WYG Environment
part of the WYG group

Barnsley College, Honeywell Campus – Submission of Reserved Matters

Barnsley College

Noise and Vibration Assessment

May 2009

Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ

Tel: 0113 219 2217

Email: enviro@wyg.com

WYG Environment
part of the **WYG** group

Document Control

Project:	Barnsley College, Honeywell Campus – Submission of Reserved Matters
Client:	Barnsley College
Job Number:	A056021
File Origin:	N:\Projects\A056001-A057000\A056021\reports\Noise\Barnsley College Honeywell Lane Campus Noise and Vibration Assessment Final Issue.doc

Document Checking:

Prepared by:	Sam Moran (MIOA) Senior Acoustic Consultant	Signed:
Checked by:	Neil Turnbull (MIOA) Associate	Signed:
Verified by:	Peter Harrison Regional Director	Signed:

Issue	Date	Status
1	May 2009	Issue 1
2		
3		
4		

Contents Page

1.0 Introduction **1**

2.0 Methodology **2**

2.1 Noise 2

2.2 Vibration 3

3.0 Baseline Conditions **5**

3.1 Site Description 5

3.2 Noise Monitoring 5

3.2.1 Instrumentation 7

3.3 Vibration Monitoring 8

3.3.1 Instrumentation 9

4.0 Results **10**

5.0 Noise Assessment **12**

5.1 Recommendations – Proposed Residential Accommodation 12

5.1.1 Glazing 12

5.1.2 Ventilation 13

5.1.3 External Amenity Areas 14

5.2 Assessment of Noise Associated with Proposed B1 Premises 14

6.0 Vibration Assessment **14**

7.0 Conclusions **16**

Appendix Contents

Appendix A – Report Conditions

Appendix B – Drawings

Appendix C – Noise Monitoring Data

Appendix D – Vibration Data Graphs

1.0 Introduction

WYG Environment Planning Transport Ltd (WYG) were commissioned by Barnsley College in order to address noise and vibration considerations at the proposed development site located at the Barnsley College, Honeywell Campus, Honeywell Lane, Barnsley. The proposed mixed use development comprises residential, office and a sports complex. The sports complex comprises a sports hall and outdoor multi-purpose sports pitch. An outline planning application has previously been submitted with regard to the development site with planning permission granted (Application number: 2005/1507) subject to a number of conditions. This noise and vibration assessment is produced to support a reserved matters planning application to discharge the appropriate condition and address any further requirements stated by the Local Authority. It should be noted that the sports complex has received planning approval and is operational.

The applicable condition attached to the planning approval is Condition 11 which states:

> *The residential reserved matters application shall be accompanied by an assessment for the impact of noise and vibration from the nearby railway lines on development which should be undertaken by a competent person, based on PPG 24: Planning and Noise and using relevant standards. The results of the assessment should be used in the design of the construction to ensure that the development will comply with the requirements of PPG 24 and that acceptable levels of noise can be achieved in gardens and internal rooms.*
>
> *Reason: to protect the amenity of future residents with regard to noise and vibration.*

In addition to Condition 11, further consultation has been undertaken to verify the assessment requirements of the Local Authority. Consultation has been undertaken with Sarah Newman, Senior Environmental Health Officer (SEHO) at Barnsley Metropolitan Borough Council (BMBC) with whom we have agreed an acceptable assessment methodology. This report will, therefore, address noise attributable to road traffic on Honeywell Lane, railway noise and vibration attributable to the lines located to the east and south of the proposed development site, noise attributable to the sports complex and noise associated with plant on commercial buildings.

The methodology, findings and conclusions of this assessment are presented below. WYG Report Conditions are presented in Appendix A.

2.0 Methodology

2.1 Noise

The guidance provided in PPG 24[1] will form the basis for assessing the potential effects of noise upon the proposed residential development. PPG 24 specifies the requirements for development proposals to address noise issues, including recommended standards for noise exposure to which new housing developments should comply. In addition, guidance provided in BS 8233[2] and by the World Health Organisation has been used in order to recommend levels of insulation required by the building façade of the proposed residential dwellings.

The recommendations made in this report will be based on achieving a daytime (07.00 – 23.00 hours) indoor ambient noise level of 35 dB $L_{Aeq,T}$[3] within living areas and a night-time level of 30 dB $L_{Aeq,T}$ within bedrooms. These levels are in line with the World Health Organisation guidelines for community noise. A summary of relevant standards is shown in Table 1 below:

Table 1: Summary of Relevant Standards

Criterion	Location	BS 8233 Design Range $L_{Aeq,T}$ dB		WHO Guidelines $L_{Aeq,T}$ dB		WYG Recommended Values $L_{Aeq,T}$ dB	
		Good	Reasonable	Day	Night	Day	Night
Reasonable resting / sleeping conditions	Living Rooms	30	40	35	-	35	-
	Bedrooms	30	35	-	30	-	30

In addition to the internal noise level recommendations above, this report will also make reference to the BS 8233 recommendations of:

---

[1] Planning Policy Guidance 24: Planning and Noise (1994)

[2] BS 8233: Sound Insulation and Noise Reduction for Buildings – Code of Practice, 1999

[3] $L_{Aeq,T}$ – 'A' Weighted average integrating sound level over the time period 'T'

- Ensuring that maximum night-time internal noise levels within bedrooms do not regularly exceed 45 dB L_{Amax}[4] from individual events; and
- Ensuring that average noise levels within external amenity areas (balconies, terraces and outdoor living areas) do not exceed 55 dB $_{LAeq}$ between 07:00 and 23:00 hours.

2.2 Vibration

An assessment of the impact of vibration with relation to human response has been undertaken with reference to BS 6472-1[5] and BS 7385[6].

