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Environmental Associates

Noise Assessment

Land at Christon Bank Farm

June 2019

Mr R Jeffrey



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Client: Mr R Jeffrey

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1 INTRODUCTION

1.1 Background

- 1.1.1 NJD Environmental Associates LTD was instructed by Mr R Jeffrey to undertake a noise assessment for a proposed residential development on land at Christon Bank Farm in Northumberland.
- 1.1.2 The site is located to the east of an existing haulage business, owned and operated by the applicant. Further to a response received by Public Protection at Northumberland County Council (NCC), noise associated with this existing business requires consideration in support of the outline planning permission for no.5 dwellings.
- 1.1.3 Public Protection also requested that odour be considered, should livestock be kept in the buildings. As livestock is not housed in any of the existing buildings to the west of the proposed development site, odour is not considered to be an issue.
- 1.1.4 The site location is shown in Drawing 1 below.



Drawing 1: Site Location

- 1.1.5 A noise report has been prepared in support of the outline planning application for proposed residential development, with measurements taken of existing noise sources, calculations performed using noise modelling software, and the results interpreted in accordance with the relevant standards.

2 PLANNING POLICY AND GUIDANCE

2.1 National Planning Policy Framework (NPPF)

2.1.1 The revised NPPF published in February 2019 provides the following with regards to noise, set out at paragraph 180:

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

In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”

2.1.2 It is clear that the NPPF seeks to limit the exposure of new development to unacceptable levels of noise, although the policy does not seek to prescribe what constitutes an unacceptable level of noise.

2.2 Noise Policy Statement for England (NPSE)

2.2.1 The Department for Environment, Food and Rural Affairs (DEFRA) published the NPSE in March 2010.

2.2.2 The explanatory note of NPSE defines the terms used in the NPPF:

“2.19 There are several key phrases within the NPSE aims and these are discussed below.

‘Significant adverse’ and ‘adverse’;

2.20 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effect on health and quality of life can be detected.

2.21 *Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.”

2.2.3 The NPSE does not define the SOAEL numerically, stating at paragraph 2.22:

“2.22 It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

2.2.4 There is no local or national guidance on how the three terms should be defined numerically, it is for the assessor to collate and interpret appropriate guidance on noise, such as may be found in British Standards, and correlate the guidance with the concepts of NOEL, LOAEL and SOAEL.

2.3 Planning Practice Guidance: Noise (PPGN)

2.3.1 In March 2014, the Government released the PPG on noise. This document sets out a number of principles and reinforces the guidance set out in the NPPF and NPSE.

2.3.2 Paragraph 001 of PPGN notes that:

“Noise needs to be considered when new development may create additional noise and when new developments would be sensitive to the prevailing acoustic environment.”

2.3.3 It goes on to note in paragraph 003 that:

“Local planning authorities’ plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.”*

2.3.4 The PPGN broadly repeats the NPSE definitions of the NOEL, LOAEL AND SOAEL and it provides a summary table to explain how the terms relate to each other and to typical human response to sound. The table is replicated below in Table 1.

Table 1: PPGN Noise Exposure Hierarchy			
Perception	Examples of Outcome	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and small changes in behaviour and/or attitude, e.g. turning up volume of televisions; 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 areas such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, 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
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory or non-auditory	Unacceptable Adverse Effect	Prevent

2.3.5 The PPGN also notes at paragraph 009 that:

“The noise impact may be partially offset if the residents of those dwellings have access to:

- *a relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or*

- *a relatively quiet external amenity space for their sole use (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or*
- *a relatively quiet, protected, nearby external amenity space for sole use of a limited group of residents as part of the amenity of their dwellings, and/or*
- *a relatively quiet, protected, external publicly accessible amenity space (e.g. a public park or local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)."*

3 ASSESSMENT METHODOLOGY

3.1 Scope of Work

- 3.1.1 A site visit and observations were undertaken on 23rd June 2019, including a walkover of the haulage yard.
- 3.1.2 Vehicle movements on the main access road into the haulage yard and manoeuvring within the yard area, occur on the western side of the main building for the majority of the time and are therefore screened from the proposed development site.
- 3.1.3 Vehicle maintenance is undertaken within the main building, with only the western facing doors open, therefore minimal noise from operations within the building was noted.
- 3.1.4 A smaller yard area is located on the eastern side of the main building. All doors were closed during the site visit and no activity was noted within this yard. Photographs are provided at Appendix 1.
- 3.1.5 An existing barrier runs partially along the eastern boundary of the haulage yard, adjacent to the proposed development site, which is approximately 3m high.
- 3.1.6 Following a discussion with the applicant, it was noted that no activity takes place during the night time period. It is understood however, that there are no restrictions on the operational hours of the haulage business and therefore consideration has been given to the possibility of activity during the night time period as part of this assessment.

