MILLER GOODALL
ACOUSTICS AND AIR QUALITY

NOISE ASSESSMENT

on behalf of

GOYT CONSTRUCTION LTD

for the site at

LAND OFF ELLISON STREET, GLOSSOP

REPORT DATE: 28TH JUNE 2017

REPORT NUMBER: 101527

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Summary

A noise assessment was undertaken to predict the potential impact of existing plant equipment close to a proposed new residential development at Land off Ellison Street, Glossop. This assessment report has been produced to support a planning application.

Fixed electrical plant equipment generating audible noise was identified at two locations in the vicinity of the site.

Measurements were made at various locations around the existing site in order to carry out a BS 4142:2014 noise impact assessment using site measured noise levels of existing plant equipment and measurements taken at positions representative of the proposed residential dwellings. Comparison of measured ambient noise levels to the guidance levels provided in BS 8233:2014 and WHO:1999 was also made. The results of each assessment are provided within this report.

Assessment of site noise sources found that measured and predicted levels are below all relevant guidance levels found in BS 4142:2014, BS 8233:2014 and WHO:1999. It is considered that the impact of noise on the proposed development is likely to be low and planning permission should not therefore be withheld on noise grounds.

Record of changes

Prepared By	Michael Rickard AMIOA	Reviewed By	Jo Miller MIOA
Signed		Signed	
Date	28th June 2017	Date	28th June 2017

Version	Date	Change	Initials
1	1st June 2017	Draft issue	MR
2	28th June 2017	Site layout ammendment	MR

Contents

1 Introduction

1.1 Miller Goodall Ltd has, on behalf of Goyt Construction Ltd, undertaken a noise assessment in respect of the potential impact of existing fixed plant equipment in the vicinity of a proposed residential site at Land off Ellison Street, Glossop.

2 Site Description

2.1 The site is currently occupied by an existing access road with car parking and disused light industrial buildings. To the north, east and south east of the site are residential buildings. To the south west is Derbyshire Police's Glossop Enquiry Office (a small police station) and beyond that, Elim Pentecostal Church. To the west is Ellison Street, with residential properties on the opposite side.

2.2 The main noise source at the site during our survey was generally found to be birdsong, as well as some distant road traffic noise. Unrepresentative noise sources were noted during the survey and excluded from measurement, such as bin collections, house alarms and dog barks.

2.3 The only industrial type noise sources noted in the vicinity of the site were a low level mid-frequency electrical hum from a substation to the south of the proposed site and a faint high pitched electrical hum from the police station yard. It was confirmed with police station staff that no ventilation plant is operated at the site.

2.4 The proposed site is shown outlined in red on Appendix 1.

3 Proposed Development

3.1 The proposal is to develop the site into 22 no. dwellings consisting of a mix of semi-detached and terraced houses with an access road into the site with associated car parking.

3.2 The proposed site layout is shown in Appendix 2.

4 Policy Context

4.1 Noise Policy Statement for England

4.1.1 The Noise Policy Statement for England (NPSE[1]), published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are:

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

- avoid significant adverse effects on health and quality of life;
- mitigate and minimise adverse effects on health and quality of life; and

[1] Noise Policy Statement for England, Defra, March 2010

- where possible, contribute to the improvement of health and quality of life."

4.1.2 The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and the quality of life occur.

4.1.3 The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the Statement). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case:

"…all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development".

4.1.4 Importantly, the NPSE goes on to state:

"This does not mean that such adverse effects cannot occur".

4.1.5 The Statement does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that:

"Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available"

4.1.6 It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

4.2 National Planning Policy Framework

4.2.1 The National Planning Policy Framework (NPPF[2]) was published in March 2012. One of the documents that the NPPF replaces is Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise"[3].

4.2.2 Paragraph 109 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by, (amongst others) "preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability".

4.2.3 The NPPF goes on to state in Paragraph 123 "planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including thorough use of conditions;

[2] National Planning Policy Framework, DCLG, March 2012

[3] Planning Policy Guidance 24: Planning and Noise, DCLG, September 1994

- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land use since they were established, and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value".

