Luton Rising
Our airport.
Our community.
Our planet.

October 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 8 Additional Submissions (Examination)

8.51 Applicant's Post Hearing Submission - Issue Specific Hearing 5 (ISH5)

Infrastructure Planning (Examination Procedure) Rules 2010

Application Document Ref: TR020001/APP/8.51

The Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

London Luton Airport Expansion Development Consent Order 202x

8.51 APPLICANT'S POST HEARING SUBMISSION - ISSUE SPECIFIC HEARING 5 (ISH5)

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Contents

1 INTRODUCTION

1.1.1 This document contains Luton Rising's (a trading name of London Luton Airport Limited) (the Applicant) oral summary of evidence and post-hearing comments on submissions made by others at Issue Specific Hearing 5 (ISH5) held on 28 September 2023. Where the comment is a post-hearing comment submitted by the Applicant, this is indicated. The Applicant has also included tabulated responses to each of the action points raised by the Examining Authority (ExA) for ISH published on 04 October 2023.

1.1.2 The document uses the headings for each item in the agenda published for ISH5 by the Examining Authority (ExA) on 19 September 2023.

2 AGENDA ITEM 1 – WELCOME, INTRODUCTIONS, ARRANGEMENTS FOR THE HEARING

2.1.1 The Applicant, which is promoting a proposal to expand London Luton Airport Expansion (the Proposed Development), was represented at ISH5 by Rebecca Clutten of Counsel, supported by the following members of the Applicant's team:

a. Tom Henderson, Partner, BDB Pitmans, Legal Advisers to the Applicant.
b. James Bellinger, Air Quality expert for the Applicant, Arup.
c. Mark Day, Green Controlled Growth expert for the Applicant, Arup.

3 AGENDA ITEM 2 – POST-COVID IMPLICATIONS FOR AIR QUALITY

3.1.1 The Applicant provided a summary on how air quality in Luton has changed following the Covid pandemic and whether this has had any implications for the air quality baseline and future scenario assessments:

a. Air quality data has shown reductions in concentrations with most recent information from 2022 showing that concentrations haven't exceeded or returned to pre-pandemic levels.
b. There have been no implications for baseline (2019).
c. There have been no implications for future baseline used. A pessimistic approach for future baseline has been taken as Department for Environment, Food & Rural Affairs (DEFRA) forecasts are provided only to 2030. Any improvements have been frozen at 2030 levels but would be expected to improve as a result of on-going uptake of electric vehicles and other policy measures.

3.1.2 In response to the ExA's query, the Applicant confirmed that annual average concentrations data for 2023 is unlikely to be available until April 2024, although current indications do not show anything that would predict exceedances or differences from 2019 baseline data.

4 AGENDA ITEM 3 – CONSTRUCTION AIR QUALITY ASSESSMENT

4.1.1 In response to questions from the ExA, the Applicant provided an explanation as to how the on time of 8hrs has been determined and how this is factored into the air quality modelling.

a. The 8hr working day was modelled in a conservative way as it was assumed that all non-road mobile machinery (NRMM) would be in use for a full 8hr day – this is a worst case assessment.

b. The Applicant noted that even considering that there might be some periods of time when intensive activity or 24hr working would occur, the spatial aspect of modelling is important as it provides an additional layer of conservatism. The Applicant modelled all activity happening at the same time across the maximum spatial extent that could potentially occur.

c. The Applicant noted that the reasonable worst-case approach taken would cover short term peaks where there would be 24hr working as the total emissions would be higher based on the approach taken.

d. In response to the ExA's query regarding short term peaks and the potential to exceed particular thresholds of concern for public health, the Applicant confirmed that the modelling carried out is across the full year and from the annual concentrations, and that the Applicant does not predict any exceedances or significant effects during that modelling period.

4.1.2 The ExA requested that the Applicant signpost where the conveyor system on time assumptions are set out in the **Environmental Statement (ES)** and to confirm whether an assessment of the potential effects from transport of contaminated spoil by conveyor had been undertaken. **Post Hearing Note:** A response to this request was provided to the ExA during ISH6 – see the Applicant's response to this request at Action 2 in Table 1.1 to this document.

4.1.3 The Applicant confirmed that the magnitude of dust emissions is defined in Table 2.7 of **ES Appendix 7.3 Air Quality Results [APP-063]** and confirmed that this was the basis for the assessment and magnitude of effects of M1 Junction 10 Works as set out in **ES Appendix 7.3 Air Quality Results, Table 2.10 [APP- 063].**

4.1.4 The ExA asked the Applicant to clarify the basis for determining the magnitude of dust effects for the M1 J10 works. **Post Hearing Note**: see the Applicant's response to this request at Action 1 in Table 1.1 to this document.

4.1.5 The Applicant confirmed that the construction dust assessment has assumed all works to be 'high risk' and appropriate mitigation is included in the **Code of Construction Practice (CoCP) [APP-049]** which would reduce all impact to a negligible level.

4.1.6 In response to ExA query about consultation with relevant local authorities regarding odour and dust monitoring procedures, the Applicant confirmed that topic working group meetings have been attended by the local authorities since

2018, as detailed within the **ES Air Quality Chapter 7 [AS-076].** As noted in the **CoCP [APP-049]**, dust monitoring will be included and locations will be agreed with local authorities.

4.1.7 The ExA stated that Table 7.11 of **ES Air Quality Chapter 7 [AS-076]** considers the potential for in-combination climate change construction dust impacts and describes the likely increase in number of hot days and drought as remote and a very low consequence. Given the recent weather trends and climate change predictions, the ExA asked the Applicant to provide further justification for this conclusion.

4.1.8 The Applicant confirmed that measures outlined in the **CoCP [APP-049]** are considered best practice as set out by the Institute of Air Quality Management (IAQM) (Ref 4.1) and stated that those measures have been set out to mitigate all effects for all high risk sites. The Applicant stated that, as outlined by the IAQM, they are suitable for action in the UK and are demonstrated to reduce all effects to a negligible level.

4.1.9 The Applicant responded that the **CoCP [APP-049]**:

a. Has monitoring in place to help identify peaks in dust concentrations that could occur during those periods.

b. Sets out a best practice to increase the monitoring, whether visual inspection, or reviewing actual data that's being picked up by the monitors during periods of hot or dry weather.

c. Has measures within it that would set out to mitigate effects in any prolonged dry periods, for example avoiding sweeping large areas.