- 3.1.7 Due to the sensitivity of the adjacent proposed residential development, should permission be granted, a Noise Management Plan (NMP) will be implemented by the haulage business. This is provided at Appendix 2 and contains control measures for reducing noise emissions from operations, including no HGV movement and external activity within the small yard area to the east of the main building, directly adjacent to the proposed development site, during the night time period (2300h to 0700h).
- 3.1.8 Background noise measurements have been obtained at a monitoring location (ML1) representative of the proposed development site but without audibility of activity associated with the haulage yard.
- 3.1.9 Noise levels of activity associated with the haulage yard have been obtained from a monitoring location (ML2), at the western site boundary of the proposed residential development site. Audio recordings were also saved throughout the monitoring period and analysed, in order to determine the noise sources associated with the haulage yard.
- 3.1.10 A summary of the measurements is provided at Appendix 3.
- 3.1.11 The noise measurements obtained at both locations have also been compared with the guidance levels contained within BS8233:2014 for the daytime and night time period.

3.2 BS8233:2014 and WHO 1999 Guidance Levels

- 3.2.1 BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' provides guidance for the control of noise in and around buildings. It applies to the design of new buildings, or refurbished buildings undergoing a change of use.
- 3.2.2 BS8233 refers to the World Health Organisation research and recommendations when defining acceptable and upper guidance noise levels within gardens during the day, and within habitable rooms in dwellings during the day and night-time periods as follows:

Table 2: Summary of BS8233 guidance noise levels			
Activity	Location	0700 to 2300h	2300 to 0700h
Resting	Living room	35dB LAeq,16h	-
Relaxing	Gardens	55dB LAeq,16h	-
Dining	Dining room	40dB LAeq,16h	-
Sleeping (daytime resting)	Bedroom	35dB LAeq,16h	30dB LAeq,8h

3.2.3 Note 4 to Table 4 of BS8233 states, "Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or LA_{maxF}, depending on the character and number of events per night. Sporadic noise events could require separate values.",

3.2.4 The WHO Community Noise Guidelines, 1999 details the following:

"If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30dBA indoors for continuous noise. If the noise is not continuous, sleep disturbance correlates best with LA_{max} and effects have been observed at 45dB or less."

3.2.5 Section 3.4 of the guidelines also states:

"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB LA_{max} more than 10-15 times per night (Vallet and Vernet, 1991).

3.2.6 The above levels have been adopted for the purpose of this assessment.

3.3 BS4142:2014 Industrial and Commercial Sound Guidance

3.3.1 Where industrial or commercial noise is present or proposed and likely to impact a residential receptor, the guidance contained within BS4142:2014 'Methods for rating and assessing industrial and commercial sound' should be followed. The guidance enables the effects of such noise on people nearby to be assessed and the associated risks to be minimised.

3.3.2 The guidance provides a methodology for determining an initial estimate of significance through subtracting the measured background noise level from the rating level (the specific sound level of the source with any corrections applied for distinctive acoustic characteristics).

3.3.3 Typically, the greater the difference, the greater the magnitude of the impact.

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

3.3.4 The context, as defined within BS4142, relates to the following factors:

- The absolute level of sound.
- Character and level of the residual sound compared to the character and level of the specific sound.
- Acoustic design measures.

4 NOISE SURVEY

4.1 Introduction

4.1.1 On the 23rd to 25th May 2019, noise measurements were undertaken to determine residual, background and specific noise levels.

4.1.2 Measurements were taken using two Acoem 01dB Fusion sound level meters. The Class 1 instruments logged 1/3 octave levels throughout the measurements and included audio recordings for subsequent analysis. The instruments were calibrated before and after the measurements to a reference level of 94dB, with no notable drift observed.

4.2 Monitoring Locations

4.2.1 Measurements were taken at the locations shown in Drawing 2 below.



Drawing 2: Noise Monitoring Locations

4.2.2 The monitoring locations were as follows:

- ML1: Background noise measurement to the east of the site, screened from the haulage yard by intervening buildings.
 - The measurements took place during the following dates and times:
 - 1045h on the 23rd May 2019 and 2300h on the 25th May 2019.
- ML2: Specific noise measurements at the site boundary of the proposed development site, closest to the haulage yard.
 - The measurement took place during the following dates and times:
 - 1030h on the 23rd May 2019 to 2055h on the 25th May 2019.

4.3 Existing Noise Levels

4.3.1 The noise levels from ML1 are summarised in Tables 3 and 4 below. The data has been analysed and separated into day and night-time periods.

