



One Housing Group

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# LAND NORTH OF WATFORD ROAD

Review of Potential Noise Impacts





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Review of Potential Noise Impacts

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The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations WSP UK Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

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# 1 INTRODUCTION

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## 1.1 INSTRUCTION

- 1.1.1. WSP has been instructed by One Housing Group Limited to undertake a review of the potential noise impacts that might result from a proposed commercial development at Land North of Watson Road (LNWR) which is sited to the north of a residential development site in its ownership.

## 1.2 BACKGROUND

- 1.2.1. The residential development site, known as North End Farm (NEF), which is outlined in blue in Figure 1-1 below, received conditional outline planning permission for 39 dwellings from Bedford Borough Council (BBC) in February 2016 (14/00700/MAO). A detailed application (19/02289/MAF) for a similar 39 dwelling development for the site was validated by BBC in October 2019.
- 1.2.2. On 18 December 2019 an outline application (19/01137/MAO) for the erection of up to 3 employment units on 'Land North of Watson Road' (LNWR), situated around 35m to the north of the NEF site, was approved by BBC. The LNWR site will form a northern extension to Wilstead Industrial Park (WIP). The extent of the LNWR site is shown in red in Figure 1-1.
- 1.2.3. Although the layout was reserved, two illustrative layouts were provided with the outline application, one with two units and one with three units. Both of the illustrative layouts provided staff car parking to the east of the site which would create a buffer between the access road and the service yard and residential receptors to the east of Bedford Road. The positioning of the proposed buildings would have also offered some noise screening with respect to those receptors. The illustrative layouts submitted with the outline application are presented in Figures 1-2 and 1-3 below.
- 1.2.4. The application for all of the reserved matters (19/02724/MAR) for LNWR was validated on the same day as the approval of the outline application but presented a significantly different layout, as shown in Figure 1-4. The layout in the reserved matters application would position the internal site access and security checkpoint to the east, in closer proximity to residential receptors, and the Unit 3 building would not offer any effective screening with respect to noise from the service yards and HGV parking and manoeuvring areas. Consequently, the noise impacts predicted at receptors would be greater than those accepted in the determination of the outline application.
- 1.2.5. Both the outline and reserved matters applications for LNWR were accompanied by noise assessment reports. The former by produced by Air and Acoustic Consultants (A&AC) reference 100267\_001 – dated May 2019 and the latter by Delta Simons (DS) reference 19-1495.03 dated December 2019. These are considered in the following sections.
- 1.2.6. By way of background, an earlier application to redevelop the eastern part of the WIP (application no. 18/0956/MAF) was approved by BBC in March 2019. That redevelopment will comprise three new industrial warehouse units with B2 and B8 uses and is referred to WIP Phase 3. The approximate extent of the WIP Phase 3 site is shown in yellow in Figure 1-1.
- 1.2.7. The WIP Phase 3 application was accompanied by a noise assessment provided by Hoare Lee (REP-1010054-AM-201117-R2) which recognised that unmitigated operations at the WIP Phase 3 would be likely to cause noise impacts at the NEF and accordingly recommended a 4.5m tall acoustic barrier adjacent to the NEF site. BBC decision 19/02084/M73, issued in December 2019, confirmed that the acoustic barrier should be constructed and retained indefinitely by the applicant.