4.1.10 The ExA asked the Applicant to provide an explanation of the discrepancy between **ES Chapter 3 Alternatives and Design Evolution, Table 3.4 [AS-026]** which includes in-combination climate change embedded design measures (i) and (k) to reduce the impact of high winds, and Table 7.11 of **ES Air Quality Chapter 7 [AS-076]** which suggests that changes to wind speed are of remote likelihood, improbable occurrence, and very low consequence and therefore not significant. **Post Hearing Note:** see the Applicant's response to this request at Action 4 in Table 1.1 to this document.

5 AGENDA ITEM 4 – OPERATIONAL AIR QUALITY MODELLING AND ASSESSMENT

5.1 Modelling and assessment assumptions

5.1.1 The Applicant confirmed that future baseline air quality assumptions would not be affected by the announcement about delays in a diesel ban.

5.1.2 The ExA asked the Applicant to explain why different modal splits have been used in the air quality and the noise assessment. **ES Appendix 7.1 Air Quality Methodology [AS-028]**, Paragraph 3.7.6 uses a 70% westerly 30% easterly modal split for air quality modelling. In contrast, **ES Appendix 16.1 Noise and Vibration Information [AS-096],** Table 6.42, indicates that for noise modelling,

the 10 year average modal split is 77% westerly and 23% easterly, the longer term data is considered to be representative of typical modal split trends.

5.1.3 The ExA asked the Applicant to provide a report or modelling data that explains the difference as the ExA wants to ensure potential higher westerly movements do not have a worse consequence and potential for likely significant effects to occur particularly for areas where there are air quality management areas. **Post Hearing Note:** see the Applicant's response to this request at Action 5 in Table 1.1 to this document.

5.1.4 The ExA also commented that aviation is a significant source of ozone and asked the Applicant to provide further justification for ruling out this pollutant.

5.1.5 The Applicant responded that ozone is a transboundary pollutant that is influenced by wider regional impacts and noted that the suite of pollutants that have been assessed are those which could result in a significant impact arising from airport related activity, as agreed through the scoping approach and through topic working groups with local authorities. Ozone is monitored at the airport along with a wide suite of other pollutants.

5.1.6 The ExA asked the Applicant to provide comments on removing a potential source of additional pollutants that might affect the local area.

5.1.7 In response, the Applicant confirmed that the Clapp and Jenkin approach used to model primary nitrogen dioxide (NO_2) along with nitrogen oxides (NOx) takes into consideration ozone and its role in the creation of secondary pollutants. The Applicant also stated that sensitivity tests on the approach is conservative as set out in **ES Appendix 7.4 Air Quality Sensitivity Tests [APP-064].** It was further explained to the ExA that the Clapp and Jenkin approach allows for modelling of different primary fractions from various airport related sources to occur and is best practice for airport modelling because it takes into account those variances in a more accurate way than using the DEFRA NOx to NO_2 tool which is primarily used with Road tractions.

5.1.8 The ExA asked the Applicant for an explanation, in qualitative terms, on what the likely impact of terrain on air quality emissions is and whether there's potential for terrain to affect dispersion of emissions from aircraft and how that would work in practice.

5.1.9 The Applicant responded that a qualitive review of terrain is included within the **ES Appendix 7.4 Air Quality Sensitivity Tests [APP-064]** where it is reported that wider terrain effects are considered within the metrological data that has been used in the dispersion modelling.

5.1.10 The ExA asked what the terrain effect is if pollutants are dispersed to the west of the airport where there is a valley and then higher ground.

5.1.11 The Applicant confirmed that the qualitative review did not indicate that it would be significant effect on modelling outcomes provided within the ES.

5.1.12 The ExA summarised **ES Appendix 7.2 Air Quality Baseline Data, Section 2 [APP-062]** and asked the Applicant to explain why there appears to be a better correlation in the model for NO_2 rather than particulate matter, and whether the

under prediction of particulate matter (PM_{10}) has any implications for the conclusions of the assessment.

5.1.13 The Applicant summarised the basis of the model backgrounds and commented that the slight underprediction for PM_{10} is noted but that it would not have a significant impact on the outcome of assessment because of the conservative way that future backgrounds have been modelled as any improvements have been frozen from the year 2030 onwards.

5.1.14 The Applicant was asked to provide a table of fine particulate matter ($PM_{2.}5$) modelled vs monitored data equivalent to those provided for NO_2 and PM_{10}. **Post Hearing Note:** see the Applicant's response to this request at Action 6 in Table 1.1 to this document.

5.1.15 The ExA stated that comparison and monitored NO_2 concentrations after adjustment are included in Table 3.3 of **ES Appendix 7.2 Air Quality Baseline Data [APP-062**] and queried why a similar process has not been carried out for PM_{10} and $PM_{2.5}$.

5.1.16 The Applicant explained that for particulate matter (PM) there are very limited number of monitors available with which to verify the process and that it would not be representative of the full study area.

5.1.17 The ExA then asked if the model adjustment for NOx is reasonable and if the model is sufficiently precautionary in light of the sensitivity of the Air Quality Management Area to air quality effects.

5.1.18 The Applicant stated that the model verification was carried out following best practices set out within technical guidance set by DEFRA Local Air Quality Management Technical Guidance (LAQM.TG22) (Ref 5.2) and meets the requirements for the modelling that was carried out for the **ES.**

5.1.19 The Applicant agreed to produce a technical note on the implications of potential underpredictions of emissions (for NO_2, PM_{10}, $PM_{2.5}$) at locations within Luton Air Quality Management Areas:

a. High Street South (monitoring location 1);
b. Church Street (monitoring location 33); and
c. Castle Street (LN67).

5.1.20 **Post Hearing Note:** see the Applicant's response to this request at Action 7 in Table 1.1 to this document.

5.1.21 The Applicant confirmed that model adjustment ratios used are within normal, acceptable ranges in accordance the standards.

5.1.22 The ExA asked for an explanation as to what carriageway width assumptions have been used in the air quality modelling for Vauxhall Road, and other areas of future junction improvements.

5.1.23 The Applicant confirmed that information was provided by the design teams and built into account for changes in road widths at the locations mentioned. **Post**

Hearing Note: see the Applicant's response to Action 8 in Table 1.1 to this document.

5.1.24 The ExA asked the Applicant why the nine substantial adverse and 34 moderate adverse effects in relation to DEFRA Pollution Climate Mapping (PCM) locations identified in **ES Appendix 7.3 Air Quality Results [APP-063]**, and **ES Appendix 7.4 Air Quality Sensitivity Tests [APP-064]**, are not reported as potential significant effects in the air quality chapter.

