

Memorandum

To: Robin Shepherd, Neil Purvis – Barton Willmore
From: Chris McConnell / Aileen Reed – 24 Acoustics Ltd
Date: 24th November 2020
Job: 6930-5 Rev 3 Ford Airfield

This memo has been prepared to address outstanding queries in relation to the noise assessment at Ford Airfield. This memo should be read in conjunction with 24 Acoustics Report R6930-3 Rev 2.

Environmental noise surveys were carried out over a representative period, all calculations are in line with standard acoustic theory and the noise impacts assessed to all relevant standards and guidance. The noise assessment is therefore robust and reasonable.

We have included our findings in relation to the potential noise impact from the consented scheme at the Grundon site, New Circular Technology Park, on the proposed development at Ford Airfield (Ref F/4/20/OUT). We have also expanded upon the previous noise assessment of noise from Ford Airfield Industrial Estate (including Booth Engineering and HD White) to include non-residential receptors.

Ford Airfield Industrial Estate

Ford Airfield Industrial Estate lies to the west of the site boundary. Our previous noise impact assessment addressed the potential impact of noise from operations on this site, including Booth Engineering and HD White, upon the proposed residential development. It considered the noise impact at the closest proposed residential receptors to the industrial estate. The care home is considered as a residential receptor and as such is included in that assessment. A 3 m high acoustic barrier/bund was recommended along the northern and eastern boundaries of the Industrial Estate.

Application WSCC/096/13/F – New Circular Technology Park

The site at the New Circular Technology Park has permission for a Materials Recycling Facility (MRF), which Grundon is currently operating, however, the permission has not been fully implemented. Certain intensive operations at the site are limited by condition to 07:00 – 20:00 hours Monday to Saturday. Planning conditions 28, 29 and 30 relate to the control of noise emissions from the MRF site.

Potential noise from the fully implemented MRF scheme was assessed as part of the Environmental Statement submitted with the planning application for that development (Environmental Statement for Proposed Waste Treatment Facility, October 2013). Chapter 8 from the ES assessed operational noise from the full scheme, with noise contours shown in Figures 8.2, 8.3 and 8.4. For information these noise contours are provided in Appendix A. With reference to Figure 8.3 it is noted that the access road from the west is to be replaced with a new access road to the east, as per approved application WSCC/027/18/F.

Assessment Criteria

BS 4142: 2014

Noise from industrial and commercial sources impacting upon residential properties should be assessed in accordance with BS 4142: 2014. The standard provides a method for rating and assessing noise from industrial or commercial premises and is relevant to assessing such noise at proposed residential properties. It advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction is applied. The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of

around +5 dBA is likely to be an indication of an adverse impact again depending on the context. Where the rating level does not exceed the background noise (sound) level, this is an indication of the specific sound source having a low impact (depending upon the context).

BB93

The document 'Acoustic design of schools: performance standards, Building Bulletin 93' was published in December 2014 and sets out acoustic performance standards for school buildings. Ambient noise is defined as the total noise from all external sources intruding into the school together with noise from the school's own ventilation or other plant. This includes noise from road, rail and air traffic and industrial/commercial premises. It does not include noise from school activities such as teaching or sports, nor teaching equipment.

The upper limits for internal noise levels within the proposed new teaching rooms are specified in Table I of BB 93 as follows:

Room	Internal Noise Level (dB $L_{Aeq, 30 \text{ mins}}$)
SEN for special hearing and communication needs	30
Classroom, Hall/Studio, Nursery.	35
ICT, Science/DT/Art/Food Tech.	40

Table I: BB 93 Criteria for Internal Ambient Noise Levels

The indoor ambient noise levels must be achieved with adequate ventilation, which may be provided by natural ventilation, mechanical ventilation or a hybrid system. For rooms that are naturally ventilated, 'normal operation' is defined in BB 93 as providing a minimum ventilation rate of approximately 5 l/s per person. Under this 'normal operation' condition, BB 93 permits internal noise levels that are up to 5 dB above the performance standards for internal noise levels in Table I of BB 93. Note that this relaxation does not apply where the upper limit is greater than or equal to 45 dB $L_{Aeq, 30 \text{ min}}$.