BS 6472-1 provides information relating to human response to building vibration. The standard indicates the vibration levels at which the probability of adverse comment is likely from occupants of buildings and the acceptable magnitudes, or limits, for building vibration depending upon specific circumstances. It should be noted that the guidance also indicates that comments regarding building vibrations in residential situations are likely to arise from occupants of buildings when the vibration levels are only slightly in excess of thresholds of perception.

Following the guidance provided in BS 6472-1, Table 2 below presents the vibration dose value (VDV) assessment criteria relating to the potential for adverse comment with respect to vibration and human response.

[4] L_{AMax} – The maximum noise level during the measurement sample

[5] BS: 6472-1: Guide to evaluation of human exposure to vibration in buildings – Part 1: Vibration sources other than blasting (2008)

[6] BS 7385-1: Evaluation and measurement for vibration in buildings – Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings (1990)

Table 2: Vibration Dose values ($ms^{-1.75}$) above which various degrees of adverse comment may be expected in residential buildings

Place	Low probability of adverse comment	Adverse comment possible	Adverse comment probable
Residential buildings 16hr day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8hr day	0.13	0.26	0.51

Nb: below the ranges specified in Table 2, adverse comment is not expected

With respect to structural damage, it is outside the scope of this report to assess structural design implications and consideration should be given to this matter by the structural engineers during the design of the building. The measured Peak Particle Velocity (PPV) levels, however, are presented in Section 7.0. For note, BS 7385 provides guidance on vibration induced structural damage to buildings. The guidance uses PPV (mm/s) as the assessment parameter and indicates that transient guide values for cosmetic damage are 15mm/s at 4Hz and 50mm/s at 40Hz. Vibration is partly frequency dependent but it is also dependent on numerous other factors such as ground conditions, type of source of vibration and distance from the receptor. The guidance also indicates that some data suggests that the probability of damage to buildings tends towards zero at 12.5 mm/s peak component particle velocity.

3.0 Baseline Conditions

3.1 Site Description

The proposed development site comprises an existing college campus with the sports complex located within the eastern part of the site.

The site, irregular in shape, is bounded by Honeywell Lane and existing residential properties to the north, the Hallam railway line, which runs from Sheffield to Leeds (Hallam line), to the east with the Barnsley to Huddersfield railway (Penistone Line) and a small area of fenced off grassland aligning the southern boundary of the site. Huddersfield Road / Cockerham Lane and existing residential properties bound the site to the west.

The noise climate at the site is influenced by intermittent road traffic noise from Honeywell Lane, distant road traffic noise from the general area to the south and west and infrequent train movement on the adjacent rail line. Noise associated with the sports complex, such as vehicle movement on Park View Road and shouting whilst the external sports pitches are in operation is also audible in the locations proposed for residential end-use.

Further to the above, there are proposals for a link road to be constructed in the area of the site aligning the railway line to the south. As the plans have not yet been submitted for approval or funding obtained for this project, no information is available to use as part of an assessment of this potential noise source. Therefore, in particular due to the fact that this development is not committed, no further consideration is given within this assessment.

3.2 Noise Monitoring

A general baseline noise survey at the proposed residential dwellings and a separate specific noise survey to establish noise levels associated with the use of the sports pitch were undertaken by Jay Puente (AMIOA[7]). The details of the 2No. individual surveys are given below.

[7] Associate Member of the Institute of Acoustics

3.2.1 General Baseline Noise Survey

The baseline noise survey, with particular regard to road and rail traffic noise, was undertaken on 23rd April 2009 between the period of 05:50 – 11:05 hours in order to obtain ambient noise level data at the site. Data was therefore captured during both the daytime and night-time periods (PPG 24 separates the daytime and night time periods as 07:00 - 23:00 hrs and 23:00 - 07:00 hrs respectively).

The survey comprised monitoring at the following locations:

- Location 1 – on the northern boundary of the site, at a distance of 6m from Honeywell Lane. This location is representative of the nearest proposed façade facing Honeywell Lane;
- Location 2 – on the eastern boundary of the site, at a distance of 20m from the nearest rail line. *The location of the nearest residential façade to the Hallam rail line is at a distance of 16m;*
- Location 3 – adjacent to the south western boundary of the proposed residential area in the centre of the site. The nearest rail line is located at a distance of 40m from this location;
- Location 4 – in the centre of the site at a position screened from the general land to the south of the site by the existing college building.

The monitoring positions are illustrated in Drawing No.01 in Appendix B.

Further to the above, noise attributable to the sports complex room ventilation system and plant room extract system was undertaken. Noise from ventilation and extract systems, which are only operational during the use of the building, was not audible beyond the sport complex car park and, therefore, no further consideration is given to these sources.

During the baseline monitoring survey the existing day and night-time noise sources were identified as follows:

- Infrequent road traffic along Honeywell Lane, which increased after 07:00, was audible at Locations 1 and 2;
- Infrequent railway traffic along the Hallam Line;
- Infrequent railway traffic along the Penistone line;
- Infrequent aircraft was audible overhead;
- Birdsong audible at all locations;
- Infrequent road traffic along local access road, Park View Road; and

- Infrequent noise attributable to pedestrians talking was audible at all locations;

3.2.2 Specific Noise Survey of External Sports Pitch

A further survey was undertaken during the evening on 29th April 2009 between the period of 19:02 – 21:21 hours in order to determine noise levels associated with the sports complex. The survey comprised monitoring at the following locations:

- Location 2 – on the eastern boundary of the site, at a distance of 20m from the football pitch. For reference, the nearest proposed residential façade is located at a distance of 25m from the sports pitch.
- Location 5 – at the Sports Centre car park entrance, at a position representative of the nearest proposed residential dwellings to the west of the centre; and
- Location 6 – opposite the southern half of the sports pitch (which was in use), at a position representative of the nearest proposed residential dwellings to the west.