Table 3: Summary of measured daytime noise levels (dBA)				
Location	Daytime LAeq		Daytime LA90	
	Weekday	Weekend	Weekday	Weekend
ML1	55	53	31	30

Table 4: Summary of measured night-time noise levels (dBA)						
Location	Night-time LAeq		Night-time LA90		Night-time LAmax	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
ML1	52	51	27	25	81	83

4.3.2 Full details of the measurements are presented in Appendix 2.

5 INDUSTRIAL NOISE SOURCES

5.1 Overview

5.1.1 The site visit conducted on 23rd May 2019, identified that the dominant noise source associated with the haulage yard, audible at the proposed development site, was external vehicle movements. A number of these movements were associated with staff vehicles currently using the proposed development site for parking, which will not occur in this area, should proposed residential development be granted.

5.1.2 Analysis of audio recordings obtained during the 58.5 hours of monitoring at ML2 was also undertaken. The majority of the audio recordings, which were triggered when the measured LAeq exceeded 50dB(A), were associated with birdsong. In addition, the sounding of train horns was also noted, associated with the East Coast Mainline approximately 365m to the east of the site.

5.1.3 Following the analysis of the noise measurements at ML2, it is confirmed that the dominant source of noise from the haulage yard is associated with external HGV movement. The loudest period measured during the daytime was between 1236h and 1336h on 24th May 2019. This 1-hour reference period included noise associated with external HGV movement for approximately 25 minutes, within the yard area to the east of the main building. This comprised of an engine running and vehicle manoeuvring within the area adjacent to the monitoring location.

- 5.1.4 The specific noise level of the external HGV movement at ML2 is 55.7dB(A). No correction has been made for residual noise due to the dominance of the noise associated with HGV movement when it occurred.
- 5.1.5 Other sources may be present, i.e. breakout noise emissions from buildings. However, this is not considered significant in the context of the potential impact of the external HGV movements observed and following an analysis of the audio recordings.
- 5.1.6 Therefore, for the purposes of the BS4142 assessment, the specific noise level of 55.7B(A) measured within the loudest period, has been used to represent HGV movement within the yard adjacent to the proposed development site during the daytime period only.
- 5.1.7 As previously discussed at Section 3.1, should permission be granted for proposed residential development, an NMP will be implemented by the existing haulage business. The NMP includes restricting access and operations within the small yard area to the east of the main building, directly adjacent to the proposed development site, with no HGV movement or external operations to be undertaken between 2300h and 0700h. The assessment for the night time period therefore considers HGV movement within the main yard area to the west of the main building only.

6 CADNAA NOISE MODELS

6.1 Input Data

- 6.1.1 Topographic data of the site and surrounding land has been incorporated into the noise models.
- 6.1.2 For the purpose of these calculations, the ground absorption has been set to $G=0.8$ and buildings set to $G=0$ (acoustically hard and reflective), with two orders of reflection considered.
- 6.1.3 The models have been programmed to assess HGV movement within the yard area to the east of the main building, during the daytime and night time periods, with receiver and grid calculation height set to 1.5m.
- 6.1.4 A point source representing an HGV engine running and line source representing HGV manoeuvring along the south of the main building and into the yard area have been input into the model, based on the specific noise level measured at ML2.

6.2 Noise Model Results

6.2.1 The results are shown in Figures 1 and 2, with the assessment and interpretation of the results discussed in the following sections.

7 BS4142 ASSESSMENT

7.1 Background Noise Level

7.1.1 To derive appropriate background noise levels representative of the proposed site, noise measurements taken from ML1 have been used. This location was selected to minimise any noise from existing operations within the haulage yard, whilst still being in close proximity.

7.1.2 The assessment is based on the measured background noise levels obtained during the weekend, as these were slightly lower than the weekday levels.

7.2 Specific Noise Level

7.2.1 As discussed above, the specific noise level associated with HGV movement within the yard, east of the main building and therefore in closest proximity to the proposed development site, was measured as 55.7dB(A) at ML2.

7.2.2 As this is an outline planning application, no detailed layout is provided that can be used to predict noise levels at proposed dwelling locations.

7.2.3 The assessment provides an indication of the potential noise impact at a location within the proposed development site at 10m from the intervening barrier. The impact will be less further into the site. In addition, once dwellings are in place, the buildings will form barriers themselves, which will further attenuate noise associated with the haulage yard.

7.2.4 The noise models produced therefore provide indicative noise levels associated with HGV movement as contours across the proposed development site for both the daytime and night time periods, with no proposed dwellings in situ. These are provided at Figures 1 and 2.

7.2.5 The noise models include a 3m high barrier as an extension to the existing barrier, along the length of the western boundary of the proposed development site.