5.1.25 The Applicant stated that the purpose of those PCM locations is to assess against compliance following the methodology set out in Design Manual for Roads and Bridges (DMRB) LA 105 (Ref 5.3), therefore the locations aren't representative of relevant exposure in terms of where the objectives would apply and do not need to be reported as significant effects within the ES**.**

5.1.26 It was confirmed that reporting on the compliance assessment in **ES Air Quality Chapter 7 [AS-076]** concluded that there are no significant effects. The Applicant added that based on the flowcharts, it was appropriate to conclude no significant effects in terms of delay to compliance with this scheme and said that a key reason is because the concentrations are well below the limit values at all of those locations.

5.1.27 The ExA stated that at PCM 33 to 34, the increases are over the annual mean objective of 40µg/m^3 for NO_2.

5.1.28 APP-063 ES Appendix 7.3 Air Quality Results and APP-064 ES Appendix 7.4 Air Quality Sensitivity Tests identify 9 substantial adverse and 34 moderate adverse effects in relation to Pollution Climate Mapping (PCM) locations. The Applicant was asked to provide an explanation in writing as to why reported effects aren't reported as potential significant effects in the air quality chapter. **Post Hearing Note:** see the Applicant's response to this request at Action 9 in Table 1.1 to this document.

5.1.29 The ExA stated that the assessment Phase 1 faster growth sensitivity test identifies moderate and substantial adverse effects for PCM 33 and 34 and asked if it is appropriate to use a faster growth assumption in the **Green Controlled Growth Framework [APP-218]**, Phase 1, given that it's confirmed this would result in deterioration of air quality and compliance areas.

5.1.30 The Applicant confirmed that the green control growth programme only looks at human health services and not PCM locations.

5.2 Operational Air Quality Action Plan

5.2.1 The Applicant provided a brief overview of **ES Appendix 7.5, the Outline Operational Air Quality Plan (AQP) [APP-065].** The Applicant stated that the purpose of the AQP is to provide additional actions which will result in reduction in air pollution. The AQP covers all areas where emissions could be expected from the airport or related activity, such as aircraft emission, air side vehicles, surface access, any fixed plant or energy and miscellaneous emissions, for example fire training ground or engine testing bay, and also odour and monitoring.

5.2.2 The Applicant was asked to provide an explanation of the proportion of the proposed measures that are committed rather than aspirational and what levers are available to the applicant to ensure that the proposed actions are implemented by the airport operator. **Post Hearing Note:** see the Applicant's response to this request at Action 10 in Table 1.1 to this document.

5.2.3 The Applicant was asked to provide an explanation of the regulations that prevent removal of diesel generators at the airport and why. **Post Hearing Note:** see the Applicant's response to this request at Action 11 in Table 1.1 to this document.

6 AGENDA ITEM 5 – WATER TREATMENT PLANT AND AVIATION FUEL

6.1 Odour mitigation and implications for users of Wigmore Valley Park

6.1.1 The Applicant confirmed that during the detailed design of the Water Treatment Plan (WTP), assessment will be carried out based on final design and relevant permits as required by the Environment Agency (EA) to determine whether odour mitigation is required.

6.1.2 The ExA asked to what extent would odour control likely be required by the EA permitting process.

6.1.3 The Applicant responded that the H4 assessment (Ref 6.4) that would be required once the detailed design is completed would identify any odour impacts and therefore no significant impacts would be included as an agency would not provide a permit for sites that will result in a significant impact.

6.1.4 The Applicant confirmed that sites such as parks or areas of recreation would be considered as sensitive receptors as part of the assessment.

6.1.5 The Applicant added that the sniff testing carried out as part of the baseline to determine odour related to airport impacts was carried out in that area.

6.1.6 The Applicant confirmed that an acceptable level of odour as referenced in **ES Appendix 7.1 Air Quality Methodology [AS-028]** equates to a conclusion of no significant odour effect on recreational amenity. The Applicant stated that the odour assessment was carried out using best practice measures following the IAQM guidance and taking into account a multi tool approach and included all of those sectors and recreational areas in order to inform that conclusion.

6.1.7 The ExA asked the Applicant to provide an explanation as to how the risk of flies at the Water Treatment Plant, as a nuisance issue, has been addressed in the statement of statutory nuisance. **Post Hearing Note:** see the Applicant's response to this request at Action 12 in Table 1.1 to this document.

6.1.8 The Applicant confirmed that they would consider the request made by the Host Authorities that a commitment to employ appropriate means to minimise the risk of detectable odour outside of the site boundary should be set out in the **Outline Operational Air Quality Plan [APP-065]** and that the action is being picked up via the SoCG process.

6.2 Fuel jettisoning

6.2.1 In response to a query from the ExA about jettisoning of fuel it was confirmed that most of the aircraft that use Luton such as the A320, and B737s do not have the capability to jettison fuel. It was confirmed that fuel jettisoning only occurs in very rare situations, and best practice from the Civil Aviation Authority (CAA) being followed would result in no significant impacts at ground level due to following methodologies that would result in dispersion of that before it reached the ground.

6.2.2 The Applicant noted that the CAA reporting cites that fuel jettisoning only happens on very rare occurrence and is unlikely to happen and that if it does occur, there are mandatory reporting process by which the airline would have to provide a report to the CAA.

6.2.3 The Applicant was asked by the ExA is to provide reference/copies of NATS/CAA records of fuel dumping. **Post Hearing Note:** see the Applicant's response to this request at Action 14 in Table 1.1 to this document.

6.2.4 ExA requested the Applicant to provide their professional opinion on what the odours being reported could be from. Based on the sniff testing carried out by the Applicant's environmental team, The Applicant reported that odour not relating to fuel jettisoning would be from aircraft movements at ground level, airport related activity, or any other aircraft movement related activity and confirmed that it was used to inform assessment within source pathway odour assessment.

7 AGENDA 6 – GREEN CONTROLLED GROWTH (GCG) THRESHOLDS AND LIMITS

7.1 GCG Framework

7.1.1 The ExA asked the Applicant to provide a brief explanation of how the shortlist of monitoring locations and the percentage contributions relating to the in-scope elements in Table 4.2 of the **Green Controlled Growth Framework (GCG Framework) [APP-218]**, have been determined.

