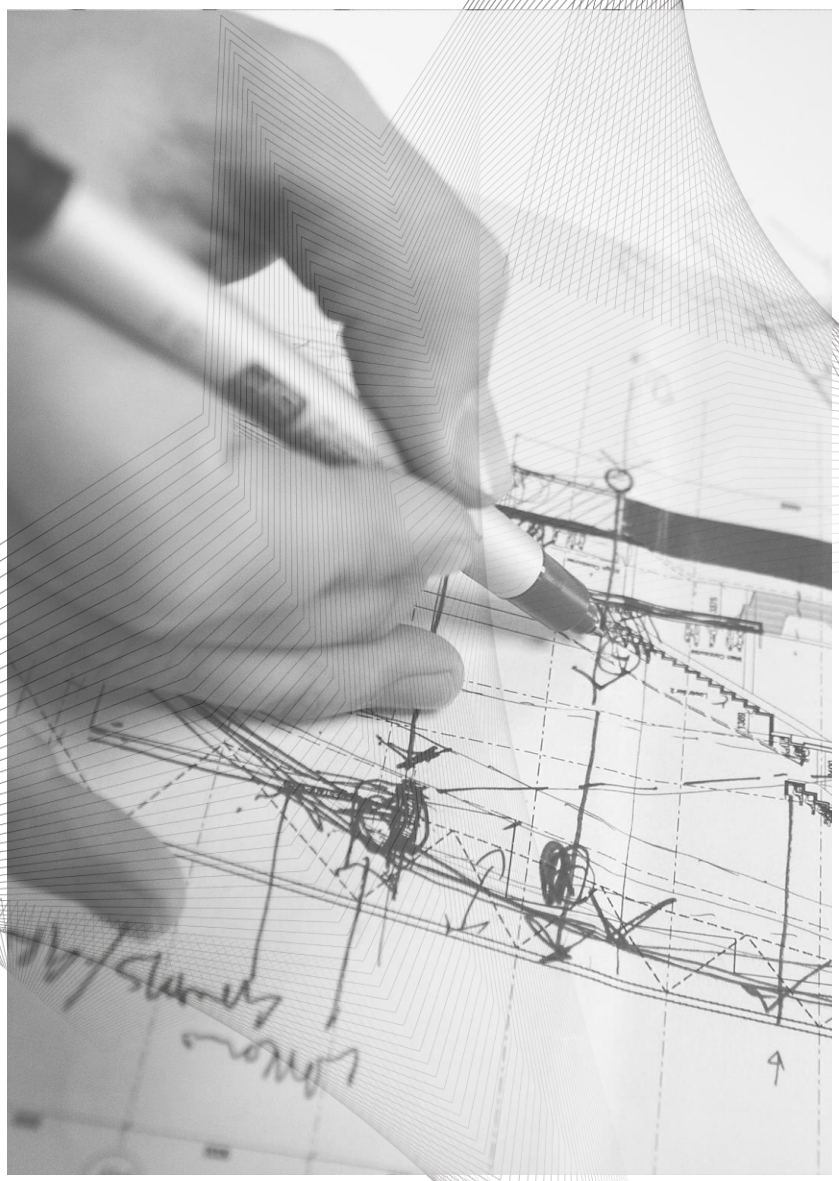
LAND FOR SPORT FACILITIES: HOYLAND COMMON

NOISE IMPACT ASSESSMENT

VC-103210-EN-RP-0002
R01

28TH AUGUST 2020



VANGUARDIA

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1. INTRODUCTION

1.1. Vanguardia has been instructed by Newlands Developments Ltd to undertake a noise impact assessment to support a planning application on land to the east of Sheffield Road in Hoyland, Barnsley. The application is for the provision of access, earthworks to provide a development plateau for future football pitches, laying out of archery pitch, provision of temporary portacabin for changing facilities and temporary car parking.

1.2. The pre-application advice from Barnsley Council indicated that due to the proximity of the nearby residential properties, a noise impact assessment for the proposed construction works would be required.

1.3. This assessment considers the predicted noise impact from the earthworks required to prepare the land for sports facilities on this site.

