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SEDDON HOMES LIMITED

HOLTS LANE, POULTON LE FYLDE

NOISE ASSESSMENT

APRIL 2020

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SEDDON HOMES LIMITED

HOLTS LANE, POULTON LE FYLDE

NOISE ASSESSMENT

APRIL 2020

PREPARED BY:

[Redacted Name]

APPROVED BY:

S

[Redacted Signature]

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EXECUTIVE SUMMARY

Wardell Armstrong LLP has carried out a noise assessment to accompany the Reserved Matters Submission and to discharge Condition 16 attached to the outline planning permission for the approved development at Holts Lane, Poulton-Le-Fylde.

The site is mostly exposed to noise levels from the Preston to Blackpool rail line with noise from the Poulton-Le-Fylde industrial estate beyond audible on occasions. The site noise levels were measured for a period of approximately 25 hours in March 2020 at a location 5m from the Preston to Blackpool rail line.

The noise criteria are set out in Condition 16(a) and cover daytime and night-time periods. Analysis of train movements identified that over the daytime and night-time periods, rail noise is the most significant noise source at the site. The noise from a proposed nearby Energy Reserve Facility (ERF) in the industrial estate was also reviewed and was found not to be significant when compared to rail noise.

A 3D noise model was developed in environmental software SoundPLAN and the model was calibrated for accuracy based on the measured noise levels. The noise levels were predicted across the development site and for each façade of the proposed dwellings. The requirement for mitigation measures was determined based on the noise model results.

The details of proposed mitigation are included in Section 4 of this report and a summary is provided in Figures 6 and 7.

Following implementation of the noise mitigation which details requirements for acoustic fences, glazing and ventilation, the guideline noise levels for garden area and within sensitive room, set out in Condition 16, would be met at all proposed residential properties.

1 INTRODUCTION

1.1.1 Wardell Armstrong LLP was commissioned by Seddon Homes Limited to undertake a noise assessment to accompany the reserved matters planning application and to discharge Condition 16 pursuant to the outline planning permission 16/0104/OULMAJ for the proposed residential development at Holts Lane, Poulton-Le-Fylde.

1.1.2 Condition 16 states;

“16(a) The residential development hereby permitted shall be designed so that cumulative noise (from industrial, commercial and transportation sources) does not exceed:

50dB LAeq 16 hours (07.00 to 23.00) in gardens and outside living areas, daytime

35dB LAeq 16 hours (07.00 to 23.00) - indoors, daytime

30dB LAeq 8 hours (23.00-07.00) - indoors, night-time

45dB LAFmax (23.00-07.00) - indoors, night-time

60 dB LAFmax 8 hours-(23.00-07.00) façade level night time

60 dB LAFmax 4 hours-(19.00-23.00) façade level night time

(b) Any mechanical ventilation system shall meet or exceed the specifications set out in clause 6, schedule 1 of the Noise Insulation Regulations 1975 with regard to acoustic performance and airflow rates.

(c) Where noise mitigation measures are required to ensure compliance with the agreed noise levels e.g. acoustic glazing, noise barrier fencing and ventilation, such mitigation details shall be submitted to and approved in writing by the Local Planning Authority prior to commencement of development demonstrating how they would mitigate noise to the approved levels together with a timetable for implementation. The approved noise mitigation measures shall be implemented in accordance with the approved timescale and shall thereafter be maintained and retained.”

1.1.3 This noise assessment has been prepared to consider the detailed layout and Condition 16 as well as results from a new baseline survey. The detailed layout assessed is included in Appendix A.

2 ASSESSMENT METHODOLOGY

2.1 Scope

- 2.1.1 A noise assessment is required to assess the detailed development layout and to establish a scheme of mitigation to discharge Condition 16.
- 2.1.2 As detailed in the outline planning application noise assessment (Ref: LE12612/002, February 2016, prepared by Wardell Armstrong), the noise levels across the development site are influenced mainly by the Preston to Blackpool rail line and to some extent by the Poulton-Le-Fylde Industrial Estate beyond.
- 2.1.3 Consultation was undertaken with Nick Clayton, Environmental Health Officer (EHO) at Wyre Council by email and phone calls. The EHO confirmed by email on 9th of March 2020 that an assessment would be required based on a new baseline survey and that the new Energy Reserve Facility (ERF) proposed in the industrial estate should also be considered.
- 2.1.4 As such, a new noise survey was undertaken in March 2020 and was analysed for the purpose of this assessment. The results of this new survey are detailed below in Section 3.
- 2.1.5 Noise modelling was also undertaken and the measured noise levels were calibrated in the model to assess the proposed development layout. The modelled noise levels, site layout and proposed house types have been considered when designing an appropriate noise mitigation scheme.
- 2.1.6 In regard to the ERF, the development was originally approved in January 2018 under planning application reference 17/00911/FUL. In January 2019 under planning application reference 18/01100/FUL an application was granted to a for variation of some conditions, inclusive of noise.
- 2.1.7 In regard to NPPF, and specifically the 'agent of change' principal, the ERF development was consented after the Holts Lane residential development and as such it had to integrate mitigation to protect the Holts Lane development. This is reflected in the noise assessment found for planning application 18/01100/FUL for the ERF but even more importantly, it is reflected in planning Condition 9 imposed on the ERF which states:

"9. The rating level of noise emitted from the site's plant, equipment and machinery shall not exceed:

.....

- noise levels of 42 Db for the day time (0700 - 1800), 35 Db for the evening (1800 - 2300) and 35 Db for the night time (2300 - 0700) determined at all boundaries of the noise-sensitive premises approved under planning permission 16/01043/OULMAJ."

2.1.8 These conditioned noise levels for the ERF at the Holts Lane residential development have been assessed in this report.

2.2 Noise Guidance and Standards

2.2.1 The noise assessment considers current guidance and standards including the following:

- National Planning Policy Framework, 2019 (NPPF).
- Noise Policy Statement for England, 2010 (NPSE).
- Planning Practice Guidance - Noise, 2014 (PPG).
- ProPG: Planning & Noise: Professional Practice Guidance on Planning and Noise, 2017 (ProPG).
- British Standard 8233: 2014 Guidance on Sound Insulation and noise reduction for buildings (BS8233).

