



Greenhead College, Huddersfield

Noise impact assessment

NE8659-APX-ZZ-ZZ-RP-YA-0002

1st April 2022

Revision P08



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Revision	Description	Issued	Date
P08	Appendix E Landscape Site Plan updated. Appendix G Response comment to KC updated	SM	01.04.2022
P07	3.6 reference to responses to KC EH noise comments dated 07.12.21 added. 11.18 added re weldmesh fencing reference. Responses to EHO and proposed acoustic mesh fencing appended	SM	28.02.2022
P06	Update of Site Boundary and Layout Plans; Correction to Figure 12 typo	SM	26/11/2021
P05	Clarifications in response to Kirklees Council EHO comments dated 09/11/21; update of site boundary and site layout plans	SM	25/11/2021
P04	Site Plan updated to latest version	SM	14/09/2021
P03	Typo's to Table 2 ref to LPGNV corrected	SM	14/09/2021
P02	Typo's corrected; Landscape plan updated to P19	SM	14/09/2021
P01	First issue	KT	31/08/2021

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2 Summary

- 2.1 This report has been prepared in support of a Planning Application for proposed development at the existing Greenhead College, Huddersfield site including the development of a new teaching block, courtyard infill, relocation of car parking and reorientation of the existing sports pitch.
- 2.2 Planning policies and guidance relevant to the proposed scheme of works have been reviewed and the Local Authority Environmental Health Department have been consulted by the project design and planning team.
- 2.3 Based on Apex' understanding of the scheme proposals and the assessment included in this report, there is potential for there to be an adverse impact on the identified noise sensitive receptors.
- 2.4 To satisfy the aims of the National Planning Policy Framework and relevant Local Authority requirements, noise mitigation measures have been proposed to reduce the potential for significant adverse impacts. Details of the recommended mitigation measures are provided in Section 9 and include:
- Provision of baseline noise survey data for the existing site to inform plant noise limits of the proposed development
 - Location of recommended noise barrier to the new teaching block rooftop area (preliminary assessment)
 - Location of recommended noise barriers to the relocated sports pitch
- 2.5 Responses and clarifications to Kirklees Council Environmental Health noise related points raised in their consultation response dated 07.12.2021 have been appended to expand upon the assessment details included within the report.
- 2.6 Based on the proposed mitigation measures, noise levels due to activities associated with the operational development are predicted to be below the noise limits proposed within this report for compliance with the aims of the National Planning Policy Framework (NPPF) and the Local Authority noise related guidance.

3 Introduction

- 3.1 This report relates to the proposed development at the existing Greenhead College site at Greenhead Road, Huddersfield, Kirklees HD1 4ES, including the development of a new teaching block, courtyard infill, relocation of existing car parking and reorientation of the existing sports pitch.
- 3.2 Apex Acoustics has been appointed to undertake a noise impact assessment associated with the development in support of a Planning Application.
- 3.3 The scope of our instruction includes:
- Assessment of the existing noise environment locations representative of the nearest noise-sensitive receptors to facilitate the future plant noise impact assessment;
 - Model the noise impact from the reoriented sports pitch and relocated car parking facilities;
 - Calculate noise propagation using proprietary noise modelling software to identified noise-sensitive receptors (NSR) and assess the impact;
 - Advise on a scheme for noise mitigation to satisfy usually accepted Local Authority requirements;
- 3.4 The NSR are identified as residential properties around the site.
- 3.5 The report addresses:
- The representative baseline noise climate and background sound levels at the NSR for future plant noise impact assessment;
 - The noise impact assessment from the proposed relocated car parking between 07:00 and 21:15 hrs on weekdays and 08:45 and 18:15 hours at weekends;
 - The noise impact assessment due to use of the proposed reorientated sports pitch for additional hours of use to the existing pitch between 08:00 and 21:00 hrs on weekdays and 09:00 and 18:00 hours at weekends.
- 3.6 This report has been updated post-planning permission approval with responses and clarifications to Kirklees Council Environmental Health noise related points raised in their consultation response dated 07.12.2021..Responses are appended to the report, where appropriate, expanding upon the assessment details included within the body of the report.

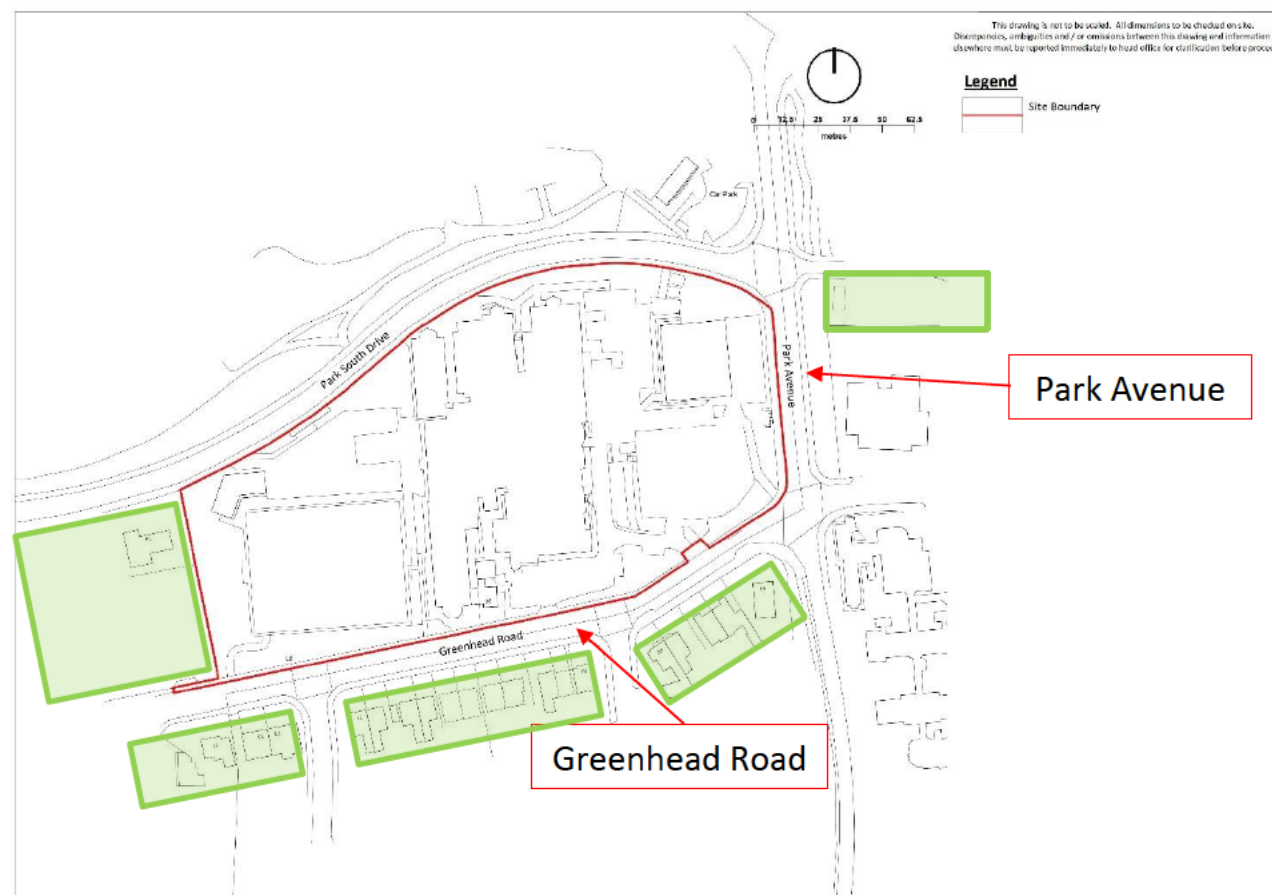


Figure 1: Site boundary in red and identified locations of the nearest residential Noise Sensitive Receptors in green

4 Planning policy and guidance

National Planning Policy Framework (NPPF)

4.1 The National Planning Policy Framework (NPPF) Reference 1, sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for development can be produced. In respect of noise, Paragraph 174, 185 and 187 of the NPPF states the following:

4.2 Paragraph 174:

"e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability..."

4.3 Paragraph 185:

"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:

- 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 life⁶⁵ [See Explanatory Note to the Noise Policy Statement for England],
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; ... "

4.4 Paragraph 187:

"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. "

Noise Policy Statement for England (NPSE)

4.5 The Noise Policy Statement for England, Reference 2, states three policy aims as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;

- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.”

4.6 The NPSE defines adverse noise impact as follows:

- No Observed Effect Level (NOEL)
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.
- Lowest Observed Adverse Effect Level (LOAEL)
This is the level above which adverse effects on health and quality of life can be detected.
- Significant Observed Adverse Effect Level (SOAEL)
This is the level above which significant adverse effects on health and quality of life occur

4.7 The first two aims of the NPSE require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

“... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.”

Planning Practice Guidance – Noise

4.8 Further Government guidance on how planning can manage potential noise impact in new development is outlined in Planning Practice Guidance (PPG-N) notes on the Government website: www.gov.uk/guidance/noise--2

4.9 The terminology and noise effect hierarchy are summarised Appendix A.

BS 4142

4.10 The principal guidance for the assessment of industrial noise impact is BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS 4142), Reference 3.

4.11 This method involves the determination of a specific sound level due to the source in question at the NSR, hence a rating level.

4.12 According to BS 4142, typically, the greater this difference, the greater the magnitude of the impact.

4.13 “A difference of around +10 dB or more is likely to be an indication of a significant adverse impact”;

4.14 “A difference of around + 5dB is likely to be an indication of an adverse impact”;

4.15 “Where the rating level does not exceed the background sound level, this is an indication of the specific source having a low impact”.

4.16 BS 4142 requires a rating level to be calculated based on the character of the specific sound.

4.17 The rating level is calculated by adding a character correction to the specific sound. The character correction can be determined in three different ways:

- Subjective method
- Objective method
- Reference method

4.18 The final noise impact is assessed based on the exceedance of the rating level over the background sound and the context.

WHO: Guidelines for community noise

4.19 For the outdoor living areas, the World Health Organisation Guidelines for Community Noise, 1999 (WHO), Reference 4, includes the following guidance:

4.20 To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on outdoor living areas should not exceed 55 dB L_{Aeq} for a steady, continuous noise. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound pressure level should not exceed 50 dB L_{Aeq} .

4.21 For the daytime indoor noise level, the WHO guidance provides: To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB L_{Aeq} .

4.22 For night-time noise levels: The indoor guideline values for bedrooms are 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for single sound events. At night-time, outside sound levels about 1 metre from façades of living spaces should not exceed 45 dB L_{AFmax}

4.23 If “the noise reduction from outside to inside with the window open is 15 dB” as described in the guidance, the indoor and outdoor guideline values are consistent.

BS 8233:

4.24 In BS 8233:2014 Guidance on sound insulation and noise reduction for buildings (BS 8233), Reference 5, it states that:

4.25 For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable.

Sport England guidance on Artificial Grass Pitches (AGP)

- 4.26 Sport England issued guidance in 2015 including noise impact related considerations Artificial Grass Pitch (AGP) Acoustics - Planning Implications, Reference 6.
- 4.27 The guidance suggests the consideration of the criteria set out by The National Planning Policy Framework and Local Planning Authority planning policies.
- 4.28 This guidance also refers to the WHO guidance to achieve outdoor noise level of 50 dB L_{Aeq} and indoor noise level of 35 dB L_{Aeq} with open windows as the criteria.
- 4.29 For changes to an existing natural turf or AGP pitch or where existing noise levels in the area are high, alternative assessment methodology may be appropriate such as comparison of AGP noise against existing noise climate.