Figure 1-1 - The Development Sites

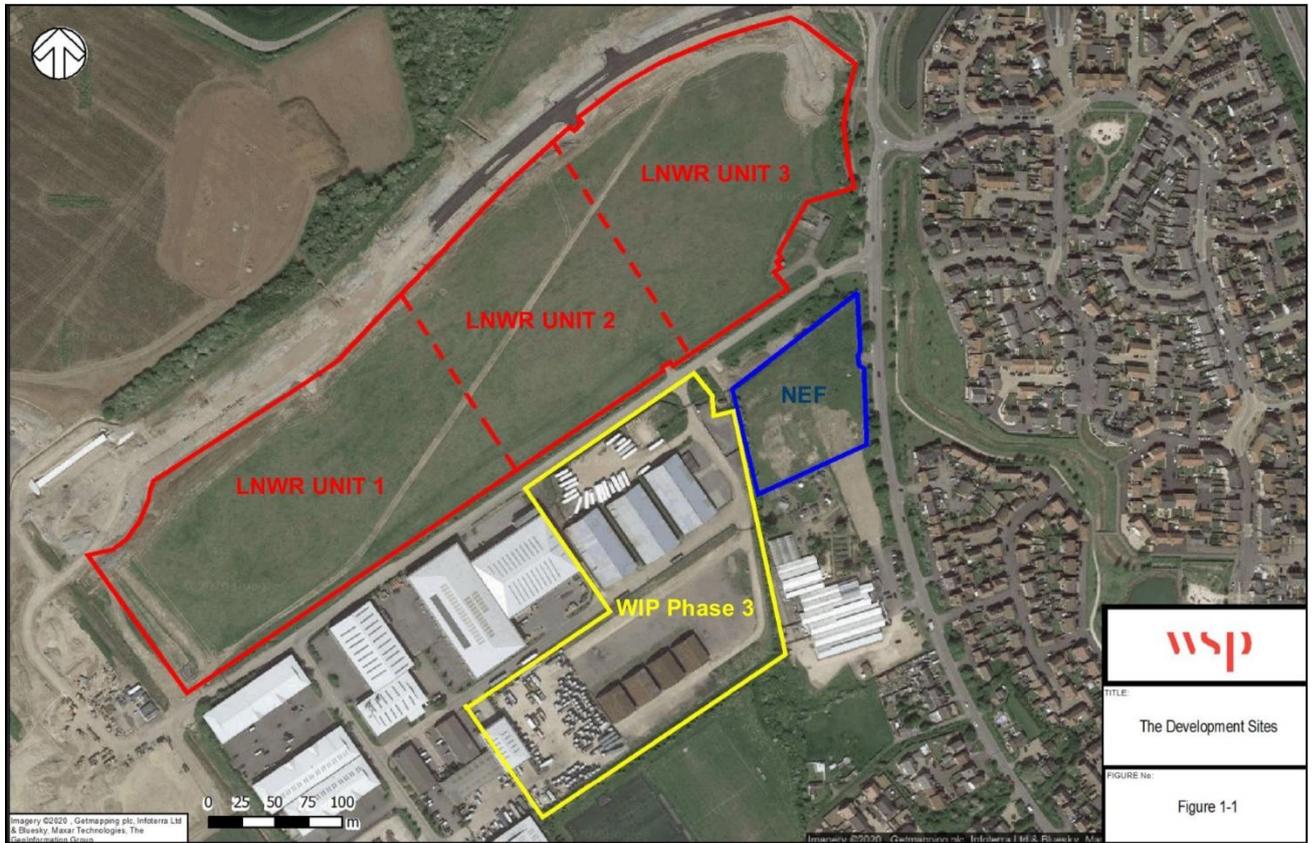


Figure 1-2 - LNWR Outline Illustrative Layout Option 1

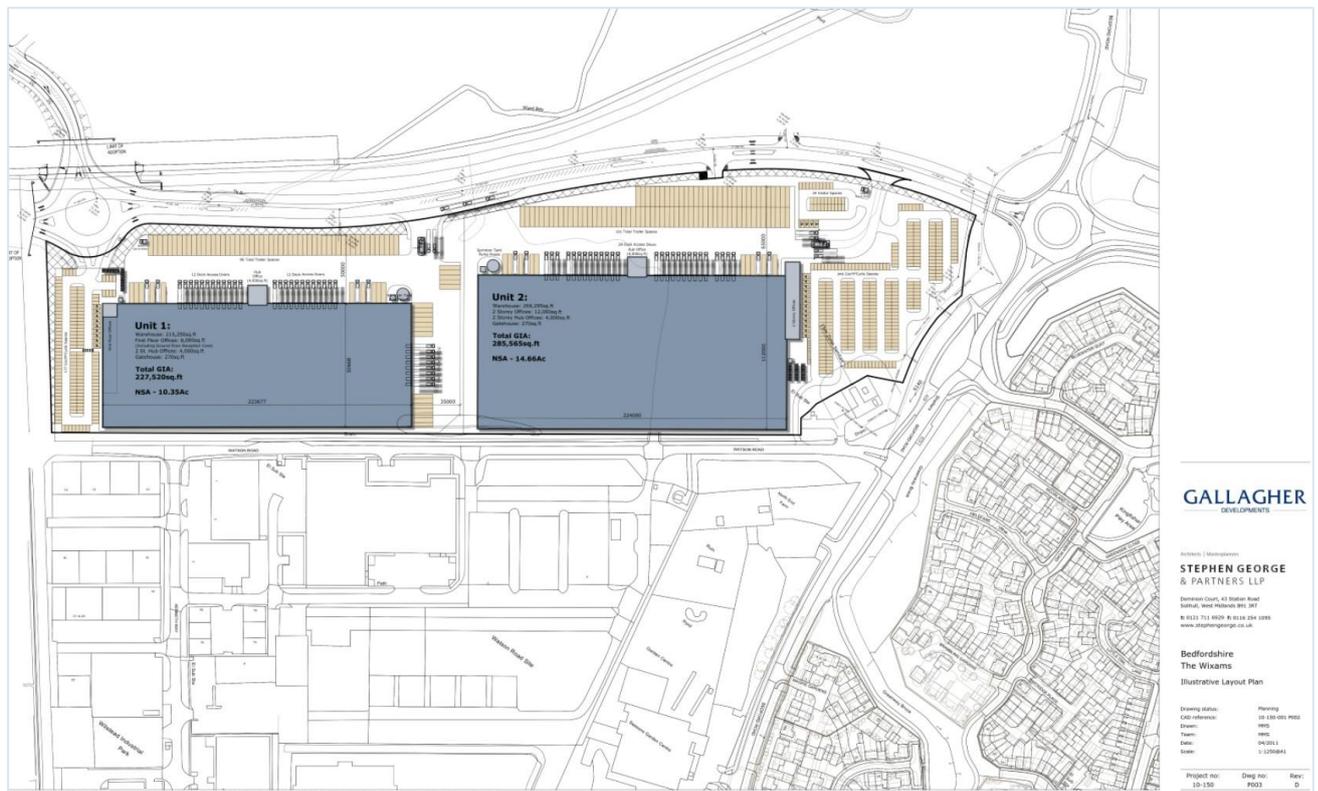


Figure 1-3 - LNWR Outline Illustrative Layout Option 2

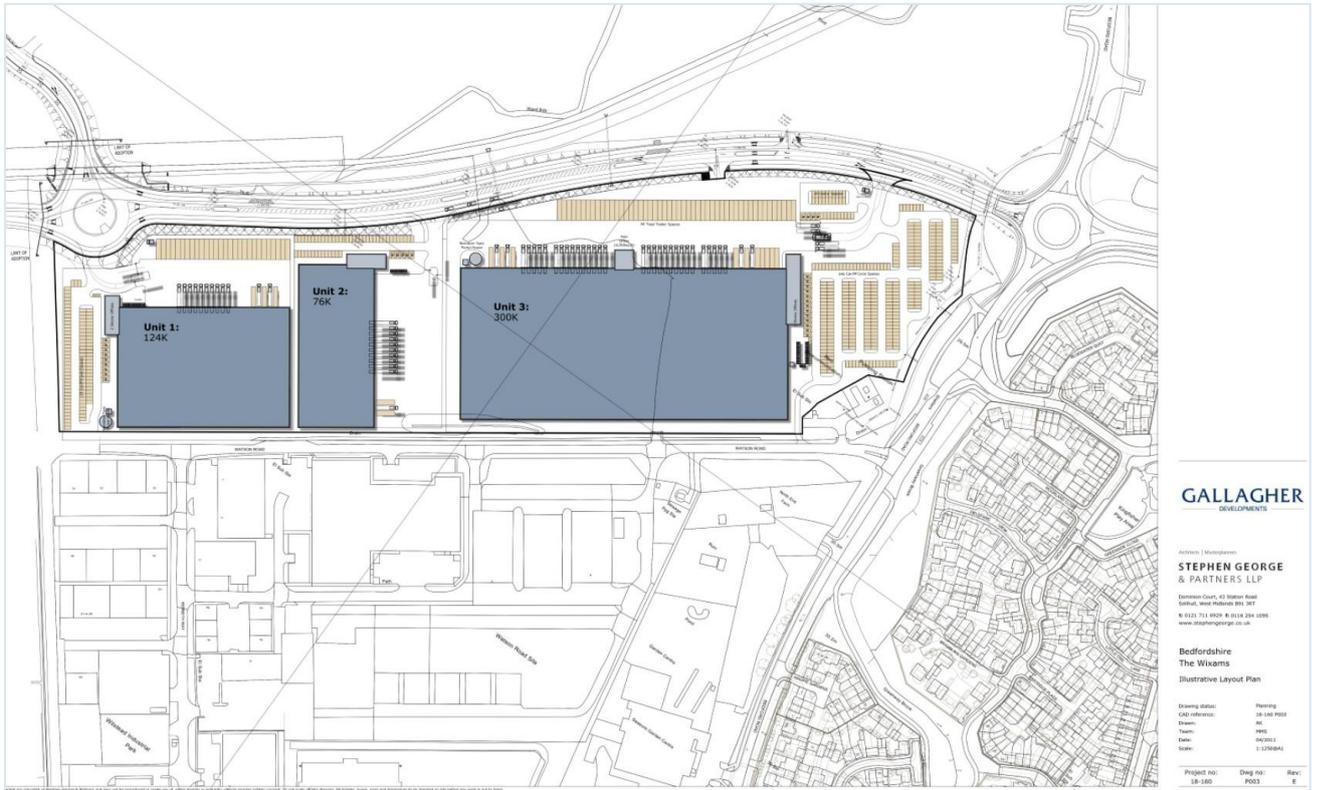


Figure 1-4 - The Reserved Matters Layout



## 2 POLICY, GUIDANCE AND STANDARDS

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### 2.1 OVERVIEW

- 2.1.1. This section considers the national and local planning policies and national and international guidance and standards which have the most relevance to the assessments.
- 2.1.2. The local policies described in section 2.3 include those from the Bedford Borough Local Plan 2030 which was adopted in January 2020, which was after both the A&AC and DS noise reports were written and submitted.
- 2.1.3. In addition to the guidance and standards described below, the A&AC report also references the World Health Organisation Guidelines for Community Noise 1999 and the Department of Transport's Memorandum: Calculation of Road Traffic Noise, 1998 (CRTN). Reference to those documents was not considered necessary as part of this review.
- 2.1.4. The guidance and standards summarised in the DS report are the same as those set out below, albeit the detail of those summaries differs.
- 2.1.5. Both the A&AC and DS assessment approaches rely heavily on the guidance set out in BS 4142:2014 (which now incorporates 2019 addendums) with the residential design criteria presented in BS 8233:2014.

### 2.2 NATIONAL PLANNING POLICY

#### NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 2.2.1. The original NPPF was published by central government in 2012 with a revised version published in February 2019. It replaces previous noise policy contained in Planning Policy Guidance Note 24. It does not replace the Noise Policy Statement for England 2010 to which it refers.
- 2.2.2. The NPPF is a concise document that provides its position on noise primarily in paragraph 180 which is reproduced below:

