

December 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 8 Additional Submissions (Examination)

**8.147 Applicant's Response to Issue Specific Hearing 9
Action 26 - Air Quality Monitoring**

Infrastructure Planning (Examination Procedure) Rules 2010

Application Document Ref: TR020001/APP/8.147

The Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

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

**8.147 APPLICANT'S RESPONSE TO ISSUE SPECIFIC HEARING 9
ACTION 26 – AIR QUALITY MONITORING**

Deadline:	Deadline 6
Planning Inspectorate Scheme Reference:	TR020001
Document Reference:	TR020001/APP/8.147
Author:	Luton Rising

Version	Date	Status of Version
Issue 1	December 2023	Additional Submission – Deadline 6

Contents

	Page
1 Introduction	1
2 Monitoring	4
2.1 PM ₁₀ and PM _{2.5} monitoring equipment	4
2.2 Quality Assurance and Quality Control of monitoring	4
2.3 Monitoring locations	5
3 Short-term air quality impacts	5
4 Emission Inventory	6
5 Summary	6
Glossary and Abbreviations	7
References	8

Tables

Table 1: NHDC, DBC and HCC references

1 INTRODUCTION

1.1.1 This summary note has been prepared in response to comments received from: North Hertfordshire District Council (NHDC), Dacorum Borough Council (DBC) and Hertfordshire County Council (HCC) in their Written Representations (WR) **[REP3-089]**. As well as comments within the Local Impact Report (LIR) **[REP3-090]** and the relevant Statement of Common Ground (SoCG) documents at Deadline 2 (12 September 2023) (**[REP2-023]**, **[REP2-024]** and **[REP2-022]** respectively). The relevant items are reproduced in Table 1 for clarity.

1.1.2 Therefore, this note covers the following points:

- a. Air quality monitoring proposed for particulate matter (PM₁₀) and fine particulate matter (PM_{2.5});
- b. Assessment of short-term impacts; and
- c. The use of emission inventories as a measure to control and review emissions of pollutants from the airport.

Table 1: NHDC, DBC and HCC references

Document	ID ref	Council's position
WR [REP3-089]	5.3	<p>“The Applicant’s response is noted, however it does not adequately address the matter. The GCG Framework [APP-218 and APP-222] thresholds for air quality do not address short-term pollution events which can trigger acute health impacts. The Applicant should confirm how short-term pollution events – especially in relation to PM_{2.5} – will be captured and addressed by the Applicant to ensure that airport is not the cause. (For PM_{2.5}, the Hertfordshire Host Authorities have suggested adopting the World Health Organisation interim target 3 for the 24-hour mean concentration of 37.5 micrograms per cubic metre, not to be exceeded more than 3-4 days per year).</p> <p>Also, the Herts Host Authorities remain concerned that the indicative (‘AQ-Mesh’) continuous monitoring method proposed by the Applicant would not meet Defra’s reference method equivalence criteria for particulate monitoring [REP1A-003, paragraph 7.7.15]. Indicative methods are generally not fit for purpose for demonstrating compliance and cannot be relied upon to capture short-term pollution events.”</p>
LIR [REP3-090]	7.4.10	<p>“[...] Furthermore, the Councils consider that the proposed use of ‘AQMesh or equivalent’ is not sufficient to</p>

		<p>demonstrate compliance with Government standards as such indicative methods (even with MCERTS certification) do not meet Defra reference method equivalence criteria. It is the Council's view that the Palas Fidas 200, which meets the Defra reference method equivalence criteria and enables simultaneous measurement of PM10 and PM2.5, would be suitable for this purpose.</p> <p>[...]</p> <p>In its response [REP1-021, page 25], the Applicant refers to the scoping out of short-term effects "<i>... in line with the guidance outlined within Defra LAQM Technical Guidance (2022)</i>". For NO2, the Defra guidance followed by the Applicant is relevant for road traffic sources only since the relationship between annual and 1-hour mean concentrations is largely based on measurements at roadside and kerbside locations. It does not apply to airside sources. The same is true for 24-hour mean PM10 concentrations. Further consideration of short-term pollutant concentrations and airside sources should therefore not be scoped out on the basis of "<i>...Defra LAQM Technical Guidance (2022)</i>".</p>
LIR [REP3-090]	7.7.16	<p>The point made relates to an emissions inventory for all sources associated with airport activities – not ambient air quality monitoring. Whilst the Applicant's Outline Operational Air Quality Plan [APP-065], page 4, paragraph 2.8.4 states "<i>Additional commitments for on-going air quality monitoring include: [...] d. Complete an annual aircraft emission inventory</i>", it is not clear how this is linked to the GCG Framework [APP-218] since it is not mentioned in relation to air quality. Also, the apparent exclusion of other airport related sources is considered a significant omission.</p>
NHDC SoCG [REP2-023]	NHDC63	<p>NHDC has requested the Applicant to review future air quality monitoring considerations. The Applicant will continue to liaise with NHDC regarding monitoring during operation via the SOCG process.</p>
NHDC SoCG [REP2-023]	NHDC64	<p>The Applicant will continue to liaise with NHDC regarding short term effects to air quality from airport (airside and traffic related) activity.</p>