Reference to the data collected at location 6 will be separated to reflect noise attributable to when a match was occurring, vehicle movement following the end of the match and data when no activity was occurring.

The monitoring positions are illustrated in Drawing No.01 in Appendix B.

During the evening noise monitoring survey the existing noise sources were identified as follows:

- Infrequent road traffic along local access road, Park View Road, audible at all locations;
- Infrequent railway traffic along Hallam Line;
- Infrequent vehicle movements on Honeywell Lane audible at Location 2;
- Pedestrians walking/talking audible at Location 5 and 6; and
- Birdsong audible at all locations.

3.2.1 Instrumentation

Noise measurements were obtained using the following instrumentation:

- Norsonic Integrating Sound Level Meter (Type 118 – Serial Number 28972).
- Norsonic Integrating Sound Level Meter (Type 140 – Serial Number 1400288).

At all locations the microphones were extended to a height of approximately 1.5m above local ground level. Calibration was undertaken before and after the survey with +0.2 sensitivity drift recorded on the Type 140 during both the baseline and evening surveys. No sensitivity drift was recorded on the Type 118 during the baseline survey but +0.1 drift recorded during the evening survey. In all cases the sound level meters were configured with the time response set to fast and measurements were obtained with 'A' weighting during the monitoring period for $L_{Aeq,T}$, $L_{A1,T}$[8], $L_{A10,T}$[9], $L_{A90,T}$[10] and L_{Amax}. Calibration certificates are available upon request.

During both monitoring surveys similar weather conditions prevailed with dry conditions and measured wind speeds not exceeding 4mph throughout.

3.3 Vibration Monitoring

The vibration monitoring survey was undertaken simultaneously with the noise monitoring survey on 23rd April 2009 to determine levels of vibration attributable to existing train movement on the railway line, Hallam Line, located to the east of the site.

The survey comprised monitoring at the following location:

- Location A – on the eastern boundary of the site, at a distance of approximately 17m from the nearest rail line. This location is representative of the nearest proposed façade facing the rail line. In order to ensure the feet of the transducers were placed in a firm footing, approximately 6 inches of top soil were manually removed beneath the location of the meter prior to the commencement of the survey.

Given that the residential area in the central part of the site is located at a distance of approximately 40m from the rail line, it is considered that there is no requirement to undertake a survey to determine vibration levels associated with the railway to the south of the site.

---

[8] $L_{A1,T}$ – Sound level exceeded for 1% of the time period 'T'

[9] $L_{A10,T}$ – Sound level exceeded for 10% of the time period 'T'

[10] $L_{A90,T}$ – Sound level exceeded for 90% of the time period 'T'

3.3.1 Instrumentation

Vibration measurements were obtained using a calibrated Vibrock V901 seismograph meter which was configured to measure both peak particle velocity (PPV) and vibration dose value (VDV) levels. The serial number of the instrument is 863.

4.0 Results

A summary of the noise results can be seen in Tables 3, 4 and 5 below. The full monitoring data is presented in Appendix C.

Table 3: Measured Noise Levels During the Night-time

Location	Time	Average Measured Noise Level L_{Aeq} (dB)	Average Measured Noise Level L_{A90} (dB)
1	05:50 – 07:01	54.7	38.0
2	05:59 – 06:24	56.7	38.1
3	06:27 – 07:00	47.4	41.3

Table 4: Measured Noise Levels During the Daytime

Location	Time	Average Measured Noise Level L_{Aeq} (dB)	Average Measured Noise Level L_{A90} (dB)
1	07:04 – 11:05	57.5	39.7
2	10:16 – 10:58	56.0	37.7
3	07:01 – 09:26	47.9	41.4
4	09:31 – 09:55	46.4	37.9

Table 5: Measured Noise Levels During the Evening period

Location	Time	Average Measured Noise Level L_{Aeq} (dB)	Average Measured Noise Level L_{A90} (dB)
2	19:02 – 21:17	57.4	39.9
5	19:22 – 19:48	50.5	44.3
6a	19:55 – 20:51	53.2	44.2

Location	Time	Average Measured Noise Level L_{Aeq} (dB)	Average Measured Noise Level L_{A90} (dB)
6b	20:51 – 21:01	55.3	44.1
6c	21:01 – 21:21	50.8	42.8

The daytime and night-time VDV levels measured during the vibration monitoring survey are presented in Table 6 below. A graphical representation is presented as Fig.01 in Appendix D.

Table 6: Measured VDV levels During the Vibration Survey

Time	Measured 1 hour VDV ($ms^{-1.75}$)		
	X – axis	Y – axis	Z – axis
06:00 – 07:00	0.012	0.013	0.02
07:00 – 08:00	0.012	0.013	0.029
08:00 – 09:00	0.012	0.013	0.031
09:00 – 10:00	0.012	0.013	0.032
10:00 – 11:00	0.012	0.013	0.032

The highest measured PPV level was 1.18mm/s during the daytime period and 1.13mm/s during the night-time period. It should be noted that the daytime graph presented in Fig.04 displays a level of 11.3mm/s. However, it is considered that this event was attributable to the site operative removing the seismograph from the ground and thus is an extraneous reading which will not be used as part of this assessment.

5.0 Noise Assessment

As highlighted in the previous chapters, the noise climate at the proposed development site is influenced by intermittent road traffic noise from Honeywell Lane, distant road traffic noise from the general area to the south and west, infrequent train movement on the adjacent rail lines. An assessment will also be undertaken in relation to noise associated with the sports complex.