4.2.4 The NPPF document does not refer to any other documents regarding noise other than NPSE.

4.3 Planning Practice Guidance – Noise

4.3.1 As of March 2014, a Planning Practice Guidance[4] for noise was issued which provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- 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.

4.3.2 In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

"…the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation".

4.3.3 Examples of these factors include:

- The source and absolute noise level of the source along with the time of day that it occurs;
- Where the noise is non-continuous, the number of noise events and pattern of occurrence;
- The frequency content and acoustic characteristics of the noise;
- The effect of noise on wildlife;
- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design;
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

4.3.4 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

"Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed".

[4] Planning Practice Guidance – Noise, http://planningguidance.planningportal.gov.uk/blog/guidance/noise/, 06 March 2014

4.3.5 The PPG was amended in December 2014 to clarify guidance on the potential effect of noise from existing businesses on proposed new residential accommodation. Even if existing noise levels are intermittent (for example, from a live music venue), noise will need to be carefully considered and appropriate mitigation measures employed to control noise at the proposed accommodation.

5 Local Authority Consultation

5.1 High Peak Borough Council (HPBC) have recommended that a BS 4142 noise survey relating to potential noise from the adjacent police station (extract fans and the like) is submitted with the planning application (HPBC ref. MOL/PAD/2017/0008).

5.2 Mathew Rhodes of High Peak Borough Council (HPBC) was consulted on 27th April 2017 in respect of the methodology used in this assessment.

5.3 It was agreed that we would visit the site between the hours of approximately 06:00 – 07:00 to take measurements of any plant noise sources identified and to determine suitable background L_{A90} levels for subsequent assessment in line with BS 4142:2014 guidance.

6 Acoustic Standards and Guidance

6.1 BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

6.1.1 This standard provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (1999)[5]. These guideline noise levels are shown in Table 1, below.

Table 1: BS 8233: 2014 guideline indoor ambient noise levels for dwellings

Location	Activity	07:00 to 23:00	23:00 to 07:00
Living Room	Resting	35 dB $L_{Aeq,16hr}$	-
Dining room/area	Dining	40 dB $L_{Aeq,16hr}$	-
Bedroom	Sleeping (daytime resting)	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$

[5] World Health Organisation Guidelines for Community Noise, 1999

6.1.2 BS 8233:2014 advises that:

> *"regular individual noise events…can cause sleep disturbance. A guideline value may be set in terms of SEL[6] or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values".*

6.1.3 BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The standard states that it is "desirable" that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ whilst recognising that development in higher noise areas such as urban areas or those close to the transport network may require a compromise between elevated noise levels and other factors that determine if development in such areas is warranted. In such circumstances, the development should be designed to achieve the lowest practicable noise levels in external amenity areas.

6.2 World Health Organisation (WHO) Guidelines for Community Noise 1999

6.2.1 The WHO Guidelines 1999 recommends that to avoid sleep disturbance, indoor night-time guideline noise values of 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for individual noise events should be applicable. It is to be noted that the WHO Night Noise Guidelines for Europe 2009[7] makes reference to research that indicates sleep disturbance from noise events at indoor levels as low as 42 dB L_{AFmax}. The number of individual noise events should also be taken into account and the WHO guidelines suggest that indoor noise levels from such events should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night.

6.2.2 The WHO document recommends that steady, continuous noise levels should not exceed 55 dB L_{Aeq} on balconies, terraces and outdoor living areas. It goes on to state that to protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB L_{Aeq}.

6.3 BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound'

6.3.1 BS 4142: 2014[8] provides guidance on the assessment of impacts relating to sound from industrial and commercial sources. It replaced the 1997 edition of the Standard in October 2014.

6.3.2 The standard applies to the assessment of sound which can include fixed plant comprising mechanical and electrical (M&E) plant, and sound from mobile plant or vehicles that form an intrinsic part of the sound emanating from a site. The standard does not apply to the rating and assessment of sound from people.

