment are likely to have a material impact on actual outcomes. The market response to the initial five years of development is also highly relevant. The forecasts reflect the impact that the global economic downturn will have on activity at the airport for the next 2-4 years. It is not anticipated that the long term growth aspirations will be affected by the short term economic conditions.

In the absence of any more accurate alternatives, we have applied a growth rate of 5% to the medium to long term in line with average rates of growth previously experienced. The demand for air travel in the UK grew at 5% per annum over the 10 years to 2007 [32]. This organic growth was the result of general population growth and additionally increases in Gross Domestic Product per capita lead to a larger proportion of the population having access to air travel.

These macroeconomic trends are expected to prevail over the long term and throughout the Master Planning period.

Other Factors

The potential for improved surface access to the wider catchment is likely to be an important factor in future growth rates. Road links to our airport are already very good

30 An operator utilising 50 – 90 seat aircraft well suited to serving smaller markets with convenient high frequency services.

31 A low-cost carrier controls costs by employing a modern fleet, utilising internet booking facilities and minimising aircraft ground time. Savings are passed on to passengers through competitive airfares.

32 CAA Passenger Statistics, 1997 to 2007 Annual Growth Rate 5.005%

and will improve further with plans referred to in this Master Plan. The potential for further development of rail links using the base of the currently planned High Speed 1 rail extension to Ramsgate, could materially improve journey times for residents in the wider catchment and for inbound travellers looking for connections to London and elsewhere in the UK.

Our short-term forecasts have been prepared taking into consideration:

- Market analysis of routes served by other airports;
- Postcode analysis estimating current catchment leakage;
- Charter traffic – looking at the current frequency and destinations operated by the existing charter airlines using our airport;
- Likely routes for low cost and regional airline operations;
- Additional opportunities for leisure based seasonal travel;
- Eastern European routes – destinations and flight times based on frequency and number of non-based flights at the airport which do not conflict with the low cost destinations provided;
- Freight forecasts based on current trends and the likelihood of capturing freight services currently operating at congested airports.

In the longer term as the connectivity of the airport to the broader catchment improves, we anticipate the introduction of long haul flights serving destinations such as New York and Honk Kong. These flights will utilise larger aircraft such as the Boeing 777 or 787 variants or Airbus 330 / 340 / 350 airliners.

Passenger Forecasts

In table 3 annual passenger figures developed for our airport have been shown for 2018 and 2033. In 2018 throughput is forecast to be 2.2 mppa. By 2033 this will increase to 4.7 mppa. All figures have been rounded to the nearest thousand.

Table 3: Annual Passengers

Year	Annual passengers
2010	< 50,000
2011	50,000-100,000
2012	206,000
2013	295,000
2014	527,000
2015	1,268,000
2018	2,286,000
2033	4,752,000

Freight Movement Forecasts

Our airport currently processes around 32,000 tonnes of freight per year. We expect freight movements to remain fairly constant, with tonnage increasing gradually each year (based on a high case forecast this is assumed to be 6%) combined with step changes as existing operators at other airports relocate to our airport to access available capacity. By 2018 freight movements are expected to have reached approximately 167,000 tonnes per annum. In 2033 they are forecast to total approximately 401,000 tonnes per annum. Table 4 provides further details of the forecast figures.

Table 4: Total Forecast Annual Tonnages

Year	Annual Freight Tonnage
2010	31,600
2011	45,200
2012	57,300
2013	62,500
2014	107,000
2015	138,400
2018	167,500
2033	401,200

Other Aircraft Movements

We expect other movements, namely general aviation, or otherwise, to increase gradually from the current level of 17,000 movements annually.

Infrastructure Demands

The growth of passenger and freight operators using our airport will create demand on various components of the airport's infrastructure – runways, aprons, terminals, car parks, as well as the land transport infrastructure supporting the airport.

Air Traffic Movements

As the passenger numbers and freight tonnages increase, there will be an increase from existing levels as shown in table 5.

Table 5: Total Forecast Annual Traffic Movements

Category	2010	2013	2018	2033
Passenger	352	1,003	20,325	31,509
Freight	473	977	2,619	6,251
Other	17,259	20,001	23,195	36,137
TOTAL	**18,084**	**21,488**	**46,139**	**73,897**

Average daily movement figures have been provided for our airport in Table 6.

Table 6: Average Daily Movements

Category	2010	2013	2018	2033
Passenger	1	3	56	97
Freight	2	3	8	18
Other	48	55	64	72
TOTAL	**51**	**61**	**128**	**187**

All figures are based on 365 days a year flying and have been rounded up to the nearest whole number.

Our forecasts assume that the domestic market will grow much more slowly than the European and long haul markets. This is due primarily to the UK Government's Air Passenger Duty and rail connectivity improvements across the UK.

Stand Demand Growth

Peak demand for aircraft parking will be expected to occur in the early morning, around lunchtime and in the late evening.

We expect these aircraft to be predominantly Code C (Boeing 737 or equivalent) aircraft and smaller turbo prop aircraft. When long-haul traffic is introduced larger Code D and E aircraft will frequent the airport (up to Boeing 747 aircraft type). Forecast passenger and freight stand demand during the Master Plan period is provided in table 7.

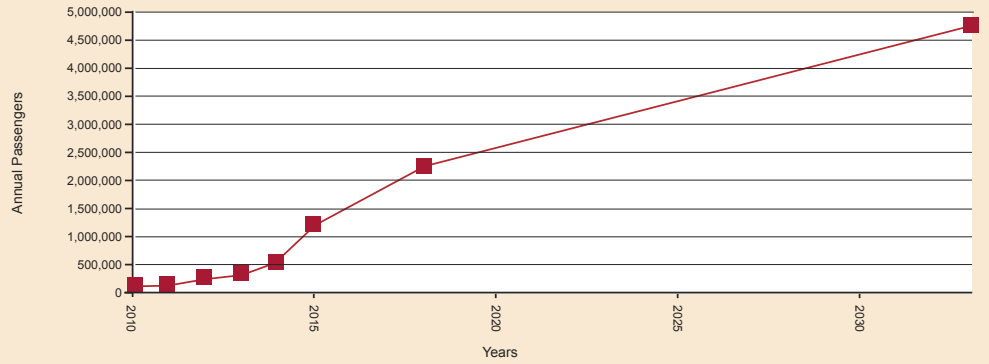
Table 7: Passenger and Freight Aircraft Stand Demand

Year	2010	2018	2033
No. of passenger stands	1	10	14
No. of freighter stands	2	4	7

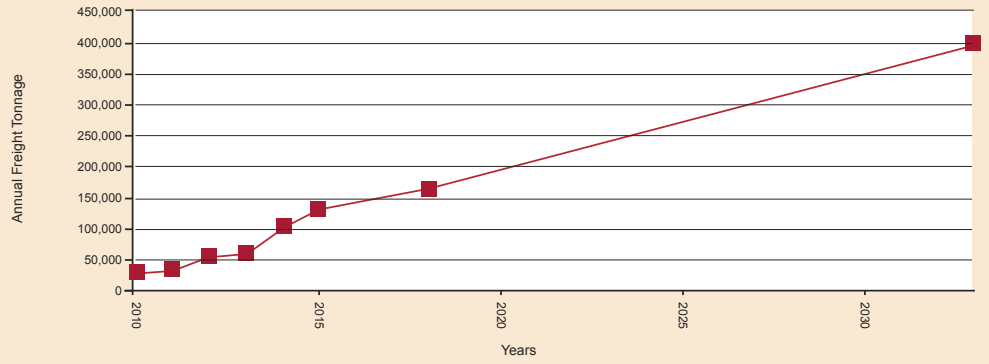
All figures have been rounded up to the nearest whole number.

A graphical representation of the airport activity forecasts is shown below.

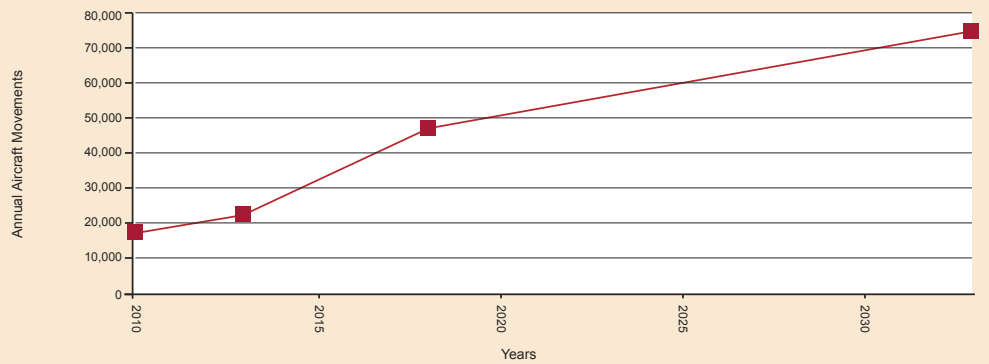
Graph 1 – Annual Passengers



Graph 2 – Annual Freight Tonnage



Graph 3 – Annual Aircraft Movements



Section Highlights

- Our vision is for Kent International Airport to become an important regional transport hub within South East England. The required development will occur gradually as the airport experiences increases in both passenger and freight business
- Approximately nine million people live within a two hour travel zone from our airport and could choose to fly from our airport on a regular basis
- Our airport functions as a transport gateway. As our airport grows the range of services we offer and destinations we service will expand. The improvements in connectivity will attract businesses to locate in the local area and take advantage of the transport infrastructure
- Flights from our airport will service domestic, Irish, European and some long haul destinations by the end of the Master Plan period. Our forecasts are focused primarily on the low cost and regional airline models
- Aircraft using our airport will typically include the Airbus A320, Boeing B737 and the Bombardier Q400. Larger aircraft will be used for long haul passenger and freight flights
- By 2011 up to 100,000 passengers will be accommodated at our airport. This is predicted to rise to approximately 2.2 mppa by 2018 and 4.7 mppa by 2033. Freight movements are forecast to exceed 160,000 tonnes per annum by 2018 and 400,000 tonnes per annum by 2033. Other general aircraft movements (those that are not associated with passengers or freight) are anticipated to increase gradually
- Business, employment and tourism opportunities will act as a catalyst for regeneration. Initial regenerative effects are likely to be focused in the Ramsgate and Margate area, as the two nearest major settlements. As activity intensifies, these effects will spread outwards to more peripheral locations within Kent.

5. Our Plans to Achieve Growth

We are committed to the development of our airport and associated infrastructure to meet the demand for air travel within South East England and the UK over the coming years.

This development will be in line with national policy and we will prepare and develop our airport in an environmentally sustainable manner.

In this section we have set out the changes required at our airport for the period up to 2018 and in principle up to 2033 to meet our growth projections. Table 9 provides a summary of the required infrastructure and the studies that will accompany planning applications up to 2018. This is consistent with the approach to airport master planning set out by the White Paper. What we have established is that we can accommodate our development requirements up to 2033 on land under our control with some small acquisitions for development.

The key land use types shown on the following pages are:

Airfield

Terminal

Apron

Freight

Fuel facilities

Surface access

Car parking

Other aviation uses / development area

The requirements for these areas have been assessed and developed as part of this Master Plan.

The forecast passenger throughput for our airport in 2018 is 2.2 mppa, rising to 4.7 mppa in 2033. This is consistent with the positive growth framework set out by the White Paper and the development plan (see Section 2 of this Master Plan for further information). We have developed our 2018 and 2033 Master Plan on the basis of 2.2 mppa and 4.7 mppa accordingly to ensure that appropriate measures are in place for land use and impacts are appropriately assessed.

Key issues for this include developing a land use plan for additional aircraft stands and the relationship with freight and passenger terminal expansion and related surface access. The 2018 and 2033 Master Plan scenarios are shown in plans 4 and 5 on pages 58 and 59 and discussion follows.

Our Development to 2018

Passenger Terminal

The existing passenger facilities are too small for our ultimate growth needs and are not ideally located to facilitate the effective reorganisation and growth of our airport. We intend to develop a new passenger terminal to meet the forecast 2018 passenger growth levels. This will enable us to increase passenger throughput, whilst minimising the cost and impact on the community and maximising the efficiency of our infrastructure.

Our terminal currently has six check-in desks and three passenger departure gates. Up to around 1 mppa, the existing passenger terminal will be extended modestly to accommodate the gradual increase in passenger numbers and better establish passenger operations at our airport.

It is then planned that a new passenger terminal will be constructed to accommodate up to 3 mppa. The new terminal is likely to be approximately 24,000m^2 by 2018.

Any new airport terminal is a system of interconnected operating elements, including:

- Landside Departures – check-in, baggage facilities, waiting areas, retail;
- Aviation Security;
- Airside Departures – seating, retail;
- Departure Gates;
- Arrival Gates;
- Immigration and Border Control;
- Baggage reclaim and Customs;
- Arrival Hall – seating, retail; and
- Offices and storage for airport operations and other services.

The new centrally located passenger terminal will provide adequate space for people waiting to board aircraft, enhanced retail outlets and will generally facilitate the smooth operation of our airport. This will reduce passenger congestion and ensure that passengers have a pleasant experience when using our airport.

The terminal design will include technologies and advancements in operational processes which can increase and enhance the efficiencies of the terminal facilities, provide space for improvements in operational processes and maximise capacity for the expected growth in passenger numbers.

The phased growth of the passenger terminal is illustrated in plan 6 on page 60.

Airfield Improvements

Runway and Taxiway system

We have safeguarded land for an extension to our runway. This may be necessary in the event that demand for longer range maximum payload flights requires it.

An improved parallel taxiway has been indicated on the 2018 and 2033 plans to safeguard land for its use. A full length parallel taxiway is likely to be constructed once sufficient demand exists. This is anticipated to be in the period beyond 2033.

The historic use as a military airfield means there are parts of the airfield taxiway infrastructure which will require modification for passenger aircraft use. These modifications will be carried out as demand requires them to minimise delay to aircraft manoeuvring on the ground.

Aprons

Aprons (the term used to describe aircraft parking areas) are currently located adjacent to the passenger and freight facilities.
In recent years our passenger apron underwent significant improvements and it is currently used for both freight and passenger activities. Our Master Plan has separate areas for dedicated freight and passenger activities so that by 2018 the freight and passenger aprons will be enlarged to accommodate the anticipated increase in passenger and freight throughput.

Fuel Facility

As throughput at the airport increases it will be necessary to improve the fuel facilities.

Land immediately to the north east of the runway has been identified as a potential location for a bulk fuel installation with capacity to accommodate forecast growth up to, and beyond, 2033.

A second option being considered is to investigate developing a compound on the south side of our airport. This site would be adjacent to the end of the runway and the village of Cliffs End.

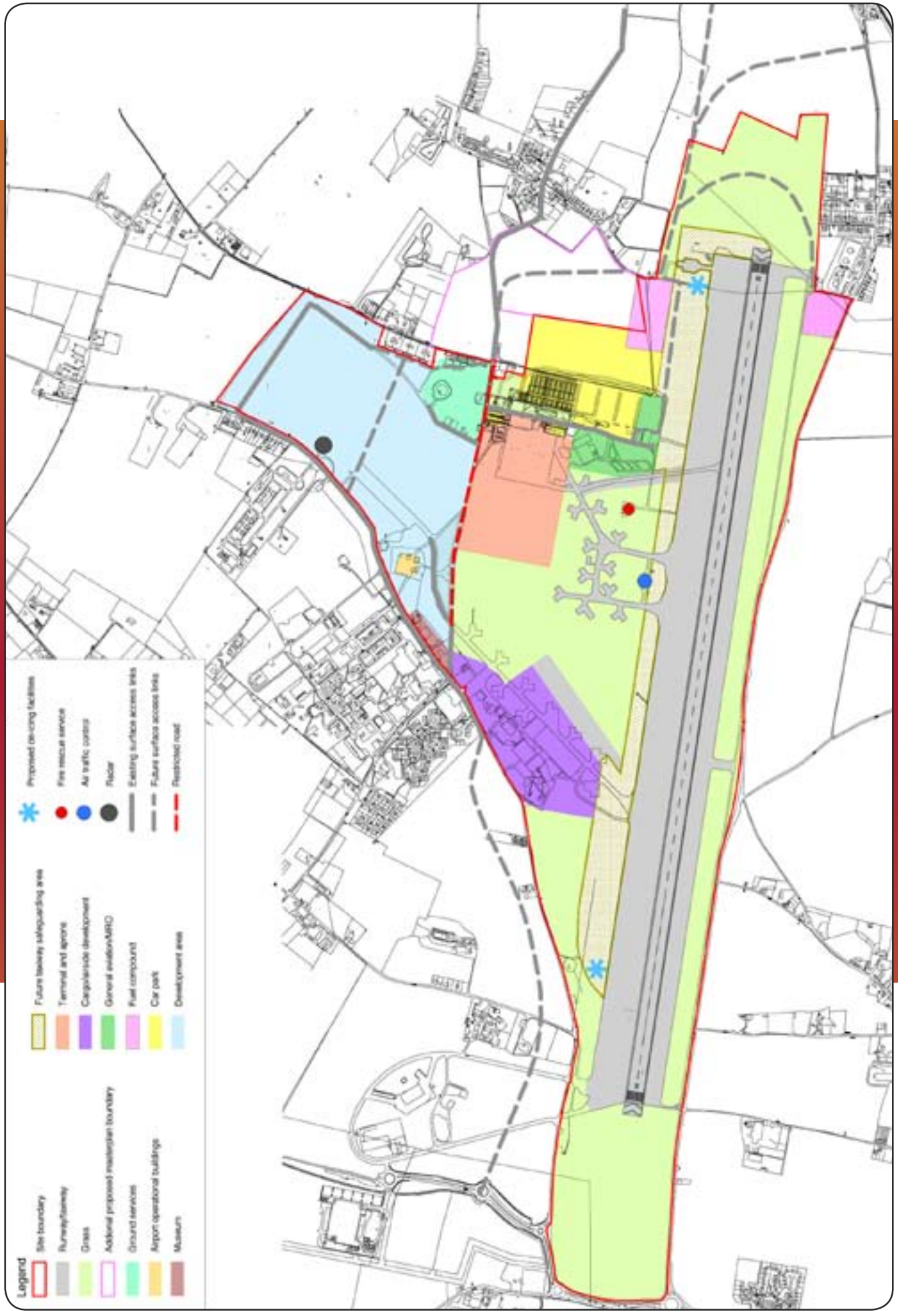
Both of these locations benefit from airside and landside access and we will investigate these options to determine which fuel storage location is the most feasible and appropriate.