*'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life<sup>60</sup>;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

*Footnote 60 See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)'*

- 2.2.3. Paragraph 182 of the NPPF provides additional policy information applicable where new development is proposed close to existing commercial noise sources and is reproduced below.

*‘Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.’*

## **THE NOISE POLICY STATEMENT FOR ENGLAND (NPSE)**

- 2.2.4. This provides more detail than the NPPF setting out the long-term vision of Government noise policy and applying to all forms of noise excluding occupational noise. The NPSE repeatedly refers to the management and control of noise within the context of Government Policy on sustainable development.
- 2.2.5. The NPSE also stresses that noise should not be considered in isolation from other related factors. At paragraph 2.7 for example it states:
- ‘...the application of the NPSE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a particular policy, development or other activity may not have been given adequate weight when assessing the noise implications.’*
- 2.2.6. The NPSE introduces and describes three categories, or levels, describing the presence or absence of noise effects but does not quantify those categories, stating that the corresponding objective levels are likely to be different for different noise sources, receptors and times of the day or night. These categories are:
- NOEL – No Observed Effect Level – This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise
  - LOAEL – Lowest Observed Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected
  - SOAEL – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur.
- 2.2.7. The NPSE recognised that, at the time of publication, further research was needed into how these categories might be quantified for different scenarios. There is still no robust, universally accepted method of deriving suitable values and a variety of approaches are adopted in different circumstances.

