Gatwick Airport Northern Runway Project

Change Application Report
Appendices C and D

Book 9

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Appendix C – Air Quality Assessment of Non-Road Mobile Machinery for Project Change 3

Air Quality Assessment of Non-Road Mobile Machinery for Project Change 3

1 Air Quality Assessment of Non-Road Mobile Machinery Impacts

1.1.1 Project Change 3 includes Non-Road Mobile Machinery (NRMM) activity associated with the construction of the constructed wetland (reed bed) system. Construction of the reed bed system is estimated to be over 12 months from 2025 to 2026 with the peak construction period being over a three month period.

1.1.2 **Chapter 13 Air Quality** of the **Environmental Statement** (ES) [APP-038] includes an assessment of NRMM equipment and this is detailed in Section 3.12 of **ES Appendix 13.4.1: Air Quality Assessment Methodology** [APP-158]. The construction of the reed bed system was not included in the ES so an assessment has been carried out to evaluate the impact of the additional NRMM activity as a result of Project Change 3.

1.1.3 The nearest sensitive receptors to the NRMM activity are the travellers' site and houses on Radford Road to the south. In addition to the discrete sensitive receptors set out in the assessment in Chapter 13 Air Quality of the ES [APP-038], four additional receptors have been included in the air quality modelling to consider the NRMM impacts at these locations closest to the NRMM activity.

1.1.4 The NRMM equipment has been assessed based on construction design information and the quantities of different types of NRMM set out in **Appendix D Noise Assessment** (Doc Ref. 9.2) of Project Change 3. The NRMM activity was modelled as an area source using Atmospheric Dispersion Modelling System (ADMS) ADMS-Airport (version 5.0.1) covering the reed bed system worksite. This follows the same approach to assessing NRMM emissions as carried out for the ES and detailed within **ES Appendix 13.4.1: Air Quality Assessment Methodology** [APP-158]. Figure 1 presents the location of the NRMM modelled area source and associated human receptors.

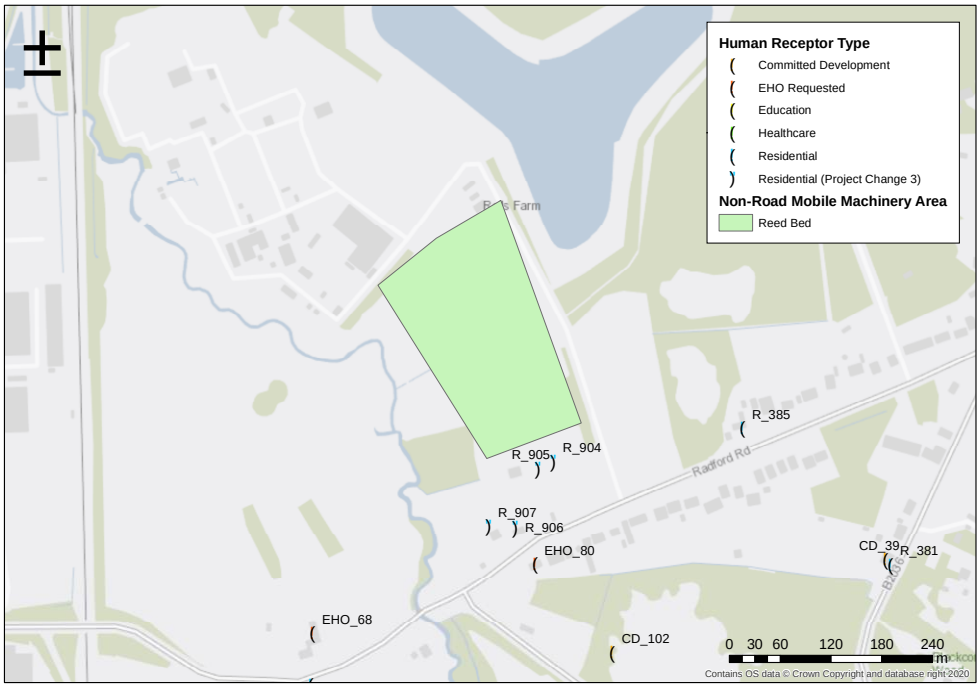

Figure 1: Modelled Human Receptors and NRMM Area for the constructed wetland (reed bed) system

1.1.5 Consistent with the methodology set out in **ES Appendix 13.4.1 Air Quality Assessment Methodology** [APP-158], the sensitivity test was based on a conservative approach. NRMM has been assessed as being in operation 24 hours a day, 7 days a week and were all included for both 2024 and 2029 construction scenarios as a worst case assumption. The emission rates were based on Euro Stage V standards and the power output for the type of NRMM.

1.1.6 The maximum change as a result of the works is predicted to be negligible (<0.1µg/m^3) at the nearest receptors.

1.1.7 The assessment has demonstrated that there are no new significant effects for Air Quality as a result of the additional NRMM activity. Measures will be implemented through the **Code of Construction Practice** (**ES Appendix 5.3.2** [APP-082]) to ensure air quality impacts of construction are minimised. Table 6 of the **Change Application Report** (Doc Ref. 9.2) identifies that there are not anticipated to be any new or materially different significant effects for Air Quality in relation to other air quality sources, including construction traffic and odour.