West Yorkshire Planning Consultation Guidance, Noise & Vibration 2016 (WYPCG)

- 4.30 The West Yorkshire Planning Consultation Guidance dated May 2016 (WYPCG), Reference 7 sets out advice when reviewing planning applications on matters related to noise and vibration. The guidance takes into consideration the noise-related guidance contained within the National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE).
- 4.31 The WYPCG guidance identified as most relevant to the proposed scheme are summarised below and reproduced in Table 1.
- 4.32 WYPCG section 4.2 provides recommended maximum sound levels for noise generating uses including internal and external plant equipment noise, which can be summarised as follows:
- The Rating Level (calculated in accordance to BS 4142:2014) is at least 10 dB below the existing Ambient noise level L_{Aeq}
 - The Rating Level (calculated in accordance to BS 4142:2014) is at least 0-5 dB below the existing Background noise level L_{A90}
 - Between the hours of 19:00 and 07:00 the maximum noise levels (L_{AFmax}) from the guidance document shall not exceed the L_{A90} by more than 10 dB; however, where the existing background noise level is 45 dB L_{A90} or less, the maximum noise levels shall not exceed 60 dB L_{AFmax}
- 4.33 WYPCG section 4.8 provides guidance on the assessment of noise impact due to use of new Multi-Use Games Areas (MUGA). Guidance on noise assessment due to new MUGAs includes the following criteria:
- MUGA Noise Level $L_{Aeq, 1min}$ should not exceed Representative Background Noise Level L_{A90}
 - The external noise level from a MUGA should not exceed 50 dB $L_{Aeq,T}$ at the boundary of the nearest noise sensitive premises, in accordance with World Health Organisation Guidelines of Community Noise 1999

- 4.34 Section 4.10 Schools identifies that the sound insulation criteria for schools formulated for the prevention of noise break-in is set out in Building Bulletin 93, Acoustic Design of Schools, Performance Standards (BB 93), Reference 8 and that Developers should adhere to these criteria. It should be noted that contractually the scheme is also subject to Department for Education (DfE) technical requirements which also require compliance with BB 93.
- 4.35 BB 93 Table 1 identifies upper limits for the indoor ambient noise level (IANL) for new build spaces according to the room use and noise sensitivity.
- 4.36 The BB 93 Table 1 IANL performance parameter identifies upper limits for the combination of external noise sources (not related to the school's own activities) and building services noise.

Leeds Planning Guidance, Noise & Vibration 2019 (LPGNV)

- 4.37 Whilst the proposed development is outside of the jurisdiction of Leeds City Council, the reference below is included as guidance relevant to assessment of MUGA noise impact.
- 4.38 The Leeds Planning Guidance Noise and Vibration dated December 2019 (LPGNV), Reference 9 is based on the WYPCG 2016 guidance and includes an additional reference for MUGA noise impact assessment as follows:
- Between the hours of 19:00 and 07:00 the maximum noise levels (L_{AFmax})...not exceed the L_{A90} by more than 10dB; however, where the existing background noise level is 45 dB L_{A90} or less, the maximum noise levels shall not exceed 55 dB L_{AFmax} .
- 4.39 It is proposed that the updated LPGNV guidance reference to L_{AFmax} noise levels due to MUGA use as above is appropriate for use for the scheme.

Summary of the guidance

4.40 Table 1 lists the reviewed guidelines on the limits for outdoor noise.

Guidance (reference)	Parameter	Criteria	Comments
WHO External residential amenity	$L_{Aeq,16hour}$	≤ 50 dB	Protect the majority of people from being moderately annoyed
	$L_{Aeq,16hour}$	≤ 55 dB	Protect the majority of people from being seriously annoyed
	L_{AFmax}	≤ 60 dB	To achieve ≤ 45 dB L_{AFmax} indoor noise level by assuming 15 dB reduction with opening windows
BS 8233 External residential amenity	$L_{Aeq,16hour}$	≤ 50 dB	Desirable
	$L_{Aeq,16hour}$	≤ 55 dB	Acceptable
Sport England	$L_{Aeq,T}$	≤ 50 dB	To achieve 50 dB $L_{Aeq,T}$ guideline values as described in WHO To achieve 35 dB indoor level by assuming 15 dB reduction with opening windows
WYPCG Transportation Noise	Ambient Level LOAEL $L_{Aeq,16hour}$	≤ 55 dB	External amenity areas, daytime
	Ambient Level LOAEL $L_{Aeq,16hour}$	≤ 35 dB	Habitable room, daytime
WYPCG Plant Noise	BS 4142 Rating Level	≤ 10 dB below ambient L_{Aeq}	Rating Level is at least 10 dB below existing ambient level L_{Aeq} at noise sensitive premises
		$\leq 0-5$ dB below background L_{A90}	Rating Level is at least 0-5 dB below existing background level L_{A90} at noise sensitive premises
	L_{AFmax}	≤ 10 dB above Background L_{A90}	Applies between the hours of 19:00 and 07:00 Or ≤ 60 dB L_{AFmax} if L_{A90} is < 45 dB. At the facade of the closest noise sensitive premises
WYPCG Multi Use Games Areas (MUGA)	$L_{Aeq,T}$	≤ 50 dB	At the boundary of the nearest noise sensitive premises
	$L_{Aeq,1min}$	Should not exceed Representative Background L_{A90}	Refers to ' <i>...inside of residential premises...</i> '
LPGNV MUGA	L_{AFmax}	≤ 55 dB L_{AFmax} between 19:00 and 07:00 hrs	LPGNV 2019 document is an updated version of the WYPCG 2016 guidance
WYPCG Schools	$L_{Aeq,30min}$	BB 93	Should adhere to BB 93 criteria relevant to prevention of noise break-in.

Table 1: Reviewed guidelines for assessment of outdoor noise

5 Noise Impact Assessment criteria

5.1 Based on the review of the national and local guidance, noise assessment criteria are proposed as shown in Table 2.

5.2 If the proposed criteria are achieved, typically applied requirements for noise control for the identified types of activities are considered in this assessment to be satisfied.

Noise source	Referenced guidance	Assessment criteria	Comment
Fixed plant	WYPCG	Rating level is at least 0-5 dB below the background sound level L_{A90} and at least 10 dB below the ambient sound level L_{Aeq} and between 19:00 and 07:00 maximum noise levels shall not exceed 60 dB L_{AFmax} at facades of residential properties	Assessment undertaken according to BS 4142 at façade of most affected residential properties, with where relevant, reference to BS 8233 for noise intrusion levels and also context of the noise climate, such as consideration of $L_{Aeq,T}$ levels rather than solely background L_{A90} .
Car park	WHO, BS 8233	≤ 55 dB $L_{Aeq,1hr}$	Protect the majority of people from being seriously annoyed. Noise emission should be calculated following the guidance in RLS 90, Reference 10.
Sports pitch	WHO, BS 8233, Sport England, WYPCG, LPGNV	Desirable ≤ 50 dB $L_{Aeq,1hr}$ and ≤ 55 dB L_{AFmax} between 19:00 and 07:00 hrs	Noise from sports pitches is not considered as a continuous noise source. Therefore, the desired (higher requirement) noise level of 50 dB $L_{Aeq,1hr}$ in external amenity areas as described in BS 8233 is used. As the sports pitch is proposed to be in use up to 21:00 hrs, maximum noise level limit of 55 dB L_{AFmax} between 19:00 and 07:00 hrs as described in LPGNV is used as a more appropriate noise event criteria than the $L_{Aeq,1min}$.

Table 2: Proposed noise impact assessment criteria and the associated noise impact implications

6 External noise intrusion to proposed school buildings

- 6.1 WYPCG section 4.10 Schools identifies that the sound insulation criteria for schools formulated for the prevention of noise break-in set out in Building Bulletin 93, Acoustic Design of Schools, Performance Standards should be adhered to.
- 6.2 BB 93 Table 1 identifies upper limits for the indoor ambient noise level (IANL) for new build spaces according to the room use and noise sensitivity.
- 6.3 The BB 93 Table 1 IANL performance parameter identifies upper limits for the combination of external noise sources (not related to the school's own activities) and building services noise.
- 6.4 **Internal ambient noise level upper limits**
- 6.5 The upper IANL limits for a selection of typical room classifications described in BB 93 are shown in Table 3.

BB 93 room description	Indoor ambient noise upper limit / $L_{Aeq,30\text{ min}}$
Secondary school classroom	35
Science Laboratory	40
6 th Form Social Space / Study Area (Open plan Resource / Breakout area)	40

Table 3: IANL upper limits

- 6.6 **Upper IANL requirements for different ventilation strategies**
- 6.7 IANL tolerances are defined in BB 93 Table 2 depending on the ventilation system and the operating condition, these tolerances are summarised in Table 4.
- 6.8 The upper noise limits in classrooms for different ventilation conditions are shown in Table 4 noting that a 5dB increase on BB 93 Table 1 IANL criteria due to natural or hybrid ventilation strategies is allowable.

Condition	Ventilation system	Upper noise level limit / $L_{Aeq,30\text{ min}}$ dB	
		Secondary school classroom	Science laboratory / 6 th Form Social Space
Normal - ventilation for normal teaching and learning activities	Mechanical	35	40
	Natural or Hybrid	40	45
Summertime - ventilation under local control of teacher to prevent overheating – allowable during the hottest 200 hrs of the year	Mechanical	40	45
	Natural or Hybrid	55	55
Intermittent boost – ventilation under local control of teacher for dilution of fumes during practical activities as in practical spaces for science, art, food technology and design and technology	Mechanical	40	45
	Natural	55	55

Table 4: Summary of ventilation conditions and internal ambient noise level tolerances

- 6.9 See BB 93 for definitions of conditions.

7 Existing sound environment & proposed plant noise limits

Hepworth Acoustics noise impact assessment report dated September 2020

- 7.1 The Hepworth Acoustics Noise Impact Assessment Report (NIA), Reference 11 provided by the Client (the DfE) in the information to inform the design and specification of the scheme has been reviewed with regards to the design development. The report was prepared by a Corporate Member of the Institute of Acoustics (MIOA) and checked by a Fellow of the Institute of Acoustics (FIOA). A copy of the full report is available on request.
- 7.2 Noise survey measurements reported by Hepworth Acoustics are for a continuous 24-hour period between Tuesday, 8th and Wednesday, 9th September 2020.
- 7.3 An extract from the Noise Survey Report showing noise survey locations is provided below in Figure 2, (noting that the yellow area relates to outdated development proposals).
- 7.4 Whilst the development proposals have evolved since the Hepworth Acoustics Noise Survey, see Site Layout Plan in Appendix E, from a review of the Hepworth NIA report, the survey data is believed to still be relevant to informing environmental noise levels at the site and the representative background noise levels at nearby noise sensitive receptors, as a worst case approach, given that the noise measurement position is more distant from Greenhead Road and Park Avenue than residential dwellings and that the noise climate during the survey period being within the 2020 Covid-19 affected time, had potential to be of a lower level than an otherwise typically representative noise climate.



Figure 2: Extract from the DfE provided noise survey report showing the 24-hour measurement location 'X' with Apex Acoustics supplementary short term approximate measurements positions 1 to 5 in red

- 7.5 The noise levels measured during the surveys are summarised in the Noise Survey Report as shown in the extract from the report in Figure 3:

Period	L _{Aeq,15 mins}	L _{A90,15 mins}
Daytime (07:00 – 23:00 hours)	44 – 55	38 – 51
College hours (08:00 – 16:45 hours)	49 – 55	45 – 51
Night-time (23:00 – 07:00 hours)	41 – 53	35 – 44

Figure 3: Extract from the Hepworth Acoustics noise survey report showing noise measurement summary

- 7.6 The provided NIA Report includes an assessment based on the measured noise levels and BS 4142 guidance of representative background noise levels, L_{A90}, at nearby residential properties to inform plant noise impact limits.
- 7.7 Where relevant, subject to any additional requirements for the proposed scheme imposed by the Local Authority, the identified representative background noise levels are proposed to be used to inform control of the building services plant equipment noise emission levels for the scheme with noise rating level due to plant to be no higher than existing representative background noise

levels, as shown in Figure 4. Results of the statistical analysis of background noise levels following the guidance within BS 4142 are shown in Figure 9 and Figure 10 in Appendix B.

