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CHURCH COMMISSIONERS FOR ENGLAND

LAND SOUTH OF DARTON LANE, DARTON

NOISE ASSESSMENT REPORT

SEPTEMBER 2019

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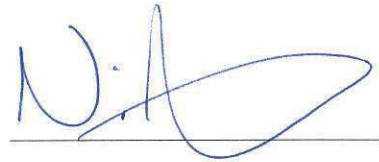
NOISE ASSESSMENT REPORT

SEPTEMBER 2019

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1 INTRODUCTION

- 1.1.1 By email instruction from Mr Matt Naylor of Church Commissioners for England, Wardell Armstrong LLP was commissioned to undertake a noise assessment for a proposed residential development at land south of Darton Lane, Darton, Staincross.
- 1.1.2 The proposed development site is located to the south of Darton and comprises open land. The development proposals comprise a residential development, with associated open space. The site boundary is shown on drawing SH12190-004.
- 1.1.3 To the north and east, the site is bordered by Darton Lane, with existing residential dwellings beyond. To the south, the site is bordered by open land. The Hallam Line railway line, Deare Mills business park, and M1 motorway are located beyond the south western boundary (130m, 190m, and 900m respectively). To the west, the site is bordered by existing residential dwellings and Darton Primary School.
- 1.1.4 The noise assessment report has been prepared to accompany the outline planning application for the proposed residential development. The report assesses the results of a noise survey carried out in accordance with current guidance and includes recommendations for noise mitigation as appropriate.

2 ASSESSMENT METHODOLOGY

2.1 Consultation and Scope of Works

- 2.1.1 On the 23rd November 2018, the potential impacts of the proposed development and general principles of the assessment methodology were sent to the Environmental Health team at Barnsley Metropolitan Borough Council (BMBC).
- 2.1.2 On the 27th November 2018, a response was received from Mr Paul Denton, Environmental Health Officer for BMBC. Mr Denton stated that he was satisfied with our proposed methodology. However, consideration should be given to noise from Darton Primary School.
- 2.1.3 The scope of this assessment comprises a consideration of noise at proposed sensitive areas, i.e. residential areas, specifically in terms of the potential impact of existing transportation. Where appropriate, existing commercial noise affecting proposed residential areas is considered.
- 2.1.4 The noise assessment takes into account current guidance including:
- National Planning Policy Framework, 2018 (NPPF);
 - Planning Practice Guidance - Noise, 2014 (PPG);
 - Noise Policy Statement for England, 2010 (NPSE);
 - ProPG Planning & Noise: Professional Practice Guidance on Planning and Noise (2017);
 - British Standard 8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS8233);
 - British Standard 4142: 2014 Method for rating and assessing industrial and commercial sound (BS4142); and
 - Department of Transport's technical memorandum Calculation of Road Traffic Noise 1998 (CRTN).

2.2 Noise Survey

- 2.2.1 As part of this assessment, Wardell Armstrong LLP has carried out an attended and unattended survey to assess the current ambient noise levels at proposed receptor locations. The noise survey is discussed in Section 3 of this report.

2.3 Guidance

National Planning Policy Framework

2.3.1 In July 2018 the 'National Planning Policy Framework' (NPPF) was introduced as the current planning policy guidance within England.

2.3.2 Paragraph 180 of the NPPF states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking in 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 impact 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 impact 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'...*

2.3.3 Paragraph 182 of the NPPF states:

'Planning policies and decisions should ensure that new development can be integrated with existing business 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.'

2.3.4 With regard to 'significant adverse impacts on health and the quality of life' the NPPF refers to the 'Noise Policy Statement for England' (NPSE).

2.3.5 The Noise Policy Statement for England refers to the World Health Organisation when discussing noise impacts and introduces observed effect levels which are based on established concepts from toxicology that are applied to noise impacts by WHO.

2.3.6 Three levels are defined as follows:

'NOEL – No Observed Effect Level

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

LOAEL – Lowest Observed Adverse Effect Level

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

SOAEL – Significant Observed Adverse Effect Level

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

2.3.7 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, this does not mean that such adverse effects cannot occur.