All future fuel storage facilities will conform to the applicable spill containment provisions and will be built in accordance with the relevant regulations.

Car Parking

Efficient and safe access is crucial for the future growth and development of the airport. Government policy encourages the integration of transport systems and seeks to direct new development to sustainable locations that are well served by public transport. Airports are identified as major opportunities to deliver these objectives. Airport operators, with the support of their partners, are expected to take the lead in improving the quality of surface transport access through encouraging use of more

Plan 4 : Manston Airport 2018 Scenario



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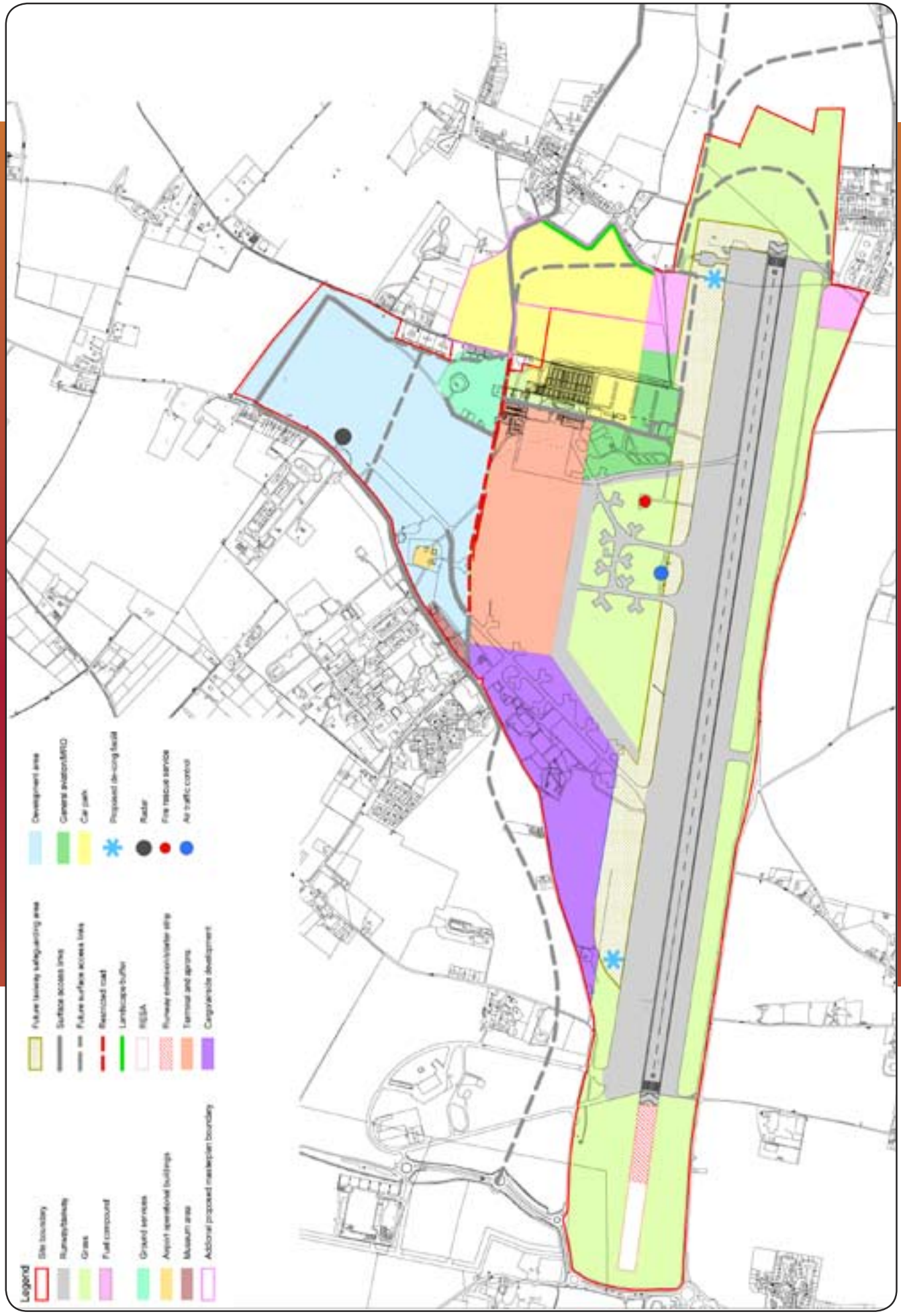

Plan 5 : Manston Airport 2033 Scenario

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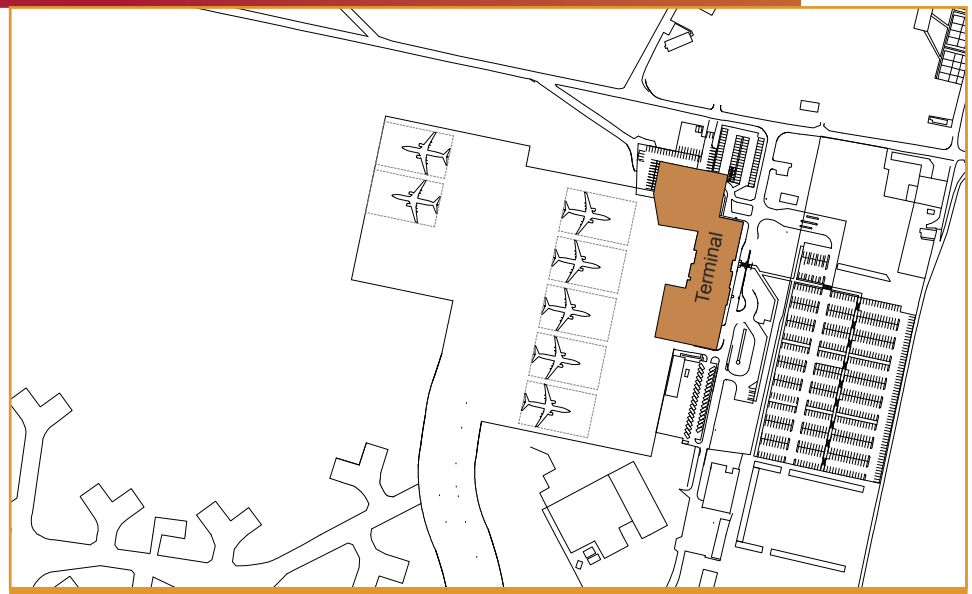
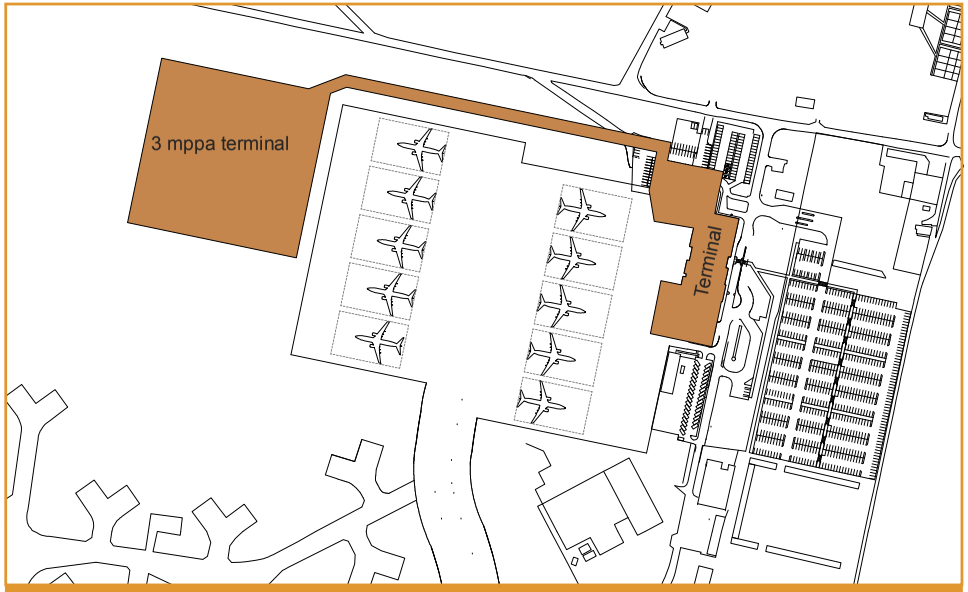
Plan 6 : Phasing of Terminal Development

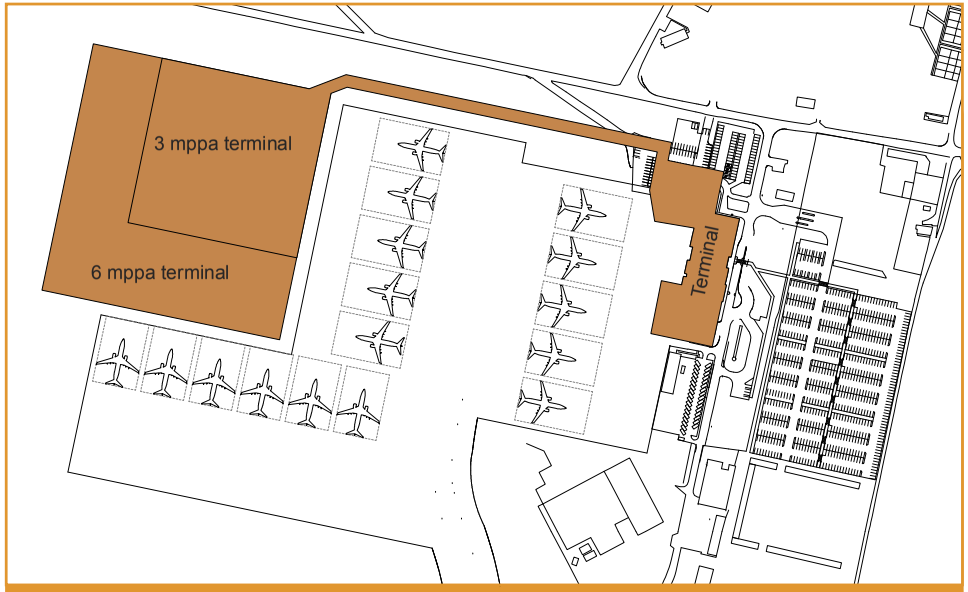
Existing context



Up to around 1 million passengers per annum



Up to 3 million passengers per annum



Up to 6 million passengers per annum

sustainable modes of transport. The key issue is to manage the growth in road traffic associated with the airport's development.

There are currently 1,100 car parking spaces available at our airport (with planning permission for a further 1,000). The spaces were provided when EUJet began operating at the airport and were fully utilised during the peak of EUJet's operations. Despite this, and the measures in place to encourage alternative means of transport to the airport, this level of car parking provision is not sufficient to meet the forecast growth levels at our airport (see table 8). In 2018 additional land for car parking will be provided to the south and east of the existing passenger terminal. Short-term premium parking will be provided on land to the north of the new terminal.

A section of this land will be used as a taxi rank / bus area. As a general rule, approximately 1,400 car parking spaces are required per million passengers at an airport.

Table 8: Car Parking Spaces Required During the Master Plan Period

Year	Passengers per annum	Total no. of spaces
Existing	<10,000	1,100
2010	<50,000	1210
2011	50,000-100,000	1350
2012	206,000	1640
2013	295,000	2053
2018	2,286,000	3200
2033	4,752,000	6653

Freight Handling Facilities

The airport currently handles around 32,000 tonnes of freight per year. The aircraft types used are generally dedicated Boeing 747 and A300 freighter aircraft. Total freight tonnage handled at the airport is expected to grow in steps as our airport attracts services currently using increasingly congested alternate airports. We also predict a high case underlying growth rate of between 4% to 6% over the long term. This growth will equate to approximately 167,000 tonnes of freight per annum in 2018.

A key component of this forecast figure arises from the ability of our airport to receive freight dislocated from congested London airports. As the freight operations demand further facilities, additional freight handling areas will be developed at the airport. Freight facilities are currently located to the north west of the runway alongside the B2050. Development within this area will accommodate approximately the freight volumes anticipated in the Master Plan period.

Other Aviation Facilities

Land to the south of the existing passenger terminal will be developed for general aviation / corporate jet facilities. Subject to demand, the existing terminal could potentially be used as an executive terminal / fixed base operations (FBO) facility once the new passenger terminal is operational.

Ground services operations will have a dedicated area for maintenance, ground handling and catering facilities within the former fuel compound area to the north

of the existing passenger terminal. This will be developed once the preferred fuel compound location enters service.

The proposed infrastructure for our airport and the triggers for its provision for the period to 2018 are summarised in table 9.

The precise timing of development is subject to influences outside of Kent International Airport's control, relating primarily to customer demand. The airport recognises the need to liaise with Thanet District Council and the East Kent Spatial Development Company to ensure that utility provisions at the airport are timed to meet the required standards.

Table 9: Infrastructure Summary to 2018

Volume / trigger	Required infrastructure	Studies to accompany applications
> 1mppa (passengers)	Extension to existing passenger terminal and associated works	Environmental impact assessment (EIA), traffic assessment (TA)
	Car park extension	
1mppa - 3mppa (passengers)	New passenger terminal (24,000m^2)	EIA, TA
	Additional car parking	
	Apron expansion and associated airfield works	
> 100,000 Tpa (freight)	Apron expansion, additional warehouse space	EIA
> 200,000 Tpa (freight)	Expansion to cargo handling area and apron Upgrade fuel facility Additional warehouse space Associated airfield works	EIA
Increased Maintenance Repair Overhaul / General Aviation	Hangar developments	Planning applications with accompanying studies dependant on scale
Employment generating development	Commercial buildings and hangars	Planning applications with accompanying studies dependant on scale
> 1000 ATMs	Airport Surface Access Strategy and Air Transport Forum	

Costs will vary according to construction timing, design and scale.

Current approximate costs at time of writing:

Terminal development:	£2000 - £2500 / sqm
Apron expansion:	£200 - £250 / sqm
Warehouse / Hangar space:	£550 - £750/sqm

Specific developments may be required before the volumes listed depending on aircraft sizes, schedules and the timing of peak operations.

Proposals Beyond 2018

Passenger Terminal

In the period 2018 - 2033 the phased extension of the passenger terminal will continue in order to accommodate up to 6 mppa (see plan 6). By 2033 we anticipate that the total floor space of the passenger terminal will be 48,000m^2. New apron space will be provided adjacent to the terminal building.

The existing terminal may continue to be used for passenger terminal activities or as an executive jet and general aviation type core function centre.

Runway & Taxiway System

A runway extension has been provided for in this Master Plan. We have identified that our airport could benefit from a lengthened runway and have set aside land on our Master Plan drawings for its future construction. Construction timing will depend on future customer demand. The land safeguarded is sufficient to include a runway extension, starter strip and runway end safety area (RESA) requirements. We have safeguarded land for future taxiways to enable their development when sufficient demand exists.

Fuel Facility

Between 2018 and 2033 subject to demand and outcomes of further assessment work, one, or both of the fuel facilities may be developed.

Car Parking

In the latter part of the Master Plan period we anticipate that additional car park spaces will be required (see table 8). Extending the parking to the north of the new passenger terminal and to the east and north east of the existing passenger terminal would best provide these spaces.

Freight Facilities

Between 2018 and 2033 freight operations are forecast to reach 401,000 tonnes per annum.

