

Noise contours commissioned from the Civil Aviation Authority by No Night Flights

14th June 2019

NNF18

1. The PINS advice note¹ on using the “Rochdale envelope” says that the Applicant is required to provide *“sufficient information to enable ‘the main,’ or the ‘likely significant’ effects on the environment to be assessed”*.
2. The note says that: *“In assessing the likely effects, it is entirely consistent with the objectives of the Directive to adopt a cautious ‘worst case’ approach.”*
3. The note says that: *“such an approach will then feed through into the mitigation measures envisaged ... It is important that these should be adequate to deal with the worst case, in order to optimise the effects of the development on the environment”*.
4. The Applicant has failed to do this. The contours we commissioned from the CAA demonstrate that tens of thousands of people will suffer a level of aircraft noise that is above the levels set out in the World Health Organisation’s guidance, and that is above the level at which the UK Government accepts that *“significant community annoyance”* begins. The Applicant has not provided the information to enable the ExA to examine the likely significant effects of its proposal on the environment. Moreover, the Applicant is suggesting mitigation measures for just a few hundred people.
5. It is for the ExA to decide whether it is satisfied, given the nature of the project in question, that it has *“full knowledge”* of the project’s likely significant effects on the environment. We say that the Applicant has failed to produce this. Moreover, now that No Night Flights has provided this information, it is clear that the likely significant negative effects of this proposal will far outweigh the small advantages that the Applicant suggests it will deliver.



¹ PINS Advice Note No 9 ‘Using the Rochdale Envelope’ July 2018, Version 3

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Why No Night Flights commissioned this work

6. No Night Flights (NNF) was established in 2009 as a response to the problem of aircraft noise from aviation operations at Manston. NNF replaced the Manston Airport Group (MAG). MAG had been in existence since 1999.
7. Most of NNF's members live under the flight path. They include residents from the western edge of Herne Bay in Hampton, to the eastern edge of Ramsgate near the harbour. We also represent residents from the villages under and near the flight paths.
8. NNF came into existence purely because of the noise nuisance created by airport operations at Manston. We know how much noise can be generated by aviation operations on the Manston site. Very early on in the DCO consultation process, it became clear to us that RSP was not presenting the public with an accurate picture of the future noise impact that we would suffer as a result of its planned operation.
9. We have set out in all our consultation submissions, as well as in numerous submissions to the DCO process, the fact that RSP's noise predictions fall far short of our experience of the actual levels of noise produced when the airport was operational. We have submitted evidence about the levels of noise captured by the noise monitors that were in place during that period. We have submitted our "noise nuisance map", that clearly shows the home location of residents who complained about noise levels when the airport was operational. However, the DCO process is designed in such a way that the Applicant can simply ignore our evidence and our challenges. This is what RSP has done.
10. We have also made the point that RSP intends to operate far more ATMs than any of the previous airport operators have handled, and that, logically, it is likely that the noise nuisance generated by RSP's plans would be far greater than the previous noise level that we experienced. To put this into context, we produce below a brief summary of the passenger and cargo Air Transport Movements (ATMs) at Manston during its life as a commercial airport. We have excluded 2014 as the airport was not open for a complete year. We have also excluded General Aviation (GA) ATMs.

Manston/Kent International Airport 1999-2013 ATMs			
	Lowest annual total	Highest annual total	Average annual total
Cargo ATMs	322 in 2006	1,081 in 2003	587
Passenger ATMs	5 in 2002	4,454 in 2005	656

11. RSP says that it will cap the total number of ATMs for its proposal at 26,468 excluding GA ATMs. RSP's Environmental Statement (ES) suggests a Year 20 total of 17,170 cargo ATMs and 9,298 passenger ATMs. Looking at the table above, it is immediately clear that RSP's operation would be many, many times bigger than that of any previous airport operator on that site. RSP's cargo operation would be more than 29 times the size of the average annual cargo operation previously at Manston, and almost 16 times the size of Manston's best year ever (2003) for cargo ATMs. RSP's passenger operation would be more than 14 times the size of the average annual passenger operation previously at Manston, and more than twice the size of Manston's best year (2005) ever for passenger ATMs. In both cases, the "best

year ever” for the total number of ATMs was many years ago. The table below shows just how much bigger RSP’s aviation operation would be than any previous commercial aviation operation that local people have experienced on that site. The full table showing commercial ATMs at Manston from 1999 to 2014 is on page 30.

	ATMs	Multiple of previous operators’ average year	Multiple of previous operators’ best year
RSP’s suggested cargo ATM cap	17,170	29.3	15.9
RSP’s suggested passenger ATM cap	9,298	14.2	2.1

12. It is not just the comparison with Year 20 that should be noted. RSP “forecasts” a steep growth in ATMs right from the day that its new airport would open. This means that a population that would not have experienced aviation noise at all for about a decade² will be exposed to levels of noise outstripping those of previous operations on the site very early on in RSP’s growth plans.
13. It is clear that RSP plans an operation that would be many multiples of the size of the previous operations on that site. Despite this, RSP’s ES suggests that the noise impact of its operations would be far less than the noise impact we previously experienced. **This has no credibility.**
14. RSP has ignored all our submissions about recorded reality and has refused to deal with the evidence we have produced about past noise impact.
15. The ExA has been entirely reliant on RSP’s modelling of noise contours. Those contours were produced by someone with no previous experience of doing this. The ExA said in January that it did not intend to commission independent expert evidence about noise.
16. ICCAN made it clear that it is too young an organisation to bring any expertise to the table to assist the ExA.
17. Given the distinct gap between our actual experience of the noise created by airport operations and RSP’s predictions about the future noise impact that it says its much, much bigger airport operation would generate, we felt we had no option but to commission independent expert input ourselves.
18. We commissioned the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority to do this work. The ERCD’s role is to provide technical advice to the Department for Transport (DfT) and other Government departments. The ERCD also provides technical advice, including the provision of noise exposure contours, to airport operators, local authorities and others on a commercial basis. We chose the CAA because:
 - It is independent.
 - It is a recognised centre of excellence in this field
 - It is using the latest version of the ANCON noise model, v.2.4

² Assuming that a DCO is awarded and that RSP takes possession at the earliest in 2021-2022, and then taking into account time required for redevelopment and the CAA licence and airspace change process

- It could do the work by using the same methodology and the same technology that it will use to assess any airspace change proposal that RSP might later submit should a DCO be awarded
19. As part of the Stansted Airport planning application UTT/18/0460/FUL, which Uttlesford District Council resolved to grant in November 2018, noise contours were commissioned. The Uttlesford DC planning committee report dated 30 November 2018 notes in paragraph 9.175 that the ERCD was asked to do this work:
 20. *“For the purposes of the ES aircraft noise modelling has been produced by the CAA’s Environmental Research and Consultancy Department (ERCD), using their Aircraft Noise Contour (ANCON) model (current version 2.3). The ERCD is a specialist body within the CAA with national and international expertise on the assessment of aircraft noise. They produce noise contours for the designated London airports, and they generated the noise contours used by the Airports Commission. **Their work is robust, authoritative and also impartial.**”* [our emphasis]
 21. We set out below what we asked the CAA to produce; why we asked the CAA to produce it; and what the results of the CAA’s work demonstrate. These are the noise contours that RSP should have produced for the public as part of the consultation process and then updated for the ExA.

The Brief we gave the CAA

Contours

22. Firstly, we asked the CAA to produce Lmax footprints for the Boeing 747-400.³ The 747-400 is the workhorse of the global freighter fleet. We asked the CAA to produce its footprint for each arrival and departure route.
23. Secondly, we asked the CAA to model contours for:
 - Day LAeq,16hr (0700-2300 local time), plotted from 51 to 72 dB(A) in 3 dB steps; and
 - Night LAeq,8hr (2300-0700 local time), plotted from 45 to 72 dB(A) in 3 dB steps.
24. We also asked for four runway modal splits:
 - 100% west
 - 100% east
 - 70% west/30% east
 - 30% west/70% east.

Fleet mix

25. We gave the CAA a fleet mix to use. That fleet mix is set out in the CAA's report (Appendix Two, pages 33-34). It draws to a very significant extent on the fleet mix set out by RSP in its ES last year. However, despite identifying a number of changes to the fleet mix and to operations since producing the ES last year, RSP has not updated its original fleet mix. This is unacceptable.
26. In the ISHs in March and in June, Nick Hilton of Wood repeatedly asserted that RSP's fleet mix is not a 100% prophecy and that it is not a guarantee. He repeatedly said that it was, however, a robust enough estimate of future operations to absorb any variation of parameters in the future. These two assertions are contradictory. The ExA cannot assess the likely significant impact of operations if the fleet mix that underpins these operations is not updated in line with changes in the Applicant's "forecasts".
27. In the ISHs in March, RSP said that its plan now includes "new" integrators. RSP said that the implication of this for the fleet mix in the ES is that the ATR-72 craft should be deleted. RSP said that these craft would be replaced by B737s and B767s. We asked the CAA to make this adjustment. We chose the B737-800 and the B767-300 to replace the ATR-72s having looked at the fleet mix of Amazon and Alibaba. Had RSP updated its fleet mix we would have been able to use that.
28. We asked the CAA to include in the fleet mix the 38,000 General Aviation ATMs for which RSP has asked permission. Again, there is little information available as to what craft would be flown. RSP has mentioned "two kinds of Piper" but has said no more. We knew that TG Aviation (the training school that was based at Manston when the airport was operational) uses C152 and Piper Warriors. We also knew that, in the past, Manston had welcomed executive jets to the airport. We asked the CAA to divide the 38,000 ATMs evenly across the four categories set out by the CAA:

³ Boeing 747-400, GE CF6 engines (ANCON type B744G)

- SP = single propeller e.g. C152
- STP = small twin-piston e.g. C310
- STT = small twin-turboprop e.g. F406
- EXE3 = executive jet (Chapter 3) e.g. C510.

An “average” day

29. Beyond the statement that RSP has modelled an average winter’s day rather than an average summer’s day, RSP has not set out clearly how its ATMs might be allocated across a year or across a day. As we had no further information to go on, we asked the CAA simply to take the RSP fleet mix, substitute the ATR-72s as explained above, and then divide the annual ATM total by 365. This means that our contours do not capture the worst case, as we were not able to model what the worst day might look like.
30. RSP has never produced an outline timetable for its operations, so we were unable to produce any noise contours using Lden. (Lden 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.) RSP accepts that there will be a clustering of ATMs in the evening. Our contours do not capture the recognised increased annoyance caused by aircraft noise in the evening and so, again, do not represent the likely worst case.

Night operations

31. We asked the CAA to produce night noise contours. RSP has never produced a fleet mix for its night flight operations, whether during the consultations or during the examination itself. All RSP has said is that it envisages around seven or eight night time flights on average a night, and that it wishes to allow dedicated cargo planes that had been scheduled for the day period to arrive late, during the night period. RSP also wants the freedom to allow passenger planes to depart from 0600.
32. RSP has asked for a Quota Count budget for the hours 2300 to 0700 of 3,028 QC points. It was perfectly clear in the ISH on Environmental Issues on 5th June 2019 that RSP had no idea what its 3,028 QC points would translate into in terms of a number of ATMs and the type of aircraft. Indeed, RSP seemed doubtful under questioning as to whether it would be possible to “retrofit” ATMs to its QC budget. We find this astonishing.
33. As an aside, if RSP does not know what its night operations would look like, it is evident that RSP cannot make a business case to support the need for those night flights.
34. Given this limited information, we developed an average night fleet mix that would use a budget of less than 8.3 QC points per night ($3,028 \div 365$); that would number fewer than seven or eight ATMs per night; and that would include dedicated cargo planes arriving and passenger planes departing. We used aircraft already in RSP’s fleet mix for these ATMs. Our night fleet mix is set out in the CAA’s report on page 34.

Flight paths

35. RSP has produced indicative flight paths only. We therefore asked the CAA to use the flight paths that it had approved when the airport first became a commercial airport – the “Wiggins routes”, see pages 41-42. These routes capture the operator’s various methods of

minimising overflying of centres of population. The routes were crystallised with the CAA's approval in the airport's AIP in September 2007 and updated in 2010. The AIPs reflect the Wiggins routes.

36. In 2009 NNF had a number of conversations with the CAA about the approved routes as, at that time, we were experiencing some off-route flying. The CAA confirmed that the routes that we had from the Wiggins days and the AIP routes were the approved routes. Pilots coming in to land, particularly in a fully laden 747-400, want to establish themselves on the centreline about 10 miles away from the airport. There is limited room for manoeuvre in a fully loaded 747 on a 3 degree Continuous Descent Approach. This means that the arrivals path is over Herne Bay and Ramsgate for the bigger, noisier planes. The departure routes were created to minimise the overflying of Herne Bay and Ramsgate.
37. We asked the CAA to use the routes that it had previously approved and that we knew had previously been flown. In practical terms, whatever routes the CAA finally approves, should the DCO be awarded, will be driven by safety and by avoiding population centres where possible. Given the geography, the flightpaths will always be pretty much the same as they were in the past.

The Rationale for our Brief to the CAA

Lmax footprints for the Boeing 747-400

38. We asked the CAA to model these footprints because they are the best reflection of the noise that we actually hear. The contour maps on pages 44-48 are maps of the noise harm that will be caused by a single 747-400G as it follows each of the flight paths.
39. People do not hear the average of a series of separate noise events. Noise harm is experienced “in the moment” for the period that it takes a plane to fly over a location. If 100 aircraft, each creating noise levels of 90dB Lmax, fly over someone’s house during a day, that person will hear 100 individual 90dB noise events. He/she will not hear an average of those 100 flights spread evenly over a sixteen hour period. LAeq is *least misleading* when used for airports where the noise is almost constant because planes are flying overhead all the time. This is not the case at Manston where RSP says that it will cap cargo and passenger ATMs at 26,468 per annum, which is around 72 to 73 ATMs per twenty four hour period.⁴
40. As far as we can make out from RSP, a maximum of seven of eight of those 72 to 73 ATMs would operate during the night period (RSP steadfastly avoids having an ATM cap for its night period, so, in reality, none of us knows how many night ATMs there will be). That leaves around 65 cargo and passenger ATMs on average per sixteen hour period – an average of four ATMs an hour. If the noise of 65 90dB flights is averaged out, **the resulting noise footprint will be artificially small**. It will suggest that the noise created is almost imperceptible above the existing ambient noise level. However, the noise of four 90dB aircraft an hour going overhead all day, every day, can be very intrusive. A 90dB overflight, we know from experience, is enough to prevent conversation and mask the sound from a television. At night it will wake people.
41. The suggested cargo and passenger ATM cap for RSP’s new airport is a few percent of the total ATMs for an airport like Heathrow. For an operation like the one RSP plans for Manston, with an average of four ATMs an hour, an average measure of noise across a sixteen hour period will do a superb job of masking the true noise impact, and must be rejected. The single noise footprints for an aircraft are the closest-to-experience representations of the noise impact that we can currently produce. They are to be preferred.

Day and Night LAeq in 3dB steps

42. We asked the CAA to model these contours because LAeq is the most widely-used metric when airports are monitoring the noise created by current operations or when they are seeking permission to expand, and also because RSP has chosen to focus on these contours. As we explain above, we know that **they are not an accurate reflection of the noise nuisance that individuals under the flight path or near the airport will suffer**. Additionally, in our assessment, the LAeq contours are unhelpful as a metric to use to inform local residents as to the level of noise that they might experience when a new airport is opened. However, we wanted to be able to compare the LAeq contours produced by RSP using its original fleet mix in the ES with LAeq contours generated by the CAA using a fleet mix that is a better match for the mix that RSP now says is most likely to be using the airport.

⁴ We are ignoring the additional 38,000 General Aviation ATMs for these purposes

43. We asked the CAA to show the contours in increments of 3dB. It is beyond us why RSP has chosen not to show this level of detail in its ES.
44. In recognition of the WHO's guidance that people should not be subjected to aircraft noise above 45dB Lden, we wanted to ask the CAA to produce contours for Lden. RSP has said in the ISHs in March that there will be busy periods in an average day and that there will probably be a clustering of ATMs in the evening. RSP also said in answer to ExA 2WQ Ns 2.16: *"... 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."* This would have a marked effect on the Lden contours. However, RSP has provided no useful information as to how ATMs might be spread across the day and evening so we were unable to model contours using this slightly more nuanced metric. Again, this means that our contours do not model the likely worst case.