Under BB 93, where natural ventilation is to be used under normal operational conditions (i.e. a minimum ventilation rate of approximately 5 l/s per person), upper internal noise limits of 40 dB $L_{Aeq, 30 \text{ min}}$ would apply within the classrooms of the proposed school. In 24 Acoustics' experience, the attenuation provided by an open window, in terms of the difference between an external and internal noise level, is approximately 18 dBA for classrooms that meet the reverberation requirements of BB 93.

Employment Land

Table 6 of BS 8233 recommends internal noise levels in study and work areas in non-domestic buildings of 35 – 45 dB L_{Aeq} in staff/meeting rooms and training rooms and 35 – 40 dB L_{Aeq} in executive offices. On that basis, assuming 15 dB across an open office window, a target external noise level of 50 dB L_{Aeq} is considered appropriate.

External Amenity

Noise levels in external amenity areas are generally subject to an aspirational target noise level of 55 dB $L_{Aeq, 16hr}$. This is considered an appropriate target noise level for existing and proposed playing fields in the vicinity of the Grundon site.

Noise Impact Assessment

Ford Airfield Industrial Estate

Noise from Ford Airfield Industrial Estate has been assessed based on noise measurements undertaken at the boundary of the proposed development site. This is considered a robust approach and is reasonable for an outline application, in the absence of detailed noise contours from the industrial sources.

It is recommended that the 3 m barrier/bund proposed for the northern and eastern boundaries of Ford Airfield Industrial Estate be extended along the southern boundary as shown in blue in Figure 1. Using the noise levels measured on the site boundary, the acoustic screening from the barrier will ensure that noise levels in the grounds of the proposed primary school external to the school building are no greater than 50 dB $L_{Aeq, 30 \text{ min}}$. This will allow acceptable internal noise levels to be achieved in classrooms, with windows open, to meet the requirements of BB93.

Noise levels from operations on Ford Industrial Estate will result in noise levels less than 50 dB L_{Aeq} at the existing and proposed sports facilities and this is considered acceptable in planning terms.

New Circular Technology Park

The revised parameters plan for the development at Ford Airfield includes an increased buffer zone of 100 m between the Grundon site and the closest proposed residential properties to the west, as shown in Figure 2. This assessment includes the following mitigation measures, as recommended in 24 Acoustics' noise impact assessment report R6930-3 Rev 2:

- (i) Gardens located to not face the industrial sources, i.e. acoustically screened by the dwellings;
- (ii) Orientation of dwellings so that no habitable rooms are directly facing the industrial sources.

The noise contours provided in the ES for the full MRF scheme (see Appendix A) have been analysed to determine the daytime and night-time noise levels at the closest proposed residential properties. It has been determined that the closest residential properties would be located within the following noise contours, in terms of the BS 4142 rating level:

Daytime (07:00 – 23:00)	35 to 39 dB $L_{Ar, Tr}$
Night (23:00 – 07:00)	35 to 39 dB $L_{Ar, Tr}$

The above noise levels have been corrected for acoustic screening below to determine the noise levels at the habitable rooms of the closest proposed properties (not facing the Grundon site), using the upper values from the noise contours as a worst-case. The noise impact has then been assessed in accordance with BS 4142, using the background noise levels measured by 24 Acoustics in July 2018 (as presented in technical report R6930-3 Rev 2).

The results of the BS 4142 assessment for daytime and night-time periods are summarised in Tables 1 and 2 below.

Description	Noise Level
BS 4142 rating level (with mitigation)	29 dB $L_{Ar, 1 \text{ hour}}$
Typical Background Noise Level (07:00 – 23:00)	34 dB $L_{A90, 1 \text{ hour}}$
BS 4142 Assessment Level	-5 dB

Table 1: BS 4142 Noise Impact Assessment, Proposed Dwellings to West of Grundon MRF, daytime hours 07:00 – 23:00

Description	Noise Level
BS 4142 rating level (with mitigation)	29 dB $L_{Ar, 15 \text{ min}}$
Typical Background Noise Level (07:00 – 23:00)	27 dB $L_{A90, 15 \text{ min}}$
BS 4142 Assessment Level	+ 2 dB

Table 2: BS 4142 Noise Impact Assessment, Proposed Dwellings to West of Grundon MRF, night-time hours 23:00 – 07:00

The assessments in Tables 1 and 2 indicate that, with mitigation as recommended, the difference between the BS 4142 rating noise level and the prevailing typical background noise level will be in the region of – 5 dB for daytime periods and + 2 dB for night-time periods. Under BS 4142 this is considered a low noise impact given the context of the site, and this is therefore considered acceptable.