## **2.3 LOCAL POLICY**

- 2.3.1. The Bedfordshire local plan 2030 Adopted version (BBC Local Plan) was adopted in January 2020. Whilst noise features in a number of policies, the one with the most relevant to potential noise impacts from the proposed development is set out below.

## **Policy 32 – The impact of development – disturbance and pollution impacts**

*Development proposals should ensure that they minimise and take account of the effects of pollution and disturbance. Planning applications should give particular attention to all of the following considerations:*

- i. Noise, vibration, smell, harmful emissions, impact on water quality, light glare or other disturbance or pollution which is likely to be generated by the development.*
- ii. The existing tranquillity of the area.*
- iii. The suitability of the existing environment in relation to nuisance or pollution in the vicinity of the site.*
- iv. Factors which might give rise to disturbance to neighbours and the surrounding community, including overlooking, crime and community safety concerns.*
- v. Arrangements for dealing with waste (including recyclable materials) storage and collection.*
- vi. The impact of development on locally, nationally and internationally important habitats (including Natura 2000 sites) as a result of changes in ground water and surface water.*

*Developers will be required to implement or contribute towards measures to mitigate adverse impacts.*

## **2.4 GUIDANCE AND STANDARDS**

### **PLANNING PRACTICE GUIDANCE (PPG)**

- 2.4.1. The Government launched the PPG web-based resource in March 2014 and refreshed it in July 2019. The section on noise provides tabulated descriptions of example outcomes of the categories introduced in the NPSE based on the likely average response. It also adds a fourth category termed Unacceptable Adverse Effect (UAE). The tabulated descriptions are summarised in Table 2-1 below.

**Table 2-1 – Outcome Descriptors for Noise Effect Levels**

Perception	Examples of outcomes	Increasing effect levels	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

2.4.2. The PPG recognises that there is not a simple relationship between measured or predicted noise levels and the resultant impact and that this will depend on how various factors combine. The factors thought to be most relevant in this assessment are:

- The source and absolute level of the noise together with the time of day it occurs
- For non-continuous sources of noise, the number of noise events and the frequency and pattern of occurrence of the noise
- The spectral content and general character of the noise i.e. tonal or with other particular features
- The local topology and topography
- The existing or, where appropriate, planned character of the area

### **BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND**

2.4.3. This Standard provides an assessment method for noise arising from commercial noise sources, including external plant and on-site vehicle movements and unloading, at residential receptors. It is a relative assessment approach whereby the predicted commercial sound level (suitably penalised for potentially annoying characteristics if appropriate) is compared with the prevailing background noise level. A summary of the BS 4142 approach is set out below.

- Establish the specific sound level of the source(s);
- Measure the representative background sound level;
- Correct the specific sound level for on-time and any noise contributions from unrelated sources if necessary;
- Rate the specific sound level to account for distinguishing characteristics;
- Estimate the impact by subtracting the background sound level from the rating level; and
- Consider the initial impact estimation in the context of the noise and its environs.

2.4.4. Where the sound source is not yet present, the specific sound level is established by calculation. The representative background sound level is established by measurement at the receptor location.

2.4.5. The specific sound level can then be upwardly adjusted, by adding feature corrections for one or more distinctive characteristics, to derive the sound rating level. The feature corrections are summarised below:

- Tonality up to 6 dB
- Impulsivity up to 9 dB
- Other sound characteristics up to 3 dB
- Intermittency 3 dB

2.4.6. An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level as described in section 11 of BS 4142:2014. The results of this comparison are assessed on the basis of the following guidance:

- Typically, the greater the difference, the greater the magnitude of the impact;

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

2.4.7. All pertinent contextual considerations should be taken into account including the following:

- The absolute level of the sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

2.4.8. The reporting requirements for the Standard include details of how assessment uncertainties were considered and minimised, and the qualifications and experience of acousticians involved in the assessment.

### **BS 8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS**

2.4.9. The guidance provided includes appropriate internal and external noise level criteria, which are applicable to dwellings exposed to steady external noise sources. It is stated that it is desirable for internal ambient noise levels not to exceed the criteria set out in Table 4 of the Standard, which are reproduced in Table 2-2 below, although Note 7 to the table states that reasonable internal conditions can still be achieved with the tabulated values relaxed by up to 5 dB.

**Table 2-2 – Summary of Internal Ambient Noise Level Criteria for Habitable Rooms from BS 8233:2014**

Activity	Location	Period	
		07:00 to 23:00 hrs	23:00 to 07:00 hrs
Resting	Living Room	35 dB $L_{Aeq,16h}$	
Dining	Dining Room/area	40 dB $L_{Aeq,16h}$	
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

2.4.12. Note 4 to Table 4 advises that regular noise events (for example, scheduled aircraft) can cause sleep disturbance and that a *'guideline value may be set in terms of SEL or  $L_{Amax,F}$ , depending on the character and number of events per night'*.



2.4.13. With respect to external amenity space such as gardens and patios, it is stated that it is desirable that the noise level does not exceed 50 dB  $L_{Aeq,16h}$ , with an upper guideline value of 55 dB  $L_{Aeq,16h}$ , being acceptable in noisier environments.