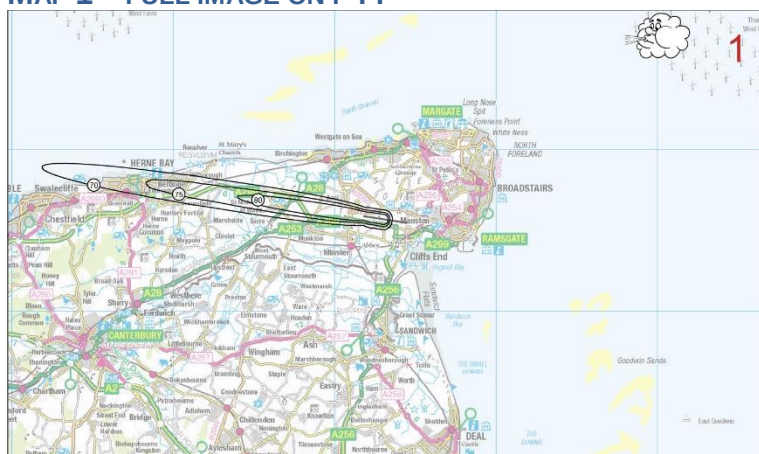
The runway modal splits

45. What RSP has set before the ExA is a suite of noise contours, the vast majority of which show the noise generated by its annual ATMs, spread out almost entirely evenly across the year, then spread out evenly over an average day, and then averaged out between easterly and westerly operations. This is a long way from being a fair representation of reality.
46. To a great extent, it is the wind that determines whether operations are easterly or westerly, with the airport operator articulating a preference for westerly operations as and when it is safe to do so. In reality, on an average day, the wind does not blow 70% of the time in one direction and 30% in the other. Operations are never simultaneously east and west for an eight or sixteen hour period as RSP's contours suggest. The 70/30 split is only apparent as a rough average when viewed across an entire year, but local people do not experience 365 days a year with the wind being 70% from the east and 30% from the west every day.
47. In reality, the wind tends to blow in a certain direction for days at a time. In reality, therefore, residents will most often experience a full day's operations being 100% to the west or 100% to the east, rather than being split neatly 70/30 for each of the 365 days of the year. TDC's consultants, Ricardo, identified this flaw in RSP's modelling in Ricardo's submission to D6.
48. Given our past experience of entire days' operations being to the west or the east, we thought it imperative that we capture the noise impact of 100% westerly and 100% easterly operations.

The Results

Lmax footprints for the Boeing 747-400

MAP 1 – FULL IMAGE ON P44



One B747-400G arriving from the West.

80dB: 750 people live inside this contour

75dB: 5,400 people live inside this contour

70dB: 26,950 people live inside this contour⁵

49. The 70dB contour extends right over the town of Herne Bay, and over Hampton and Studd Hill in the west. The 80dB contour extends into St Nicholas at Wade. 80dB is typically described as a noise equivalent to an alarm clock going off close to a sleeping person.
50. If this DCO is awarded, the numbers of people who will experience the noise levels shown in Map 1 will increase substantially. The Canterbury Local Plan provides for over 4,000 new homes in Herne Bay. Four new housing estates, totalling towards 3,000 homes, will be at the eastern end of town, the part of the town most affected by aviation noise from Manston. Some of those estates are already at the planning permission stage. At a conservative estimate, an additional 6,000 to 9,000 people will be in the 75dB contour when these new homes are built.

MAP 2 – FULL IMAGE ON P45



One B747-400G departing to the East.

80dB: 22,050 people live inside this contour

75dB: 33,100 people live inside this contour

70dB: 42,600 people live inside this contour⁶

51. The 80dB contour extends right over Ramsgate and beyond the harbour arm.

⁵ CAA table 18, see page 40
⁶ CAA table 16, see page 39

MAP 3 – FULL IMAGE ON P46



One B747-400 arriving from the East.

80dB: 15,100 people live inside this contour

75dB: 20,550 people live inside this contour

70dB: 26,800 people live inside this contour⁷

52. The 80dB contour extends from the runway, right over the town and over the harbour. The 70dB contour covers almost the entire town.

MAP 4 – FULL IMAGE ON P47



One B747-400 departing East then turning North.

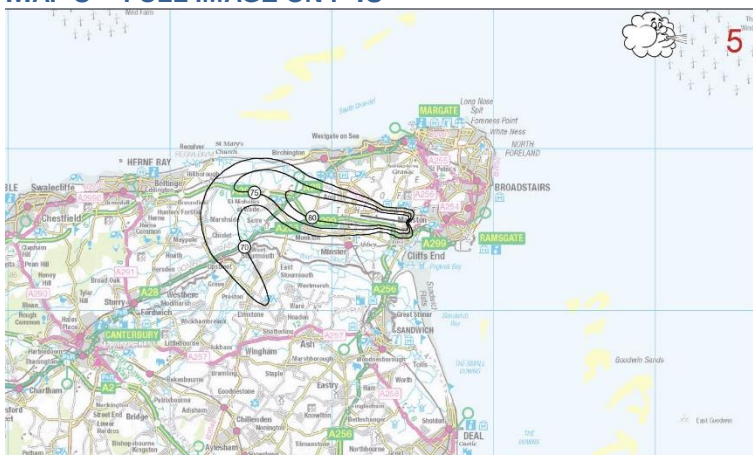
80dB: 650 people live inside this contour

75dB: 2,100 people live inside this contour

70dB: 6,100 people live inside this contour⁸

53. There are two departure paths available when a plane departs to the west over Herne Bay. Route 1 means a turn to the north over the Wantsum Channel.

MAP 5 – FULL IMAGE ON P48



One B747-400 departing East then turning South.

80dB: 650 people live inside this contour

75dB: 2,250 people live inside this contour

70dB: 5,650 people live inside this contour⁹

⁷ CAA table 17, see page 40

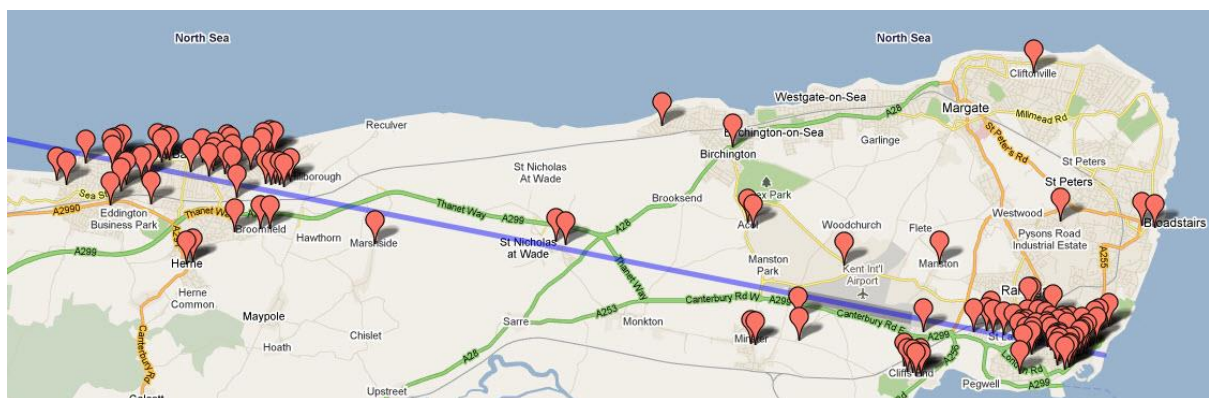
⁸ CAA table 14, see page 39

⁹ CAA table 15, see page 39

54. The second departure path for a plane departing to the west over Herne Bay is Route 2. This means a turn to the south over St Nicholas at Wade.

Comparisons

55. It is hard to compare the CAA's noise contours with those provided by RSP. As far as we can tell (it is needlessly difficult to navigate RSP's thousands of pages of unhelpfully referenced submissions, so we may have missed something), RSP has failed to model the noise impact generated by a single 747-400 flight on each of the five available routes. The nearest comparators that we can find are RSP's LASmax night contours for Year 20.¹⁰
56. A comparison of RSP's Figure 12.9 (page 63) with NNF's Maps 1 and 2 reveals a significant noise impact that RSP has simply not shown. The 70dB contours extend over the entire town of Herne Bay in the NNF contours. RSP has only modelled 80dB LASmax and so Herne Bay does not even appear on its maps. This suggests that Herne Bay will be entirely unaffected by aircraft noise – an assertion often made by the RSP team at various consultation events. However, Herne Bay residents know from experience that a single 747-400 creates a significant noise footprint. A 747-400 overflying Herne Bay in the daytime is loud enough to make people look up as it goes over. At night, the impact is greater. The real impact on Herne Bay residents is entirely missing from RSP's assessment of noise impact.



57. We have submitted many times before NNF's map of noise complaints to illustrate the homes of people who felt so strongly about the aircraft noise generated by Manston that they complained. We submitted it in our response to the July 2017 and the February 2018 statutory consultations. We submitted it in our critiques of Dr Dixon's "Azimuth – volume I" report in February 2018, December 2018 and February 2019. We submitted it in NNF06 and NNF09 in February 2019 in response to D3. It has been ignored by RSP on every occasion. We submit it again above. It can immediately be seen how our noise map, identifying real people who made actual complaints about real aircraft noise, matches the CAA noise contours for a 747-400.
58. Clearly, footprints like the ones we've shown are the best representation of the actual noise (and therefore the actual harm) experienced by the people who live, work and study within earshot of the flight paths.
59. Averaging the noise contours gives the appearance of averaging the harm, and the technique that RSP is using to present the effect of its proposals downplays the actual harm to the extent that it appears not to exist. **Averaging noise destroys evidence of harm, and**

¹⁰ ES Figure 12.9

must not be relied on by the ExA when assessing the potential harmful effects of the proposal.

Contours for operations 100% to the east or west – a real “average” day

MAP 6 – FULL IMAGE ON P49



operations to the west. This means that the noise impact is considerably understated in RSP's contours. RSP's 50dB contour over Ramsgate falls slightly outside the CAA's 57dB LAeq contour and between that contour and the CAA's 54dB LAeq contour. The CAA's contour map shows that between 29,100 and 37,950 people¹³ will experience average noise levels over 54 dB LAeq. That is the level of the onset of significant community annoyance. RSP is seeking to downplay this. RSP is not proposing to offer any mitigation.

66. In TR020002-004180, the ExA's list of Action Points arising from the June hearings, the ExA asks at point 7 about the proximity of the 57dB contour to Albion Place Gardens.
67. The additional KML files that the CAA provided allow us more flexibility in viewing the contours, for example being able to "zoom in". Below is the CAA Map 6, viewed through Google Earth. The 57dB LAeq contour is highlighted in pink for clarity. Below that, at paragraph 69, is a closer look at the eastern end of the 57dB contour.



¹³ CAA table 7, see page 35



- 69.
70. The Google Earth images overlaid with the CAA contours show that Albion Place Gardens are entirely within the 57dB Leq contour for 100% operations to the East, as is much of central Ramsgate's harbour frontage, from the Old Sailors' Church by Nelson Crescent to the Bandstand at Wellington Crescent.
71. The other thing that is immediately clear when looking at the difference between RSP's contours and the CAA's contours is the stark difference that a marginal tweak to the fleet mix produces. The NNF fleet mix used by the CAA is a closer representation of the fleet mix that RSP now says will be using its proposed airport. However, if another 10% or 20% of the aircraft in the mix were replaced with noisier aircraft, the average noise contours would expand. There is no confidence that the fleet mix that NNF gave to the CAA represents the likely worst case. The lack of detail from RSP, the lack of credible forecasting, the rejigging of forecasts, and the lack of an operational plan from the Applicant mean that residents and the ExA are prevented from analysing the likely worst case scenario with regard to noise.
72. RSP also produced a 50dB LAeq contour at p383 of the appendices to its response to the ExA's 3WQ – see page 64. That 50dB LAeq contour is similar to the CAA 51dB LAeq contour to the west and markedly understates the noise impact to the east. What it fails to set out is the fact that some of the schools that RSP has marked in Ramsgate are within the 57dB LAeq contour.

MAP 7 – FULL IMAGE ON P50



Runway operations during Westerlies

63dB: 300 people live inside this contour

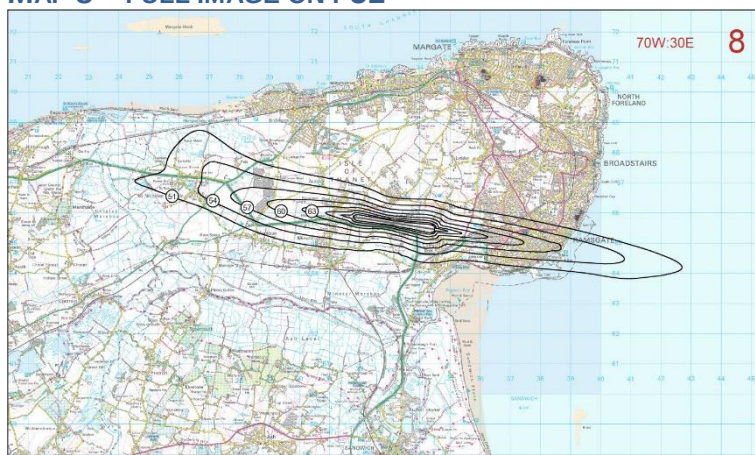
54dB: 14,700 people live inside this contour

51dB: 21,800 people live inside this contour¹⁴

73. 14,700 people will suffer noise levels at or above the level of significant community annoyance when operations are towards the west. Again, we cannot find this clearly set out anywhere in RSP's documentation.
74. RSP produced a 50dB LAeq 100% west contour at page 382 of the appendices to its response to the ExA's 3WQ. It shows the primary school at St Nicholas at Wade as being outside the 50dB LAeq contour. The CAA shows this school as being between the 51dB LAeq and the 54dB LAeq contours.

Contours for operations 70% west and 30% east

MAP 8 – FULL IMAGE ON P51



Runway operations during 70W:30E

54dB: 19,400 people live inside this contour¹⁵

75. We also asked the CAA to produce contours for runway operations averaged out so that 70% are west and 30% are east.
76. Again, even with the caveat that these contours are artificial, and that this *average of an average* understates the impact, the noise impact is still significant. 19,400 people will suffer a noise level of 54dB LAeq and above. That's 19,400 people who, even on RSP's average of an average, will suffer significant community annoyance.
77. Again, the contours in Map 8 are larger than the contours in RSP's Figure 12.6 from its ES (see page 61). In Ramsgate, RSP's 50dB LAeq contour falls partly inside the CAA's 51dB LAeq contour and then runs with the CAA's 54dB LAeq contour to the north.

¹⁴ CAA table 6, see page 35

¹⁵ CAA table 8, see page 35

Contours for operations 30% west and 70% east

MAP 9 – FULL IMAGE ON P52



Runway operations during
30W:70E

54dB: 25,250 people live inside
this contour¹⁶

78. We asked the CAA to produce contours for runway operations averaged out so that 30% are west and 70% are east. As we say above, we produced these contours simply so that we would have a comparator for the contours produced by RSP. It must be remembered that **these contours do not in any way reflect the reality of operations**. Operations are never simultaneously east and west for a sixteen hour period as RSP's contours suggest. The contours are generated by taking the "forecast" fleet mix and ATM total for Year 20, then dividing those ATMs by 365 to arrive at an "average" ATM total for one day. That day's average ATMs is then split between easterly and westerly operations 30/70 or 70/30 on the assumption that traffic might be split in this way over the course of a full year. This 30/70 split does not happen in practice. The wind does not blow neatly 30% in one direction then 70% in another to allow this split for every 16 hour period. This 30/70 split does not show an "average" day.
79. Even with the caveat that these contours are artificial, and that this average of an average understates the impact of the aircraft noise, the noise impact is still significant. 25,250 people¹⁷ will suffer a noise level of 54dB LAeq and above. That's 25,250 people who, even using RSP's approach of taking an average of an average, will suffer significant community annoyance.
80. It is instructive to look at the noise footprints produced by the CAA for a single 747-400 (Maps 1 to 5) and then compare those footprints with the CAA's average contours for operations 100% to the east or west (Maps 6 and 7). The contours shrink as quieter aircraft are added into the calculation and the noise impact of four aircraft an hour is averaged out over a full 16 hour period. If we then compare the 100% east or west contours with the 70/30 splits, we see that the contours shrink again. Finally, if we look at RSP's LAeq contours (on pages 61-62), we can see the diminishing effect of taking a 70/30 modal split and averaging it with a 30/70 modal split. The full extent of the noise harm presented by every 747-400 appears to have vanished. Even the extent of the noise harm caused by a 100% east or west operation has shrunk significantly. We conclude that this is why RSP chooses to present so few contours and to present contours that represent average noise that is then averaged again.

¹⁶ CAA table 9, see page 36

¹⁷ CAA table 9, see page 36

81. RSP's Noise Mitigation costs will be driven by the number of people who fall within whichever noise contour that the ExA decides is appropriate. As an example to illustrate what this could mean, we note that the planning approval given to Stansted by Uttlesford DC includes a requirement to extend the sound insulation grant scheme to include households in the 57 dB LAeq,16h noise contour. This is set out in the relevant draft s106 agreement (see schedule 3: Part 1).¹⁸ The CAA contours for RSP's proposals for operations 100% to the east show that 8,300 households fall within the 57 dB Leq contour and would be entitled to a sound insulation grant under the Stansted scheme. That's £41.5m to add to the insulation scheme costs for homes within the higher contours of 60dB LAeq and 63dB LAeq. The smaller the relevant contour, the smaller RSP knows its noise mitigation bill will be.

Night contours

82. We asked the CAA to produce four sets of night contours:
- 100% to the east
 - 100% to the west
 - 30% to the west and 70% to the east
 - 70% to the west and 30% to the east.
83. NNF set out in detail the WHO's 2018 guidance on aviation noise in NNF09. In its 2018 report,¹⁹ the WHO said that:
84. *"11% of participants were highly sleep-disturbed at a noise level of 40 dB Lnight."*
85. At 55dB Lnight, that figure rose to 25.5%.²⁰ The WHO went on:
86. *"There is additional uncertainty when characterizing exposure using the acoustical description of aircraft noise by means of Lden or Lnight. Use of these average noise indicators may limit the ability to observe associations between exposure to aircraft noise and some health outcomes (such as awakening reactions); as such, noise indicators based on the number of events (such as the frequency distribution of LAmax) may be better suited. However, such indicators are not widely used. The GDG acknowledged that the guideline recommendation for 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."*²¹ [our emphasis]
87. RSP has chosen to ignore the latest WHO guidance. The ExA should not.
88. As we have said above, we were unable to provide the CAA with the data that it would need to calculate Lden as RSP has not produced any information about the likely timing of flights. In our assessment, given the relatively small number of night ATMs that would be spread across an average night, the LAmax contours would be the most accurate reflection of the

¹⁸ Document submitted separately with this submission.