Noise contours in Appendix A show that in the location of the proposed school, noise levels due to the Grundon site are predicted to be less than 35 dB $L_{A_{r,T_r}}$. It is clear that this site does not make a significant contribution to noise levels at the site of the proposed school and this does not need to be considered further.

It can be seen from Appendix A that noise levels in the area to the east of the Grundon site, which is allocated for employment land, are 40 - 49 dB $L_{A_{r,T_r}}$ during the day. Utilising the highest of these levels, and assuming 15 dB reduction in noise level across an open office window, would indicate internal noise levels no greater than 34 dB $L_{A_{eq}}$. This meets the recommended noise levels for executive office spaces in BS 8233 and is therefore considered acceptable in planning terms.

For playing fields to the west of the Grundon site, the noise contours in Appendix A indicate noise levels within the range 35 - 39 dB $L_{A_{r,T_r}}$ during the day. This is well below the recommended criteria of 55 dB $L_{A_{eq}}$ and is therefore considered acceptable in planning terms.

Summary

The above assessment demonstrates that the noise impact from the consented MRF scheme at the Grundon site upon residential and non-residential elements of the proposed Ford Airfield development would be acceptable. Recommendations are made for extending the acoustic barrier/bund around the Ford Airfield Industrial Estate and on that basis, noise levels at the school site and at the playing fields from operations within the Industrial Estate will be acceptable.

Environmental noise surveys were carried out over a representative period, all calculations are in line with standard acoustic theory and the noise impacts assessed to all relevant standards and guidance. The noise assessment is therefore robust and reasonable.