### 3 NOISE SENSITIVE RECEPTORS

#### 3.1 EXISTING RESIDENTIAL RECEPTORS

- 3.1.1. The closest existing residential receptors to the LNWR development site are located to the east of Bedford Road. These comprise two and three-storey houses and flats at Bluewater Quay, Brooklands Avenue, Moorland Close, Fieldfare View and Kingfisher Road. These include properties with habitable rooms which directly overlook the LNWR site as well as relatively exposed residential gardens.
- 3.1.2. Assessment locations that are broadly representative of these receptors have been considered in the A&AC noise assessment presented at outline and the DS report submitted with the reserved matters application.

#### 3.2 PROPOSED RESIDENTIAL RECEPTORS

- 3.2.1. Both the A&AC and DS noise reports included noise predictions and assessments at proposed residential receptors to the south-west of the development site. However, in contrast to the HL noise assessment, they both failed to refer to, or consider potential impacts at, the NEF site to the south.
- 3.2.2. The principle of residential development at the NEF site was established by virtue of outline consents issued in 2011 and in 2016. The indicative residential layout presented as part of the 2016 consent (14/00700/MAO) is presented at Figure 3-1(a) below with the layout submitted with the current detailed application in October 2019 (19/02289/MAF) shown at Figure 3-1(b).

**Figure 3-1 - Proposed Layout of the NEF Site in (a) 2016 and (b) 2019**



**(a) Indicative Layout 2016**

**(b) Detailed Layout 2019**



- 3.2.3. Given the established precedent for the residential use of the NEF site and the undetermined detailed application that was submitted in October 2019, it is suggested that it is incumbent on those seeking to develop adjacent sites for commercial uses to consider the noise impacts from those uses on the future occupants of the NEF site.
- 3.2.4. The noise assessments submitted with the three recent applications for commercial development are considered in the following section. These are set out in chronological order as follows:
- 1 The HL Report submitted with the WIP Phase 3 2018 application.
  - 2 The A&AC Report submitted with the LNWR outline application.
  - 3 The DS Report submitted with the LNWR reserved matters application.

## 4 INDUSTRIAL DEVELOPMENT NOISE ASSESSMENTS

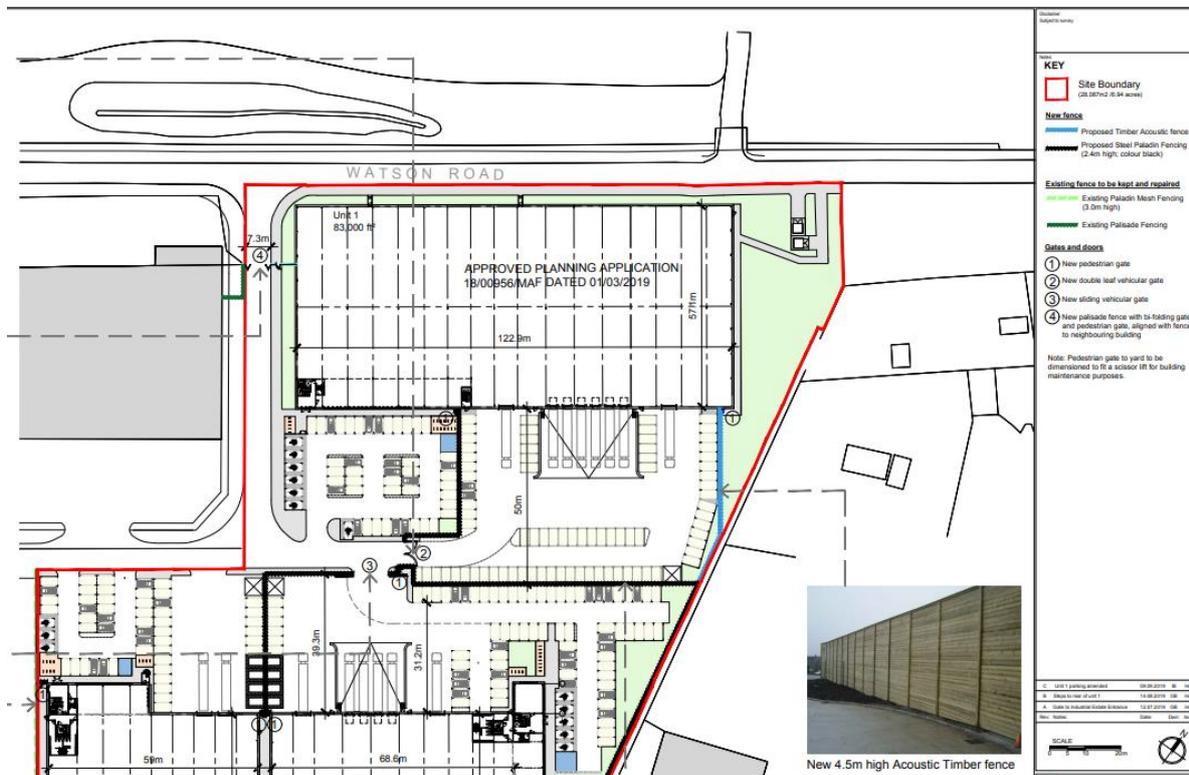
### 4.1 INTRODUCTION

- 4.1.1. The following commentary on the noise assessments submitted with the recent commercial development proposals only comprises a relatively brief overview due to the nature of the scope and the associated constraints.
- 4.1.2. Our review has focussed on certain key elements of the noise assessments and, in particular, on the adequacy of those assessments and whether or not the current reserved matters proposal would be likely to result in unacceptable noise impacts at existing residential receptors.
- 4.1.3. No agreement with elements of the assessment methodologies or reports should be inferred due to the absence of commentary on those specific elements.