Table 5: Plant Noise Limits (dB)	
Daytime (07:00-23:00)	Night (23:00-07:00)
46	35

Figure 4: Extract from the noise survey report showing representative background noise levels

Apex Acoustics noise measurements

- 7.8 Apex Acoustics have also visited site to carry out supplementary noise measurements in the vicinity of the proposed new teaching block in the existing College car park on the south-east of the site adjacent to Greenhead Road and Park Avenue.
- 7.9 Apex Acoustics carried out noise measurements on Monday, 15th March 2021 at a number of positions representative of the proposed new teaching block facades and site boundaries most exposed to road traffic noise between approximately 12:30 and 17:00 hrs in and around the existing main car park.
- 7.10 At the time of Apex' survey, the College site had just reopened after several weeks of Covid-19 related lockdown restrictions and hence the local roads, car park and area was generally busy with staff and students
- 7.11 Based on an analysis of the measured noise levels, incident noise levels at southern and eastern facades proposed for the new teaching block due to road traffic on Greenhead Road and Park Avenue are predicted to be 50 – 55 dB $L_{Aeq,T}$.
- 7.12 Based on a review of existing residential facades on Greenhead Road and Park Avenue identifying that they are at a similar distance from the roadside as the proposed new teaching block, it can be expected that ambient noise levels at residential facades are of a similar level as predicted for the new teaching block façade overlooking the adjacent roads.

8 Proposed plant noise limits

Proposed plant noise limits at residential facades

- 8.1 Representative background and ambient sound levels have been identified from the supplied NIA report to inform fixed plant noise limit requirements in accordance with WYPCG criteria, as shown in Table 5.

Assessment period, T	Sound level limit based on Baseline representative background L_{A90} (at least 0 – 5 dB below existing background (see below))	Sound level limit based on Baseline representative ambient L_{Aeq} (at least 10 dB below existing ambient (see note below))	Maximum noise levels (L_{AFmax}) shall not exceed
Daytime 07:00 – 23:00	≤ 46 dB L_{A90}	≤ 45 dB L_{Aeq}	-
Night- time 23:00 – 07:00	≤ 35 dB L_{A90}	≤ 35 dB L_{Aeq}	-
19:00 – 07:00	-	-	≤ 60 dB L_{AFmax}

Table 5: Representative sound level at residential noise sensitive receptors in accordance with WYPCG criteria

- 8.2 Based on the proposed development being at an existing college type location, and; types of plant equipment being to provide building conditioning services including ventilation, heating and fume extract and similar, and; the context of residential receptors being adjacent to through roads, with a mix of non-residential uses included within the area, it is proposed that use of a plant noise limit for plant of no higher than '0 dB' below the existing background noise level is appropriate to inform plant noise control and assessment for the proposed scheme.
- 8.3 Baseline representative ambient noise levels have been based on review of the provided NIA report supplemented by Apex Acoustics noise survey measurements.
- 8.4 These limits are proposed to be applied at the nearest and most exposed residential properties to the new plant equipment installed in the scheme on Greenhead Road to the south and Park Avenue to the east. Other residential properties, such as those to the west of the site for example, are more distant / less exposed to proposed new plant equipment installations than those directly to the south and north east of the scheme.
- 8.5 This is considered a robust assessment of noise level limits based on previously cited noise survey conditions.

Proposed plant noise limits at college facades

- 8.6 To meet BB 93 internal noise criteria, noise limits due to external plant outside of a ventilation opening during college hours are included within Table 6.

Assessment period, T	Sound level limit at untreated ventilation opening to occupied space dB L _{Aeq,30 mins}
Daytime 09:00 – 16:00	≥ 15 dB + BB 93 IANL criteria

Table 6: Representative sound level at college noise sensitive facade in accordance with WYPCG and BB 93 criteria

9 Noise sources

Proposed plant and associated noise levels

9.1 The details of proposed building services plant including operating mode and noise data are subject to detailed design and were not confirmed at the time of writing. Further assessment will be undertaken when these details are confirmed.

Proposed relocated car parking

9.2 It is understood that the proposed car park would be available up to 21:15 hrs on weekdays and up to 18:15 hours on weekends.

9.3 The noise from the car parking area has been modelled following the German guidance RLS 90, Reference 10. This guidance describes the calculation method of the noise emitting from car parking based on:

- the type of the parking area, i.e. for car parking;
- number of vehicle movements at daytime or night-time;
- number of parking spaces; and
- ground absorption and barrier shielding effect.

9.4 It should be noted that there is no UK guidance to calculate the noise from a car park. The German guidance is the most relevant and used guidance in the UK. Additionally, it follows the general acoustic principle of noise emitting for such a space, with the total sound power level related to the number of vehicle movements, number of spaces, type of parking spaces, type of cars, etc.

9.5 The parameters used in the model are shown in Table 13 and in Table 14 in Appendix C.

9.6 The calculated noise level of a single parking space at 25 m as given in RLS 90 is shown in Table 7.

Parking type	RLS 90 Time Reference	Sound level used at 25 m for 1 no. parking space
Car park	06:00 to 22:00 hrs	30 dB L _{Aeq,1hr}

Table 7: Sound level used for a single car parking space

Proposed all weather pitch (08:00 to 21:00 hrs, weekdays; 09:00 – 18:00 weekends)

9.7 The noise levels from sports pitches vary dependent on the activities on the pitch.

9.8 Based on noise measurement of sports pitches including football, hockey and rugby and participation by men, women and children, the majority of the noise levels measured at 10 m are between 56 dB and 58 dB L_{Aeq,T}, Reference 12.

9.9 The Sport England recommended noise level limit from use of artificial grass pitches is 58 dB L_{Aeq,T} at 10 m, (Reference 6). The study in Reference 12 and Sport England are consistent.

9.10 The source noise levels from the proposed pitches are shown in Table 8. The noise levels used in this report are considered to be prudent as in most of the cases, experience has shown that the noise from the AGP is below the levels used in this assessment.

Parameter	Noise level used in the assessment	Sources
$L_{Aeq,T}$	58 dB $L_{Aeq,T}$ at 10 m	C. Vaughan, Reference 12; and Sport England, Reference 6

Table 8: Source noise levels of the sports pitches

9.11 No measured maximum noise levels or data is provided in relation to sports activity noise on pitches in Sport England guidance. Therefore, the maximum noise levels have been based on measurements of similar activities carried out by Apex Acoustics, which are in part included in a paper published in the Proceedings of the Institute of Acoustics 2018, Reference 13, and provided to inform the assessment as summarised in Table 9.

Event	Maximum sound power level
Stick hitting hockey ball	105 dB $L_{Amax,F}$
Ball hitting backboard with acoustic treatment	103 dB $L_{Amax,F}$
Shouting	102 dB $L_{Amax,F}$
Whistle blowing	102 dB $L_{Amax,F}$

Table 9: Maximum sound power levels associated with sports activities on pitches

10 Noise transmission and initial assessment

Acoustic model

10.1 Noise transmission and propagation is modelled to the NSR based on the noise source data detailed, using proprietary software, CadnaA, Reference 14. This models noise propagation outdoors according to RLS 90, Reference 10. The plan views of the acoustic models for the car park and sports facilities are shown in Figure 5 and Figure 6.

10.2 The model parameters and assumptions are summarised in Appendix C.

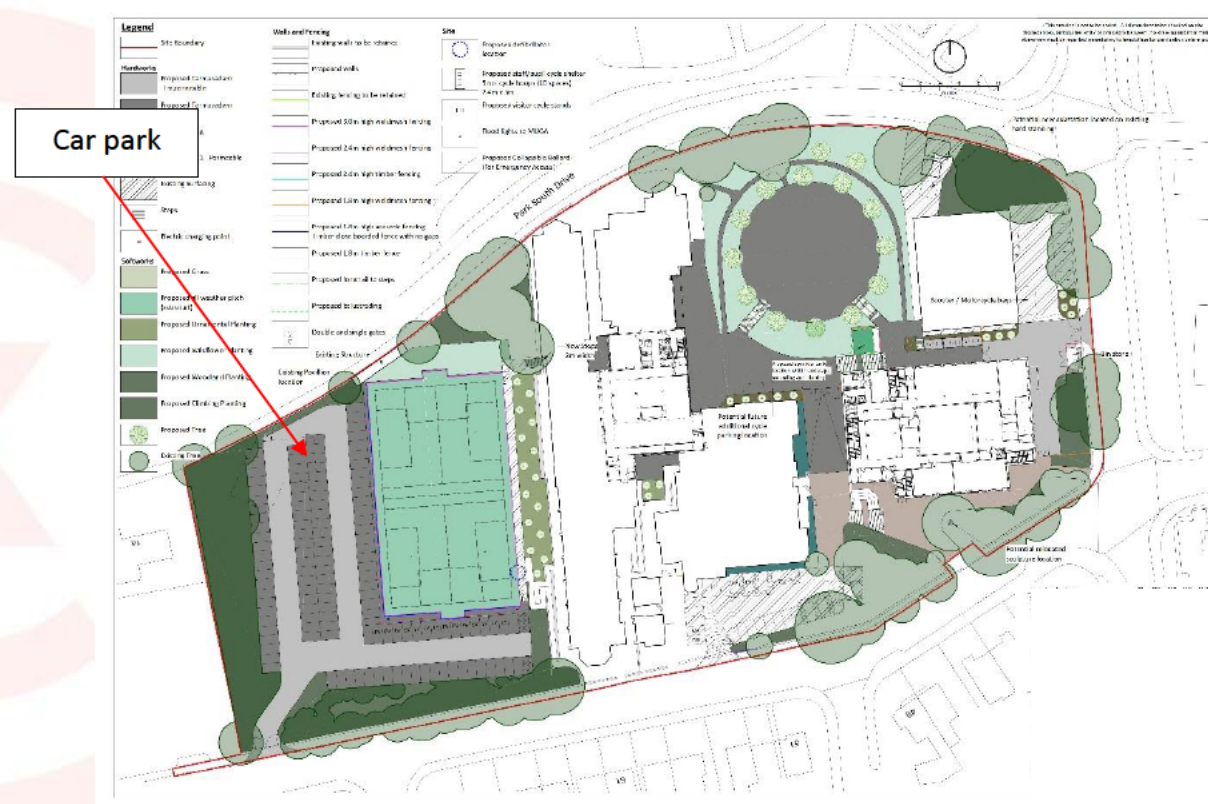


Figure 5: Acoustic model for car park – plan view

Sports pitch

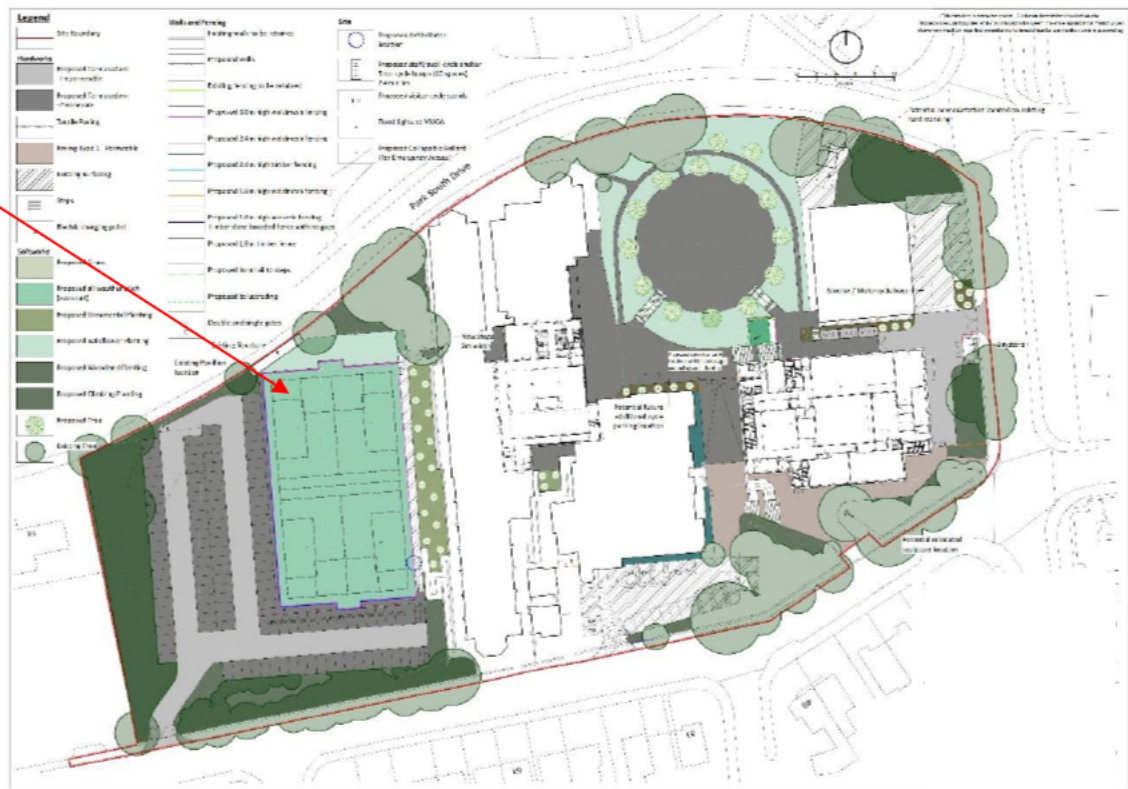


Figure 6: Acoustic model for sports pitch – plan view

Initial calculation and assessment

10.3 Without any additional mitigation measures, the calculated noise levels at the noise sensitive receptors (NSR) are shown in Table 10.