2.2.2 More details of each guidance and standard is provided in Appendix B.

2.3 Acoustic Design Criteria

2.3.1 The acoustic design criteria are taken from Condition 16 and are summarised as follows:

- 55 dB $L_{Aeq,16h}$ during the daytime in outdoor living area.
- 35 dB $L_{Aeq,16h}$ during the daytime in living rooms and bedrooms.
- 30 dB $L_{Aeq,8h}$ during the night-time in bedrooms.
- 45 dB $L_{Amax,f}$ during the night time in bedrooms.

2.3.2 It should be noted that the $L_{Amax,f}$ criteria for external façade levels has not been used, instead, and in accordance with BS8233, the criteria for internal noise levels was used to test compliance to $L_{Amax,f}$.

2.3.3 The noise assessment undertaken for the outline planning application had already identified that living rooms and bedrooms of dwellings closest to the rail line would require glazing and ventilation mitigation. Therefore, noise mitigation for internal

levels has been designed to ensure that plots which are most exposed to noise can meet the internal guideline noise guideline levels and maintain an adequate level of ventilation. This is consistent with the outline consent and in accordance with NPPF.

3 NOISE SURVEY AND MODELLING ASSUMPTIONS

3.1 Noise Survey

- 3.1.1 On the 10th to 11th March 2020, Wardell Armstrong carried out a noise survey to measure existing noise levels at the proposed development site.
- 3.1.2 Unattended noise measurements, supplemented with audio recording, were taken at one Monitoring Location (ML) for a period of 25 hours between 1436 hours on 10th March 2020 and 1605 hours on 11th March 2020.
- 3.1.3 The ML was 5 meters from the Preston to Blackpool rail line and is shown as ML1 on Figure 1.
- 3.1.4 The noise measurements were made using a Class 1, integrating sound level meter. The microphone was mounted on a tripod 1.5m above the ground and more than 3.5m from any other reflecting surfaces. The sound level meter was 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 A-weighted¹ L_{eqs} ² were measured in accordance with the requirements of BS8233. The maximum and minimum sound pressure levels, A-weighted L_{90s} ³, A-weighted L_{10s} ⁴ were also measured to provide additional information. Detailed noise survey results are presented in Appendix C.
- 3.1.6 The wind speeds were below 5m/s and the temperature ranged between 3 and 11°C. Conditions were dry throughout the survey.
- 3.1.7 Based on site observations and a detailed post-survey review of the data and audio recordings, rail noise was found to be the most significant noise source over the 16hour daytime and 8hour night-time periods. As part of a detailed review of the measured data, all train passing by were marked and the daytime and night-time levels associated uniquely to train noise was calculated at 58dB $L_{Aeq,16h}$ daytime and 56dB $L_{Aeq,8h}$ night-time. In comparison, the ambient levels (all noise measured) were 59dB $L_{Aeq,16h}$ and 56dB $L_{Aeq,8h}$ which demonstrates that the noise levels over the day

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_{eqs} 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.

and night-time are clearly dominated by train noise. The detailed analysis of train event is shown in the Appendix C.

3.1.8 There were also birdsongs audible throughout and occasional events of noise from the industrial estate beyond the train line. Noise from a distant construction site and a nearby house being renovated were also noted at the start of the survey whilst on-site and this period (10th March 15h30 to 16h30) is shown on a detailed time series in Appendix C. These other sources did not significantly contribute to the noise levels over the daytime and night-time periods.

3.1.9 For the purpose of this assessment, daytime hours are taken to be 0700 to 2300 hours and night-time to be 2300 to 0700 hours. The measured levels have been split into daytime and night-time to calculate the relevant $L_{Aeq,16h}$, $L_{Aeq,8h}$ and 10th highest $L_{Amax,f}$ values, in accordance with ProPG:2017.

3.1.10 The measured noise levels are summarised in Table 1 below.

Monitoring Location	Noise Index	Overall dB(A)	Noise Levels dB(A) per 1/1 Octave band						
			63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
ML1-Measured 10 th to 11 th March 2020, 5m from the rail line	Daytime $L_{Aeq,16h}$	59	29	35	42	52	53	55	50
	Night-time $L_{Aeq,8h}$	56	26	32	39	49	50	52	47
	Night-time 10 th $L_{Amax,f}$	82	54	59	68	76	76	77	74

3.2 Modelling Assumptions

3.2.1 A 3D noise model was built in environmental software SoundPLAN version 8.1 and the rail noise levels in the model have been calibrated for accuracy based on the measured levels shown in Table 1 above.

3.2.2 Once the model was calibrated, it was updated to include the proposed development layout which is shown in Appendix A.

3.2.3 Figures 2 appended to this report show the predicted overall daytime noise levels across the site and Figures 3 to 5 show day, night-time, and night-time maximum levels for each façade of the proposed dwellings. It should also be noted that a 2.2m high acoustic fence has been included around the most sensitive garden areas.

- 3.2.4 As discussed in the survey section above, the levels in Table 1 are inclusive of all noise measured (combined rail plus birdsongs and industrial), but are dominated by rail noise. By modelling the rail line with the noise levels calibrated to those of Table 1, this allows for consideration of all noise as required in Condition 16.
- 3.2.5 In regard to the proposed EFR in the industrial estate, it was not necessary to include it in the model. The conditioned EFR noise levels at properties of Holts Lane are 42dB daytime and 35dB night-time and as can be seen on Figure 2 and 4, the noise levels at the nearest properties to the EFR, are predicted to be 54dB daytime (in gardens) and 50dB night-time (at façades), due to rail noise. This is at least 10dB over the EFR conditioned levels, therefore the EFR would not contribute to an increase of the modelled rail noise levels.

4 NOISE MITIGATION

4.1 Outdoor Living Areas

4.1.1 Figure 2 provides noise contours across the development during the daytime, and with the approved site layout in place. The figure shows that with the use of 2.2m high acoustic fences garden areas closest to the rail line, the guideline noise level of 55dB $L_{Aeq,16h}$ would be met in all outdoor living areas of the development.

