



Gatwick Airport Northern Runway Project

The Applicant's Response to Actions
ISH 7: Other Environmental Matters

Book 10

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Introduction

- 1.1.1 This document provides the Applicant's response to the actions arising from Issue Specific Hearing (ISH) 7: Other Environmental Matters [[EV13-009](#)]. The actions relevant to the Applicant are as follows:

No.	Action	Deadline
Future Baseline		
1	Confirm that figures provided for the baseline case in GEN.1.17 refer to the full extent of the case, e.g. 67.2mppa.	Deadline 4
2	Do the extra 100 passengers per hour for departures in Table 2 of GEN.1.17 arise from the larger planes and higher seat utilisation of planes described in your case?	Deadline 4
3	Would an extra 100 passengers require any additional departure facilities? If not, why not?	Deadline 4
4	<p>The figures in table 2 of GEN.1.17 state that the baseline would result in 4,450 passengers, up from 4,200 in the north terminal and 3,700 from 3,350 passengers in the south. This seems to be more of an increase – and more than the 2% stated in the answer to the question – roughly 6% increase in the north and 10% in the south terminal.</p> <p>However, immigration desks and baggage reclaim belts would stay the same. Would this be sustainable given this percentage increase in a busy hour? Would the service standards still be met?</p>	Deadline 4
5	To what extent are GAL reliant on UK border force to meet immigration operations and its own service standards?	Deadline 4

6	<p>Easyjet noted in their relevant representation that current critical infrastructure at LGW (including the North Terminal departure facility) is full or close to full during the morning peak hour, making it impossible to add more aircraft or up gauge to larger aircraft with more seats. They also note that there is no capacity to expand on the current security infrastructure within LGW and no increase in security resources at peak times leading to long queues and delays. How does this square with your answer to GEN.1.17 and your proposals for no more departure facilities?</p>	Deadline 4
7	<p>Para 6.1.30 of [REP3-079] states that if the project is not approved that <i>“the avenues through which the Airport and its airline customers can seek to grow and satisfy unmet demand will be more limited and this will increase the focus on those avenues – such as improved seasonality – which are available. Under these circumstances, the seasonal price signals offered under the published tariff and bilateral agreements may be stronger, which would, in turn, support peak spreading.”</i></p> <p>Please elaborate on this.</p>	Deadline 4
8	<p>Para 6.1.32 of [REP3-079] refers to Heathrow and the potential for some operations to move from Heathrow to Gatwick. This states that <i>“While the pandemic has created some slot opportunities to accommodate the spill or transfer of demand from Heathrow, the Airport is also full during the peak summer season and the scope for additional services is therefore very limited, particularly as airlines will not launch new services without access to the lucrative peak summer slot capacity where the most profitable opportunities lie.”</i></p> <p>How does this statement square with the peak spreading proposals or predictions?</p>	Deadline 4

9	Applicant to provide a response to the Examination and the Joint Local Authorities regarding the concerns that the LAs have over the runway capacity for the base case to handle the extra numbers of planes forecast	Deadline 4
10	<p>Paragraph 5.1.3 of [REP3-079] states that if the local authorities are right and that baseline capacity is lower than the Applicant states, the impacts from the NRP would be greater. But that if the authorities were right about baseline capacity, the need for the NRP would be even greater, as would its benefits.</p> <p>The JLAs made a request to consider such impacts and benefits. Applicant to explain the broad propositions that it has made regarding the future baseline in response to such suggestions and any further justification as to why this work could not be carried out.</p> <p>Note – the statement made to the Examination in CAH1 concerning ongoing discussions with the Joint Local Authorities related to the above two actions (9 &10) is recognised. If necessary these actions can be dealt with in the context of this statement</p>	Deadline 4
11	Applicant to confirm if the Transport Assessment and the Car Parking Strategy need to be updated to reflect that the Hilton Hotel MSCP has been removed from the parking provision.	Deadline 4
12	<p>It was discussed at ISH4 how parking supply at the airport is an important factor affecting mode choice.</p> <p>Applicant to consider how the 2,500 robotic parking spaces would come forward were permitted development rights at the Airport removed.</p>	Deadline 4
Flood modelling, wastewater treatment and water supply		

13	Thames Water to provide into the Examination results of its initial modelling to demonstrate there is sufficient capacity within the system to accommodate the proposal.	Deadline 5
14	Applicant to submit into the Examination the correspondence that it has had from Sutton and East Surrey (SES) Water as quoted in the Applicant's response to EXQ1 WE1.9.	Deadline 4
Air Quality		
15	Applicant to explain the inconsistency between the Air Quality contour map figures and tabulated data in the ES.	Deadline 4
16	Applicant and JLAs to outline in their post hearing submissions their position on the assessment of 2047 forecasts of emissions levels	Deadline 4
17	Applicant and JLAs to outline in their post hearing submissions their position on the issue of ultrafine particles and how to deal with any tightening of the air quality standards.	Deadline 4
Draft Section 106 Agreement		
18	Applicant to provide an Explanatory Memorandum for the Draft Section 106 Agreement	Deadline 5 (however, the Applicant has proposed Deadline 6 as an alternative)
19	Explain in the EM how the financial contributions within the Schedules been arrived at.	Deadline 5 (however, the Applicant has proposed Deadline 6 as an alternative)

20	Set out in the EM how the provisions in the s106 agreement relate to paragraphs 55-58 of the NPPF.	Deadline 5 (however, the Applicant has proposed Deadline 6 as an alternative)
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1.1.2 The sections below provide the Applicant's response. For actions which require a more detailed response, a reference to the appropriate document is included.

1 Action Point 1

1.1 **Confirm that figures provided for the baseline case in GEN.1.17 refer to the full extent of the case, e.g. 67.2mppa.**

- 1.1.1 The terminal infrastructure assessments were based on 62.4mppa in 2038 rather than 67.2mppa in 2047. Any additional flights after 2038 are forecast outside of the peak and the vast majority of passenger growth is also outside of the peak, and therefore the impact on the terminal capacity requirements after 2038 is minimal.