The freight operators using our airport value the ability to load freight directly from the aircraft onto trucks in a secure airside environment. Further aircraft stands will be developed adjacent to the freight area and these stands will be designed to allow continuous tail to truck operations across all of the stands. Potential exists to construct warehouse / stillage areas and truck staging sites as required.

Freight aprons that allow Head of Stand (HOS) and Tail of Stand (TOS) access to aircraft have been allowed for in the Master Plan. These will enable two way access and HGV parking within the freight handling area.

Other Aviation Facilities

Our strategy for activities in the period 2018-2033 is similar to that for the next ten years. The General Aviation / Fixed Base Operators operations will continue to develop to the south of the existing passenger terminal and the existing terminal will be used for General Aviation / Fixed Base Operators passengers

as demand increases. Ground services operations will be developed within the former fuel compound once a suitable alternative location for the fuel facilities is created.

Achieving Ground Access Growth

If our airport is to deliver growth in the manner aspired to by the Master Plan there will need to be a corresponding growth in opportunities and capacity to access the airport. Such growth in access provision will need to be delivered in a way that encourages passengers, staff and visitors alike to adopt sustainable travel habits in travelling to and from the airport, whilst also recognising that the car will need to play a continuing role.

Beyond 2018 we will continue to assess the ground access requirements and consider proposals and options to enhance travel opportunities for both passengers and staff getting to and from our airport.

Surface Access Strategy

A Surface Access Strategy should detail the short and long term targets for increasing the proportion of sustainable journeys associated with the airport, the strategy for achieving these targets (including Travel Plans) and a system for implementing the strategy. In developing our Surface Access Strategy it will be necessary to understand the existing opportunities and constraints of accessing an airport and how these may be enhanced and new measures implemented to encourage a greater proportion of sustainable travel. Our Master Plan envisages a significant growth in passenger movements at the airport and will require the development of a Surface Access Strategy.

It is proposed that our Surface Access Strategy will be developed by an Airport Transport Forum comprising representatives from the airport, local authorities, transport providers and local business and community representatives. The Surface Access Strategy will be used to set out the manner in which transport issues raised by airport expansion will be addressed. Depending upon timing factors the surface access strategy will input to a Transport Assessment submitted in support of a planning application for expansion of the airport. Alternatively, the Transport Assessment will detail the manner in which a surface access strategy will be delivered and its broad scope and content.

Mode Share

Our Master Plan looks forward to a scenario when approximately 2.2 million passengers pass through the airport in 2018 and around 4.7 mppa in 2033.

This number of people will require a range of travel mode options and appropriate capacity to access the airport efficiently.

The proportion of passengers and airport employees using sustainable modes of transport at these forecast horizons will of course be dependent upon the level of service offered by walking, cycling and public transport networks. However, it is possible to consider the travel mode shares experience at other airports around the UK to inform the

Table 10: Percentage mode share information from the UK airports for 2006 passenger departures

	Luton**	Stansted	Nottingham	Birmingham	Gatwick	Prestwick**
Passengers >	8.3 mppa*	2.37 mppa	4.7 mppa	9.1 mppa	34.1 mppa	2.5 mppa
Private Car	56.1	46.9	68.6	54.2	48.2	57.2
Hire Car	2.6	3.1	2.8	3.4	2.2	57.2
Taxi / Minicab	12.6	8.8	19.2	23.7	14.0	5.2
Rail	17.9	23.3	4.5	9.6	29.1	20.8
Bus / Coach	10.4	16.3	4.6	8.7	6.3	3.6
Other	0.4	1.5	0.4	0.4	0.3	0.7
Total	**100**	**100**	**100**	**100**	**100**	**100**

Table 11: Summary of mode share that may be aspired to by our airport based upon the average experience at Luton, Nottinghham and Birmingham Airports

Travel Mode	Mode Share Estimate %
Private Car	59
Hire Car	3
Taxi / Minicab	18
Rail	11
Bus / Coach	8
Other	1
Total	**100**

target setting process required for our airport. Whilst it is not possible at this stage to predict the likely mode share of travel to and from an expanded Kent International Airport, it is possible to make estimates based upon experience at other airports, and by assuming that the existing level of service offered by public transport will be appropriately upgraded. Table 11 provides a summary of the mode share that may be aspired to by our airport based upon the average experience at Luton, Nottingham East Midlands and Birmingham International Airports.

The CAA Passenger Surveys Report 2006 has been consulted to provide an understanding of travel mode share achieved at a selection of airports across England. Table 10 summarises percentage mode share information from a number of airports for 2006 passenger departures.

This table demonstrates that the private car is the favoured mode of transport for travelling to each airport and this would be expected. However, whilst this table summarises information with respect to a number of airports, this should be considered in the context of the individual airport circumstances and the transport offer available to employees and passengers.

For example, it is noted that Stansted and Gatwick airports show a high proportion of passengers arriving by rail as these airports have their own rail stations at the airport terminal. Luton and Nottingham airports provide a bus shuttle service between the nearest rail station and the airport and this need to transfer is reflected in the lower proportion of passengers arriving by rail.

Birmingham International Airport provides a dedicated shuttle between the city centre and the airport via the Air-Rail Link which is a free shuttle service operating every two minutes with a journey time of 90 seconds. This provision is an intermediate option between an onsite rail station and a bus shuttle link.

Up to around One Million Passengers

The existing terminal will accommodate growth for around 1 mppa with some small expansion works and it is proposed that the existing access route would continue to serve the airport up to this point with relatively modest highway upgrades.

We expect in the region of 1,800 vehicle movements (900 arriving and 900 departing) each day. Of these, we anticipate about 70 movements to occur during the morning peak hour and the same during the evening peak hour. A detailed analysis of traffic generation and impact will be undertaken when the appropriate phases of planning applications are submitted. Parking for the airport would be provided as already discussed.

It is expected that local highway upgrades would be required. These may include the following:

- Upgrade to the Mount Pleasant roundabout which may include enlargement of entry widths, flare lengths or conversion to a signal controlled gyratory;
- Upgrade to the Minster roundabout which may comprise local widening of entries;
- With respect to the Spitfire Corner junction, this may lend itself to conversion to signal control.

The form of network upgrade that would be required, and its funding, would need to be the subject of detailed consideration at an appropriate time.

Up to Three Million Passengers

As already discussed, on reaching around 1 mppa there is likely be a need to provide a new terminal to serve the next stage of passenger growth. At this stage access to the airport would need to be reconfigured and it is proposed to establish a new access route allowing passengers to access a new short term car park in front of the new terminal. The existing car park would become a long stay car park and staff car park.

We expect in the region of 5,400 vehicle movements (2,700 arriving and 2,700 departing) each day. Of these we anticipate about 200 movements to occur during the morning peak hour and the same during the evening peak hour. A detailed analysis of traffic generation and impact will be undertaken when the appropriate phases of planning applications are submitted.

Parking for the airport would be provided as already discussed.

At this stage we propose closing the B2050 to through traffic and restricting its use to airport and emergency vehicles only. A new through road will potentially be constructed through our northern land to provide access into our long stay car park, commercial developments and the village of Manston.

The access route would link with the existing B2190 Manston Road as a new junction. Additional parking would be provided to the east of the existing car park and this would be accessed from the north. There may be a requirement to upgrade the section of Manston Road between the new access route and the car park access.

In terms of offsite highway works further growth may require additional investment at Mount Pleasant roundabout and potentially traffic management schemes on local routes (within Manston village for example) to discourage their use by airport related traffic and encourage use of the new East Kent Access Road. Once again, the form of network upgrade that would be required, and its funding, would need to be the subject of detailed consideration at an appropriate time.

Up to Six Million Passengers

On reaching 3 mppa our Master Plan proposes a further enlargement of the terminal building to serve up to six million passengers. Access will continue from the Mount Pleasant roundabout and towards the Spitfire Corner junction.

At this junction through traffic and a proportion of airport traffic would continue north using Manston Road (which may be upgraded) before heading east through our Northern Lands and thereafter heading south to rejoin the B2050 Manston Road. A proportion of the airport traffic would turn east at Spitfire Corner and enter the short term parking provided in the Northern Lands. During this phase consideration would also be given to opening up a further access route from the east as a bus priority route to link either a new railway station or Ramsgate railway station to the airport. This would be the subject of future investigations, particularly with respect to land, topography and flight path conflict constraints.

We expect in the region of 10,800 vehicle movements (5,400 arriving and 5,400 departing) each day. Of these we anticipate about 400 movements to occur during the morning peak hour and the same during the evening peak hour. A detailed analysis of traffic generation and impact will be undertaken when the appropriate phases of planning applications are submitted.

Parking for the airport would be provided as already discussed.

The East Kent Access Road

Aside from direct highway links we propose to further investigate offsite highway infrastructure capacity and its potential to serve expansion of our airport. Provision of additional highway capacity to support regeneration within Dover and Thanet, including expansion of the airport, has already been considered in delivering the East Kent Access (EKA) scheme. The EKA scheme is split into two phases.

Phase 1 comprised a new link road between the Pfizer roundabout on the A256 Sandwich Bypass to a new roundabout on Ramsgate Road, the improvement of A256 Sandwich Bypass between the Stour viaduct and Ramsgate Road roundabout to dual

carriageway standard and the improvement of the A256 between Ramsgate Road roundabout and the old Richborough power station site (Ebbsfleet Lane) to dual carriageway standard.

These improvements have now been completed. Phase 2 involves the improvement of the A253 from Minster roundabout to Lord of the Manor and the A256 from Lord of the Manor back to Ebbsfleet Lane where Phase 1 terminates. Work on Phase 2 is expected to be complete in 2011.

Highways

Whilst the Air Transport Forum and Airport Surface Access Strategy ASAS) will seek to encourage a high proportion of travel by passengers and employees to be via sustainable travel modes, there will also be an increase in private vehicles seeking to access the airport as passenger numbers grow.

It is envisaged that an increase in vehicle movements will give rise to a number of issues with respect to the capacity of the local highway infrastructure which will need to be addressed by our airport and local authorities. During the planning process it will be necessary to undertake detailed calculations and modelling of the existing and proposed highway network to demonstrate that its operation is satisfactory assuming the expansion of passenger numbers. At this stage a number of assumptions have been made with respect to the phased highway upgrades that may be required to serve the Master Plan aspirations. Highway upgrades are likely to be required to serve both the airport and the proposed development at the China Gateway site adjacent to our airport. Upgrades to highway infrastructure could be considered in a coordinated approach between all parties with an interest in the growth of the area.

Car Parking

Car parking to serve the airport will be provided in a staged approach reflecting the expansion of passenger numbers. The early stages of development will comprise an expansion of the existing parking area to serve around one million passengers.

Following this, further expansion of the car parking areas would be provided to the east of the existing parking area and finally to the north east of the existing parking area. Short term parking would be provided to the north of the new terminal building.

Airport car park operations not managed by the airport operator usually work against airport sustainable transport objectives and would normally be discouraged.

Taxis

The existing taxi provision would be relocated to the controlled area inside the airport car park in line with DfT requirements to serve the early phases of development up to around 1 mppa.

On opening the new terminal building there will be a new taxi and bus drop-off zone located on the other side of the then restricted B2050 to access the terminal building. The

Master Plan shows taxi provision to the north of the expanded terminal building and this would be accessed from the B2050.

Buses & Coaches

Our existing airport terminal already provides for bus and coach services with bus stops located immediately adjacent to the terminal building. Given the requirement for vehicles to be no closer than 30m to a terminal, one possible short term solution could be to relocate the bus set down and pick up areas within the existing car park.

The expanded car park design will include dedicated coach stands for passenger pickups and drops offs at a scale that is in accordance with mode share aspirations for the growth levels proposed. These modes will include bus stopping facilities north of the terminal building. In addition, there is an opportunity to link the provision of bus services to the airport with the proposed China Gateway employment area to the west. Success in encouraging the use of coaches and buses will depend upon the reliability and convenience of these modes of transport.

Bus services should be convenient and serve the areas where people want to travel to in as direct a route as possible. Areas of highest passenger demand and greatest employee catchment could be provided at a frequency that allows a turn up and go philosophy to become established. Bus services should be reliable, although achieving reliability of services will often be subject to external influences such as highway congestion.

It is possible to greatly increase the reliability of a bus service by working with bus companies and local authorities to provide dedicated bus priority infrastructure, such as bus lanes, bus gates and bus priority at traffic signal controlled junctions. Our Master Plan has identified the opportunities to provide various bus only links into our airport, either from a new link to the A299, via a link from Mount Pleasant roundabout or from Ramsgate railway station.

We would like bus infrastructure to be of a high quality. This could be achieved through providing good quality shelters that provide real time travel information similar to those used by the Fastrack service recently implemented in North Kent. Bus services should be affordable in relation to other transport modes. Whilst the cost of a bus fare is unlikely to be a determining factor for airport passengers, it will be a significant factor in encouraging staff to use bus services to commute to work on a daily basis.

Rail

At present the nearest rail stations to our airport are located at Ramsgate, Minster and Birchington. These stations lie a distance from the airport that would require an additional mode of travel to be employed – such as a bus link between the stations and our airport.

In late 2009, domestic high speed rail services are scheduled to begin using the Channel Tunnel Rail Link across Kent. This will reduce current journey times

between London and Ashford from approximately 1 hour and 15 minutes to approximately 37 minutes. The high speed service will also benefit those rail services between London and Ramsgate that travel via Ashford, thereby significantly reducing the existing journey time between Ramsgate and London from nearly two hours to approximately 75 minutes.

Whilst this will have a positive influence in choice of travel mode to the airport it will also be necessary to invest further in rail services to maximise the potential for passengers and staff to commute to the airport using rail. We have identified several options which would facilitate a greater use of rail travel between the catchment area and our airport.

Broadly these can be split into three groups:

- Provision of a dedicated bus link to existing railway stations;
- Bus link to a new railway station; and
- New dedicated rail spur line into our airport.

The provision of a dedicated bus to a range of existing railway stations has been considered and it has been concluded that Ramsgate will connect passengers to a good rail service of both high speed and regular trains. A direct bus link to Ramsgate services will enhance the ability of rail to attract a higher proportion of passenger and employee patronage. This is shown on Tables 12 and 13.

Ramsgate station is located within an urban area and reliable access between the rail station and airport can often be affected by traffic. Bus priority measures could be implemented to improve the reliability of bus services between the station and our airport.

The provision of a new parkway facility on the existing Ramsgate Stour Valley Rail Line [33] has been explored. This has the potential to attract a higher modal share for passenger access to our airport. This would further enhance the ability of rail to attract a higher proportion of passenger and employee patronage. A typical example of a successful parkway rail station can be observed at London Luton Airport.

The provision of a dedicated rail spur line into our airport has been investigated. It has been concluded that the potential modal share of at least 20% rail patronage could be achieved if an airport station was provided. This would best enable rail to attract the highest proportion of passenger and employee patronage.

There are a number of other airports aside from international hubs with successful rail links and these include London City, Southampton, Bristol and Glasgow Prestwick airports.

Ramsgate Station offers the highest frequency of rail services to and from London and would therefore represent the primary rail facility to serve our airport in lieu of a dedicated station being provided.

33 The railway line from Ashford to Ramsgate is known as the Stour Valley Rail Line.

The frequency of trains will be discussed with rail operators as passenger and staff numbers grow at our airport. Increasing the frequency of trains would not only increase the relative advantages of rail as a travel option but would also increase the capacity of services to carry passengers.

This would certainly become a consideration as passenger numbers at the airport grew in line with the Master Plan aspirations.

An increase in operating hours of rail services at Ramsgate, to coincide with the earliest and latest flights that will be offered by the airport, will be explored with rail operators.

Table 12: Access Times to and from London from our airport via...

Our airport to London via….	Bus to railway station	Rail journey time	Total travel time
Ebbsfleet	68 mins	17 mins	85 mins
Canterbury West	25 mins	60-65 mins	85-90 mins
Ramsgate	7 mins	75 mins	82 mins
Faversham	36 mins	65 mins	101 mins
Sittingbourne	50 mins	55-60 mins	105-110 mins

Cycling & Walking

Whilst it is not expected that airport passengers would walk or cycle to the airport, employees of our airport will generally live locally and this opens up the potential for walking and cycling to play a significant role with respect to their journey to work. Whilst there will be a proportion of people who work shift patterns that make driving to work a practical and safety / security necessity, there will be a proportion of staff who will be targeted for encouraging walking and cycling to work.

This will be assisted by the Thanet Cycling Plan proposals which include a significant expansion of cycle networks within Thanet during the coming years, and the Bike to Work Scheme. Our airport would support the provision of cycle routes where these serve airport employee catchment areas.

The facilities at our airport will include provision for secure cycle storage in areas that are convenient as well as the provision of shower and changing facilities for employees.

Walking and cycling access to the airport and movement within our airport will be designed such that employees and the general public will find this mode convenient where security and safety objectives are not compromised.