¹⁹ World Health Organisation - Environmental Noise Guidelines for the European Region 2018

²⁰ ibid – table 32

²¹ ibid – section 3.3.2.3

level of noise that each night ATM will cause. Averaging the noise generated by seven or eight flights across an eight hour period is meaningless.²²

89. Nevertheless, in order to be able to compare the CAA's work with RSP's, we asked the CAA to provide night contours based on LAeq 8 hr.

MAP 10 – FULL IMAGE ON P53



Runway operations during Easterlies at night

45dB: 28,750 people live inside this contour²³

3,163 people highly sleep-disturbed

90. Map 10 shows the average noise nuisance created by six night ATMs averaged across an eight hour period when operations are to the east. 28,750 people currently live within the 45dB LAeq contour, so that's 28,750 people who would experience a level of aircraft noise at night at least 5dB above the level recommended by the WHO. More than 11% of these people are predicted to be highly sleep-disturbed. That's at least 3,163 people. This will have negative implications for their health. As we have explained above, the likely number of people adversely affected will soon be much higher given the plan for four new housing estates in eastern Herne Bay. A conservative estimate of an additional 6,000 to 9,000 people will be in the 45dB contour.

MAP 11 – FULL IMAGE ON P54



Runway operations during Westerlies at night

45dB: 22,450 people live inside this contour²⁴

2,470 people highly sleep-disturbed

91. Map 11 shows the average noise nuisance created by six night ATMs averaged across an eight hour period when operations are to the west. 22,450 people live within the 45dB LAeq

²² We are ignoring here the freedom that RSP seeks to carve out via its Noise Mitigation Plan to have a countless number of night flights using aircraft rated QC0.125 and QC0. The Government recognises that these aircraft create enough noise to cause disturbance to people. RSP has ignored this

²³ CAA table 11, see page 37

²⁴ CAA table 10, see page 37

contour, so that's 22,450 people who would experience a level of aircraft noise at night at least 5dB above the level recommended by the WHO. More than 11% of these people will be highly sleep-disturbed. That's at least 2,470 people.

92. RSP's night LAeq contours are in the ES at Figure 12.7 (see page 62). It is hard to know how RSP calculated these contours given the confusion amongst the RSP team when asked at the ISH on Environmental Issues in June what underpinned its night operation assumptions and what fleet mix and number of ATMs led to RSP's desire for a 3,028 annual QC budget. It can be seen from RSP's Figure 12.7 that RSP has significantly understated the potential noise impact of the night flights that it could operate whilst staying within its desired QC budget and whilst following its statements about welcoming late arriving cargo planes at night and allowing passenger planes to take off from 0600.
93. RSP has shown only the 40dB and the 55dB night contours. Looking at Map 10 above, RSP's 40dB contour is smaller than the CAA's 45dB contour in the west and is closer to the CAA's 48dB contour. Looking at Map 11 above, RSP's 40dB contour is similar to the CAA's 45dB contour in the east. RSP's Figure 12.7 disguises the fact that the 57dB Lnight contour stretches well into Ramsgate and that much of the town would experience average night noise of 51dB.
94. As we have said above, we are modelling average noise here. That's the average noise of six flights, each taking, say, a minute in terms of the sound that any one person hears. Those six minutes of sound are then averaged over an eight hour period, suggesting that the actual noise experienced is at a very low level. This is highly misleading. A better indicator of the noise suffered when there are relatively few ATMs in a period is LAm_{ax} – the actual sound generated by each overflight. Our Maps 1 to 5 are the most useful when considering the impact of night noise on the local population created by one kind of aircraft.

MAP 12 – FULL IMAGE ON P55



Runway operations during
70E:30W at night

45dB Lnight: 23,300 people
live inside this contour²⁵

²⁵ CAA table 12, see page 38

MAP 13 – FULL IMAGE ON P56



Runway operations during
30W:70E at night

45dB Lnight: 23,600 people
live inside this contour ²⁶

95. For completeness, we have included LAeq contours for night noise for the “average of an average” calculation of 30% west and 70% east (Map 13), and vice versa (Map 12). The same caveats apply to these as we set out above. Even with this repeated coarsening of the data by averaging, it can be seen that the CAA’s contours here stretch further than the contours shown in RSP’s Figure 12.7 (see page 62). 23,600 people²⁷ will experience noise levels of 45dB Lnight and above for the imaginary 30% west and 70% east runway split, and 23,300 people²⁸ will experience noise levels of 45dB Lnight and above for the imaginary 70% west and 30% east runway split. This means that tens of thousands of people will suffer aircraft noise at night well above the maximum level recommended by the WHO.

²⁶ CAA table 13, see page 38

²⁷ CAA table 13, see page 38

²⁸ CAA table 12, see page 38

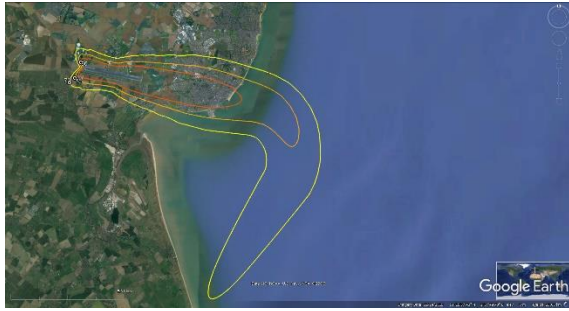
Additional Comments

The impact of changes to the fleet mix – RSP is not showing the likely worst case

96. The CAA's work depends entirely on the brief that NNF gave the CAA. NNF's brief depends on the fleet mix that RSP published in its ES and on the oral updates to that fleet mix given by Mr Cain and his RSP colleagues at the ISHs in March and June. The fleet mix in RSP's ES depends on the "forecasts" produced by Dr Dixon. Dr Dixon admitted in March that she has no experience of forecasting air freight in the south east of the UK. It is hard to understand why Mr Freudmann introduced Dr Dixon to his RSP colleagues as the consultant to undertake this work given her lack of experience.
97. NNF recognises that the fleet mix produced by RSP is of questionable quality in terms of its predictive power. However, it is the only fleet mix that RSP has produced and so we felt that we were obliged to use it. Our removal of the ATR-72 craft reflects RSP's many statements that this is a sensible thing to do, in recognition of the fact that RSP has changed its expected fleet mix since publishing its ES.
98. RSP compounded the unreliability of the "forecasts" that generated its fleet mix by then asking a consultant who had not previously used the relevant software to take that fleet mix and model the noise contours that it would generate. This is another odd decision. It is also surprising that RSP chose not to use the software used by the CAA, or indeed, the CAA itself.
99. The difference between the CAA 70/30 contours and the RSP 70/30 contours demonstrates the impact on the noise environment that occurs when relatively small changes are made to the fleet mix. The fact that this difference is visible for an annual ATM average that has then been split 70/30 and 30/70, and then averaged across those two modal splits, shows what impact a small change in the fleet mix can make even when the data is degraded through several iterations of averaging. It is all the more important then, that the ExA should have available to it a fleet mix that truly represents the likely worst case. The fleet mix in RSP's ES is clearly not that fleet mix.

RSP does not show the likely worst case impact on Ramsgate

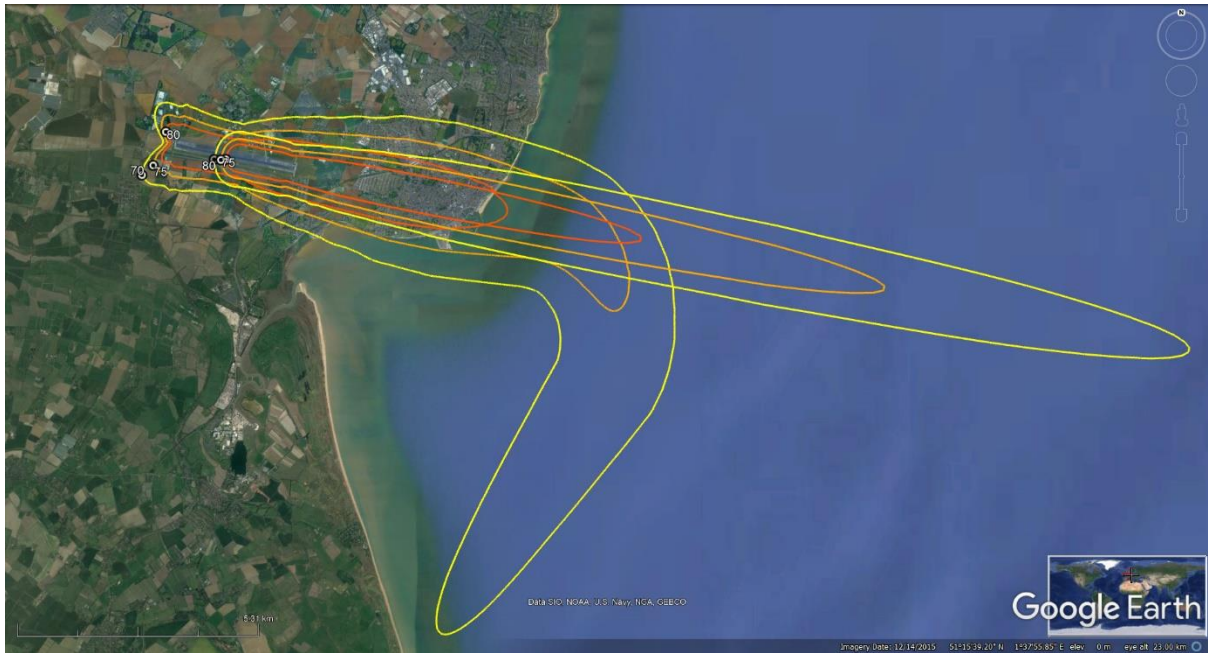
100. The town of Ramsgate will be particularly disadvantaged by RSP's proposal. The prevailing winds mean that around 70% of arrivals will come in over Ramsgate. Around 30% of departures will also be over Ramsgate. Most of Ramsgate lies within the 80dB LA_{max} footprint for the 747-400 arrival and for its departure. RSP's contours mask this. NNF and a number of individual residents have been trying to get across to RSP for years the fact that most people in Ramsgate will experience 80dB LA_{max} for every 747-400 arrival and every 747-400 departure to the East, whether day or night.
101. This can be clearly shown using the KML files from the CAA, as in the images below. For clarity, the 70dB, 75dB, and 80dB contours have been coloured yellow, orange and red respectively. The arrival and departure flight paths (CAA Maps 3 & 2) are shown separately and together, and the fourth image is a close-up of the area of Ramsgate enclosed by the two 80dB contours (which are shown in splendid isolation).



Departure to the East



Arrival from the East



The two footprints overlaid



Zoomed on central Ramsgate, showing only the 80dB contour

Night flights

102. RSP has yet to set out the forecast fleet mix and ATM numbers for its proposed night operations. Despite this, RSP has asked for a QC budget of 3,028. NNF set out in NNF09²⁹ for D3 the fact that a lower QC budget (1,995 QC points) was determined in 2012 to represent more harm than good to the community. We also highlighted in our response to ExA 2WQ Ns. 2.4 the fact that RSP is seeking a disproportionately higher QC budget than Heathrow, if the Quota Count for each airport is compared to its annual ATM cap. RSP has not set out what, if any, benefit might accrue to the community as a result of night operations and this oversized QC budget. Given this, there is nothing to set against the obvious downsides of night operations as set out by NNF and as shown clearly in the CAA contours. There should therefore be a complete ban on night operations, scheduled, timetabled, late, unplanned or otherwise.
103. NNF set out in NNF17 in our answer to ExA 3WQ Ns 3.1 the fact in 2011 24.8% to 50% of Manston's annual 1,472 ATMs that year were "late" arrivals. The ExA has asked whether the QC budget should apply only to the hour from 0600 to 0700. The answer is an emphatic "no". A QC budget is for the entire night period. If RSP is to be allowed to operate night flights (and we can see nothing that approaches a case that, on balance, says that it is in the public interest for RSP to be allowed to do so) then every night ATM must be accounted for within whatever QC budget is allowed. To do otherwise will give RSP the freedom to land a sizable percentage of its ATMs at night, unscheduled, with no penalty and no limit. As cargo ATMs are typically not scheduled flights anyway, past experience says that this would have alarmingly negative noise impacts for tens of thousands of people.
104. RSP has set no ATM limit for its night operations. RSP also intends not to count aircraft rated QC0 and QC0.125 in its QC budget for night movements. The Government recognises that aircraft rated QC0 and QC 0.125 expose communities to noise levels that the WHO identifies as being capable of creating sleep disturbance. If the QC budget and Noise Mitigation Plan as currently proposed are approved, RSP will have free rein to have as many night flights rated QC0 and QC 0.125 as it can attract. **This is clearly not acceptable, and is not in line with the Government's expressed position.**
105. RSP persists in asking to operate flights rated QC4 at night. It has produced no case for doing so. A B747-400 is rated QC4 on departure. The impact on the local population of allowing this can be seen in our Maps 2, 4 and 5.

²⁹ Paragraphs 144-149

Summary

- RSP's proposal is for an airport many times the size of the commercial airport that used to be on the Manston site
- RSP's proposed **cargo** operation would be more than 29 times the size of the average annual cargo operation previously at Manston, and almost 16 times the size of Manston's best year ever (2003) for cargo ATMs
- RSP's proposed **passenger** operation would be more than 14 times the size of the average annual passenger operation previously at Manston, and more than twice the size of Manston's best year ever (2005) for passenger ATMs
- It is clear that RSP's proposal will generate a far greater level of aircraft noise than has been generated by any other commercial aviation operation on that site
- Residents who lived through the airport's previous commercial operations complained about the noise impact on them and on their life of both day and night operations
- When a 747-400 – the workhorse of the air cargo world – arrives from the west, 26,950 people are in the 70dB contour³⁰, 5,400 people are within the 75dB contour and 750 in the 80dB contour. The 80dB contour extends into St Nicholas at Wade
- When a 747-400 arrives over Ramsgate from the east, 15,100 people are in the 80dB contour³¹, 20,550 people are within the 75dB contour and 26,800 in the 70dB contour. The 70dB contour covers almost the entire town
- When a 747-400 departs to the east over Ramsgate, 42,600 people are in the 70dB contour³², 33,100 people are within the 75dB contour and 22,050 in the 80dB contour. The 80dB contour extends right over Ramsgate and beyond the harbour arm. We have previously submitted noise monitor records of noise levels of 90dB and over 100dB LAmax over Ramsgate
- When a 747-400 departs to the west, turning North, 6,100 people are in the 70dB contour³³, 2,100 people are within the 75dB contour and 650 in the 80dB contour
- When a 747-400 departs to the west, turning South, 5,650 people are in the 70dB contour³⁴. 2,250 people are within the 75dB contour and 650 in the 80dB contour
- A comparison of RSP's Figure 12.9 with NNF's Maps 1 and 2 reveals a significant noise impact that RSP has simply not shown
- For operations 100% to the east, the 63dB contour includes 700 people³⁵. The 51dB contour includes 37,950 people and the 54dB contour includes 29,100 people
- For operations 100% to the west, the 63dB contour includes 300 people³⁶. The 51dB contour includes 21,800 people and the 54dB contour includes 14,700 people

³⁰ CAA table 18, see page 40

³¹ CAA table 17, see page 40

³² CAA table 16, see page 39

³³ CAA table 14, see page 39

³⁴ CAA table 15, see page 39

³⁵ CAA table 7, see page 35

³⁶ CAA table 6, see page 35

- The Government recognises that the onset of significant community annoyance begins at 54 dB LAeq, 16hr. The WHO says that aircraft noise levels above 45dB Lden are “associated with adverse health effects”.
- For the hypothetical operations 30% to the west and 70% to the east, even with the shrinking of the contours generated by showing an average of an average, the noise impact is still significant. 25,250 people³⁷ will suffer a noise level of 54dB LAeq and above. That’s 25,250 people who, even on RSP’s average of an average, will suffer significant community annoyance
- For the hypothetical operations 70% to the west and 30% to the east, even with the shrinking of the contours generated by showing an average of an average, the noise impact is still significant. 19,400 people³⁸ will suffer a noise level of 54dB LAeq and above. That’s 19,400 people who, even on RSP’s average of an average, will suffer significant community annoyance
- RSP’s 30/70 and 70/30 contours are smaller than the CAA’s
- When night operations are to the east, 28,750³⁹ people are within the 45dB LAeq contour. They will experience a level of aircraft noise at night at least 5dB above the level recommended by the WHO. More than 11% of these people will be highly sleep-disturbed – 3,163 people
- When night operations are to the west, 22,450⁴⁰ people are within the 45dB LAeq contour. They will experience a level of aircraft noise at night at least 5dB above the level recommended by the WHO. More than 11% of these people will be highly sleep-disturbed – 2,470 people
- For the more realistic operations 100% to the East 29,100 people will suffer noise levels that generate significant community annoyance
- For the more realistic operations 100% to the West 14,700 people will suffer noise levels that generate significant community annoyance
- RSP has significantly understated the potential noise impact of night operations. RSP’s 40dB LAeq contour to the west is smaller than the CAA’s 45dB LAeq contour and is closer to the CAA’s 48dB LAeq contour. RSP’s 40dB LAeq contour to the east is similar to the CAA’s 45dB LAeq contour. RSP’s Figure 12.7 disguises the fact that the 57dB Lnight contour stretches well into Ramsgate and that much of the town would experience average night noise of 51dB Lnight – well above the WHO guidance level.