2 Action Point 2

2.1 **Do the extra 100 passengers per hour for departures in Table 2 of GEN.1.17 arise from the larger planes and higher seat utilisation of planes described in your case?**

- 2.1.1 Yes, the departure capacity increase of 100 passengers in each terminal is driven primarily by up gauging with a very small impact from higher load factors which are already high in the Summer 2024 declaration.
- 2.1.2 The process of determining slot allocations takes up gauging into account but also recognises that load factors have the potential to increase, and terminal capacity must be able to accommodate any resultant passenger growth. This was considered and included in the Summer 2024 declaration.

3 Action Point 3

3.1 **Would an extra 100 passengers require any additional departure facilities? If not, why not?**

- 3.1.1 Check-in, the departing baggage system, and security all have enough latent capacity within the current facilities to accommodate the uplift of 100 passengers in a peak hour.
- 3.1.2 Departure lounge capacity assessments are based on the space required to deliver high standards of service for passengers, with an appropriate mix of core services (toilets, seating etc), a wide range of dining options, and a selection of retail opportunities. As such, the small increase in peak passenger numbers can be easily accommodated. These matters are monitored and, if necessary, the lounge space would be slightly rebalanced, for example, replacing a low passenger occupancy retail unit with a higher occupancy catering unit.

4 Action Point 4

4.1 The ExA noted that the figures in Table 2 in the response to ExQ GEN1.17 [REP3-091] show increases in arrivals in the future baseline scenario of 4450 up from 4200 and 3700 up from 3350 arrivals in the north and south terminals respectively. This is more than the percentage increase in departures, at 6% and 10% respectively. However, immigration desks and baggage reclaim belts would stay the same. Would this be sustainable given this percentage increase in a busy hour? Would the service standards still be met?

4.1.1 The existing immigration desk and e-gate infrastructure over provides for the current demand and therefore has sufficient capacity to accommodate the future baseline growth, whilst meeting UKBF national service standards for EU and non-EU passenger processing.

4.1.2 Baggage reclaim capacity is a function of both the number of reclaims and their individual capacity. Limited numbers of larger reclaims in both terminals result in wide-body flights being allocated to two smaller belts, which wastes capacity. Baseline plans include reconfiguring and extending some of the smaller belts to increase their individual capability and thus release overall capacity. Simple process changes, such as additional porter resource to remove the last few bags belonging to passengers with more complex immigration processing, also create capacity. This mix of infrastructure and process solutions, funding for which is included in Gatwick's Capital Investment Programme, will maintain reclaim service standards in the baseline.

5 Action Point 5

5.1 To what extent are GAL reliant on UK border force to meet immigration operations and its own service standards?

- 5.1.1 UKBF set national service standards for EU and non-EU passenger processing. Immigration e-gate and desk capacity requirements are calculated based on UKBF's standards.
- 5.1.2 Passenger queue times are measured by Gatwick via an automated system which provides UKBF with in-the moment data on queues as well as historic performance. Looking further ahead, Gatwick's operational teams work closely with the local UKBF team to build an accurate forward view, based on historic service performance and airline schedules. As an example, UKBF amended their summer 2024 staff rosters to ensure they had sufficient staff to process passengers from new long-haul services which typically have higher passenger volumes and a greater proportion of non-EU passport holders. In the longer term, UKBF use long-term air traffic forecasts at both a national and airport level to develop their resource plans and respond to changes in demand.
- 5.1.3 The Home Office have ambitious plans to transform the UK's border in the next few years, creating a digital end-to-end arrivals process, including Electronic Travel Authorisation (ETA), eVisas and new generation eGates. Gatwick was the first airport to trial eGates, over a decade ago, and will work closely with UKBF to trial and adopt new technology/processes that can streamline the arrivals process for our passengers. However, given that it is too early to fully understand either the scope of any potential infrastructure changes or the impact such changes might have on Border space, Gatwick's Northern Runway plans are based on current processes and technology and have not assumed any efficiencies from the transformation workstreams.

6 Action Point 6

- 6.1 Easyjet noted in their relevant representation that current critical infrastructure at LGW (including the North Terminal departure facility) is full or close to full during the morning peak hour, making it impossible to add more aircraft or up-gauge to larger aircraft with more seats. They also note that there is no capacity to expand on the current security infrastructure within LGW and no increase in security resources at peak times leading to long queues and delays. How does this square with your answer to GEN.1.17 and your proposals for no more departure facilities?**
- 6.1.1 The primary limiting factor in North Terminal's current infrastructure is pier-served stand availability. The Pier 6 Western Extension project, currently under construction, will deliver eight additional pier served stands and release the constraint. It should be noted that during the morning peak easyJet reference, whilst the North Terminal is constrained, the South Terminal has plenty of spare capacity as the South terminal first wave peak is later than the North Terminal first wave peak. The future baseline will make use of the unutilised capacity through terminal balancing.
- 6.1.2 Gatwick does not recognise easyJet's description of "long queues and delays" at Security. Gatwick consistently exceeds its target for passengers to wait no more than 5 minutes, 95% of the time. In December 2023 and March 2024 this dropped to 93% of the time, as security capacity was temporarily impacted by the installation of new screening equipment, mandated by the Department of Transport. However, the impact on queue times was limited, with all passengers through in less than 15 minutes. The technology upgrade programme is expected to complete in Q1 of 2025.
- 6.1.3 As observed in Action Point 3 (above), security has latent capacity and can accommodate the modest 100 additional departing passengers in the baseline peak hour.

7 Action Point 7

7.1 Para 6.1.30 of [REP3-079] states that if the project is not approved that “the avenues through which the Airport and its airline customers can seek to grow and satisfy unmet demand will be more limited and this will increase the focus on those avenues – such as improved seasonality – which are available. Under these circumstances, the seasonal price signals offered under the published tariff and bilateral agreements may be stronger, which would, in turn, support peak spreading.”

Please elaborate on this.