Noise source	Calculated noise level at NSR	Assessment criteria	Additional mitigation suggestion
Fixed plant	N/A	Rating level is at least 0-5 dB below the background sound level L_{A90} and at least 10 dB below the ambient sound level L_{Aeq} and between 19:00 and 07:00 maximum noise levels shall not exceed 60 dB L_{AFmax} at facades of residential properties	N/A
Car parking area	54 dB $L_{Aeq,1hr}$	≤ 55 dB $L_{Aeq,1hr}$	-
Sports pitch	52 dB $L_{Aeq,1hr}$; 61 dB L_{AFmax}	Desirable ≤ 50 dB $L_{Aeq,1hr}$; and ≤ 55 dB L_{AFmax} between 19:00 and 07:00 hrs	Noise barrier to the west and south of the sports pitch are required. Details are shown in Figure 8.

Table 10: Calculated noise levels and assessment without additional mitigation measures

11 Noise mitigation measures

Fixed plant

- 11.1 As the plant details are not confirmed at this stage, plant design and selections shall be informed by the noise limits proposed within this report and where appropriate, consider what additional mitigation may be necessary.
- 11.2 The potential mitigation measures should ensure the rating level of the fixed plant at 1 m outside of habitable room windows of the nearest residential property is no higher than identified sound level limits based on the identified plant noise impact assessment criteria.
- 11.3 Based on an understanding of proposed fixed plant available at the time of writing and noise control requirements for limiting of noise ingress at new and existing school facades to meet BB 93 IANL criteria within teaching spaces, identified noise limits for residential receptors are likely to be met with the same mitigation measures as required for the college – ie where relevant, appropriately specified in line attenuation, enclosures and or barriers.
- 11.4 **Preliminary assessment for BB 93 requirements**
- 11.5 *New teaching block roof plant*
- 11.6 Preliminary assessment indicates that additional mitigation measures are required for the new teaching block rooftop area to mitigate noise impact at the classroom roof turrets. A 2.4 high solid screen between the main plant and the natural ventilation roof turrets is recommended. The barrier location is shown in Figure 7.
- 11.7 To be effective in practice, the barrier should have no cracks or gaps, be continuous to the ground, and have a surface density $\geq 12 \text{ kg/m}^2$.

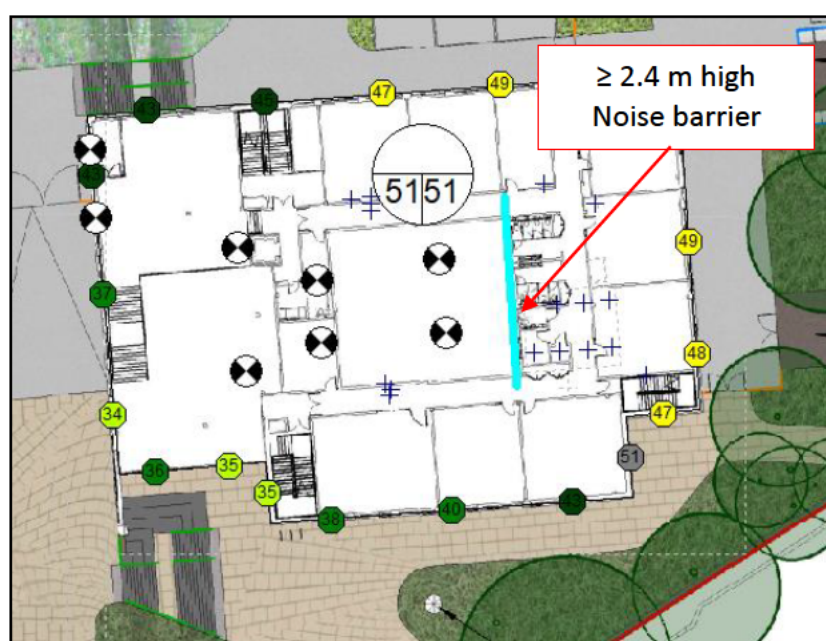


Figure 7: Noise barrier to the roof level plant area west elevation

11.8 *New Courtyard Infill roof plant*

- 11.9 A number of existing condenser type plant units on the existing Courtyard Infill roof are proposed to be retained in approximately the same location as existing.
- 11.10 Based on preliminary assessment of the plant unit proposals current at the time of writing, no additional noise attenuation measures are anticipated to be required, subject to detailed design.

Relocated car parking

- 11.11 It should be noted that there is understood to be no increase in the overall number of car parking spaces proposed due to the scheme. Hence, whilst the main car parking area for the site is being relocated from south east of the site to the west of the site, for the majority of residential properties adjacent to the scheme, the proposed relocation of car parking is broadly equivalent to the existing, alongside Greenhead Road and extending north toward Park Drive South, where there are limited numbers of dwellings adjacent to the College site, with an existing area of the site also used for parking of vehicles.
- 11.12 Note also that dwellings closest to the relocated car parking spaces are at a similar distance to either Greenhead Road to the south or Park Drive South to the north and therefore already exposed to road traffic related noise to an extent. Based on Apex Acoustics noise measurements at and around the proposed new teaching block south and east façade locations, as per the assessment to inform the new teaching block façade design for BB 93, ambient noise levels measured during mid-afternoon were circa 50 – 55 dB $L_{Aeq,T}$.
- 11.13 Based on Apex noise modelling results no additional mitigation measures are required for the proposed relocated car park spaces to meet the identified criteria.

Reoriented sports pitch

- 11.14 There is an existing sports pitch at the College site on a broadly east-west axis between the existing school buildings and College site boundary to the west. In the proposed scheme, the pitch is to be reoriented north-south such that overall, it is more distant from the site boundaries to west and south, extending closer to the north site boundary with Park Drive South. To the immediate north of the Park Drive South is Greenhead Park.
- 11.15 During the current hours of sports pitch use at the site, noise impact due to the reoriented pitch is likely to be marginally reduced at nearby dwellings due to increased distance alone. Where an acoustic barrier is installed as proposed, noise impact due to use of the reoriented pitch during existing times of use is likely to be further reduced.
- 11.16 Acknowledging that where there is potential for increased hours of use for the pitch relative to existing, 1.8 m high noise barriers to the west and south of the sports pitch are proposed based on the output from the sports pitch noise modelling. The barrier locations are shown in Figure 8.

- 11.17 To be effective in practice, the barrier should have no cracks or gaps, be continuous to the ground, and have a surface density $\geq 12 \text{ kg/m}^2$ such as a close boarded timber fence.
- 11.18 In addition, with regards to the referenced Sport England AGP guidance on page 10 relating to weldmesh fencing that: '[fence] panels should be securely clamped with resilient fixings to avoid vibrations', an example of a weldmesh fence type addressing the above is identified in Append F to inform the final selection of this type of fencing, where ball impact noise may be relevant.

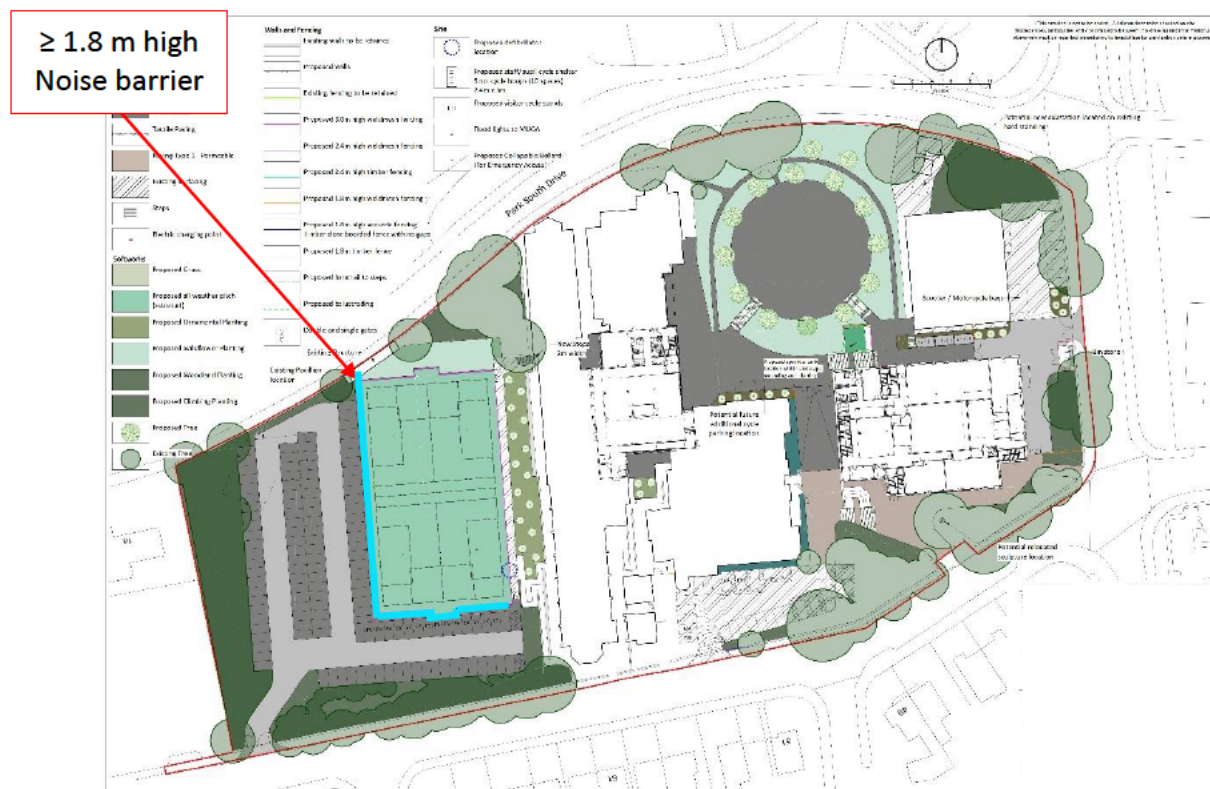


Figure 8: Noise barrier to the west and south of the sports pitch

12 Calculated noise levels and assessments

Calculated noise levels

- 12.1 With the additional noise mitigation measures described in Section 9, the calculated noise levels at the noise sensitive receptors (NSR) are shown in Table 11.