³⁷ CAA table 9, see page 36

³⁸ CAA table 8, see page 35

³⁹ CAA table 11, see page 37

⁴⁰ CAA table 10, see page 37

Conclusions

106. RSP's contours mask the reality that its proposals for a new airport at Manston represent material harm for tens of thousands of people. RSP significantly underestimates the population numbers affected and ignores the fact that this is a vulnerable population in UK health terms, and one that is not currently exposed to noise from aviation operations.
107. RSP's measurements of the current ambient noise levels are suspect. RSP placed noise monitors in the gardens of airport supporters and chose locations for other measurements that are not representative of the ambient noise in that location. This means that the proposed change in the level of noise that people will experience as a result of RSP's proposal has been understated at both ends – RSP's measurements of the current noise level are tainted by uncertainty and its measurements of the possible future noise level and the number of people affected is demonstrably understated.
108. The inconvenient truths of past noise levels recorded by official noise monitors; of past planning decisions taken about aviation noise; and of past complaints from residents have all been steadfastly ignored by RSP.
109. The move from actual noise footprints for one type of aircraft (our Maps 1 to 5) to our two 100% LAeq contour maps show how the actual noise level heard is immediately diminished by averaging out individual noise events over time. Even so, our Maps 6 and 7 are a more accurate reflection of the noise environment under an easterly or westerly wind. This is the actual "lived experience".
110. When our two 100% maps are adulterated to make the 70/30 LAeq contour maps, the noise contours shrink again. This is RSP's preferred reporting format. As Ricardo observed in its response to D6:
111. *"It is further noted that the eligibility [for noise insulation compensation] shown is for contours averaged for both easterly and westerly operations, rather than an actual day of westerly or easterly operation. Using the average mode has the effect of reducing the contours as the noise is spread across the routes in a way that would not necessarily happen in a day of operation at the airport. The eligibility contours should be provided separately for both easterly and westerly operations to derive noise insulation eligibility."*
112. We know that the noise maps we have provided do not show the likely worst case. It is clear that RSP's fleet mix is based on guesses and that the fleet mix has already worsened (in noise terms) since it was created last year. We have no idea what further changes might occur which could easily produce a worse noise environment. Our night noise contours do not include any QC0 and QC0.125 ATMs, yet RSP could operate as many as it pleases under the terms of its Noise Mitigation Plan. We do not have the information that we need to be able to calculate Lden. And, of course, our noise contours do not include noise from other sources of airport noise such as road noise.
113. RSP has not set out the "*likely significant effects*" of its proposal in terms of aviation noise.
114. RSP's proposed Noise Mitigation Plan is nowhere near "*adequate to deal with the worst case*". The CAA contours reveal a worse case than the one that RSP is suggesting. Moreover, given the limitations in the NNF brief to the CAA, the CAA contours are not the likely worst case, and the mitigation plan does not even deal with this.

115. The CAA contours reveal the number of people who will experience a serious degradation in their quality of life as a result of RSP's proposed operation. These people will also be at risk of adverse impacts on their health.
116. RSP has yet to identify a level of benefits that its proposal will deliver such that the serious and permanent harm to local people would be outweighed by these benefits. Given this, there is no compelling case in the public interest to allow a compulsory purchase by RSP of SHP's land.

Appendix 1: Commercial operations at Manston, annual ATMs

Year	Total Passenger ATMs (peak)	Total Cargo ATMs (peak)	Total ATMs
1999	46	700	746
2000	20	915	935
2001	26	911	937
2002	5	800	805
2003	25	1,081	1,108
2004	2,603	730	3,333
2005	4,454	177	4,631
2006	139	322	461
2007	164	444	608
2008	128	412	540
2009	98	485	583
2010	660	491	1,151
2011	1,083	389	1,472
2012	255	432	687
2013	1,129	511	1,640
2014 (part year)	392	229	621
Averages (excl. 2014)	656	587	1,309
RSP Year 20 (for comparison)	9,298	17,170	26,468



TECHNICAL NOTE:

Manston Airport – ‘NNF’ fleet mix noise modelling results (v.2)

Introduction

This technical note summarises the air noise modelling work for Manston Airport carried out by ERCD on behalf of No Night Flights (‘NNF’). The following forecast contours were generated using the ‘NNF’ fleet mix scenario:

- Day $L_{Aeq,16hr}$ (0700-2300 local time), plotted from 51 to 72 dB(A) in 3 dB steps; and
- Night $L_{Aeq,8hr}$ (2300-0700 local time), plotted from 45 to 72 dB(A) in 3 dB steps.

The contours have been produced for the following 4 runway modal split cases:

- 100% west;
- 100% east;
- 70% west / 30% east; and
- 30% west / 70% east.

Lmax noise footprints have also been generated for the Boeing 747-400 with GE CF6 engines (ANCON type ‘B744G’) on each departure and arrival route. The Lmax footprints are plotted at levels 70, 75 and 80 dB(A).

Modelling assumptions

The contours have been generated using the latest version of the ANCON noise model (v2.4) and based on the ‘NNF’ fleet mix scenario. The daytime annual ATM figures for 100% W and 100% E modes supplied by No Night Flights were divided by 365 to produce average daily totals (see **Tables 1 & 2**). Average night movement data were also provided (**Tables 3 & 4**). General aviation movements were split equally amongst the ANCON types SP (single propeller), STP (small twin-piston), STT (small twin-turboprop) and EXE3 (‘Chapter 3’ executive jet), as advised by No Night Flights. Aircraft types with more than one engine variant in the ANCON database were split according to assumptions provided by No Night Flights (see **Table 5**).

The proposed departure flight tracks were digitised from the attached ‘Wiggins’ route map. RNAV lateral spread was modelled on all the departure tracks for the Leq contours. All arrivals have been modelled as ‘straight-in’ tracks along the extended runway centreline.

In view of the expected high proportions of freight traffic, proxy average flight profiles of height, speed and thrust were employed from the latest ANCON Stansted database for both departures and arrivals. Aircraft types that were not present in the Stansted database were substituted by Heathrow profiles where possible, and if not available in the Heathrow database, by Gatwick profiles. The flight profiles assume average weights.

The effects of the surrounding topography have been modelled using Meridian 2 Gridded Heights terrain data from Ordnance Survey.

Results

Contour diagrams are provided for the following cases:

- Day $L_{Aeq,16hr}$ (0700-2300 local time), runway modal split 100% W;
- Day $L_{Aeq,16hr}$ (0700-2300 local time), runway modal split 100% E;
- Day $L_{Aeq,16hr}$ (0700-2300 local time), runway modal split 70% W / 30% E;
- Day $L_{Aeq,16hr}$ (0700-2300 local time), runway modal split 30% W / 70% E;
- Night $L_{Aeq,8hr}$ (2300-0700 local time), runway modal split 100% W;
- Night $L_{Aeq,8hr}$ (2300-0700 local time), runway modal split 100% E;
- Night $L_{Aeq,8hr}$ (2300-0700 local time), runway modal split 70% W / 30% E;
- Night $L_{Aeq,8hr}$ (2300-0700 local time), runway modal split 30% W / 70% E;
- B744G L_{Amax} footprints for Runway 28 departure route 1;
- B744G L_{Amax} footprints for Runway 28 departure route 2;
- B744G L_{Amax} footprints for Runway 10 departure route 3;
- B744G L_{Amax} footprints for Runway 28 arrival; and
- B744G L_{Amax} footprints for Runway 10 arrival.

(Note: For night Leq, the 69 and 72 dBA contours have been omitted from the diagrams for clarity).

Areas, populations and households within all the contours have been estimated using an updated 2018 population database based on the 2011 Census (supplied by CACI Ltd) and are summarised in **Tables 6-9** for daytime Leq, **Tables 10-13** for night-time Leq, and **Tables 14-18** for the L_{max} footprints.

ERCD
03/06/2019

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Table 1 Manston 'NNF' fleet mix average day 100% W traffic

Type	Code	Departure route 1	Departure route 2	RWY 28 arrivals
Airbus A320	A320	0.1	0.1	0.3
Airbus 330-200	A332	1.4	1.4	2.7
Boeing 747-400	B744	0.8	0.8	1.7
Boeing 747-800	B748	0.5	0.5	1.1
Boeing 757-200	B752	1.4	1.4	2.7
Boeing 757-300	B753	0.1	0.1	0.2
Boeing 737-800	B738	5.7	5.7	11.3
Boeing 737-300	B733	1.6	1.6	3.2
Boeing 777-200	B772	2.5	2.5	5.1
Boeing C17 Globemaster III	C17	< 0.1	< 0.1	< 0.1
Fokker 70	F70	1.0	1.0	2.0
Lockheed L-100 Hercules	C130	< 0.1	< 0.1	< 0.1
Boeing 737-800	B738	0.7	0.7	1.5
Boeing 767-300	B763	2.2	2.2	4.4
General Aviation	SP/STP/STT/EXE3	26.0	26.0	52.1
	Total	44.2	44.2	88.3

Table 2 Manston 'NNF' fleet mix average day 100% E traffic

Type	Code	Departure route 3	RWY 10 arrivals
Airbus A320	A320	0.3	0.3
Airbus 330-200	A332	2.7	2.7
Boeing 747-400	B744	1.7	1.7
Boeing 747-800	B748	1.1	1.1
Boeing 757-200	B752	2.7	2.7
Boeing 757-300	B753	0.2	0.2
Boeing 737-800	B738	11.3	11.3
Boeing 737-300	B733	3.2	3.2
Boeing 777-200	B772	5.1	5.1
Boeing C17 Globemaster III	C17	< 0.1	< 0.1
Fokker 70	F70	2.0	2.0
Lockheed L-100 Hercules	C130	< 0.1	< 0.1
Boeing 737-800	B738	1.5	1.5
Boeing 767-300	B763	4.4	4.4
General Aviation	SP/STP/STT/EXE3	52.1	52.1
	Total	88.3	88.3

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Table 3 Manston 'NNF' fleet mix average night 100% W traffic

Type	Code	Departure route 1	Departure route 2	RWY 28 arrivals
Boeing 737-800	B738	1	1	0
Airbus A320	A320	0.5	0.5	0
Boeing 747-400	B744	0	0	3
	Total	1.5	1.5	3

Table 4 Manston 'NNF' fleet mix average night 100% E traffic

Type	Code	Departure route 3	RWY 10 arrivals
Boeing 737-800	B738	2	0
Airbus A320	A320	1	0
Boeing 747-400	B744	0	3
	Total	3	3

Table 5 Manston 'NNF' fleet mix engine split assumptions

Type	Code	Engine splits
Airbus A320	A320	75% CFM / 25% IAE
Boeing 747-400	B744	30% GE / 60% PW / 10% RR
Boeing 757-200	B752	50% RR / 50% PW
Boeing 777-200	B772	40% GE / 20% PW / 40% RR
Boeing 767-300	B763	40% GE / 40% PW / 20% RR

Table 6 Manston 'NNF' fleet mix average day 100% W Leq contours – estimated areas, populations and households

L _{Aeq,16hr} , dB(A)	Area (km ²)	Population	Households
> 51	31.5	21,800	10,400
> 54	17.9	14,700	6,950
> 57	9.9	9,100	4,200
> 60	5.5	2,650	1,250
> 63	2.9	300	200
> 66	1.5	0	0
> 69	0.8	0	0
> 72	0.5	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 7 Manston 'NNF' fleet mix average day 100% E Leq contours – estimated areas, populations and households

L _{Aeq,16hr} , dB(A)	Area (km ²)	Population	Households
> 51	34.1	37,950	17,200
> 54	18.1	29,100	13,600
> 57	9.8	17,800	8,300
> 60	5.4	4,900	2,200
> 63	2.8	700	300
> 66	1.5	0	0
> 69	0.8	0	0
> 72	0.5	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 8 Manston 'NNF' fleet mix average day 70% W / 30% E Leq contours – estimated areas, populations and households

L _{Aeq,16hr} , dB(A)	Area (km ²)	Population	Households
> 51	31.4	28,600	13,400
> 54	17.9	19,400	9,350
> 57	9.8	10,350	4,750
> 60	5.3	3,100	1,450
> 63	2.8	300	200
> 66	1.5	0	0
> 69	0.9	0	0
> 72	0.5	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

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Table 9 Manston 'NNF' fleet mix average day 30% W / 70% E Leq contours – estimated areas, populations and households

L_{Aeq,16hr}, dB(A)	Area (km²)	Population	Households
> 51	32.2	35,350	16,150
> 54	17.9	25,250	11,950
> 57	9.8	14,400	6,650
> 60	5.3	4,050	1,850
> 63	2.7	450	250
> 66	1.5	0	0
> 69	0.9	0	0
> 72	0.5	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 10 Manston 'NNF' fleet mix average night 100% W Leq contours – estimated areas, populations and households

L _{Aeq,8hr} , dB(A)	Area (km ²)	Population	Households
> 45	27.5	22,450	10,700
> 48	14.2	17,150	8,300
> 51	7.4	12,200	5,750
> 54	4.0	7,450	3,350
> 57	2.3	1,850	900
> 60	1.3	250	150
> 63	0.8	0	0
> 66	0.5	0	0
> 69	0.3	0	0
> 72	0.2	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 11 Manston 'NNF' fleet mix average night 100% E Leq contours – estimated areas, populations and households

L _{Aeq,8hr} , dB(A)	Area (km ²)	Population	Households
> 45	27.7	28,750	13,300
> 48	14.2	8,050	3,550
> 51	7.6	1,450	700
> 54	4.1	100	50
> 57	2.3	< 50	< 50
> 60	1.3	0	0
> 63	0.8	0	0
> 66	0.5	0	0
> 69	0.3	0	0
> 72	0.2	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 12 Manston 'NNF' fleet mix average night 70% W / 30% E Leq contours – estimated areas, populations and households

L _{Aeq,8hr} , dB(A)	Area (km ²)	Population	Households
> 45	26.2	23,300	11,050
> 48	14.2	16,650	7,950
> 51	7.8	10,850	5,050
> 54	4.4	4,950	2,250
> 57	2.5	800	400
> 60	1.6	0	0
> 63	1.0	0	0
> 66	0.6	0	0
> 69	0.4	0	0
> 72	0.3	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 13 Manston 'NNF' fleet mix average night 30% W / 70% E Leq contours – estimated areas, populations and households

L _{Aeq,8hr} , dB(A)	Area (km ²)	Population	Households
> 45	27.0	23,600	11,150
> 48	14.2	15,150	7,050
> 51	7.9	6,600	2,950
> 54	4.4	1,100	600
> 57	2.5	< 50	< 50
> 60	1.6	0	0
> 63	1.0	0	0
> 66	0.6	0	0
> 69	0.4	0	0
> 72	0.3	0	0

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 14 Manston B744G Lmax footprints for RWY28 departure (route 1) – estimated areas, populations and households

L _{Amax} , dB(A)	Area (km ²)	Population	Households
> 70	46.3	6,100	2,800
> 75	19.1	2,100	950
> 80	8.8	650	300

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 15 Manston B744G Lmax footprints for RWY28 departure (route 2) – estimated areas, populations and households

L _{Amax} , dB(A)	Area (km ²)	Population	Households
> 70	46.5	5,650	2,500
> 75	19.2	2,250	1,000
> 80	8.8	650	300

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 16 Manston B744G Lmax footprints for RWY10 departure (route 3) – estimated areas, populations and households

L _{Amax} , dB(A)	Area (km ²)	Population	Households
> 70	46.1	42,600	19,150
> 75	19.0	33,100	15,150
> 80	8.7	22,050	10,450

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 17 Manston B744G Lmax footprints for RWY28 arrival (route 4) – estimated areas, populations and households

L _{Amax} , dB(A)	Area (km ²)	Population	Households
> 70	32.7	26,800	12,550
> 75	14.8	20,550	9,900
> 80	6.2	15,100	7,200