2.3.8 The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the NOEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table 1 summarises the noise exposure hierarchy.

Table 1 National Planning Practice Guidance noise exposure hierarchy				
Perception	Examples of Outcomes	Increasing Level	Effect	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 causes small changes in behaviour and/or attitude, 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 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 close windows for most of the time. 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 an 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 and non-auditory.	Unacceptable Adverse Effect		Prevent

2.3.9 The PPG summarises the approach to be taken when assessing noise. It accepts that noise can override other planning concerns, but states:

“Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other environmental dimensions of proposed development”

2.3.10 British Standard 8233 “Guidance on sound insulation and noise reduction for buildings” 2014, suggests the following guideline noise levels and states that they are based on guidelines issued by the World Health Organisation;

- 35 dB L_{Aeq} (16 hour) during the day time in noise sensitive rooms
- 30 dB L_{Aeq} (8 hour) during the night time in bedrooms
- 45 dB $L_{Af,Max}$ during the night time in bedrooms
- 50 dB L_{Aeq} (16 hour) desirable external noise levels for amenity space such as gardens and patios
- 55 dB L_{Aeq} (16 hour) upper guideline value which would be acceptable in noisier environments.

2.3.11 In addition, for internal noise levels it states;

“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”

2.3.12 Furthermore, with regard to external noise, the Standard states;

“However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited”.

ProPG: Planning & Noise Professional Practice Guidance on Planning & Noise

2.3.13 ProPG Planning and Noise provides professional practice guidance in relation to new

residential development exposed to noise from transport sources. It provides practitioners with a recommended approach to the management of noise within the planning system in England.

2.3.14 The guidance reflects the Government's overarching National Planning Policy Framework, the Noise Policy Statement for England, and Planning Practice Guidance (including PPG-Noise) and draws on other authoritative sources of guidance. It provides advice for Local Planning Authorities and developers, and their professional advisors, on achieving good acoustic design in and around new residential developments.

2.4 British Standard 4142:2014 (BS4142), Method for rating and assessing industrial and commercial sound.

2.4.1 BS4142 is used to rate and assess sound of an industrial and/or commercial nature including:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

2.4.2 The standard is applicable to the determination of the following levels at outdoor locations:

- rating levels for sources of sound of an industrial and/or commercial nature; and
- ambient, background and residual sound levels, for the purposes of:
 - Investigating complaints;
 - Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
 - Assessing sound at proposed new dwellings or premises used for residential purposes.

- 2.4.3 The purpose of the BS4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.
- 2.4.4 BS4142 refers to noise from the industrial source as the 'specific noise' and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with any noise sources associated with the existing commercial areas.
- 2.4.5 BS4142 assesses the significance of impacts by comparing the specific noise level to the background noise level (L_{A90}).
- 2.4.6 Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. In particular, BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS4142 includes allowances for a rating penalty to be added if it is found that the specific noise source contains a tone, impulse and/or other characteristic, or is expected to be present. The specific noise level along with any applicable correction is referred to as the 'rating level'.
- 2.4.7 The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:
- 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 a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 2.4.8 During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.
- 2.4.9 Where the initial estimate of the impact needs to be modified due to context, BS4142 states that all pertinent factors should be taken into consideration, including:

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

3 NOISE SURVEY

3.1.1 On 13th and 14th December 2018 Wardell Armstrong LLP carried out a noise survey at the development site.

3.1.2 Unattended noise measurements were carried out at two monitoring locations. The monitoring locations (MLs) are detailed in Table 2, and are shown on Drawing Number SH12190-004.

Table 2: Summary of Noise Monitoring Locations			
Monitoring Location Number	Location Description	Monitoring Period	
		Start	End
1	Northern part of the site, approximately 10m from Darton Lane. This location is considered representative of proposed dwellings in the northern part of the site, closest to Darton Lane.	2117 hours 13.12.2018	2217 hours 14.12.2018
2	South western part of the site, approximately 10m from the boundary. This location is considered representative of proposed dwellings in the south western part of the site, closest to the railway line, industrial units, and primary school.	2047 hours 13.12.2018	1624 hours 14.12.2018

3.1.3 The noise measurements were made using two Class 1, integrating sound level meters. In accordance with guidance, the meters were mounted vertically on tripods 1.5m above the ground and more than 3.5 metres from any other reflecting surfaces. Continuous audio recording was also utilised at monitoring location 2.

