



**PHILIP FLETCHER ARCHITECTURAL DESIGN SERVICES**  
**PROPOSED HAND CAR WASH**  
**125 WELLINGTON ROAD, BATLEY, WF17 5TH**  
**NOISE ASSESSMENT**

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## SECTION 1 INTRODUCTION

- 1.1 RP Acoustics Ltd (RPA) has been commissioned by Philip Fletcher Architectural Design Services, on behalf of its client, to undertake a noise assessment for the operation of a proposed hand car washing facility at 125 Wellington Street, Batley (the application site).
- 1.2 The objectives of the assessment were to:
- i.* Identify the nearest noise sensitive receptors (NSRs) to the application site.
  - ii.* Determine the existing noise climate at the nearest NSRs during representative periods of the proposed operating times of the hand car wash.
  - iii.* Identify key noise sources and associated emission data for car washing operations.
  - iv.* Assess the potential impact of car washing operations at the application site on the existing noise climate at the nearest NSRs with reference to relevant guidelines.
  - v.* Provide recommendations, as necessary, to minimise the impact of noise at the NSRs associated with car washing operations at the application site.
- 1.3 This report details the methodology and results of the assessment and has been prepared for Philip Fletcher Architectural Design Services and its client for the sole purpose described above, with no extended duty of care to any third party implied or offered.
- 1.4 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

## SECTION 2 SITE SETTING AND APPLICATION SITE OPERATIONS

### 2.1 SITE SETTING

- 2.1.1 The application site is located off Wellington Street, to the south west of the centre of Batley. An annotated aerial image of the site and its environs is contained in Appendix 2.1. The application site is bound by:
- i.* Wellington Street to the north.
  - ii.* Dark Lane to the east.
  - iii.* An access road to the south, with dwellings beyond.
  - iv.* Dwellings to the west.
- 2.1.2 The site previously contained an hotel, but is currently vacant with all existing buildings demolished.



## 2.2 DEVELOPMENT PROPOSALS AND FACILITY OPERATIONS

- 2.2.1 It is understood that the proposed operations will consist of car valeting and washing, with cars entering the site via the existing access off Dark Lane and exiting the site via the existing access off Wellington Street.
- 2.2.2 Typical operations will consist of internal car valeting using a vacuum cleaner, car washing using pressure lances and drying by hand. The lance compressors will be housed in a storage container. Site power will be provided by a silenced generator. From experience, the main noise sources associated with these activities are the lance nozzles and the impact of high pressure water on the bodywork of the cars.
- 2.2.3 As no proposed layout plan has been provided, Appendix 2.2. contains a plan identifying the recommended locations of activities/equipment to minimise the potential noise impact at the identified NSRs.

## SECTION 3 NOISE ASSESSMENT

### 3.1 NOISE SENSITIVE RECEPTORS (NSRS)

- 3.1.1 The nearest noise sensitive receptors (NSRs) have been identified as the existing dwellings to the west (NSR1) and the existing dwellings to the south (NSR2). The location of the NSRs is identified on the annotated aerial image contained in Appendix 2.1.

### 3.2 NOISE SURVEY RESULTS

- 3.2.1 In order to establish the existing noise climate at the application site, representative noise measurements were undertaken between 14:35 and 15:35 hours on Saturday 10<sup>th</sup> June 2023. For the purpose of the assessment, one monitoring position (MP1) was used. MP1 was located at 1.5 metres above ground level (mAGL), in a free field environment, adjacent to the existing dwellings to the west of the site set back from Wellington Street. The approximate location of MP1 is identified on the annotated aerial image contained in Appendix 2.1.
- 3.2.2 Noise measurements were undertaken using a NTi Audio XL2 Type 1 integrating sound level meter. A 90 mm windshield was fitted for all measurements. The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end. No drift in calibration level was noted. Weather conditions throughout the survey were appropriate for monitoring.
- 3.2.3 Measurements consisted of A-weighted broadband parameters, together with linear third octave band Leq levels, with a logging interval of 1 second.
- 3.2.4 The following table contain a summary of the noise measurement data (rounded to the nearest decibel).