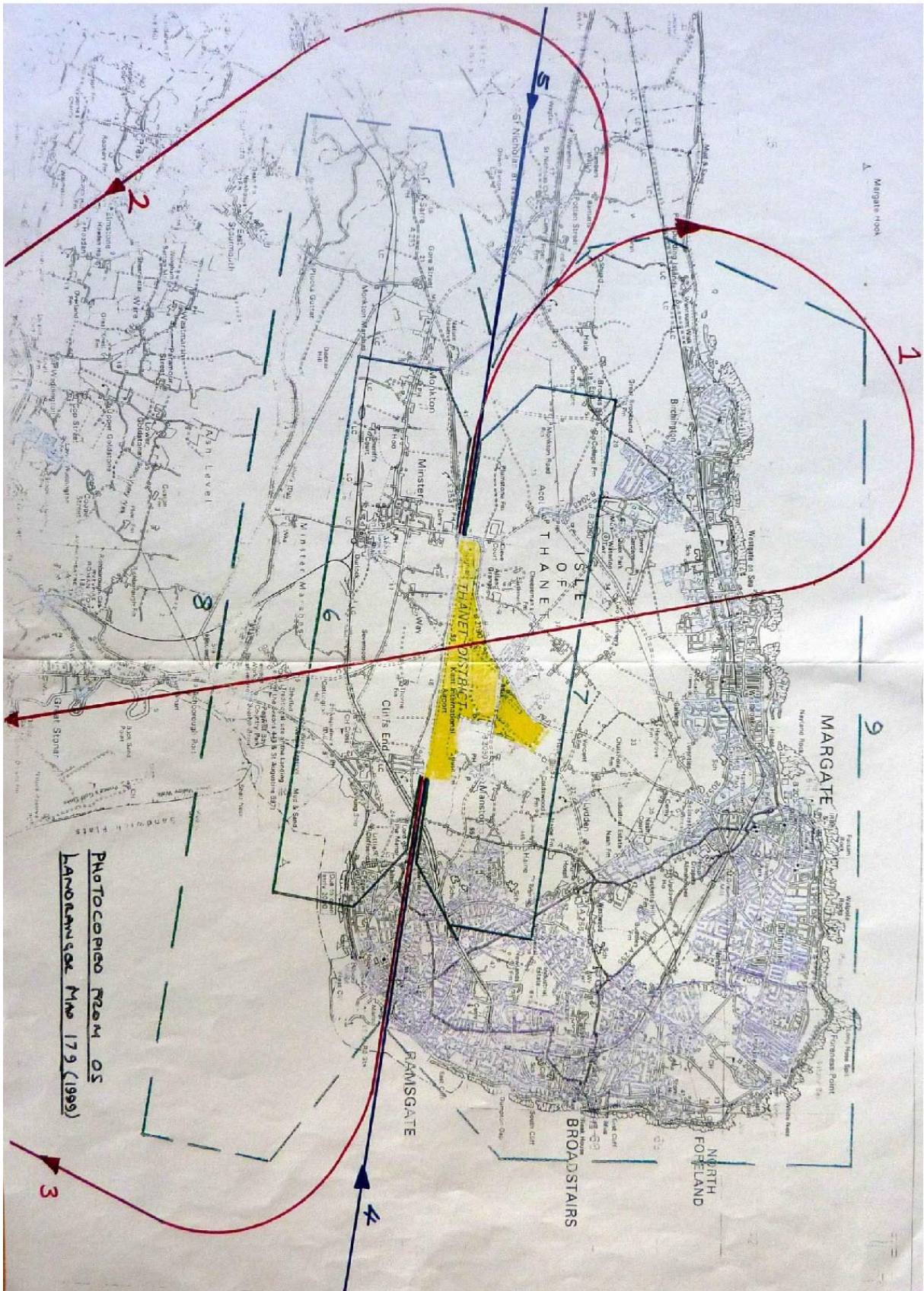
Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Table 18 Manston B744G Lmax footprints for RWY10 arrival (route 5) – estimated areas, populations and households

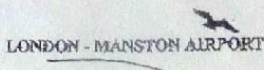
L _{Amax} , dB(A)	Area (km ²)	Population	Households
> 70	32.9	26,950	12,050
> 75	15.5	5,400	2,400
> 80	6.3	750	350

Note: Population and household estimates are given to the nearest 50, and based on 2011 Census data updated for 2018, supplied by CACI. © CACI Limited 2018 All Rights Reserved.

Wiggins Routes 1



Wiggins Routes 2

 WIGGINS	 LONDON - MANSTON AIRPORT	Kent International Airport plc Trading As LONDON MANSTON AIRPORT PO Box 500, Manston, Kent CT12 5BP Tel: 01843 823198 Fax: 01843 823570
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ROUTE MAP

Key

1. Standard instrument departure from runway 28.
2. Alternative instrument departure from runway 28.
3. Standard instrument departure from runway 10.
4. Standard arrival route for runway 28.
5. Standard arrival route for runway 10.
6. Standard visual circuit for both runways flown by light aircraft at 1000 ft above ground level.
7. Alternative visual circuit for both runways flown by light aircraft at 1000 ft above ground level.
8. Standard visual circuit for both runways 10 and 28 flown by large aircraft at 1500 ft above ground level.
9. Alternative visual circuit for both runways 10 and 28 flown by large aircraft at 1500 ft.

Notes

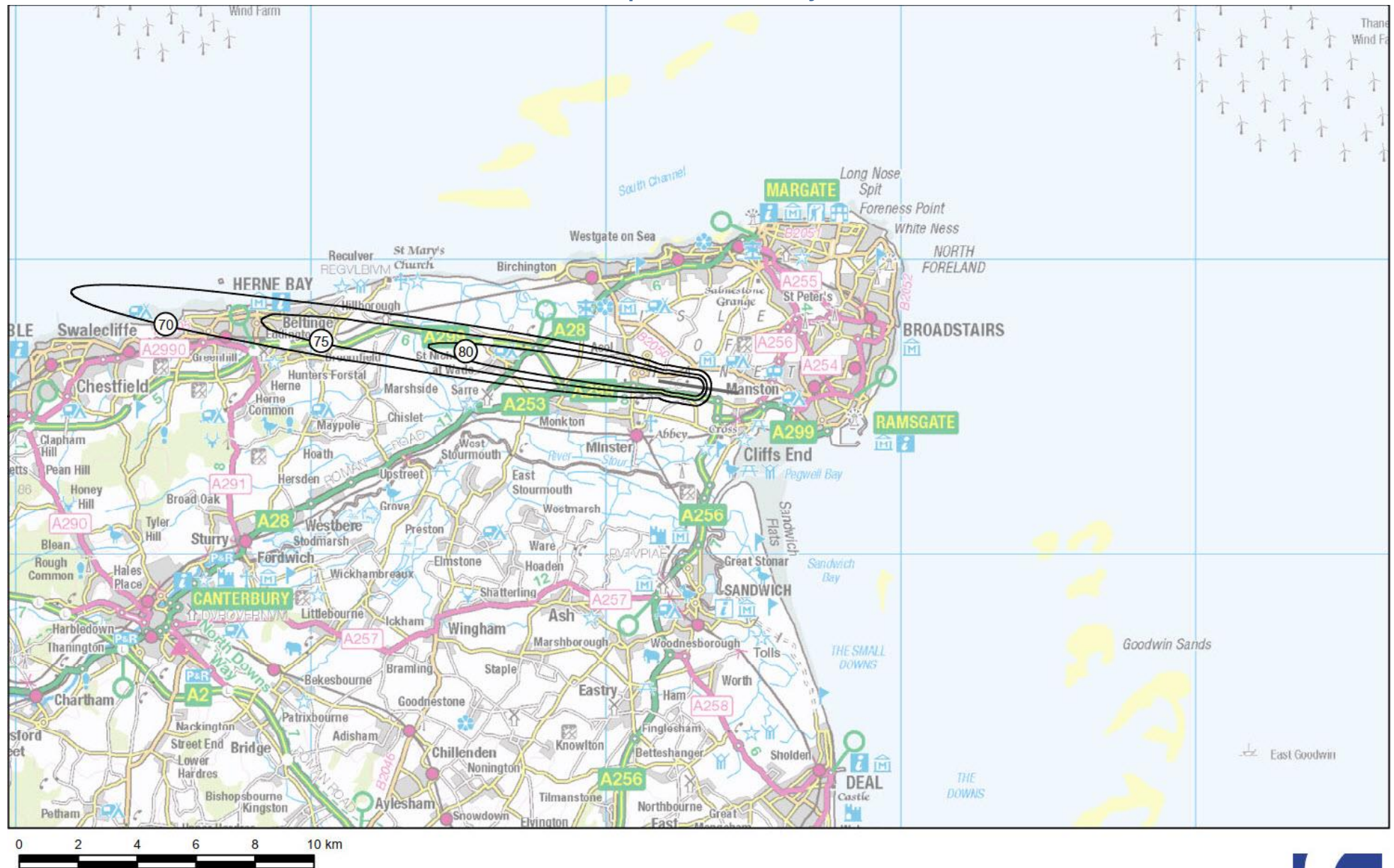
- i) This information is provided as a courtesy only.
- ii) These routes are indicative not definitive and the information is provided on this understanding.
- iii) These routes may vary depending upon a number of factors including weather, and air traffic control requirements.
- iv) These routes may be changed or developed as the Airport develops.
- v) Noise travels. Aircraft noise may be audible several miles away from these indicative routes.

\\SERVER1\manston\Robertson A\ROUTE MAP.doc

Appendix 3: CAA Maps 1 – 13

- 1 B744G LAmax footprints for Runway 10 arrival Easterlies
- 2 B744G LAmax footprints for Runway 10 departure route 3 Easterlies
- 3 B744G LAmax footprints for Runway 28 arrival Westerlies
- 4 B744G LAmax footprints for Runway 28 departure route 1 Westerlies
- 5 B744G LAmax footprints for Runway 28 departure route 2 Westerlies
- 6 Day LAeq,16hr (0700-2300 local time), runway modal split 100% Easterlies
- 7 Day LAeq,16hr (0700-2300 local time), runway modal split 100% Westerlies
- 8 Day LAeq,16hr (0700-2300 local time), runway modal split 70% W / 30% E
- 9 Day LAeq,16hr (0700-2300 local time), runway modal split 30% W / 70% E
- 10 Night LAeq,8hr (2300-0700 local time), runway modal split 100% Easterlies
- 11 Night LAeq,8hr (2300-0700 local time), runway modal split 100% Westerlies
- 12 Night LAeq,8hr (2300-0700 local time), runway modal split 70% W / 30% E
- 13 Night LAeq,8hr (2300-0700 local time), runway modal split 30% W / 70% E

1 B744G LMax footprints for Runway 10 arrival Easterlies

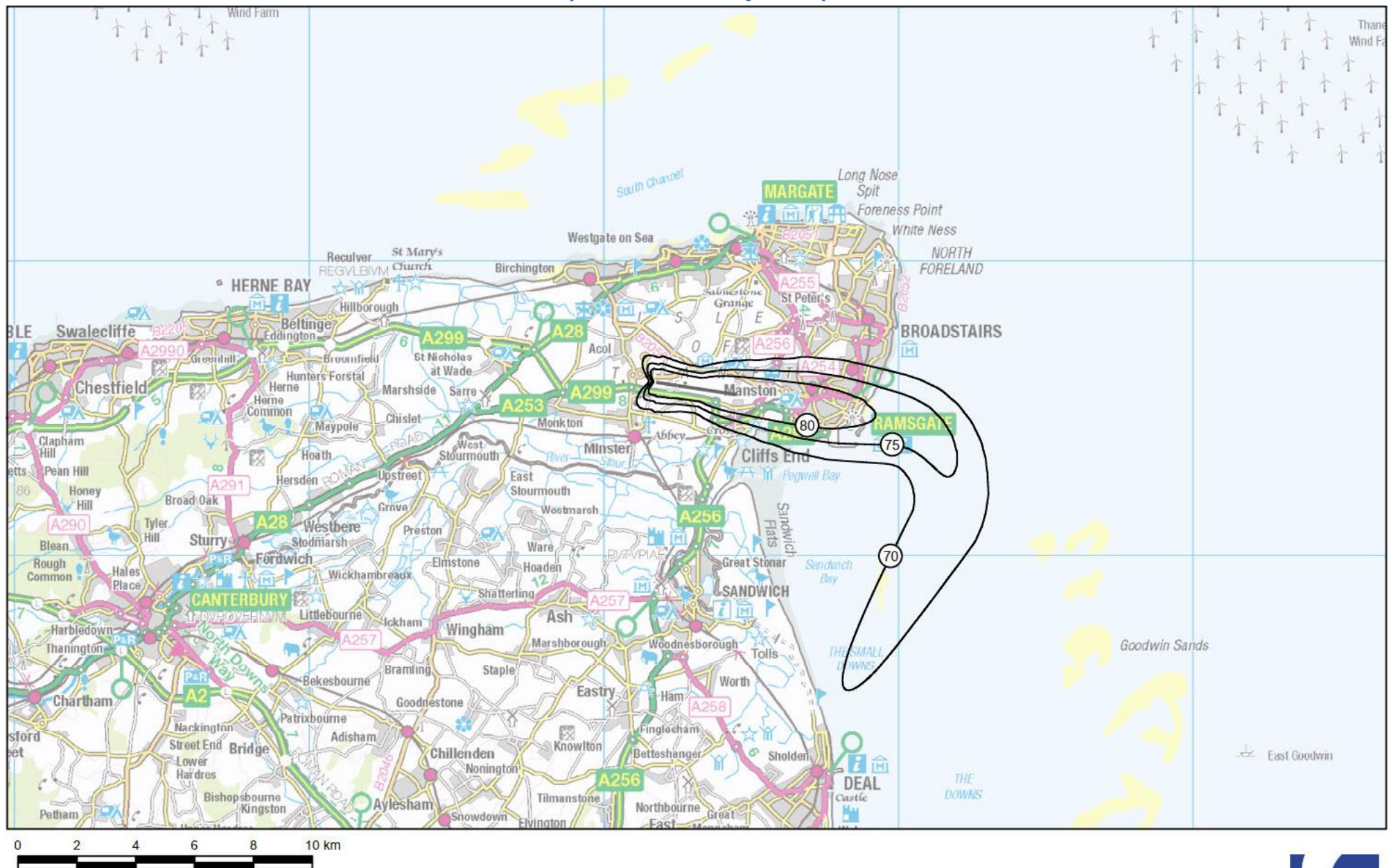


MANSTON AIRPORT
B744G (Boeing 747-400 with GE CF6 engines) L_{max} 70-80 dB(A) Footprints - RWY10 Arrival

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2 B744G LAmx footprints for Runway 10 departure route 3 Easterlies

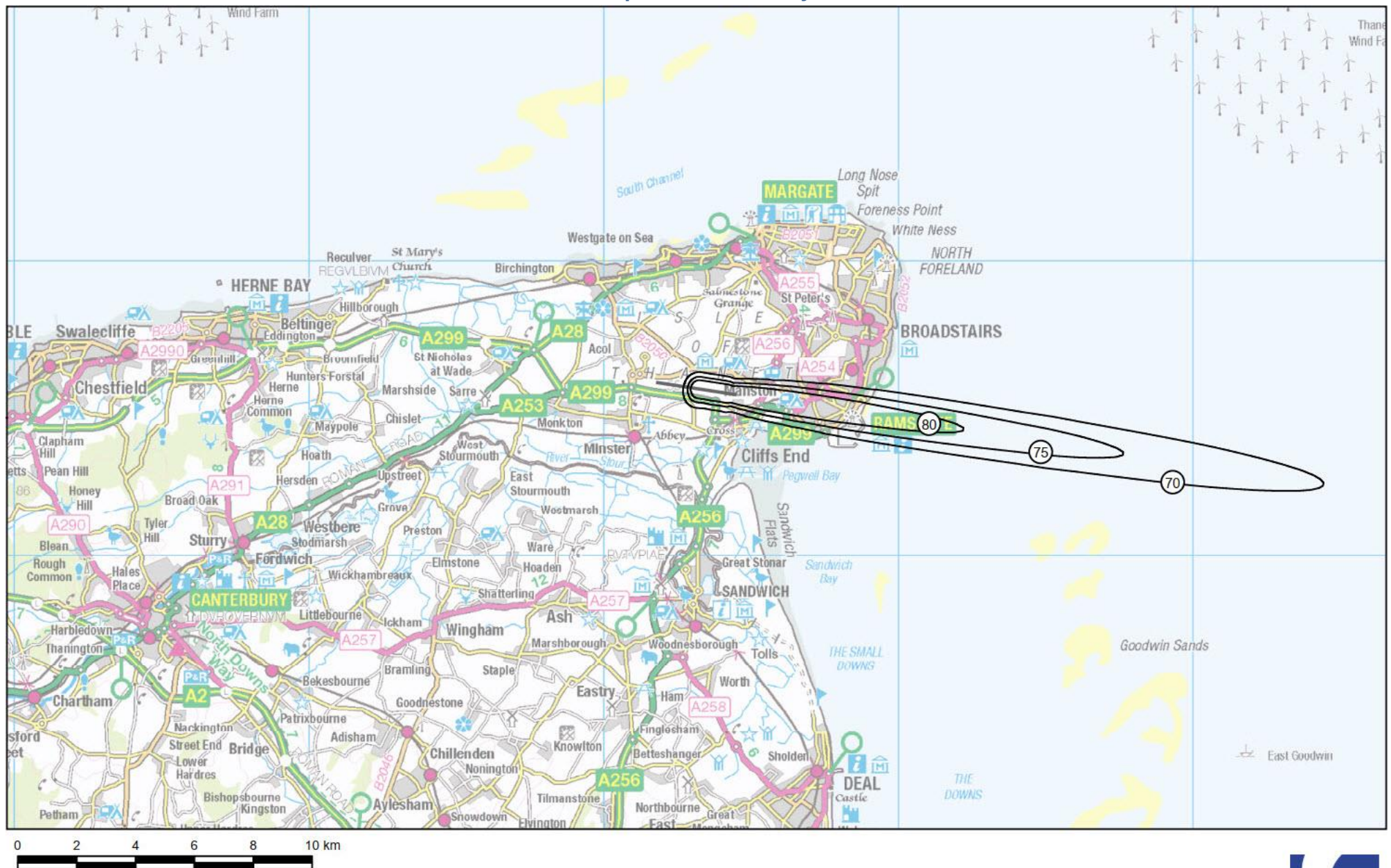


MANSTON AIRPORT
B744G (Boeing 747-400 with GE CF6 engines) L_{Amax} 70-80 dB(A) Footprints - RWY10 Departure Route 3