7.3 Rating Level

- 7.3.1 Where a specific noise has particular acoustic features or characteristics that make it more likely to attract attention or cause annoyance, the guidance recommends applying penalties as appropriate. The penalties are discussed in the BS4142 assessments shown in Tables 5 and 6.

Table 5: BS4142 Assessment of haulage yard – Daytime Weekend

	Predicted noise level (dB)	Commentary
Results	@10m from barrier	
Specific sound level	37	Based on the calculated levels at Figure 1, derived from the loudest period measured at ML2.
Acoustic feature correction	+3	The intermittency of vehicle movements may be readily distinctive against the residual acoustic environment, a penalty of +3dB has therefore been applied.
Rating level	40	Specific noise level corrected for acoustic features
Background sound level	30	Lowest measured background during weekend (Table 3).
Excess of rating over background sound level	+10	Rating level minus background level
Initial assessment of impact	A	Negligible (N); Low (L); Minor Adverse (M/A); Adverse (A); Significant Adverse (S/A)
Assessment of Context	<p>The initial assessment indicates that noise from vehicle movement within the external yard directly adjacent to the development site during the daytime could result in an adverse impact, depending on the context. The context is assessed below:</p> <p>The specific noise level in gardens is below the WHO guidance level of 55dB LAeq,16h. The specific noise level is below the BS8233 guidance level of 35dB, assuming 15dB of attenuation for a partially open window, at facades with directly adjacent to the yard.</p> <p>The industrial noise is expected to have acoustic features that may affect the acoustic character of the area and may causes small changes in behaviour and/or attitude, resulting in impact between LOAEL and SOAEL in accordance with the NPSE.</p>	
Conclusion	<p>It is concluded that during the daytime period, without mitigation, noise from HGV movement within the adjacent haulage yard, to the east of the main building, may at times be noticeable, and cause changes in behaviour and/or attitude of the receptor. However, as the main yard is located on the western side of the building, movement within the eastern yard does not occur frequently, with receptors able to experience levels significantly below the WHO guidance level 55dB LAeq for the large majority of the day.</p> <p>On balance, the industrial noise impact is considered to be Minor Adverse during the daytime period, at the most exposed plots, i.e. those within the western area of the proposed development site.</p>	

Table 6: BS4142 Assessment of haulage yard – Night Time Weekend

	Predicted noise level (dB)	Commentary
Results	@10m from barrier	
Specific sound level	15	Based on the calculated levels at Figure 2, derived from the loudest daytime period measured at ML2.
Acoustic feature correction	0	N/A
Rating level	15	Specific noise level corrected for acoustic features
Background sound level	25	Lowest measured background during weekend (Table 3).
Excess of rating over background sound level	-10	Rating level minus background level
Initial assessment of impact	N	Negligible (N); Low (L); Minor Adverse (M/A); Adverse (A); Significant Adverse (S/A)
Assessment of Context	<p>The initial assessment indicates that noise from vehicle movement within the external yard to the west of the main building during the night time could result in a negligible impact, depending on the context. The context is assessed below:</p> <p>The specific noise level is below the BS8233 guidance level of 30dB, assuming 15dB of attenuation for a partially open window, at facades adjacent to the yard.</p> <p>Noise is not expected to be noticeable, resulting in a No Observed Effect in accordance with the NPSE.</p>	
Conclusion	<p>It is concluded that during the night time period, without mitigation, noise from HGV movement within the haulage yard, to the west of the main building, is unlikely to be noticeable.</p> <p>On balance, the industrial noise impact at the proposed development site is considered to remain Negligible during the night time period, at the most exposed plots, i.e. those within the western area of the proposed development site.</p> <p>Where no observed effect is predicted, the NPSE recommends no specific mitigation is required.</p>	

7.4 BS4142 Assessment Summary

Introduction

- 7.4.1 Noise from activity associated with the existing haulage yard has been assessed in accordance with BS4142:2014.
- 7.4.2 The assessment has considered noise associated with external HGV movements within the yard to the east of the main building, closest to the proposed development site.

7.5 Daytime

- 7.5.1 During the daytime, the impact is predicted to be, at worst, adverse in the west of the proposed development site, adjacent to the yard, when taking into consideration the background noise level for a weekend period.
- 7.5.2 The context assessment found that when HGV movement does occur in the yard to the east of the main building, the noise impact is likely to be at worst, minor adverse, with receptors in gardens and living rooms experiencing levels within the guidance recommendations from BS8233 and WHO 1999, and the impact infrequent over the course of a day, lessening the effect.