4.1.2 Therefore, only localised 2.2m high acoustic fences are required to protect outdoor living areas. The location of the fence is reproduced in the noise mitigation Figures 6 and 7. The fences should, as a minimum, have a density $>15\text{kg/m}^2$ and be of close boarded or alternative with no gaps in the construction.

4.2 Internal Living Areas

4.2.1 When assessing noise sensitive rooms, the noise attenuation provided by the overall building façade needs to be considered. The façade noise levels from the model have been considered and appropriate glazing, and where required an alternative means of ventilation, have been specified to meet the internal noise criteria.

4.2.2 Glazing and façade vents are the building elements that provide the least noise attenuation. Detailed noise break-in calculations have been undertaken to consider these building elements of noise sensitive rooms (i.e. living rooms and bedrooms) across the development.

4.2.3 The break-in calculations are based on the calculated noise levels at the proposed dwelling façades and a worst-case ratio of room volume to glazing surface. Two example specifications have been calculated to ensure that internal noise guideline levels are met for all living rooms and bedrooms during the day and night-time. Examples of the break-in calculations are included in Appendix D.

4.2.4 The façade specifications calculated are shown in Figure 6 and 7 and can be summarised as follows:

- GREEN: No specific glazing and ventilation requirement, can be met with open windows.
- BLUE: Combination of 4/12/4 double glazing with one trickle vent of acoustic performance similar or better to Greenwood 5000EAW (without acoustic module).
- RED: Combination of 10/12/6 double glazing with one trickle vent of acoustic performance similar or better to Greenwood 5000EAW.AC1.

4.2.5 Other products or specifications may be suitable, it is recommended that the acoustic performance of the glazing and ventilation meets the specifications assumed in the calculations of Appendix D, also reproduced in Table 2 below, for each octave band between 63Hz and 8kHz.

Product	Noise Attenuation (dB)							
	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Glazing 4/12/4	18	24	20	25	23	29	35	35
Glazing 10/12/6	20	26	27	34	40	38	46	46
Greenwood 5000EAW	30	40	37	36	32	31	31	31
Greenwood 5000EAW.AC1	30	42	40	36	48	53	56	56

4.2.6 It is recommended that any acoustic ventilation proposed at the site should, as a minimum, comply with Building Regulations 2000 Approved Document F Means of Ventilation and British Standard BS5925 1991: “Code of Practice for Ventilation Principles and Designing for Natural Ventilation”.

4.2.7 The implementation of the recommended glazing together with appropriate ventilation shown in shown in Figure 6 and Figure 7 would ensure that the required internal daytime and night-time noise levels are achieved in all proposed dwellings across the site.

5 CONCLUSIONS

- 5.1.1 Wardell Armstrong has carried out a noise assessment for the proposed residential development at land at Holts Lane, Poulton-Le-Fylde in order to provide a detailed noise mitigation scheme which forms part of the Reserved Matters Submission and pursuant to the requirements of Condition 16 of the outline planning permission
- 5.1.2 The noise levels have been measured for a period of approximately 25 hours in March 2020 at a location 5m from the Preston to Blackpool rail line.
- 5.1.3 The site is mostly exposed to noise levels from the Preston to Blackpool rail line with noise from the Poulton-Le-Fylde industrial estate beyond audible on occasions. The noise criteria are set in Condition 16 for daytime and night-time periods. A detailed analysis of train events identified that over the daytime and night-time periods, rail noise is the most significant noise source.
- 5.1.4 The noise from a proposed nearby Energy Reserve Facility (ERF) in the industrial estate was also reviewed and found to be controlled by a planning condition. The conditioned ERF noise levels at the proposed Holts Lane development are not significant when compared to rail noise.
- 5.1.5 A 3D noise model was developed in environmental software SoundPLAN and the model was calibrated for accuracy based on the measured road noise levels. The noise levels were predicted across the development and for each façade of the proposed dwellings and requirement for mitigation measures were calculated.
- 5.1.6 The details of proposed mitigation are included in section 4 of this report and a summary is provided in Figure 6 and 7.
- 5.1.7 Following implementation of the noise mitigation which details requirements for acoustic fences, glazing and ventilation, the guideline noise levels would be met at all proposed residential properties.

DRAWINGS



KEY

- Site Boundary
- Noise Monitoring Location

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT	SEDDON HOMES LIMITED
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PROJECT	HOLTS LANE, POULTON-LE-FYLDE
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DRAWING TITLE	FIGURE 1 - NOISE MONITORING LOCATION PLAN
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DRG No.	GM11106-001	REV	A
DRG SIZE	A3	SCALE	1:1,750
		DATE	27/03/2020
DRAWN BY	EF	CHECKED BY	MC
		APPROVED BY	SU

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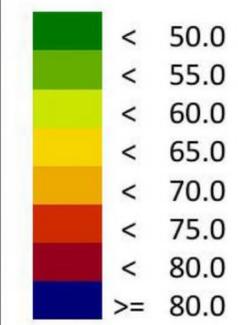
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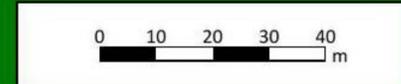
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Daytime $L_{Aeq,16h}$ dB at 1.5m



CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 2 - Daytime Noise Levels across the developed site	
DRG NO:	GM11106/002	REV: A
DRG SIZE:	A3	SCALE: 1:1250
		DATE: 03/04/2020
DRAWN BY:	MC	CHECKED BY: SU
		APPROVED BY: SU



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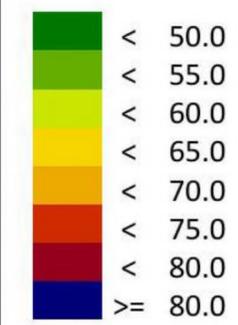
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- EDINBURGH
- STOKE ON TRENT



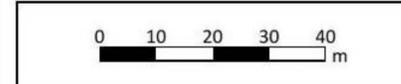
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Daytime $L_{Aeq,16h}$ dB on Ground Floor



CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 3 - Daytime Noise Levels at the facade of proposed dwellings	
DRG NO:	GM11106/003	REV: A
DRG SIZE:	A3	SCALE: 1:1250
		DATE: 03/04/2020
DRAWN BY:	MC	CHECKED BY: SU
		APPROVED BY: SU



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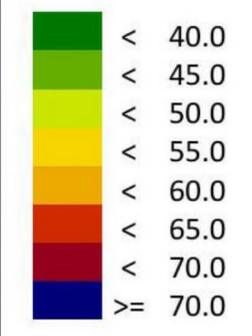
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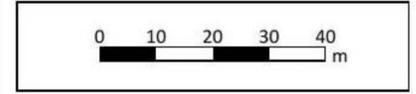
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Night-time $L_{Aeq,8h}$ dB on First Floor



CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 4 - Night Noise Levels at the facade of proposed dwellings	
DRG NO:	GM11106/004	REV: A
DRG SIZE:	A3	SCALE: 1:1250
		DATE: 03/04/2020
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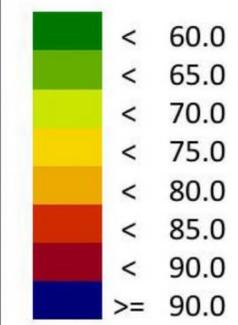
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<input type="checkbox"/> CARLISLE	<input type="checkbox"/> SHEFFIELD
<input type="checkbox"/> EDINBURGH	<input type="checkbox"/> STOKE ON TRENT



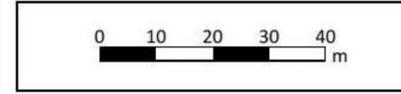
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Night-time $L_{Amax,f}$ dB on First Floor



CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 5 - Night Maximum Noise Levels at the facade of proposed dwellings	
DRG NO:	GM11106/005	REV: A
DRG SIZE:	A3	SCALE: 1:1250
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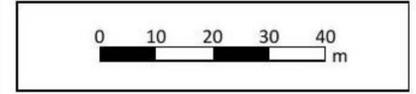
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Glazing and Ventilation

- Open Windows(no specific requirement)
- 4/12/4 with Greenwoods 5000

CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 6 - Daytime Noise Mitigation	
DRG NO:	GM11106/006	REV: A
DRG SIZE:	A3	SCALE: 1:1250
		DATE: 03/04/2020
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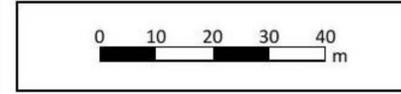
Key

- Site Boundary
- Buildings
- Rail Line
- Acoustic Fence (2.2m)

Glazing and Ventilation

- Open Windows(no specific requirement)
- 4/12/4 with Greenwoods 5000
- 10/12/6 with Greenwoods 5000.AC1

CLIENT:	Seddon Homes Limited	
PROJECT:	Holt Lane, Poulton le Fylde	
TITLE:	Figure 7 - Night Noise Mitigation	
DRG NO:	GM11106/007	REV: A
DRG SIZE:	A3	SCALE: 1:1250
		DATE: 03/04/2020
DRAWN BY:	MC	CHECKED BY: SU
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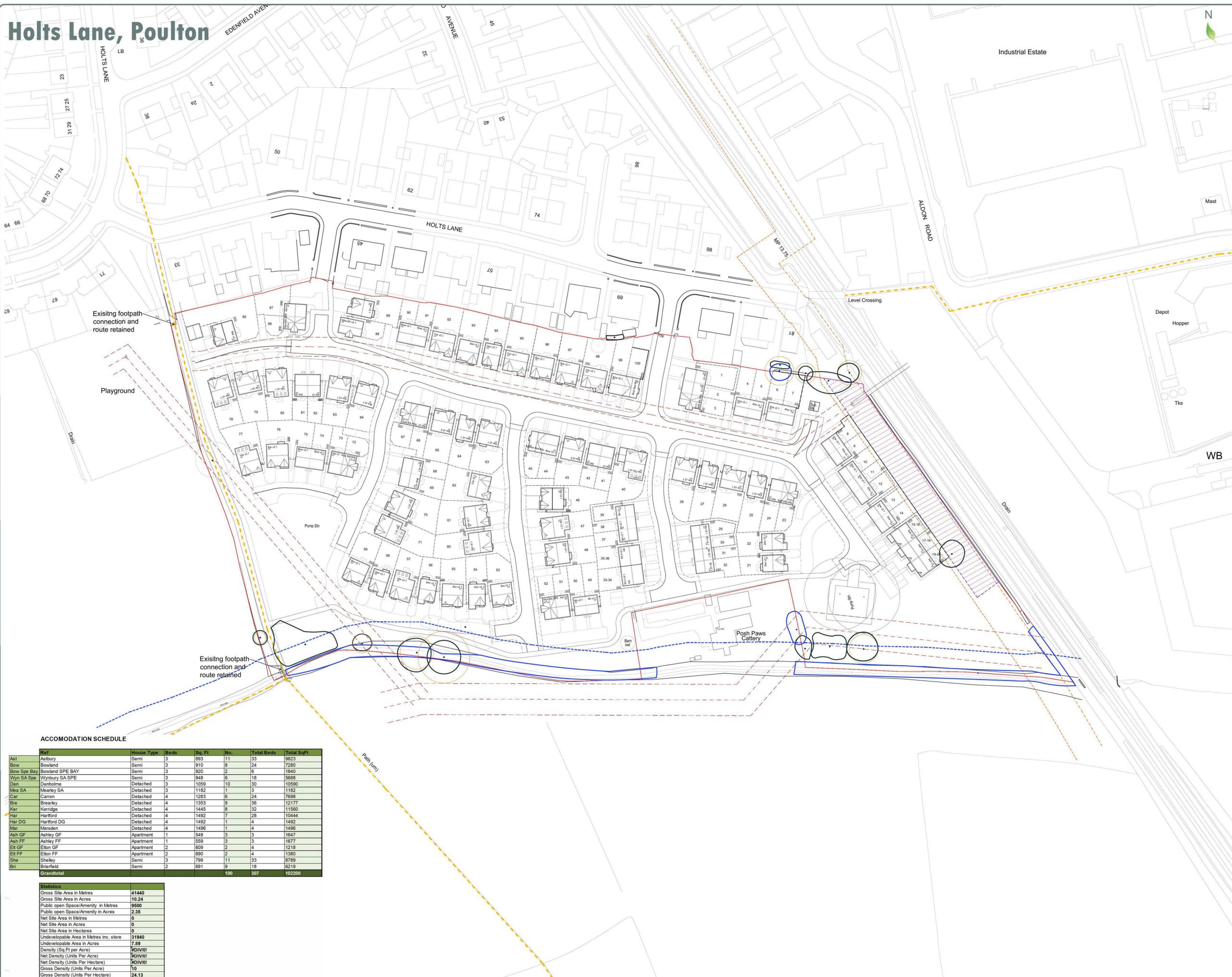
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<input type="checkbox"/> BIRMINGHAM	<input type="checkbox"/> GLASGOW
<input type="checkbox"/> BOLTON	<input type="checkbox"/> LONDON
<input type="checkbox"/> CARDIFF	<input type="checkbox"/> MANCHESTER
<input type="checkbox"/> CARLISLE	<input type="checkbox"/> SHEFFIELD
<input type="checkbox"/> EDINBURGH	<input type="checkbox"/> STOKE ON TRENT