6.3.3 The key aspects of the Standard are summarised below.

6.3.4 The standard presents a method of assessing potential noise impact by comparing the noise level due to sources of an industrial and/or commercial nature (the Rating Level) with that of the existing background noise level at the nearest noise sensitive receiver in the absence of the source (the Background Sound Level).

[6] Sound exposure level or L_{AE}

[7] WHO Night Noise Guidelines for Europe 2009

[8] BS 4142:2014 Methods for rating and assessing industrial and commercial sound

6.3.5 The Specific Noise Level - the noise level produced by the source in question at the assessment location - is determined and a correction applied for certain undesirable acoustic features such as tonality, impulsivity or intermittency. The corrected Specific Noise Level is referred to as the Rating Level.

6.3.6 In order to assess the noise impact, the Background Sound Level is arithmetically subtracted from the Rating Level. The standard states the following:

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

6.3.7 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

> *An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.*

6.3.8 The 2014 edition of BS 4142 also introduces a requirement to consider and report the uncertainty in the data and associated calculations and to take reasonably practicable steps to reduce the level of uncertainty.

6.4 Possible LOAEL and SOAEL Noise Standards

6.4.1 It is acknowledged that the NPSE and the Planning Practice Guidance both advise caution when attempting to set objective standards in relation to LOAEL and SOAEL that may be applicable to a new development.

6.4.2 That said, the guideline values for internal noise within the WHO documents are set at the level of the lowest adverse health effect (the critical health effect) and as such, the values could form the basis of the LOAEL as referenced in the NPSE and PPG. Targeting the WHO guideline levels as the LOAEL should, therefore, provide a robust basis for assessment. No levels are provided within the WHO guidance that may be directly applicable to the SOAEL and any such threshold levels will, as indicated in the above guidance, vary depending on the specific circumstances of the development and the noise climate in which it is located.

6.4.3 With reference to external noise levels in gardens, the WHO lower guideline value of 50 dB L_{Aeq} during the day is intended to protect the majority of people from moderate annoyance and could, therefore, equate to the LOAEL. The upper guideline value of 55 dB L_{Aeq} is intended to protect the majority of people from serious annoyance and whilst this does not necessarily imply that this guideline value would equate to the SOAEL, it would be reasonable to suggest that the SOAEL might occur at a level at or above the guideline value of 55 dB $L_{Aeq.}$

6.4.4 Where an assessment of noise impact to BS 4142:2014 is undertaken, a Rating Level that is 10 dB or more above the prevailing Background Sound Level (BSL) could be indicative of the SOAEL, depending on the context. BS 4142:2014 does not provide guidance on what may constitute the LOAEL but suggests that a Rating Level that is 5 dB or more above the BSL could result in an adverse impact with a Rating Level at or below the BSL indicative of a low likelihood of adverse impact, again depending on the context. The LOAEL could, therefore, fall somewhere between 0 and + 5 dB above the BSL.

7 Noise Assessment Survey

7.1 Measurement Locations

7.1.1 Attended noise measurements were undertaken at five locations in the vicinity of the proposed site. Measurements were made in accordance with BS 7445-1: 2003[9] by Michael Rickard of Miller Goodall Ltd between approximately 06:00 – 07:45 hrs on the Thursday 11th May 2017. The monitoring locations were chosen in order to measure the specific noise sources close to the proposed site as well as to gain representative background noise levels for residential houses at the proposed site.

7.1.2 The measurement locations are detailed below and indicated in Appendix 1.

P1) Towards the south of the proposed site. This position was well screened acoustically due to the close proximity of the existing buildings at the site. The background levels measured here are considered typical of the lowest levels likely to occur at the proposed development. Noise levels were initially controlled by birdsong and occasional local and distant traffic noise. Towards the end of the survey the noise contribution from local and distant traffic rose due to increasing traffic volume towards the rush hour.

P2) 2 m from an electrical substation. The substation was screened around 3.5 sides by a brick wall and the measurement was taken at the open side in order to gain a direct measurement of the substation noise.

P3) At the eastern boundary of the police courtyard, approximately 5 m from police electrical plant equipment which generated a faint electrical humming sound.