**Table 3.1: Noise Measurements at MP1 (Existing noise climate at the application site), 10/6/2023**

Time	L <sub>Aeq,T</sub> (dB)	L <sub>AFmax</sub> (dB)	L <sub>A10,T</sub> (dB)	L <sub>A90,T</sub> (dB)	Comments
14:35-15:35	55	65	58	48	Distant and local traffic.

3.2.5 The existing noise climate at the application site was typified by distant traffic and local road traffic on Wellington Street. Based on a manual traffic count, the traffic volume on Wellington Street was circa. 550 vehicles/hour. Dark Lane was noted to be lightly trafficked.

3.2.6 With reference to a noise survey undertaken by others at the application site in April 2018, typical daytime background noise levels were measured at 54 – 56 dB L<sub>A90,T</sub> (07:00-19:00 hours) towards the Wellington Street frontage of the site and 44 – 48 dB L<sub>A90,T</sub> (07:00-19:00 hours) towards the rear of the site. Note: the measurements towards the rear of the site were screened from Wellington Street by an existing building (prior to demolition).

3.2.7 On the basis of the above, a residual background noise level of 54 - 56 dB L<sub>A90,T</sub> is considered representative of the existing dwellings in close proximity to Wellington Street and 48 dB L<sub>A90,T</sub> for existing dwellings set back from the road.

### 3.3 POTENTIAL NOISE SOURCES

3.3.1 The potential noise sources associated with the use of the site as a car washing facility are considered to include:

- i.* Noise from the washing lance nozzles.
- ii.* Impact noise from the washing lances on the car body.
- iii.* Lance compressor noise (not considered significant as to be housed in storage container).
- iv.* Vacuum cleaner noise.
- v.* Generator noise (site power).
- vi.* Vehicle movements on and off site (not considered significant in the context of the traffic volumes on Wellington Street).

3.3.2 Based on the RPA database of noise sources (including measurements previously undertaken at a car washing facility), Table 3.2 contains noise emission data considered representative of the proposed activities at the application site.



**Table 3.2: Noise Emission Data for Site Activities**

Activity	Measurement Duration	L <sub>Aeq,T</sub> (dB)
Car wash cycle consisting of low pressure foam application, high pressure rinse and low pressure wax	6 min 46 secs	64 @ 4m
Vacuuming of car interior at 1 m from vacuum cleaner	38 secs	64 @ 1m
Silenced generator	-	54 @ 7m*

\* Based on silenced generator with screening to provide 10 dB additional attenuation.

- 3.3.3 In order to assess the cumulative effect of the simultaneous operation of individual items of equipment and also to allow an assessment of the impact of the proposed car washing facility at the identified NSRs, a typical use scenario has been developed. Distance attenuation has been based on a 6 dB reduction in sound pressure level per doubling of distance from source (inverse square law), with a receptor distance taken as 15 metres from source (see Appendix 2.1).
- 3.3.4 A full wash cycle has been estimated to take between six to nine minutes, with the typical scenario based on a one hour reference period. The typical scenario has been based on the following operations: (i) two washing bays operating simultaneously with four washes in each (36 minutes on a 9 minute wash cycle), (ii) equidistant from the receptor position, two internal valeting operations operating simultaneously for 15 minutes), and (iii) generator operating continuously.
- 3.3.5 On the basis of the above, for the typical scenario, the cumulative noise emission level of car wash activity equates to 55 dB L<sub>Aeq,T</sub> at 15 metres from source (note: based on screening of the generator from the receptor). In this scenario, the combined washing operations is the dominant noise source, with the internal valeting operations contributing little to the noise climate.
- 3.3.6 It should be noted that no allowance for screening between the wash bays and receptor positions has been made and that an appropriately designed screen may be expected to provide screening of  $\geq 10$  dB for washing lance noise (due to the majority of the sound energy being in the higher end of the frequency spectrum).



## SECTION 4 ASSESSMENT CRITERIA

### 4.1 NATIONAL PLANNING POLICY FRAMEWORK

4.1.1 The National Planning Policy Framework (NPPF) is a material consideration in planning decisions. At the heart of the NPPF is a presumption in favour of sustainable development, and the policies in Paragraphs 18 to 219 of the NPPF, taken as a whole, constitute the Government's view on what sustainable development in England means in practice for the planning system.