Appendix A – Detailed Layout considered

Holts Lane, Poulton



General notes
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 This drawing is subject to the accuracy of detailed supporting reports, surveys, working drawings and Local Authority Approval. Dimensions, finished floor levels, exact sizes of houses and areas shown are approximate only and subject to separate detailed design. Any finished floor levels shown have been provided by others and should be checked by a qualified structural engineer prior to commencement of on site works. It is the responsibility of the client and contractor to check the accuracy of this drawing is correct.

- ### Key
- #### BOUNDARY TREATMENT
- 1.8m WALL WITH 1.3M TIMBER INFILL PANELS
 - 1.8m TIMBER FENCE
 - 2.5m High Noise Barrier
Barrier returns topped down to Cica 2m
- #### HARD LANDSCAPING
- Access Road / Footway
 - Shared Surface Road
 - Private Footpath/Path - Paving Slabs
 - Private Driveway/Parking
 - Private Shared Drive
 - Retained vegetation/hedges/groups of trees
 - Existing tree/hedge to be removed
 - Bin storage area
 - Bin collection point
 - Denotes line of existing Public Right Of Way
 - Denotes 6m watercourse assessment
 - Sewer/service easement
 - Denotes Gas Pipeline and easement
 - Network Rail, safe guarded land

ACCOMODATION SCHEDULE

Ref	House Type	Beds	Sq. Ft	No.	Total Beds	Total SqFt
As1	Asbury	Semi	893	11	33	9623
Bow	Bowland	Semi	910	8	24	7290
Spw Spe Bay	Spowland SPE BAY	Semi	920	2	6	1840
Wyn SA Spe	Wynbury SA SPE	Semi	948	6	18	5688
Den	Denholme	Detached	1059	10	30	10590
Mea SA	Mearley SA	Detached	1182	1	3	1182
Car	Caron	Detached	1283	6	24	7698
Bre	Brearley	Detached	1353	9	36	12177
Ker	Kerridge	Detached	1445	8	32	11560
Har	Hartford	Detached	1492	7	28	10444
Har DG	Hartford DG	Detached	1492	1	4	1492
Mar	Marsden	Detached	1496	1	4	1496
Ash GF	Ashley GF	Apartment	549	3	3	1647
Ash FF	Ashley FF	Apartment	559	3	3	1677
El GF	Elton GF	Apartment	609	2	4	1218
El FF	Elton FF	Apartment	690	2	4	1380
She	Shelley	Semi	799	11	33	8789
Bri	Brierfield	Semi	691	9	18	6219
Grandtotal				100	307	102200

Statistics

Gross Site Area in Metres	41440
Gross Site Area in Acres	10.24
Public open Space/Amenity in Metres	9500
Public open Space/Amenity in Acres	2.35
Net Site Area in Metres	0
Net Site Area in Acres	0
Net Site Area in Hectares	0
Undevelopable Area in Metres inc. store	31940
Undevelopable Area in Acres	7.89
Density (Sq Ft per Acre)	6DIV01
Net Density (Units Per Acre)	6DIV01
Net Density (Units Per Hectare)	6DIV01
Gross Density (Units Per Acre)	10
Gross Density (Units Per Hectare)	24.13

Revised

urban design | masterplanning | architecture

Client
Seddon Homes

Project
Holts Lane, Poulton

Drafting Title
Proposed Site Layout General Arrangements

Drawing No. 18-41-P01
Revision -
Date March 2020
Scale 1:500
Drawn WCD
Sheet Size A0

DRAFT 3

Appendix B – Noise Guidance and Standards

National Planning Policy Framework

In February 2019 the 'National Planning Policy Framework' (NPPF) was amended as the current planning policy guidance within England.

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'...

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.'

Noise Policy Statement for England

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

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.

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'.

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.

Planning Practice Guidance – Noise

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 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 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 non-awakening 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 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 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

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”

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

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.

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.

British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings

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 $L_{Amax,F}$ 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.

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.”

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”.