3.1.4 The sound level meters were calibrated to a reference level of 94dB at 1kHz both before, and on completion of, the noise survey. No drift in the calibration during the survey was noted.

3.1.5 On the 13th and 14th December, the weather conditions during the night time were as follows:

- Northerly winds up to 2m/s;
- Dry ground;
- Temperature approximately +1°C; and,
- Approximately 80% cloud cover.

3.1.6 On the 14th December, the weather conditions during the day time were as follows:

- South easterly winds up to 2m/s;
- Dry ground;
- Temperature approximately +4°C; and,

- Approximately 60% cloud cover.

3.1.7 For the purpose of this assessment daytime hours are taken to be 0700 to 2300 hours and night time hours to be 2300 to 0700 hours.

3.1.8 A-weighted¹ L_{eq} ² noise levels were measured to comply with the requirements of BS8233. A-weighted L_{90} ³ and L_{10} ⁴ noise levels, together with the maximum and minimum sound pressure levels, were also measured to provide additional information. The measured noise levels are set out in full in Appendix A.

3.1.9 Playback of audio recordings and on-site observations, allow detailed notes to be made of the significant noise sources which contribute to each of the measured levels. The observations identified the following:

Road Traffic Noise: Noise from road traffic on Darton Lane was audible at monitoring location 1, and distant traffic on the surrounding road network including the M1, was audible at monitoring location 2. A slight reduction in the level of road traffic noise was noted during the night time.

Rail Traffic: Noise from occasional rail movements on the railway line to the south west of the site were audible in the southern part of the site.

Darton Primary School: Low level noise from children playing was audible at monitoring location 2, during break and lunchtime periods.

Other Sources: Birdsong was audible at both locations during the daytime and night time survey, together with occasional sound of wind in trees and bushes.

3.2 Darton Primary School

Noise from the primary school was audible during the measurement periods. The noise was primarily restricted to break and lunchtime periods, when children were outside the school building. However, even during these periods, noise levels within the development site are dominated by road traffic noise. Analysis of the measured

¹ A' Weighting	An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions
² L_{eq}	Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.
³ L_{90}	The noise level which is exceeded for 90% of the measurement period.
⁴ L_{10}	The noise level which is exceeded for 10% of the measurement period.

noise levels confirms that the school lunchtime period was quieter than the morning and afternoon periods when the children were inside the school building.

- 3.2.1 It is likely that new residents to the area will be aware of the presence of the primary school, and of the likely noise from the school together with the periods when it is most likely to be audible.
- 3.2.2 Therefore, noise from this source has not been considered further, as it is not considered to be significant in terms of the proposed development.

3.3 Deare Mills Business Park

- 3.3.1 Observations undertaken at the start of the noise survey (i.e. the late evening period), indicate that noise from the business park was not audible. The dominant source of noise in the southern part of the site was road traffic on the surrounding road network, which includes the M1, together with the occasional rail movements.
- 3.3.2 Analysis of the audio recordings and spectral history, during the quieter night and day periods, also indicates that noise from the business park (including from external ancillary plant) is not audible.
- 3.3.3 Therefore, industrial type noise has not been considered further.

4 NOISE IMPACT ASSESSMENT

4.1 Existing Noise Levels

- 4.1.1 The measured noise levels for both monitoring locations, have been divided into daytime (0700-2300 hours) and night time (2300-0700 hours) categories, and these are presented in Table 3.

Table 3: Daytime and Night time Noise Levels (Figures in dB L _{Aeq})		
Time	Monitoring Location	Measured Noise Level
0700-2300	1	57
2300-0700		51
0700-2300	2	47
2300-0700		44

- 4.1.2 The short-period, maximum noise levels at the monitoring locations, measured during the night time period of the survey, are summarised in Table 4.