4.1.2 The NPPF states that there are three dimensions to sustainable development, which include an economic role (contributing to building a strong, responsive and competitive economy), a social role (providing the supply of housing required to meet the needs of present and future generations) and an environmental role (which includes minimising waste and pollution).

4.1.3 The NPPF supersedes Planning Policy Guidance Note 24 (PPG 24). The main policy statement in relation to noise is Paragraph 123 of the NPPF, which states:

*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 through the use of conditions;*
- *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 uses 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 for this reason.*

4.1.4 In relation to 'adverse impacts', the NPPF refers to the Explanatory Note to the Noise Policy Statement for England (NPSE) for guidance.

4.1.5 The Noise Policy Statement for England (NPSE) and associated Explanatory Note were published by DEFRA in 2010 and set out the Government's noise management strategy to enable noise management decisions to be made within the wider context (i.e. guiding principles of sustainable development), in a cost-effective manner and in a timely fashion.

4.1.6 Fundamental to this approach is '*there is a need to integrate consideration of the economic and social benefit of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation, i.e. not focussing solely on the noise impact without taking into account other related factors*'.

4.1.7 The noise policy aims of NPSE are to (i) avoid significant adverse impact on health and quality of life, (ii) mitigate and minimise adverse impacts on health and quality of life, and (iii) where possible,



contribute to the improvement of health and quality of life. The policy aims are always to be considered within the context of the Government's policy on sustainable development.

- 4.1.8 In relation to the mitigation and minimisation of adverse impacts, NPSE considers that *'in reality, although not always stated, the aim has tended to be to minimise noise 'as far as is reasonably practical'*. This is reinforced in Paragraph 2.24 of the Explanatory Note, which requires that *'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. This does not mean that such adverse effects cannot occur'*.
- 4.1.9 In relation to explaining the 'significant adverse' and 'adverse' effects quoted in the NPPF, NPSE uses the two established concepts from toxicology that are currently being applied to noise impacts, for example by the World Health Organisation (WHO), these are:
- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.
  - LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.
- 4.1.10 The NPSE then extends these concepts to lead to a SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.
- 4.1.11 No specific criteria are presented in the NPSE, to provide the necessary policy flexibility until further evidence and suitable guidance is available. The main potential for noise impact associated with operations at the application site are considered to be through subjective effects such as annoyance. To assess these effects, a comparative assessment has been considered. In lieu of specific criteria in the NPSE, for the assessment, reference is made to existing guidance, which is summarised under the headings below.
- 4.1.12 A comparative assessment is where the noise from the facility is assessed against the existing noise climate. Typically, British Standard BS 4142:2014+A1:2019 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS 4142) is used as a suitable assessment tool.



## 4.2 NATIONAL PLANNING PRACTICE GUIDANCE: NOISE

4.2.1 Guidance provided in the National Planning Practice Guidance (NPPG) for noise, presents a table of noise exposure hierarchy, which relates the NOEL, LOAEL and SOAEL levels to the subjective perception of noise and examples of outcomes (reproduced in Table 4.1 below).

**Table 4.1: Summary of noise exposure hierarchy (from NPPG, Noise)**

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 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 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

4.2.2 When considering the factors that influence whether noise could be a concern, the NPPG considers that *'the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected'*. This includes factors such as the source and absolute level of the noise, the time of day it occurs, the number of noise events and the frequency and pattern of occurrence.



#### 4.3 **BS 4142:2014+A1:2019**

4.3.1 BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- i.* sound from industrial and manufacturing processes;
- ii.* sound from fixed installations which comprise mechanical and electrical plant and equipment;
- iii.* sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- iv.* 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.

4.3.2 The methods described in BS 4142 use outdoor sound levels to assess the likely effects of sound on people for the purposes of (i) investigating complaints, (ii) assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature, and (iii) assessing sound at proposed new dwellings or premises used for residential purposes.

4.3.3 BS 4142 considers that the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. It goes on to suggest that:

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

4.3.4 Where the initial estimate of the impact needs to be modified due to the context, factors to be taken into account include the absolute level of sound and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions. The reference time interval of the specific sound is 1 hour during the day and 15 minutes at night.