Appendix C - Noise Monitoring Results

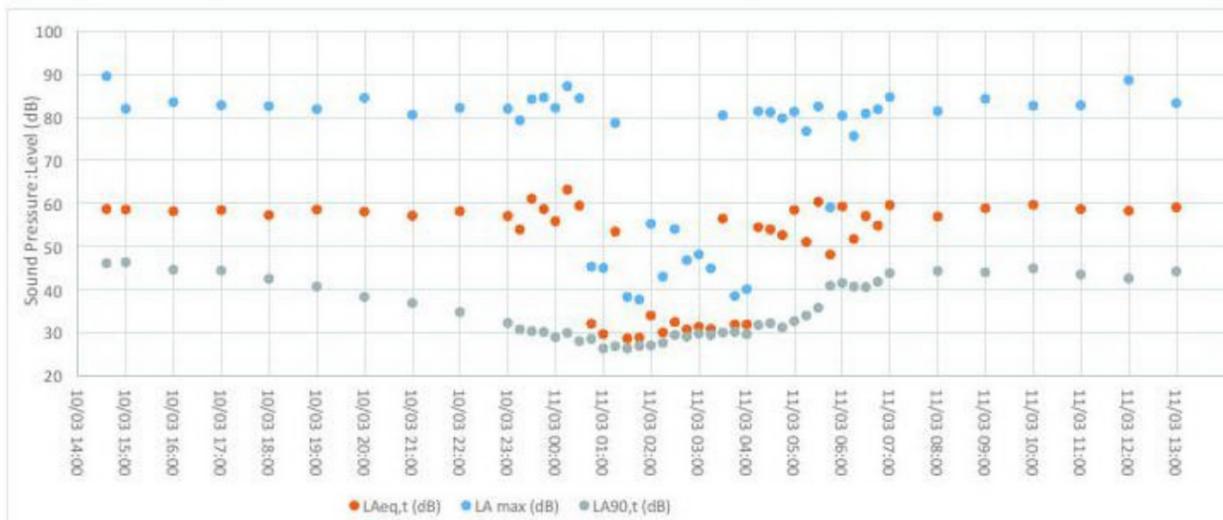
ML1

ML1 Noise Survey results - Summary

Description	Location 5m from the rail line. Rail noise was the most significant noise source and distant noise from the industrial estate (beyond the rail line) was occasionally audible as well as odd event of construction noise.	
Daytime LAeq,16h (dB)	59	
Night-time LAeq,8h (dB)	56	
Night-time 10th LAmax, f (dB)	82	

ML1 Noise Survey results - Tabular Detailed break-down

Timestamp (dd/mm/yyyy hh:mm)	Duration (in min)	LAeq,t (dB)	LAmax (dB)	LA90,t (dB)	LA10,t (dB)	Time Period (Day / Night)	Comment for specific period
10/03/2020 14:36	24	58.7	89.5	46.2	52	Day	
10/03/2020 15:00	60	58.6	82	46.4	53.8	Day	
10/03/2020 16:00	60	58.2	83.5	44.7	49.8	Day	
10/03/2020 17:00	60	58.5	82.8	44.5	51.6	Day	
10/03/2020 18:00	60	57.3	82.6	42.6	47.8	Day	
10/03/2020 19:00	60	58.6	81.9	40.8	44.5	Day	
10/03/2020 20:00	60	58.1	84.5	38.4	43.7	Day	
10/03/2020 21:00	60	57.2	80.6	37	41.2	Day	
10/03/2020 22:00	60	58.2	82.2	34.9	41.2	Day	
10/03/2020 23:00	15	57.1	82	32.4	38.1	Night	
10/03/2020 23:15	15	54	79.3	30.9	37.2	Night	
10/03/2020 23:30	15	61.1	84.2	30.5	38	Night	
10/03/2020 23:45	15	58.7	84.6	30.3	37.3	Night	
11/03/2020 00:00	15	55.9	82.2	29.1	33.7	Night	
11/03/2020 00:15	15	63.2	87.2	30.1	38.8	Night	
11/03/2020 00:30	15	59.5	84.4	28.2	37	Night	
11/03/2020 00:45	15	32.2	45.4	28.7	34.4	Night	
11/03/2020 01:00	15	29.8	45.1	26.5	31.9	Night	
11/03/2020 01:15	15	53.5	78.7	27	33.5	Night	
11/03/2020 01:30	15	28.8	38.4	26.5	30.5	Night	
11/03/2020 01:45	15	29	37.8	27.1	30.6	Night	
11/03/2020 02:00	15	34.1	55.3	27.2	34.4	Night	
11/03/2020 02:15	15	30.2	43.1	27.8	32.4	Night	
11/03/2020 02:30	15	32.6	54.1	29.6	32.5	Night	
11/03/2020 02:45	15	30.9	46.9	29.2	31.6	Night	
11/03/2020 03:00	15	31.5	48.2	29.9	32.6	Night	
11/03/2020 03:15	15	31	45	29.6	32.1	Night	
11/03/2020 03:30	15	56.5	80.5	30.2	40.2	Night	
11/03/2020 03:45	15	32	38.6	30.3	33.4	Night	
11/03/2020 04:00	15	32	40.2	29.8	33.5	Night	
11/03/2020 04:15	15	54.5	81.4	31.9	38.8	Night	
11/03/2020 04:30	15	54	81.2	32.3	40.5	Night	
11/03/2020 04:45	15	52.7	79.8	31.4	38.5	Night	
11/03/2020 05:00	15	58.5	81.3	32.8	44.1	Night	
11/03/2020 05:15	15	51.1	76.8	34.1	40.8	Night	
11/03/2020 05:30	15	60.4	82.5	35.9	47.7	Night	
11/03/2020 05:45	15	48.2	59.1	41	51.4	Night	
11/03/2020 06:00	15	59.3	80.4	41.6	51.7	Night	
11/03/2020 06:15	15	51.8	75.7	40.8	50	Night	
11/03/2020 06:30	15	57.1	80.9	40.7	50.7	Night	
11/03/2020 06:45	15	54.9	81.9	41.9	49.6	Night	The 10th LAmax,f is in this period.
11/03/2020 07:00	60	59.6	84.7	43.9	50.1	Day	
11/03/2020 08:00	60	57	81.4	44.4	51	Day	
11/03/2020 09:00	60	58.9	84.3	44.1	50.2	Day	
11/03/2020 10:00	60	59.7	82.7	45	51.1	Day	
11/03/2020 11:00	60	58.7	82.8	43.6	49.8	Day	
11/03/2020 12:00	60	58.3	88.6	42.7	49.4	Day	
11/03/2020 13:00	60	59.1	83.3	44.3	51.1	Day	
11/03/2020 14:00	60	58.7	83.5	45.6	53	Day	
11/03/2020 15:00	60	59.9	83.8	45	51.3	Day	
11/03/2020 16:00	5	60.7	80.1	46.7	53.1	Day	



ML1-Train Events Analysis

All events of train passing were identified and marked and a summary of the results is provided below