The recommendations presented in Section 5.1 below take into consideration the potential impact of noise from all sources. Section 5.2 presents an assessment of noise considerations associated with the proposed B1 premises.

5.1 Recommendations – Proposed Residential Accommodation

The building envelope must provide adequate insulation against the measured noise levels and most standard external wall and roof constructions will do so if correctly designed. The glazing is generally the weak spot of the building envelope, in acoustic terms, and the following recommendations indicate the glazing specification required to achieve the required internal criteria as well as the ventilation methods (which would need to achieve a sound reduction level equivalent to that recommended for the glazing) which need to be considered. Alternative ventilation can comprise mechanical, stack assisted, vents in walls etc[11]. Reference is also made to external amenity areas.

5.1.1 Glazing

A visual representation indicating where enhanced glazing to that of standard double glazing[12] is required is presented in Drawing No.02. The recommended specifications take into consideration noise from all sources with a description presented below of the required level of insulation for bedrooms and living rooms associated with properties located at the closest positions to the identified noise sources. The level of performance of the glazed unit will be based on the sound reduction index (SRI) parameter R_w[13] for rail

[11] Companies which provide alternative ventilation solutions include Greenwood AirVac, Passivent, NuAire and Silivent. WYG make no representation or guarantee as to the quality of work or products of any company mentioned. Acoustic trickle vents could also be appropriate.

[12] Specification 4mm glass / 16mm air gap / 4mm glass (R_w 31 dB)

[13] R_w – Weighted sound reduction index

noise and the SRI parameter R_{Tr}[14] with regard to all other noise sources. The specified performance required will attenuate noise from all sources in accordance with the criteria presented in Section 2.0.

For bedrooms located on the nearest proposed residential façade which faces the rail line to the east a glazing specification which provides a minimum sound insulation value of 41 dB(R_w) is required. An example glazing specification of SG Phonip 9mm glass / 12mm air gap / 10mm glass[15] will achieve this. This is based on a maximum noise level associated with train movements of 85.4 dB(A). At further distances from the rail line this specification reduces.

With regard to the impact of noise emanating from the south of the site, the highest L_{Amax} recorded during the night-time period was 73.7 dB(A) and was attributable to a train using the Barnsley to Huddersfield line.

The sports complex is operational up to 22:00 with the main noise generating sources comprising impulsive noise events such as vehicle movement on Park View road and shouting whilst the pitches are in operation. It is considered appropriate to reference the L_{Amax} criteria to assess the potential impact of these sources against. Based on the data collected at locations 5 and 6, standard double glazing (R_w 31 dB, R_{TR} 26 dB(A)) would mitigate virtually all the measured maximum noise levels.

Based on the noise level data collected at all locations, standard double glazing will be acceptable for all living rooms in order to achieve an internal noise level of 35 dBL_{Aeq}.

5.1.2 Ventilation

A visual representation indicating where alternative ventilation is required is presented in Drawing No.02. Openable windows will be acceptable in the central proposed residential areas for living rooms and bedrooms which are orientated inwards (i.e. screened from the surrounding noise sources). For rooms orientated towards the boundaries of the site, there will be a requirement to provide alternative ventilation for these rooms. Further to consultation with the SEHO, acoustic trickle vents would be an acceptable means of ventilation. This is based on noise emanating from the south of the site resulting in a marginal exceedance of the criteria whilst the impact of road traffic noise on Honeywell Lane and rail noise occurring as infrequent events. A visual representation of the facades where trickle vents are recommended is presented as Drawing No.03 in Appendix B.

---

[14] R_{tr} – Sound reduction index for road traffic noise, chosen as the most stringent R value

[15] Saint Gobain Specialist Glazing

5.1.3 External Amenity Areas

BS 8233 recommends a limit of 55 dBL_{Aeq} for the noise criteria in external amenity areas. Data collected at locations 3 and 4, which is representative of external amenity areas located within the central area of the site, fall within the required criteria. Data collected at locations 1 and 2 slightly exceed the required criteria. However, the external amenity areas are proposed to be screened from Honeywell Lane and located at a greater distance from the rail line. Therefore, it is considered highly likely that the noise levels in these locations will fall within the criteria.

It should be noted that whilst the measured noise levels fall within the required criteria, noise attributable to users of the external sports pitch was audible at locations 5 and 6 with noise just audible at location 2. Plot 44 – 50 gardens are screened by the proposed building envelopes which will reduce noise attributable to noise from vehicle movements and users of the sports pitch shouting. However, following consultation with the EHO, it is recommended that screening is provided by a suitable acoustic barrier[16] located along the western and northern façades of the sports pitch to minimise noise in the gardens of Plots 1 – 8, 28 – 31 and 23 – 27.

5.2 Assessment of Noise Associated with Proposed B1 Premises

The proposed B1 premises will operate between 08:00 – 19:00. No detailed information with regard to specific noise levels associated with noise generating sources such as plant is currently available. Through good design and consultation with the EHO, however, it is considered that there will be negligible impact on proposed and existing residential dwellings. This can be established once details with regard to the type and location of proposed plant is finalised. Dependent on the specific noise impact, noise data collected as part of this assessment which is presented in Appendix C, could be used to be representative of the existing baseline noise climate at sensitive receptors located within proximity to the site.

6.0 Vibration Assessment

The worst case accumulative 1no. hour total VDV level attributable to a train movement was $0.032ms^{-1.75}$. From a review of the full data, the highest VDV level for a single train event attributable to a train resulted

[16] The Green Barrier, an acoustic fence, which will provide line of sight screening from the sports pitch to users of the specified gardens

in a VDV level of 0.006mms$^{-1.75}$ on the x-axis, 0.005mms$^{-1.75}$ on the y-axis and 0.029mms$^{-1.75}$ on the z-axis. Table 7 below presents the predicted 16 hour and 8 hour VDV levels at a distance of 17m from the nearest rail line. The predicted levels are calculated[17] using the worst case measured VDV level for a single event along each axis.