P4) At the corner of the carpark to the south of the proposed development. Approximately 10 m from the police electrical plant equipment. There was a drop in the perceptible noise from the police courtyard in comparison to position P3.

P5) A residential area to the east of the proposed site. This location was chosen in order to gain a background noise level which is comparable to the noise climate at positions P3 and P4 in the absence of police courtyard electrical noise.

[9] BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures

7.2 Instrumentation

7.2.1 The instrumentation used during the survey was fully calibrated and traceable to UKAS standards and satisfy the requirements for Class 1 instruments described in BS EN 61672-1:2013[10].

7.2.2 The conformity of the sound level meter (SLM) was checked before and after measurements with negligible deviation (<0.1 dB). Details of the equipment used are shown in Table 2.

Table 2: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 Sound Analyser	Type NOR 140	Norsonic	1406017	22/05/15	U18820
Microphone	Type NOR 1225	Norsonic	151206	22/05/15	18658
Calibrator	Type NOR 1251	Norsonic	34123	05/07/16	02777/1

7.2.3 The sound level meter was set to measure continuously with a resolution of 1 second. The time constant of the SLM was set to 'Fast' during all measurements.

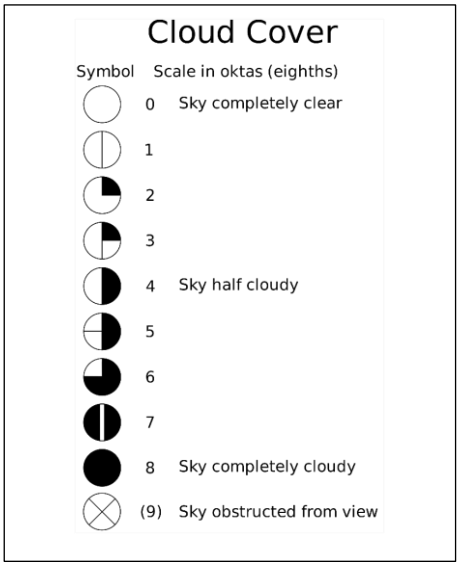
7.2.4 Measurement times for ambient noise measurements are considered to be representative of the typical noise climate at the proposed site. Measurements were made at a height of approximately 1.5 m above the ground.

7.3 Meteorological Conditions

7.3.1 Weather conditions were determined both at the start and on completion of the survey and are specified in Table 3 below.

[10] British Standards Institution (2013) 61672-1 Electroacoustics – Sound level meters – Part 1: Specifications, BSI. London

Table 3: Dates, times and weather conditions during noise measurements

Measurement Locations	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
MP1	11/05/17, 06:00 to 07:45	Temperature:	9 ºC	11 ºC
		Precipitation:	Dry	Dry
		Cloud cover (oktas – see opposite):	2	2
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	No
		Wind speed:	2.7 m/s	2.2 m/s
		Wind direction:	SW	W
		Any conditions that may cause temp. inversion	No	No

7.4 Monitoring Results

7.4.1 A summary of the broadband measurement data is provided in Table 4. Whilst all the individual noise measurement data are not presented in this report, they are kept on file for future reference. All data are sound pressure levels in dB re 20 μPa.

Table 4: Summary of noise measurements

Position	Start Time	Duration (mins:secs)	Sound Pressure Level, dB (range)		
			$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A90,T}$
P1	06:01	14:38	39	61	31
	07:33	05:01	44	60	36
P2	06:28	00:11	45	46	45
P3	06:35	00:31	41	51	38
	07:10	02:01	41	57	37

Position	Start Time	Duration (mins:secs)	Sound Pressure Level, dB (range)		
			$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A90,T}$
P4	06:37	02:04	40	50	37
P5	07:07	02:00	39	50	37

7.5 Determination of the Background Sound Level

7.5.1 The survey measurement taken at position P1 at 06:01 has been used to gain a representative background sound level for the BS 4142 assessment. 06:00 – 07:00 hrs is still considered night time according to BS 4142 assessment methodology, and the guidance suggests that the beginning and end of the night time period can be of greater significance than the middle of the night because they are relative to the times when most people are either going to sleep or waking up.