- 7.1.1 Like other airports Gatwick generates aeronautical revenues from its airline customers for the use of its facilities. These charges are normally composed of a passenger charge, an ATM related charge, and other smaller charges typically related to parking, NOx emissions, carbon emissions, etc.
- 7.1.2 At many airports a flat per passenger fee is charged on a year-round basis based on the destination (e.g. domestic vs short haul vs long haul) whilst ATM related charges are based on an MTOW (maximum take off weight) basis.
- 7.1.3 Unlike many other airports, Gatwick has moved to seasonalise their charges which means that airlines are incentivised to fly in the off-peak periods. To do this Gatwick does not charge an ATM related fee in the winter months (November – March) and in the summer season the charges are varied with higher charges in place for the peak months (Jul-Aug) and peak hours (e.g. departures in 05:00-08:59 window)
- 7.1.4 A summary of Gatwick’s ATM related charges for the year to March 2024 is provided in **Table 1**. One peak departure in the summer (August at 07:00) will pay £1,361 more than a departure at a similar time in the Winter season.

Table 1 Summary of Gatwick’s ATM related charges for the year to March 2024

		August	April	February
Demand charges per ATM				
Departure	07:00	£1,361	£907	£0
Departure	19:00	£302	£302	£0

- 7.1.5 When combined with Gatwick's passenger and other related charges, the discount is material. For example, a short haul operator can expect a discount of 39-44% when operating a winter service compared to summer service.
- 7.1.6 These published incentives are available to all airlines that have not negotiated bilateral agreements with the airport.
- 7.1.7 Gatwick also negotiates bilateral agreements directly with many of its airlines, this means the airlines agree with Gatwick an agreed rate and this is intended to benefit both parties. For example, airlines typically receive a discount in exchange for supporting growth targets (e.g. x million passenger growth or total volume).
- 7.1.8 Within these bilateral deals Gatwick has started to introduce stronger pricing signals intended to support factors including off-peak growth, up-gauging to larger aircraft and other targets.
- 7.1.9 These pricing signals have the potential to be increased providing airlines with support to increase flying in the off-peak. Just like any business, Gatwick keeps these matters under review but they are a useful tool in optimising the use of spare capacity.

8 Action Point 8

8.1 **Para 6.1.32 of [REP3-079] refers to Heathrow and the potential for some operations to move from Heathrow to Gatwick. This states that “*While the pandemic has created some slot opportunities to accommodate the spill or transfer of demand from Heathrow, the Airport is also full during the peak summer season and the scope for additional services is therefore very limited, particularly as airlines will not launch new services without access to the lucrative peak summer slot capacity where the most profitable opportunities lie.*”**

How does this statement square with the peak spreading proposals or predictions?

- 8.1.1 The context of the peak spreading needs to be taken in the context of the long-term timescales for these forecasts. Gatwick and other London airports will reflect a highly constrained market by the 2030s when unconstrained demand will significantly exceed supply. Whilst the scope for peak slots is limited, there is scope for peak spreading through other means.
- 8.1.2 Whilst new entrants permitted by the pandemic secured peak slots and are already supporting long haul carriers operating many year-round markets, some carriers have also been able to grow in the off-peak hours. For example, carriers like Air India and Wizz are operating with evening departures using available slots.
- 8.1.3 **Airlines will operate longer seasons:** Even during the peak season there is a degree of seasonality and many markets have seen the length of the season extend.
- 8.1.4 **Intra airline slot swaps:** Airlines have shown a preference to swap short haul slots to year-round flying. For example, pre-Covid BA and Norwegian converted some of their short haul slots to long haul flying to ‘fund’ the growth of their wide body network.
- 8.1.5 **Inter Airline slot loans:** Airlines will sometimes ‘loan’ their slots to other airlines, BA has recently lent slots to airlines including Qatar and Vueling which operate more consistent year-round flights than BA.
- 8.1.6 **Inter airline slot transactions:** A well developed slot market exists at Gatwick with daily slot pairs (i.e. a daily arrival and departure slot) selling for close to £3m pre-Covid. This highlights the strong underlying demand for Gatwick. In the 2011-21 period slot transactions affected nearly 20% of Gatwick’s total slot

capacity. Future transactions are expected and common place at constrained airports like Gatwick. These transactions and ongoing market consolidation amongst airlines will provide further evolution of Gatwick's traffic base in the next 20 years.

- 8.1.7 **Slot pool/churn:** Incremental slot capacity will come from the 'slot pool', for example modest incremental capacity has been declared in recent years supporting further growth in peak and off-peak hours.
- 8.1.8 **Slot allocation:** In order to optimise capacity, any slot capacity that becomes available from the 'slot pool' will be allocated by the slot coordinator favouring operations by airlines operating larger aircraft on year-round markets. IATA's slot guidelines for the allocation of slots explicitly prioritises larger aircraft on year-round markets.
- 8.1.9 By the 2030s, demand is forecast to grow significantly and this increased demand will present itself across the year. The peak months will be constrained so demand will not be able to grow in these months. However, demand in the shoulder and off-peak periods will still continue to grow and be supported by demand 'spilling' from the peak months to off peak months. Airlines will respond by adding capacity with new services as well as extending the seasons they operate on some routes. This is already apparent from the trends explained above and is encouraged by Gatwick's seasonal charging structure.
- 8.1.10 Even in the relatively short period from 2016-2019 Gatwick's airlines added significant new capacity in the off peak months. With a relatively stable busy day, the average ATMs in winter increased by 5%, equivalent to 29 ATMs per day.
- 8.1.11 In summary, peak spreading trends are well established at Gatwick and many factors will continue to support further de-peaking in the time horizon considered within the baseline and NR forecasts.

9 Action Point 9

9.1 **Applicant to provide a response to the Examination and the Joint Local Authorities regarding the concerns that the LAs have over the runway capacity for the base case to handle the extra numbers of planes forecast**

9.1.1 This matter is addressed separately – please see the **Appendix A: Response to York Aviation – Forecasts** of the **Applicant’s Response to Deadline 3 Submissions** (Doc Ref. 10.24) submitted at this deadline. In relation to capacity, the Applicant’s response is set out in Annex A to that document.