Table 13: Connectivity to Railway Stations

Station	Distance from Airport	Journey time	Direct Rail Service (2010)	Comments
Ramsgate	4.2 km	7 mins	High Speed: 2 per hour peak, 1 per hour off peak. Regular: 6 per hour peak, 3 per hour off peak	Interchange with local bus services. Access route through Manston village
Margate	8.0 km	11 mins	High Speed: 3 per hour peak, 1 per hour off peak. Regular: 5 per hour peak, 2 per hour off peak	Interchange with local bus services
Birchington	5.6 km	9 mins	High Speed: 2 per hour peak. Regular: 3 per hour peak, 2 per hour off peak	Very limited forecourt access
Faversham	38.3 km	36 mins	High Speed: 2 per hour peak, 2 per hour off peak. Regular: 5 per hour peak, 2 per hour off peak	
Sittingbourne	49.7 km	50 mins	High Speed: 2 per hour peak, 2 per hour off peak. Regular: 5 per hour peak, 2 per hour off peak	
Ebbsfleet	85.8 km	68 mins	High Speed: 9 per hour peak, 8 per hour off peak. Regular: 4 per hour peak, None per hour off peak	Large Car Parks
Minster	5 km	9 mins	High Speed: (not known). Regular: 2 per hour peak, 1 per hour off peak	Access route through village
Sturry	18.2 km	18 mins	High Speed: (not known). Regular: 2 per hour peak, 1 per hour off peak	
Canterbury West	22.9 km	25 mins	High Speed: 2 per hour peak, 1 per hour off peak. Regular: 2 per hour peak, 2 per hour off peak	Access through Canterbury via A28

Achieving Growth in Other Areas of the Business

Improved Connectivity

Our airport has long been an important transport hub with links across the UK and Europe and its role will be significantly enhanced as growth occurs. Since WWII Manston Airport has played a role in the operation and success of the UK, from our strategic position in relation to Europe during times of war, through to today's flights taking local people away on holidays and bringing in fresh produce for the consumer markets.

As demand for air travel increases over time, the range of destinations available and frequency of flights serving them will increase. We envisage that domestic, European and transatlantic flights will depart from our airport on a regular basis by the end of the Master Plan period.

Development trends across the UK indicate that businesses will locate in, or relocate to, areas with essential linkages to strategic road, rail and air infrastructure. This is particularly relevant for businesses which distribute to foreign destinations, or operate within the aviation industry. Employment land is available at a number of locations within close proximity to the airport (in particular Manston Park and EuroKent Business Park) and it is envisaged that the growth of our airport will act as a catalyst for development.

As companies locate in the area to take advantage of the transport infrastructure linkages, jobs will be created and people will be attracted to live and work in the area. These households will support the local economy in terms of the spend on local services and the rates paid to their council.

The location of the airport will influence business decisions and attract inward investment.

The Thanet Local Plan indicates that the development of existing employment allocations [34] within the district will generate some 6,000 new jobs by 2011. It also envisages that 3,660 additional new jobs will be created at our airport by 2011. The Local Plan assumes that a proportion of these jobs will be taken by unemployed people, employees currently commuting outside the district for work and by people choosing to live outside Thanet.

In total, all of these employment opportunities are expected to generate a housing requirement of some 4,200 homes in the period to 2011. The Local Plan also aims to provide additional housing opportunities to attract people to live and work in the district [35].

Employment opportunities generated by the growth of the airport are likely to increase demand within the district for housing. The South East Plan identifies that some 7,500 homes should be provided in Thanet District in the period 2006-2026 (policy H1). The Thanet LDF will contain a policy framework to ensure sufficient land supply to deliver this target during the plan period and it is not considered that demand will not outstrip supply. Employment growth at our airport in the

34 Including Manston Park, EuroKent, Thanet Reach and land within the Sandwich Corridor.

35 In association with the planned expansion at Pfizer Ltd.

period to 2011 and the impact that this will have on housing supply has been assessed by the Local Plan. Beyond this period, employment opportunities at our airport and the demand for housing are also likely to increase.

It is inevitable that land will be released and windfall sites will come forward for new housing over time. It is therefore not envisaged that employment numbers, and employment activity generated at our airport will increase at a disproportionate rate to housing supply, and the local housing market will not overheat as a result of our airport's growth.

Enhanced connectivity through the improvement of our airport will also enable greater tourist access to this part of East Kent. Tourists travel to East Kent to enjoy the natural scenery and range of tourist destinations and activities within easy travelling distance of the airport.

Our experience at Glasgow Prestwick Airport shows that a significant portion of inbound visitor spending takes place in the home district of the airport even when the majority of inbound passengers are continuing their travel to a city destination [36]. Visitors travelling by air are likely to stay for more than one day and spend money on accommodation and tourism related services.

The growth of our airport and the influx of people to the area in line with direct and indirect employment generation are likely to have significant regeneration benefits for the region. As people move to the area the demand for housing, community facilities [37] and services will increase.

The development industry will respond to this demand and accommodation will be provided. Over time this will encourage greater inward investment by external companies and the local authority, which will enhance the profile of the area and the quality of life for local residents.

The regeneration benefits will spread outwards from the local area and are likely to contribute towards the regeneration of the smaller peripheral coastal locations in East Kent.

In summary, it is evident that the growth of our airport will contribute towards the development of the local economy in terms of business generation and tourism. It also has the potential to act as an important catalyst for the regeneration of local community areas.

Our airport is currently home to a variety of small businesses both aviation and non-aviation related. The rental income derived from these businesses forms an important part of the revenue stream for the entire airport. These businesses are crucial to create a wide range of employment opportunities in the region.

36 Economic Impact of Glasgow Prestwick Airport, SQW Consulting, February 2008

37 Schools, healthcare, childcare, public services etc.

Airports worldwide are increasingly becoming centres of commercial activity over and above direct aviation related enterprises. A combination of superior transport infrastructure, high security and extensive communications infrastructure makes airports attractive to a wide variety of businesses. Development of the land holdings at our airport will bring a range of employment opportunities to an area of Kent with an unemployment rate that compares poorly to the Kent average [38].

Many businesses located at the airport are directly related to the handling of passengers and freight. As passenger and freight traffic grows we expect the demand for the services of these businesses to grow as well.

We are seeking a greater flexibility of land uses for our Northern Lands through the planning policy framework review process and regard the ability to develop both aviation and non-aviation activity in this area as key to successful growth of the airport.

A large employment area, known as Manston Park, is located immediately to the north of our airport and has been subject to recent outline planning permissions for B1 office, B2 general industry and B8 storage and distribution uses (China Gateway proposals).

It is likely that this employment area will be developed for a range of employment uses within the Master Plan time horizon and that the companies locating here will contribute significantly toward the local and regional economy. The proximity of Manston Park to our airport could facilitate its use as a large logistics and trade platform with the potential for excellent air links to the rest of the UK and Europe. Companies are also likely to benefit from its proximity to Dover and Ramsgate shipping ports and the strategic road network.

Our Master Plan anticipates the increase in freight throughput as a result of the capacity and cost pressures on the existing London airports. Associated with the growth in freight volumes there will be an increase in local employment generated by businesses basing at and around our airport. These new ventures will be required to facilitate and support the air freight industry. The businesses will include freight forwarders, logistics providers and other contract service providers.

As a result of our strategic location and excellent transport links, freight is expected to grow significantly during the Master Plan period. The ability to accommodate the growth of freight and ancillary facilities is provided for in the Master Plan. Maintenance, repair and overhaul (MRO) is a large sector of the UK aerospace industry. We expect to develop this activity as demand for maintenance facilities increases as new aircraft enter service. Competition for these facilities is significant from continental Europe, Asia and the Middle East.

38 Thanet Economic Growth and Regeneration Strategy.

Safeguarding for Growth

In order that our airport may grow as outlined in the earlier sections of this chapter, we need to safeguard our land and surrounding areas along with the airspace so as not to compromise our plans and to ensure that we continue to operate a safe airport in accordance with the terms of our CAA licence.

We would like to move towards being a CAA officially safeguarded aerodrome as it becomes appropriate.

Aviation Security

We will continue to liaise with the DfT and local planning authorities to ensure that aviation security is given careful consideration when assessing development proposals in close proximity to the airport and that the prevailing government guidelines are adhered to. This will involve the continued monitoring of all planning applications in the vicinity of our airport.

Land for Growth

We can realise the plans for our airport largely within the existing airport site and with minimal impact on the community, our neighbours or the environment. Land to the north of the airport site has been identified for possible future employment generating development.

It is common that both aviation and non-aviation related activities find airport environs an attractive commercial location. High quality transport links, communication links and a high security environment ensure that airports are regarded as attractive locations for many businesses. Detailed land use planning will be investigated further and may become the subject of a new master plan in due course.

Whilst there are provisions in legislation for the compulsory acquisition of land necessary to facilitate the growth of the airport, in the first instance, we will enter into normal commercial negotiations with the owners of sites where required.

We will promote future development proposals beyond the current airport boundary, such as road improvements, parking and aviation associated facilities, through the Thanet LDF to reduce uncertainty and long term blight.

Wind Farms

A new and particular area of safeguarding concern for the airport is wind farms. Our airport is located on a ridge line and has clear lines of sight in all directions for some significant distance, including out to sea in the Thames Estuary.

While we are not opposed to wind farms per se, there are places where wind energy developments and aircraft operations cannot co-exist without detriment to the provision of a safe and effective air traffic service, thus significantly constraining the current and future growth opportunities for the airport.

Within our airport's air traffic approach environment (42 nautical miles from the

airport), there are a number of wind farms either operating or which have obtained planning consent. Of particular note, due to their scale, are the offshore wind farms in the Thames Estuary.

The 30-turbine Kentish Flats Wind Farm is already operating and is “seen” by our air traffic control radar. Thanet Offshore Wind Farm (100 turbines) and London Array (up to 341 turbines) have also been granted consent by the Secretary of State for Business, Enterprise and Regulatory Reform (BERR) and will be “seen” by our air traffic control radar once they are built.

Wind turbines generate false returns (also known as “clutter”) on our radar display and require our air traffic controllers to avoid directing aircraft through or near the airspace above the turbines.

As a result, certain areas of airspace formerly used by aircraft become “no go” zones, unless a technical mitigation can be identified and implemented which effectively removes the clutter from our radar displays. The airport can continue to operate safely and grow with the current level of radar clutter from Kentish Flats.

However, in order for Thanet Offshore Wind Farm and London Array to be built, we have had to identify and agree with the CAA, BERR and the developers, a technical mitigation for these wind farms. We are being faced with increasing numbers of development proposals for onshore and offshore wind farms which would be visible to our radar in critical areas of our airspace. We have objected to a number of such developments, where we believe that the construction of a wind farm may compromise the safety, flexibility and capacity of the airport.

We do, however, seek to work with the wind farm developers to identify whether any mitigation may exist which would allow the wind farms and our current and future air traffic operations to co-exist. This is a time consuming and resource intensive task, but we take it seriously as we are committed not only to the future viability of the airport but also to facilitating, where we can, the increased generation of renewable energy.

To this end, we are producing a wind farm safeguarding map to guide developers and local planning authorities as to preferred areas for wind farm development from an aviation perspective. It takes into account our current and likely future radar and navigational aid parameters: planning law allows for future facilities to be safeguarded in advance.

Our airport safeguards navigation aids such as the instrument landing system (ILS) on Runway 28, as well as our primary radar. Our airport is safeguarding for a Secondary Surveillance Radar to be installed as part of the London Array and Thanet Offshore wind farm mitigation.

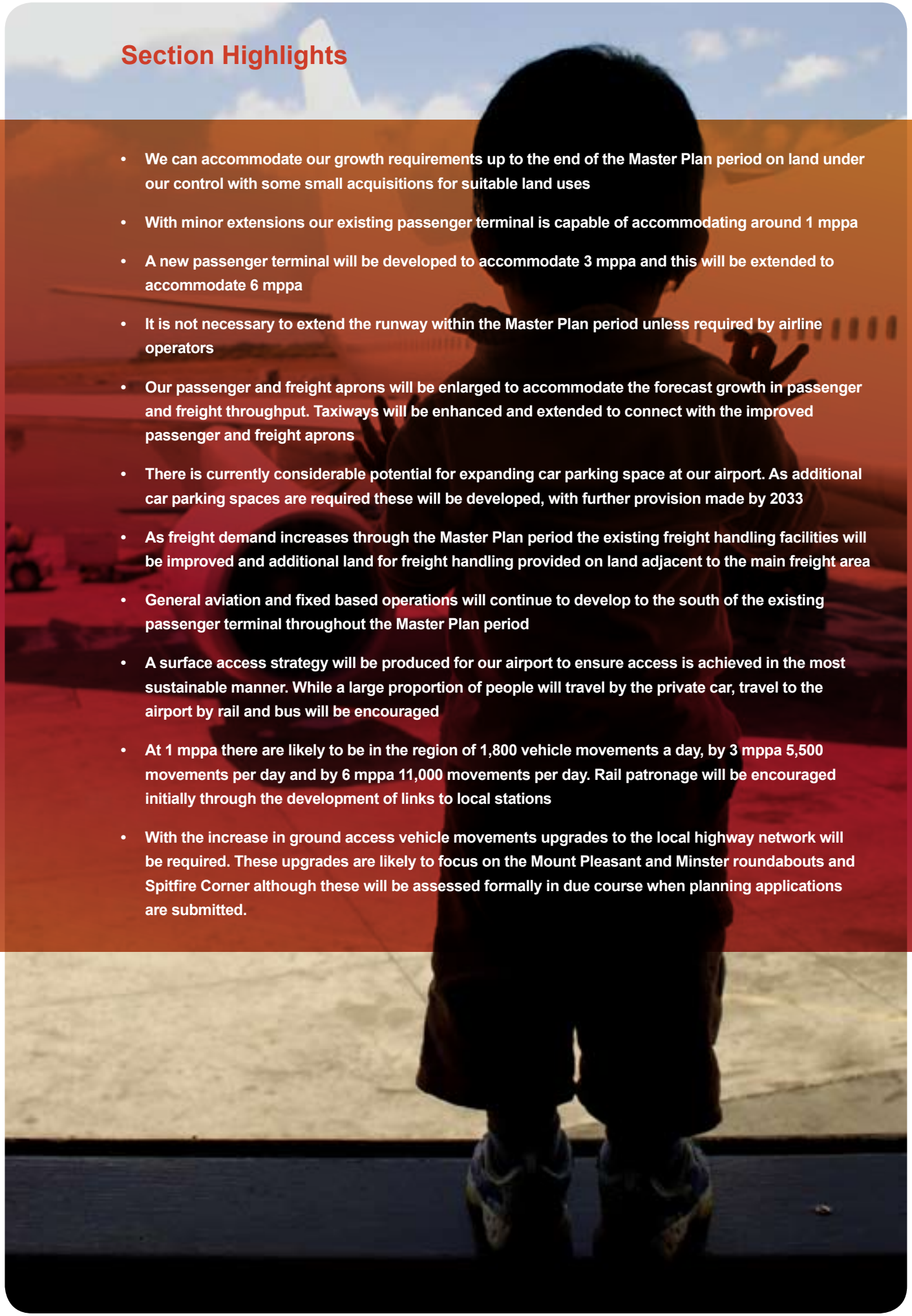
Our wind farm safeguarding map over time will be more dynamic than our protected surfaces safeguarding map as

our analysis of areas acceptable for wind farm development will change in light of the grant of planning approvals. The cumulative impact of wind farm developments on the safety, flexibility and capacity of our airspace requires constant monitoring.

In light of this, we recommend that the local planning authorities take a strategic approach to onshore wind farm site selection, so as to identify preferred areas of search and to apply a sequential approach with regard to wind farm development, namely that developments should first take place in agreed preferred areas of search, rather than the more piecemeal approach which airports find themselves facing today. Such an approach would also assist in the identification and implementation of mitigation.

The difficulty we face with some of the onshore applications to which we have objected is that because of their small scale, they cannot afford to fund possible mitigation. However, the fact that the developments consist of a smaller number of turbines than the offshore schemes does not mean that the clutter these turbines will generate on our radar displays can be ignored.

We will only object where we believe that the turbines will impact on safety, flexibility and capacity of our airport.