7.5.2 The $L_{A90,T}$ at position P1 measured at 06:01 hrs was 31 dB. This level has been selected as the background noise level representative of dwellings at the proposed development against which the BS 4142:2014 assessment will be carried out.

8 BS 4142 Assessment of Noise Impact

8.1 Introduction

8.1.1 Two distinct noise sources were identified close to the proposed development site as follows:

1) Electrical substation approximately 14 m to the south of the nearest dwelling at the proposed site.

2) Electrical plant in the police station yard approximately 20 m to the south of the nearest dwelling at the proposed site.

8.1.2 It was confirmed with staff at the police station that no other significant noise sources (e.g. ventilation plant) exist at the police station.

8.1.3 A desktop based calculation has been carried out to predict the BS 4142 rating level of both identified noise sources at a height of 4 m above ground (i.e. bedroom window height) at the closest façades of the proposed residential development.

8.1.4 The locations of both noise sources in relation to the site are shown in Appendix 1.

8.1.5 As is particularly the case with fixed electrical equipment of an AC/DC nature, the noise from both sources was continuous and steady-state in level; therefore in order to obtain as accurate a measurement of the specific noise as possible, the measured L_{A90} levels from specific noise sources have been used in order to exclude other ambient noise sources such as distant traffic and birdsong as much as possible.

8.2 Electrical Substation Noise

8.2.1 Measurement of the electrical substation was taken at a distance of 2 m. The substation was enclosed on 3.5 sides by a brick wall enclosure which extended above the height of the substation equipment itself. This means that measurement of the equipment inherently included lateral reflections from the surrounding brick enclosure. As a worst-case assumption no correction has been made to account for these reflections even though the opening of the enclosure faces southwards (i.e. away from the proposed site), so the directivity of the reflected equipment noise, as measured, is in the opposite direction to the residential assessment location.

8.2.2 A conservative screening assumption of 3 dB has been made based on the brick wall enclosure around the equipment. This is based on the worst-case assumption that there will be a direct line of site from a bedroom window at the proposed development over the enclosure to the top part of the substation equipment.

8.3 Police Yard Electrical Plant

8.3.1 Measurement of the police yard electrical plant was taken at a distance of approximately 5 m to the east. It was not possible to get closer to the plant equipment and the specific noise from the equipment was subjectively very quiet against the ambient noise environment, though nevertheless distinctly audible at 5 m. The measured L_{A90} level has been taken as being representative of the specific noise level from the plant equipment exclusive of ambient noise sources such as distant traffic and birdsong. This is considered very much worst-case as comparative measurements of background L_{A90} levels at positions considered equivalent in terms of ambient noise sources and general background levels show no significant difference in measured L_{A90} levels. It is therefore possible that the specific noise level from police yard plant equipment may be 10 dB or more below the lowest measurable L_{A90} from a distance of approximately 5 m away.

8.3.2 For example the lowest measured L_{A90} at position 3 (adopted in this assessment as representative of the specific noise from the police yard plant equipment) was 37 dB, whilst the lowest measured L_{A90} at position 4 (where the specific noise was getting closer to subjective inaudibility) was also 37 dB. Similarly the L_{A90} measured at position 5, where the specific noise from police yard plant was completely inaudible, was also 37 dB, whilst the L_{A90} measured at position 1 at 07:33 hrs, where again specific plant noise was completely inaudible, was only 1 dB quieter at 36 dB.

8.3.3 In summary the specific noise level for police yard plant of 37 dBA at 5 m is considered very much a worst-case assumption and it is likely that although we were unable to gain a more accurate (i.e. closer) measurement of the noise source, the specific noise level from police yard plant may have been 10 dBA or more quieter than we were able to measure.