10 Action Point 10

- 10.1 Paragraph 5.1.3 of [REP3-079] states that if the local authorities are right and that baseline capacity is lower than the Applicant states, the impacts from the NRP would be greater. But that if the authorities were right about baseline capacity, the need for the NRP would be even greater, as would its benefits.

The JLAs made a request to consider such impacts and benefits. Applicant to explain the broad propositions that it has made regarding the future baseline in response to such suggestions and any further justification as to why this work could not be carried out.

Note – the statement made to the Examination in CAH1 concerning ongoing discussions with the Joint Local Authorities related to the above two actions (9 &10) is recognised. If necessary these actions can be dealt with in the context of this statement

- 10.1.1 This matter is addressed in part in the Applicant's **Appendix A: Response to York Aviation – Forecasts** of the Applicant's **Response to Deadline 3 Submissions** (Doc Ref. 10.24) submitted at this deadline but also in the Applicant's covering letter with its Deadline 4 submissions (to reflect the very latest discussions between the parties).

11 Action Point 11

11.1 **Applicant to confirm if the Transport Assessment and the Car Parking Strategy need to be updated to reflect that the Hilton Hotel MSCP has been removed from the parking provision.**

11.1.1 The proposed addition of 820 spaces for the Hilton Hotel was being promoted by the hotel operator. It was not a direct response to passenger demand for spaces and does not affect the Applicant's Car Parking Strategy in respect of the NRP, nor the modelling which informs it, which is sufficiently robust and flexible with or without the additional spaces. The area proposed for the Hilton hotel spaces is co-located (in terms of access to/from the highway network) with around 18,000 south terminal short stay and long stay spaces within a total of over 40,000 airport-operated on-airport spaces overall. Based on an average duration of stay, even if all of the spaces generated additional peak passenger demand they would yield less than 100 vehicle arrivals per day, which is not significant in terms of either traffic distribution or traffic growth.

11.1.2 In addition, 820 spaces is within the margins of the Applicant's comfortable operating tolerances and is routinely managed by the Applicant's parking operations team. For example, when that amount of parking is taken out of action temporarily for construction projects, routine maintenance or seasonal reasons it has limited impact within the context of the wider management of the Applicant's car parking offer.

12 Action Point 12

12.1 It was discussed at ISH4 how parking supply at the airport is an important factor affecting mode choice.

Applicant to consider how the 2,500 robotic parking spaces would come forward were permitted development rights at the Airport removed.

- 12.1.1 It is currently proposed (as the Future Baseline assumes) that the additional spaces from robotic parking spaces will come forward as permitted development (pursuant to Schedule 2, Part 8, Class F of the Town and Country Planning (General Permitted Development) (England) Order 2015 ("GPDO"), subject to the prior consultation requirements with the local planning authority as set out in the GPDO). Whilst it is noted that there would be a phased delivery of the spaces in subsequent years, it is anticipated that the deemed planning permission authorising the robotic parking spaces would be implemented prior to the DCO being made therefore any limitation of GAL's permitted development rights imposed within the DCO would not impact on the delivery of these additional spaces.
- 12.1.2 The above answer notwithstanding, the Applicant would resist the basis for such a restriction in the strongest possible terms. Existing evidence at the Airport demonstrates GAL's strategy for bringing forward car parking provision pursuant to its permitted development rights ("PDR") has been consistently complementary to achieving high sustainable mode shares and, - there is no evidence to suggest a change to the PDR would be necessary or that it would achieve more sustainable outcomes (as the Applicant understood the potential inference of such a proposed restriction to be). The National Planning Policy Framework (NPPF) notes (at paragraph 54) that planning conditions should not be used to restrict national permitted development rights unless there is clear justification to do so. The Applicant considers the same test should apply to the consideration of removing permitted development rights in the context of the DCO. In light of the Applicant's evidenced success at achieving high sustainable mode share it does not consider that any such removal of PDR would be justified. As set out further in **The Applicant's Response to Rule 17 Letter - Car Parking** (Doc Ref 10.21), it is important that the Applicant maintains a flexible, dynamic approach to managing car parking as one of the tools to optimise outcomes (for GAL, the public and the local authorities).
- 12.1.3 Furthermore, an additional control by way of removal of PDR is not required as the Draft DCO [[REP3-008](#)] includes binding mode share commitments, i.e. the

object of the additional control is already achieved. The Applicant's modelling and transport assessment, and other information submitted into the examination, demonstrates how the forecast parking provision and strategy, including the use of pricing to achieve mode shares, is complementary to the achievement of the **Surface Access Commitments** [\[REP3-028\]](#) and provides sufficient assurance and control without changes to the PDR.

- 12.1.4 There is a risk to imposing restrictions on the Applicant that such limitations on future parking requirements on-airport (provided by the airport operator) may increase the amount of drop off/pick up journeys and/or lead to more demands for off-airport parking, unauthorised or otherwise. It would therefore be inconsistent with local planning policy, which recommends on-airport parking provision in combination with measures to increase sustainable mode shares as the most sustainable approach to delivering airport-related parking. This is something only the Applicant is able to deliver and this is clearly set out in the provisions of the **Surface Access Commitments** [\[REP3-028\]](#).
- 12.1.5 The Applicant is not aware of there being precedence for such a restriction being imposed in relation to any other airport planning application and no evidence that may otherwise justify the approach.
- 12.1.6 The Applicant notes that many of the local authorities recognise the delicate balance of the provision of on-airport parking which must be achieved to manage supply in order to meet the **Surface Access Commitments** [\[REP3-028\]](#) and avoid unlawful off-airport parking (see 17.1N of the Joint West Sussex Local Impact Report [\[REP1-068\]](#), item 10 of the Legal Partnership Authorities Responses to Applicants Written Summary of Oral Submissions and Responses to Actions (ISH 1-5) [\[REP2-065\]](#) and paragraph 10.123 of the Joint Surrey Councils Local Impact Report [\[REP1-097\]](#)). The Applicant notes that its ability to meet parking demand is an important consideration for local authorities in assessing the provision of less sustainable off-airport parking. The Applicant recognises the important role it has in being able to quickly and often pro-actively respond to demand to ensure there is no lag or undue delay in meeting parking demand which could provide potential opportunities for less sustainable parking provision to come forward; the Applicant's PDR is an important planning tool to ensure it dynamically responds to parking demand.