Table 7: Predicted 16 hour / 8 hour VDV levels

Time	Measured 1 hour VDV (ms$^{-1.75}$)		
	X – axis	Y – axis	Z – axis
Daytime (16 hour)	0.02	0.02	0.09
Night-time (8 hour)	0.01	0.01	0.05

Following the methodology provided in BS 6472 and based on the VDV levels shown in Table 7 above, all predicted existing scenarios lie within the category where adverse comment highly unlikely.

The maximum recorded PPV level of 1.18mm/s falls below the level specified within BS 7385 which suggests that the probability of structural damage to buildings tend towards 0.

[17] $\sqrt[4]{((vdv)^4 * \text{number of trains})}$ where the number of trains equates to 12 for the night-time period (6 trains per 2No. hour periods) and 96 for the daytime period (6No. trains per 16No. hour periods).

7.0 Conclusions

A noise and vibration assessment has been undertaken in accordance with appropriate guidance including PPG 24. The assessment considered the suitability of the site for residential end-use and the potential noise impact of the proposed B1 office units.

Noise level data was collected at appropriate locations with regard to the proposed residential dwellings to determine the impact of road traffic noise on Honeywell Lane, rail noise on the rail lines to the east and south of the site, noise attributable to the sports complex and general area noise emanating from the south of the site. The recorded noise levels were assessed against both internal and external noise criteria with mitigation measures, such as glazed units with higher levels of sound insulation than standard double glazing or where acoustic trickle vents would be appropriate, recommended where applicable. Further to a noise survey undertaken to determine the potential noise impact attributable to users of the sports pitch, an acoustic fence will be installed along the western and northern boundaries of the sports pitch. With regard to the proposed B1 use, through good design, there will be a negligible impact on proposed and existing residential premises.

The vibration survey was undertaken at the position of the nearest proposed residential dwelling to the rail line to the east of the site. The results indicated that it is highly unlikely that complaints would occur due to vibration from the rail line. Due to the large distance between the proposed residential units and the rail line to the south of the site, no vibration monitoring was undertaken at this location.

In summary, this noise and vibration assessment establishes that through incorporation of the specified recommendations with regard to the glazing unit, means of ventilation and external amenity areas, that Planning Condition 11 and the requirements specified by the Local Authority can be addressed accordingly.

Appendices

Appendix A – Report Conditions

WYG Environment Planning Transport Ltd

Report Conditions

Noise Assessment and Vibration Assessment

Barnsley College, Honeywell Campus

This report is produced solely for the benefit of Barnsley College and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors

November 2008

WYG Environment Planning Transport Ltd

Appendix B – Drawings

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

KEY

- EXTENT OF RESIDENTIAL DEVELOPMENT
- EXTENT OF B1 COMMERCIAL DEVELOPMENT
- BOUNDARY OF OUTLINE PERMISSION
- BELLE VUE, SEPARATE APPLICATION & EXCLUDED FROM RESERVED MATTERS
- 1 APPROXIMATE NOISE MONITORING LOCATION
- A APPROXIMATE VIBRATION MONITORING LOCATION

N

Honeywell Lane

Land retained by barnsley college as part of all weather pitch maintenance

Barnsley College Sports Facility

Leeds to Sheffield Railway

Existing access built to acceptable standards

Land retained Barnsley Colle future parkin

Belle Vue

Huddersfield Road

Barnsley College

Barnsley College construction C

Scale (metres)

0 20 40 60 80 100

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

BARNSLEY COLLEGE

ARNDALE COURT
HEADINGLEY
LEEDS
LS6 2UJ

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623
e-mail: enviro@wyg.com

Project: A056021

BARNSLEY COLLEGE
HONEYWELL CAMPUS

Drawing Title:

NOISE & VIBRATION MONITORING LOCATION PLAN

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
N.T.S	CM	01.05.09	SAM	06.05.09	NT	06.05.09

Project No.	Office	Type	Drawing No.	Revision
A056021	4104	552	01	

© WYG Group Ltd.

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

KEY

- EXTENT OF RESIDENTIAL DEVELOPMENT
- EXTENT OF B1 COMMERCIAL DEVELOPMENT
- BOUNDARY OF OUTLINE PERMISSION
- BELLE VUE, SEPARATE APPLICATION & EXCLUDED FROM RESERVED MATTERS
- SG PHONIP 9mm/10mm/6mm (Rw 42dB)
- 12mm/16mm/10mm (Rw 39dB)
- 6mm/16mm/10mm (Rw 36dB)
- 4mm/16mm/8mm (Rw 34dB)
- 6mm/16mm/6mm (Rw 33dB)

N

Honeywell Lane

Land retained by Barnsley College as part of all weather pitch maintenance

Belle Vue

Huddersfield Road

Barnsley College Sports Facility

Leeds to Sheffield Railway

Existing access built to acceptable standards

Land retained Barnsley Colle future parkin

Barnsley College

Scale (metres) 0 20 40 60 80 100

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:
BARNSLEY COLLEGE

ARNDALE COURT
HEADINGLEY
LEEDS
LS6 2UJ

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623
e-mail: enviro@wyg.com

Project: A056021
BARNSLEY COLLEGE
HONEYWELL CAMPUS

Drawing Title:
GLAZING RECOMMENDATIONS FOR BEDROOMS

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
N.T.S	CM	01.05.09	SAM	06.05.09	NT	06.05.09

Project No.	Office	Type	Drawing No.	Revision
A056021	4104	552	02	

© WYG Group Ltd.