1.4. To assist with the understanding of this report, a glossary of acoustic terms is provided in Appendix A.

2. PROPOSED DEVELOPMENT

2.1. The location of the proposed earthworks site comprises of an area of informal open space which is adjacent to the residential housing on the northern boundary and the agricultural land that forms part of the site is to the south of this.

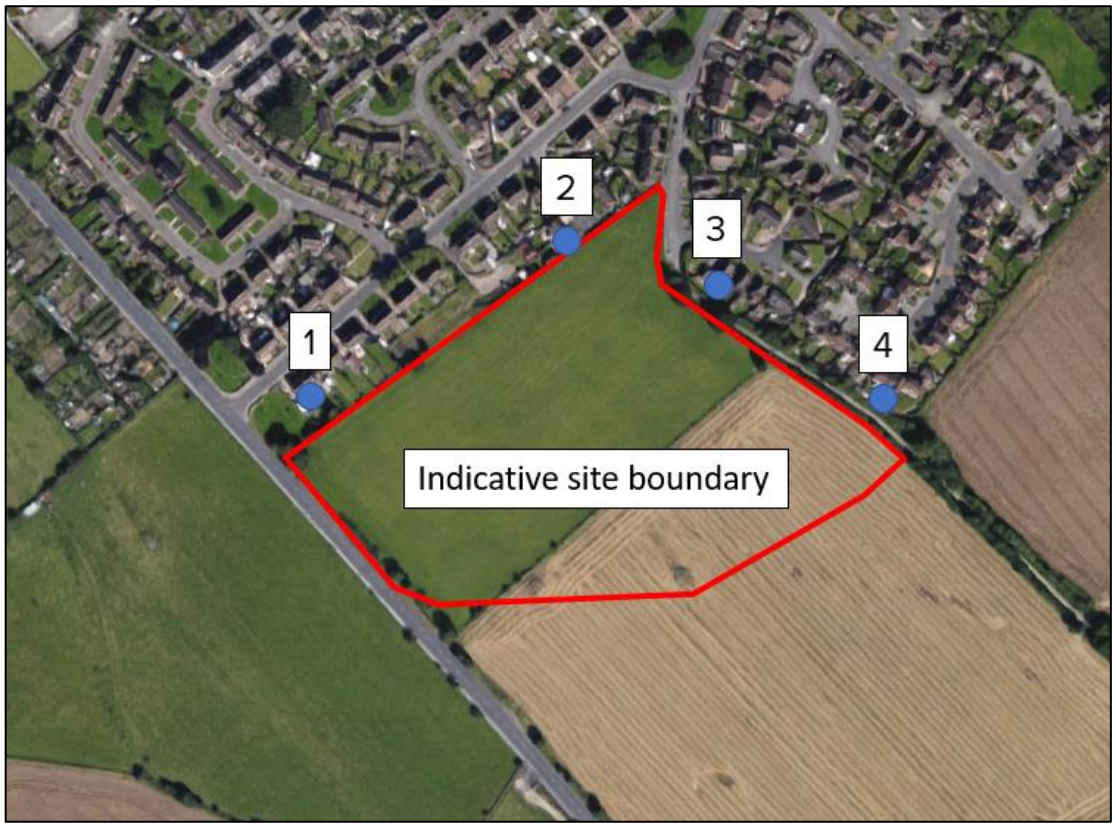
2.2. The proposed earthworks include clearance of the site to form new entrance from Sheffield Road and the works necessary to create plateaus for a new archery zone and sports pitches. Figure 1 below presents the site boundary of the proposed earthworks, anticipated sports pitch locations and the proximity of these to residential dwellings.

Figure 1 Proposed earthworks relative to existing properties

NOISE SENSITIVE RECEPTORS

2.3. As indicated in Figure 1 there are multiple properties backing onto the proposed earthworks site boundary. in order to assess the impact at these dwellings, four receptors have been considered representative of properties along each of the northern and eastern boundaries. Figure 2 below presents these locations relative to the site boundary

Figure 2 Locations representing the nearest noise sensitive receptors.



2.4. Table 1 provides further information on the receptors used for this assessment

Table 1 Description of receptors used for the assessment.