Section Highlights

- We can accommodate our growth requirements up to the end of the Master Plan period on land under our control with some small acquisitions for suitable land uses
- With minor extensions our existing passenger terminal is capable of accommodating around 1 mppa
- A new passenger terminal will be developed to accommodate 3 mppa and this will be extended to accommodate 6 mppa
- It is not necessary to extend the runway within the Master Plan period unless required by airline operators
- Our passenger and freight aprons will be enlarged to accommodate the forecast growth in passenger and freight throughput. Taxiways will be enhanced and extended to connect with the improved passenger and freight aprons
- There is currently considerable potential for expanding car parking space at our airport. As additional car parking spaces are required these will be developed, with further provision made by 2033
- As freight demand increases through the Master Plan period the existing freight handling facilities will be improved and additional land for freight handling provided on land adjacent to the main freight area
- General aviation and fixed based operations will continue to develop to the south of the existing passenger terminal throughout the Master Plan period
- A surface access strategy will be produced for our airport to ensure access is achieved in the most sustainable manner. While a large proportion of people will travel by the private car, travel to the airport by rail and bus will be encouraged
- At 1 mppa there are likely to be in the region of 1,800 vehicle movements a day, by 3 mppa 5,500 movements per day and by 6 mppa 11,000 movements per day. Rail patronage will be encouraged initially through the development of links to local stations
- With the increase in ground access vehicle movements upgrades to the local highway network will be required. These upgrades are likely to focus on the Mount Pleasant and Minster roundabouts and Spitfire Corner although these will be assessed formally in due course when planning applications are submitted.

6. Managing the Impacts of Growth

Our vision is to be recognised as a major contributor to the sustainable development of the local area whilst providing a wider positive contribution to the South East Region and the UK as a whole. We have committed to working with local partners and the community to ensure that our airport plays a significant role in the region's future success.

Aviation is a major contributor to UK economic growth and is estimated to directly support 185,900 jobs in the UK economy, whilst generating around £11.2 billion of Gross Value Added (GVA) [39]. When indirect and induced effects are also included these figures rise to nearly 580,000 jobs and £22.2 billion of GVA.

The potential for growth at our airport contributes towards the value of the sector, however it is fully recognised that future growth in passenger numbers will bring additional environmental pressures that will need to be planned for and managed sustainably.

Our expansion will involve a new building programme to accommodate an increase in passenger numbers and the growth in activity at the airport.

We recognise that expansion at our airport could lead to increased pressures on the surrounding environment and local communities, however it is also an opportunity for sustainability features to be thoroughly incorporated throughout the design process.Our approach to future development and management of the airport recognises the objectives of the UK Government's Sustainable Development strategy Securing the Future (March 2005).

This strategy identifies four priority areas as the focus for future action:

- Sustainable consumption and production;
- Climate change and energy;
- Protecting natural resources and enhancing the environment; and
- Creating sustainable communities and a fairer world.

Adopting these principles, this section of the Master Plan outlines our proposals for managing a range of local sustainability impacts which are associated with our airport now and throughout the plan period, including socio-economic aspects, ecology, surface access, noise and air quality, as well as further key impact areas that may have local or wider significance, in particular climate change. Our assumption that provides the basis of this chapter is that our impacts cannot increase in proportion to airport growth.

39 Airport Operators Association (2005) The Economic and Social Impact of Airports.

Our Policies on Sustainability

We see sustainability as a core business area. This is why we have developed a sustainability charter for all of our airports and are now putting in place Environment Strategies. These are to meet the charter commitments whilst having due regard to the individual commercial and environmental circumstances of each location and the legal requirements and community expectations of the jurisdictions they are located in.

Sustainability is as much about attitudes and processes as it is about targets and actions, no matter how important those are. This is why we are working towards implementing a robust Environmental Management System at our airport. The main sustainability commitments proposed during the Master Plan period are summarised in table 14.

Our environmental policy will be regularly reviewed and developed to ensure that it:

- Is appropriate to the nature, scale and environmental impacts of our activities, products and services;
- Leads to continual improvement and prevention of illegal pollution;
- Ensures we comply with applicable legal requirements and with other requirements to which the organisation subscribes which relate to its environmental aspects;
- Provides the framework for setting and reviewing environmental objectives and targets;
- Is documented, implemented and maintained;
- Communicated to all persons working for or on behalf of the organisation; and
- Is available to the public.

In addition to putting sustainability at the core of our business model, we are committed to the following overall actions and targets for our airports:

- Manage carbon dioxide emissions from energy sources through developing and implementing our Energy Plan;
- Investigate opportunities for development of renewable energy generation on the airport site to provide some, if not all, airport energy needs;
- Minimise noise levels as a result of airport development and operations;
- Regularly undertake air quality testing and make the results publicly available;
- Work towards a recycling rate of 50% for all waste generated at the airport from 2011 onwards;
- Uphold compliance to discharge consents and improving the quality of watercourses at our airports;
- Monitor water consumption as the airport grows ensuring that a high level of efficiency is achieved, through the use of appropriate technology;
- Endeavour to ensure all new buildings are neutral consumers of potable water through the use of grey water, rainwater harvesting and waterless systems;
- Carry out regular ecological surveys to identify opportunities to promote suitable wildlife at our airport;
- Ensure that all new developments have a neutral or positive impact on biodiversity; and
- Maintain an open dialogue with local communities and ensure all negative impacts associated with the airport are mitigated.

Table 14: Airport Sustainability Summary Table

Issue	Commitment Target
Renewables	Meet 10% of energy needs through on-site renewable technologies by 2018
Carbon Dioxide / Emission Control	Manage carbon emissions through an energy plan, incorporate best practice aircraft operating procedures to encourage sustainable airline operations (such as continuous decent approach procedures, minimising ground engine use and aircraft holding patterns) and efficient ground operations
Air quality	Maintain the regime of continuous air quality testing to monitor trends
Waste	Recycle 50% of waste generated by the airport by 2011
Water consumption	Monitor water consumption and endeavour to ensure that all new buildings are neutral consumers of potable water
Water quality	Monitor water quality to ensure that there are no adverse impacts on local water courses

Energy and Climate Change

Climate change is one of the most significant challenges facing the globe and as an airport we have the responsibility for reducing our greenhouse gas emissions. According to the United Nations Framework Convention on Climate Change UK domestic and international aviation contributed less than 2% of the global total emissions of carbon dioxide. This is very low in comparison to vehicle emissions, which account for 12% of global total emissions [40].

Aviation contributes to climate change in a number of ways. The burning of fossil fuel, in flight is the industry's biggest contribution, but greenhouse gas emissions are also generated by the production of the energy used in airport buildings. Ground emissions from airport vehicles and the vehicles used by passengers and staff also contribute significantly.

Our aim is in line with the Kent Environmental Strategy which is to be "a place where energy, derived principally from innovative and renewable sources, is cheaply and efficiently available to all and where the impacts of climate change are mitigated by widespread carbon savings".[41]

To support this aim, we are committed to taking a low carbon approach to the way we operate, the emphasis being on the ground level emissions attributable to the operation of airport facilities. Carbon reduction should also be viewed in the regional and national context. The increased choice of routes and services from regional airports outside the South East, not only promotes regional development but also cuts down on the need for long-distance travel to and from airports, thereby reducing emissions.

In addition, we have set a target of making all airport ground operations carbon neutral through new development. We shall endeavour to do this through reducing energy usage, buying green energy, developing on site renewable sources and investing in certified schemes that through off-setting will capture the equivalent amount of CO2 to that generated at the site.

40 World Resources Institute 2006 indicates that aviation contributes 1.6% of an overall 13.5% for, the transportation sector, and compares with 9.9%, for road-related emissions.

41 The Kent Environment Strategy, 2003

We will seek to ensure that passengers are made aware of the opportunity to offset the carbon footprint of their flights via operator websites and notices in our terminal building.

We will also seek to explore any opportunities to establish shared energy generation and distribution systems with other site developers, aiming to minimise the carbon emissions associated with the wider site.

Further to this, we shall continue to set targets for reducing CO2 from energy, sources against 'business as usual' benchmarks. We will achieve this through the following measures:

- Training and awareness
- Providing training to staff to conserve energy; and
- Establishing a company working group to identify opportunities for energy saving initiatives.

Ground Access Improvements

- Developing a green travel plan to target passengers, businesses and staff; and
- Encouraging clean fuel use for onsite vehicle fleets.
- Our carbon reduction aims will be supported by continuous benchmarking and internal auditing to measure and identify opportunities for further improvement in our airport's performance.

Environmental Controls

Currently an agreement exists between Thanet District Council and our airport. The agreement, made in accordance with Section 106 of the Town and Country Planning Act (the s106 agreement) provides a framework in order for the local planning authority to control the operation of the airport so that the substantial benefits of air services can be realised whilst managing the effects of the airport in the community. The issues addressed by the current agreement remain valid, although some conditions are unique to our airport and act as a deterrent to aircraft operators wishing to base operations at Manston. In summary, the s106 agreement addresses the following key issues:

- Night-time flying;
- Noise;
- Preferred departure runway;
- Noise abatement routes;
- Noise monitoring terminals;
- Pollution monitoring;
- Noise monitoring; and
- Engine testing.

The environmental controls relevant to an airport s106 agreement are outlined in the following paragraphs, with the exception of the environmental studies and green travel proposals, which are addressed elsewhere in the Master Plan.

Air Quality Monitoring

A comprehensive system of air quality monitoring in the vicinity of the airport was agreed as a part of the s106 agreement to maintain an accurate record of changes in levels of pollutants around the airport. We anticipate that this regime will continue to operate.

Aircraft Routes

In order to minimise disturbance on adjacent residential areas, aircraft routes are currently controlled by the s106 agreement such that, subject to aircraft separation requirements, aircraft departing to the west turn right after take-off, avoiding Herne Bay. This restriction does not apply to aircraft operating in the training circuit and returning back to the airport. Aircraft undertaking circuit training to the north of the runway should avoid overflying Margate and Broadstairs by keeping their path over the sea until they approach the runway. Due to the orientation of the runway there will always be a requirement for aircraft to approach and depart over residential areas. This is not unusual, with airports traditionally built adjacent to towns and cities for reasons of convenience.

As the airport develops, we will install a radar tracking and recording system. This system will enable residents to monitor the flight paths, providing a clear and accurate record of aircraft routes and detecting off route aircraft.

Airport Operational Hours

With any scheduled aircraft activity, a proportion of flights are affected by unanticipated delays. These delays can relate to weather at a destination / origin airport, loading difficulties, engineering faults, airport congestion or a range of contributing factors. Whilst we would expect this activity to remain proportionally low relative to total movements, it is essential to provide a degree of flexibility to enable aircraft operators to meet the demands placed upon their business.

There has never been a rule in place which bans flights between certain hours at our airport, although the scheduling of regular flights between 11pm and 7am is not presently permitted. The current agreement has within it a system whereby aircraft arriving and departing between 11pm and 7am are allowed, provided a payment is made into a community fund for aircraft movements which exceed a noise quota count rating of 4. The community fund is audited by the KIACC [42] and Thanet District Council, with the funds collected and distributed by a panel to applicant organisations located in the area affected by airport noise.

As the airport grows, the essential requirement to accommodate delayed aircraft will remain. We will propose a system of controls consistent with those in place at our UK and European counterparts. Several options exist, including a Quota Count System, restrictions on noisy aircraft and the adoption of a night time flying policy.

42 The Kent International Airport Consultative Committee consists of elected representatives of Thanet and Canterbury District Councils, Kent County Council, local parish councils and other interested parties. The KIACC meets quarterly with our airport management, including a meeting held in public each calendar year.

Noise Monitoring

Noise emanating from airports can be a key concern and we recognise that airport noise can affect our close neighbours. Noise associated with an airport originates most significantly from aircraft in flight, but also from ground movements, traffic, construction work and equipment.

In line with the s106 agreement, the noise emitted by aircraft using our airport is monitored. Currently noise monitors are installed at either end of the runway and have been interfaced with a flight movement database, which records corresponding aircraft type data and passes this information on to the KIACC in graphical form. The noisiest aircraft movements during the quarterly period are reported. Thanet District Council also uses a mobile noise monitor funded by the airport to take measurements at other locations. This is an advanced system of monitoring, providing useful information for future analysis. We propose to keep this system in operation to allow the noise effects of airport growth to be measured accurately.

It is not possible at this time to predict which types of aircraft will be operating by 2033 and for this reason we do not consider that noise calculations for 2033 will be in any way representative. Further to this, it is likely that by 2033 technological advancements will have reduced the amount of noise produced by aircraft, which will help to mitigate the increase in the number of flights forecast. The noise footprint of a modern jet is 75% smaller than that of a 1960's jet aircraft [43]. 2018 noise contours for our airport are provided later in this section.

Aircraft Noise

Whilst the aviation industry is actively working towards quieter aircraft types, there remain some concerns from residents and communities close to the airport boundaries relating to the increase in noise levels associated with our airport's expansion.

Air noise within the UK is commonly portrayed using Leq noise exposure contours. Noise exposure contours show a set of closed curves on a map with each contour showing places where people experience the same amounts of aircraft noise energy. The Leq is the equivalent continuous sound level and research has indicated that the Leq is an indicator of a community's disturbance from aircraft noise. Conventional noise exposure contours are calculated for an average summer day over the period from 16 June to 15 September inclusive (92 days), for traffic in the busiest 16 hours of the day; between 0700 and 2300 local time. Contours are depicted from 57 decibels to 72 decibels in 3 decibel steps.

For reference, the 57 Leq contour is the point at which the community becomes aware of airport noise, 63 Leq contour is the point at which noise mitigation of some form is recommended for residential dwellings and the 69 Leq contour indicates the area closest to the airport within which residential land use is discouraged.

43 Airport Operators Association, UK Aviation Facts 2007.

Accordingly, air noise modelling has been performed for our airport using INM version 7.0, which is a fully compliant ECAC.CEAC air noise model, for the following situations:

- Current baseline for year 2009 – using the most up to date aircraft dataset; and
- Future activity in 2018.

The aircraft fleet used in our noise modelling was derived from a combination of:

- Forecast scheduled movements for both passenger and freight aircraft; and
- 2007 and 2008 airfield movement logs.

The resultant noise contours are shown on plans 7 and 8 on pages 88 and 89 and indicate the potential requirement for some properties to be noise insulated as our airport grows and develops.

In line with the projected increases in aircraft movements, we will work towards preparing a noise insulation scheme and consult on this in advance of achieving long term growth projections in order to enable early implementation.

Ground Noise

Noise generated by operations other than aircraft in flight or taking off and landing is known as ground noise. The main source of ground noise is aircraft taxiing between runways and stands. This includes all holding, engine start up and shut down procedures, auxiliary power units (APUs) used by aircraft whilst on stand and ground running of aircraft engines during maintenance.

Airport ground noise is potentially audible within a limited radius of the airport boundary particularly at night for towns close to our airport boundary. We will work with airlines to ensure ground noise levels are minimised as the airport develops. We have placed appropriate restrictions on using APUs and will endeavour to introduce additional fixed ground power to limit the need for these. Ground noise at our airport will be controlled in accordance with best practice guidelines.

Engine Testing

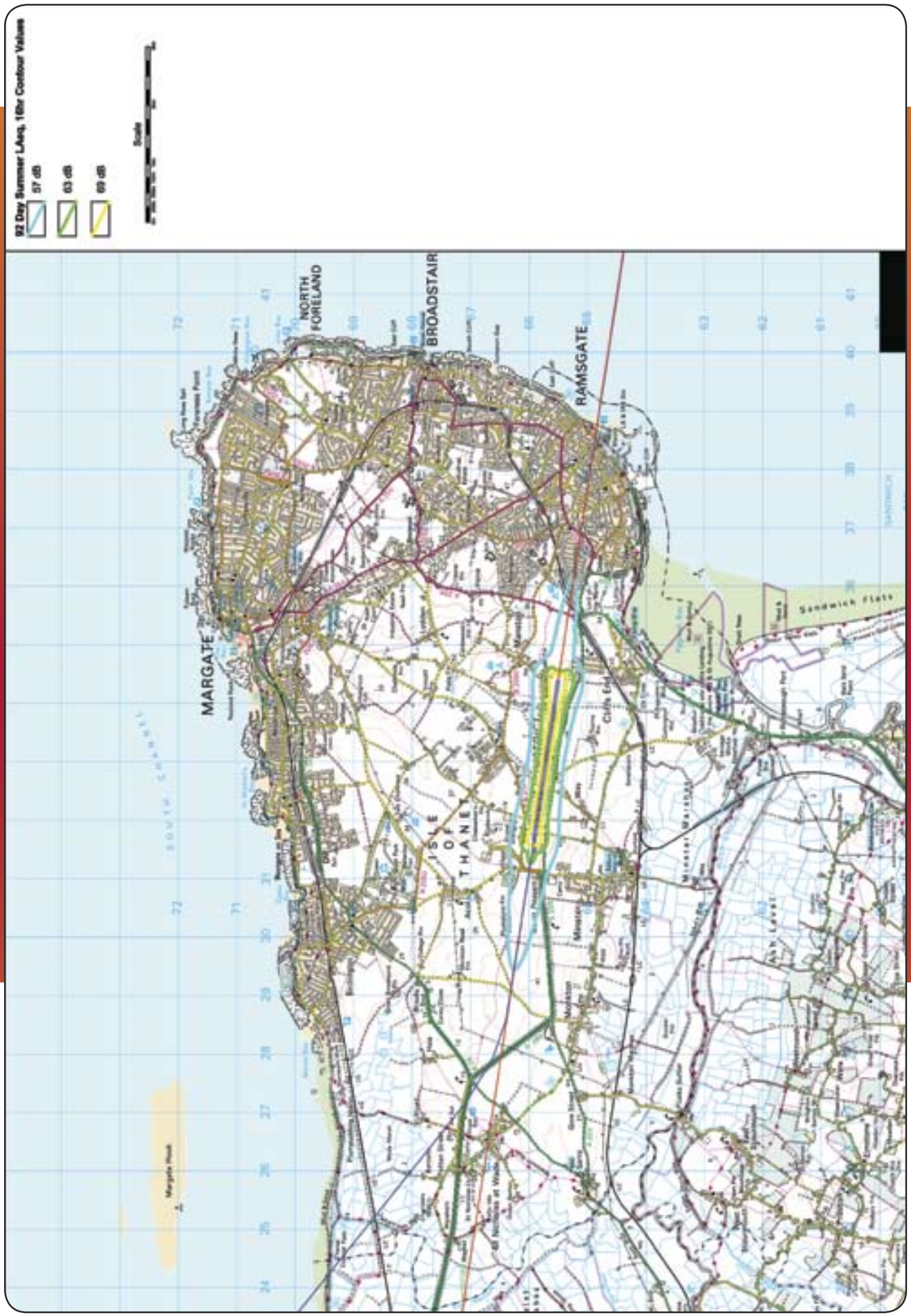
From time to time, aircraft are required to test their engines on the ground for maintenance reasons. The s106 agreement contains provisions limiting the times during which aircraft operators are permitted to test engines on the ground. Restrictions will be maintained and reviewed through the s106 agreement.