7.6 Night Time

- 7.6.1 During the night time, the impact is predicted as negligible in the west of the proposed development site.
- 7.6.2 Although no movements were noted during the night time noise monitoring survey, noise associated with HGV movement in the main yard area to the west of the building has been considered due to the unrestricted hours of the haulage business.
- 7.6.3 Should permission be granted, an NMP will be implemented preventing access and operations within the small yard area to the east of the main building during the night time period.
- 7.6.4 The context assessment found that should HGV movement occur in the yard to the west of the main building, the noise impact is likely to remain negligible.

8 BS8233 ASSESSMENT

8.1 Gardens During the Daytime

8.1.1 In accordance with BS8233, the upper guidance noise level in gardens is 55dB LAeq,16h. Based on measured levels obtained at ML1 and ML2, the upper guidance noise level can easily be met within gardens across the site.

8.2 Living Rooms and Bedrooms During the Daytime

8.2.1 During the daytime period, BS8233 recommends a guidance level of 35dB LAeq,16h inside living room and bedroom areas.

8.2.2 WHO1999 indicates that with a window partially open for ventilation, approximately 15dB of attenuation from external noise sources should be achieved.

8.2.3 On this basis, plots located adjacent to the eastern boundary may not achieve internal guidance levels without the provision of some form of acoustic ventilation, due to noise from train horns on the East Coast Mainline.

8.2.4 Appropriate mitigation measures are discussed in Section 9.

8.3 Bedrooms During the Night-time

8.3.1 During the night-time period, BS8233 recommends a guidance level of 30dB LAeq,8h and 45dB LAmax inside bedroom areas.

8.3.2 On this basis, plots located adjacent to the eastern boundary may not achieve internal guidance levels without the provision of some form of acoustic ventilation, due to noise associated with train horns on the East Coast Mainline. A snapshot of the LAmax from train horns sounding at ML1 during the night time period is provided at Appendix 4, with measurements of up to 72dB(A) recorded.

8.3.3 Appropriate mitigation measures are discussed in Section 9.

9 MITIGATION MEASURES

9.1.1 The results demonstrate that garden areas are likely to achieve the recommended guidance level of 55dB LAeq, across the site without mitigation.

9.1.2 Facades of plots in the eastern area of the site may exceed the internal guidance level during the daytime and night time with an open window, due to noise from train horns on the East Coast Mainline.

- 9.1.3 In addition, noise associated with HGV movements within the haulage yard to the west of the site, may give rise to minor adverse impact at plots located in the western area of the site, during the daytime period, without mitigation.
- 9.1.4 As this is an outline planning application with no detailed layout, it is recommended that consideration be given to the configuration of the internal layout of plots at the design stage.
- 9.1.5 It is recommended that noise sensitive rooms, particularly bedrooms, be located on the screened façades of those plots adjacent to the eastern boundary exposed to train noise.
- 9.1.6 Where limiting factors exist that make achieving internal guidance levels with windows open impractical, acoustic ventilation is considered a suitable solution that meets the good acoustic design test, as per Paragraph 2.33 to 2.34 of the ProPG, which states:

“It should be noted that the acoustic performance of the building envelope will be reduced in the event windows are opened for ventilation or cooling purposes, typically reducing the insulation to no more than 10 to 15 dB(A).

Most residents value the ability to open windows at will, for a variety of reasons, and LPAs should therefore normally request that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open. Where internal noise levels are assessed with windows closed the justification for this should be included in the ADS.

Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment.

In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore,

in this scenario the internal LAeq target noise levels should not generally be exceeded."

- 9.1.7 It is felt that in this circumstance, with due consideration to the factors set out above, as the site lies in close proximity to a transportation noise source, i.e. the East Coast Mainline, achieving the internal guidance levels through use of an alternative means of ventilation is a suitable solution that meets the good acoustic design test.
- 9.1.8 The exact requirements would be confirmed once a detailed layout was submitted.

10 CONCLUSION

10.1 Introduction

- 10.1.1 NJD Environmental Associates has undertaken a noise assessment for a proposed residential development, on land at Christon Bank Farm in Northumberland.

10.2 BS4142 Assessment

- 10.2.1 The BS4142 assessment found that noise associated with external HGV movements in the yard adjacent to the proposed development site, may give rise to a minor adverse impact, during the daytime period at the most exposed plots, without appropriate mitigation. This is based on the highest specific noise level associated with HGV movement measured at the site boundary with the haulage yard and also takes into consideration low background noise levels during a weekend, in order to provide a robust assessment.

