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**8.63 Issue Specific Hearing 5 Action 17 Response Paper
- Breakdown of Non-Surface Access Emissions**

Infrastructure Planning (Examination Procedure) Rules 2010

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The Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

**London Luton Airport Expansion Development Consent
Order 202x**

**8.63 ISSUE SPECIFIC HEARING 5 ACTION 17 RESPONSE PAPER -
BREAKDOWN OF NON-SURFACE ACCESS EMISSIONS**

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1 INTRODUCTION

- 1.1.1 This technical note has been prepared in response to Issue Specific Hearing 5 (ISH5), Action 17:
- 1.1.2 “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.”
- 1.1.3 This paper provides details for the emissions from different airport sources (e.g. aviation, surface access, ground operations) to demonstrate why the approach of the **Green Controlled Growth (GCG) Framework [APP-218]** to focus on surface access emissions only is correct.
- 1.1.1 By way of background, the findings in the air quality assessment, set out in **Chapter 7 Air Quality** of the **Environmental Statement [AS-076]**, demonstrate that no significant impacts from air quality as a result of the Proposed Development will occur. The spatial aspect of airport impacts is important to consider and as noted in the Department for Transport’s Air Navigation Guidance 2017 (Ref 1.1) : *“Aircraft engines, airport related traffic on local roads and surface vehicles all contribute to air pollution around airports...Studies have shown that NOx emissions from aviation related operations reduce rapidly beyond the immediate area around the runway”*.

2 SOURCE APPORTIONMENT RESULTS

- 2.1.1 In order to demonstrate the magnitude of impact from various sources in the study area, sites have been selected at locations around the airport and across the study area, such as in Hitchin and the centre of Luton.
- 2.1.2 Table 1 to Table 3 provide the NO₂, PM₁₀ and PM_{2.5} concentrations and source apportionment from background, airport and non-airport sources. A map of the selected locations is provided in Figure 1. The locations chosen for discussion and included in Table 1 to Table 3 and Figure 1 were based on the GCG monitoring locations, representing human exposure, detailed in the **GCG Framework Appendix D - Air Quality Monitoring Plan [APP-222]**. Eaton Green Road, Crawley Green Road and Hitchin locations were consolidated for the following discussion, and H459, Guildford Street, was included as it is located in central Luton.
- 2.1.3 The changes for NO₂ are easier to observe due to the greater relative impact from airport and road sources from this pollutant. The PM₁₀ and PM_{2.5} results are provided, however as can be seen in Table 2 and Table 3, the airport impacts (across all airport sources) are very minor with the main source being background sources. Background sources in this context are defined as non-airport sources, excluding non-airport related road traffic, which is explicitly provided in the tables. Therefore, the NO₂ results are used to summarise the impact of airport operations.
- 2.1.4 At locations close to the airport such as receptor H299 (Dane Street) to the south of the runway the modelling shows that aircraft emissions contribute 31% of total NOx. Similarly at other sites close to the airport such as H44 at Winch

Hill and H415 Wandon End Farm the aircraft emissions contribute 18% and 15% respectively.

- 2.1.5 Moving away from the airport the proportion of aircraft related effects reduces and the effects from road traffic take over as can be seen at H260 (Crawley Green Road) and H459 (Guildford Street, in the centre of Luton).
- 2.1.6 Further away still, the effect of aircraft related emissions drops to well below 5% and the impact from surface access and other background sources is dominant as can be seen in Hitchin (H77), near the M1 (H399) and in Dunstable (H133).
- 2.1.7 It is clear from the data the proportion of aircraft related emissions reduce with distance away from the airport. The proportion of NO_x has been presented in the tables, however it is also useful to consider the total concentrations. As can be seen the total percentages of NO_x from aircraft are higher at near airport locations compared with locations in the near busy roads but the total concentrations are much lower. For example, H299 at Dane Street has an NO₂ total concentration of 15.1µg/m³ which is less than half of the air quality objective. Therefore, whilst the aircraft contribution to the total is higher than at other locations further away it is not likely to result in an exceedance of an objective concentration.