7.1.2 The Applicant explained how the GCG Assessment locations were identified:

a. 15 key locations, some 'in scope' (GCG process applies) and some 'out of scope' (monitoring only). Scope reviewed every five years.

b. Started with 601 ES receptors – not feasible or proportionate to monitor all (no significant impacts).

c. Top 10 by pollutant and year – shortlist of 43 receptors.

d. Receptors close together - combine to make 15 shortlisted locations.

e. Where total airport impact forecast to be negligible, 'out of scope', otherwise in scope.

7.1.3 The Applicant confirmed that the Applicant is committing to monitor air quality on an ongoing basis across all of the 15 locations and the process is set out in

the **GCG Framework Appendix D – Air Quality Monitoring Plan [APP-222]**. The Applicant has looked at the significance of the airport's impact and where negligible airport impacts are seen, in accordance with guidance set out by the IAQM (Ref 7.5) is reproduced at **Table 3.2** of **Green Controlled Growth Explanatory Note [APP-217]**, the Applicant will commit to monitoring. Where the impact is non-negligible, this will be in-scope and the full GCG process for air quality would be applied. The process is subject to periodic review.

7.1.4 The Applicant stated that the Applicant has committed to review background concentrations at all 15 of those locations every five years and where the recorded concentration of any one pollutant is 20% or greater than is forecast in the ES, the Applicant will consider bringing those into the scope of green controlled growth. The review process will be undertaken between the airport operator and the proposed Environmental Scrutiny Group (ESG).

7.1.5 The ExA asked the Applicant to explain why 5% is considered to be a reasonable headroom allowance.

7.1.6 The Applicant explained that there are practical constraints around monitoring accuracy, related to monitoring the airport's contribution to air quality and being able to identify and isolate from general background concentrations. The Applicant stated that air quality forecasting, using a model, is easy to extract. In contrast, it is less easy to do on an ongoing basis through monitoring. The 5% broadly reflects the banding of significant that are set out in Table 6.3 from land use planning and development control planning for air quality, which is published by the IAQM 2017 guidance.

7.1.7 The ExA asked if the addition to the 5% and the 20% at later points will have any potential to effectively enable a situation where the limits being worked to are above the statutory air quality objectives.

7.1.8 The Applicant explained that the purpose of the level one and level two thresholds is to enable a proactive management of environmental effects and to provide an early warning of a limit potentially being breached. The airport operator is required to set out action being taken to avoid an exceedance. The Applicant noted that there is a requirement to prepare the level two plan that is to be agreed with the ESG, and there are constraints on the growth of the airport until that level two plan is approved. When or if the limit is then ultimately exceeded, there will be more significant implications for the airport.

7.1.9 The Applicant commented that likelihood of exceedance is very low based on the conservative assessment. The Applicant noted that given current assessment and current concentrations where $PM_{2.5}$is being monitored in the centre of Luton is at the objective, there is an assumption that there will be no improvement between now and 2040, which is unlikely.

7.1.10 The Applicant confirmed that Vauxhall Way has not been included as one of the potential monitoring locations as it is a PCM location which is not relevant to human exposure.

7.1.11 In light of PCM exceedances identified in ES Appendices 7.3 and 7.4, the ExA asked the Applicant to provide an explanation as to why $PM_{2.5}$ monitoring is not

being considered in these locations (e.g. Airport Way, New Airport Way and Vauxhall Way (near roundabout with Eaton Green Road). **Post Hearing Note:** see the Applicant's response to this request at Action 15 in Table 1.1 to this document.

7.1.12 The Applicant confirmed that **Table 4.2** of the **GCG Framework [APP-218]** shows no locations as being in-scope for assessment phase 2a as all air quality forecasting for that assessment phase is showing negligible impacts across all three pollutants. The five yearly monitoring in place through green controlled growth will flag if any locations where background concentrations exceeded those forecasts subject to the 20% threshold.

7.1.13 The Applicant confirmed that is not necessary to assess for surface access emissions in phase 2a as the total airport impacts, both associated with existing airport and proposed development are forecast to be negligible across all locations and pollutants. Subject to that periodic review to ensure that remains the case as the airport expands.

7.1.14 The Applicant was asked to provide a note regarding strengthening of Green Controlled Growth (GCG) Framework for Phase 2a in the absence of any in scope monitoring commitment. **Post Hearing Note:** see the Applicant's response to this request at Action 16 in Table 1.1 to this document.

7.1.15 The ExA asked if an exceedance of a level two threshold should be the point at which further growth is capped until air quality has improved.

7.1.16 The Applicant stated that the forecasts included in the **ES** are showing no significant effects and that there is no requirement to mitigate as this is an additional layer of protection being proposed through green controlled growth. The Applicant then explained the difference between paragraphs 4.2.3 and 4.2.4 of the **GCG Framework [APP-218]**.

7.1.17 Re paragraph 4.2.3 - The Applicant stated that paragraphs 2.2.34 to 2.2.40 in **GCG Explanatory Note [APP-217]** highlight the circumstances beyond the operator's control and states that if the airport operator can demonstrate to the ESG satisfaction that a specific exceedance is caused by a short-term factor, beyond the operator's control, the operator can choose to disapply the GCG framework for that breach. The Applicant also stated that Paragraph 4.2.5 of **GCG Framework [APP-218]** considers, if that provision is not invoked, would look to try and isolate the impact of the airport specifically.

7.1.18 Re Paragraph 4.2.4 – The Applicant stated that the drafting in the **Draft Development Consent Order (DCO) [REP-003]** requirement 19 in part 3 of Schedule 2 is to ensure that when a mitigation plan is put forward by the airport operator, that the mitigation can be proportionate to the airport's contribution to an air quality exceedance.

7.1.19 In relation to the level two thresholds, the ExA asked what the likely lag time between identifying an issue through monitoring, commencing additional monitoring to determine whether contributions are related to the airport, and commencing the green controlled growth process if possible.

7.1.20 The Applicant clarified that the timings set out in the **GCG Explanatory Note [APP-217]** and secured through the draft DCO represent the worst case scenario. Additionally, the operator is encouraged to engage with the ESG and relevant technical panels as early as possible. The air quality limits are reviewed as annual average concentrations and so monitoring will take place once a year. By the time adjustments have been applied, the report will likely be around April the following year. The ESG would then likely meet at around June or July of the given year, namely at a time which would allow for the airport's capacity declarations to be influenced during the summer of the following year which typically occurs at the end of the summer season (the end of September). The Applicant confirmed its approach was to utilise slot allocations across all four of the environmental topics.