4.3.5 The rating level is described as the specific sound level (the equivalent continuous A-weighted sound pressure level at the assessment position (NSR) produced by the specific sound source over the given reference time interval) plus any adjustment for the characteristic features of the sound. The character correction relates to whether and to what degree the specific sound is assessed to have an element of tonality, impulsivity and/or characteristics that are readily distinctive against the residual acoustic environment. Based on the character of the operations relative to the residual noise climate, a character correction of +3 dB is considered warranted.



4.3.6 The background sound level is the A-weighted sound pressure level of the residual sound at the assessment position that is exceeded for 90 percent of a given time interval, T, measured using time weighting 'F' and quoted to the nearest whole number of decibels. The residual sound is described as the ambient sound remaining in a given position in a given situation when the specific sound source is suppressed to a degree such that it does not contribute to the ambient sound.

4.3.7 With reference to the NPPF/NPSE and BS 4142, a rating level of < + 10 dB accords with the 1<sup>st</sup> aim of NPSE (to avoid significant adverse impacts), whilst a rating level approaching the representative background level accords with the 2<sup>nd</sup> aim of NPSE (to mitigate and minimise adverse impacts).

## SECTION 5 NOISE IMPACT ASSESSMENT

5.1 A BS 4142 assessment for the impact of car washing operations at 15 metres from source is contained in Table 5.1.

**Table 5.1: BS 4142 assessment for car washing operations at 15 metres from source**

Noise Parameter	Value	Comments
(A) Specific noise level	55 dB $L_{Aeq, T}$	Specific noise level associated with typical car washing operations (Section 3.3).
(B) Acoustic feature correction	3 dB	Para. 4.3.5.
(C = A+B) Rating level	58 dB $L_{Ar, T}$	
(D) Background noise level	48 dB $L_{A90, T}$	Measured residual background noise level (Table 3.1, Para. 3.2.7)
Excess of rating over background noise level (C – D)	+10 dB	Initial estimate of impact: 'tending towards a significant impact'.

5.2 The BS 4142 assessment indicates that the proposed car washing operations tend towards a significant impact at NSRs which are set back from Wellington Street (i.e. relatively lower residual background noise climate compared to road frontage dwellings) unless mitigation measures are incorporated into the site layout.

5.3 As stated previously, washing operations (lances) is the dominant noise source, with the internal valeting operations contributing little to the noise climate. Additionally, no allowance for screening between the wash bays and receptor positions has been made as part of the BS 4142 assessment.

5.4 In order to control noise emissions associated with the wash bays, it is recommended that imperforate barriers of (i) 2.0 metre height, (ii) min. 10 kg/m<sup>2</sup> mass per unit area, and (iii) no gap between the ground and barrier, are erected between the site and the receptors. Barriers are most effective when located in close proximity to the source or receptor. In this situation, it is considered that barriers should provide screening of ≥ 10 dB for washing lance noise (due to the majority of the sound energy being in the higher end of the frequency spectrum). See Appendix 2.1 for proposed locations. With the barriers in place, the impact of car washing operations should reduce to a low impact (i.e. rating level approximating to residual background level).



## SECTION 6 CONCLUSIONS

- 6.1 A noise impact assessment has been undertaken for the operation of a hand car washing facility at 125 Wellington Street, Batley.
- 6.2 Based on the assessment detailed in this report, it is concluded that the proposed operations have the potential to represent an impact tending towards significant if mitigation measures, in the form of barriers, are not incorporated into the site layout.
- 6.3 With the barriers in place, the potential impact of the car washing operations is considered to be acceptable in relation to noise.



**APPENDIX 1**   ▪   Glossary of acoustic terms

## **Appendix 1 Glossary of Acoustic Terms**

### **Sound Pressure Level ( $L_p$ )**

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20  $\mu\text{Pa}$  to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where  $L_p$  = sound pressure level in dB;  $p$  = rms sound pressure in Pa; and  $p_0$  = reference sound pressure (20  $\mu\text{Pa}$ ).

### **A-weighting Network**

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

### **Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$**

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time.  $L_{Aeq, 16h}$  (07:00 to 23:00 hours) and  $L_{Aeq, 8h}$  (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

#### **$L_{A10, T}$**

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T.  $L_{A10, 18h}$  is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

#### **$L_{A90, T}$**

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T.  $L_{A90}$  is typically taken as representative of background noise.