Noise source	Calculated noise level at NSR	Noise level contour	Assessment criteria	Criteria achieved?
Fixed plant	N/A	N/A	Rating level is at least 0-5 dB below the background sound level L_{A90} and at least 10 dB below the ambient sound level L_{Aeq} and between 19:00 and 07:00 maximum noise levels shall not exceed 60 dB L_{AFmax} at facades of residential properties	Yes. Based on appropriate selection and design of plant and mitigation to meet identified noise limits
Car park	54 dB $L_{Aeq,1hr}$	Figure 11	$\leq 55 \text{ dB } L_{Aeq,1hr}$	Yes
Sports pitches	50 dB $L_{Aeq,1hr}$ 55 dB L_{AFmax}	Figure 12 and Figure 13	Desirable $\leq 50 \text{ dB } L_{Aeq,1hr}$ $\leq 55 \text{ dB } L_{AFmax}$ between 19:00 and 07:00 hrs	Yes

Table 11: Calculated noise levels with the additional mitigation measures described in Section 9

Assessment

- 12.2 With the identified additional noise mitigation measures and where relevant, appropriate selection and design of plant equipment and mitigation, the highest calculated noise levels at the noise sensitive receptors are within the noise limits proposed.
- 12.3 The calculated noise levels indicate that the noise impact is likely to be around Lowest Observed Adverse Effect Level (LOAEL) according to the Noise Policy Statement for England.
- 12.4 On this basis, it is anticipated that Local Authority requirements shall be satisfied.

13 Conclusion

- 13.1 An assessment of the predicted noise impact due to the operation of the proposed site at Greenhead College, Huddersfield has been carried out in support of a planning application.
- 13.2 Calculations and assessment have been made of a range of potential noise sources that may be either introduced, relocated or increased in scale due to the development.
- 13.3 Based on typically applicable guidance and an understanding of Local Authority considerations in respect of noise, limits have been proposed for a range of noise generating activities
- 13.4 Based on the recommended mitigation measures detailed in Section 9 and in the context of the existing site and surroundings, the calculated noise levels are below noise limits proposed to meet the identified requirements, and therefore comply with the aims of the NPPF and anticipated requirements of the Local Authority.

14 References

- 1 National Planning Policy Framework, Ministry of Housing, Communities & Local Government, July 2021.
- 2 Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, March 2010.
- 3 BS 4142:2014:A1+2019, Method for rating and assessing industrial and commercial sound.
- 4 World Health Organisation Guidelines for Community Noise, 1999
- 5 BS 8233:2014 Guidance on sound insulation and noise reduction in buildings.
- 6 Sport England: Artificial Grass Pitch (AGP) Acoustics – Planning Implications, New Guidance for 2015.
- 7 West Yorkshire Planning Consultation Guidance (Condensed Version), Noise & Vibration, May 2016.
- 8 Building bulletin 93 (BB93), Acoustic design of schools: performance standards, February 2015.
- 9 Leeds City Council Planning Consultation Guidance, Noise & Vibration, December 2019.
- 10 RLS, 1990. Richtlinien für den Lärmschutz an Strassen. BM für Verkehr, Bonn, 1990
- 11 Hepworth Acoustics report, reference no. P20-333-R01v1, Greenhead College, Huddersfield, Noise Impact Assessment, September 2020.
- 12 The assessment of noise from all-weather sports pitches, Charley Vaughan, IOA Acoustics Bulletin Vol 43 No 1 January/February 2018.
- 13 Measurements of Hockey Ball Hitting Backboards Covered by Different Materials, by Weigang Wei, Adam Cooke and Jack Harvie-Clark of Apex Acoustics Ltd. Proceedings of the Institute of Acoustics Vol. 40. Pt. 1. 2018 available at <https://www.apexacoustics.co.uk/wp-content/uploads/2020/01/Measurements-of-hockey-ball-noise-IOA-2018-WW-ATC-JHC.pdf> with summary at <https://www.apexacoustics.co.uk/wp-content/uploads/2018/04/Apex-Acoustics-Poster-2018-IOA-Measurements-of-hockey-ball-impact-noise-on-backboards.pdf>
- 14 CadnaA environmental noise modelling software, version 2017, Datakustik GmbH.
- 15 ISO 9613: Acoustics - Attenuation of sound during propagation outdoors.
- 16 Architect's and Landscape Architects drawings, inc: Site Location Plan drawing no. NE8659-OOB-ZZ-00-DR-L-0000 and Site Layout Plan as proposed / Block Layout, drawing no. NE8659-OOB-ZZ-00-DR-L-0001.

Appendix A Noise exposure hierarchy

Planning Practice Guidance - Noise				Significant adverse effect Adverse effect Low Impact An initial estimate of the impact of the specific sound may be obtained by subtracting the measured background sound level from the rating level. Typically, the greater this difference, the greater the magnitude of impact + 10 dB + 5 dB 0 dB
Noise	Example of outcomes	Increasing effect level	Action	
Present and very distributive	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	
Present and distributive	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	
Significant Observed Adverse Effect Level (SOAEL)				
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 or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum	
Lowest Observed Adverse Effect Level (LOAEL)				
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 change in the quality of life.	No Observed Adverse Effect	No specific measures required	
No Observed Adverse Effect Level (NOAEL)				
Not present	No effect	No Observed Effect	No specific measures required	
No Observed Effect Level (NOEL)				

Table 12: PPG-N Noise Exposure Hierarchy and BS 4142 initial estimate of impact

Appendix B Noise measurements results

- B.1 Extracts from the Hepworth Acoustics noise impact assessment report provided by the DfE for the scheme of the background noise level analysis used in the assessment.
- B.2 The provided analysis of the typical background sound levels at the measurement position are shown in Figure 9 and Figure 10.

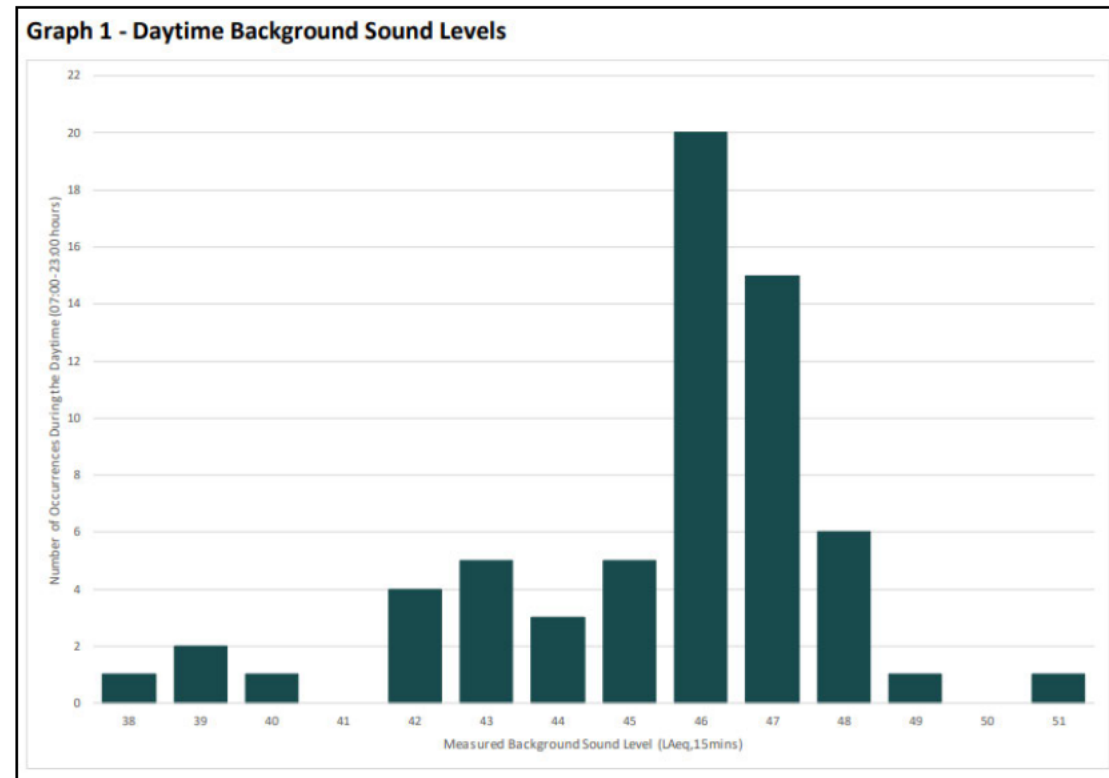


Figure 9: Extract of analysis of the background sound levels measured during daytime (07:00-23:00) from Hepworth Acoustics Noise Impact Assessment report provided by the DfE for the scheme

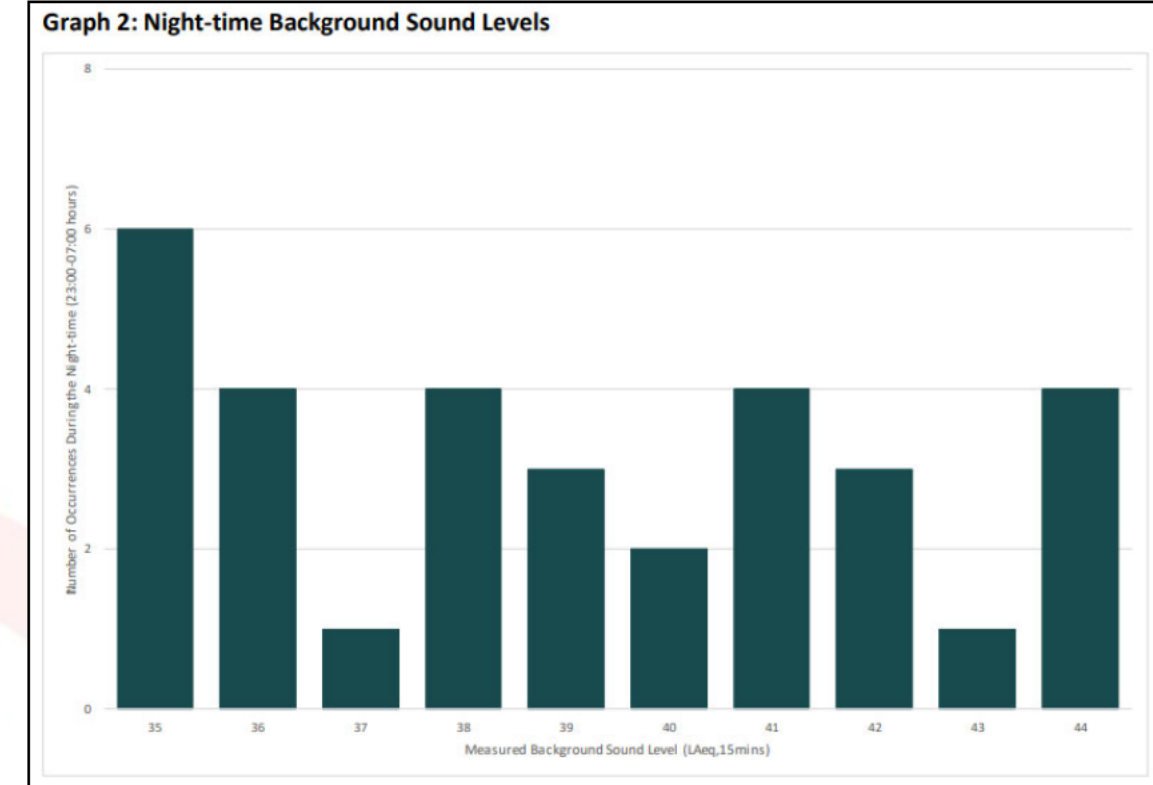


Figure 10: Extract of analysis of the background sound levels measured during night time (23:00-07:00) from Hepworth Acoustics Noise Impact Assessment report provided by the DfE for the scheme

Appendix C Noise transmission and propagation

- C.1 Noise transmission and propagation is modelled using proprietary software, CadnaA.
- C.2 The noise propagation from car park is calculated following the guidance in RLS 90 and the noise propagation from sports pitches is calculated following the guidance in ISO 9613-2, Reference 15.
- C.3 0.3 cars per space per hour is based on statistical study of parking space types for a “Park and Ride”. For a college car park, it is likely that the number of car movements for the majority of the day shall typically be less than 0.3 per space per hour.
- C.4 The parameters used in modelling are shown in Table 13 and Table 14.