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND *REPORT ANY OMISSIONS OR ERRORS*

KEY

- EXTENT OF RESIDENTIAL DEVELOPMENT
- EXTENT OF B1 COMMERCIAL *DEVELOPMENT*
- BOUNDARY OF OUTLINE PERMISSION
- BELLE VUE, SEPARATE APPLICATION & EXCLUDED FROM RESERVED MATTERS
- FACADE WHERE ACOUSTIC TRICKLE VENTS ARE RECOMMENDED

N

Honeywell Lane

Land retained by Barnsley College as part of all weather pitch maintenance

Barnsley College Sports Facility

Leeds to Sheffield Railway

Existing access built to acceptable standards

Land retained Barnsley Colle future parkin

Cockerham Avenue

Huddersfield Road

Belle Vue

Regent Gardens

Barnsley College

Barnsley College Construction Ce

Huddersfield to Sheffield Railway

Scale (Metres) 0 20 40 60 80 100

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:
BARNSLEY COLLEGE

ARNDALE COURT
HEADINGLEY
LEEDS
LS6 2UJ

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623
e-mail: enviro@wyg.com

Project: A056021
BARNSLEY COLLEGE
HONEYWELL CAMPUS

Drawing Title:
VENTILATION REQUIREMENTS FOR BEDROOMS AND LIVING ROOMS

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
N.T.S	CM	01.05.09	SAM	06.05.09	NT	06.05.09

Project No.	Office	Type	Drawing No.	Revision
A056021	4104	552	03	

© WYG Group Ltd.

Appendix C – Noise Monitoring Data

Barnsley College, Honeywell Campus - (23rd April 2009)

Background Noise Levels

Night-time

Location 1

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 05:50:48.00)	48.6	65.6	61.7	50.1	39.1
(2009/04/23 05:55:50.00)	51.6	68.2	65.2	52.0	38.3
(2009/04/23 06:00:51.00)	43.6	57.2	51.7	47.5	37.1
(2009/04/23 06:05:53.00)	48.1	64.0	60.4	50.7	38.1
(2009/04/23 06:10:54.00)	58.3	80.5	73.4	49.3	37.2
(2009/04/23 06:15:56.00)	49.3	64.9	62.6	50.5	36.9
(2009/04/23 06:20:58.00)	61.4	83.1	74.6	55.1	38.3
(2009/04/23 06:26:00.00)	49.6	70.2	62.6	47.2	39.3
(2009/04/23 06:31:01.00)	56.6	77.5	69.7	56.1	40.7
(2009/04/23 06:36:03.00)	46.7	65.9	60.2	46.1	38.4
(2009/04/23 06:41:04.00)	51.3	69.9	64.7	48.2	37.1
(2009/04/23 06:46:06.00)	57.9	76.3	70.9	60.6	37.9
(2009/04/23 06:51:08.00)	48.6	65.8	61.5	49.8	36.6
(2009/04/23 06:56:09.00)	53.6	69.4	67.6	51.8	36.7
Average	**54.7**		**64.8**	**51.1**	**38.0**

Location 2

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 05:59:41.00)	39.9	59.7	45.8	42.1	36.8
(2009/04/23 06:04:44.00)	49.6	69.4	61.0	52.8	39.0
(2009/04/23 06:09:47.00)	63.2	85.4	78.2	44.2	37.7
(2009/04/23 06:14:50.00)	49.9	69.9	64.4	46.6	38.0
(2009/04/23 06:19:53.00)	44.8	57.8	55.5	48.0	38.9
Average	**56.7**		**61.0**	**46.7**	**38.1**

Location 3

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 06:27:18.00)	48.2	65.0	55.5	51.1	42.8
(2009/04/23 06:32:21.00)	47.5	55.5	53.2	50.4	43.1
(2009/04/23 06:37:24.00)	45.6	57.0	53.6	48.4	41.3
(2009/04/23 06:42:27.00)	48.9	73.7	56.2	51.5	42.0
(2009/04/23 06:47:30.00)	46.4	56.5	53.6	50.5	40.4
(2009/04/23 06:52:33.00)	48.4	63.5	61.7	50.6	39.6
(2009/04/23 06:57:39.00)	45.1	55.2	52.5	48.5	40.1
Average	**47.4**		**55.2**	**50.1**	**41.3**

Daytime

Location 1

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 07:04:43.00)	57.3	80.6	69.6	51.6	37.0
(2009/04/23 07:19:45.00)	56.8	78.5	69.6	58.2	38.2
(2009/04/23 07:34:47.00)	57.0	79.0	68.2	59.8	38.9
(2009/04/23 07:49:49.00)	58.6	79.1	71.4	62.2	37.2
(2009/04/23 08:04:51.00)	59.8	79.1	70.8	63.3	40.0
(2009/04/23 08:19:52.00)	59.1	74.0	68.6	63.8	42.6
(2009/04/23 08:34:54.00)	59.8	80.5	71.3	63.1	43.4
(2009/04/23 08:49:56.00)	57.5	69.9	67.1	62.5	43.3
(2009/04/23 09:04:57.00)	57.7	79.4	67.6	60.9	43.1
(2009/04/23 09:19:59.00)	56.8	73.4	68.2	61.4	37.7
(2009/04/23 09:35:01.00)	57.5	79.1	69.3	59.6	37.2
(2009/04/23 09:50:03.00)	54.4	70.2	65.8	58.9	38.6
(2009/04/23 10:05:04.00)	57.1	79.7	67.7	60.2	39.4
(2009/04/23 10:20:06.00)	54.5	77.5	66.2	54.7	38.7
(2009/04/23 10:35:08.00)	56.9	79.1	68.9	58.0	39.7
(2009/04/23 10:50:10.00)	54.1	72.3	65.6	57.6	40.0
Average	**57.5**		**68.5**	**59.7**	**39.7**