Table 4: Summary of the Maximum Night time Noise Levels (Figures in dB L _{Amax})	
Monitoring Location	Maximum Noise Level
1	73
2	60

- 4.1.3 Based on the results obtained, a robust assessment can be made of the noise levels at the site and of the mitigation necessary to achieve the guideline noise levels at the development.

4.2 Assessment of Daytime Noise Levels in Outdoor Living Areas

- 4.2.1 The measured daytime noise levels, as detailed in Table 3, have been used to determine the noise levels likely in outdoor living areas of dwellings in the vicinity of the noise sources during the daytime period.
- 4.2.2 The noise levels within garden areas, together with the level of attenuation required to achieve the upper guideline level of 55dB L_{Aeq}, recommended by BS8233, are summarised in Table 5.

Table 5: Noise Levels at Dwellings in the Vicinity of the Monitoring Locations and Level of Attenuation Required to Achieve the External Daytime Guideline Level (Figures in dB(A))		
Residential Properties	Noise Level in Outdoor Living Areas	Level of Attenuation Needed To Achieve Noise Guideline Level in Outdoor Living Areas
Residential properties in northern parts of the development site, approximately 10m from Darton Lane, i.e. Monitoring Location 1.	58	3
Residential properties in southern parts of the development site, i.e. Monitoring Location 2.	47	0

4.2.3 Table 5 shows that during the daytime, noise levels affecting the northern parts of the development site is 58dB L_{Aeq} , which is marginally above the upper guideline level of 55dB L_{Aeq} . Therefore, mitigation is required in these areas.

4.2.4 The outdoor living areas of the dwellings further away from Darton Lane, and will also be protected by the intervening buildings. It is considered that these garden areas will not require any mitigation.

4.3 Assessment of Daytime Noise Levels in Living Rooms and Bedrooms

4.3.1 The measured daytime noise levels, as detailed in Table 3, have been used to determine the noise levels likely at the facades of dwellings in the vicinity of the monitoring locations during the daytime period.

4.3.2 Before internal noise levels can be calculated 3dB(A) must be added to the freefield measured levels to allow for the reflection of noise from the facades when the proposed dwellings are in place.

4.3.3 The calculated noise levels at the facades of the dwellings, together with the level of attenuation required to achieve 35dB L_{Aeq} during the daytime, in the living room and bedroom areas, are summarised in Table 6.

Table 6: Facade Noise Level at Dwellings in the Vicinity of the Monitoring Locations and Level of Attenuation Required to Achieve the Internal Daytime Guideline Level (Figures in dB(A))		
Residential Properties	Noise Level at the Facade of the Property	Level of Attenuation Needed To Achieve the Noise Guideline Level in Living Room and Bedroom Areas

Residential properties in northern parts of the development site, approximately 10m from Darton Lane, i.e. Monitoring Location 1.	60	25
Residential properties in southern parts of the development site, i.e. Monitoring Location 2.	50	15

4.3.4 The facades of dwellings further into the site will be screened by the intervening buildings. It is considered that the noise levels at these facades, and therefore the level of attenuation the facades would need to provide to achieve 35dB L_{Aeq} during the daytime in the living room and bedroom areas, will be less than those detailed in Table 6.

4.4 Assessment of Night Time Noise Levels in Bedrooms

4.4.1 The measured night time noise levels, as detailed in Tables 3 and 4, have been used to determine the noise levels likely at the facades of dwellings in the vicinity of the monitoring locations, during the night-time period.

4.4.2 To be robust, the noise levels at these facades are based on the highest maximum measured noise levels recorded during the night-time survey. Before internal noise levels can be calculated 3dB(A) must be added to the freefield measured levels to allow for the reflection of noise from the facades when the proposed dwellings are in place.

4.4.3 The calculated noise levels at the facades of dwellings, together with the level of attenuation required to achieve 30dB L_{Aeq} and 45dB $L_{Amax,f}$ in the bedrooms, are summarised in Table 7.