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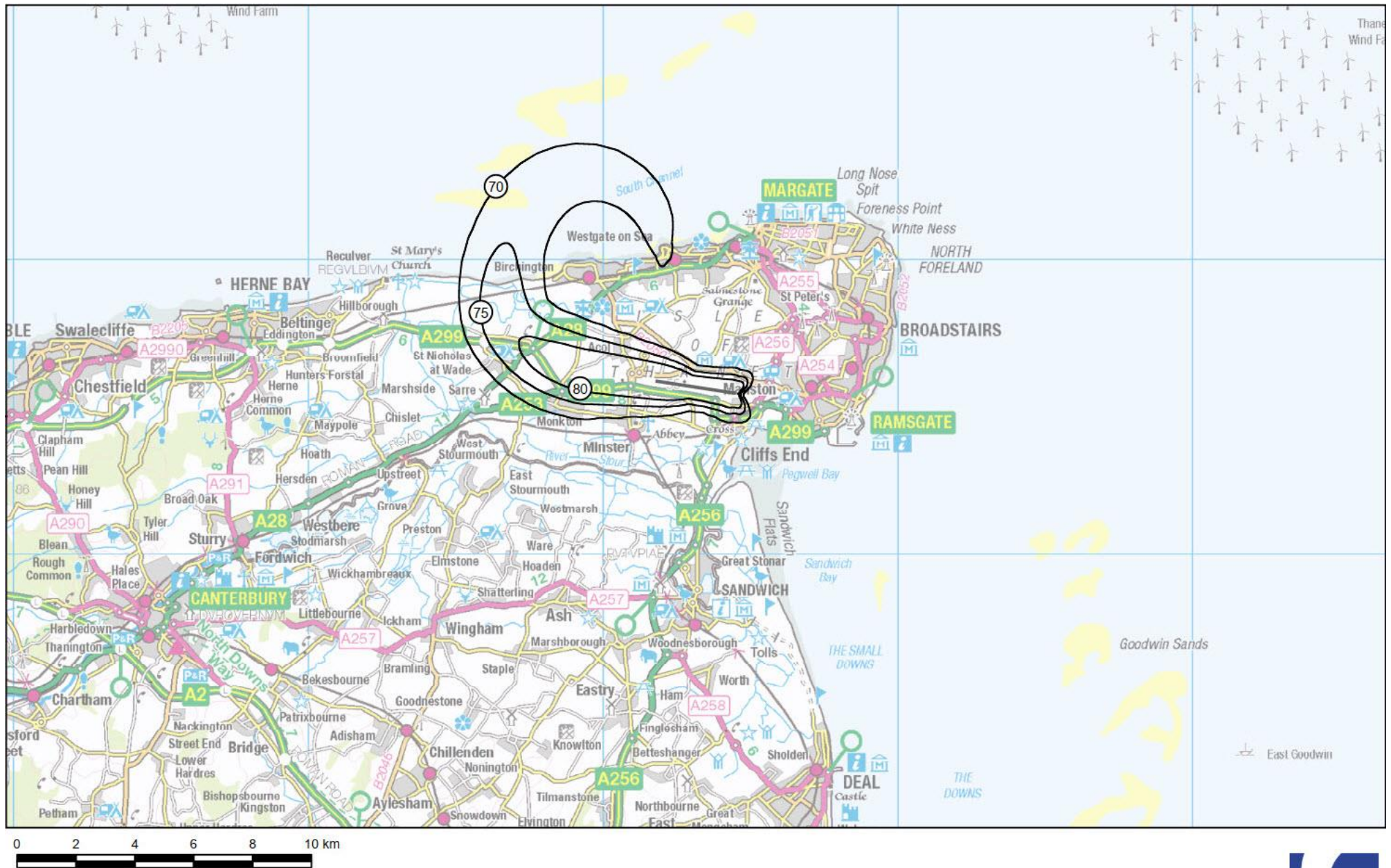
3 B744G L_{Amax} footprints for Runway 28 arrival Westerlies



MANSTON AIRPORT
B744G (Boeing 747-400 with GE CF6 engines) L_{Amax} 70-80 dB(A) Footprints - RWY28 Arrival

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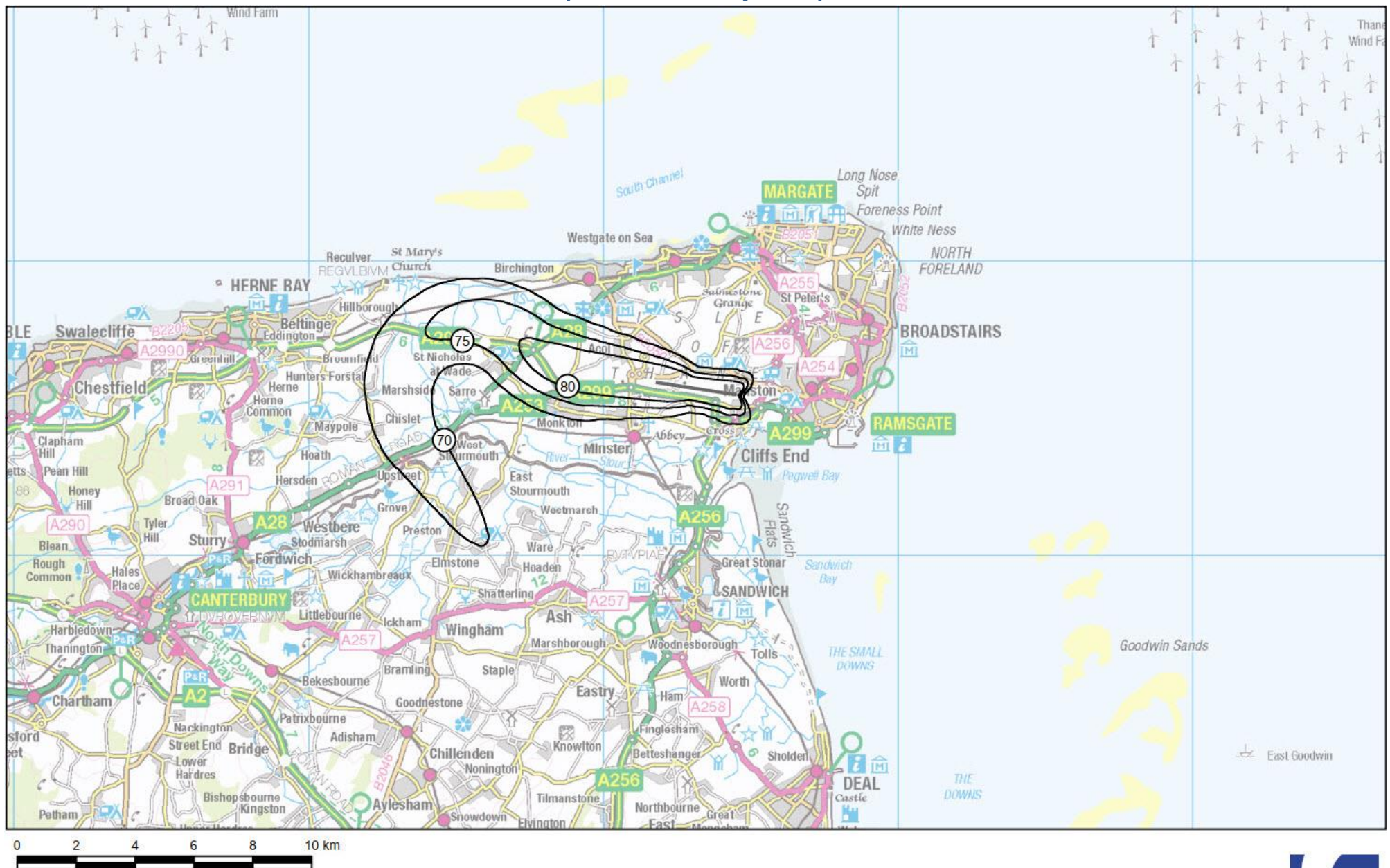




MANSTON AIRPORT
B744G (Boeing 747-400 with GE CF6 engines) L_{Amax} 70-80 dB(A) Footprints - RWY28 Departure Route 1

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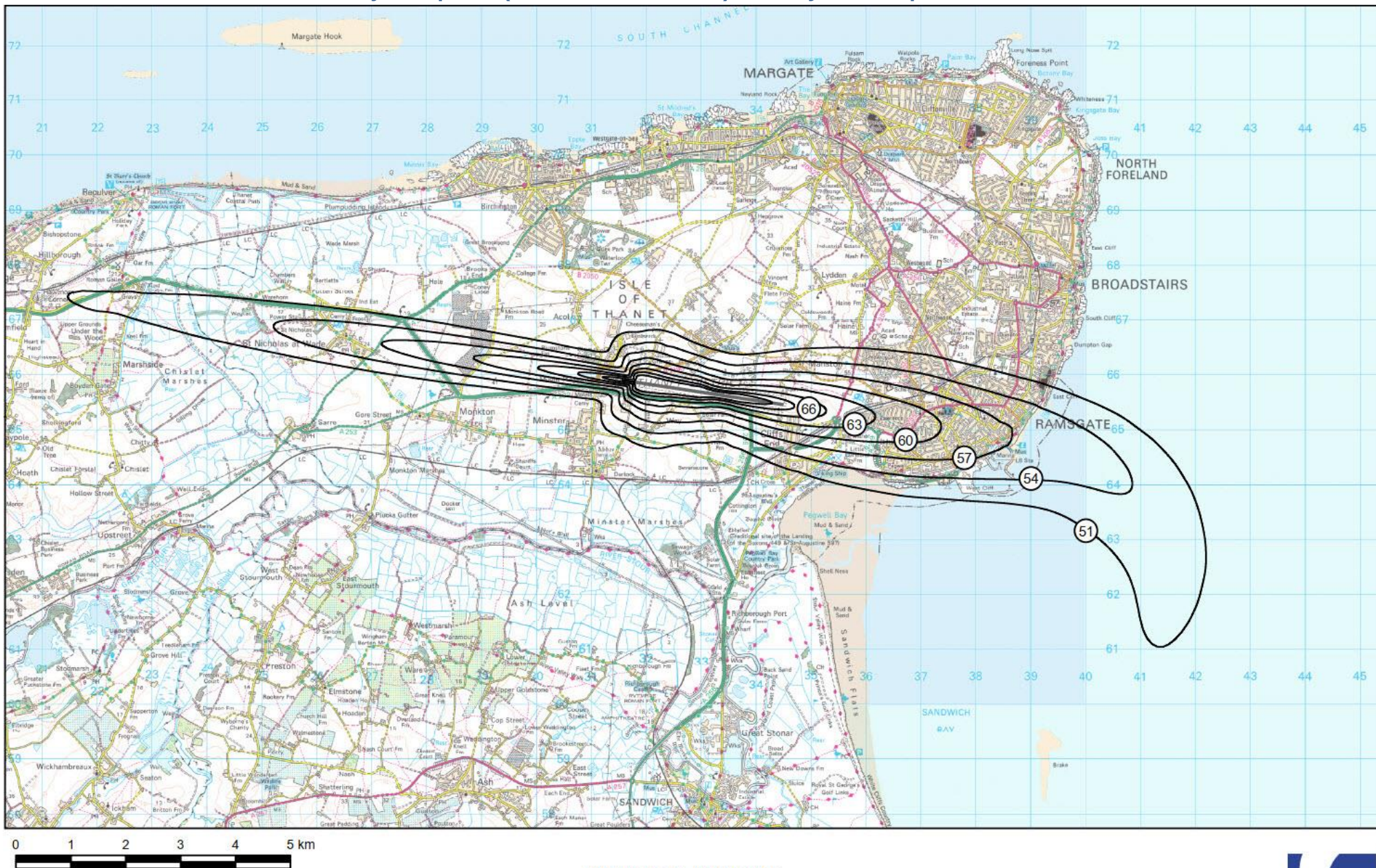
5 B744G LAmx footprints for Runway 28 departure route 2 Westerlies



MANSTON AIRPORT
B744G (Boeing 747-400 with GE CF6 engines) L_{Amax} 70-80 dB(A) Footprints - RWY28 Departure Route 2

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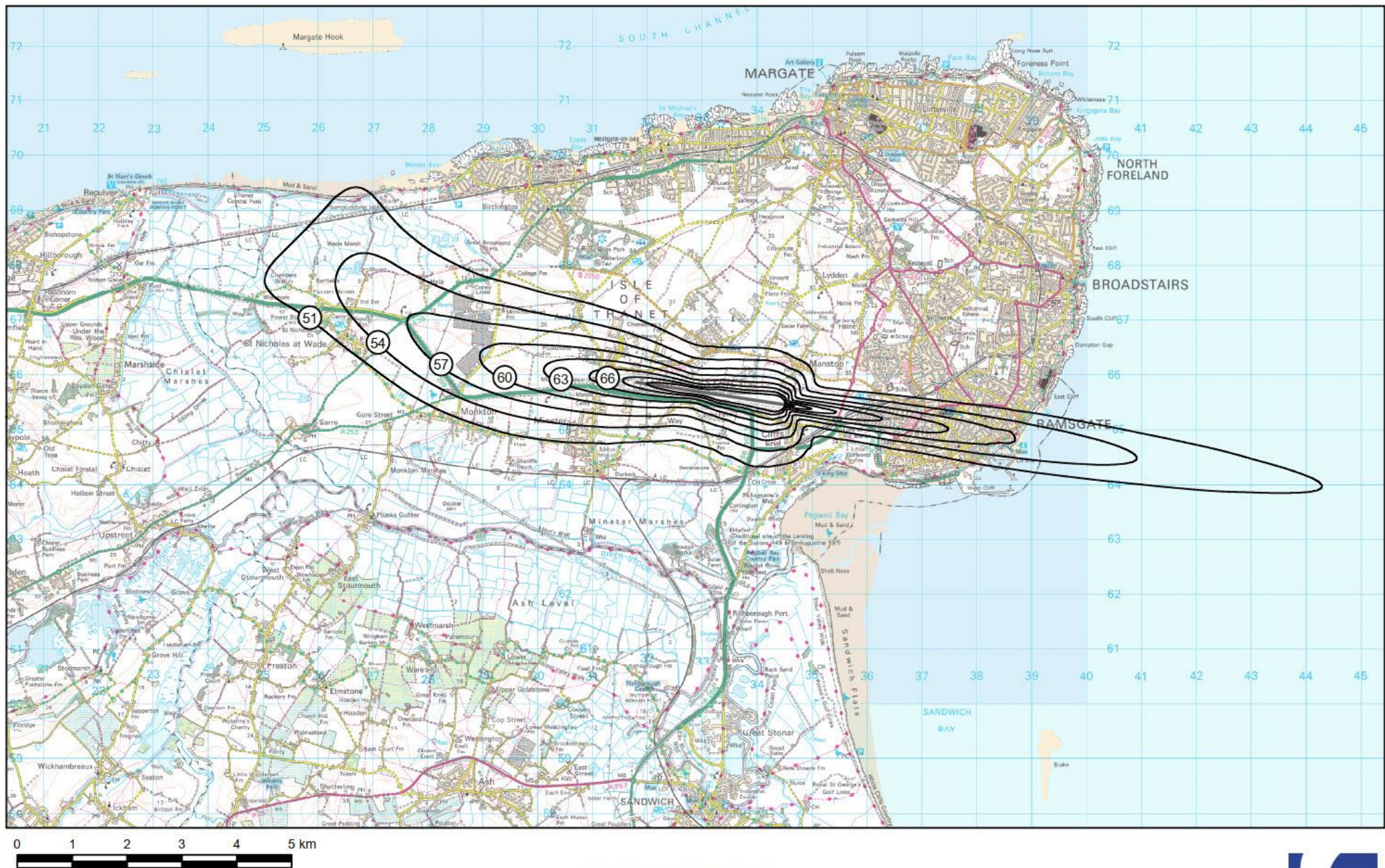
6 Day LAeq,16hr (0700-2300 local time), runway modal split 100% Easterlies



MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Day LAeq,16hr 51-72 dB(A) Contours
 Runway Modal Split 100% E