Receptor reference	Address	Receptor height
1	64 Parkside Road	1.5m from floor
2	22 Parkside Road	1.5m from floor
3	4 Warren View	1.5m from floor
4	28 Bluebell Close	1.5m from floor

3. ASSESSMENT CRITERIA

3.1. The potential noise effects of construction works at the proposed development site have been predicted at the nearest noise sensitive receivers. This assessment has been based on preliminary estimates of construction plant and machinery that would be used for site activities, using the methodology contained within Annex F of the British Standard BS 5228-1:2009+A1:2014[1].

3.2. BS 5228-1:2009+A1:2014 provides several methodologies to determine the significance of noise from construction activities. The noise values detailed in Annex E of the standard have been adopted for this assessment, which advocate that between 07:00 and 19:00 hours, the noise level from construction works outside the window of the occupied room closest to the site boundary should not exceed:

- 70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise; and
- 75 decibels (dBA) in urban areas near main roads in heavy industrial areas.

3.3. It has been assumed that these values are stated in terms of the $L_{Aeq,T}$ noise level (see the glossary in Appendix A for further details).

3.4. The site is located close to the M1 Motorway and Sheffield Road, and therefore the acoustic environment of the surrounding area is dominated by the resulting road traffic noise. On this basis, the value of 75 dB LAeq,T is considered to be applicable to the area around the site and has been used as a threshold to identify any potentially significant effects at the receptors in the assessment.

[1] BS 5228-1:2009 +A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise

4. ASSESSMENT METHODOLOGY

4.1. The noise emissions from the plant associated with these works have been predicted using estimates of the type and numbers of plant and equipment likely to be used, together with their estimated usage, or on-time for a typical working day when the activities are in relatively close proximity to the receptors. These estimates are based on information provided by the appointed contractor are summarised in Table 2 below.

4.2. The source sound pressure levels presented in Table 2 have been taken from the library of sound level data found in BS 5228-1:2009+A1:2014.

Table 2 Construction Plant Assumptions

Activity	Plant / Equipment	BS 5228-1 Database Reference	Sound pressure level LAeq, 10m (dB)	Quantity	On-time (%)
Site Clearance & Earthworks	40t excavator	C2.14	79	1	100
	30t dump trucks	C2.30	79	3	100
	D6 dozers	C2.12	81	1	100
	Bomag 213 rollers	C2.37	79	1	100
	Temporary Welfare Unit	C3.32	73	1	100
	Road lorries	C11.20	83	3	20

4.3. The construction noise levels will vary considerably throughout the works programme depending on the different activities and how they are distributed across the site.

4.4. To give an indication of the variation in noise levels, predictions have been made for two situations as described below:

a) when all of the works and plant are concentrated at a position in proximity to each receptor,

b) when the works and plant are concentrated at a fixed central position within the site relative to each receptor.

4.5. With regards to construction traffic onto the site, it is anticipated that there will be up to 3 HGV movements per day over a 4 week period. These movements will include moving earth from the Hoyland West development to this site. Due to the low frequency of movements it is considered there will be a minimal noise impact over this short period.

4.6. It is anticipated that the earthworks for this site will be undertaken over a 12 week work programme. The working hours will be similar to that of the construction works for the development to the west of Sheffield Road, which is anticipated to be between 07:00 – 18:00 hours.