14 Action Point 14

14.1 **Applicant to submit into the Examination the correspondence that it has had from Sutton and East Surrey (SES) Water as quoted in the Applicant's response to EXQ1 WE1.9.**

- 14.1.1 Sutton and East Surrey Water confirmed via email to the Applicant on 9 February 2024 that their water sources and infrastructure would be able to meet the predicted demands from the Project. They have confirmed to the Applicant that a copy of that email could be submitted to the Examination. This is submitted as **Appendix A** to this document.

15 Action Point 15

15.1 Applicant to explain the inconsistency between the Air Quality contour map figures and tabulated data in the ES.

- 15.1.1 Contour mapping of pollutant concentrations are set out in **Air Quality Figures – Part 1** [APP-066]. The air quality impacts at receptors has been tabulated following industry guidance, as set out in **ES Appendix 13.9.1: Air Quality Results Tables and Figures Part 1 to 6** [APP-162 to APP-167]. The tabulated values are those that have been used in the assessment of significance and compliance.
- 15.1.2 To create contours, a grid of receptors are modelled. As standard, interpolation using GIS software is used to calculate the contours and this would be needed for any resolution of gridded receptors used.
- 15.1.3 A resolution of 100m was used to create a grid of receptors across the 10 by 11 km domain centred on the airport. This resolution is considered proportionate and was chosen for practical reasons due to the extent of the modelled area. The interpolation between the 100 m gridded points would explain the discrepancy between the contour plots and the tabulated data. For this reason, it would not be appropriate to extrapolate concentrations from the contour maps in precise locations.
- 15.1.4 In addition, the contour maps use concentration bands, so the detail of the concentrations extrapolated would be lost. Therefore, the maps are not as precise as the tabulated data.
- 15.1.5 In summary, the contour plots were intended to provide helpful context only and have no implication for the assessment conclusions.

16 Action Point 16

16.1 Applicant and JLAs to outline in their post hearing submissions their position on the assessment of 2047 forecasts of emissions levels.

16.1.1 The Applicant has submitted its position as follows:

- its position regarding the 2047 assessment and emissions levels at Section 3 of **Appendix D** of the **Supporting Air Quality Technical Notes to the SoCGs** [[REP1-050](#)]; and
- its position on 2047 aircraft fleet forecasts in response to ExA question AQ.1.11, **The Applicant's Response to ExQ1** [[REP3-083](#)].

16.1.2 Together these submissions set out the Applicants position on the assessment of 2047 forecasts of emissions levels and provide the justifications for the assumptions and methodology that have been used in carrying out the Applicant's assessment.

17 Action Point 17

17.1 Applicant and JLAs to outline in their post hearing submissions their position on the issue of ultrafine particles and how to deal with any tightening of the air quality standards.

17.2 Position on the issue of ultrafine particles

17.2.1 This note follows-up on the points made regarding ultrafine particles (UFP) during ISH7 and responds to clarification requests from the JLAs Deadline 2 PADSS on whether:

- a UFP assessment has been undertaken, including of aviation and transport sources;
- UFP monitoring, including a local monitoring study, is proposed;
- PM_{2.5} exposure is correlated to, or a proxy for, UFP exposure;
- it is appropriate to mitigate UFPs.

17.2.2 The World Health Organization (WHO) Air Quality Guidelines 2021 note that the main sources of UFP include vehicles and other forms of transportation (aviation and shipping), industrial and power plants, and residential heating. UFPs are therefore a ubiquitous air quality issue and not limited to aviation, although it is agreed that UFP levels are elevated around airports.

17.2.3 A qualitative UFP assessment has been undertaken and is set out in **ES Chapter 18: Health and Wellbeing** [[APP-043](#)], section 18.8.67 to 18.8.86, covering aviation and transport UFP for the Project. The assessment explains the state of epidemiological understanding on the extent to which UFPs are likely to affect health outcomes for the populations, including vulnerable groups, near the airport.

17.2.4 The current evidence is that there is not a large effect size. The assessment concludes there would be minor adverse, not significant, population health effects due to the Project. UKHSA and OHID in their combined relevant representation [[RR-4687](#)] confirm that: *“Following our review of the submitted documentation we are satisfied that the proposed development should not result in any significant adverse impact on public health”*.

17.2.5 For particles less than 2.5µm in diameter (PM_{2.5}) the risks of health effects have been well studied, leading to the establishment of air quality standards and routine monitoring. For particles less than 0.1µm in diameter, UFPs, the evidence base is still developing, meaning that there are currently no agreed thresholds for

health risks or monitoring standards. **ES Chapter 18: Health and Wellbeing [APP-043]** has however conservatively assumed a non-threshold approach to UFPs, i.e. assuming that UFP exposure at any concentration will have some influence on population health risk factors.