Table 7: Facade Noise Level at Dwellings in the Vicinity of the Monitoring Locations and Level of Attenuation Required to Achieve the Internal Night-time Guideline Values (Figures in dB(A))			
Residential Properties	Noise Level at the Facade of the Property (L_{Aeq})	Maximum Noise Level at the Facade of the Property ($L_{Amax,f}$)	Level of Attenuation Needed To Achieve the Noise Guideline Levels in Bedrooms
Residential properties in northern parts of the development site, approximately 10m from Darton Lane, i.e. Monitoring Location 1.	54	76	31

Residential properties in southern parts of the development site, i.e. Monitoring Location 2.	47	63	18
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- 4.4.4 The facades of dwellings further into the site will be screened by the intervening buildings. It is considered that the noise levels at these facades, and therefore the level of attenuation the facades would need to provide to achieve 30dB L_{Aeq} and 45dB $L_{Amax,f}$ in the bedrooms, will be less than those detailed in Table 7.

5 NOISE ATTENUATION SCHEME

5.1 Introduction

5.1.1 The results of the noise assessment, for the proposed residential areas of the development, indicate that noise mitigation measures would need to be incorporated into the proposed site design to ensure that the required noise levels are achieved within external and internal areas.

5.1.2 The assessment also indicates that mitigation measures will be limited to dwellings located in the northern part of the site, and bedroom areas in the southern part of the site, with the majority of dwellings requiring no mitigation measures.

5.2 Daytime Noise Levels in Outdoor Living Areas

5.2.1 The noise levels, as detailed in Table 5, indicate that outdoor living areas in northern parts of the site, nearest to Darton Lane, will not quite achieve the required daytime noise level of 55dB L_{Aeq} .

5.2.2 To mitigate noise in outdoor living areas located closest to, and with a direct line of sight of Darton Lane, it is recommended that gardens are located on the screened sides of dwellings, i.e. located with no direct line of sight of the main sources of noise.

5.2.3 Alternatively, close boarded fences and/or wall, with a total height of at least 1.8m could be constructed between garden areas of proposed residential dwellings and the main sources of noise.

5.2.4 With the above mitigation measures in place, all plots will meet the guidance level of 55dB L_{Aeq} suggested by WHO for outdoor living areas.

5.2.5 It should be noted that the final height and location of the above mitigation measures will depend upon the final layout of the site, and mitigation requirements can be confirmed on a plot by plot basis, once a detailed design layout is available.

5.3 Glazing Requirements for Living Rooms and Bedrooms during the Daytime

5.3.1 When assessing daytime noise levels in living rooms the noise attenuation provided by the overall building facade should be considered. To mitigate noise levels, the composition of the building facade can be designed to provide the level of attenuation required. Glazing is generally the building element which attenuates noise the least, so the proportion of glazing in a building facade is an important consideration when assessing overall noise attenuation.

5.3.2 In the absence of design details for the building facades, it has been assumed that the

glazing to noise sensitive rooms would comprise about 25% of the facade area. To calculate the overall attenuation provided by this percentage of glazing in a brick or block facade, a non-uniform partition calculation can be used.

- 5.3.3 The calculation combines the different degrees of attenuation of the wall element and the window element. A facade element comprising solid brick or blockwork, will attenuate by 45dB (British Standard 8233: "Guidance on sound insulation and noise reduction for buildings" 2014) whereas standard double glazing will attenuate road traffic noise by 26-29dB(A) (BRE Digest 379 "Double glazing for heat and sound insulation"). The overall noise attenuation provided by this combination is, therefore, between 32dB(A) and 35dB(A).
- 5.3.4 The noise attenuation requirements for living rooms of dwellings in northern and southern parts of the site are summarised in Table 6. The requirements indicate mitigation measures will not be required in central and southern parts of the site.
- 5.3.5 However, in northern parts of the site, closest to Darton Lane, standard thermal double glazing will be sufficient to ensure that internal noise levels are met with the windows closed.
- 5.3.6 With windows open, the attenuation provided by the facade will be approximately 15dB(A). This would allow the recommended noise guideline value in living rooms to be exceeded, in properties in northern parts of the development site.
- 5.3.7 On occasions this may be acceptable to the resident, but when quiet conditions are required, the resident should be able to close the windows whilst maintaining adequate ventilation. Some form of acoustic ventilation would therefore need to be installed in some of the living rooms to meet the noise guideline value.
- 5.3.8 The requirement for alternative ventilation would apply only to dwellings nearest to Darton Lane, and mainly to facades facing the road. Proposed dwellings further into the site will be screened by the proposed intervening buildings, and will therefore not need to rely on closed windows and will not, therefore, require an alternative means of ventilation.
- 5.3.9 Alternatively, to meet the required daytime noise levels, living rooms and bedrooms could be located on the screened side of the proposed buildings, facing away from the road. With only non-noise sensitive facades facing the road all windows could be opened for ventilation.