FIGURE I – UPDATED ACOUSTIC BARRIER/BUND– FORD AIRFIELD INDUSTRIAL ESTATE

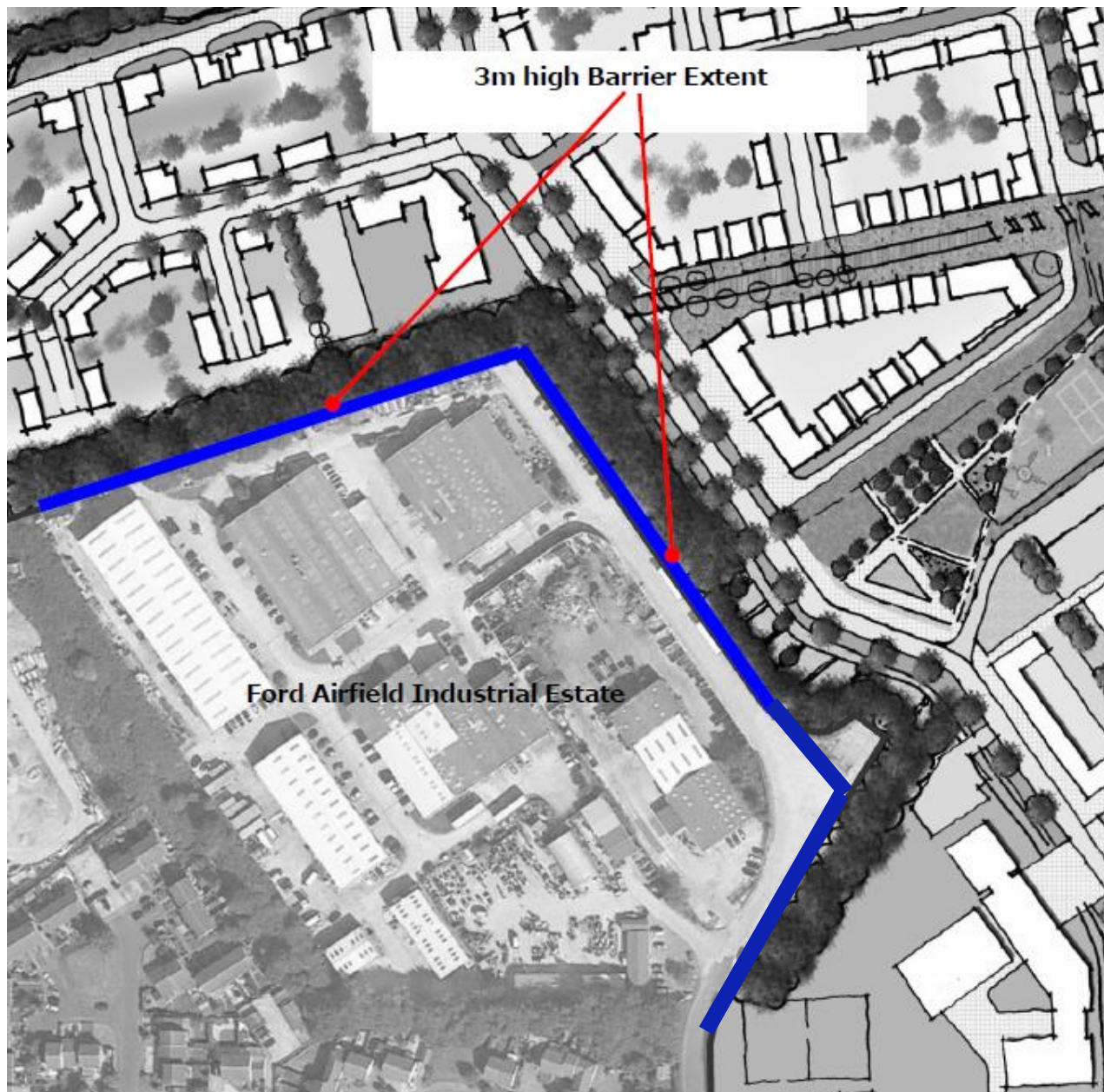