#### **$L_{AF \max}$**

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

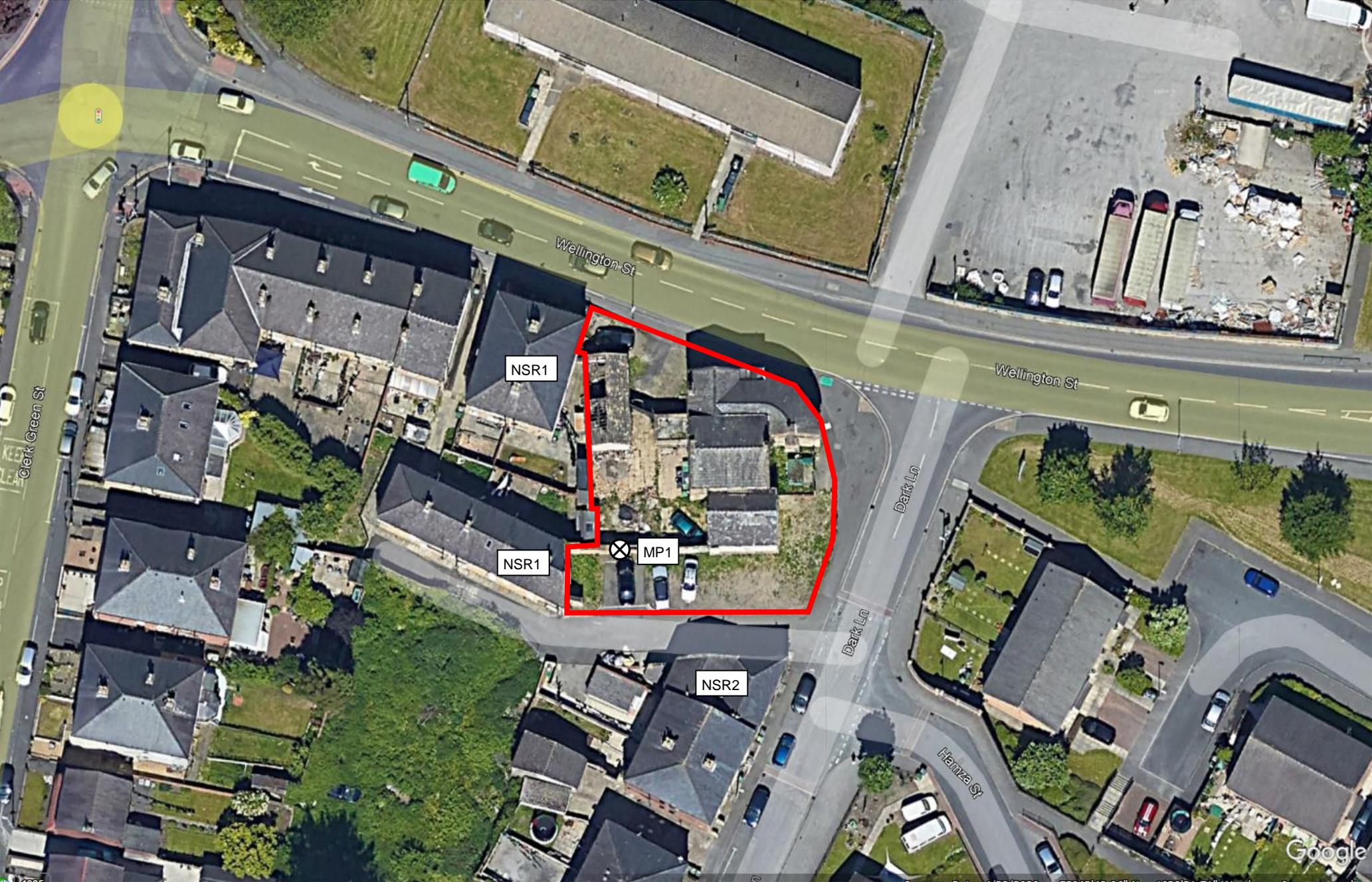
### **Sound Exposure Level (SEL or $L_{AE}$ )**

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.



**APPENDIX 2**    ▪    Plans

Appendix 2.1: Annotated Aerial Site Image



Appendix 2.2: Recommended Locations of Operations, Equipment and Barriers