10.3 BS8233 and WHO 1999 Assessment

- 10.3.1 The BS8233:2014 assessment found that guidance noise levels in garden areas can be achieved across the site.
- 10.3.2 Plots located adjacent to the eastern boundary may not achieve internal guidance levels without the provision of some form of acoustic ventilation, due to noise associated with train horns on the East Coast Mainline
- 10.3.3 As this is an outline planning application, the final site layout is not known at this stage. Recommendations have been made with regards to the internal layout configuration of dwellings in order that noise sensitive rooms, i.e. bedrooms, are located on the screened sides of proposed dwellings for those plots located in

the eastern area of the site, the detail of which can be provided at the reserved matters stage. Acoustic ventilation is also likely to be required for affected facades.

- 10.3.4 It is concluded that subject to the recommended mitigation measures being implemented, noise should not be a prohibitive factor in the determination of this outline planning application.



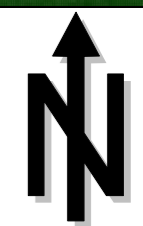
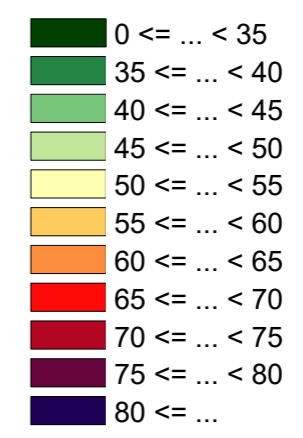
Environmental Associates

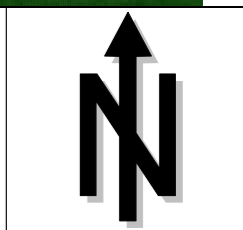
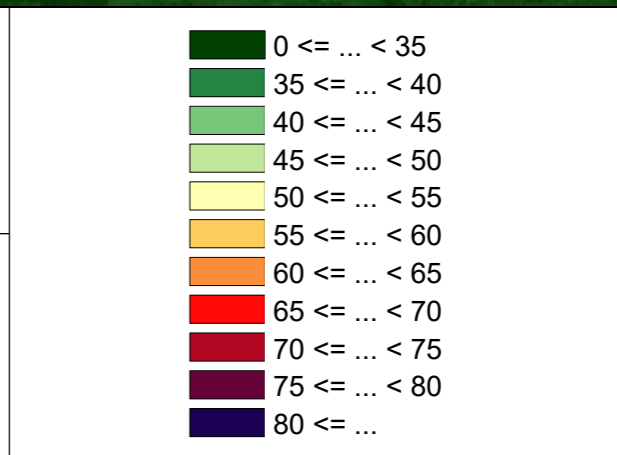
NJD Environmental Associates LTD

www.njdenvironmental.co.uk

Company Registration No 10956987







APPENDIX 1



Photograph 1: Western side of main building



Photograph 2: Main yard to the west of the main building

APPENDIX 1



Photograph 3: Yard to the east of the main building, adjacent to proposed development site

Noise Management Plan
Agricultural and Commercial Haulage Operations
Land at Christon Bank Farm

Noise Management Plan
Agricultural and Commercial Haulage Operations
Land at Christon Bank Farm

Operator: **Mr R Jeffrey**

Report Version	Issue Date	Issued By
001	TBC	Mr R Jeffrey

1 INTRODUCTION

1.1 Background

1.1.1 This Noise Management Plan (NMP) addresses the need to manage the potential for noise associated with agricultural and haulage operations at Christon Bank Farm, that may have the potential to give rise to an adverse impact at adjacent neighbours.

1.1.2 Noise has been defined in various ways, but essentially it is *unwanted* sounds or sound that is not desired by the recipient. The degree of annoyance and stress that can result from exposure to noise is almost impossible to quantify, since responses may vary widely between individuals.

1.2 Responsibilities

- **Operator-** The operator is responsible for ensuring that this management plan is fit for purpose through regular reviews and updates accordingly.
- **Site Operatives-** All site operatives shall follow this management plan when using loud equipment and machinery.

1.3 Overview

1.3.1 The NMP shall identify sources and potential sources of noise, and shall consider the risk to sensitive receptors. The NMP has been produced with the intention to reduce as much as possible noise-causing activities.








1.3.2 The NMP contains:

- An assessment of the risks of noise, from normal and abnormal situations, including worst case scenarios, for example breakdowns and accidents;
 - The appropriate controls (both physical and management) needed to manage those risks;
 - Actions, contingencies and responsibilities when problems arise; and;
 - Regular review of the effectiveness of noise control measures.
-

2 NOISE CONTROL

2.1 Principles

2.1.1 There are a number of physical factors involved in determining how the noise is propagated and how much reaches the receiver.