Table 1: NO₂ concentrations predicted at selected receptors

ID	Location	Background	Aircraft Landing Take-off (LTO)	Airside operations	Airport-related road traffic	Non-airport related road traffic	Total (µg/m ³)
H299	Dane Street	64.6%	30.6%	1.7%	0.4%	2.7%	15.1
H44	Winch Hill	76.9%	18.3%	1.5%	0.4%	2.9%	13.1
H415	Wandon End Farm	76.3%	15.3%	2.4%	1.2%	4.7%	12.9
H107	New Airport Way	69.7%	2.0%	0.2%	8.3%	19.8%	19.3
H144	Eaton Green Road	62.2%	12.4%	4.5%	5.7%	15.2%	17.8
H260	Crawley Green Road	65.1%	6.8%	1.3%	1.5%	25.3%	16.2
H459	Guildford Street	81.4%	2.1%	0.2%	0.8%	15.4%	16.8
H133	A505	31.6%	0.2%	<0.1%	1.0%	67.2%	29.3
H399	M1	32.9%	0.3%	<0.1%	3.3%	63.5%	27.1
H77	Hitchin 2	47.6%	0.6%	0.1%	3.1%	48.6%	18.9

Note: Figures rounded to 1 decimal place.

Table 2: PM₁₀ concentrations predicted at selected receptors

ID	Location	Background	Aircraft Landing Take-off (LTO)	Airside operations	Airport-related road traffic	Non-airport related road traffic	Total
H299	Dane Street	99.2%	0.5%	<0.1%	<0.1%	0.3%	12.9
H44	Winch Hill	99.4%	0.2%	<0.1%	<0.1%	0.3%	12.9
H415	Wandon End Farm	99.2%	0.2%	0.1%	0.1%	0.4%	13.1
H107	New Airport Way	95.8%	<0.1%	<0.1%	1.2%	2.9%	15.0
H144	Eaton Green Road	96.7%	0.2%	0.4%	0.7%	2.0%	14.4
H260	Crawley Green Road	96.8%	0.1%	0.1%	0.2%	2.9%	14.9
H459	Guildford Street	98.2%	<0.1%	<0.1%	0.1%	1.6%	15.1
H133	A505	91.7%	<0.1%	<0.1%	0.1%	8.1%	15.6
H399	M1	88.8%	<0.1%	<0.1%	0.4%	10.8%	16.4
H77	Hitchin 2	92.9%	<0.1%	<0.1%	0.4%	6.7%	14.5

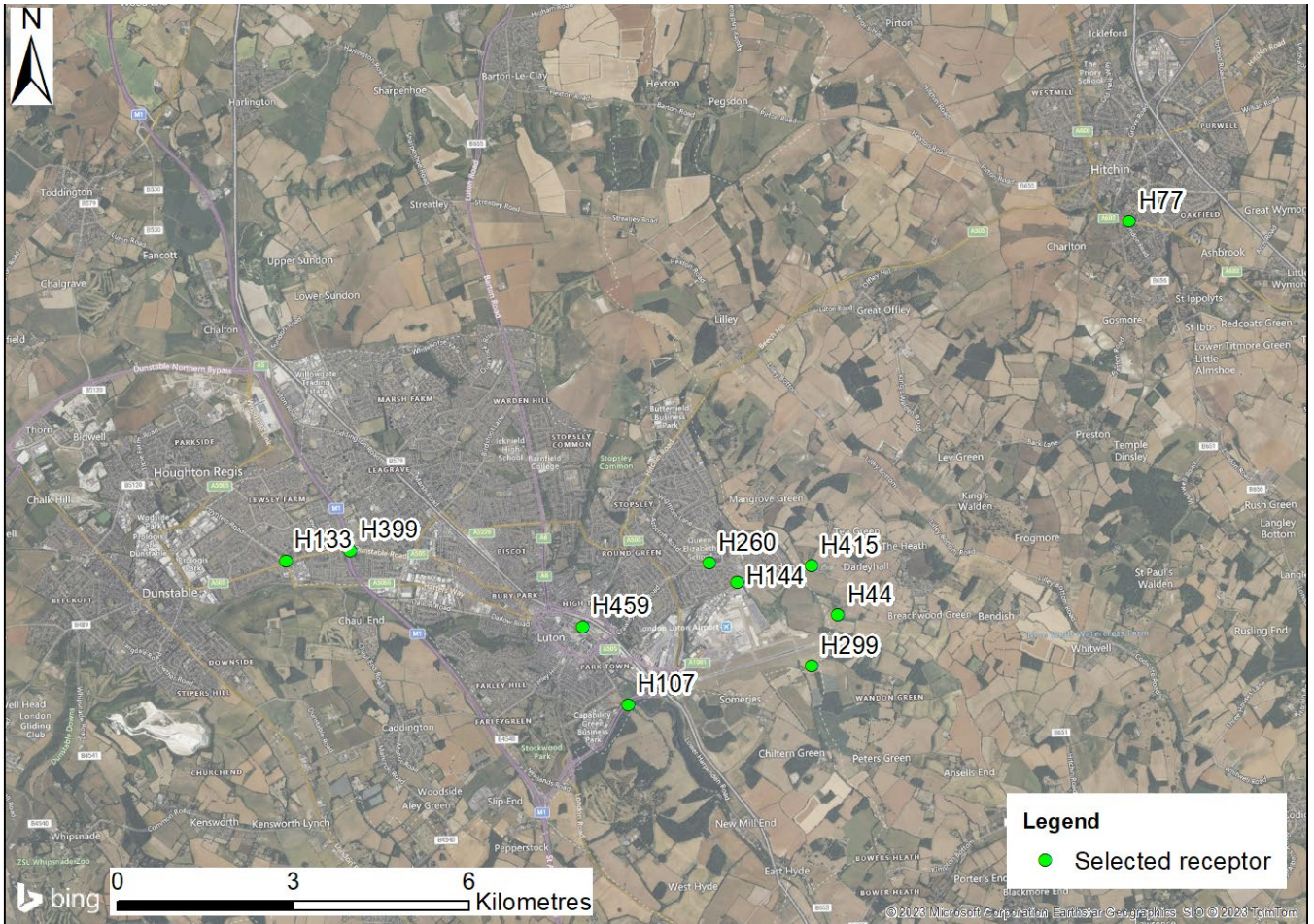
Note: Figures rounded to 1 decimal place.