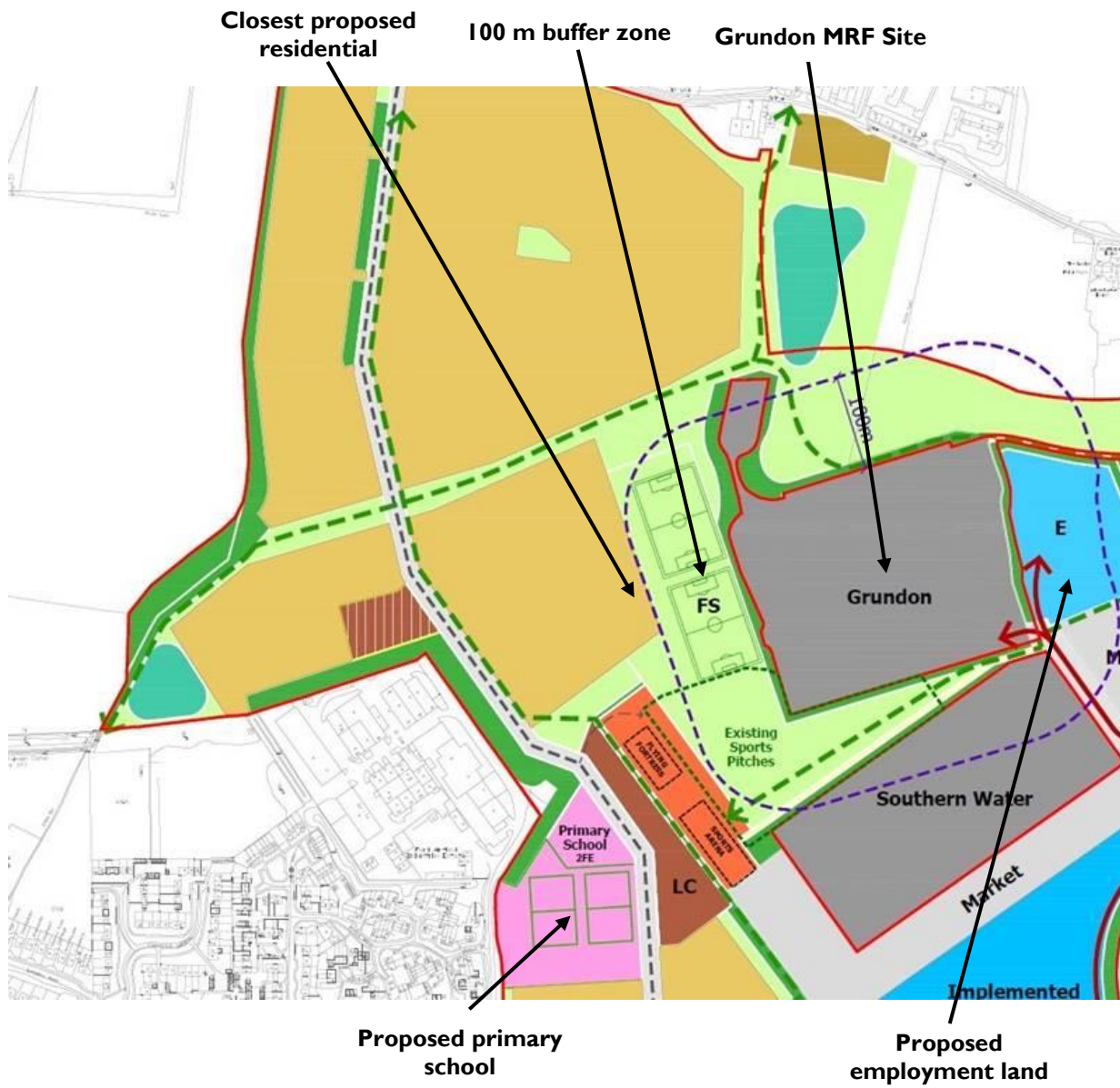
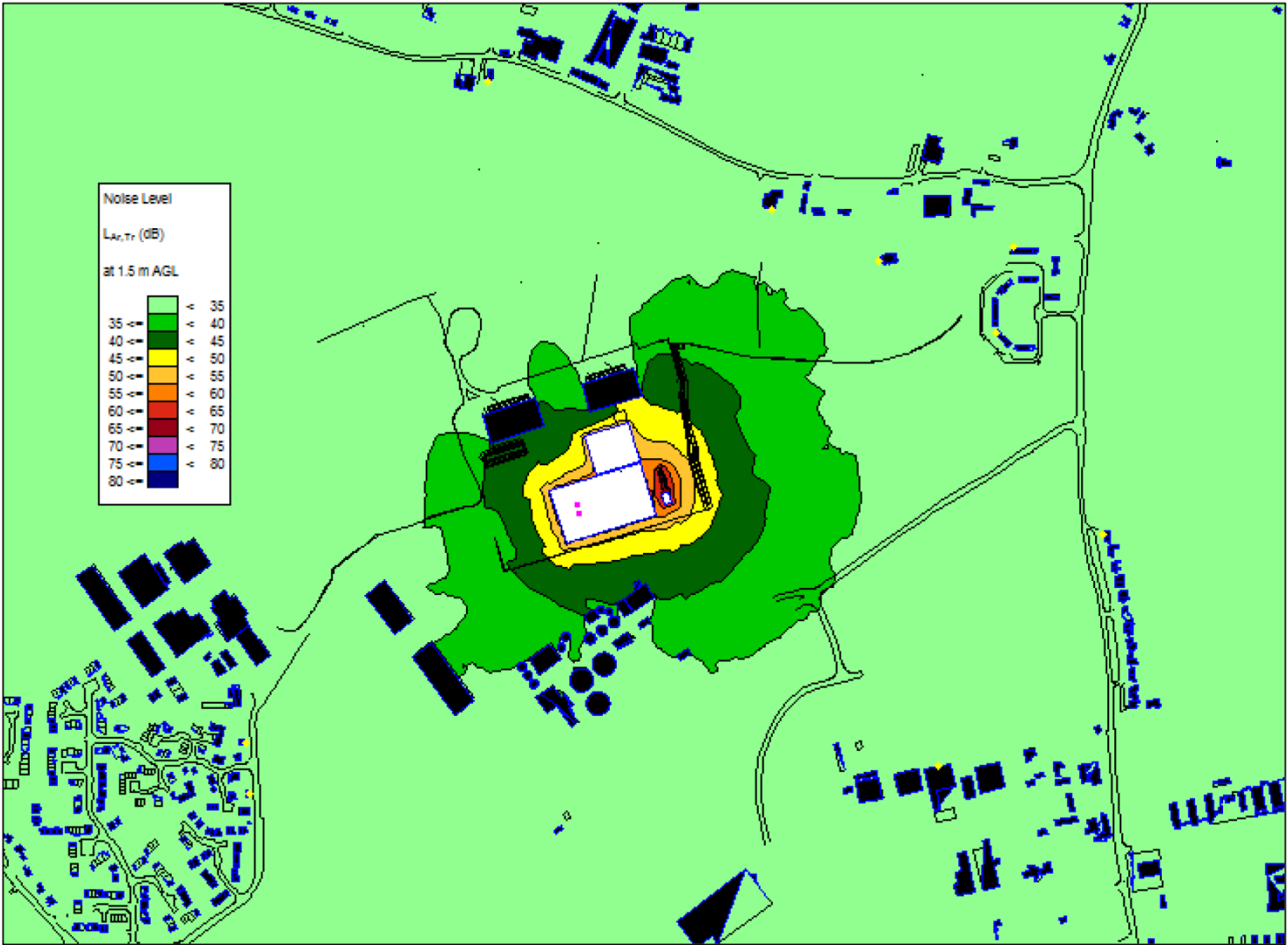