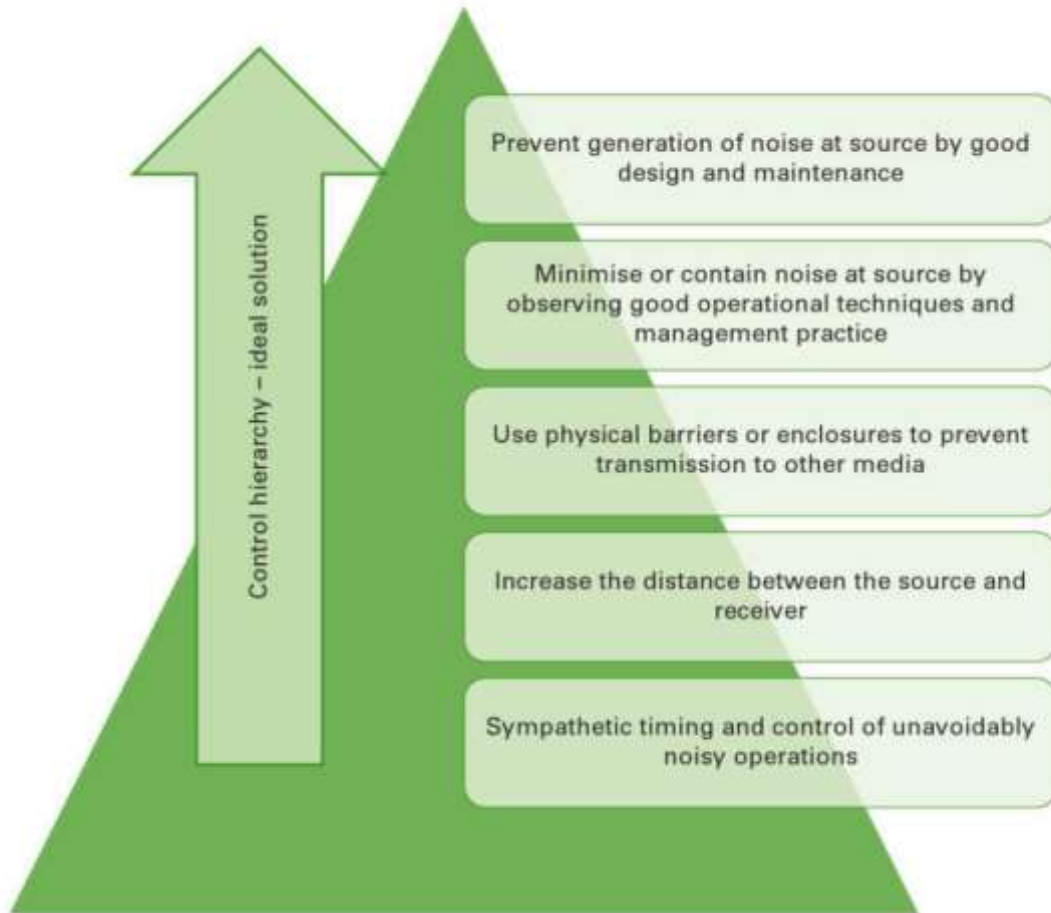
SOURCE	PATHWAY	RECEPTOR	
			
			
<p>The amount of noise radiated depends upon:</p> <ul style="list-style-type: none"> • The sound power level of the source; • The nature of the building structure; • Gaps in the fabric of the building; • The number of sources. 	<p>The noise received depends upon the degree of attenuation provided by:</p> <ul style="list-style-type: none"> • Distance from source; • Attenuation provided by type of ground; • Screening by walls, banks or buildings; • Wind direction; • Meteorological conditions; • Atmospheric absorption 	<p>The strength of any vibration received will depend upon:</p> <ul style="list-style-type: none"> • The strength of the source; • Ability of the source to transmit vibration to the ground; • The nature of the ground conditions; • Distance of the receiver from the source; • The continuity of the transmission route; • The ability of the receiver to receive the vibration. 	
HAZARD			Nuisance to local population.

2.2 Noise Control Techniques

2.2.1 Control of noise associated with the haulage business can be implemented as follows:

- Reducing at source by design or management;
- Blocking or impeding the transmission paths, control by distance, direction or some form of noise abatement equipment.

2.2.2 A hierarchy of noise control measures determines the most appropriate solution to control where practicable under any one site specific scenario.