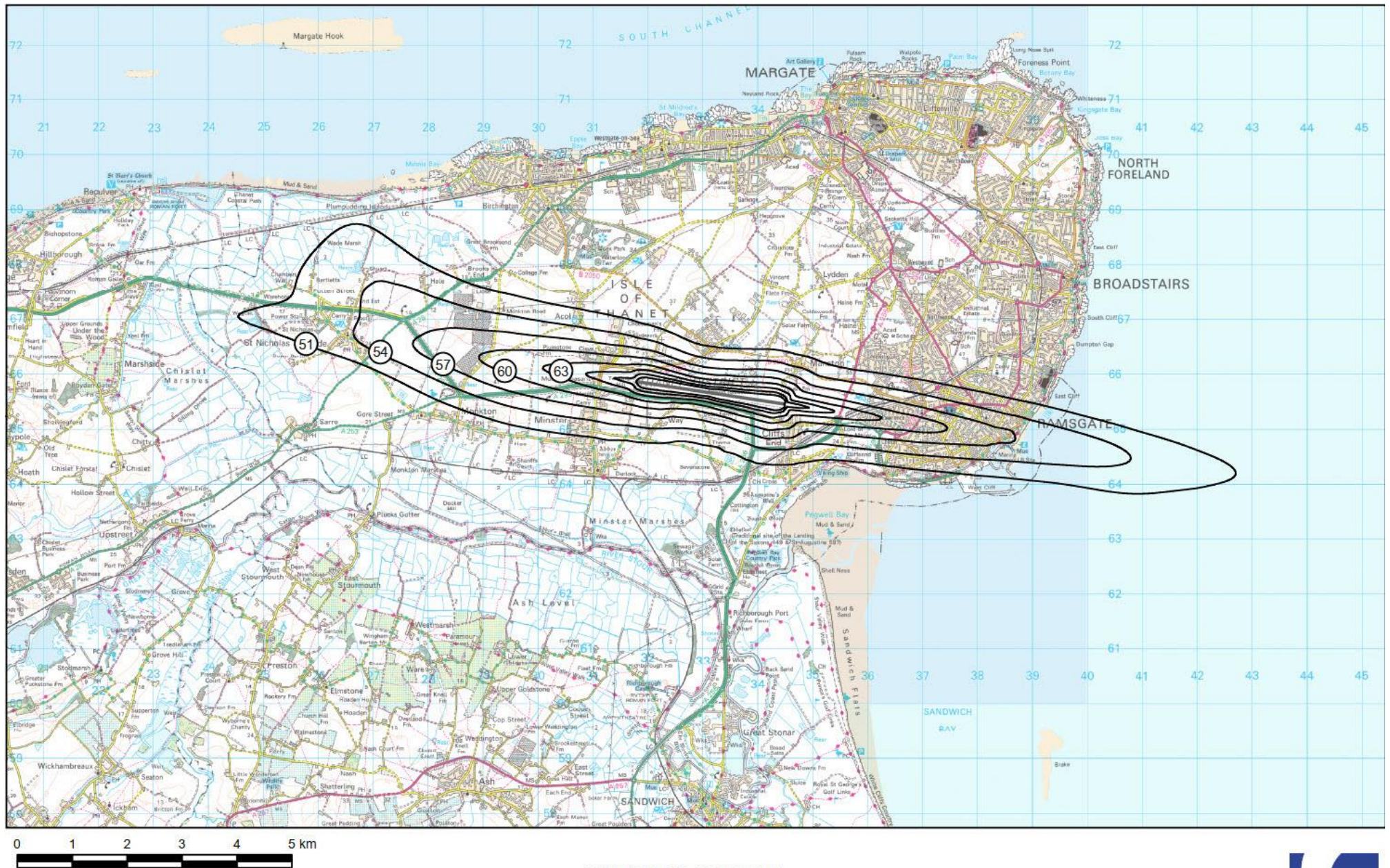
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7 Day LAeq,16hr (0700-2300 local time), runway modal split 100% Westerlies

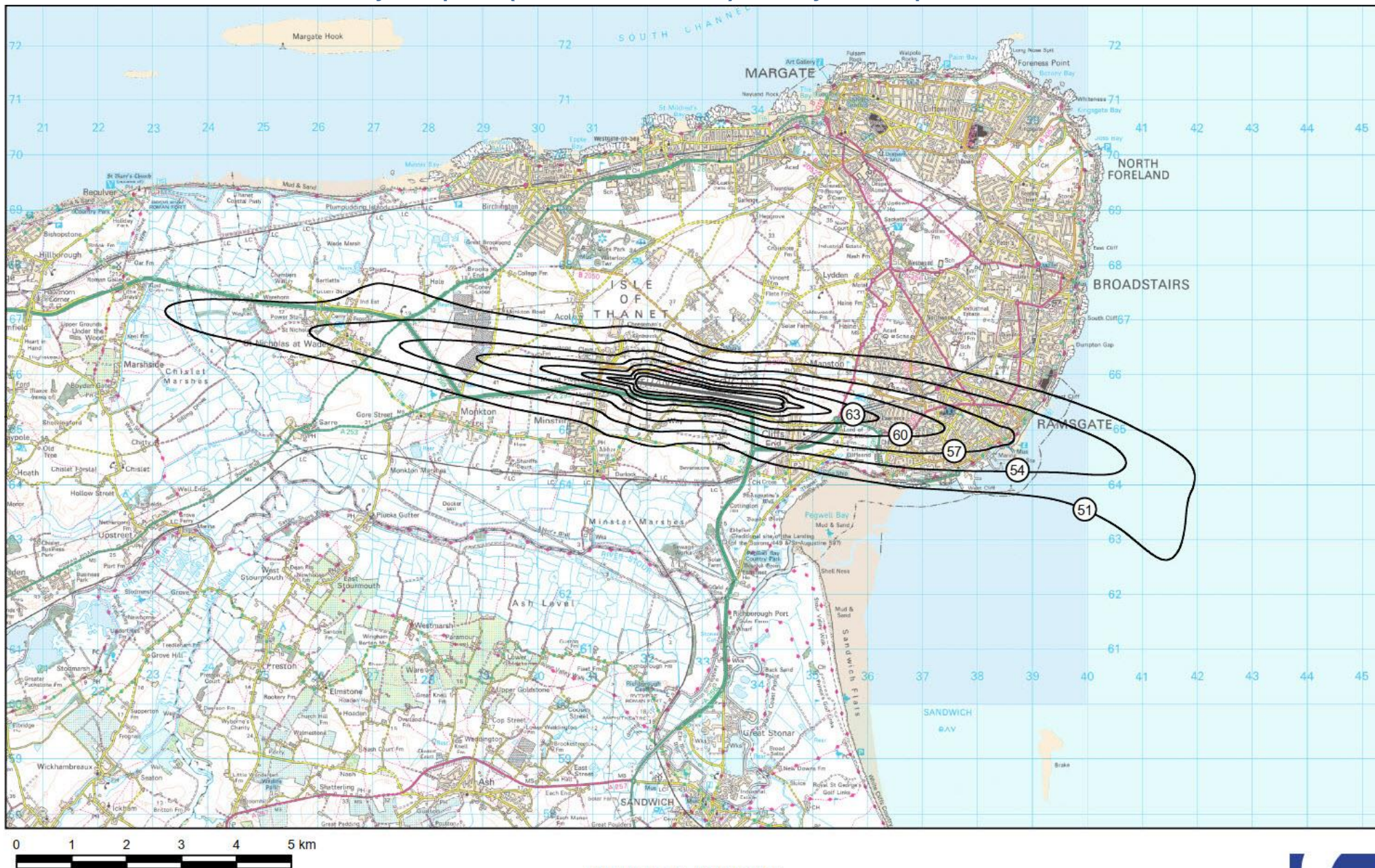


MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Day $L_{Aeq,16hr}$ 51-72 dB(A) Contours
 Runway Modal Split 100% W

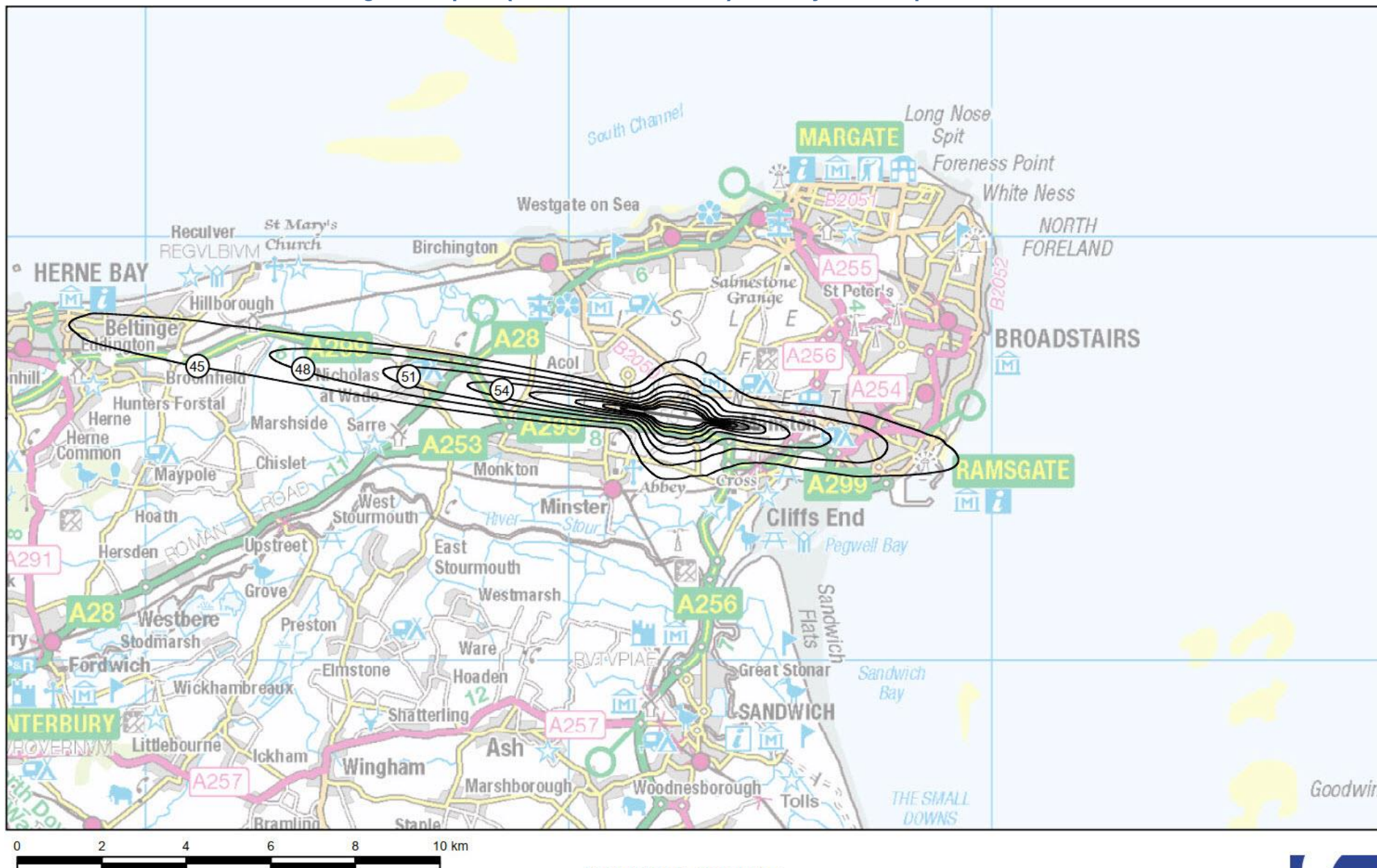
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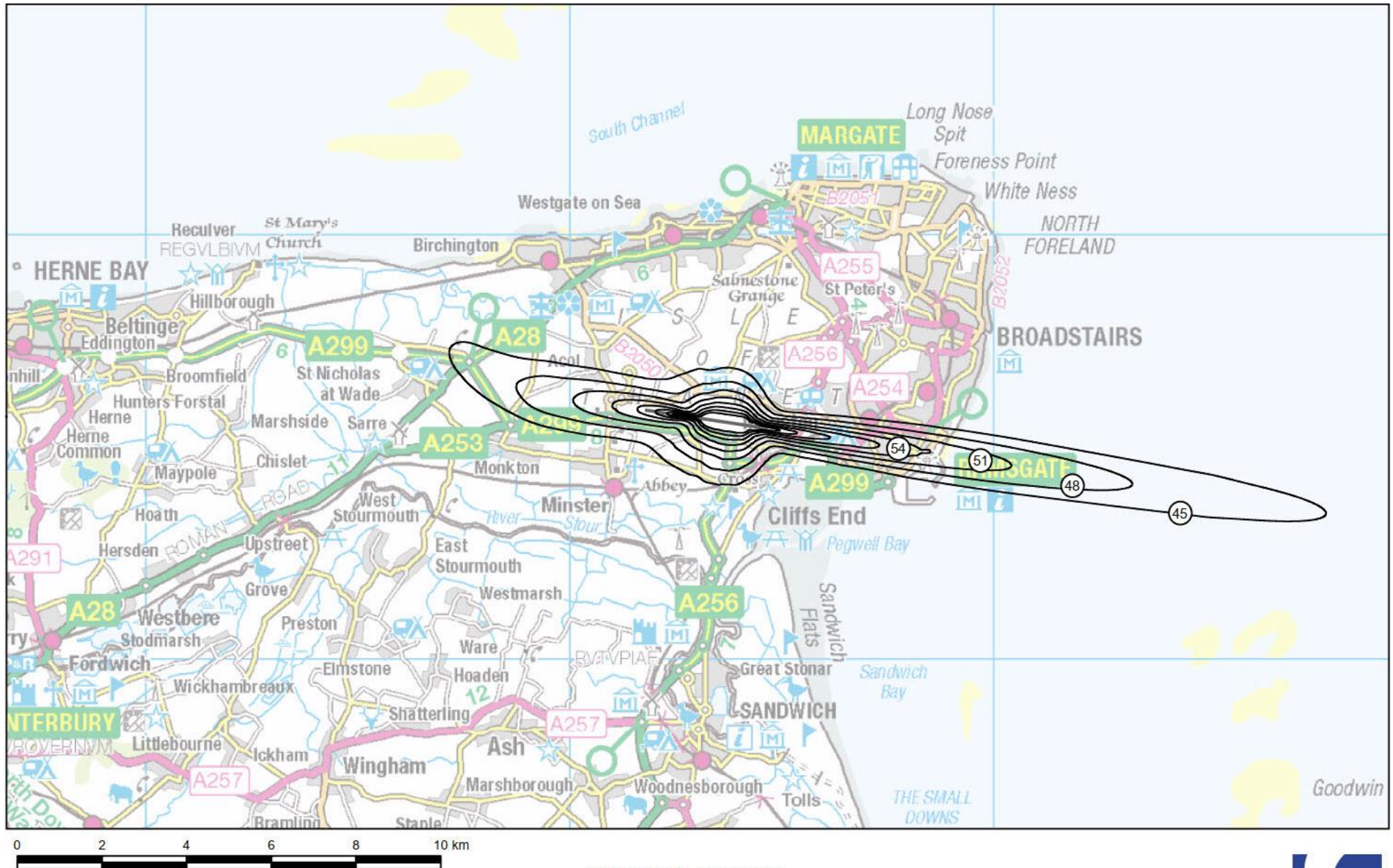
MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Day $L_{Aeq,16hr}$ 51-72 dB(A) Contours
 Runway Modal Split 70% W / 30% E



MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Day LAeq,16hr 51-72 dB(A) Contours
 Runway Modal Split 30% W / 70% E

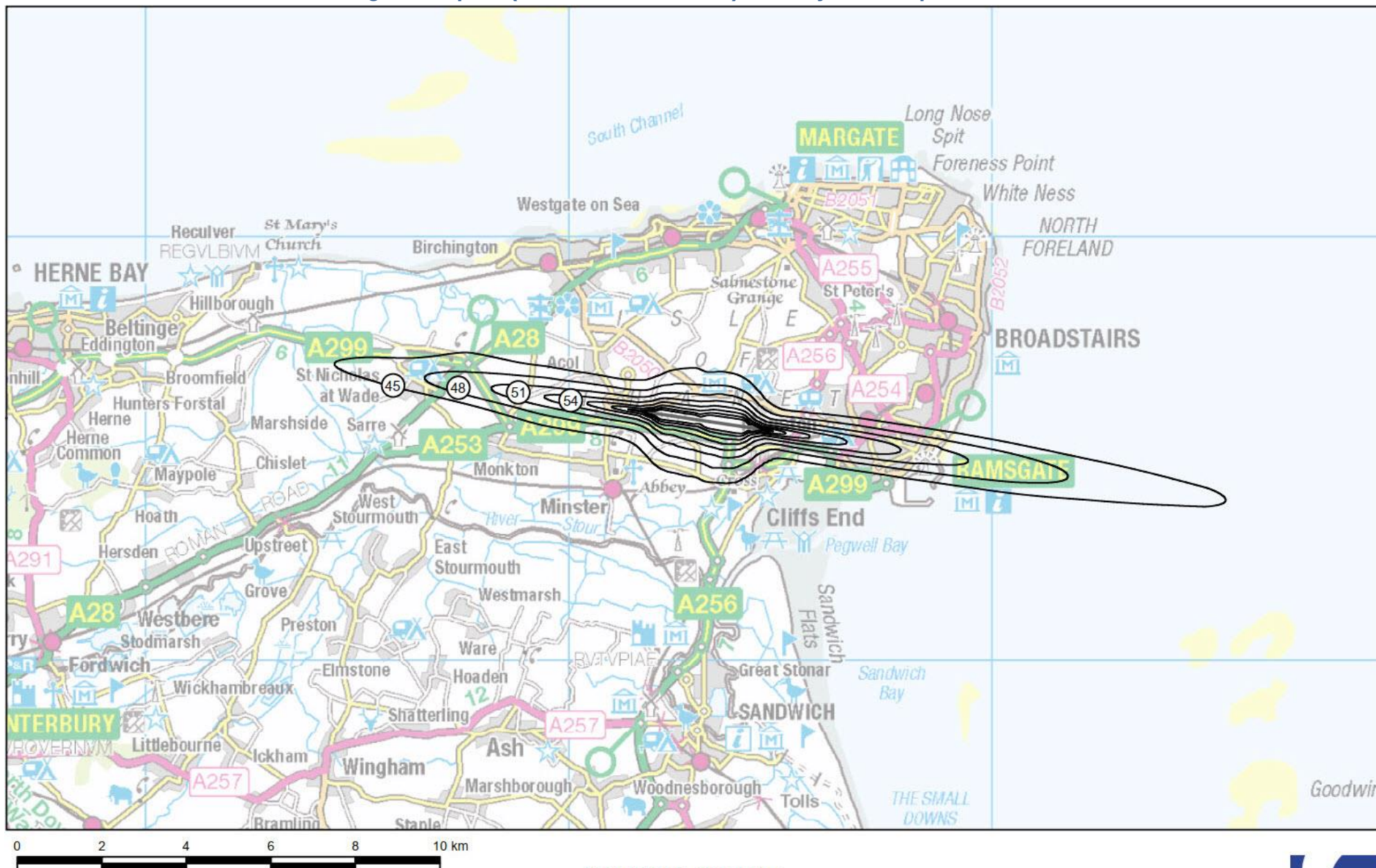


MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Night $L_{Aeq,8hr}$ 45-66 dB(A) Contours
 Runway Modal Split 100% E