DAYTIME

Total Train Count

159

Train Noise Time Weighted

58

Period start (date and time)	Period duration (min)	Train Count	Train Duration (min)	Train LAeq (dB) - for train duration	Train LAeq (dB) time weighted for whole period duration	Train LAmix (dB)	Train SEL (dB)
10/03/2020 14:36	24	3	0.88	70.2	55.9	83.4	87.5
10/03/2020 15:00	60	8	3.18	69.5	56.7	79.6	92.3
10/03/2020 16:00	60	9	3.60	70	57.8	82.6	93.4
10/03/2020 17:00	60	12	4.48	69.3	58.0	81.4	93.6
10/03/2020 18:00	60	7	2.42	70.1	56.2	80.5	91.8
10/03/2020 19:00	60	9	3.93	70.3	58.5	80.4	94.1
10/03/2020 20:00	60	9	4.07	69.7	58.0	83	93.6
10/03/2020 21:00	60	9	3.95	69	57.2	79.4	92.7
10/03/2020 22:00	60	9	3.88	70.1	58.2	81.5	93.7
11/03/2020 07:00	60	9	3.60	71.5	59.3	83.6	94.9
11/03/2020 08:00	60	7	2.90	69.3	56.1	80.3	91.7
11/03/2020 09:00	60	9	3.50	70.9	58.6	82.6	94.2
11/03/2020 10:00	60	9	3.58	71.6	59.4	81	95
11/03/2020 11:00	60	11	4.42	69.7	58.4	81	94
11/03/2020 12:00	60	8	3.20	70.7	58.0	83.6	93.6
11/03/2020 13:00	60	10	4.50	70	58.8	82.6	94.3
11/03/2020 14:00	60	8	3.30	70.7	58.1	81.4	93.7
11/03/2020 15:00	60	12	4.55	70.8	59.6	82.2	95.2
11/03/2020 16:00	5	1	0.42	71.5	60.7	79.6	85.5