7.1.21 The Applicant further confirmed that because monitoring for air quality assets, as shown in **GCG Framework Appendix D – Air Quality Monitoring Plan [APP-222], i**s ongoing throughout the year, and uses a mixture of different techniques, the airport's operator will then essentially have early warning of any problems associated with air quality and provided they're taking a proactive approach to that monitoring, they should have early warning of any potential exceedances of the limit associated with the annual average that will give the airport operator time to consider the cause of any exceedance and the best way to mitigate any impact that may be required back and then form part of the monitoring results, the monitoring report is then submitted to the ESG the following year.

7.1.22 The Applicant concluded that it is in the airport's interests to mitigate impacts as early as possible; essentially, if the airport can see an issue and mitigate it within the year to avoid the limit being exceeded, then they don't have issues in terms of how the airport can then subsequently grow.

7.1.23 The ExA asked if the Applicant would ever conclude that the effects of the airport was of sufficient magnitude to warrant triggering green controlled growth, acknowledging that pollution from vehicles within Luton is an issue and a significant proportion of the initial emissions will be from existing vehicle traffic on the network.

7.1.24 The Applicant acknowledged that concentrations of pollutants are going to be influenced by a wide range of sources, both airport related, and non-airport related. However, through the Green Controlled Growth Framework the Applicant is committing to take action where the airport's contribution to an air quality exceedance is 5% or more greater than forecast, irrespective of how big the airport's contribution was forecast to be.

7.1.25 The Applicant acknowledged that from conclusions of the air quality assessment in **ES Appendix 7.3 Air Quality Results [APP-063],** there are no significant effects that require mitigation. The Applicant is making a commitment through green controlled growth to address this should it not be the case in the future. The Applicant stated that road traffic is typically the biggest source of pollutants from the airport as seen in the Applicant's modelling, along with modelling from other airports and noted in the Air Navigation Guidance 2017.

7.1.26 The Applicant estimated that aircraft contribute a relatively small proportion of pollutants from the airport and stated that this would be dependent on locations, spatial distance from airport sources, and other factors.

7.1.27 The Applicant was asked to provide a technical note quantifying the emissions from different airport sources (e.g. aviation, surface access, ground operations) to demonstrate why GCG is correct to focus on surface access only. **Post Hearing Note:** see the Applicant's response to this request at Action 17 in Table 1.1 to this document.

7.1.28 'The ExA asked the Applicant to explain how a proportionate contribution to mitigation and associated financial contribution would be calculated.

7.1.29 The Applicant confirmed that there is no formal mechanism for that financial contribution because there are so many variables as to what the contribution or the cause the contribution might be. The Applicant also confirmed that it would be at the discretion of the ESG as they have the ability to approve or refuse a mitigation plan.

7.1.30 The ExA queried why, given the speed of response is potentially important to controlling an issue, has annual monitoring been used instead of responsive real time monitoring.

7.1.31 The Applicant stated that the annual objectives are potentially most at risk being exceeded in the study area, and therefore it is those that are most relevant to this study. The Applicant recommended the use of monitoring equipment which allows continuous monitoring to be taken both for NO_2 and or for particulate matter. This will be backed up with diffusion tubes for NO_2 as well so there will be duplicate methodology for that pollutant, along with colocation of the indicative monitoring equipment at other automatic sites to allow that certainty for the data that's being collected. This is considered to be proportionate to the risk.

7.1.32 The Applicant also flagged that due to some of the practical constraints around isolating the impact of the airport and noted that from a technical perspective it is quite difficult to isolate the airports impact when looking at that continuous monitoring and seeing short term exceedances.

7.1.33 The Applicant confirmed that the Applicant is in continuing discussions with the Hertfordshire Host Authorities and reiterated the point, that has been provided previously, that paragraph 7.7.7 of **ES Chapter 7 Air Quality [AS-076]** sets out the short-term impacts and demonstrated there are no short term likely effects as a result of the scheme. The Applicant also confirmed that in terms of the monitoring equipment, the Applicant considers this to be a proportionate use of equipment.

7.1.34 The Applicant stated that the equipment would provide the time variable fluctuations in concentrations throughout the day which would be able to pick up when there are peaks and troughs in pollutant concentrations. The monitoring equipment is indicative as noted, which is considered to be proportionate based on the cost of fully MCERT ratified equipment. As the risk from PM concentrations as demonstrated within section 7.9 of **ES Chapter 7 Air Quality**

[AS-076] is considered to be very low, it would not be proportionate to put out equipment to every single GCG site that is of that higher spec due to the cost.

7.1.35 The Applicant confirmed that there would be robust quality control standards in place and that best practice for data ratification in the quality assurance and quality control (QA/QC) procedures would be carried out following colocation with other automatic Monitoring Certification Scheme For Equipment (MCERT). The monitoring data and ratification would follow best practice set up by DEFRA.

7.1.36 The ExA asked the Applicant to confirm what progress has been made in setting up ANPR to determine the airport's proportional contribution, and if no ANPR solution is in place, how the Applicant would confirm the proportional contribution the airport.

7.1.37 The Applicant explained that it would be an extensive undertaking to implement a network of ANPR cameras across all locations. The Applicant confirmed that the work to determine the airport's contribution takes place once it has been registered that a threshold or a limit has been exceeded, on a case by case basis in response to monitored air quality concentrations.

7.1.38 The Applicant was asked to provide written responses to various queries relating to limits and to provide an explanation as to whether this provision means that the Applicant would not need to comply with UK legislation and why it would be acceptable to wait 6 months when a new legal provision came into force. **Post Hearing Note:** see the Applicant's response to this request at Action 18 in Table 1.1 to this document.

7.1.39 The ExA asked the Applicant to explain how a reasonable estimate of risk has been determined at 20%.

7.1.40 The Applicant explained that 20% is suitable based on the concentrations that would be expected in future years and the low impacts that are predicted from the airport and scheme in particular. The 20% figure is based on accuracy of proposed monitoring equipment and the equipment is indicative and would be in alignment with the government's MCERT program, which specifies a plus or minus 50% accuracy for peer monitoring. Therefore, to avoid placing to greater weight on a small absolute change in concentration, from indicative equipment, a 20% change is suitable metric, particularly when viewed alongside other monitoring that would be used in the local area.

7.1.41 The Applicant confirmed that the 20% and 5% will be used at different times and for different purposes and therefore apply independently.

7.2 Monitoring standards and air quality measures

7.2.1 The ExA asked what interventions are in the toolbox for air quality and/or for the Applicant to signpost where these particular measures are in the application documents.