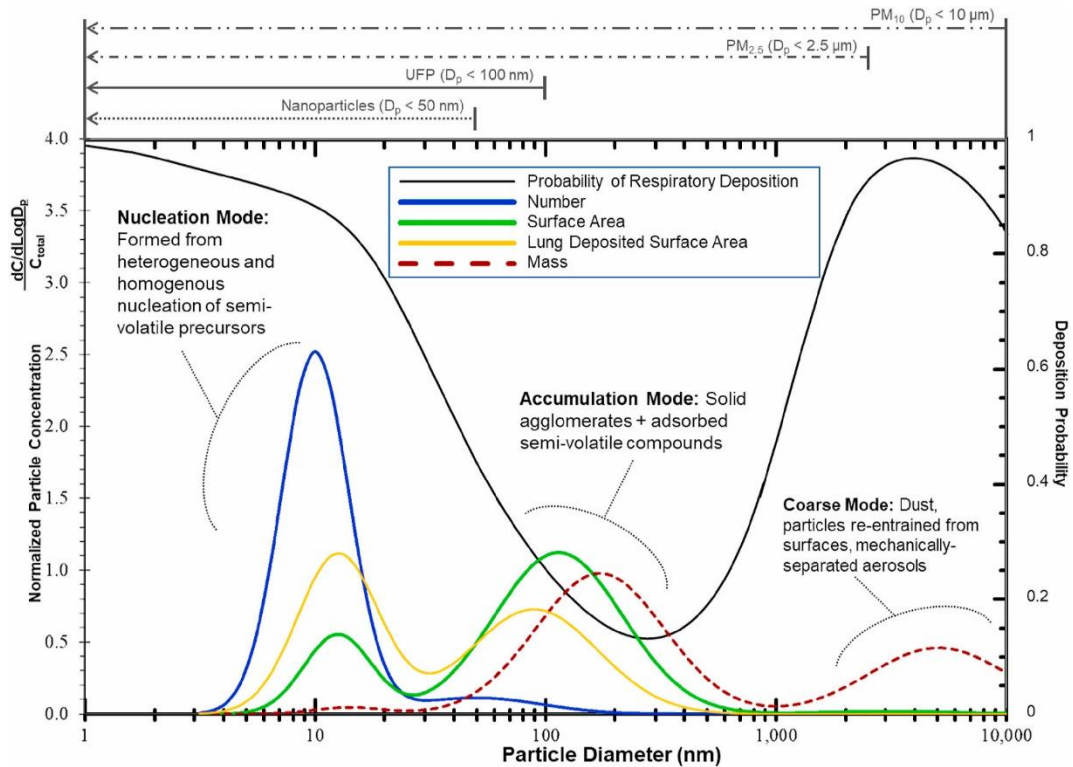
- 17.2.6 Part of the complexity arises because UFP emissions are usually classified into two major fractions, non-volatile and volatile particles. Depending on the conditions in the exhaust gas channel, the volatile particles in the emission may undergo transformation and form new additional particles. The health implications are therefore not simply the particles as measured at the point of exiting an engine¹.
- 17.2.7 The emerging literature on UFP has been kept under review and findings are consistent with those presented in the ES. Recent studies include:
- Vallabani, *et al.*, August 2023, *Toxicity and health effects of ultrafine particles: Towards an understanding of the relative impacts of different transport modes*¹. The review found that whilst only a few studies have investigated the toxicity of aviation exhaust, those studies suggest aviation-related particles are not of greater toxicity than other traffic-related particles.
 - Bookstein, *et al.*, Feb 2024, *Association between Airport Ultrafine Particles and Lung Cancer Risk: The Multiethnic Cohort Study*². The study followed the health outcomes for ten years of approximately seventy thousand participants living near Los Angeles International Airport. The study concluded that airport-related UFP exposure was not associated with lung cancer risk overall. The study did however note inflammatory biomarkers and a suggestive association with one cancer type. This confirms the need for further studies. The hazard ratio (a measure of relative risk) for UFP related lung cancer was 1.01, where 1.00 is no change in risk. For comparison, frequently smoking in a similar population has been associated with a hazard ratio of 20.7, i.e. a twenty-fold risk increase.³
- 17.2.8 **ES Chapter 18: Health and Wellbeing [APP-043]** paragraph 18.8.85 concludes that the appropriate response is for public health to maintain a watching brief on UFP as a topic area and that the monitoring of UFPs is therefore supported. The Applicant's commitments to UFP monitoring are set out in the **Draft Section 106 Agreement [REP2-004]**, UFP local monitoring which is linked to Appendix 5, Draft Air Quality Action Plan, paragraph 4.3.4, participation in national study. This is consistent with the WHO Air Quality Guidelines 2021 recommendation for

¹ The International Civil Aviation Organization (ICAO) agreed in 2019 to the aircraft engine emission standards for non-volatile particles (both mass and number), providing regulations for aircraft engine emissions. In effect January 2023.

expanded monitoring based on the establishment of a consistent metric of quantification.

- 17.2.9 The following points are made regarding the clarification on whether aviation UFP exposure correlates with PM_{2.5} exposure. **ES Chapter 18: Health and Wellbeing** [APP-043] paragraph 18.8.83 references PM_{2.5}, but does not use PM_{2.5} as a direct proxy of UFP because UFP ‘particle number’ concentration and PM_{2.5} ‘mass’ concentration are distinctly different units of measurement. A change in modelled PM_{2.5} would therefore not correspond to a linear change in aviation related UFP. For example, a small PM_{2.5} mass concentration change may be associated with a high UFP particle number concentration count, the count depending on the size of those particles. This point is made by the WHO Air Quality Guidelines 2021, which states “*there is very little or no relationship between particle number concentration (PNC) and mass concentration of larger particles (PM_{2.5}) ... no other pollutant is a good proxy for UFP*”. However, for the health assessment the relevant relationship is that both UFP and PM_{2.5} of aviation origin independently correlate with aircraft movements (being the common source). There is not a reliance on the UFP PM_{2.5} relationship being linear. In the absence of methods that allow quantitative modelling of UFP, the assessment has simply pointed to aviation PM_{2.5}, as well as aircraft movements and scientific literature, as information triangulated to inform a professional judgment as to the likely ‘relative’ scale of change. Triangulating evidence in this way to reach an informed professional judgement is the approach advocated by the *IEMA guidance (2022) Determining Significance for Human Health in Environmental Impact Assessment*. It is relevant to note that Vallabani, *et al.*, August 2023 state that “*UFPs is a good indicator of primary, freshly emitted particles...*”. As noted above volatile, non-volatile and any secondary particles are all important, so this statement of correlation is not complete, but it confirms there is a relationship between some UFP measures and larger particles including PM_{2.5}.
- 17.2.10 Kittelson *et al.*, 2022, *Particle emissions from mobile sources: Discussion of ultrafine particle emissions and definition*⁴, illustrates points around relationships between particle size, particle concentration and deposition probability. The lines for particle mass (dotted red line) and particle number (blue line) are illustrative of the complexity of the relationship that has been assumed in the **ES Chapter 18: Health and Wellbeing** [APP-043] qualitative assessment. As can be seen the mass to particle number relationships for PM_{2.5} and UFP differ, and this has been taken into account. Such relationships are assessed in the context of what the epidemiological and aetiological evidence can confirm about exposures and risk

of health outcomes. This is set out in **ES Chapter 18: Health and Wellbeing** [APP-043].