NHDC SoCG [REP2-023]	NHDC65	The Applicant will continue to liaise with NHDC regarding use of emissions inventories for air quality from airport (airside and traffic related) activity.
DBC SoCG [REP2-024]	DBC62	DBC has requested the Applicant to review future air quality monitoring considerations. The Applicant will continue to liaise with DBC regarding monitoring during operation via the SOCG process.
DBC SoCG [REP2-024]	DBC63	The Applicant will continue to liaise with DBC regarding short term effects to air quality from airport (airside and traffic related) activity.
DBC SoCG [REP2-024]	DBC64	The Applicant will continue to liaise with DBC regarding use of emissions inventories for air quality from airport (airside and traffic related) activity.
HCC SoCG [REP2-022]	HCC65	HCC has requested the Applicant to review future air quality monitoring considerations. The Applicant will continue to liaise with HCC regarding monitoring during operation via the SOCG process.
HCC SoCG [REP2-022]	HCC66	The Applicant will continue to liaise with HCC regarding short term effects to air quality from airport (airside and traffic related) activity.
HCC SoCG [REP2-022]	HCC67	The Applicant will continue to liaise with HCC regarding use of emissions inventories for air quality from airport (airside and traffic related) activity.

2 MONITORING

2.1 PM₁₀ and PM_{2.5} monitoring equipment

2.1.1 The use of indicative monitoring has been chosen because it provides a marked improvement in data availability and allows the project to identify peaks in pollutant concentrations, when compared against diffusion tube monitoring and other passive monitoring techniques (e.g. dust flux gauges), which would only provide the average concentration per week or month. Therefore, would not provide the granularity to understand how pollutant concentrations change over much shorter periods, or at times of particular known activities. The Applicant also proposes the use of monitoring technology holding 'monitoring certification scheme' performance standards for indicative measurements of ambient particulates' (indicative MCERTS) (Ref 1).

2.1.2 Indicative monitoring has been chosen over monitoring employing a DEFRA equivalent reference method for continuous ambient monitoring (reference MCERTS monitor) for several reasons:

- d. It is noted that reference MCERTS were required for monitors used for reporting purposes to the European Union, outlined in the Ambient Air Quality Directive (2008/50/EC) and in the amending Directive (EU) 2015/1480. However, this is not the purpose of the GCG monitoring, and therefore, there is no requirement to use reference MCERTS equipment;
- a. The certification of indicative MCERTS monitors applies data quality requirements for the monitors, which means that the data quality for PM_{2.5} and PM₁₀ is fit for the purpose of measuring against GCG limits and thresholds;
- b. As no significant impacts are predicted in the air quality chapter **[AS-076]**, it is considered that the proportionate approach is to use the equipment with a lower total cost as there is a large difference in price and other constraints such as planning, security and electric supply, compared with a large reference equivalent unit; and
- c. Indicative MCERTS monitors can also be deployed more easily in locations where it may be difficult or impossible to locate a reference monitor, thus allowing for more monitoring locations.

2.2 Quality Assurance and Quality Control of monitoring

2.2.1 The indicative continuous monitoring data will be ratified following best practice methods. The monitoring will be subject to a rigorous quality assurance (QA)/quality control (QC) procedure set out below.

2.2.2 Prior to deployment, each monitor will be collocated at a relevant reference monitor to derive a correction algorithm, which will be applied when the monitors are deployed at their destination location. Monitors will be collocated with a reference monitor to allow dynamic calculation of correction algorithms to ensure that the most up to date correction is applied that is representative of current environmental conditions (temperature, relative humidity, ozone, aerosol chemical and physical composition). This should ensure that the monitor is

reporting high-quality data as based on the statement from a 2021 paper (Giordano et al. 2021(Ref 2)):

“As long as sensor users perform collocation calibrations that span the entire range of expected operating conditions (RH, T, PM concentrations), report the specific correction factors (equations) obtained from these collocation studies, and appropriate descriptive metrics for their correction factors (correlation, accuracy, and bias on separate testing data) then trust can be established that low-cost PM sensors are reporting high-quality data.”