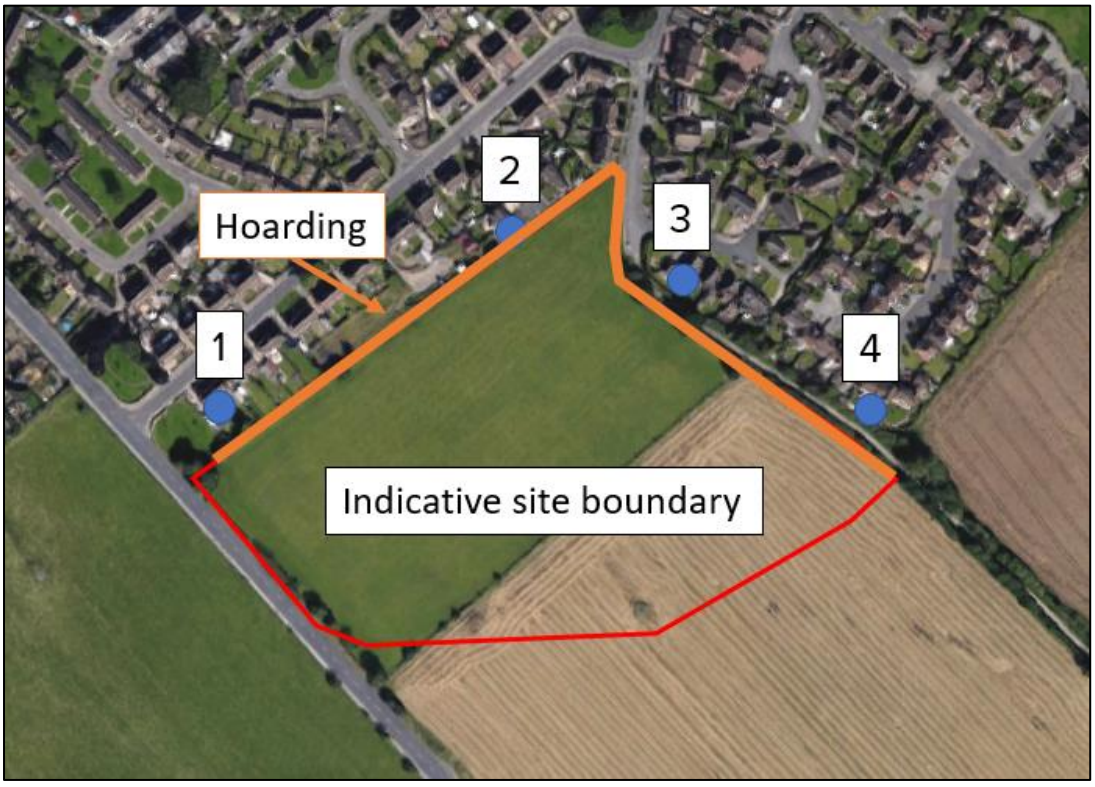
MITIGATION

4.7. For safety and to mitigate the noise impact, it is proposed to install hoarding along the length of the adjacent boundary. Hoarding on this site should be deployed to restrict the line of sight between plant and the ground floor level at each receptor surrounding the construction site. It is anticipated that the hoarding will need to be at least 2.5m in height but depending on the site levels this may need to be higher to prevent line of sight.

4.8. The hoarding should have a mass per unit of surface area in excess of 7kg/m^3 with no gaps in the joints. For the assessment below, a reduction of 10dB has been included where plant is near each receptor. This will be achieved if there is no direct line of sight between the construction plant and the receptor.

4.9. Figure 3 below presents the location of the proposed hoarding to minimise the noise impact to the residential properties

Figure 3 Proposed hoarding location



5. CONSTRUCTION NOISE ASSESSMENT

5.1. The predictions of construction noise for the proposed site clearance and earthworks are presented in Table 3 below. The results are quoted for when the works are in close proximity to the receptor and at a central position within the site.

Table 3 Predicted noise impact from earthworks construction phase.

Phase	Predicted Construction Noise Levels LAeq, 11 hours (dB)			
	Receptor 1	Receptor 2	Receptor 3	Receptor 4
Site Clearance & Earthworks close to receptor	72	75	70	71
Site Clearance & Earthworks central position	61	64	64	61

5.2. Table 3 shows that the predicted noise level at each receptor does not exceed the threshold for potential significance indicated in paragraph 3.2. This is an indication that no significant adverse effects are expected at the receptor locations.

5.3. On occasion there may be days when the predicted noise levels could be slightly higher than those presented, when activities are at the closest possible point to the receptor. However, this would very much be a worst case, atypical occurrence.

5.4. It should be noted that, for the predicted construction noise levels in close proximity to the receptors, the result is considered to be particularly worst-case as in practice it is unlikely that all of the plant would be situated and operating at such a close distance for the full construction hours. However, the results have been included to provide context and to provide an indication of the range of levels that might occur at the receptor locations.