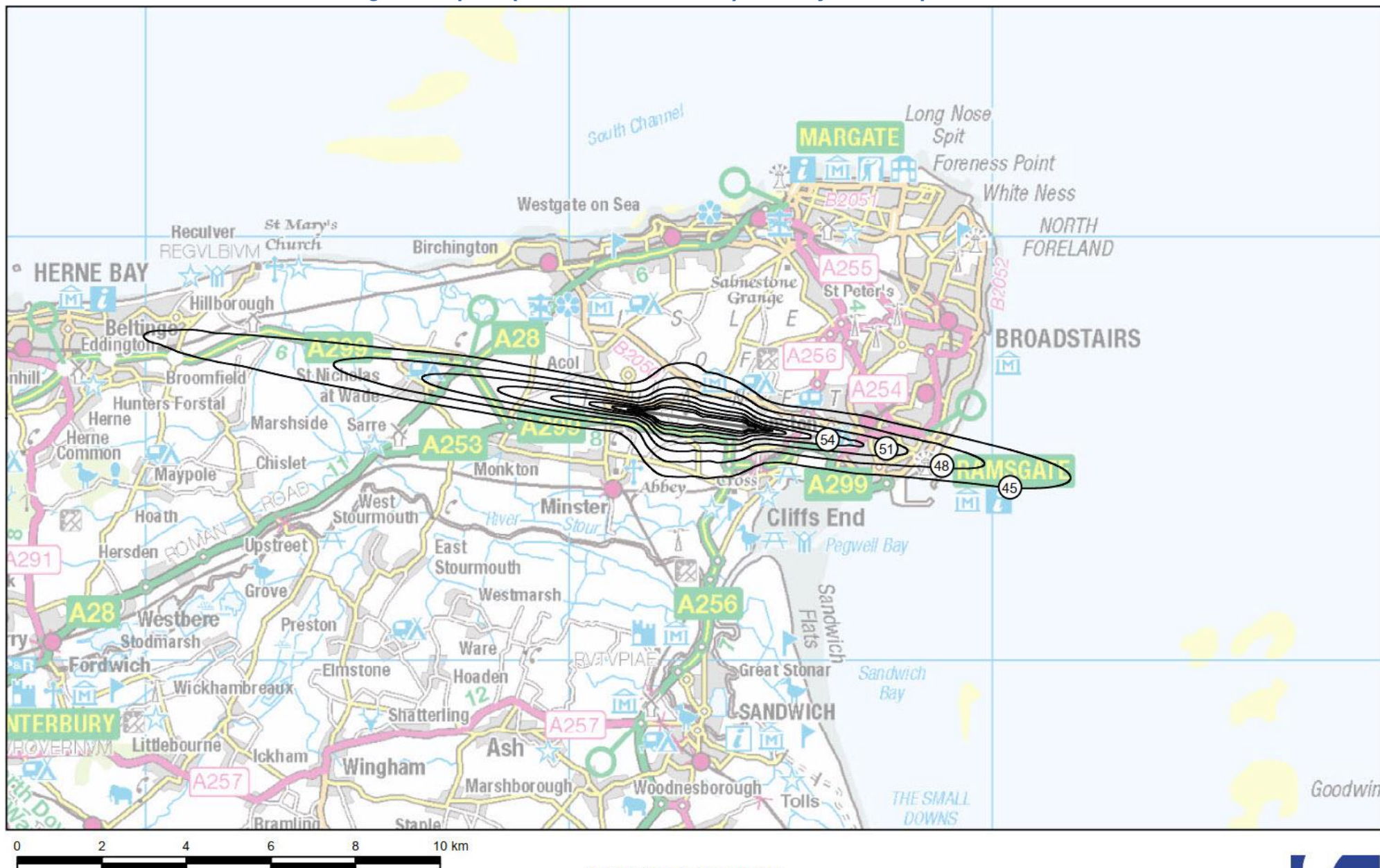


MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Night $L_{Aeq,8hr}$ 45-66 dB(A) Contours
 Runway Modal Split 100% W

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MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Night $L_{Aeq,8hr}$ 45-66 dB(A) Contours
 Runway Modal Split 70% W / 30% E



MANSTON AIRPORT
 'NNF' Fleet Mix - Forecast Average Night $L_{Aeq,8hr}$ 45-66 dB(A) Contours
 Runway Modal Split 30% W / 70% E

Appendix 4: KML files of the CAA Maps displayed on Google Earth

A: CAA Map 6, 57dB highlighted

B: CAA Map 6, 57dB highlighted, zoomed on Ramsgate to show Albion Place Gardens

A: CAA Map 6, 57dB highlighted



CAA Map 6:Day LAeq,16hr (0700-2300 local time), runway modal split 100% Easterlies

B: CAA Map 6, 57dB highlighted, zoomed on Ramsgate to show Albion Place Gardens



CAA Map 6: Day LAeq,16hr (0700-2300 local time), runway modal split 100% Easterlies

Appendix 5: RSP's Maps

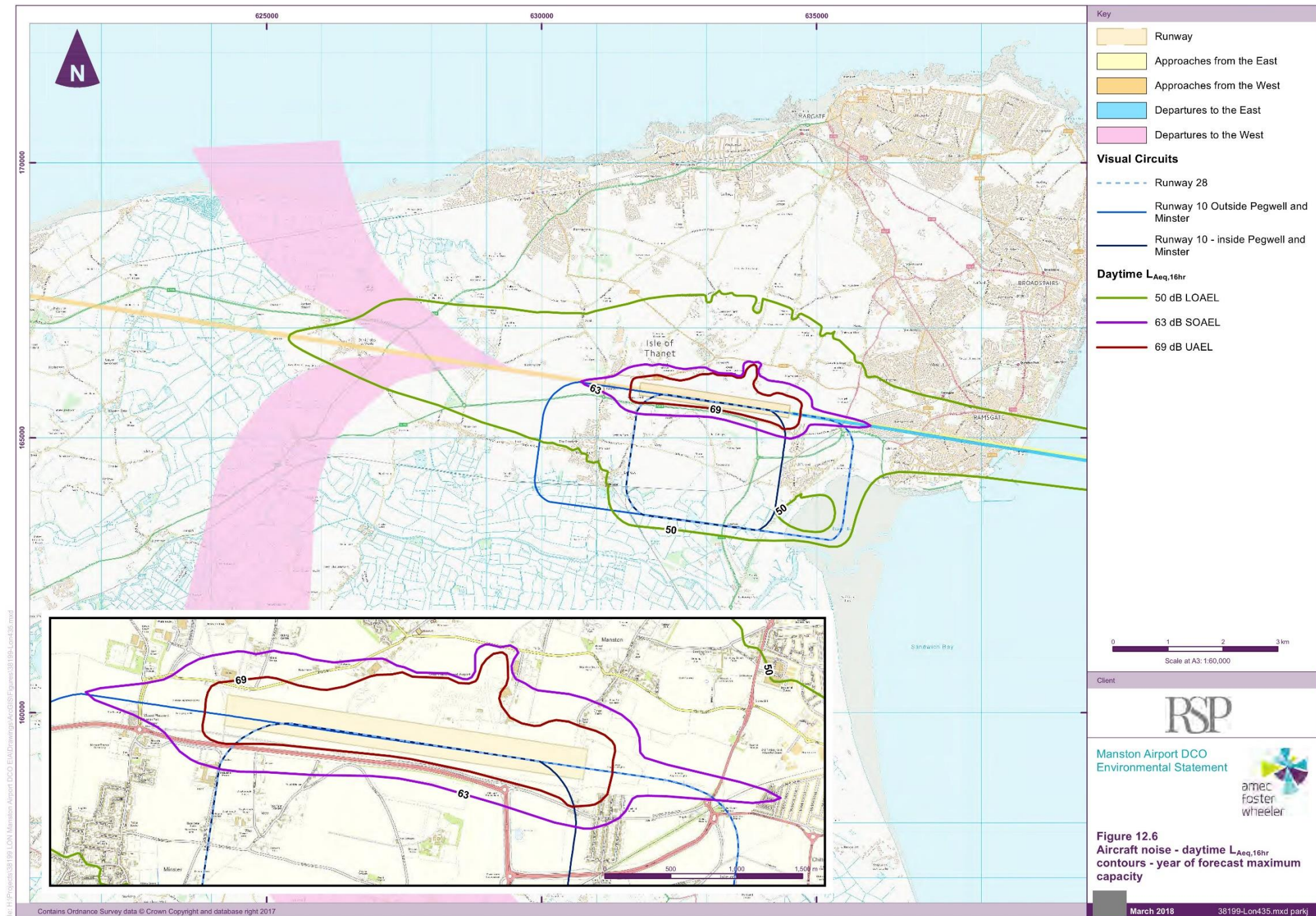
RSP Map 12.6 – Aircraft Noise Day-time LAeq 16hr contours, year of forecast maximum capacity

RSP Map 12.7 – Aircraft Noise Night-time LAeq 8hr contours, year of forecast maximum capacity

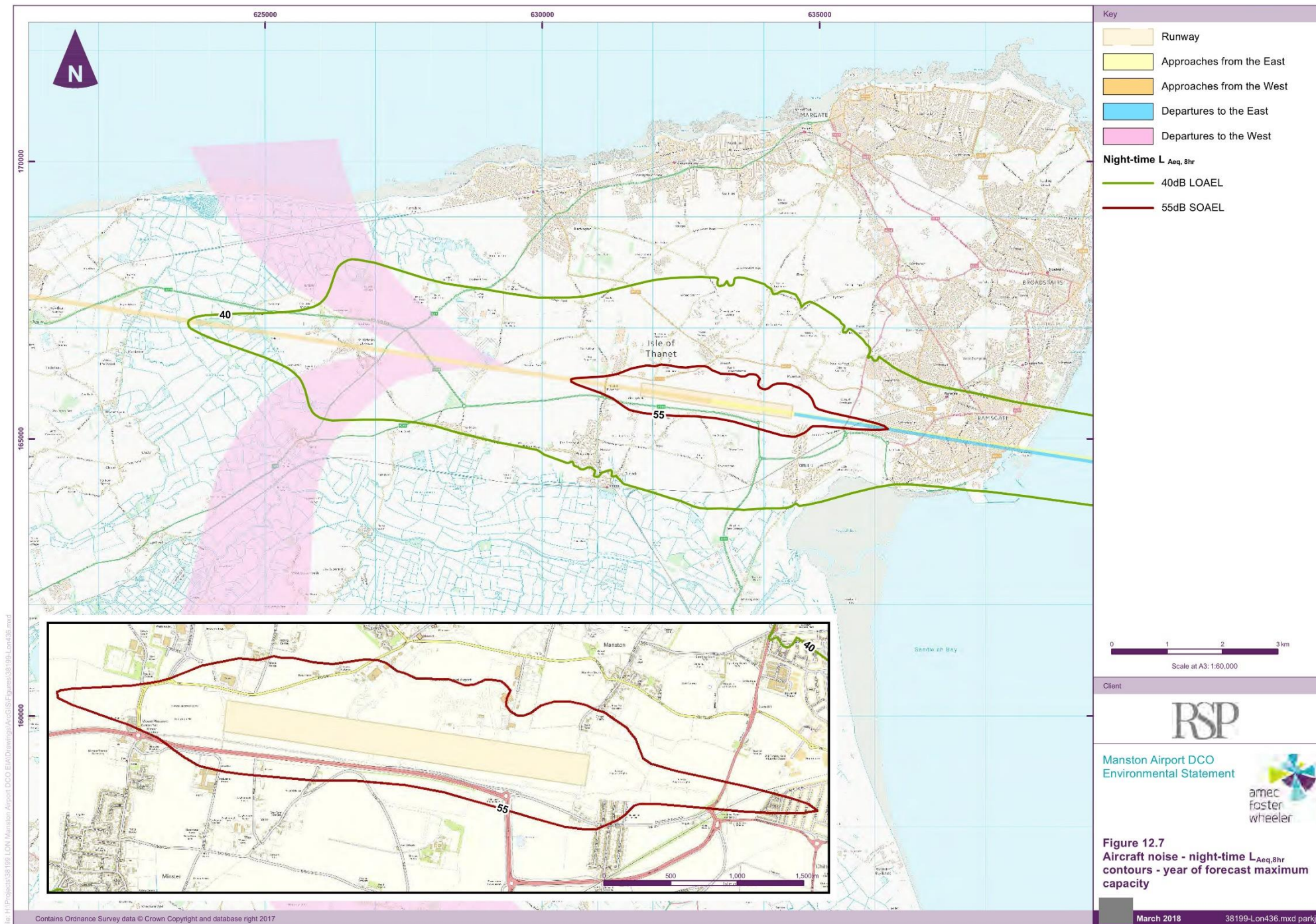
RSP Map 12.9 – Aircraft Noise Night-time LASmax contours, year of forecast maximum capacity

Figure 12.30: Aircraft noise – day-time 50dB LAeq,16hr noise contour - year of forecast maximum capacity, easterly operations
(TR020002-004071-Appendices to Answers to TWQ)

RSP Map 12.6 – Aircraft Noise Day-time LAeq 16hr contours, year of forecast maximum capacity



RSP Map 12.7 – Aircraft Noise Night-time LAeq 8hr contours, year of forecast maximum capacity



RSP Map 12.9 – Aircraft Noise Night-time LASmax contours, year of forecast maximum capacity

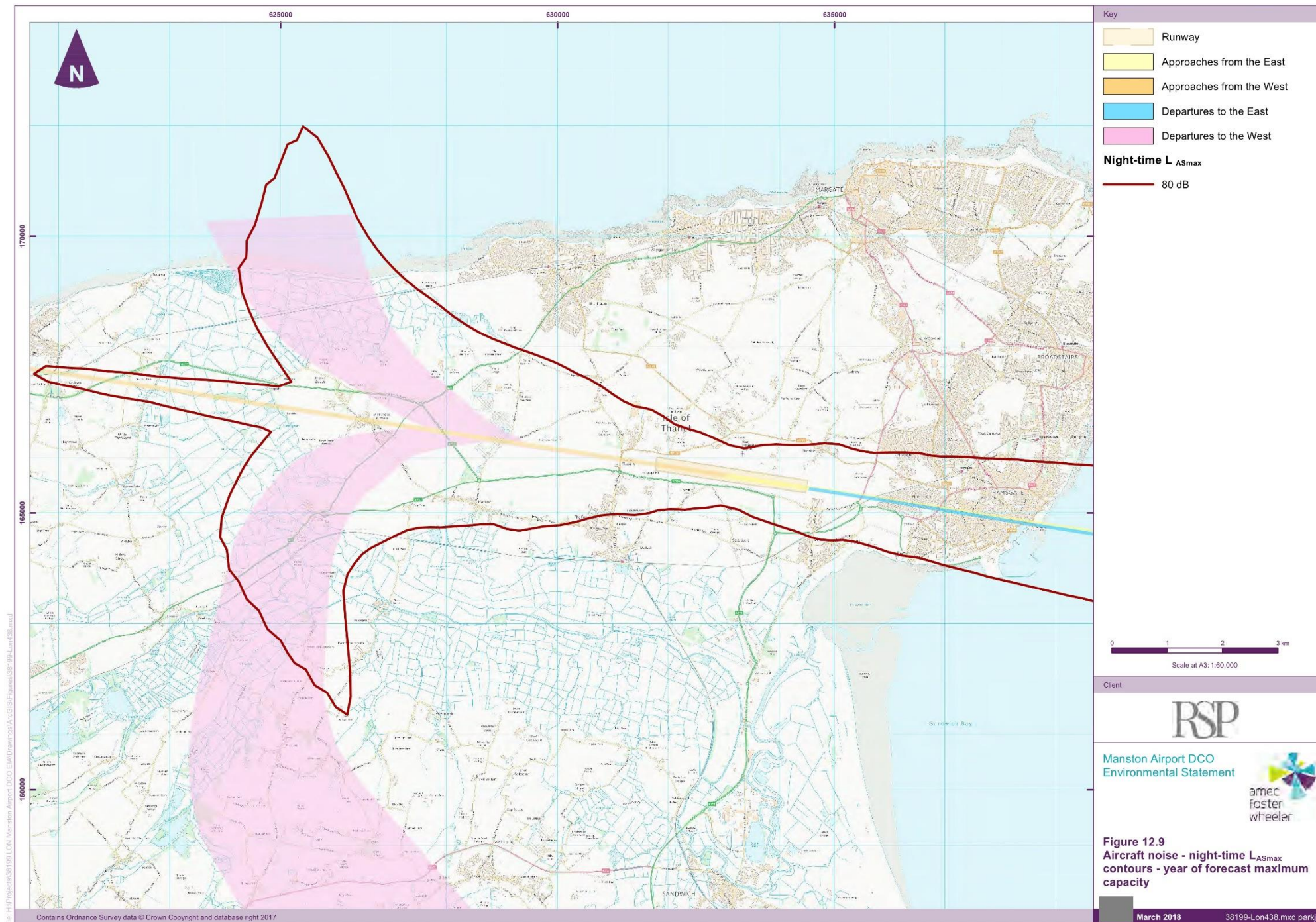


Figure 12.30: Aircraft noise – day-time 50dB LAeq,16hr noise contour - year of forecast maximum capacity, easterly operations (TR020002-004071-Appendices to Answers to TWQ)