Location 2

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 10:16:37.00)	46.5	66.6	55.7	48.5	37.0
(2009/04/23 10:31:40.00)	60.5	84.5	73.3	51.0	38.3
(2009/04/23 10:46:43.00)	44.8	58.3	52.7	48.4	37.9
Average	**56.0**		**60.6**	**49.3**	**37.7**

Location 3

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 07:01:18.00)	49.2	71.6	60.8	51.0	40.7
(2009/04/23 07:16:21.00)	46.5	59.2	55.2	48.5	42.4
(2009/04/23 07:31:24.00)	46.5	68.9	54.4	49.4	41.2
(2009/04/23 07:46:27.00)	47.9	69.1	57.1	49.7	40.0
(2009/04/23 08:01:30.00)	49.7	68.4	60.1	51.1	41.4
(2009/04/23 08:16:32.00)	47.7	59.2	54.5	51.2	41.5
(2009/04/23 08:31:35.00)	47.4	62.1	54.8	50.9	42.4
(2009/04/23 09:01:41.00)	49.3	73.6	61.8	50.1	41.6
(2009/04/23 09:16:44.00)	44.4	59.6	50.5	46.1	41.7
Average	**47.9**		**56.6**	**49.8**	**41.4**

Location 4

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/23 09:31:55.00)	46.2	62.5	59.5	44.9	38.2
(2009/04/23 09:40:41.00)	39.3	48.1	44.8	41.4	36.6
(2009/04/23 09:50:58.00)	49.1	64.0	60.5	52.7	38.8
Average	**46.4**		**54.9**	**46.3**	**37.9**

Barnsley College, Honeywell Campus - (29th April 2009)

Specific Noise Levels - Outdoor Sports Pitch (during 6 a side football match)

Evening

Location 5 (at Sports Centre car park prior to outdoor pitch use)

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/29 19:22:16.00)	48.0	59.4	57.1	49.7	44.0
(2009/04/29 19:27:19.00)	47.7	60.6	56.9	50.2	43.4
(2009/04/29 19:32:22.00)	52.5	68.3	62.9	55.9	45.0
(2009/04/29 19:37:56.00)	50.2	65.8	63.0	50.3	44.5
(2009/04/29 19:42:59.00)	52.1	72.4	62.0	53.3	44.5
Average	**50.5**		**60.4**	**51.9**	**44.3**

Location 6a (at western boundary of proposed site during 6 a side football match)

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/29 19:55:55.00)	50.4	64.8	60.8	53.4	43.3
(2009/04/29 20:00:58.00)	50.5	67.1	60.6	54.1	43.3
(2009/04/29 20:06:01.00)	49.7	65.8	59.0	52.2	44.5
(2009/04/29 20:11:04.00)	54.2	71.1	66.1	57.1	44.7
(2009/04/29 20:16:06.00)	50.9	67.6	61.2	53.6	43.6
(2009/04/29 20:21:09.00)	52.1	69.6	62.0	54.8	44.2
(2009/04/29 20:26:12.00)	52.4	68.1	63.7	55.4	43.7
(2009/04/29 20:31:15.00)	53.6	70.0	65.2	55.9	44.8
(2009/04/29 20:36:18.00)	55.7	72.7	66.8	59.2	45.1
(2009/04/29 20:41:21.00)	55.6	76.8	66.6	58.3	44.7
(2009/04/29 20:46:24.00)	54.7	71.6	64.6	59.2	44.2
Average	**53.2**		**63.3**	**55.7**	**44.2**

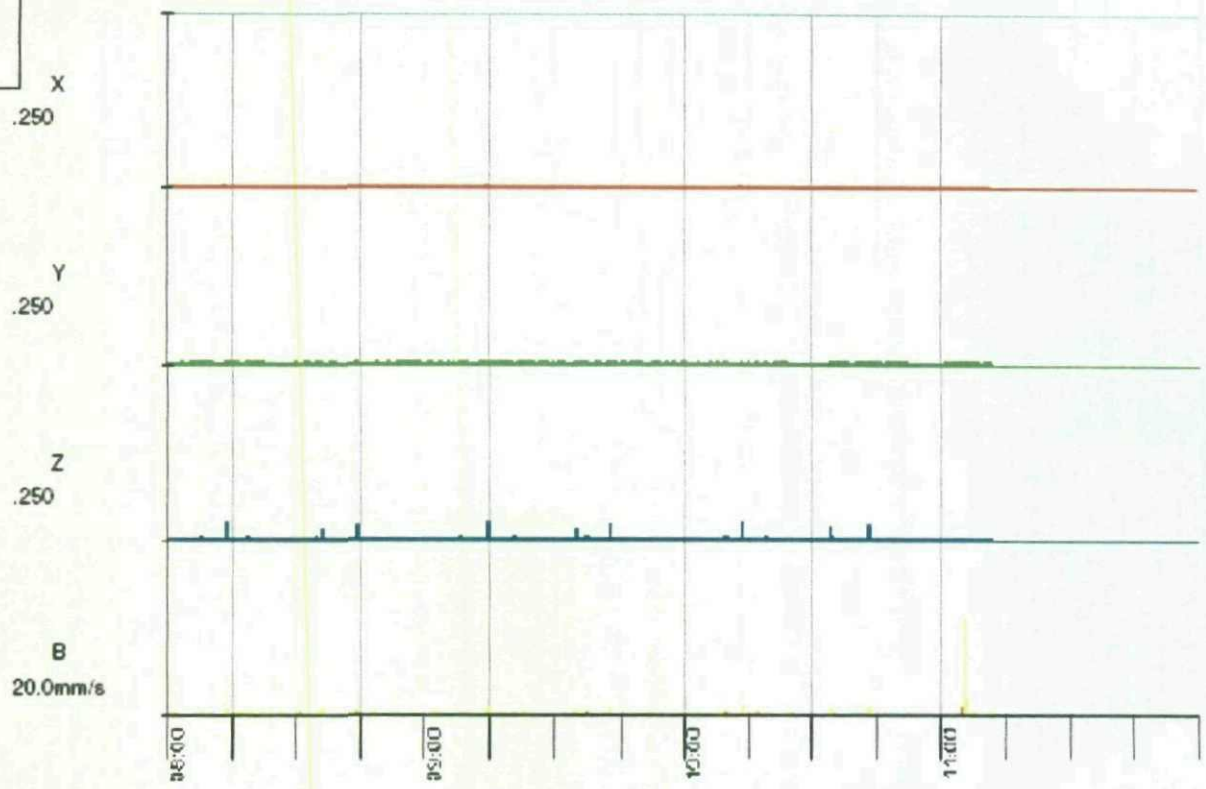
Location 6b (after match, people leaving pitch, cars leaving car park)