### 4.2 WIP PHASE 3 APPLICATION, 2018

- 4.2.1. When the proposals for the WIP Phase 3 redevelopment were advanced in 2018 the applicant engaged Hoare Lee (HL) acoustic consultants to advise them primarily on the potential for the operational use of the site to result in noise impacts at future residential receptors at the NEF site. This was presumably because the NEF site is much closer to the development than existing receptors. The most recent HL report dated March 2019 and submitted to support the variation to the outline planning approval, presents an assessment of the impact of the operation of the WIP Phase 3 site on the NEF site.
- 4.2.2. The proposed layout of the WIP Phase 3 redevelopment is shown in Figure 4-1 below.

**Figure 4-1 - Proposed Layout of the WIP Phase 3 Development**



4.2.3. The HL noise report recognised that the proposed layout would result in loading areas, service yards and HGV movements in close proximity to the west boundary of the NEF site. It presented assessments of several sources, based on the principles of BS 4142:2014, which included:

- Noise breakout from the warehouse buildings
- HGV movements on site
- HGV reversing alarms
- Refrigeration lorries
- Mechanical services plant

4.2.4. Feature corrections were applied to a number of noise sources based on how distinctive the distinguishing noise characteristics would be at the noise sensitive receptors. The magnitude of the feature corrections and the reason for their inclusions are set out in Table 4-1 below.

**Table 4-1 – BS 4142 Feature Corrections Applied in the HL Report**

Source	Feature Correction	Reason
Noise breakout from the warehouse buildings	+3	Intermittent
HGV movements on site	+5	+3 Intermittent, +2 tonal
HGV reversing alarms	+3	Tonal
Refrigeration lorries	+2	Tonal
Mechanical services plant	+5	Intermittent and tonal

4.2.5. The noise impact from each of these sources was assessed individually (rather than as scenarios where the cumulative impact of several simultaneous activities could be considered) with a 4.5m tall noise barrier in place to protect the future residents of the NEF site as shown in blue in Figure 4-2 above.

4.2.6. With this 4.5m tall noise barrier in place the potential noise impacts were estimated by subtracting the adopted background sound levels from the rating levels predicted for each assessed noise source.

4.2.7. The background sound levels adopted as representative for the NEF site were simply the modal values of the  $L_{(A)90,15min}$  data logged during a noise survey conducted on the NEF site over four days and three nights in November 2017. The adopted values were 52 dB(A) and 41 dB(A) for the daytime and night time periods respectively. Given the distribution of the  $L_{A90,15min}$  values reported by HL the adopted values are arguably slightly higher than would be justified.

4.2.8. The HL report concluded that the magnitude of the noise impacts from the assessed sources would be low at the NEF site based on the derived rating levels being below the adopted background sound levels by margins of between 1 and 16 dB.

4.2.9. No contextual assessment was undertaken, as would be necessary in a BS 4142 compliant assessment.

### 4.3 LNWR OUTLINE APPLICATION 2019

- 4.3.1. The outline application was accompanied by two indicative layouts which are presented in Figures 1-2 and 1-3 above. The application was supported by the A&AC noise report which presented a noise impact assessment based on Layout Option 1 (Figure 1-2).
- 4.3.2. The A&AC approach differed from that adopted by HL and crucially failed to consider the potential noise impacts on the NEF site.
- 4.3.3. The A&AC report considered potential noise impacts at nine receptor locations. Five of these were at existing residential receptors to the east of the development site, on the other side of Bedford Road. The other four were to the south west of the development site (closest to Unit 1) designed to be representative of proposed residential and leisure receptors.
- 4.3.4. Layout Option 1 positioned the employee carpark between Unit 3 and the closest assessed residential receptors. As a consequence, the Unit 3 Loading bays, service yards and HGV parking that were closest to the receptors were at a distance of around 150m. The gatehouse, where HGVs accessing and egressing the site would have to pull over, was over 100m from the receptors.
- 4.3.5. The A&AC report only predicted noise levels arising from HGV movements and loading/unloading activities and did not consider noise from the use of the carpark. Noise from the HGVs was assessed based on 23 two-way movements during a worst-case hour during the daytime and 5 two-way movements during a worst-case fifteen-minute period during the night time.
- 4.3.6. Contrary to the approach adopted in the HL report, no feature corrections were applied to the predicted noise levels to account for tonality, impulsivity, intermittency or other characteristics. This position is explained in Section 6.11 of the report as *'none of the acoustic characterises [sic] or features ... are expected to be significant at the receiver locations, above the existing traffic noise'*.
- 4.3.7. The HGV reversing alarms, which are of a tonal nature, were measured and reported by HL as 87.9 dB  $L_{A(max)}$  at 3m which would be expected to attenuate to 54 dB  $L_{Amax}$  at the receptor locations to the east of Bedford Road (around 150m away from the Unit 3 service yard).
- 4.3.8. The maximum sound power levels attributed to HGV movements by A&AC in Table 6.2 are 113 dB  $L_{Amax}$  which presumably correlate with impulsive noises such as engine start-ups, door slams or air brakes. At Paragraph 6.21 A&AC correctly correlate this maximum with a sound level of 85 dB  $L_{Amax}$  at 10m but then go on to extrapolate that to a level of 48.6 dB at the receptors to the east. This extrapolation is incorrect, and it seems possible that it has been mistakenly sourced from the  $L_{Aeq,1h}$  model outputs reported in Table 6.6.
- 4.3.9. This actual maximum level that would be expected at the receptor locations, based on distance attenuation of around 150m, would be 61 dB  $L_{Amax}$ .
- 4.3.10. Given that the night-time background sound levels reported by A&AC are generally below 40 dB  $L_{(A)90}$  (occasionally falling to the low thirties) it is evident that the tonal reversing alarms and maximum noise events could be clearly audible and distinguishable at the receptor locations to the east and would therefore justify the addition of feature corrections.