Parameter	Details
Model dimensions	British Transverse Mercator coordinates
Site location and layout	Architects’ drawings, Reference 16
No. of vehicle movements	0.3 cars per car parking space per hour based on RLS 90 noise source levels for 06:00 to 22:00 hrs;
D_p , correction for different parking types	Car park: +0 dB
D_B , shielding	0 dB, no shielding
Source height	0.5 m

Table 13: Modelling parameters and assumptions – RLS 90

Parameter	Details
Model dimensions	British Transverse Mercator coordinates
Site location and layout	Architects’ drawings, Reference 16
Topography	Topography included
Building heights – proposed buildings	Architects’ drawings
Building heights – outside of site	6 m for residential dwellings
Building and barrier absorption coefficient	0.21 to represent a reflection loss of 1 dB
G, Ground factor	Hard ground, $G = 0$; Porous ground, $G = 1$ (Grass land around full weather pitches where relevant)
Source height	For sports pitches, 1.5 m to represent height of players’ mouth, 0.5 m to represent height of a ball strike
Max. order of reflections	Three

Table 14: Modelling parameters and assumptions – ISO 9613-2

Appendix D Calculated noise contour levels



Figure 11: Noise level contour at 1.5 m above ground due to proposed car park (no mitigation required)

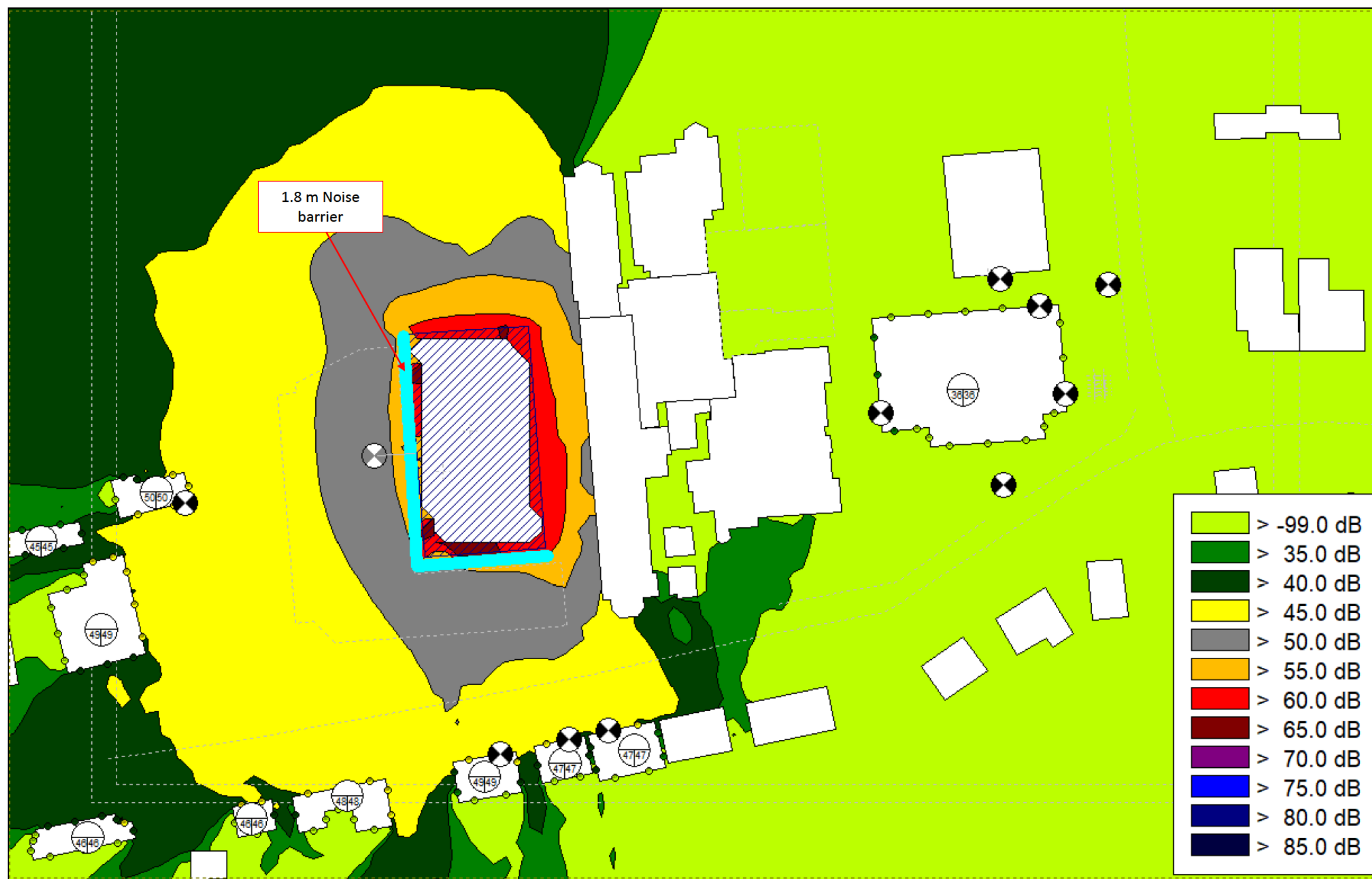


Figure 12: LAeq,1hr Noise level contour due to sports pitch at 1.5 m above ground (with mitigation)

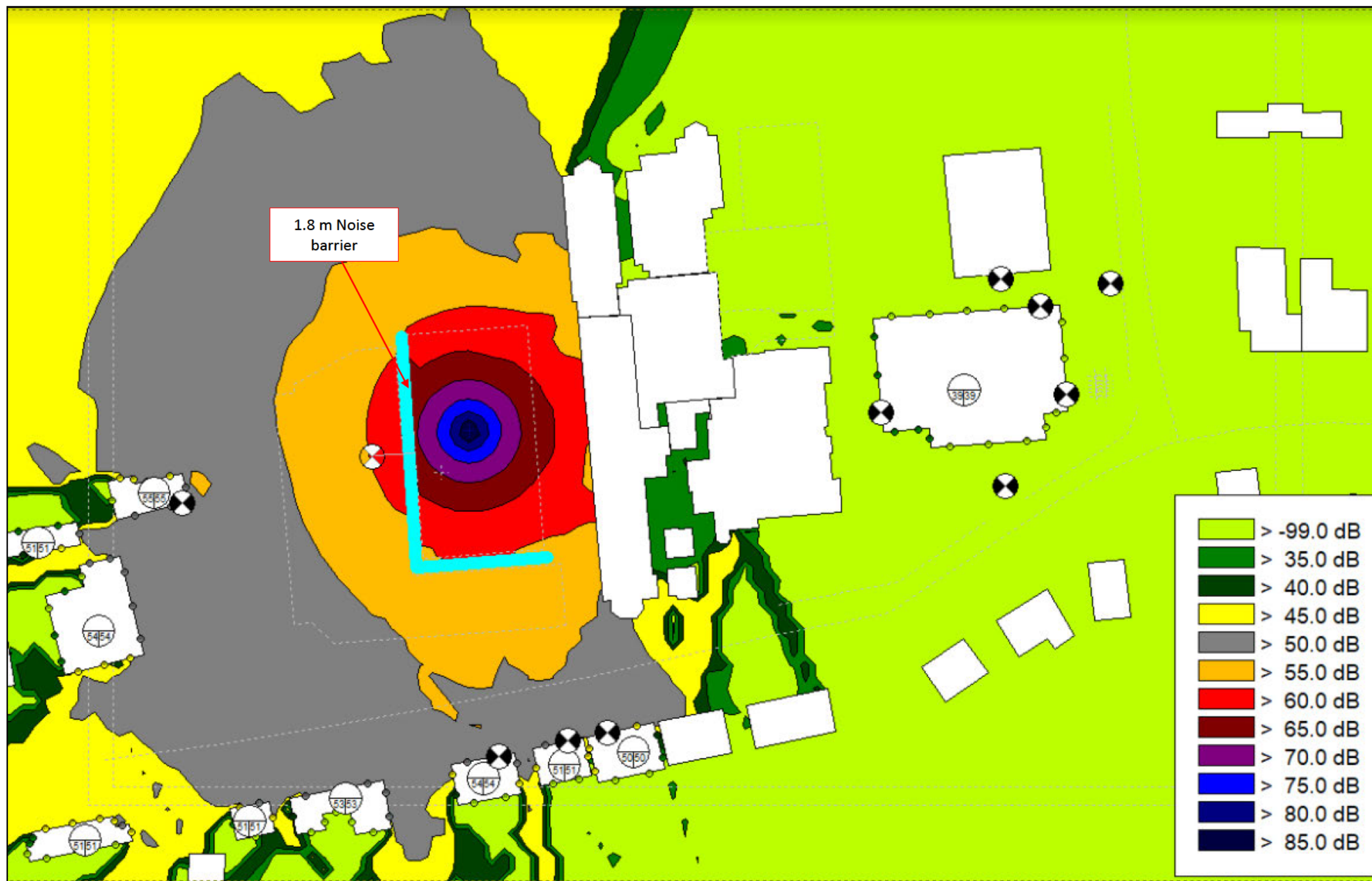
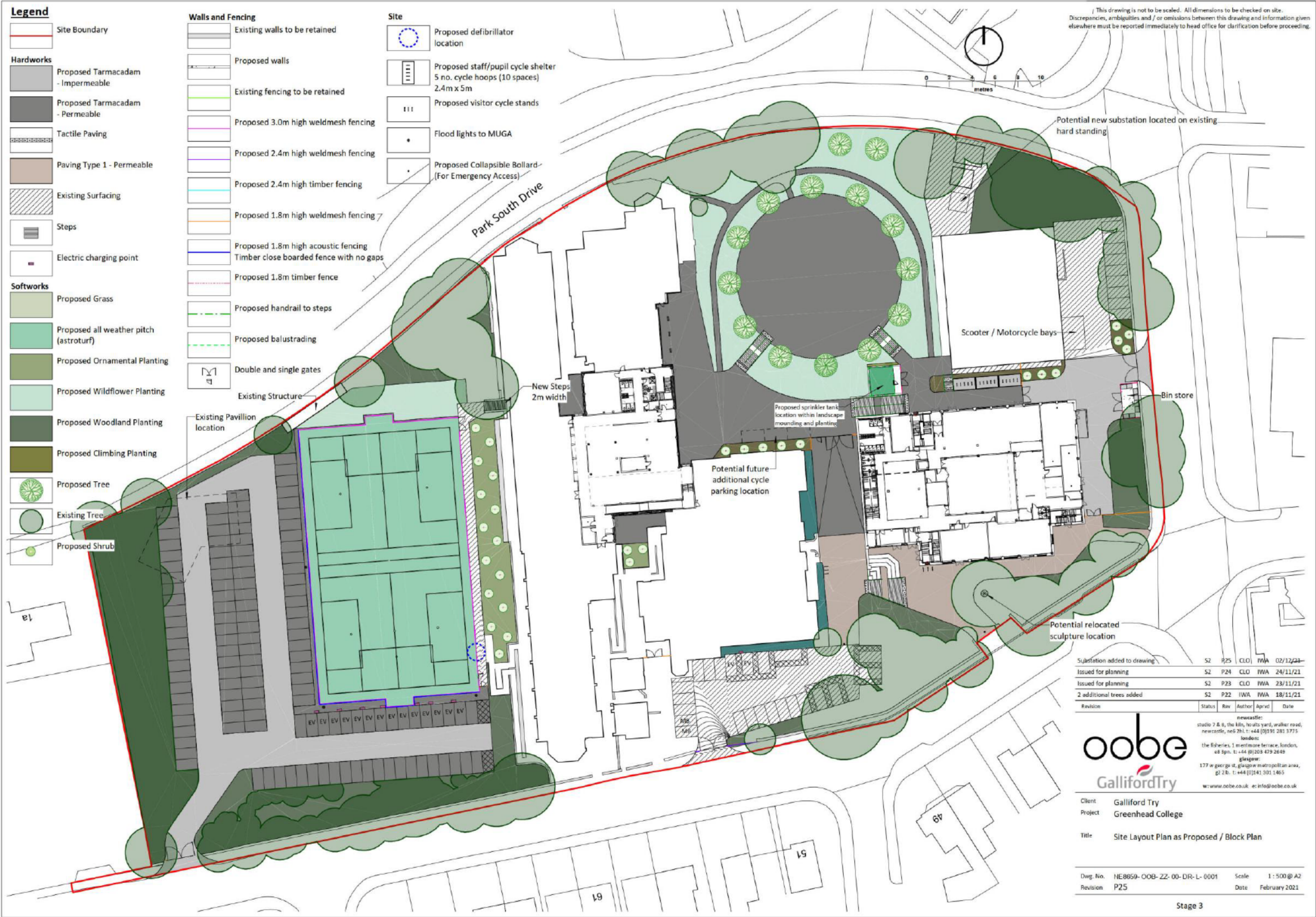


Figure 13: LAFmax Maximum noise level contour at 1.5 m above ground due to a hockey ball strike (worst case) on sports pitch (with mitigation)

Appendix E Site plan

AE-1 Landscape Architect Site Layout Plan, Reference 16 site plan used to inform noise control requirements for the proposed scheme.