NIGHT-TIME

Total Train Count

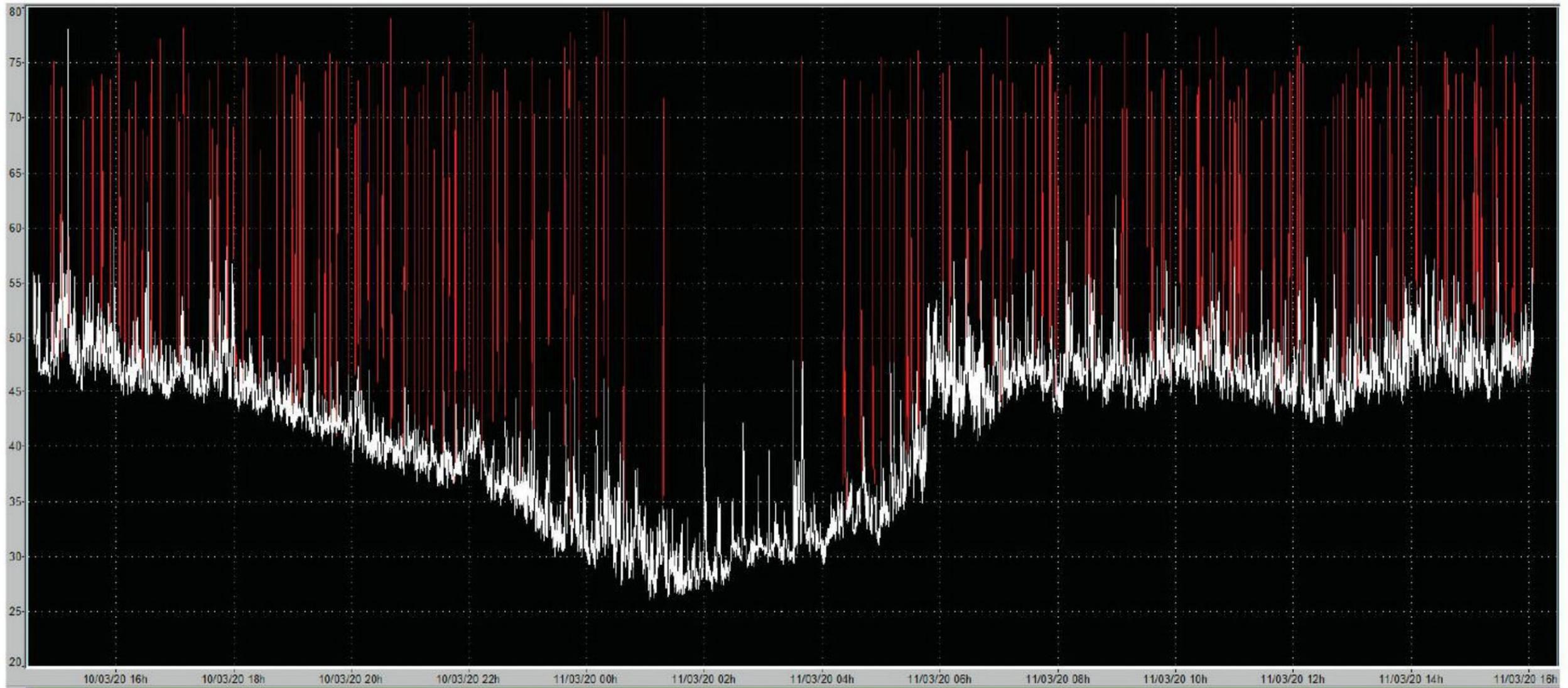
28

Train Noise Time Weighted

56

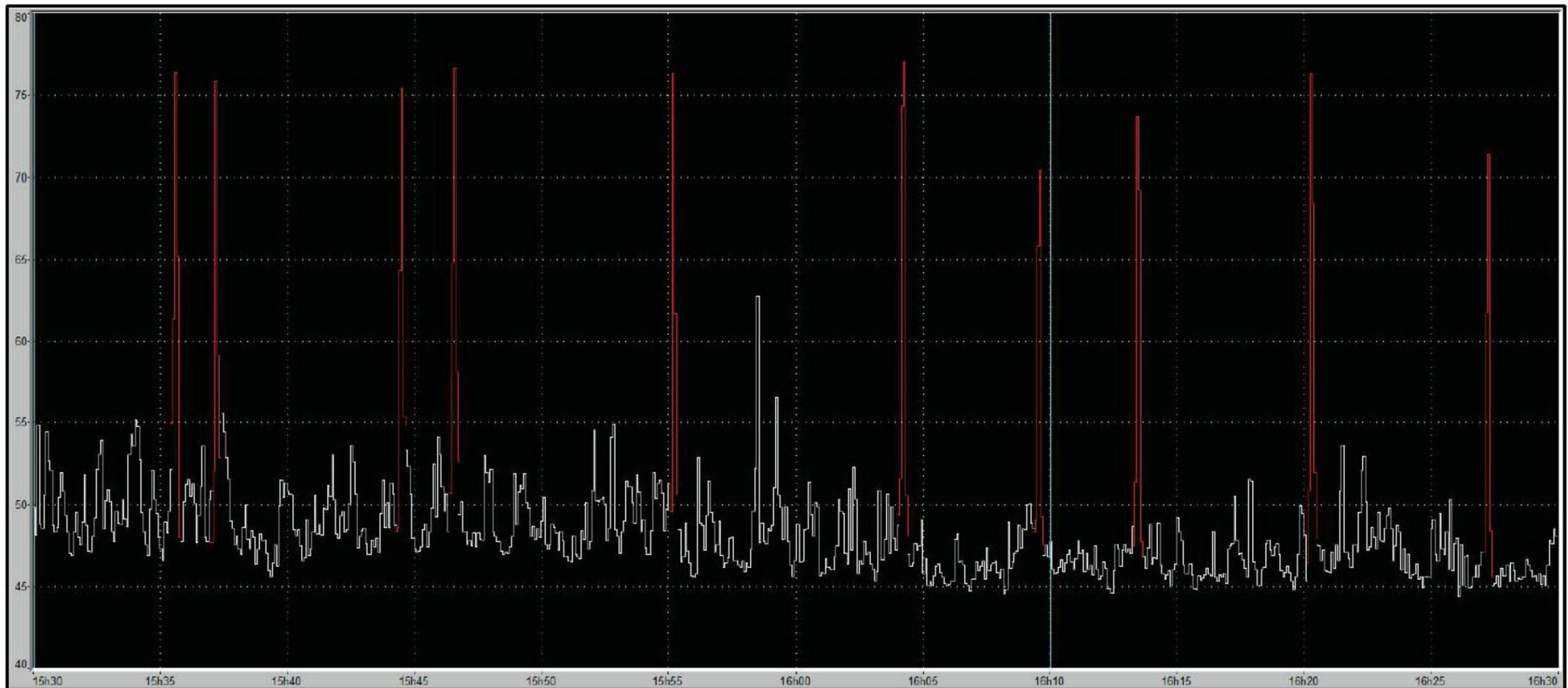
Period start (date and time)	Period duration (min)	Train Count	Train Duration (min)	Train LAeq (dB) - for train duration	Train LAeq (dB) time weighted for whole period duration	Train LAmix (dB)	Train SEL (dB)
10/03/2020 23:00	60	7	3.08	71.3	58.4	83.7	94
11/03/2020 00:00	60	4	2.18	73.6	59.2	86.4	94.8
11/03/2020 01:00	60	1	0.88	65.8	47.5	77.2	83
11/03/2020 02:00	60	0	0.00				
11/03/2020 03:00	60	1	0.42	72	50.4	79.7	85.9
11/03/2020 04:00	60	3	5.65	62.8	52.5	80.4	88.1
11/03/2020 05:00	60	7	5.95	66.8	56.8	80.4	92.4
11/03/2020 06:00	60	5	2.28	70.3	56.1	80	91.7

10/03/2020 14h30 to 11/03/2020 16h30 – LAeq,10s noise levels over the full period



This whole period includes several train events, as shown in red. The daytime LAeq,16h and Night-time LAeq,8h levels are both dominated by train noise. Birdsong was notable on several occasions.

10/03/2020 15h30 to 10/03/2020 16h30 – LAeq,5s noise levels over an example 1h period



This period includes 10 train events, shown in red, and was attended with on-site observations which also included:

- 15:40 reversing alarm audible from industrial site (~51dB as shown above on above graph)
- 15:46 metal banging and unloading audible (~54dB as shown on above graph)
- 15:51 loading scaffolding pipes at industrial premises and metal grinding at a nearby house being redecorated (~55dB as shown on above graph)
- 16:02 activity from construction site faintly audible - reversing alarms (~53dB as shown on above graph)
- 16:21 birdsong noise (~54dB as shown on above graph)

Appendix D – Example Noise Break-in Calculations

STOKE-ON-TRENT

Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)1782 276 700

BIRMINGHAM

Two Devon Way
Longbridge Technology Park
Longbridge
Birmingham
B31 2TS
Tel: +44 (0)121 580 0909

BOLTON

41-50 Futura Park
Aspinall Way
Middlebrook
Bolton
BL6 6SU
Tel: +44 (0)1204 227 227

CARDIFF

Tudor House
16 Cathedral Road
Cardiff
CF11 9LJ
Tel: +44 (0)292 072 9191

CARLISLE

Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH

Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GLASGOW

2 West Regent Street
Glasgow
G2 1RW
Tel: +44 (0)141 433 7210

LEEDS

36 Park Row
Leeds
LS1 5JL
Tel: +44 (0)113 831 5533

LONDON

Third Floor
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)207 242 3243

MANCHESTER

76 King Street
Manchester
M2 4NH
Tel: +44 (0)161 817 5038

NEWCASTLE UPON TYNE

City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

TRURO

Baldhu House
Wheal Jane Earth Science Park
Baldhu
Truro
TR3 6EH
Tel: +44 (0)187 256 0738

International offices:

ALMATY

29/6 Satpaev Avenue
Regency Hotel
Office Tower
Almaty
Kazakhstan
050040
Tel: +7(727) 334 1310

MOSCOW

21/5 Kuznetskiy Most St.
Moscow
Russia
Tel: +7(495) 626 07 67