- 4.3.11. Under these circumstances the A&AC decision to discount feature corrections does not appear to be justified and initial impact estimations derived based on the BS 4142 approach could therefore underestimate the actual impact.
- 4.3.12. Notwithstanding the lack of feature corrections; the A&AC report does predict rating levels of around 4 dB above background during the day and up to 11 dB above background during the night time based on the modal values of the  $L_{A90,15min}$  data sets reported for the respective periods. Based on a visual inspection of these  $L_{A90,15min}$  data, the use of lower values to underpin the assessment would arguably have been justified which would have increased the apparent impact of the assessment.
- 4.3.13. Notwithstanding the choice of representative background sound levels; the magnitude of the exceedance of the specific sound levels predicted would be indicative of adverse and significant adverse impacts for the day and night time periods respectively.
- 4.3.14. However, the significance of these impact estimations appears to have been discounted entirely by DS based on a comparison of the predicted operational sound levels with the internal and external design criteria set out in BS 8233.
- 4.3.15. This comparison is inappropriate for two main reasons. Firstly; the BS 8233 is applicable to the design or refurbishment of buildings *'but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building'*. Secondly; the criteria in BS 8233 are based on steady noise sources – not dynamic noise from industrial operations.
- 4.3.16. The A&AC interpretation that operational noise would have *'negligible impacts at all receptor positions'* is not supported for the reasons set out above.
- 4.3.17. It is not possible to make any detailed observations with regards to the potential impact of the development on the receptors proposed at the NEF site. This is because they have not been included as receptor locations by A&AC and it is difficult to discern the modelled noise predictions from the development site portrayed at Figure 6.2 because of the inclusion of road traffic noise in the model outputs and the low resolution of the plots.

## 4.4 LNWR RESERVED MATTERS APPLICATION

- 4.4.1. The LNWR reserved matters application was received by BBC on the 10 December and validated on the 18 December 2019 which is the same day that the outline application was approved.
- 4.4.2. Notwithstanding that both applications were with BBC at the same time, the reserved matters application included a fundamentally different layout to the two options presented with the outline application. The reserved matters layout, which is shown at Figure 1-4 above, effectively turns Unit 3 around by 180° so that the HGV access road, gatehouse, HGV parking, service yard and loading areas are orientated towards the closest existing noise sensitive receptors to the east.
- 4.4.3. Noise from the operation of the layout presented at reserved matters was assessed by a different consultancy, DS, who were given access to the noise survey data and adopted source data reported by A&AC at the outline stage. No review of these data was reported, and it appears that they were relied upon in good faith by DS. No site visit is reported in the DS scope and it is understood that the DS assessment comprised a desktop study only.
- 4.4.4. As described in section 2.1 above, DS summarise the same standards as those set out in this report. However, in Table 4 of the DS report DS seeks to rigidly align the initial impact estimations which can be derived through BS 4142 (see paragraph 2.4.6 above) with the effect levels described

in the PPG (see Table 2-1 above). This rigid alignment is not supported by the PPG or BS 4142 and is inappropriate. A key component of any BS 4142 assessment is the consideration of all pertinent contextual factors to modify the initial impact estimation and the DS correlation entirely circumvents that assessment stage.

- 4.4.5. The DS assessment adopted receptor locations as close as possible to those considered in the A&AC report although it excluded the two non-residential locations that had been considered to the south-west. The NEF site was not, therefore, considered as a receptor location in the assessment.
- 4.4.6. Noise from the use of the car parks has been explicitly excluded from the DS assessment on the basis that they are *'commensurate with the traffic use on the link road'* and are *'not considered as an operational element'*. Whilst WSP contends that car parking is entirely operational and should typically be included; it is not considered to be a critical source in the context of the reserved matters layout as it is well screened from receptor locations.
- 4.4.7. The DS noise assessment only seems to consider noise from HGV activities and does not overtly take account of fixed plant or other ancillary noise sources. The number of HGV movements assumed to be associated with the development appear to be higher than those assumed in the A&AC report.
- 4.4.8. Whereas A&AC assumed 23 two-way HGV movements during a worst-case hour during the day, DS appear to have assumed 37. The reason for this apparent difference is not clear although this factor alone would be expected to contribute to higher noise levels than those reported in the outline application.
- 4.4.9. During the night-time, A&AC has assumed 17 two-way HGV movements during a worst-case hour whilst DS has assumed 13. Again, it is not clear why there is a difference nor why the relative proportions of the total movements are so different for the daytime and night-time periods.
- 4.4.10. The  $L_{Aeq,T}$  noise levels predicted at the receptors to the east are higher than those reported by A&AC during the daytime (up to +7 dB) and similar during the night time (up to +11 dB). DS does not appear to have considered the applicability of feature corrections and their potential addition to the predicted levels stating, *'in line with the previous assessment, no correction for acoustic features has been made'*. The limitations set out at section 5.3 of the DS report acknowledge that this lack of feature corrections is unusual for intermittent loading operations and that assessment outcomes may therefore be underestimated.
- 4.4.11. In the context of the  $L_{Aeq,T}$  predictions for both the day and night time periods DS state that *'levels at around +3dB above the background level could be perceivable at the receptor'* and on this basis appear to identify predictions of +4 dB or below as of low impact.
- 4.4.12. This statement is fundamentally flawed given that the average  $L_{Aeq,T}$  levels reported will include shorter periods of much higher noise levels which would be highly perceptible at the receptor locations. Furthermore, some of those higher noise levels will result from impulsive or tonal sources such as door slams and reversing alarms whereby the perceptibility of those sounds at receptors would justify the addition of feature corrections to the predicted levels.
- 4.4.13. Notwithstanding the failure to include feature corrections; the predicted noise levels are indicative of adverse impact during the day and significant adverse impact during the night at the existing receptors to the east. However, DS state that this significant impact predicted during the night would be reduced by the reduction provided by an open window on the most sensitive facades.