Appendix F Example of acoustic fencing

AF-1 Example of acoustic fencing incorporating acoustic measures identified in Sport England Design Guidance Note ‘Artificial Grass Pitch (AGP) Acoustics – Planning Implications.

AF-2 Zaun Duo8 Sports datasheet:

Applications:

 Civic & Public Sector

 Sport & Leisure

 Schools & Education

Drawings:

Download our drawings direct from our website:

www.zaun.co.uk/about-us/downloads/drawings/

ZAUN

Duo8 Sports

Features & Benefits:

- Reduces noise and rattle caused by ball impact with EPDM inserts and fixings every 200mm
- 50mm x 200mm open mesh increases visibility to ensure there are no hiding places for the safety of players
- Twin wire structure provides a rigid strong mesh panel that is low maintenance and provides no solid surface for vandals
- Continuous panel without mid-rails to injure players
- Supplied with standard or minimal projections at the top of the panel
- Available either bolt down, in ground or on wall
- Goal and basketball ends also available

Description:

Zaun's Duo8 Sports fencing system has been designed and evolved from the Duo8 perimeter system. The Duo8 Sports solution is ideal for both light usage courts and for heavy use with MUGAs in urban settings.

One of the major stumbling blocks during the planning of sports courts is noise that occurs during play. Like Duo, Duo8 Sports is available using 8mm twin horizontal wires however Duo Sports has been developed to overcome the rattle that so many residents object to. Duo8 Sports uses twice as many fixings to mount the panels to the posts, ensuring that there is minimum movement between the two. Furthermore, each fixing uses a synthetic EPDM insert to insulate the panel from the post. Fixings every 200mm and synthetic rubber inserts at each fixing virtually eliminates rattle during play.

Panels can be cranked inwards to increase ball retention and the addition of Zaun football goals and basketball units will increase user participation. A clamp bar covering panel ends ensures a safe playing surface with no sharp edges.

Technical Support

Should you require any help or assistance in your requirement please contact

sales@zaun.co.uk or call +44 (0)1902 796 699

Turnkey Solutions

Zaun can provide you with solutions to suit all of you sport and perimeter protection requirements, whether you need to protect a school playground or a military base, Zaun has the solutions for you. From perimeter and sports fencing to CCTV and access control, Zaun can provide solutions to your specific requirements.

For more information on any of our products or services please visit our website at:

www.zaun.co.uk

Version: 20160325



Details:

Minimum height of 630mm to maximum height of 6 metres – Duo8 Sports Fencing

Mesh:

Duo8 mesh comprising 50mm x 200mm mesh with dual 8mm horizontal wires at 200mm centres and single 6mm vertical wires at 50mm centres

Posts:

Various RHS post sizes dependent on height (see chart below for details), spaced at 2525mm centres

Post to panel fixing:

Panels fixed to posts with full height 40mm x 5mm clamp bar with bolt fixings at 200mm centres with EPDM inserts. The full height clamp bars create a flush safe finish with the mesh ends behind the clamp bar.

Gates:

Pedestrian gates are single leaf 1.2m wide, (or width to suit), framed in a 50mm x 50mm SHS with Zaun Duo8 mesh welded inside the frame, with slide latch. Gate supplied with rubber bump stop and 2 x suitable gate posts.

Vehicle access gates are double leaf (single leaf vehicle gates available) 3.0m wide (or width to suit), framed in 50mm x 50mm SHS, with Zaun Duo8 mesh welded inside the frame, with drop bolts and slide latch. Gate supplied with rubber bump stop and 2 x suitable gate posts.

Finish:

Materials are galvanised and Polyester Powder coated.

Drawings:

www.zaun.co.uk/about-us/downloads/drawings/

Specifications:

Height	Post Centres	Vertical Wires	Horizontal Wires	Mesh Pattern	Post Section
630mm to 2.23 mtr	2.525 mtr	6mm	8mm	50mm x 200mm	60mm x 40mm
2.43 mtr to 3.68 mtr	2.525 mtr	6mm	8mm	50mm x 200mm	80mm x 40mm
3.88 mtr to 4.48 mtr	2.525 mtr	6mm	8mm	50mm x 200mm	100mm x 50mm
5.00 mtr to 6.00 mtr	2.525 mtr	6mm	8mm	50mm x 200mm	120mm x 60mm

Appendix G Responses to EHO noise related comments dated 07.12.2021

AG-1 Apex comments on relevant extracts from Kirklees Environmental Health dated 07.12.21:

The screenshot shows a PDF document titled "Environmental Health Revised Response - 8769 Apex Acoustics Greenhead 6th Form College noise requirement comments 28.03.22 - v...". The document is from Kirklees Council and is a consultation response from KC Environmental Health (Pollution & Noise Control). It details the partial redevelopment of Greenhead College, including demolition, new buildings, parking, and sports provision. It lists responding officers: Mohammed Nasim (Noise), Natalie Heaney (Contaminated Land), and Rebecca Muff (Air Quality). The response date is 7th December 2021, with a reference WK/202140632. The text discusses initial consultation on 9th November 2021, subsequent comments on 9th November, and a noise survey on 15/03/21. A sticky note on the right side of the page, dated 28/03/2022, 12:45:01, provides additional context on the noise assessment, stating it is in accordance with current Sport England guidance and that the submitted noise report does not reflect the worst-case acoustic environment.

Kirklees COUNCIL

Consultation Response from: KC Environmental Health (Pollution & Noise Control)

2021/93674 Greenhead College, Greenhead Road, Huddersfield, HD1 4ES

Partial redevelopment of Greenhead college including demolition and making good, erection of 2 and 4 storey buildings, reconfiguration of parking and access arrangements, reconfiguration of sports provision and other associated external works (Within a Conservation Area)

Date Responded: 7 th December 2021	Responding Officers: Mohammed Nasim – Noise Natalie Heaney – Contaminated Land Rebecca Muff – Air Quality	Responding Ref: WK/202140632
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In our initial consultation dated 9th November 2021 we reviewed the submitted information and recommended conditions for: Kitchen Extract Scheme, Contaminated Land, Ground Gas, Noise, External Artificial Lighting, Hours of Use, Construction Environmental Management Plan, Electric Vehicle Charging Points and Pollution Prevention.

Since our previous comments of 9th November, further information has been submitted which has been reviewed and we make the following comments and recommendations, which supersedes our previous comments for these areas. Conditions relating to the Kitchen Extract Scheme, Installation of the Agreed External Artificial Lighting (Car Parks, Security Lighting and Walkways), Construction Environmental Management Plan, and Pollution Prevention remain unchanged.

Noise
Further to our comments dated 09 November 2021, Apex Acoustics have responded in the submitted document 'Apex Acoustics responses to EHO noise related comments - v25112021' dated 25 November 2021 clarifying the points and concerns raised.

Noise Survey
We sought clarity on the noise measurements and Apex state they were carried out at the site on 15/03/21. The background noise levels included in Appendix B of the Apex NIA report are taken from the Hepworth noise assessment report. Since the measurement position used for the Hepworth noise survey was set well back from Greenhead Road, Park Avenue and Park Drive South, being carried out during September 2020 when road traffic levels were likely to be below typical levels due to Covid-19, it was felt that the use of these background noise level measurements at dwellings which are typically closer to roads than the measurement position to inform the noise impact assessment is a robust approach. It is accepted that road traffic levels were lower than normal due to Covid restrictions but even after applying any correction, it is unlikely to result in a perceptible increase and this is accepted.

It was unclear from the report whether the sports pitches were in use during this time, and if so, what sports activities were underway. Apex have stated that their measurements were supplementary to the Hepworth noise survey and that their report is based on Sport England published guidance on noise assessment for all weather pitches including their published noise levels due to sport and included in Table 8. Where Sport England doesn't include detailed noise information for LAF_{max} levels, Apex have supplemented this with their own measurements of a range of sports related noise generating activities. This point is accepted, however, the submitted noise report does not reflect the worst-case acoustic environment and

Sticky Note - [Silvio Murgia] 28/03/2022, 12:45:01

Apex noise assessment of the relocated sports pitch is in accordance with current Sport England guidance for planning implications of AGP's (2015). This guidance assesses noise impact based on absolute noise levels and provides limits based on WHO & BS 8233 recommended noise limits for outdoor amenity. The guidance does not base the assessment on existing environmental noise levels as appears to be suggested by the EHO. In addition, Apex have also assessed against the following criteria: maximum noise level shall not exceed 55 dB LAF_{max}, based on noise due to a hockey stick hitting a hockey ball. As per Apex NIA report and assessment, we have proposed that assessment in accordance with current Sport England guidance is sufficient and suitable for this site.

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Environmental Health Revised Response - 8769 Apex Acoustics Greenhead 6th Form College noise requirement comments 28.03.22 - v...

File Home View Comment Protect Form Organize Convert Share Review Accessibility Bookmarks Help Commenting Tools Format

Environmental Health Revised Response - 8769 Apex ..

Kirklees COUNCIL

it is our belief that this needs to consider any activities during the peak times and days. This needs to include the evenings and weekends and so a condition requesting a revised report to take these timings into account is recommended.

Fixed Plant
Apex state a reduction in the number of ASHPs (Air Source Heat Pumps) is now proposed compared to that current at the time of their initial report, with units also being relocated further away from the existing college façade, reducing the risk of adverse noise impact, including at the existing college façade. Apex state that mechanical plant and attenuator selections shall be based on Table 5 plant noise limits within the report. Detailed plant noise impact assessment based on BS 4142 at nearby dwellings shall be carried out once final plant selections have been confirmed. Our position remains that a condition requiring a further assessment of the proposed plant and the associated noise levels during operation must be undertaken once these details are confirmed.

A condition is also recommended to ensure the mitigation measures proposed (2.4m high solid screen) is installed as per the location and specification given.

Sports Pitch
The report acknowledges that the noise levels from the sports pitch are likely to vary depending on the activities underway but indicates that the majority of the noise levels measured at 10m are between 56dB and 58dB LAeq,T. The report considers this consistent with the Sports England recommended noise level limit for use of artificial grass pitches. The sound associated with sporting activities has also been taken into consideration (i.e. a stick hitting a hockey ball, shouting and whistleblowing). The calculated noise levels at the noise-sensitive receptors for the sports pitch were 52dB LAeq,1hr and 61dB LAFmax. These were above the desirable assessment criteria of 50dB LAeq,1hr and 55dB LAFmax between 1900hrs and 0700hrs. As stated, the submitted noise report does not reflect the worst case acoustic environment and it is our belief that this needs to consider any activities during the peak times and days. This needs to include the evenings and weekends and so a condition requesting a revised report to take these timings into account is recommended.

Apex state their report has been updated to include reference to noise levels due to a hockey ball hitting a resilient material treated backboard. The applicant will need to ensure all pitch perimeter fencing is installed in accordance with the Design Guidance Note from Sport England - Artificial Grass Pitch (AGP) Acoustics - Planning Implications and a condition is recommended to ensure it is installed as per this guidance document.

All other noise mitigation fencing is to be installed as per the location and specification given and a condition is recommended.