- 2.2.3 The quality performance of the monitors will be assessed using methodology recommended in EU guidance and reported in the monitoring reports produced as part of the GCG Framework. Annual results will be calculated in line with the method described in the DEFRA TG22 guidance (Ref 3).

2.3 Monitoring locations

- 2.3.1 Indicative continuous monitoring has been proposed as part of the Green-Controlled Growth (GCG) Framework monitoring at the proposed locations shown in Figure 3.8 of the **Green Controlled Growth Explanatory Note [REP5-020]**. The purpose of this is to monitor the impact of the project at the locations that are forecast to experience the greatest change as a result of expansion. These are located across the administrative areas of Luton, Central Bedfordshire and North Hertfordshire, and are concentrated on the area around the airport with some additional locations in Hitchin, and to the west of Luton and east Dunstable.
- 2.3.2 The locations are considered suitable for the purpose intended.
- 2.3.3 It is noted that a request has been made for additional monitoring at the boundary of the airport. It is understood that the purpose of the request is in relation to monitoring direct airport effects (reducing the dilution of non-airport related sources). Monitoring is proposed to be undertaken near the boundary of the airport as shown in Figure 3.8 in the **Green Controlled Growth Explanatory Note [REP5-020]**.

3 SHORT-TERM AIR QUALITY IMPACTS

- 3.1.1 The air quality assessment (**Chapter 7 [AS-076]**) has provided an assessment of air quality in line with National Legislation. Long term effects have been assessed in the air quality assessment. Based on the monitored and modelled annual mean concentrations, the impact of Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}) are not considered to be at risk of exceeding the short-term standards as outlined in **Chapter 7 [AS-076]**, Paragraphs 7.7.7 and 7.7.8. Therefore, detailed assessment of short-term effects was not undertaken. This is in line with the guidance outlined within the DEFRA TG22 guidance, which is relevant to the receptors assessed.
- 3.1.2 In addition, it should be noted that exposure to short term effects is influenced by a range of lifestyle and travel choices. Short term exposure would only be relevant at locations where people spend time equivalent to the short-term target. Attributing short term peaks to the airport would be a significant

challenge as there are a large number of local variables which could have an influence. As the Environmental Statement (ES) has demonstrated there are no likely exceedances of the short-term objectives, it is not considered necessary to include targets for short term monitoring.

- 3.1.3 With regards to the health impacts from pollutants, an assessment of the health impacts of air quality was undertaken and reported in **Chapter 13 [AS-078]** (Health chapter). This assessment concluded that the development would have no significant impact on health during construction and operation.

4 EMISSION INVENTORY

- 4.1.1 An annual emissions inventory will be carried out to report total emissions from aircraft and on airport sources (GSE, APU etc). The emissions inventory will not include road traffic.
- 4.1.2 The emissions inventory will play a useful role in supporting the validation and understanding of monitoring results carried out as part of the GCG requirements.

5 SUMMARY

- 5.1.1 In summary, the Applicant's choice of method (MCERTS) represents the most robust means available to assess air quality, and indicative post completion continuous monitoring has been proposed as part of the Green Controlled Growth Framework monitoring and will undergo a rigorous QA/QC process.
- 5.1.2 An assessment of short term effects was scoped out of further assessment based on the monitored and modelled annual mean concentrations and low risk of exceeding the relevant short term objectives.
- 5.1.3 An emissions inventory including all aircraft and on airport sources will be carried out on an annual basis.

GLOSSARY AND ABBREVIATIONS

Term	Definition
APU	Auxiliary Power Units
DCO	Development Consent Order
DEFRA	Department of Environment, Food and Rural Affairs
ES	Environmental Statement
EU	European Union
GCG	Green-Controlled Growth
GSE	Ground Support Equipment
LR	Luton Rising
MCERTS	Monitoring emissions to air, land and water
NO ₂	Nitrogen dioxide
NHDC	North Hertfordshire District Council
PM _{2.5}	Fine particulate matter
PM ₁₀	Particulate matter
QA	Quality assurance
QC	Quality control
SOCG	Statement of Common Ground

REFERENCES

Ref 1 Environment Agency (2022) Guidance, MCERTS performance standards for ambient monitoring equipment, Published 6 December 2022

Ref 2 Michael R. Giordano, Carl Malings, Spyros N. Pandis, Albert A. Presto, V.F. McNeill, Daniel M. Westervelt, Matthias Beekmann, R. Subramanian (2021) From low-cost sensors to high-quality data: A summary of challenges and best practices for effectively calibrating low-cost particulate matter mass sensors, *Journal of Aerosol Science*, Volume 158, 2021, 105833, ISSN 0021-8502

Ref 3 Department for Environment, Food and Rural Affairs (DEFRA) (2022) Local Air Quality Management Technical Guidance [online source]. Available at: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>