7.2.2 The Applicant stated that as the scenario is regarding air quality emissions from surface access, the toolbox of measures is likely to overlap quite significantly

with the toolbox that has been provided in respect of surface access and suggested the following:

a. The airport operators can encourage fewer people to travel by car to and from the airport and to use more sustainable transport.

b. Those travelling by car can be encouraged to use cleaner or zero emission vehicles.

7.2.3 The Applicant was asked to explain what interventions are in the 'toolbox' for air quality. **Post Hearing Note:** see the Applicant's response to this request at Action 19 in Table 1.1 to this document.

7.2.4 The ExA asked the Applicant how many of the measures are aspirations as opposed to measure that would be committed.

7.2.5 The Applicant stated that the GCG Framework is intended to operate as a backstop. Therefore, the mitigation measures within the toolbox would not need to be committed to at present as the air quality assessment is showing no significant effects and therefore no mitigation being required. The Applicant stated that the toolbox can be drawn upon in future if needed, acknowledging that it is a 20 year expansion programme and that mitigation measures may change over that period.

7.2.6 The ExA suggested that wording used in the **GCG Framework Appendix A, Draft ESG Terms of Reference, Section A4.5 [APP-219]** should be changed to exclude work attributable to the airport. **Post Hearing Note:** see the Applicant's response to this request at Action 20 in Table 1.1 to this document.

8 AGENDA ITEM 7 – ACTION POINTS ARISING FROM THE HEARING

8.1.1 **Post Hearing Note:** A response to ISH5 Action Points is provided in Table 1.1.

9 AGENDA ITEM 8 – ANY OTHER BUSINESS

9.1.1 The Applicant did not make any submissions under this Agenda time.

10 AGENDA ITEM 9 – CLOSE OF HEARING

10.1.1 The Applicant did not make any submissions under this Agenda Item.

Responses to Action Points from ISH5

Table 1.1: Applicant's Responses to Action Points from ISH5

Action	Description	When	Applicant's response
1	Clarify the basis for determining the magnitude of dust effects for the M1 J10 works.	D3	Works taking place at the M1 have been assessed following the methodology outlined in **ES Chapter 7 Air Quality [AS-076]** and **Appendix 7.1 [AS-028]**. The study area for dust impacts at the M1 junction can be seen in **Figure 7.40 [AS-100]**. A precautionary approach has been taken by committing to implement measures for high risk sites via the **CoCP [APP-049]**, as stated in section 7.9.5 of **Chapter 7** of the ES **[AS-076]**, at all locations including the M1. Whilst the M1 works magnitude of impact is therefore not specifically outlined in the ES, the mitigation is appropriate for all work being carried out as part of the DCO. Therefore, the highest level of mitigation as recommended by the IAQM guidance (Ref 4.1) will be implemented and as such effects can be reduced to a negligible level.
2	Signpost to where the conveyor system on time assumptions are set out in the Environmental Statement (ES). Confirm whether an assessment of the potential effects from transport of contaminated spoil by conveyor has been	D3	Following ISH5, in ISH6 **[TR020001/APP/8.52]** it was clarified that the Applicant is not proposing to transport contaminated material across the site using a static conveyor belt, so for this reason, it has not been assessed. The Applicant added that conveyors may be used within controlled processing sites, but that would be subject to its own permissions. As stated in section 4.3.34 of **Appendix 4.1 Construction Method Statement and Programme Report** of the ES **[AS-082]**, the alternative to the conveyor system would be traditional trucks/dump trucks. Emissions from dump trucks (referred to as dumpers) associated with not using a conveyor were included in the modelling, as detailed in Table 3.24 of **Appendix 7.1 [AS-028]**. It is understood the conveyor can be run using electrical hook up as noted in **Appendix 4.1 Construction Method Statement and Programme Report [AS-082]** and would therefore be zero emissions at source.

Action	Description	When	Applicant's response
	undertaken (if not, an assessment to be provided).		
4	Provide an explanation of the discrepancy between AS-026, ES Chapter 3, Table 3.4 which includes in-combination climate change embedded design measures (i) and (k) to reduce the impact of high winds, and Table 7.11 of the Air Quality chapter which suggests that changes to wind speed are of remote likelihood, improbable occurrence, and very low consequence	D3	**ES Chapter 3**, Table 3.4 **[AS-026]** includes embedded mitigation measures part (i) and (k) which note design elements constructed to reduce any effects from high winds as a result of climate change on the Proposed Development, and are not related to the in-combination climate change assessment. Embedded mitigation measures for in-combination climate change impacts associated with air quality can be found in Table 7.11 in **ES Chapter 7 [AS-076]** and Tables 9.26 and 9.27 in **ES Chapter 9 [APP-035]**. Table 7.11 in **ES Chapter 7 [AS-076]** notes that changes to wind speeds are 'remote'. Table 7.11 does also note *'There is considerable uncertainty in projections for changes in wind speed and wind direction, and studies show statistically insignificant variation in wind speed.*'. Where embedded mitigation is included in Table 3.4 **ES Chapter 7 [AS-026]** this is accounting for worst case situations where climate change results in high wind speeds associated with extreme weather. Table 7.11 in **ES Chapter 7 [AS-076]** is referring to general changes to average wind speeds and direction as those are the main factors which influence annual mean concentrations. Therefore, there is no contradiction in the reported outcomes in either table.

Action	Description	When	Applicant's response
	and therefore not significant.		
5	Provide an explanation as to why it is appropriate, or not, to use different modal splits for the air quality and noise assessments.	D3	The noise assessment uses a long term 10-year average modal split for the 92-day summer following Civil Aviation Authority (CAA) guidance (CAP1616a) which, specifically for noise modelling, recommends at paragraph 1.15 that "*average summer day contours be produced using long-term average runway usage*". Whilst the same document also addresses air quality modelling, it does not recommend the usage of long-term average runway use for air quality. The subject of long-term average runway use for noise modelling was raised by the CAA in their Statutory consultation response, and the Applicant provided a response in **Consultation Report Appendix M [APP-190]**, p 276, to note why a 10-year average has been used. Following this response, the CAA noted in their relevant representation [RR-0257] that "*On Noise, we are content with answers provided by LLAL since consultation on the points we raised in the statutory consultation and have no principal areas of disagreement at this stage.*". No similar comments or queries were raised on the use of a 2019 annual modal split for the air quality modelling. The air quality assessment uses the annual modal split, using 2019 data. This is to align with the other datasets used in the baseline dispersion modelling, such as the meteorological data, emission factors, background contributions and 2019 monitored data used to verify the baseline modelling, following DEFRA guidance (Ref 5.2). Observed meteorological data is used for future scenarios (2019 data in this case), which is also in line with the DEFRA guidance. It is appropriate to use the 2019 meteorological data for both the baseline and future scenarios, as is the standard practice for air quality assessments. As the meteorological conditions are a key factor in determining the operational direction of the runway (and therefore the modal split), it is therefore appropriate to use the 2019 modal split in the baseline and future air quality assessments.