Traffic Noise

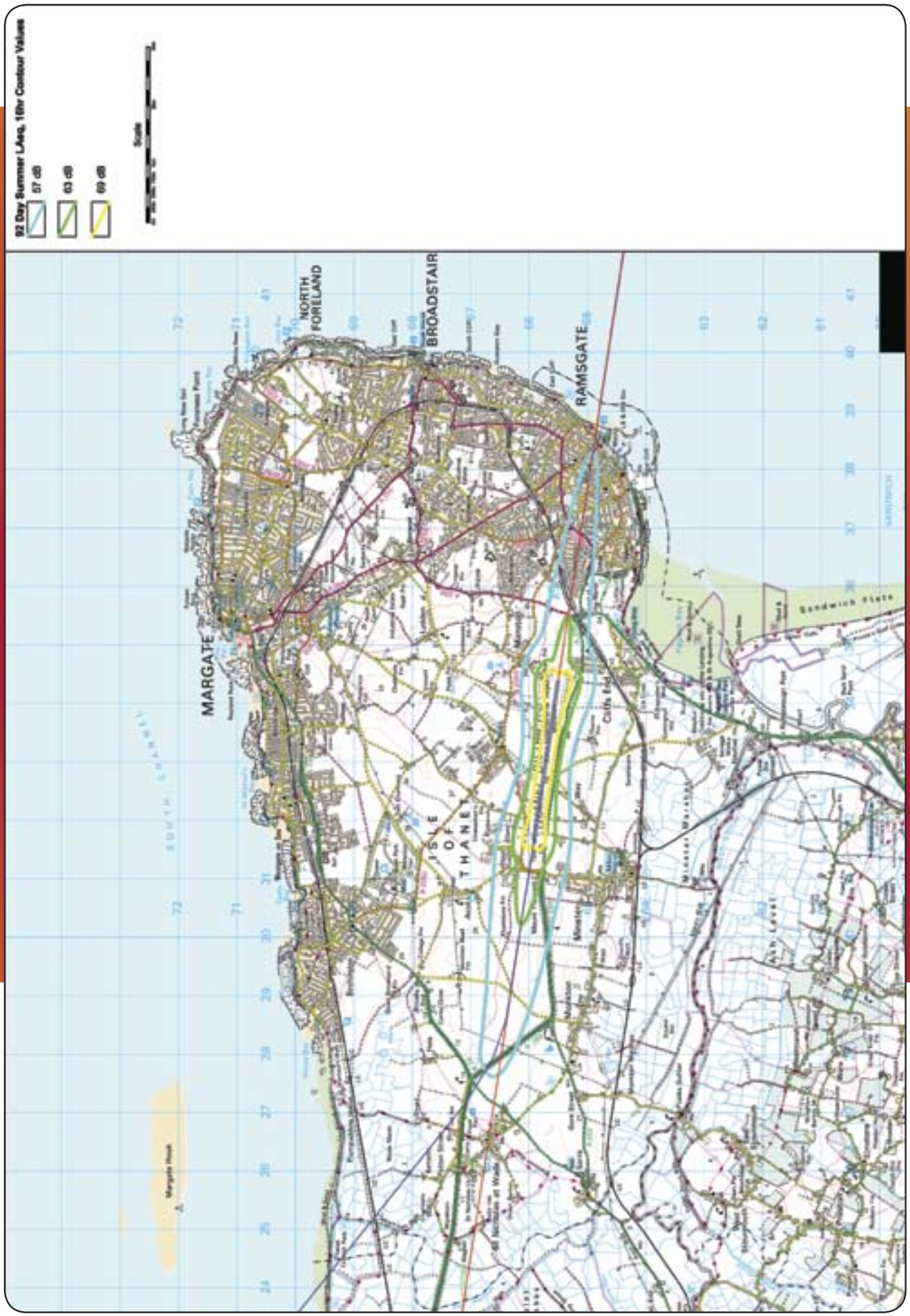
The additional traffic generated by the airport will give rise to an increase in vehicle noise in the car parks and approach routes. To minimise the impact of traffic noise on the village of Manston measures will be introduced to reduce the potential noise impact once the 3 mppa terminal is constructed.

Noise from Construction Work

During the period of this Master Plan there will be a number of construction projects on the airport site. These will occur within the existing boundary of the airport and are not expected to create significant noise



Plan 7 : 2009 92 Day Summer LAeq, 16hr



Plan 8 : 2018 92 Day Summer LAeq, 16hr

problems for local residents and businesses. However, in developing detailed proposals for any major construction projects, we will include assessments of construction noise and the necessary mitigation proposals will be developed.

Facility Noise

Historic noise calculations at our airport have shown that the noise impact due to facilities can be controlled to an appropriate level (in accordance with and defined by government guidance and standards). Based on noise levels it may be necessary to either enclose or screen externally sited plant to mitigate noise propagation.

Environmental Impacts & Mitigation

Details of the environmental constraints covered in this section are provided on plan 9. Table 15 provides a summary of the environmental issues which will be assessed and the broad timescales for undertaking these assessments as development proposals at the airport come forward.

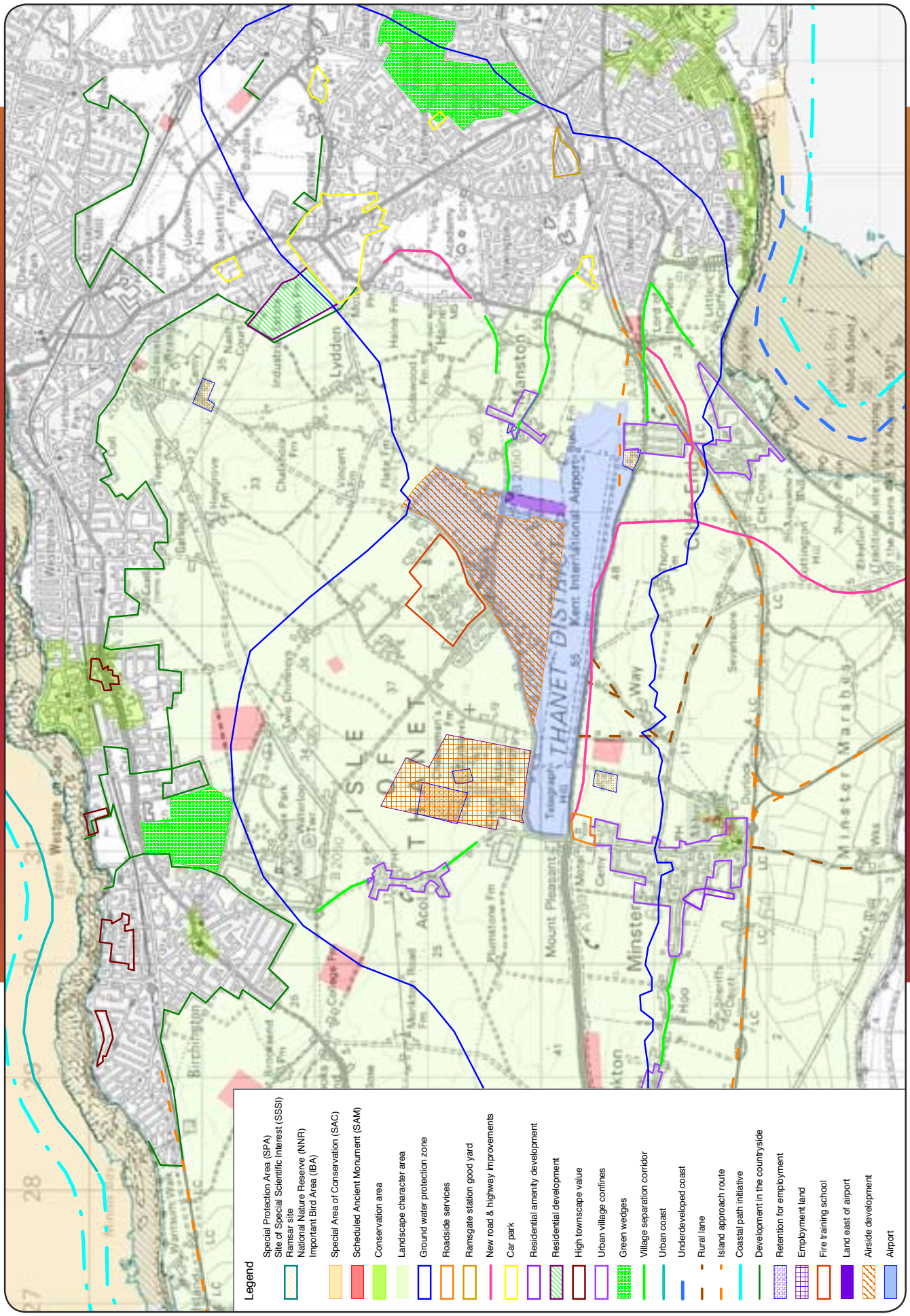
Table 15: Environmental issues assessment timescales

Issue / Assessment	Timescale / threshold
Air quality	Ongoing
Surface access strategy and ATF	> 1000 ATMs
Waste management programme	Ongoing
Water monitoring	Ongoing
Noise monitoring	Ongoing
Biodiversity surveys	Planning application / EIA
Landscape and visual assessment	Planning application / EIA
Land quality	Planning application / EIA
Archaeology	Planning application / EIA

Emissions to Air

The Government has set Air Quality Strategy Objectives to limit the impact of atmospheric pollutants on human health and the environment. Ensuring compliance with the Air Quality Strategy Objectives is the responsibility of local authorities through the Local Air Quality Management (LAQM) system, introduced by the Environment Act 1995.

Local authorities are required periodically to assess current and predicted air quality within their jurisdiction. If an objective is unlikely to be achieved, local authorities must designate the relevant locations as Air Quality Management Areas (AQMAs) and work towards ensuring that the target is met. The local authority has not been required to designate any part of the locality of Kent International Airport as an AQMA.



Plan 9 : Environmental Constraints

Based upon the 2007 Ordnance Survey 1:50000 scale raster map with the permission of the Ordnance Survey on behalf of Her Majesty's Stationery Office, © Crown copyright. Terence O'Rourke Ltd. Licence No. AL100017826. Data provided by Natural England and English Heritage 2007. Masterplan data digitised from Thanet local plan 2006 Copyright Terence O'Rourke Ltd, 2008

Guidance produced by Defra [44] indicates that emissions from large airports can have a detrimental effect on local air quality. A detailed assessment of the effects of nitrogen dioxide is required where more than 5 mppa are predicted; for PM10 the threshold is ten mppa, reflecting the respective significance of each pollutant.

Nevertheless, aircraft, and aircraft support activities, are the principal source of atmospheric emissions at airports. Emissions from sources such as airport buildings are minor by comparison. Aircraft emissions arise from take-off, landing and taxiing; aircraft-support emissions are generated by ground support vehicles, aircraft engine testing and refuelling operations. Road traffic resulting from travel to and from our airport is the other main source of emissions.

Such emissions include nitrogen dioxide (NO2) and fine particulate matters (PM10), which are known to have harmful health effects. Aviation activity is a contributor to ambient concentration of these pollutants, however, road vehicle traffic contributions are significantly higher [45, 46]. Over the Master Plan period there is expected to be an increase in both the average aircraft size and number of flights to and from the airport. Our forecasts predict a significant increase in total aircraft movements over the next 25 years.

Aircraft are becoming more efficient with fewer emissions [47]. This will lead to a significant decline in emissions per aircraft movement.

At Kent, projected passenger throughputs do not exceed 5 mppa until the latter years of the Master Plan period and are not expected to exceed 10 mppa by 2033. It is therefore very unlikely, based upon case studies at other airports processing volumes in this range, that there will be breaches of air quality strategy objectives. As previously discussed, Thanet District Council maintains constant monitoring of the air quality in the area surrounding our airport, which is a requirement of the s106 agreement.

During the Master Plan period, in line with increased flight numbers, vehicle movements will increase around the site not only from passenger vehicles but also from goods vehicles. Improvements in ground access will curb the increase in emissions relative to the increased activity at our airport. The aim is for a proportional decrease in emissions associated with our airport.

Monitoring and Reporting

Thanet District Council monitors air quality around our airport using equipment funded by our airport. Results are reported to the airport consultative committee quarterly in accordance with the s106 agreement. All test results confirm that air quality is well within prescribed limits and the detailed information can be effectively used to monitor changes in future.

44 Local Air Quality Management. Technical Guidance LAQM. TG(03)

45 World Resources Institute 206 indicates that aviation contributes 1.6% of an overall 13.5% for the transportation sector, and compares with 9.9% for road-related emissions.

46 UK Air Quality Strategy 2007, Volume 2.

47 Boeing notes on its website that the new B787 aircraft will 20% percent improvement in fuel use and an equivalent reduction in carbon dioxide emissions compared to today's similarly-sized aircraft.

Ground Access

At present there are no significant issues regarding airport traffic flow. However, we understand that an increase in airport activity will result in an increase in ground traffic over the next ten years. Therefore infrastructure improvements and behaviour change approaches to ground access are required in order to accommodate this growth. In particular, the following developments shall be considered:

- Improved public transport services direct from our airport to the major urban areas;
- Identification of opportunities for encouraging sustainable alternatives to the car for passengers and staff through a green travel plan; and
- Enhanced highway links in the region.

Our Surface Access Strategy and the establishment of an Air Transport Forum, as confirmed in table 9, will address the growth in traffic. It is envisaged that wider benefits to the community could occur through enhancing the economic efficiency of travel movement, by, for example, providing a greater catchment area for employment.

Waste

Waste is generated from a number of sources at our airport, notably from passengers, catering outlets, offices, shops, construction activity and from vehicle and aircraft maintenance. Waste stream volumes are currently low but will inevitably increase as the airport expands so it is important that this growth is managed carefully and that waste is disposed of sustainably, legally and appropriately.

Typical waste streams generated and disposed of at our airport include:

- Paper (office paper from staff, newspapers and magazines from passengers);
- Cardboard (mostly generated from stores);
- Plastics (the majority being plastic bottles deposited into bins prior to going through security because of liquid restrictions);
- Glass (limited to bottles bought in by passengers and disposed of in the terminal litter bins);
- A minimal amount of wood (timber pallets from freight activity);
- Hazardous wastes (fluorescent tubes, redundant IT equipment, batteries and materials containing oil).

We aim to mitigate the effects of waste to reflect the Government's sustainable waste management strategies. This involves reducing waste at source in the first place and then identifying a disposal option which provides the most benefit or least damage to the environment as a whole, at an acceptable cost.

This can include the reuse of materials wherever possible; making the best use of waste through recycling, composting or energy recovery; and finally disposing of it through appropriate licensed facilities, as near to its place of production as possible (see table 14).

We are re-evaluating our waste management practices and through the staged development of our airport we could implement some or all of the following:

- Programmes for monitoring waste generated from airport activities;
- Appropriate processes and provision of facilities within all buildings to ensure the collection, sorting and storage of waste with a view to optimising reuse, recycling and composting;
- Effective and regular communication with all staff, passengers and tenants to raise awareness of waste issues and encourage best performance;
- Proactive management of the supply chain to minimise waste and maximise the use of reusable and recycled materials; and
- A construction waste strategy for all future development, applied by all staff and contractors.