FIGURE 2 – UPDATED PARAMETERS PLAN

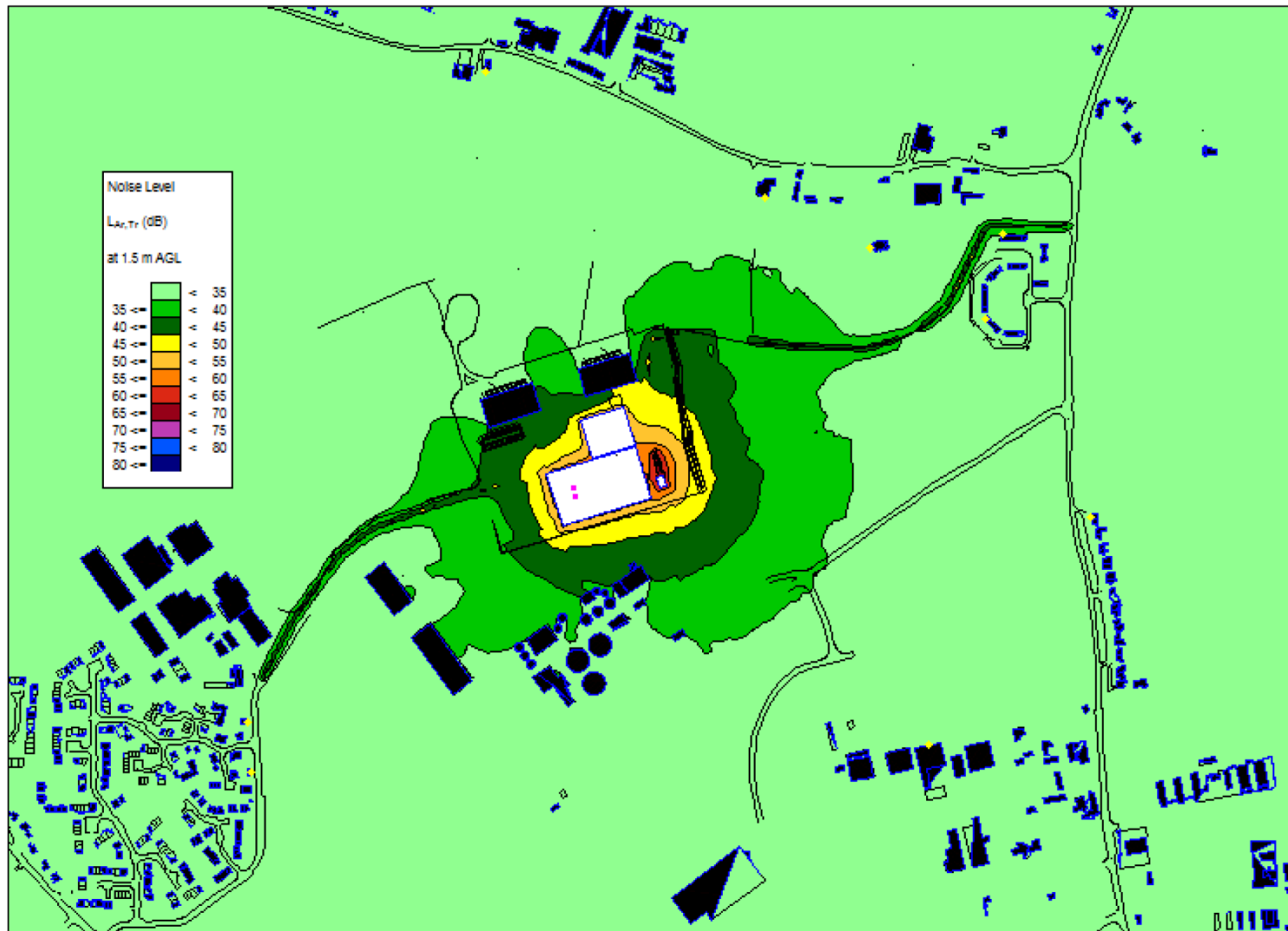


APPENDIX A – NOISE CONTOURS FROM ES FOR APPLICATION WSCC/096/13/F



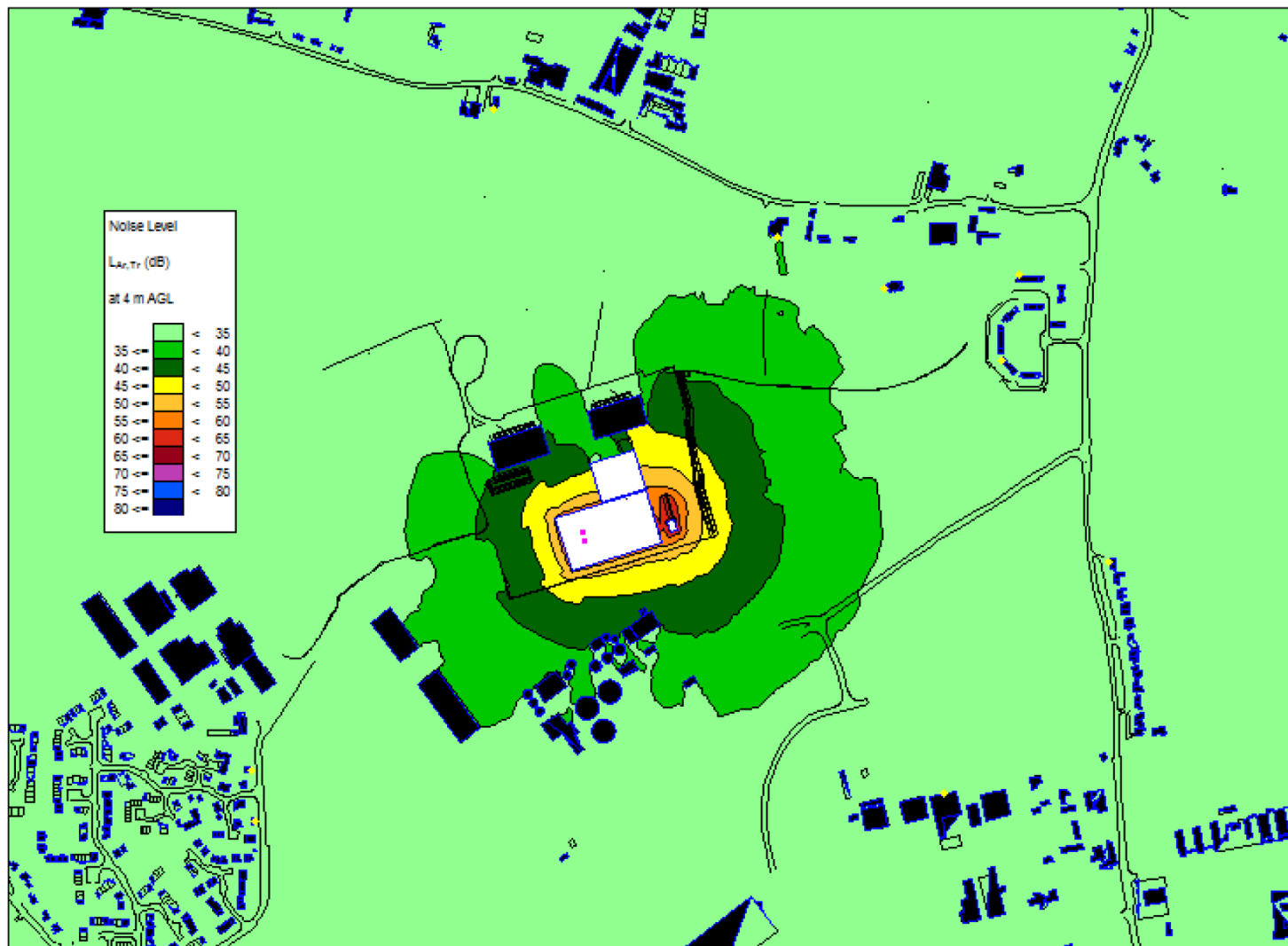
RPS

Figure 8.2: Daytime Site Only Operational Noise Level at 1.5 m



RPS

Figure 8.3: Daytime Site Including HGVs Operational Noise Level at 1.5 m



RPS

Figure 8.4: Night-time Site Only Operational Noise Level at 4 m