8.4 BS 4142 Results

8.4.1 Table 5 below shows the results of the BS 4142 assessment.

Table 5: BS 4142:2014 Noise Impact Assessment Summary

Noise Source	Receptor	Predicted level dB $L_{Aeq,T}$	Acoustic Feature Correction dB	Rating level dB $L_{Aeq,T}$	Assessment Level (Rating – Background level)	BS 4142 Assessment of Impact
Electrical substation	NSR 1	25	+ 3*	28	(28 - 31) - 3	Low Impact
Police yard plant	NSR 2	24	+ 3*	27	(27 - 31) - 4	Low Impact

* specific noise assumed 'just perceptible' as worst-case

8.5 Discussion of Results

8.5.1 The assessment levels are predicted to be -3 dB and -4 dB for the electrical substation and police yard plant noise respectively, which is a positive indication that complaints from future residents due to these noise sources is unlikely. The positive outcome is supported by the worst-case assumptions detailed in 8.2 and 8.3, which would tend to make the outcome even more positive if resolved. There were many residential receivers already existing in close proximity to the noise sources assessed; assuming there is no history of complaints from nearby receptors this would be a further positive indication of the likelihood of low impact.

9 Assessment to BS 8233:2014 and WHO:1999 Guidance

9.1.1 To assess indoor noise levels within proposed dwellings, allowance needs to be made for the attenuation via the building envelope, which is generally governed by the weakest construction elements, acoustically speaking. Invariably, these are glazing or any ventilation openings.

9.1.2 The simplest form of natural ventilation is provided by open windows and the generally accepted rule of thumb is that a window left open for ventilation provides 10 - 15 dB attenuation from external noise sources, with the WHO Guidelines for Community Noise suggesting 15 dB.

9.1.3 Based on measurements made at position 1 (which are considered representative of the future levels at proposed dwellings) and assuming a typical attenuation of 15 dB across a window left open for ventilation, levels of around 24 dB between 06:00 – 07:00 (night time) and 29 dB between 0700 –08:00 (daytime) would be expected. These levels are 6 dB below both the maximum night time internal ambient noise level (30 dBA) and maximum daytime internal ambient noise level (35 dBA) provided in the BS 8233 and WHO guidance documents.

9.1.4 The externally measured $L_{Aeq,T}$ levels of 39 dB (06:01 – 06:15) and 44 dB (07:33 – 07:38) are also below the 50 dBA lower guidance limit for external noise provided in both BS 8233 and WHO.

10 Conclusions

10.1 A noise assessment was undertaken to predict the potential impact of existing plant equipment close to a proposed new residential development at Land off Ellison Street, Glossop. This assessment report has been produced to support a planning application.