We have the opportunity to develop an exciting environmentally, friendly airport and, in accordance with this philosophy, we will develop targets for recycling wastes generated by our airport. Our emerging waste management programme will seek improvements aimed at achieving these targets. The programme will be reviewed annually and revised as necessary to take account of business growth and to ensure that expected levels of improvement are achieved.

Water Quality

Whilst our proposed developments and projected growth in passenger numbers will increase the level of activity at our airport, it is important to note that normal airport activities do not generate surface and groundwater pollution to any significant degree.

Our airport has strict operating procedures relating to:

- De-icing of aircraft and airside areas;
- Vehicle and aircraft washing;
- Aircraft and vehicle maintenance;
- Run-off from construction sites;
- Aircraft refuelling (spillages);
- Waste and cargo handling; and
- Fire training activities.

Pegwell Bay is a National Nature Reserve and Site of Special Scientific Interest, which lies 500 metres to the south east of our airport. The Environment Agency works with our airport to ensure that appropriate safeguards are put in place to protect Pegwell Bay as airport activity changes over time.

A project is currently underway which will ensure airport surface water collected from areas of hardstanding is controlled before it leaves the airport boundary and any contaminates are contained onsite. The project will involve the installation of a drainage interceptor placed at the point at which surface runoff from the runway leaves the airport site.

Parts of our airport are located over an aquifer that supplies some of the water utilised by the Thanet region. We are committed to ensuring that the expansion of our airport will have no adverse impact on local watercourses and are mindful of the ecological sensitivity of Pegwell Bay and the aquifer.

We will continue to carry out regular monitoring of compliance with future water discharge consents. We are also committed to ensuring that any spillage of fuel, dangerous goods, fire fighting foam or de-icing products is reported and appropriate action taken to prevent fouling of connected watercourses. We will liaise closely with the EA to ensure that levels of risk mitigation are appropriate.

Naturally, we will continually evaluate any new technologies which could assist in managing water resources at our airport and will endeavour to implement them where possible and practicable.

Surface Water Drainage

The airport has a large impermeable surface area which includes our paved runway and taxiway system, therefore rainwater runs off relatively quickly, rather than gradually sinking into the soil and either recharging groundwater or percolating slowly into rivers and streams. We are committed to controlling and minimising the volume of run-off draining from future airport developments into local watercourses, where technically feasible, for example through the use of sustainable urban drainage systems (SUDS), which will be incorporated into new buildings where feasible.

Water Consumption

Airports are significant consumers of water. Water requirements include water used for aircraft and vehicle washing, aircraft potable water supply / toilets and shower facilities.

Water use at our airport in 2007 was 62,800 m^3. Demand for mains water will increase in line with increased activity at the airport over the next 25 years. This will have both an environmental and economic impact at the airport if unnecessary use is not managed efficiently.

We see this as a challenge we wish to embrace and we will continue to explore technological options to reduce current and future water consumption. We are already evaluating options such as waterless urinals and cistern volume reducers (CVR) which can be fitted into older toilet cisterns and displace a certain volume of water, thus reducing the amount of unnecessary water use for each flush. All new buildings will aim to be neutral consumers of potable water through the use of grey water and waterless systems.

Management of water resources will also rely on awareness programmes for all staff and tenants, in conjunction with enhanced metering, to encourage efficient water use.

Biodiversity

Standing open water, hedgerows, lowland farmland and saltmarsh are features of this area recognised in the Kent Biodiversity Action Plan. These areas support a wide variety of wildlife such as voles, badgers, bats and a variety of reptiles, birds and amphibians. All future airport developments will be assessed to establish their impact on biodiversity and provide appropriate mitigation in consultation with consultees such as Natural England and the relevant approval authorities.

A survey was undertaken across our entire airport property in May 2008 by qualified independent ecologists to identify the ecological constraints on site to guide any proposed expansion of the airport. This involved both a desk based and field survey. During the field survey habitat types were classified using the standard extended Phase 1 methodology [48] and notable features were recorded. Habitats were also assessed in terms of their potential to support protected species or species of principal conservation importance and evidence of the use of the site by such species was recorded.

This habitat identification survey noted the presence of the following features, which have the potential to support a variety of species:

- Areas of scrub, with concrete blocks and mound covered by vegetation which is a potential reptile habitat;
- Balancing pond with grills on top, surrounded by hawthorn shrubs;
- Emergency water tank with a metal holding at back showed the presence of fox earth. Pile of pebbles covered in vegetation have reptile potential;
- Rabbit holes;
- Rubble pile with reptile potential;
- Defunct hedgerow which can support a variety of species including bats and the brown hare;
- World War II bunker with bat potential;
- Decommissioned aircraft with bat potential;
- Derelict buildings and tree with ivy with bat potential; and
- Open area of soil with ephemeral growth.

Species of principal conservation importance and UK Biodiversity Action Plan (BAP) species potentially affected include some species of birds (e.g. skylark) and the brown hare. Our surveys indicate that the site does not contain any evidence of newt activity.

Our airport does not cross any designated nature conservation sites and the nearest of these is over 1 kilometre away. However, designated European sites within close proximity to Kent International Airport include:

- Thanet Coast and Sandwich Bay RAMSAR site;
- Thanet Coast and Sandwich Bay Special Protected Area (SPA);
- Sandwich Bay candidate Special Area of Conservation (SAC);
- Sandwich and Pegwell Bay National Nature Reserve (NNR);
- Pegwell Bay Local Nature Reserve (LNR); and
- Ash Level and South Richborough Pasture Site of Nature Conservation Interest (SNCI);

Given the ecological sensitivity of these sites, Natural England will be consulted when planning applications are submitted.

These surveys have identified that at our airport the overall ecological potential of the site is low. We will however undertake further surveys to identify species which may not have been identified previously due to seasonal constraints, in particular species of principal conservation importance.

We are committed to the sensitive stewardship of the land we own and the

48 Joint Nature Conservation Committee (2003). Handbook for Phase 1 Habitat, Survey: A Technique for Environmental Audit. JNCC, Peterborough.

land surrounding it and where possible new developments will be designed to have no, or a minimal adverse impact on biodiversity and include features that enhance biodiversity where possible.

It should be possible to identify where on the airfield land management practices could be modified to benefit biodiversity without compromising operational functionality.

These measures will be undertaken without compromising aircraft safety through the attraction of birds to the airfield.

Landscape and Visual

The key characteristics of Thanet are described in the Landscape Assessment of Kent as follows:

- Open, large scale arable fields;
- Long views;
- Exposed landscape, historically long denuded;
- Seaside coastal influence with big skies;
- Suburban character to towns; and
- Open cliff tops and bleak, grassy spaces.

The Thanet Local Plan identifies Pegwell Bay as a landscape character area (LCA) (policy CC2). Because it is a relatively small area, it is recognised as being less robust than other LCAs and more vulnerable to development impact. The nearest towns to the airport are Manston, St Lawrence, Cliffs End and Minster. The development options set out in the Master Plan are in line with the characteristics of the existing airport complex landscape character and no key landscape features will be lost as a result of the potential developments.

Soils, Geology and Contamination

A land quality survey has identified low levels of contamination in certain areas around the airport site as a result of past military use. This does not pose a risk to groundwater which was found to be at approximately 50 metres below the surface. However, further surveys will be undertaken in connection with development proposals identified in table 9, and other development as required so that levels of contamination can be closely monitored and contained.

Cultural Heritage and Archaeology

Thanet's geographically exposed location has made it a traditional point of entry into the country for centuries and as a result it is rich in archaeological sites of all periods from the Mesolithic to late medieval. These sites, in the form of earthworks, structures and other remains serve as important records of Thanet's history and heritage.

We recognise that archaeological sites and ancient monuments contribute greatly to the character of the county and are an important education and tourism resource. These sites will be considered in the location and construction of future development. We will also liaise with Kent County Council's Heritage Conservation Group with regard to the potential impact of development on archaeology.

Our airport was once known as RAF Manston, becoming operational in 1915 and playing a very significant role during the Battle of Britain in World War II. There are also three museums on site: the RAF Manston History Museum, the Spitfire and Hurricane Memorial Museum and the Manston Fire Museum. Two of these museums have expressed an interest in being located closer to the runway. This will be considered as other airport development takes shape.

Our Community

The Airport as an Employer

We understand that East Kent is a particular focus and priority for regeneration within the county due to the persistently higher levels of unemployment and pockets of deprivation in evidence.

Based on the employment generation calculations developed for our Master Plan, we envisage that up to 500 people will be directly employed at our airport by 2018 and 1,000 by 2033. Total employment generated by our airport (including direct, indirect, induced and catalytic) is envisaged to reach over 2,800 in 2018 and 6,150 in 2033.

The increase in activity at our airport will work towards addressing this by providing both direct and indirect employment opportunities and stimulating the local economy.

Community Relations

Environmental issues are naturally a key concern for communities living within the locality of airports particularly with regards to noise, pollution and visual impacts. As a member of the community it is our intention to work alongside our neighbours and consult with them on how best to manage any negative impact on their lives. Over time it is important to ensure that no nuisance issues occur as a result of expansion. Working closely with the local community through the KIACC our airport will inform local community groups of all developments at the airport identifying all current and future impacts and how these can be mitigated.

Procurement

As well as being a key employer for the local communities, we are also committed to sourcing local contractors for our future developments. This not only reduces vehicle mileage but is also an important driver for the regional economy, engendering a feeling of community pride in locally built projects.

In addition, the purchasing and use of natural and manufactured resources is a key sustainability aspect and can usually be addressed to realise significant cost savings and environmental benefits. We are therefore seeking to assess current procurement practices for our airport by including environmental criteria in purchasing decisions.

Section Highlights

- Sustainability is core to our business and we are working towards implementing a robust Environmental Management System
- It is recognised that future growth in passenger numbers and freight movements will bring additional environmental pressures to our airport that will need to be planned for and managed sustainably. However, our airport is not subject to any direct environmental designations
- Surveys have identified that the overall ecological habitat potential of our airport is low. Despite this, all future airport developments will be assessed to establish their impact on biodiversity and provide appropriate mitigation in consultation with key stakeholders. We are committed to the sensitive stewardship of land at and around our airport
- Archaeological resources are known to be present within our site but are not visually prominent. These sites will be considered in the design and location of future development
- We are committed to taking a low carbon approach to the way we operate, the emphasis being on the ground level emissions attributable to the operation of airport facilities. We have set a target of making all operations carbon neutral through new development
- It is very unlikely that there will be any breaches of air quality strategy objectives at our airport during the Master Plan period. We currently have a robust air quality monitoring system in place and will continue to use this to feedback to key consultees
- Waste stream volumes will increase as our airport grows. We aim to mitigate the effects of waste through our emerging waste management programme
- We are committed to ensuring the growth of our airport will have no adverse impacts on local watercourses and are mindful of the ecological sensitivity of Pegwell Bay. Discharge from the airport will be monitored and appropriate action taken where necessary
- Normal airport activities do not generate surface and groundwater pollution to any significant degree
- The noise contours produced indicate the potential requirement for some properties to be noise insulated as our airport grows and develops. We will work towards preparing a noise insulation scheme and consult on this in due course.

7. Our Conclusions & Next Steps

Our Master Plan identifies many positive factors in support of the growth of the airport. These include a positive planning policy framework, capacity for growth at our airport, access to airport infrastructure, potential contribution to the economy and regeneration effects and demand for enhanced airport facilities.

Planning Policy Context

There is very strong policy support at the national, regional and local level for our airport to become an airport of regional significance. The White Paper acknowledges that our airport has a valuable role to play in meeting local demand, while the Progress Report identifies that making the best use of existing runways in the South East (such as our airport) could help to alleviate pressures on the major South East Airports. The South East Plan specifically recognises the potential for our airport to become a regional airport (policy T9).

The South East Plan and Local Plan policies estimate that a throughput of up to 6 mppa and up to 400,000 tonnes of freight per annum could be achieved at the airport and that these figures should not be seen as a ceiling limit on development at the airport.

Capacity for Expansion

We have sufficient space at our airport to meet our forecast growth requirements for the period to 2033. Our runway is capable of accommodating all commercial aircraft types and existing airport facilities require further developing to meet the forecast passenger and freight throughput. Preliminary surveys have identified that the airport is not heavily constrained by environmental features.

We are seeking a greater flexibility of land uses for our Northern Lands through the planning policy framework review process and we regard the ability to develop both aviation and non-aviation activity in this area as key to the successful growth of our airport.

Access to Our Airport

As throughput at the airport increases, a greater range of destinations will be serviced and the frequency of flights will increase. This will strengthen our airport's role as a gateway to the South East and have positive benefits in terms of economic and tourism growth which we shall continue to actively encourage.

Our airport has good connections with the strategic road and rail network, offering short journey times to London and the rest of the South East. The proposed East Kent Access scheme will increase road capacity in this part of East Kent and will ensure local junctions do not become overloaded. Public transport linkages to the airport will be enhanced as growth occurs and our green travel plan, once developed, will encourage people to travel by alternative means of transport to the private car where possible.

Surface access growth will occur as throughput increases and it is considered that the local highway network has, and will continue to have, sufficient capacity

to accommodate the increases in vehicle movements anticipated during the Master Plan period.

The Master Plan proposals have been orientated so as to avoid adverse impacts on the environment and detailed environmental assessment work will be undertaken to support the planning applications that will come forward at our airport in due course.

Further specific transport assessments will be undertaken as required, and appropriate mitigation measures provided where necessary.

Contribution to the Economy

The growth of our airport will contribute to the national, regional and local economy in terms of direct, indirect, induced and catalytic employment generation. New businesses will require staff and it is likely that staffing requirements will be met by people living in close proximity to the airport. The development of our airport will generate over 2,800 jobs by 2018, and over 6,000 jobs by 2033 within Kent, predominantly in East Kent. As the economic profile of the area is strengthened, people will be increasingly attracted to live and work in Kent and Thanet.

Available land, suitable for a range of employment uses is located at, and immediately adjacent to, our airport. These opportunities are likely to appeal to businesses that cannot afford the rental or capital land values at or around the other major South East airports. Many aviation and non-aviation related businesses will benefit from easy access to air transport services.

Access to low cost air transport infrastructure and services will also promote the development of sub regional and local tourism, leisure and recreation business sectors.

As jobs are created the demand for local housing will increase and the communities near to our airport will experience regeneration benefits during the Master Plan period. This will help strengthen the local economy.

Aviation Demand

We have been liaising with a number of passenger airline operators who are very interested in establishing regular scheduled flights from our airport to a number of UK and European destinations. We shall continue to work with them in developing opportunities at our airport.

Freight operations have been a key area of business for us since we purchased the airport in 2005. Freight activities at our airport will be strengthened through the Master Plan period and we are actively investigating opportunities to alleviate freight congestion at other South East airports.

Next Steps

In due course we will submit our initial phase of planning applications, which will outline our proposals to make more efficient use of land within our existing boundary through appropriate development outlined in this Master Plan.

Before the applications are submitted further surveys will be undertaken to assess:

- Landscape impacts of the proposals (including detailed fieldwork and photographic surveys to assess the predicted significance of visual impacts of development on residential properties around the airport);
- Geological and ground condition impacts;
- Economic impacts;
- Health impacts;
- Noise impacts;
- Water environment impacts (in relation to emissions generated by aircraft, ground support vehicles and buildings);
- Cultural heritage impacts (including an assessment of the impact on listed buildings in the village of Manston, which could potentially be affected by development) and scheduled monuments;
- Surface access impacts;
- Local biodiversity and ecology impacts; and
- Sustainability.

A detailed emissions assessment (particularly in terms of nitrogen dioxide) will be undertaken to assess the impact of the 2033 scenario and the growth of the airport beyond 3mppa.

Where adverse impacts are identified, we will ensure that appropriate mitigation measures are in place.

We are committed to consult on our development proposals and will continue stakeholder involvement during the planning application process. We will also continue to liaise with the KIACC, which has been crucial to our progress at the airport so far.

Information on the progress of the planning applications will be provided on our website and updated as we progress.

The Final Word

Our airport has long played a central role in Thanet through its history of aviation activity stretching back over 90 years. The airport will continue to contribute to the Thanet economy and community as it grows during the exciting years ahead. Development at and around the airport will also add considerable weight to the regeneration and economic growth of the wider East Kent area, providing connectivity, opportunity and employment. We are pleased to share our vision and we look forward to working with the community to make this vision a reality.

Appendices

Appendix A

South East Plan and Thanet Local Plan Policies

South East Plan Policies

Policy T9: Airports

Relevant regional strategies, local development documents (LDDs) and local transport plans (LTPs) will include policies and proposals that:

i) Support the development of Gatwick and Heathrow Airports and safeguard land at Gatwick for possible new runway after 2019 as set out in the 2003 Air Transport White Paper and subsequent Government statements;

ii) Encourage Southampton Airport to sustain and enhance its role as an airport of regional significance;

iii) Support an enhanced role for Kent International Airport as an airport of regional significance; and

iv) Take account of airport operator master plans produced in accordance with the Air Transport White Paper.