- 4.4.14. This assumption, that the reduction afforded in the specific sound level by the building envelope would reduce the impact, disregards the fact that the envelope reduction also applies to the background sound level so masking levels inside habitable rooms may be very much lower than those outside. It also conflicts with the premise for an assessment based on BS 4142 which uses *'outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling'*.
- 4.4.15. Given the particularly high operational noise levels predicted during the night time, DS do recommend the installation of a continuous 4m tall acoustic barrier on the south-eastern boundary of Units 2 and 3.
- 4.4.16. The residual noise predictions with the barrier in place are not presented in detail in the DS report. It does state that it would expect *'noise levels at properties on Brooklands Avenue not exceeding 45 dB L<sub>Aeq,T</sub>'* at top floor receptors during the night time with the barrier in place. Given that the prediction without the barrier is 49 dB L<sub>Aeq,T</sub> it is assumed that the benefit at receptors to the east would be in the region of 4 dB, which will could still therefore result in significant noise impacts.
- 4.4.17. A number of management controls are recommended by DS at paragraph 6.1.8 to further mitigate noise impacts, however, some of these measures have already been included in the assessment assumptions and others may be impractical. They are considered in turn below:
- The model inputs have assumed that there are no idling vehicles;
  - Refrigeration lorries have not been included as noise sources in the model;
  - The manoeuvring times allowed for HGVs in the model assumptions are already short (perhaps unrealistically so at 1 minute per unit);
  - Mobile plant, such as forklift trucks, have not been included as noise sources in the model;
  - The choice of loading bays may be dictated by internal warehouse logistics;
  - Unless a specific planning restriction is imposed, arrival and departure times will be dictated by the occupiers of the units;
  - The majority of the loading bays are already docking bay systems.
- 4.4.18. In view of the above it is considered unlikely that any significant reductions in noise levels could be guaranteed by the recommended measures.
- 4.4.19. The DS report concludes that the noise levels predicted to result from HGV activities using the reserved matters layout would be higher than those assessed at outline and that *'physical and managerial control measures are required in order to minimise the impact at the nearest noise sensitive premises'*.
- 4.4.20. Unfortunately, it has been demonstrated that the recommended controls would yield very limited benefits at the assessed receptors.
- 4.4.21. In view of the above it is clear that the reserved matters layout could lead to adverse or significant adverse noise impacts at existing receptors and is therefore unacceptable in policy terms. A potential solution would be to revert to the layouts proposed at outline whilst incorporating localised noise barriers to minimise propagation from the service yard and access road to the east.

## 5 CONCLUSIONS

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- 5.1.1. The A&AC report that accompanied the outline application for the LNWR development has been reviewed and its conclusion that operational noise would have '*negligible impacts at all receptor positions*' is not supported for the reasons set out in section 4.3. Based on our review of the A&AC report it is possible that the illustrative layout proposed at the outline stage could result in adverse or significant adverse effects at existing residential receptors to the east of Bedford Road.
- 5.1.2. The A&AC report failed to recognise the precedents for residential development at the NEF site and made no noise predictions or assessments at those proposed residential receptors. Notwithstanding the lack of consideration of the NEF site it is thought that the outline layout assessed by A&AC would not have led to any insurmountable adverse noise impacts at the NEF site due to the significant screening of noise sources in and around the service yard by the proposed building.
- 5.1.3. The DS report that accompanied the reserved matters application for the LNWR assessed a different layout from the illustrative layouts submitted at outline. The reserved matters layout was significantly less favourable, in terms of noise impacts at existing receptors, than those which had been proposed at outline. Our analysis of the DS report indicates that the operation of the reserved matters layout could result in significant adverse noise impacts at existing residential receptors to the east of Bedford Road. The DS report did not consider potential noise impacts at the NEF site at all.
- 5.1.4. The DS report adopted the key elements of the A&AC assessment approach which included failing to apportion feature corrections in its assessments whilst at the same time tacitly acknowledging that such corrections would typically be included in an assessment of this type.
- 5.1.5. Both the A&AC report and the DS report fail to apply the BS 4142 assessment approach reasonably and proportionately and rely inappropriately on other less relevant guidance, namely BS 8233, resulting in the presentation of more favourable assessment results than would otherwise be the case.
- 5.1.6. Based on a brief review of the two reports mentioned above, and the HL report that was provided for the WIP Phase 3 site in 2018, it is concluded that the reserved matters layout now proposed for the LNWR could result in adverse or significant adverse noise impacts at existing receptors which is a situation compounded by the unsympathetic layout and orientation of Unit 3 as presented in the reserved matters application.
- 5.1.7. Given the policy requirements to avoid '*significant adverse noise effects*', and to minimise and reduce to a minimum '*other adverse noise effects*' it is suggested that the currently proposed layout is unacceptable in terms of applicable noise policy due to the adverse impacts predicted and anticipated at existing noise sensitive receptors.



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