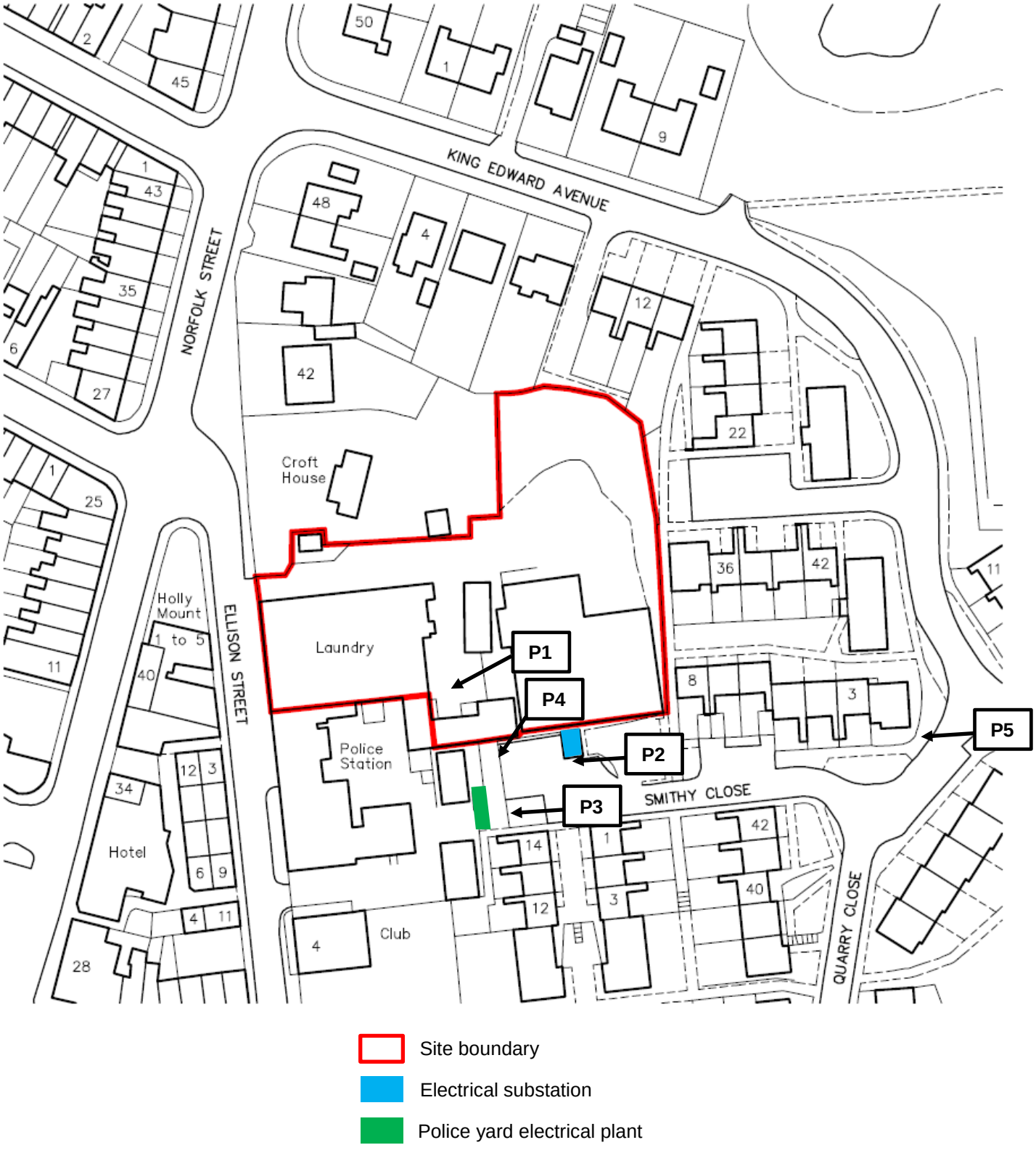
10.2 Fixed plant equipment noise was identified at two locations in the vicinity of the site.

10.3 Measurements were made at various locations around the existing site in order to carry out a BS 4142:2014 noise impact assessment using site measured noise levels of existing plant equipment and measurements taken at positions representative of the proposed residential dwellings. Comparison of measured ambient noise levels to the guidance levels provided in BS 8233:2014 and WHO:1999 was also made. The results of each assessment are provided within this report.

10.4 Assessment of site noise sources found that measured and predicted levels are below all relevant guidance levels found in BS 4142, BS 8233 and WHO:1999. It is considered that the impact of noise on the proposed development is likely to be low and planning permission should not therefore be withheld on noise grounds.

APPENDICES

Appendix 1: Site Boundary and Measurement Positions



Appendix 2: Proposed Site Plan

Glossary of Terms

Decibel (dB) The unit used to quantify sound pressure levels; it is derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 µPa, the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is usually only perceptible under controlled conditions.

dB L_A Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB L_A broadly agree with an individual's assessment of loudness. A change of 3 dB L_A is the minimum perceptible under normal conditions, and a change of 10 dB L_A corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB L_A; normal conversation about 60 dB L_A at 1 meter; heavy road traffic about 80 dB L_A at 10 meters; the level near a pneumatic drill about 100 dB L_A.

$L_{A90,T}$ The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 1997 it is used to define background noise level.

$L_{Aeq,T}$ The equivalent continuous sound level. The sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

L_{Amax} The highest A weighted noise level recorded during the time period. It is usually used to describe the highest noise level that occurred during the event.

NOEL No observed effect level: the level of noise exposure below which no effect at all on health or quality of life can be detected.

LOAEL Lowest observed adverse effect level: the level of noise exposure above which adverse effects on health or quality of life can be detected.

SOAEL Significant observed adverse effect level: the level of noise exposure above which significant adverse effects on health or quality of life can be detected.

NSR Noise sensitive receptor.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