Action	Description	When	Applicant's response
6	Provide a table of PM2.5 modelled vs monitored data equivalent to those provided for NO2 and PM10.	D3	The data being referred to for NO_2 and PM_{10} as having been provided was in relation to comparison of monitored and modelled concentrations at background sites as provided in **ES Appendix 7.2 [APP-062]** section 2. Table 2.5 **ES Appendix 7.2 [APP-062]** presented the modelled background compared with the DEFRA mapped concentrations at urban background locations. As there are no urban background monitoring sites for $PM_{2.5}$ in the study area, the comparison between modelled backgrounds for $PM_{2.5}$ and monitored concentrations had not been reported. It is not appropriate to compare a modelled roadside concentration with a modelled background concentration, therefore no comparison can be made for $PM_{2.5}$.
7	Produce a technical note on the implications of potential underpredictions of emissions (for NO2, PM10, PM2.5) at locations within Luton Air Quality Management Areas. - High Street South (monitoring location 1) - Church Street (monitoring location 33)	D3	The ExA summarised information shown in **ES Appendix 7.2 [APP-062]** Section 3 and asked if the model adjustment is reasonable and if the model is sufficiently precautionary in light of the sensitivity of the Air Quality Management Area (AQMA) to air quality effects. The Applicant agreed to produce this technical note on the implications of potential underpredictions of emissions (for NO_2) at locations within Luton Air Quality Management Areas: a. High Street South (monitoring location 1); b. Church Street (monitoring location 33); and c. Castle Street (LN67). As stated in **Appendix 7.1** of the **ES [AS-028]**, verification has been undertaken for the base year, using the methodology set by DEFRA. Verification applies to the changes in NO_2 concentrations and not PM_{10} and $PM_{2.5}$. Therefore, the following relates specifically to NO_2 results. The objectives of the model verification are to evaluate model performance, determine whether model adjustment is required, and to provide confidence in the

Action	Description	When	Applicant's response
	- Castle Street (LN67)		assessment. Based on the verification results presented in **Appendix 7.2** of the ES **[APP-062]**, over the whole modelled area, there is generally good agreement between measured and modelled concentrations of NO_2 after adjustment. As noted in **Appendix 7.1** of the **ES [AS-028]**, results may not compare well at some locations for several reasons, some of which are detailed in section 3.8.13. Where sites have higher percentage differences between modelled and monitored concentrations they were investigated as outlined in section 3.8.14 to 3.8.16 in **Appendix 7.1** of the **ES [AS-028]**. The three sites were investigated as part of the model verification process and kept in the results to help provide a greater understanding of model effects at those locations. Monitoring locations close by these three sites (including within AQMAs), which were considered representative of relevant exposure, provided confidence that the modelling was performing well at receptor locations. In summary, the model performs within LAQM.TG(22) criteria at the AQMAs mentioned and that the specific results at locations 1, 33 and LN67 are as a result of localised factors at these monitoring sites, which do not have implications overall modelled results at receptor locations.
8	Provide a note explaining what carriageway width assumptions have been used in the air quality modelling for Vauxhall Road and other areas of future offsite	D3	It has been noted that the request states 'Vauxhall Road'. The applicant has examined the study area used in the air quality assessment and Vauxhall Road has not been included in the ARN, as it is only a small access road to the west of the airport, so no increase in AADT to meet screening criteria was determined. Carriageway width assumptions are provided for Vauxhall Way as an example of how changes were made in the air quality modelling to account for road alignment or width changes (either as part of the Proposed Development or other planned changes such as the plans for a dual carriageway on Vauxhall Way).

Action	Description	When	Applicant's response
	highway works improvements.		Off-site Highway works are provided in Volume 4 Plans and Sections 4.13, **Off-site Highway Works [AS-023]**. These drawings were georeferenced into GIS software for use in the air quality modelling to reflect the same widths and alignments as shown in the drawings. The width of Vauxhall Way before it was dualled was modelled as being 6m. After dualling it was modelled as two 7.5m lanes. Other road alignment changes set out within Volume 4 Plans and Sections 4.13, **Off-site Highway Works [AS-023]** were adjusted for the with and without Proposed Development scenarios based on the plans.
9	APP-063 ES Appendix 7.3 Air Quality Results and APP-064 ES Appendix 7.4 Air Quality Sensitivity Tests identify 9 substantial adverse and 34 moderate adverse effects in relation to Pollution Climate Mapping (PCM) locations. Provide an explanation in	D4	To be provided at Deadline 4.

Action	Description	When	Applicant's response
	writing as to why these aren't reported as potential significant effects in the air quality chapter.		
10	Provide an explanation of the proportion of the proposed measures that are committed rather than aspirational and what levers are available to the applicant to ensure that the proposed actions are implemented by the airport operator.	D4	To be provided at Deadline 4.
11	Provide an explanation of the regulations that prevent removal of diesel generators at	D3	London Luton Airport operates in accordance with an Aerodrome Certificate issued by the CAA and is required to comply with standards and recommended practices in relation to the airfield infrastructure, including safety critical assets such as the Aeronautical Ground Lighting (AGL). The airport is currently certified to operate in low visibility up to Cat III b standards which is the most onerous criteria to enable aircraft to take-off and land in very low

Action	Description	When	Applicant's response
	the airport and why.		visibility (i.e. Decision Height lower than 100 ft, and Runway Visual Range lower than 200 m but not less than 7m). It is intended that the airfield will retain its Cat III b operational status following the completion of the Proposed Development. Both European Union Aviation Safety Agency (EASA) Certification Specifications and Guidance Material for Aerodrome Design (CS-ADR-DSN, Issue 6 29 March 2022, available on EASA website) and International Civil Aviation Organisation (ICAO) Aerodrome Design Manual – Part 5 – Electrical Systems (Doc 9–57 - Part 5) 2nd Edition, 2017 (as amended) discuss options for ensuring the reliability and quality of the aerodrome power supplies, these include one or more external sources of supply and the use of local dispersed generation plant. The design objective for the AGL system is such that, upon occurrence of failure or malfunction of the normal supply, automatic transfer takes place to the standby supply within a specified period of time. When the airfield is operating under low visibility procedures the standby AGL generators are run and act as the primary power source for the AGL installation as a whole. This is because the stipulated transfer time of 1 second requires that the generators be brought into operation as the normal supply and the public power source labelled as standby. Should the generator fail the AGL installation drops back to mains power. This procedure is based on the mains being a more reliable source of power than a generator. Presently this requirement is met by the use of diesel-powered standby generators as there is currently no viable alternative which meets licencing requirements with respect to standby power. The airfield designers at detail design stage, shall seek to use alternative more environmentally friendly standby power systems, such as battery storage, UPS or a second public power source designated for service as the standby supply which we are continuing to explore with UKPN. However, the use of diesel generators cannot be ruled out at this stage so has been assessed as worst case.