Priority should be given in Airport Surface Access Strategies:

i) To reduce the environmental impact of surface access;

ii) To increase modal share in favour of public transport and sustainable modes; and

iii) To set and monitor targets that are consistent with the aims of LDDs and LTPs.

Policy EKA4: Urban Renaissance of the Coastal Towns

Local authorities and development agencies will work together to encourage new economic impetus throughout the coastal towns including the following:

i) Regeneration measures will create high quality urban environments within the coastal towns;

ii) Concentrations of employment in small businesses, education, culture and other services are encouraged, notably in central Folkestone, Margate and Dover;

iii) The economy of Thanet will be developed and diversified through provision of a full range of accessible local services, a regional role for Kent International Airport (Manston), expansion of Port Ramsgate as Kent's second Cross-Channel port and continued inwards investment in manufacturing and transport, notably aviation and marine engineering;

iv) The Port of Dover and Eurotunnel have potential to generate freight handling and tourism;

v) Further growth will be encouraged and supported at the large-scale pharmaceutical manufacturing and research plant at Sandwich;

vi) The regeneration of former colliery sites has attracted manufacturing and food processing and their transformation should be completed including mixed-use expansion of Aylesham;

vii) The smaller towns of Deal, Faversham, Herne Bay and Whitstable should develop stronger local service functions and mixed employment uses of a scale and character suitable to their size; and

viii) New measures to increase local employment will be required in Shepway to coincide with the decommissioning of the nuclear power plant at Dungeness in the short term and around 2018.

A broad balance between new housing and new jobs will be sought at each urban area at a level commensurate with the size and character of the town.

Policy EKA5: The Gateway Role

The growth of the gateways will be supported as catalysts for economic development, including that associated with freight handling and tourism, and to encourage a choice of transport modes and adequate capacity on the cross-Channel routes:

i) Appropriate development of the Port of Dover will be supported to enable growth of freight and passenger traffic. Any such development outside the existing harbour will be subject to the reinstatement of the rail link to the Western Docks to enable a significant proportion of freight to reach the port by rail; and

ii) At the Port of Ramsgate, proposals should assist the growth of port trade and not compromise its role as a major port.

In the event of a second fixed cross-Channel link being proposed it will be considered on the basis of the economic, transport, social and environmental impacts. Such a proposal should be designed to increase the share of traffic carried by rail.

The growth of Kent International Airport as a regional airport with up to 6 mppa is supported provided proposals satisfy policy criteria for the environment, transport and amenity.

Thanet District Local Plan policies

The Planning and Compulsory Purchase Act 2004 introduced measures that meant that the policies of the Thanet Local Plan would expire in June 2009 unless the Secretary of State extended the policies beyond that date. Following a direction from the Secretary of State, 93 local plan policies have been saved. The policies, which have not been saved, and that are relevant to Kent International Airport, include:

- Policy EC3 'Kent International Airport, surface transport issues';
- Policy CC3 'Local landscape features';
- Policy CC4 'Island approach routes'
- Policy HE1 'Listed buildings of special architectural or historic interest';
- Policy HE10 'Protection of scheduled ancient monuments';
- Policy D4 'Design statements';
- Policy NC1 'Habitats'; and
- Policy NC2 'Nature reserves and SSSI'

The saved Thanet Local Plan policies which are relevant to the airport and remain part of the development plan are listed below.

Policy EC2: Kent International Airport

Proposals that would support the development, expansion and diversification of Kent International Airport will only be permitted subject to the following requirements:

- Demonstrable compliance with the terms of the current agreement under section 106 of the Town and Country Planning Act 1990 or subsequent equivalent legislation;
- New built development is to be designed to minimise visual impact on the open landscape of the central island. particular attention must be given to roofscape and to minimising the mass of the buildings at the skyline when viewed from the south;

- Appropriate landscaping schemes, to be designed and implemented as an integral part of the development. Any application for development for the purpose of increasing aircraft movements in the air or on the ground, auxiliary power or engine testing, must be supported by an assessment of the cumulative noise impact and the effectiveness of mitigation measures to be implemented in order to minimise pollution and disturbance. the acceptability of proposals will be judged in relation to any identified and cumulative noise impact, the effectiveness of mitigation and the social and economic benefits of the proposals;
- An air quality assessment in compliance with policy EP5, to demonstrate that the development will not lead to a harmful deterioration in air quality. Permission will not be given for development that would result in national air quality objectives being exceeded;
- Development will not be permitted within the airport complex to the south of the airside development site identified in policy ec4, unless it has been demonstrated that the development is necessary for the purpose of air traffic management;
- Any new development which would generate significant surface traffic must meet requirements for surface travel demand in compliance with policy EC3; and
- It must be demonstrated that new development cannot contaminate groundwater sources or that appropriate mitigation measures will be incorporated in the development to prevent contamination.

Given the prime role of Kent International Airport in the strategy of this plan, the district council will carefully consider the potential adverse impacts of landscaping and nature conservation enhancements in the vicinity of the airport, given, for example, the potential to increase the risk of bird strike.

Policy EC4: Airside development area

Land at the airport, as identified on the proposals map, is reserved for airside development. Development proposals will require specific justification to demonstrate that an airside location is essential to the development proposed. Development will be required to retain sufficient land to permit access by aircraft of up to 65m (217ft) wingspan to all parts of the site.

Policy EC5: Land at, and east of, the airport terminal

Until such time as a new airport terminal is built, land at, and east of, the existing airport terminal is identified on the proposals map for airport terminal-related purposes. Uses will be restricted to those which directly support or complement the operational requirements of the existing airport terminal. Should a new terminal be built, other airport related development will be permitted on this allocated site. Planning conditions or planning agreements will be applied to limit any development granted planning consent to uses conforming to this policy.

Policy EC6: Fire training school / MOD complex

If the current use of the fire training school or adjoining land ceases, the local planning authority will support the development of airport or airport-related uses, which would assist in the expansion of the airport. These could include:

- Educational / training uses (such as fire training);
- Hotels;
- Car parking;
- Or uses falling within use classes A2 and B1, with an airport orientation.

Policy TR4: New road and highway improvements

During the plan period to 2011 the district council will seek the implementation of the following highway improvements and will, where appropriate, safeguard any land required for their construction. Each improvement shall be sensitively designed and landscaped so as to minimise environmental impact.

- Improvements to dual carriageway standard to the A256 and A299 between Richborough, lord of the manor and mount pleasant, minster (known as phases 1 & 2 of East Kent access)
- Realignment of the A256 adjacent to Eurokent Business Park.

Policy EP5: Local air quality monitoring

Proposals for new development that would result in the national air quality objectives being exceeded will not be permitted. Development proposals that might lead to such an exceedance, or to a significant deterioration in local air quality resulting in unacceptable effects on human health, local amenity or the natural environment, will require the submission of an air quality assessment, which should address:

1. The existing background levels of air quality;
2. The cumulative effect of further emissions; and
3. The feasibility of any measures of mitigation that would prevent the national air quality objectives being exceeded, or would reduce the extent of air quality deterioration.

Policy EP7: Aircraft noise

Applications for noise sensitive development or redevelopment on sites likely to be affected by aircraft noise will be determined in relation to the latest accepted prediction of existing and foreseeable ground noise measurement of aircraft noise. Applications for residential development will be determined in accordance with the following noise exposure categories.

NEC predicted aircraft noise levels (dbl aeq.0700-23.00)

A <57	noise will not be a determining factor
B 57-63	noise will be taken into account in determining applications, and where appropriate, conditions will be imposed to ensure an adequate level of protection against noise (policy ep8 refers)
C 63-72	planning permission will not be granted except where the site lies within the confines of existing substantially built-up area. where residential development is exceptionally granted, conditions will be imposed to ensure an adequate level of protection against noise (policy EP8 refers).
D >72	residential development will not be permitted

Applications for non-residential development including schools, hospitals and other uses considered sensitive to noise will not be permitted in areas expected to be subject to aircraft noise levels exceeding 60 db(a) unless the applicant is able to demonstrate that no alternative site is available. proposals will be expected to demonstrate adequate levels of sound insulation where appropriate in relation to the particular use

Policy EP8: Aircraft noise & residential development

When planning consent is granted for residential development on any land expected to be subject to a level of aircraft noise of above = 57db(a)**, such consent will be subject to provision of a specified level of insulation to achieve a minimum level of sound attenuation in accordance with the following criteria:

NEC predicted aircraft minimum noise levels attenuation required (db(a)
(frequency range 100-3150 hz)

A <57	no attenuation measures required
B 57-63	20db
C 63-72	30db

** laeq 57db 07.00-23.00

Policy EP13: Groundwater protection zones

If a proposed development in the groundwater protection zones identified on the proposals map would have the potential to result in a risk of contamination of groundwater sources, it will not be permitted unless adequate mitigation measures can be incorporated to prevent such contamination taking place.

Policy CC2: Landscape character areas within the landscape character areas identified on the proposals map,

The following policy principles will be applied:

1. At Pegwell Bay priority will be given to the conservation and enhancement of the natural beauty of the landscape over other planning considerations;
2. In the former Wantsum Channel area, new development will not normally be permitted;
3. In the Wantsum Channel north shore area, development will only be permitted that would not damage the setting of the want sum channel, and long views of Pegwell Bay, the Wantsum Channel, the adjacent marshes and the sea;
4. On the central chalk plateau, a number of sites are identified for various development purposes. Where development is permitted by other policies in this plan, particular care should be taken to avoid skyline intrusion and the loss or interruption of long views of the coast and the sea;
5. At Quex Park, new development proposals should respect the historic character of the parkland; and
6. At the urban coast, development that does not reflect the traditional seafront architecture of the area, maintain existing open spaces and long sweeping views of the coastline will not be permitted. Development proposals that conflict with the above principles will onlybe permitted where it can be demonstrated that they are essential for the economic or social well-being of the area.

In the event of a real and specific threat to the landscape character of these areas from permitted development, the use of article 4 directions will be considered, and Secretary of State approval for the direction sought.

Policy D1: Design principles

1. All new development is required to provide high quality and inclusive design, sustainability, layout and materials.
2. A new development proposal will only be permitted if it:
    a. Respects or enhances the character or appearance of the surrounding area, particularly in scale, massing, rhythm, and use of materials appropriate to the locality;
    b. Is compatible with neighbouring buildings and spaces and does not lead to unacceptable loss of amenity through overlooking, noise or vibration, light pollution, overshadowing, loss of natural light, or sense of enclosure;
    c. Incorporates where practicable a high degree of permeability for pedestrians and cyclists and also considers access for public transport;
    d. Incorporates provision for disabled access;
    e. Retains open spaces, gaps in development, mature trees, other vegetation and any other features that contribute to biodiversity and the quality of the local environment;
    f. Incorporates new landscaping as an integral part (as set out in policy D2);
    g. Incorporates, where appropriate, wildlife habitats, wildlife corridors and initiatives for their long term management;
    h. Incorporates measures to prevent crime and disorder, promotes public safety and security and the perception of public safety and security;
    i. Incorporates, where practical and appropriate, high quality integrated public art which is relevant to the site and locality;
    j. Provides safe and satisfactory means of pedestrian and, where provided, vehicle access;
    k. Provides for clothes drying facilities and refuse disposal or dustbin storage;
    l. Incorporates sustainable drainage systems.

Policy D2: Landscaping

The following elements will be required as part of landscaping proposals for any new development:

1. The enhancement of the development site in its setting;
2. The retention (and protection during site works) of as many of the existing trees, hedges and other habitat features on site as possible;
3. On sites of one hectare or more, the setting aside of 10% of the development site for the planting of native tree species, either within or at the boundary of the development site;
4. The maximising of nature conservation opportunities where development is proposed in proximity to existing open space or wildlife habitats, and
5. Where both appropriate and possible, the provision of landscaping in advance of new development to facilitate the assimilation of new development into the landscape.

The district council will require to be satisfied that the developer has made adequate arrangements to ensure continued maintenance of landscaping, and may seek to secure arrangements for this purpose by entering into a planning agreement.

Glossary

Common terms used in this Master Plan are defined below:

ACI	Airports Council International
Aprons	An apron is where passengers and / or freight board and disembark the aircraft
ATF	Air Transport Forum
CAA	Civil Aviation Authority
DfT	Department for Transport
DRDF	Digitally Resolved Direction Finder
GA	General Aviation
GPA	Glasgow Prestwick Airport
IAEL	Infratil Airports Europe Ltd.
ICAO	International Civil Aviation Organisation
ILS	Instrument Landing System
LDF	Local Development Framework
mppa	Million passengers per annum
MRO	Maintenance Repair and Overhaul
NDB	Non-Directional Beacon
NPF	National Planning Framework published in 2004
NPF2	National Planning Framework published in 2008 (draft)
RES	Regional Economic Strategy
RFF	Rescue and Fire Fighting
White Paper	The Future of Air Transport White Paper, published December 2003

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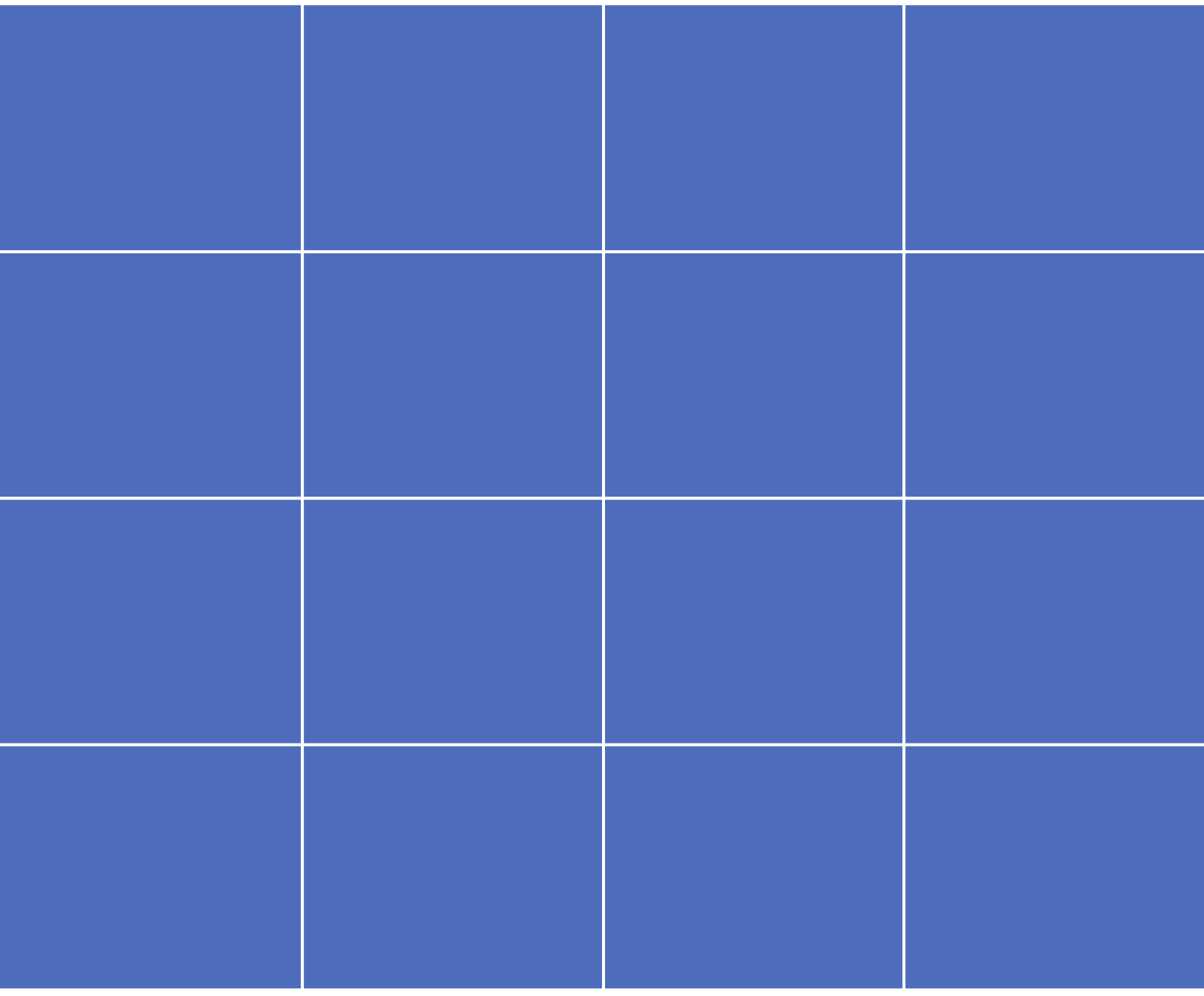

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