5.5. These calculations include a façade correction and screening attenuation of 10dB which assumes the hoarding completely obscures the view from the source from the ground floor receiver, this correction is applied in accordance with the principles of BS 5228-1:2014+A1:2014.

6. CONCLUSION

6.1. Vanguardia has been instructed by Newlands Developments Ltd to undertake a noise impact assessment to support a planning application on land to the east of Sheffield Road in Hoyland, Barnsley. The application is for the provision of access, earthworks to provide a development plateau for future football pitches, laying out of archery pitch, provision of temporary portacabin for changing facilities and temporary car parking.

6.2. The proposed site boundary of the proposed earthworks is adjacent to residential properties in the northern and eastern directions

6.3. For safety and to mitigate the noise impact, it is proposed to install hoarding along the full length of the adjacent boundary to the north and east. The hoarding should be high enough to prevent direct line of sight between residential properties (at ground floor level) and sources in the development boundary. It is anticipated that a hoarding height of 2.5m will be sufficient, however this depends of the floor levels where installed.

6.4. A construction noise level of 75 dB LAeq,T is considered to be applicable to the area around the site and has been used as a threshold to identify any potential significant effects at the receptor locations.

6.5. With the aforementioned mitigation, the predicted noise level at each receptor does not exceed the threshold for potential significance indicated in paragraph 3.2. This is an indication that no significant adverse effects are expected at the receptor locations.

6.6. On occasion there may be days when the predicted noise levels could be slightly higher than those presented, when activities are at the closest possible point to the receptor location. However, this would very much be a worst case, atypical occurrence.

APPENDIX A – ACOUSTIC GLOSSARY

Noise is usually defined as unwanted sound. The perception of sound arises from small pressure fluctuations at the eardrum leading to the sense of hearing. Human ears can respond to sound in the frequency range of approximately 20 Hertz (Hz) (low pitch) to 20,000 Hz (high pitch). Whilst the level of sound could be described in terms of different pressures, the range of sensitivity of the human ear is very large and it is easier to use the unit of decibel (dB) to quantify sounds. The human ear can detect sounds in the approximate range of 0 dB (the threshold of perception) to 140 dB (commonly described as the threshold of pain).

The ear does not respond equally to sounds of the same magnitude at different frequencies, but, instead, it is more responsive to mid frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, an electronic weighting mechanism is used when sound is measured. This weighting reduces the importance of lower and higher frequencies, in a similar manner to the human ear. The most commonly used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement and assessment, and the levels are denoted as dB(A).

Whether sound is perceived as noise depends on a number of factors, which should be considered in any assessment. Generally, the extent of the impact and effect of noise depends upon:

- its level;
- the margin by which the particular source of noise exceeds the prevailing baseline level;
- the character of the source in relation to the character of the baseline noise environment;
- how the sound varies over a given period of time;
- when the sound occurs, i.e. during the day, evening or night; or at weekdays or weekends; and
- the acoustic features of the source (such as its general frequency content, whether it has tonal qualities or whether the source is impulsive in nature).

The decibel scale is logarithmic. This means that if two sources of the same sound pressure level are combined, this doubling of the sound energy gives a resultant level 3 dB higher than the decibel value of the single source.

Subjectively, experiments have shown that in general a 10 dB increase is regarded as a doubling of perceived loudness, and a change in sound level of 3 dB is generally the minimum difference that can be perceived under normal listening conditions.

Sound levels are rarely constant, and a range of indicators are used to describe the varying sounds that occur. A description of the main indicator in this assessment is given below:

$L_{Aeq,T}$ The equivalent continuous A-weighted sound or noise level over the time period (T). This is the A-weighted sound pressure level of a continuous, steady sound that, over the given time period (T), contains the same sound energy as the actual fluctuating sound over the same time period.

Façade Level: The sound level at a position 1 m in front of a reflecting façade of a building. The façade noise level is assumed to be 3 dB(A) higher than the level measured or predicted at the same position but without the influence of the reflecting façade.

Free-field Level: The sound level in an open area well away from any buildings or other sound reflecting surfaces other than the ground. Generally, the minimum distance from building facades required for free-field measurements is 3.5 m.

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