Action	Description	When	Applicant's response
12	Provide an explanation as to how the risk of flies at the Water Treatment Plant, as a nuisance issue, has been addressed in the statement of statutory nuisance.	D3	The **Statement of Statutory Nuisance (SSN) [APP-169]** notes that the Proposed Development includes a water treatment plant (WTP) in paragraph 4.3.2 and 4.6.5 and has therefore been considered. The WTP would not include treatment processes which would lead to fly breeding or proliferation to cause a nuisance and is not specifically discussed in the SNN. The WTP would include screening and a biological stage that would generate sludge requiring separation and disposal. Only thickening and storage for offsite disposal by tanker is proposed at the WTP which would be an enclosed system, and odour control plant would be provided for malodours areas and operations. The WTP would be located at the east side of the Proposed Development with open space and landscaping to the north and north east, and with and habitats and agricultural land to the north east and east. If the preferred drainage and water treatment strategy described in the **Change Notification – Drainage Strategy [AS-152]** is confirmed, the separation and biological steps would be removed from the treatment process as foul water would be discharged to the sewer rather than treated on site. No changes to the **Statement of Statutory Nuisance (SSN) [APP-169]** are proposed as the SSN has appropriately considered the potential for insects emanating from the Proposed Development that would constitute a statutory nuisance.
14	Provide reference/copies of NATS/CAA records of fuel dumping.	D3	The CAA have provided a statement in the past indicating that fuel dumping is '*not a very common occurrence*' (see Appendix A for full document). Where fuel dumping does occur in an emergency situation the process and reporting requirements are set out in the Manual of Air Traffic Services – Part 1, CAP 493, Civil Aviation Authority, Part 13 – available on their publications website (Ref 8.1). Approach has been made to NATS seeking clarification on this issue, a response is still awaited and the Applicant will provide it to the ExA once received.

Action	Description	When	Applicant's response
15	In light of 24 exceedances identified in ES Appendices 7.3 and 7.4, provide an explanation as to why PM2.5 monitoring is not being considered in these locations (e.g. Airport Way, New Airport Way and Vauxhall Way (near roundabout with Eaton Green Road).	D4	To be provided at Deadline 4.
16	Applicant to provide a note regarding strengthening of the Green Controlled Growth (GCG) Framework for Phase 2a in the	D4	To be provided at Deadline 4.

Action	Description	When	Applicant's response
	absence of any in scope monitoring commitment.		
17	Provide a technical note quantifying the emissions from different airport sources (e.g. aviation, surface access, ground operations) to demonstrate why GCG is correct to focus on surface access only.	D3	This has been provided as a separate technical note submitted at Deadline 3 - **Issue Specific Hearing 5 Action 17 Response Paper - Breakdown of Non-Surface Access Emissions [TR020001/APP/8.63]**.
18	Paragraph 4.4.1 of the GCG framework states that when legal limits change this will trigger a review within 6 months. Paragraph 4.4.2 then explains that there will be no absolute requirement to	D4	To be provided at Deadline 4.

Action	Description	When	Applicant's response
	revise air quality thresholds to align with the new UK legal limits. Provide an explanation as to whether this provision means that the Applicant would not need to comply with UK legislation and why it would be acceptable to wait 6 months when a new legal provision came into force.		
19	Explain what interventions are in the 'toolbox' for air quality.	D3	Text added at Paragraph 3.3.25 in the Deadline 3 version of the **Green Controlled Growth Explanatory Note [TR020001/APP/7.07, Revision 1]**. As discussed here, as air quality is primarily impacted by emissions from airport-related road traffic, the 'toolbox' is likely to significantly overlap with the toolbox of measures under consideration to address the surface access impacts of the Proposed Development.
20	APP-219 GCG Appendix A, Draft Environmental Scrutiny Group Terms of	D3	This has been updated in Paragraph 2.2.43 in the Deadline 3 version of the **Green Controlled Growth Explanatory Note [TR020001/APP/7.07, Revision 1]**, Paragraph A4.5.4 of the Environmental Scrutiny Group Terms of Reference and Paragraph B4.10.4 of the Technical Panels Terms of Reference. Note that in all cases the list is intended to be indicative, and the Environmental Scrutiny Group

Action	Description	When	Applicant's response
	reference section A4.5 sets out reasons why exceedance may not be due to the Airport, which includes 'significant engineering work, road works and other construction activity, not permanent in nature'. Applicant to amend wording of ToR to exclude work attributable to the airport.		will ultimately need to certify that an exceedance of a Level 2 Threshold or breach of a Limit is due to circumstances beyond the operator's control.

REFERENCES

Ref 4.1 IAQM (2023) Guidance on the assessment of dust from demolition and construction, 2023 (Version 2.1). Institute of Air Quality Management, London.
Ref 5.2 Department for Environment Food & Rural Affairs. (2022) Local Air Quality Management Technical Guidance (TG22) August 2022.
Ref 5.3 Highways England (2019). Design Manual for Roads and Bridges Sustainability and Environment Appraisal LA 105 Air quality (revision 0)
Ref 6.4 Environment Agency. Additional guidance for, H4 Odour Management, How to comply with your environmental permit, 2011. Environment Agency, Bristol.
Ref 7.5 Moorcroft and Barrowcliffe. et al. (2017) Land-use Planning & Development Control: Planning for Air Quality. v1.2, 2017. Institute of Air Quality Management, London.
Ref 8.1 Manual of Air Traffic Services – Part 1, CAP 493, Civil Aviation Authority, Part 13 – available on their publications website