5.3.10 Glazing requirements can be confirmed, on a plot by plot basis, at the detailed application/reserved matters stage, once a detailed design layout is available.

5.4 Glazing Requirements for Bedroom Areas during the Night Time

5.4.1 The majority of properties will be able to achieve guideline noise values in bedrooms, with windows opened for ventilation. However, properties towards the northern and southern edges of the development area will require noise attention as summarised in Table 7.

5.4.2 The requirements indicate that standard thermal double glazing, as detailed in paragraph 5.2.3, would ensure that the internal noise guideline levels are met in dwellings closest to the noise sources, with windows closed.

5.4.3 With windows open, the attenuation provided by the façade will be approximately 15dB(A). This would allow the recommended noise guideline value in bedrooms to be exceeded, in properties in northern and southern edges of the development site.

5.4.4 On occasions this may be acceptable to the resident, but when quiet conditions are required, the resident should be able to close the windows whilst maintaining adequate ventilation. Some form of acoustic ventilation would therefore need to be installed in some of the bedrooms to meet the noise guideline value.

5.4.5 The requirement for alternative ventilation would apply only to properties nearest to the noise sources, and mainly to facades facing the sources. Proposed dwellings further into the site will be screened by the proposed intervening buildings, and will therefore not require an alternative means of ventilation.

5.4.6 Alternatively, to meet the required night time noise levels, bedrooms could be located on the screened side of the proposed buildings, facing away from the off-site sources of noise. With only non-noise sensitive facades facing the noise sources all windows could be opened for ventilation.

5.4.7 Glazing requirements can be confirmed, on a plot by plot basis, at the detailed application/reserved matters stage, once a detailed design layout is available.

5.5 Acoustic Ventilation Requirements

5.5.1 It is recommended that the acoustic ventilation proposed at the site should, as a minimum, comply with Building Regulations 2000 Approved Document F1 Means of Ventilation and British Standard BS5925 1991: "Code of Practice for Ventilation

Principles and Designing for Natural Ventilation". Acoustic ventilation is only recommended for noise sensitive rooms, which are bedrooms and living rooms.

- 5.5.2 The implementation of standard thermal double glazing together with appropriate acoustic ventilation should ensure that the required internal daytime and night-time noise values are achieved.
- 5.5.3 The façades of some of the properties further into the site will be protected by the buildings themselves and/or screened by other buildings. Therefore, acoustic ventilation may not be required for these plots.
- 5.5.4 The requirement for acoustic ventilation can be confirmed on a plot by plot basis, at the detailed application/reserved matters stage.