Kittelson *et al.*, 2022, Figure 2-3.

- 17.2.11 Regarding the application of the precautionary principle in public health, this is discussed by the WHO⁵. The WHO note how the precautionary principle is a two-stage test, requiring both uncertainty (as is the case with UFPs) and serious treats to health, i.e. large effect sizes indicated by available evidence (which is not the case with UFPs). The WHO describe health impact assessments (such as **ES Chapter 18: Health and Wellbeing** [APP-043]) as a “*compass to guide public health decisions under uncertainty*” and that “*a centrepiece of precautionary assessment is environment and health assessment, which weighs the science of hazards and exposure. In this step, evidence of risk and uncertainty is examined to determine the possibility (and plausibility) of a significant health threat and the need for precautionary action.*” Such an approach has been taken by **ES Chapter 18: Health and Wellbeing** [APP-043], which considers levels of UFP exposure, extent of the population exposed and the scale of change in relevant risk factors for health outcomes.
- 17.2.12 Regarding the dispersion characteristics of UFPs and PM_{2.5}, the following points are illustrative of the evidence base that informed **ES Chapter 18: Health and Wellbeing** [APP-043], this is not intended to be exhaustive. Having a diameter of less than 0.1μm may allow UFPs to remain suspended in the air for longer than

larger particles⁶, although UFP number concentration may also decrease away from the emission source due to the rapid coagulation of the particles⁷. Compared to UFPs, PM_{2.5} tend to settle out of the air more quickly⁸. The highest UFP concentrations arise during take-off, though relatively high concentrations also occur during landing^{Error! Bookmark not defined.}. Whilst the assessment has not relied on rapid reductions in UFP with distance, as secondary particle formation as well as meteorological, seasonal and local conditions are also relevant, a study by Hsu et al., 2012⁹ found that UFP particle number concentrations decreased rapidly with distance on an airfield, falling by almost an order of magnitude by the airport boundary 250m downwind of the departure runway. Low UFP concentrations are however known to extend long distances, Hudda & Fruin, 2016¹⁰ were able to detect airport related UFP emissions 18km from Los Angeles International Airport, while Keuken et al., 2015¹¹ detected airport related UFP over 40km from Amsterdam Airport Schiphol. By comparison, at Los Angeles International Airport in 2005–2006, Zhu et al., 2011¹² detected PM_{2.5} concentrations up to 600m from the take-off runway and Unal et al., 2005¹³ found very low concentrations of PM_{2.5} from a radius of about 16km at the Atlanta International Airport.

- 17.2.13 The scientific evidence is not sufficiently advanced to confirm that the policy position should be to focus air quality mitigation efforts on UFPs. WHO Air Quality Guidelines note that there is no evidence that mitigating particle mass only, as the existing air quality measures do, will necessarily lead to a reduction in UFP. As scientific evidence develops, policy is able to respond, which is no different from any environmental topic area or other public health issue. A shift to alternative and sustainable aviation fuels is likely to provide one mechanism to reduce aviation UFPs in the future if required. There are existing mechanisms by which the Government is seeking to support this transition¹⁴.

17.3 Any tightening of the air quality standards

- 17.3.1 The thresholds used to assess the Project have followed those set in national legislation and policy. Until such thresholds are changed, which may or may not reflect the World Health Organisation (WHO) Guidelines, then assessment is undertaken in accordance with current legislation which is consistent with policy standards. To determine the significance of air quality impacts the methodology used is detailed in **ES Chapter 13: Air Quality**, Section 13.5 [[APP-038](#)].
- 17.3.2 The air quality assessment is carried out using conservative assumptions for future emissions, such as background values being frozen at 2030 and conservative aircraft emissions assumed for future cases. The Applicant has

provided additional information for the conservative approach that has been taken in the ES at **Appendix F** of the **Supporting Air Quality Technical Notes to the SoCGs** [[REP1-050](#)].

- 17.3.3 Road traffic emissions are anticipated to improve in future years due to changes in fleet composition which will be necessary to meet the trajectory of carbon reductions set out in the Transport Decarbonisation Plan to ensure commitments to net zero are met. In addition, with improved vehicle engine testing and improved emission factors the risk of underprediction has reduced.
- 17.3.4 As noted in paragraph 13.13.6 of **ES Chapter 13: Air Quality** [[APP-038](#)], the Project recognises the non-threshold effects of air pollution, which is related to the possibility of future changes to air quality standards. Therefore, notwithstanding the outcome which demonstrates no significant effects as a result of the Project, the Applicant has provided a draft air quality action plan (AQAP) at Appendix 5 of the **Draft Section 106 Agreement** [[REP2-004](#)]. The document sets out measures and monitoring commitments related to air quality and odour management to be undertaken by the Applicant which are secured under the DCO and s106 Agreement.

18 Action Points 18, 19 and 20

Action Point 18: Applicant to provide an Explanatory Memorandum for the Draft Section 106 Agreement.

Action Point 19: Applicant Explain in the EM how the financial contributions within the Schedules been arrived at.

Action Point 20: Applicant Set out in the EM how the provisions in the s106 agreement relate to paragraphs 55-58 of the NPPF.

- 18.1.1 At ISH7, the Applicant explained that it is preparing an explanatory memorandum for the DCO s106 Agreement (s106 EM) which will, among other things, include the information requested by the ExA in Action Points 19 and 20.
- 18.1.2 The Applicant notes the ExA's request for the s106 EM to be submitted at Deadline 5, however the Applicant considers that the s106 EM will be most complete and useful to the ExA and Interested Parties if read alongside the latest version of the DCO s106 Agreement. Discussions with the JLAs on the draft DCO s106 Agreement are progressing actively and the content and scope of the DCO s106 Agreement are evolving as the parties agree the appropriate obligations, drafting and securing mechanisms.
- 18.1.3 The next version of the draft DCO s106 Agreement has been requested for submission at Deadline 6 in the Rule 8 Letter [[PD-011](#)] and the Applicant therefore proposes to submit the s106 EM at Deadline 6 alongside the latest version of the s106 Agreement.