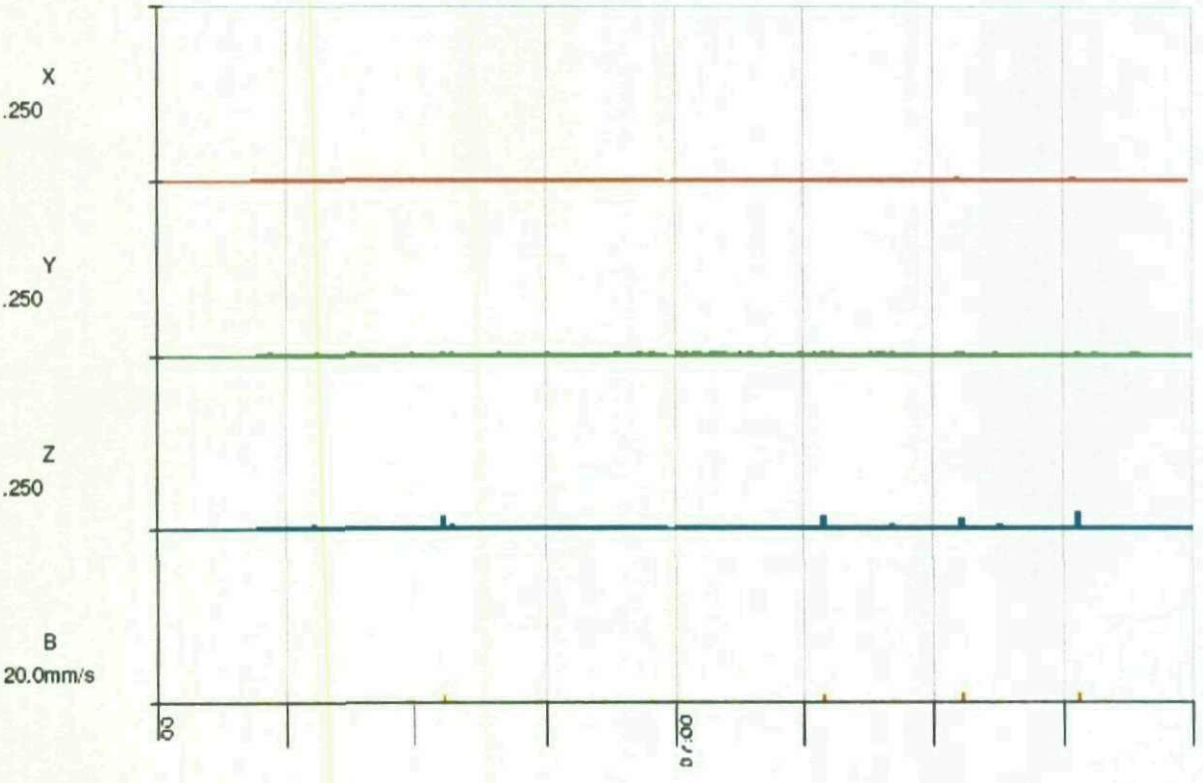
Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/29 20:51:27.00)	56.2	79.1	65.5	58.2	44.5
(2009/04/29 20:56:30.00)	54.2	66.1	64.0	59.5	43.6
Average	**55.3**		**64.8**	**58.9**	**44.1**

Location 6c (pitch and car park empty)

Date/Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/04/29 21:01:33.00)	48.8	65.3	61.4	48.5	42.5
(2009/04/29 21:06:36.00)	49.5	68.4	60.8	50.6	42.6
(2009/04/29 21:11:39.00)	48.8	67.7	60.7	48.0	43.2
(2009/04/29 21:16:42.00)	53.8	70.7	66.5	56.2	42.9
Average	**50.8**		**62.4**	**50.8**	**42.8**

Appendix D – Vibration Data Graphs





Arndale Court
Headingley
Leeds
LS6 2UJ

Tel: 0113 278 7111
Fax: 0113 275 0623
email: enviro.leeds@wyg.com

Project: Barnsley College Honeywell Campus		Drawing Title: Vibration Monitoring Graphs	Figure No.: 01
		Project No.: A056021	Scale at A4: NTS
Client: Barnsley College		Checked By: SAM	Approved By: NT
		Office: 4104	Type: Env
			Approval ☐ Information ☑