6 CONCLUSIONS

- 6.1.1 Wardell Armstrong has carried out a noise assessment for a proposed residential development located at Darton Lane, Darton, Staincross.
- 6.1.2 The dominant noise source, which will potentially affect the residents of the proposed development, is road traffic on Darton Lane, and to a lesser extent the surrounding road network. Additionally, rail traffic on The Hallam Line is also audible at the site.
- 6.1.3 Attended and unattended noise monitoring was carried out at two monitoring locations, on the 13th and 14th December 2018. The monitoring locations represent the proposed dwellings which are nearest the main off-site sources of noise.
- 6.1.4 The resultant noise levels have been assessed against the guideline values suggested by the World Health Organisation. It should be remembered that the internal guideline values are health-based and are therefore relatively inflexible; however adequate noise mitigation is relatively straightforward to engineer. The external guideline values are based on amenity and allow noise to be balanced against any benefits which flow from the location of the proposed scheme.
- 6.1.5 The results of the noise survey and assessment indicate that to meet the guideline value of 55dBL_{Aeq} (16 Hour) in outdoor living areas, mitigation measures will be required in northern parts of the site, closest to Darton Lane.
- 6.1.6 Gardens could be located on the screened sides of dwellings, furthest away from Darton Lane. Alternatively, standard close boarded fencing or walls of 1.8m in height could be installed between the gardens and Dalton Lane.
- 6.1.7 With regard to indoor noise levels, the majority of properties will be able to achieve guideline noise values within living rooms and bedrooms, with windows opened for ventilation. However, acoustic ventilation would need to be incorporated within living rooms and bedrooms of dwellings in northern parts of the site, and bedrooms in southern parts of the site, where facades overlook the sources of noise. This will enable the windows to remain closed whilst maintaining adequate ventilation. Alternatively, if only non-noise sensitive facades face the noise sources, all windows in all dwellings could be opened for ventilation.
- 6.1.8 The requirement for glazing and acoustic ventilation can be confirmed, on a plot by plot basis, at the detailed application/reserved matters stage.

6.2 Summary

- 6.2.1 This noise report assesses the results of a noise survey carried out in accordance with current national guidance.
- 6.2.2 The report includes recommendations for noise mitigation as appropriate and demonstrates that the noise impact associated with the proposed development will be acceptable, and noise can be adequately mitigated.
- 6.2.3 Future occupiers will not be exposed to unacceptably high levels of noise, and the proposed development will meet the appropriate external and internal noise standards, with the use of mitigation, in compliance with relevant planning policies and guidance.

Appendix A

Noise Monitoring Results

Appendix A

Noise Monitoring Results

Monitoring Location 1						
Time	L _{Aeq} (dB)	L _A min (dB)	L _A max (dB)	L _{A90} (dB)	L _{A10} (dB)	Comments
13/12/2018 - Daytime						
2117-2300	54.2	38.0	72.3	41.0	58.4	Unattended Noise from occasional road traffic on Darton Lane. Distant Road traffic.
14/12/2018 - Night Time						
2300-0700	51.3	31.0	72.7	35.7	55.9	Unattended Noise from occasional road traffic on Darton Lane. Distant Road traffic. Birdsong.
14/12/2018 - Night Time						
0700-2217	58.8	42.0	80.9	50.1	61.9	Unattended Noise from occasional road traffic on Darton Lane. Distant Road traffic. Birdsong.

Monitoring Location 2						
Time	L _{Aeq} (dB)	L _A min (dB)	L _A max (dB)	L _{A90} (dB)	L _{A10} (dB)	Comments
13/12/2018 - Daytime						
2047-2300	45.1	36.6	75.0	40.3	47.3	Unattended Noise from distant road traffic on surrounding network. Rail traffic.
14/12/2018 - Night Time						
2300-0700	44.0	30.4	60.1	35.3	48.3	Unattended Noise from distant road traffic on surrounding network. Rail traffic. Birdsong.
14/12/2018 - Night Time						
0700-1624	49.5	40.2	73.7	45.2	51.6	Unattended Noise from distant road traffic on surrounding network. Rail traffic. Birdsong.

Drawings

Noise Monitoring Locations



KEY

Site Boundary

● Noise Monitoring Locations

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHECKED	APPROVED
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CLIENT

THE CHURCH COMMISSIONERS FOR ENGLAND

PROJECT

LAND SOUTH OF DARTON BARNSELY

DRAWING TITLE

NOISE MONITORING LOCATION PLAN

DRG No.	SH12190-004	REV	A
DRG SIZE	A3	SCALE	1:2,500
		DATE	05/02/2019
DRAWN BY	EF	CHECKED BY	NA
		APPROVED BY	MD



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