Table 3: PM_{2.5} concentrations predicted at selected receptors

ID	Location	Background	Aircraft Landing Take-off (LTO)	Airside operations	Airport-related road traffic	Non-airport related road traffic	Total
H299	Dane Street	99.2%	0.5%	0.1%	<0.1%	0.2%	8.9
H44	Winch Hill	99.5%	0.2%	0.1%	<0.1%	0.2%	8.9
H415	Wandon End Farm	99.2%	0.2%	0.1%	0.1%	0.4%	9.0
H107	New Airport Way	96.6%	<0.1%	<0.1%	1.0%	2.4%	10.3
H144	Eaton Green Road	97.1%	0.2%	0.5%	0.6%	1.6%	9.9
H260	Crawley Green Road	97.3%	0.1%	0.1%	0.1%	2.4%	10.2
H459	Guildford Street	98.5%	<0.1%	<0.1%	0.1%	1.4%	10.3
H133	A505	92.6%	<0.1%	<0.1%	0.1%	7.3%	10.6
H399	M1	90.1%	<0.1%	<0.1%	0.3%	9.5%	11.1
H77	Hitchin 2	94.2%	<0.1%	<0.1%	0.3%	5.5%	9.8

Note: Figures rounded to 1 decimal place.

Figure 1: Map of locations



3 GCG DISCUSSION

- 3.1.1 As set out in section 3.3 of the **GCG Explanatory Note [APP-217]**, and in particular paragraph 3.3.7, to determine the shortlist of sensitive locations to include within the **GCG Framework [APP-218]** the locations which have the greatest changes as a result of the Proposed Development have been considered.
- 3.1.2 It was queried why GCG is correct to focus on surface access only. It is confirmed that for air quality all project related emissions are considered, not just those from surface access.
- 3.1.3 The GCG locations have been assessed in respect of all emissions, including from aircraft, and are not restricted to surface access sources. Therefore, the GCG Framework is intended to control all air quality impacts arising from the Proposed Development. The **Air Quality Monitoring Plan** included at **Appendix D** of the **GCG Framework [APP-222]** is not intended to be prescriptive in regards to how this apportionment stage is carried out. The approach will need to reflect the location and circumstances of any given exceedance, and it should also be recognised that given the 20-year expansion programme there are likely to be technological advances in the future that will lead to changes to best practice in monitoring and modelling of air quality. The example of ANPR was chosen as it represents a way in which NO₂ emissions (which are those in scope in the early phases of GCG) associated with airport-related traffic (which is responsible for the majority of airport-related emissions) could be isolated.
- 3.1.4 Notwithstanding this, it is acknowledged that the Examining Authority may seek comfort that emissions associated with non-traffic airport-related sources could be isolated to support the functioning of the GCG Framework. Further information on this will be submitted at Deadline 4 as part of a wider Green Controlled Growth / Air Quality paper that considers other matters raised at Issue Specific Hearing 5.

REFERENCES

Ref 1.1 Department for Transport (2017) Air Navigation Guidance 2017