Appendix D – Noise Assessment of Project Change 3

Noise Assessment of Project Change 3

1 Noise Assessment of Impact: Project Change 3

1.1. Introduction

1.1.1 This document describes the noise assessment for Project Change 3.

1.2. Baseline and Receptors

1.2.1 The site borders Noise Sensitive Receptor Area 11, Tinsley Green, as shown in ES Figure 14.4.2 of **ES Noise and Vibration Figures (Part 1)** [APP-063]. The nearest Noise Sensitive Receptors (NSRs) are the travellers' site and houses on Radford Road to the south. Further East are houses on Balcombe Road, with the Sewage Works located to the North and the airport to the East.

1.2.2 Baseline noise levels were measured at Hoots Cottage, Radford Road, approximately 170m east along Radford Road. **ES Appendix 14.9.6 Baseline Noise Survey Report** [APP-176] gives details of the survey and results, referring to the Hoots Cottage site as Location 15, whereas it is referred to in the **ES Chapter 14 Noise and Vibration** [APP-039] and ground noise in **ES Appendix 14.9.3 Ground Noise Modelling** [APP-173] at Location 13 Hoots Lane. The property is on the south side of Radford Road and the measurements were taken over a two week period in the rear garden approximately 40 metres from Radford Road. Noise sources at this location were noted as mainly road traffic on Radford Road, and also aircraft overflights. The northern most houses and travellers site dwellings closest to the site are located a similar distance from Radford Road, so the baseline measured at the Hoots Cottage baseline site is considered representative of the baseline these nearest NSRs. The measured levels are summarised in Table 1.2.1.

Table 1.2.1: Baseline Noise Levels

Time	Background Noise Level L_{A90} dB	Ambient Noise Level $L_{Aeq,\,T}$ dB
Day 0700-1900	50	58
Night 2300-0700	45	54

1.3. Construction Noise and Vibration

1.3.1 Earthworks required to construct the reed bed ponds and construction traffic on the access route, both within a closest distance of approximately 30 to 40m of the closest homes on the travellers' site, have been identified as the activities required to construct the scheme that are the closest and most likely to give rise to construction noise impacts, and have been modelled using the Plant Team T1 for large earthworks listed in **ES Appendix 14.9.1 Construction Noise Modelling** [APP-171]. To give an account of the range in noise levels expected, the earthworks activity has been modelled in three locations spread north to south across the reed bed site at the furthest, middle and closest area of reed bed pond excavation that will be required. The range of predicted noise levels is given in Table 1.3.1.

Table 1.3.1: Predicted Construction Noise Levels ($L_{eq,\ 12\ hour}$ dB façade)

NSR	No Mitigation	Best Practicable Means Mitigation	Best Practicable Means and Noise Barrier Mitigation
Travellers Site	59/66/78	54/61/73	50/56/65
Radford Farm	56/62/68	51/57/63	51/55/57
Brookside	57/62/67	52/57/62	52/56/57
The range of noise levels cover the construction works furthest/middle/closest			

1.3.2 It is assumed all work will take place in daytime hours, and given the baseline noise levels the NSRs would fall into BS5228 Category A with a LOAEL of $L_{eq\ 12\ hour}$ 65dB and a SOAEL of $L_{eq\ 12\ hour}$ 75dB.

1.3.3 The predicted noise levels with no mitigation are above the LOAEL, so mitigation has been considered as required under the **Code of Construction Practice**, contained in **ES Appendix 5.3.2** [APP-082]. Best Practicable Means to reduce noise on site would be expected to reduce noise levels from large excavation works by about 5dB (as explained in section 14.9 of **ES Chapter 14 Noise and Vibration** [APP-039]). Noise modelling shows a 2.4m high noise barrier located along the south side of the southern pond construction area would be sufficient to reduce noise levels to below the LOAEL at all NSRs, ensuring negligeable and not significant adverse effects.

1.3.4 No driven piling works are required and the works are sufficiently far from NSRs that there will be no significant vibration effects.

1.4. Operation

1.4.1 The main source of noise from the operation of the reed beds is expected to be the blowers that would be required to supply air 24 hours a day in winter months to keep the substrate active. A number of pumps would also be required but these would either be below ground or small and not significant sources of noise offsite.

1.4.2 A set of six blowers would be located to the south of Reed Bed 1 near the centre of the site. Noise data from a typical model of blower that would be required indicates that with the inclusion of an acoustic hood each blower would emit a noise level of approximately 75dB(A) at 1m. Noise modelling indicates a noise level of L_{Aeq} 30dB at the nearest NSRs. The representative Background Noise Level at night in the vicinity of the NSRs is 45dB. Noise from the blowers would be continuous much of the time and is not expected to sound tonal in character at NSRs. An acoustic fencing has been included in the outline design to provide further screening on the east, south and west sides of the blowers to further reduce noise levels at NSRs. Noise from the blowers would be below the representative Background Noise Level resulting in negligeable and not significant noise impacts are not expected.

1.5. Conclusion

1.5.1 There is potential for new significant noise effects at the Travellers site and nearby receptors during earthworks construction to form the nearest reed bed and during operation from unattenuated air blowers operation 24 hours a day.

1.5.2 Mitigation measures have been incorporated so that noise impacts during the construction and operation of the reef beds facility are expected to be negligible. This will ensure that there are now new or in combination adverse noise or vibration effects.