19 References

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- ² Bookstein A, Po J, Tseng C, Larson TV, Yang J, Park SL, Wu J, Shariff-Marco S, Inamdar PP, Ihenacho U, Setiawan VW, DeRouen MC, Le Marchand L, Stram DO, Samet J, Ritz B, Fruin S, Wu AH, Cheng I. Association between Airport Ultrafine Particles and Lung Cancer Risk: The Multiethnic Cohort Study. *Cancer Epidemiol Biomarkers Prev.* 2024 May 1;33(5):703-711.
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- ⁴ Kittelson D, Khalek I, McDonald J, Stevens J, Giannelli R. Particle emissions from mobile sources: Discussion of ultrafine particle emissions and definition. *J Aerosol Sci.* 2022 Jan;159:1-31.
- ⁵ M Martuzzi, M., Tickner, JA. The precautionary principle: protecting public health, the environment and the future of our children. World Health Organization. Regional Office for Europe.
- ⁶ Kelly, F. J., & Fussell, J. C. (2012). Size, source and chemical composition as determinants of toxicity attributable to ambient particulate matter. *Atmospheric Environment*, 46, 504–526; [REDACTED] Moreno-Ríos, A. L., Tejeda-Benítez, L. P., & Bustillo-Lecompte, C. F. (2022). Sources, characteristics, toxicity, and control of ultrafine particles: An overview. *Geoscience Frontiers*, 13(1), 101147.
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- ⁹ Hsu, H.-H. L., Adamkiewicz, G., Houseman, E., Zarubiak, D., Spengler, J., & Levy, J. (2012). Contributions of aircraft arrivals and departures to ultrafine particle counts near Los Angeles International Airport. *The Science of the Total Environment*, 444C, 347–355.
- ¹⁰ Hudda, N., & Fruin, S. (2016). International Airport Impacts to Air Quality: Size and Related Properties of Large Increases in Ultrafine Particle Number Concentrations. *Environmental Science & Technology*, 50.
- ¹¹ Keuken, M., Moerman, M., Zandveld, P., Henzing, B., & Hoek, G. (2015). Total and size-resolved particle number and black carbon concentrations in urban areas near Schiphol airport (the Netherlands). *Atmospheric Environment*, 104, 132–142.
- ¹² Zhu, Y., Fanning, E., Yu, R. C., Zhang, Q., & Froines, J. R. (2011). Aircraft emissions and local air quality impacts from takeoff activities at a large International Airport. *Atmospheric Environment*, 45(36), 6526–6533.
- ¹³ Unal, A., Hu, Y., Chang, M. E., Talat Odman, M., & Russell, A. G. (2005). Airport related emissions and impacts on air quality: Application to the Atlanta International Airport. *Atmospheric Environment*, 39(32), 5787–5798.
- ¹⁴ Department for Transport. Supporting the transition to Jet Zero: creating the UK SAF mandate. Government response to the second consultation on the SAF Mandate. April 2024.

Appendix A: SES Water Correspondence

Subject: [EXTERNAL SENDER] RE: Gatwick Northern Runway Project
Date: Friday, 9 February 2024 at 11:14:39 Greenwich Mean Time
From: Liam Ahearne
To: Ian Waghorn
CC: Murray Taylor
Attachments: 0.png

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Ian,

Further to discussions we are having on matters relating to utility and asset management, this note has been prepared in relation to the Gatwick Northern Runway proposal. We understand Gatwick, where possible, want to understand the nature of relevant representations to the Planning Inspectorate in relation to the proposed Development Consent Order for Gatwick Airport Northern Runway (reference TR02005).

We have not made a representation to the Planning Inspectorate in this matter. We consider that to undertake our role as a statutory undertaker in compliance of the Water Industry Act 1991, we have a responsibility to develop and maintain an efficient and economical system of water supply within our area and ensure that arrangements have been made to provide supplies of water to premises and make such supplies available to persons who demand them. We also have a responsibility to prepare and maintain a water resources management plan (reviewed every five years) to ensure we meet our obligations as a water undertaker.

When preparing our water resources management plan, we received details from Gatwick concerning the future demand the airport anticipates so we can ensure we maintain a balance of supply and demand to meet the needs of water users in our area. Our current plan, and proposed revision (due to be published in 2024), accounts for the demand Gatwick anticipates. We therefore do not consider we need to make a representation to the Planning Inspectorate relating to the proposed development as a consequence of ensuring our operation as a water undertaker.

Separate to the requirement to maintain a water resources management plan, the Environmental Improvement Plan has placed stretching targets on each water company in England and Wales to reduce our customers' and end users' water consumption over the next 25 years. We would therefore separately encourage the ongoing discussions between our organisations supporting Gatwick's decade of change, which we appreciate is a wholly separate project to the Northern Runway development but will ultimately enable our two organisations to demonstrate excellent water efficiency and the upstream/downstream benefits to the water system and environment arising from this.

Apologies for the delayed response. If you have any questions, please do not hesitate to contact me.

Kind regards
Liam

Liam Ahearne
Head of Asset Strategy
Wholesale Services
SES Water

Putting our customers first
Service | Commitment | Innovation | Compassion | Collaboration | Integrity

From: Ian Waghorn <[REDACTED]@gatwickairport.com>
Sent: Tuesday, February 6, 2024 5:08 PM
To: Liam Ahearne <[REDACTED]@seswater.co.uk>
Cc: Murray Taylor <[REDACTED]@gatwickairport.com>
Subject: [EXTERNAL] Gatwick Northern Runway Project

Hello Liam,

Hope you are well? I was just wondering if there was any progress with the relevant reps response for our Northern Runway Project.

Please let me know if you have any questions or concerns.

Best Regards,

Ian Waghorn.
Principal Environmental Water Engineer
Gatwick Airport Ltd.

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