Car Parking
We have stated that it is unclear whether consideration has been given to the vehicle movements that are likely to fluctuate due to scheduled sports games. Apex state that for a college car park, it is likely that the number of car movements for the majority of the day shall typically be less than 0.3 per space per hour. They consider the car park as a source area with the total sound power level determined by the number of vehicle movements and the total parking spaces. Whilst it is noted that the proposed car parking layout for the scheme is based on the total of 157 existing car parking spaces currently at the site being the same with

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Sticky Note - [Silvio Murgia] 28/03/2022, 11:22:09
Apex NIA report Table 5 includes noise limit criteria for plant emissions to achieve at nearby dwellings. Based on assessment of the plant selections current at the time of the planning application, plant noise mitigation measures have been assessed to meet the Table 5 identified noise limit criteria. In this regard, Apex NIA report is considered to meet the 'pre-commencement' requirements of Condition 27. Permission Condition 22 requires noise assessment evidence to be submitted 'Prior to...[the 2 new buildings] being brought into use...'. It is proposed that a detailed plant noise impact assessment based on BS 4142 guidance be carried out once final plant selection details are confirmed, to be submitted for Condition 22.

Sticky Note - [Silvio Murgia] 28/03/2022, 11:32:54
See Apex response above regarding use of absolute noise level criteria based on WHO / BS 8233.

Sticky Note - [Silvio Murgia] 28/03/2022, 12:47:24
See further below for sports pitch barriers re Condition 30.

Options... W: 210.0mm H: 297.0mm X: Y: 2/12 80.62%

The screenshot shows a PDF document titled "Environmental Health Revised Response - 8769 Apex .." in a web browser. The document is from Kirklees Council and contains a response to noise impact assessment comments. A yellow sticky note is attached to the document, containing the following text:

the scheme, it does not state whether there is a possibility of an increase in noise levels from vehicle movements in the late evening or over the weekends due to the proposed use of the sports pitches and this will need to be clarified. The use of the German Guidance is accepted.

Contaminated Land

In our previous response dated 9th November 2021 we commented on the following documents that had been submitted in support of the application:

1. Phase I Geo-Environmental Desk Study by EPS dated 24th September 2020, (Ref: UK20.5113)
2. Coal Mining Risk Assessment by Cundall dated 15 September 2021 (Ref: 1029739.RPT.GL.001)
3. Phase II Geotechnical and Geoenvironmental Assessment (Ref: NE8659-CDL-ZZ-XX-RP-GE-60200)

We concluded that there were several aspects of the Phase II report that required additional information/clarification. These related to the ground gas data, the ground monitoring data, the absence of a sampling plan and the proposals for the carbon dioxide and methane detectors.

We have now received the following in support of the application:

1. Phase II Geotechnical and Geoenvironmental Assessment dated 22nd November 2021 (Ref: NE8659-CDL-ZZ-XX-RP-GE-60200 – Revision C)
2. A document titled 'GT response to Environmental Health comments on Contamination (9th November).'

First, we indicated that no ground gas data had been provided other than the summary sheets provided in the report. We also noted that the groundwater monitoring data was absent. Secondly, we commented on the absence of a sampling plan. Lastly, we considered the proposals for carbon dioxide and methane detectors unclear and detailed that we require detailed information before the development commences.

The new information provided, details that the previously submitted information failed to include the final ground gas monitoring round information however this is now provided in the revised document. This also includes the groundwater monitoring data and the depth ranges of the response zones have been into Table 11 of Rev. It is also detailed that the raw information presented by EPS is not available, but the summarised information is now presented in Appendix A.

It has also been clarified that a targeted sampling methodology was undertaken the exploratory hole positions were determined by physically accessible locations and around the constraints of the college as it was operational during the works.

Lastly, it has been raised that it is beyond the scope of the scope of a Phase II report to make detailed recommendations for or specify detailed gas monitoring equipment and that this will be included in a remediation strategy.

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Environmental Health Revised Response - 8769 Apex ..

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Environmental Health Revised Response - 8769 Apex Acoustics Greenhead 6th Form College noise requirement comments 28.03.22 - v.. Quick Launch (CTRL+) Find... Search...

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activities and trackout and outlines measures to control and prevent dust emissions during the construction phase. These are seen in section 6 Dust Emission Prevention Measures. In the event that these measures do not prevent significant dust emissions further measures are to be put in place to further enhance and adequately control dust – these measures are outlines in section 7.0 of the report titled Dust Emission Response Measures.

Comment
We have reviewed the submitted information and accept the Dust Management Plan by GallifordTry and recommend a condition relating to its implementation.

Recommended Conditions
NC8 Noise Report required for proposed noise generating use close to existing noise sensitive premises - Condition
Before construction work commences, a further noise assessment report by a suitably competent person shall be submitted to and approved in writing by the Local Planning Authority. The report shall include:

- an assessment of all of the noise emissions from the proposed development including (but not limited to) from the use of the sports pitches, car parking and mechanical plant.
- details of existing background and predicted future noise levels at the boundary of the nearest noise sensitive premises
- a written scheme of how the occupants of the above-mentioned noise sensitive premises will be protected from noise from the proposed development including details of all necessary noise attenuation

The development shall not be brought into use until all works comprised within the measures specified in the approved report have been carried out in full and such works shall be thereafter retained.

NF4 Competent Person - Footnote
All noise assessments should be carried out by a competent person. Developers may wish to contact the Association of Noise Consultants <http://www.association-of-noise-consultants.co.uk/> (020 8253 4518) or the Institute of Acoustics <http://www.ioa.org.uk> (0300 999 9675) for a list of members.

NC1 Implement Agreed Noise Mitigation Measures – Condition
Before the development is first brought into use all works which form part of the sound attenuation scheme as specified in the Apex Acoustics Noise Impact Assessment dated 14th September 2021 (ref: NE8659- APX-ZZ-ZZ-RP-YA-0002

- shall be completed; and
- written evidence to demonstrate that the specified noise levels have been achieved shall be submitted to and approved in writing by the Local Planning Authority.

If it cannot be demonstrated that the noise levels specified in the aforementioned Noise Report have been achieved, then a further scheme shall be submitted for the written approval of the Local Planning Authority incorporating further measures to achieve those noise levels.

All works comprised within those further measures shall be completed and written evidence to

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Sticky Note - [Silvio Murgia] 28/03/2022, 12:40:34
Apex NIA report includes assessment of noise due to the proposed development including sports pitches, car parking and mechanical plant.

Based on a 24-hour background noise survey within the College site, at a location more distant from the local road network than nearby dwellings, it is believed that the identified representative background noise levels quoted in the NIA report, Table 5 are a reasonable representation of background noise levels likely to be experienced at nearby dwellings facing the College site - as identified in NIA section 7.4.

Apex NIA report includes details of noise assessment carried out, including where appropriate, noise mitigation measures.

All noise mitigation measures included in the NIA report shall be carried out in full prior to the the development being brought into use and retained thereafter.

Sticky Note - [Silvio Murgia] 28/03/2022, 12:38:39
All Apex Acoustics acoustics consultants are members of the Institute of Acoustics.

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Environmental Health Revised Response - 8769 Apex ..



demonstrate that the aforementioned noise levels have been achieved shall be submitted to and approved in writing by the Local Planning Authority before the development is first brought into use

BC1 Acoustic Barrier - Condition

Before the development is brought into use, details of all acoustic barriers as recommended in the report by Apex Acoustics Noise Impact Assessment dated 14th September 2021 ref: NE8659-APX-ZZ-ZZ-RP-YA-0002 shall be submitted to and approved in writing by the Local Planning Authority. The details shall include:

- A plan showing the location of the barriers
- The minimum height of the barriers relative to the adjacent ground level
- The construction specification of the barriers including the barrier support structure, the barrier material, the minimum barrier thickness, the minimum density of the barrier material and the details of where the barrier meets the ground.

The use hereby approved shall not commence until the construction of the acoustic barriers has been completed and the barriers shall be retained thereafter.

Noise Management Plan - Condition

Before the use of the pitch commences, a site-specific noise management plan shall be submitted to and approved in writing by the Local Planning Authority, the plan shall include:

- a) a facility for neighbours to report excessive noise or anti-social behaviour directly to the operator of the site and that all such complaints be logged and investigated upon receipt, and appropriate action taken promptly, and the complainant kept informed of progress.
- b) a system for training all staff to follow an action plan for dealing with complaints. This would include the ability to warn or ban user groups from the pitches.
- c) a method of informing users that swearing and anti-social behaviour is unacceptable, and that the operator of the site reserves the right to dismiss users from the pitch and ban their future use
- d) a log of complaints which should be retained for at least a period of two years.

The approved noise management plan shall be implemented before the use of the pitch commences and shall be retained thereafter.

Ball impact sound mitigation - Condition

All works to minimise the noise from the impact of balls should be carried out in accordance with the Design Guidance Note from Sport England - Artificial Grass Pitch (AGP) Acoustics - Planning Implications.

CLC2 Submission of a Revised Phase 2 Intrusive Site Investigation Report - Condition

Groundworks (other than those required for a revised site investigation report) shall not commence until a Phase II Intrusive Site Investigation Report by a suitably competent person has been submitted to and approved in writing by the Local Planning Authority.

Reason: To ensure the safe occupation of the site in accordance with Policy LP53 of the

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Sticky Note - [Silvio Murgia] 28/03/2022, 12:31:19

As above.

Sticky Note - [Silvio Murgia] 31/03/2022, 22:04:43

Details of all acoustic barriers shall be confirmed before the sports pitch is brought into use with regards to Condition 30.

Sticky Note - [Silvio Murgia] 28/03/2022, 12:37:37

Condition 28. Details to be submitted before the use of the pitch commences.

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Environmental Health Revised Response - 8769 Apex ..

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- BS 10175:2011+ A2:2017 *Investigation of Potentially Contaminated Sites. Code of Practice*
- *Development on Land Affected by Contamination - Technical Guidance for Developers, Landowners & Consultants - (v11.2) June 2020* by the Yorkshire and Lincolnshire Pollution Advisory Group

OC1 Kitchen Extract Scheme - Condition
Before food cooking commences details of a kitchen extract system shall be submitted to and approved in writing by the Local Planning Authority. The details shall provide the following information:

- A risk assessment for odour which considers amount and type of food that will be cooked together with the proposed dispersion of odours and proximity of receptors likely to be affected by any cooking odours.
- Based on the risk assessment, details of the proposed methods of odour control and dispersion of any extracted odours.
- Details showing the proposed location of all the major components of the extract system.
- The noise mitigation measures that will be incorporated in the extract system and details of the likely resulting noise levels that will be caused by operation of the extract system, in particular how loud it will be at nearby noise sensitive locations.
- The proposed ongoing maintenance schedule that will be carried out to ensure that the extract system continues to effectively control odours and not cause excessive noise.

Before food cooking commences the approved extract system shall be installed and thereafter retained and maintained in accordance with the approved details.

Reason: To ensure the proposed development does not cause harmful odour pollution (within either a public area or at neighbouring premises) in the interest of amenity, to comply with the aims and objectives of Policies LP24 and LP52 of the Kirklees Local Plan and Chapters 12 and 15 of the National Planning Policy Framework.

Footnote
Detailed advice is available in "Control of Odour and Noise from Commercial Kitchen Exhaust Systems" by EMAQ Sep 2018 which is an update of "Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems" by DEFRA 2005.

LC5 Installation of the Agreed External Artificial Lighting – Condition
Before the All-Weather Sports Pitch is brought into use, the external artificial flood lighting shall be installed in accordance with the details provided in the Plan HLS3095- proposed Flood Lighting by Halliday Lighting (dated 06/09/2021). The installed external artificial lighting shall be operated thereafter in accordance with the approved scheme and maintained thereafter.

Reason: To safeguard the amenities of the occupiers of nearby properties and promote sustainable development in accordance with part 2 and 15 of the NPPF and xxxxx of the Local Plan.

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Sticky Note - [Silvio Murgia] 28/03/2022, 12:55:31
Kitchen extract system detailed noise assessment shall be included within BS 4142 Plant Noise Impact Assessment submission for Condition 22, prior to buildings being brought into use.