Noise Management Plan
Agricultural and Haulage Operations
Land at Christon Bank Farm

SOURCE	NATURE OF NOISE	LOCATION/ACTIVITY	MITIGATION MEASURES
<p>Vehicles arriving and manoeuvring</p>	<p>Diesel engine sounds and reversing alarms.</p> <p>Intermittent sound when vehicles are moving.</p> <p>Unrestricted hours</p>	<p>Access road</p> <p>Main yard area, west of building</p> <p>Small yard area, east of building</p>	<ul style="list-style-type: none"> - Site speed limit - No revving of engines - No unnecessary use of horns - Vehicle engines switched off when not in use. - Routine vehicle maintenance and inspection undertaken - Although unrestricted hours, no vehicle movements currently taking place through the night - Should vehicles enter site during the night time/early morning, between the hours of 2300 and 0700, access is only permissible within the main yard area to the west of the building

Noise Management Plan
Agricultural and Haulage Operations
Land at Christon Bank Farm

SOURCE	NATURE OF NOISE	LOCATION/ACTIVITY	MITIGATION MEASURES
Vehicle maintenance	Sound breakout from buildings associated with maintenance, i.e. use of hand tools Intermittent Unrestricted hours	Within onsite buildings	<ul style="list-style-type: none">- Doors not required for regular access remain closed during normal operations- Walls and building fabric integrity maintained- Although unrestricted hours, no operations currently take place through the night.- Should operations within buildings be required during the night time/early morning, between the hours of 2300 and 0700, east facing doors are not to be used for access and are to remain closed- Should radios be in use, the volume should be controlled so as to prevent emissions to be audible outside of the buildings.

3 SENSITIVE RECEPTORS

3.1 Personnel and Visitors

- 3.1.1 Personnel/operatives working on site are the closest receptors to any noise produced on site. All operatives should be made aware of the issue of noise on site.
- 3.1.2 Personal Protective Equipment (PPE) shall be made available where the daily or weekly lower exposure value is exceeded. PPE shall be made available where required to all site visitors.

3.2 Neighbours

- 3.2.1 Local residents neighbouring the site are likely to be sensitive receptors to noise. Good relationships with neighbouring land owners and neighbours is essential in order to anticipate potential problems and avoid them, where possible, before official complaints are made.
- 3.2.2 The operator will ensure:
- that all the neighbours know how to contact the site if they consider noise to be a problem; and
 - that any complaints are recorded and that problems, where possible, are dealt with promptly.
-

4 CONTROL MEASURES

4.1 General Controls

- Vehicles and Plant shall be switched off when not in motion or operation.
- Continuing high levels of maintenance of vehicles and plant will ensure minimal noise when in operation;
- Equipment will not be operated with casings or the housing removed, which would increase the noise levels;
- Noise levels of equipment will be considered when replacing existing equipment with new equipment. Preference will be given to equipment with lower dB and vibration levels;
- Vehicle movements within yard area east of the building are not permitted during the night time/early morning between 2300 and 0700h;
- All doors are to remain closed when regular access is not required;
- East facing doors are to remain closed during the night time/early morning between 2300 and 0700h;
- Staff training will be held on the importance of noise control.

4.2 Review

4.2.1 The above noise control measures shall be reviewed on a regular basis.

4.2.2 The control measures shall be reviewed as a matter of course if:

- A complaint is received;
- If new plant equipment is brought on site;
- If new working procedures are planned.

4.3 Complaints Response

4.3.1 All complaints shall be dealt with promptly and any appropriate remedial action shall be taken. A noise complaint will result in:

- Logging the complaint;
 - Source of noise identified;
 - Remedial action taken (where possible);
 - Complainant notified of remedial action;
 - Control measures reviewed.
-

File	20190523_104014_000000_1.CMG																								
Start	5/23/2019 10:45:00 AM																								
End	5/25/2019 11:00:00 PM																								
Source	Thurs 23 May Daytime					Thurs 23/Fri 24 May Night Time					Fri 24 May Daytime					Fri 24/Sat 25 May Night Time					Sat 25 May Daytime				
Location	Leq specific dB	Lmin dB	Lmax dB	L90 dB	Duration cumulated h:min:s	Leq specific dB	Lmin dB	Lmax dB	L90 dB	Duration cumulated h:min:s	Leq specific dB	Lmin dB	Lmax dB	L90 dB	Duration cumulated h:min:s	Leq specific dB	Lmin dB	Lmax dB	L90 dB	Duration cumulated h:min:s	Leq specific dB	Lmin dB	Lmax dB	L90 dB	Duration cumulated h:min:s
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ML1 [Fast Max A]		24.8	78.2		12:15:00		24.6	81.0		07:59:59		24.7	89.1		16:00:00		20.9	82.7		08:00:00		25.2	86.1		16:00:00

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ML2 [Fast Max A]		23.9	80.6		12:30:00		23.6	70.8		08:00:00		24.2	79.8		16:00:00		20.9	85.0		08:00:00		29.6	79.9		13:55:00

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HGV	55.7	36.9	67.9	00:26:02

APPENDIX 3 – LAMAX,F TRAIN HORNS AT ML1

