



Architectural & Environmental Acousticians
Noise & Vibration Engineers

NOISE ASSESSMENT

SWANSEA ROAD, READING

ELSTREE LAND

RP01-19441

NOISE ASSESSMENT

PROJECT: SWANSEA ROAD, READING

CLIENT: ELSTREE LAND

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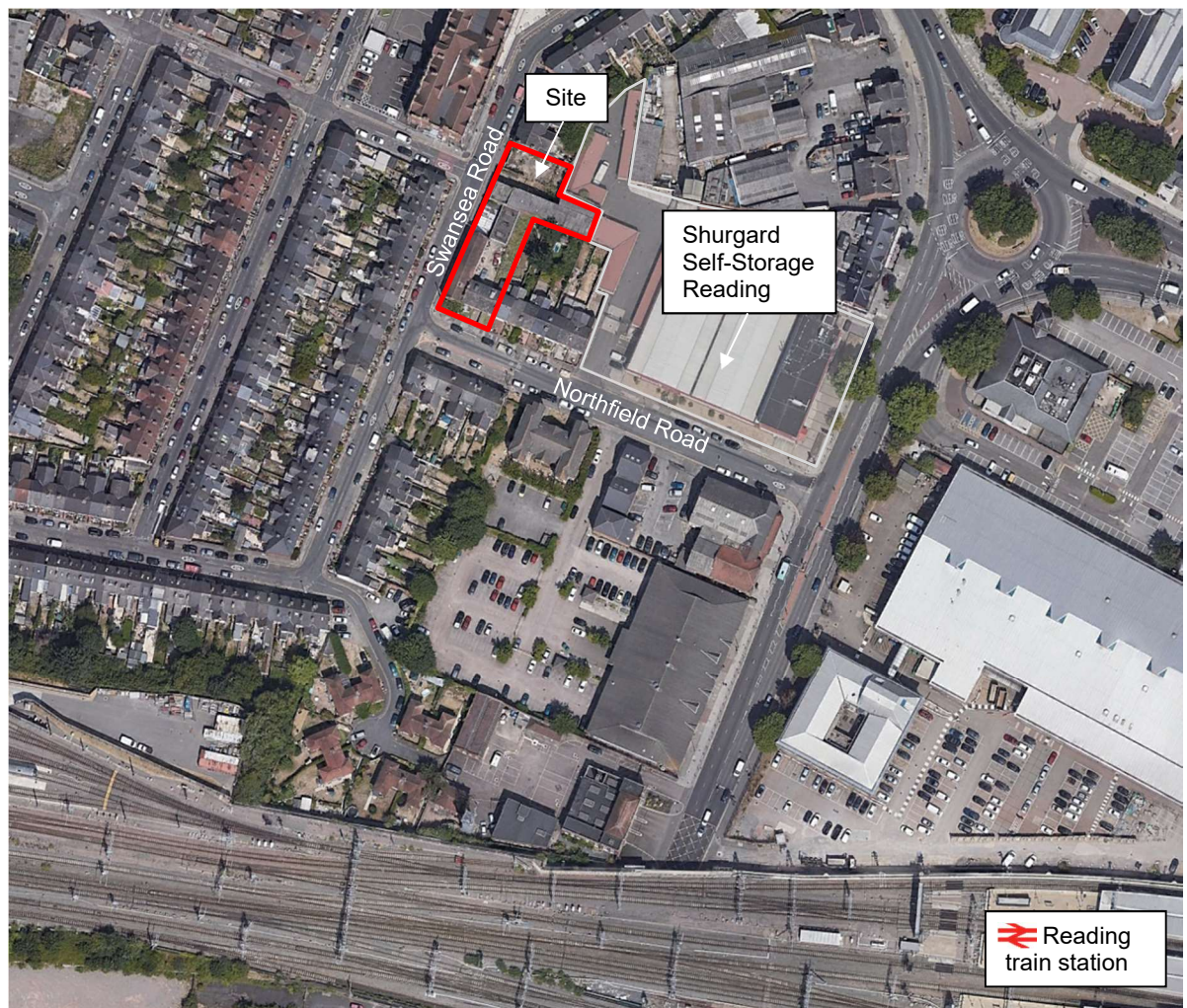
1. INTRODUCTION

- 1.1 Cass Allen has been instructed by Elstree Land to assess the noise environment for a proposed new development at Swansea Road, Reading.
- 1.2 The assessment has been carried out in accordance with relevant local and national planning guidance.
- 1.3 The aims of the assessment were:
- To establish the suitability of existing noise levels at the site for the proposed development;
 - Where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise levels in habitable areas.
- 1.4 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

2. PROJECT DESCRIPTION

- 2.1 The site currently contains a two storey end of terrace dwelling and a series of garages previously used for car repairs and MOT's. The site is bounded to the west by Swansea Road and to the south by Northfield Road. To the north of the site are residential dwellings and to the east of the site lies a commercial self-storage facility. The surrounding area predominantly consists of two storey terraced dwellings.
- 2.2 An annotated aerial photo of the site is shown in Figure 1 below.

Figure 1 Annotated Aerial Photo



- 2.3 The proposal is for demolition of the existing two storey dwelling and garages and erection of 8 x two storey terrace dwellings with rooms in the roof space and 1 x two storey coach house with rooms in the roof space. Parking and access will be from Swansea Road. A current drawing of the proposed development layout is shown in Appendix 1.

3. PLANNING POLICY

National Policy

- 3.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Section 170 of the NPPF states:

Planning policies and decisions should contribute to and enhance the natural and local environment by ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ...noise pollution.

Section 180 states:

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

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

and in Section 182:

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses 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.

Local policy

- 3.2 Reading Borough Council's Local Plan adopted November 2019 provides outline guidance on the assessment of noise affecting new development in the borough. Relevant policies are reproduced below:

Policy CC8: Safeguarding Amenity

Development will not cause a detrimental impact on the living environment of existing residential properties or unacceptable living conditions for new residential properties, in terms of:

...

- Noise and disturbance;*
- Vibration;*

...

EN16: POLLUTION AND WATER RESOURCES

Development will only be permitted where it would not be damaging to the environment and sensitive receptors through land, noise or light pollution; where it would result in no deterioration in, or ideally enhance, ground and surface water quality; and where adequate water resources, sewerage and wastewater treatment infrastructure will be in place to support the proposed development prior to occupation.

Proposals for development that are sensitive to the effects of noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution...

- 3.3 To address the requirements of the national and local policies, noise affecting the habitable areas of the proposed development has been assessed and is discussed in the following sections of this report.

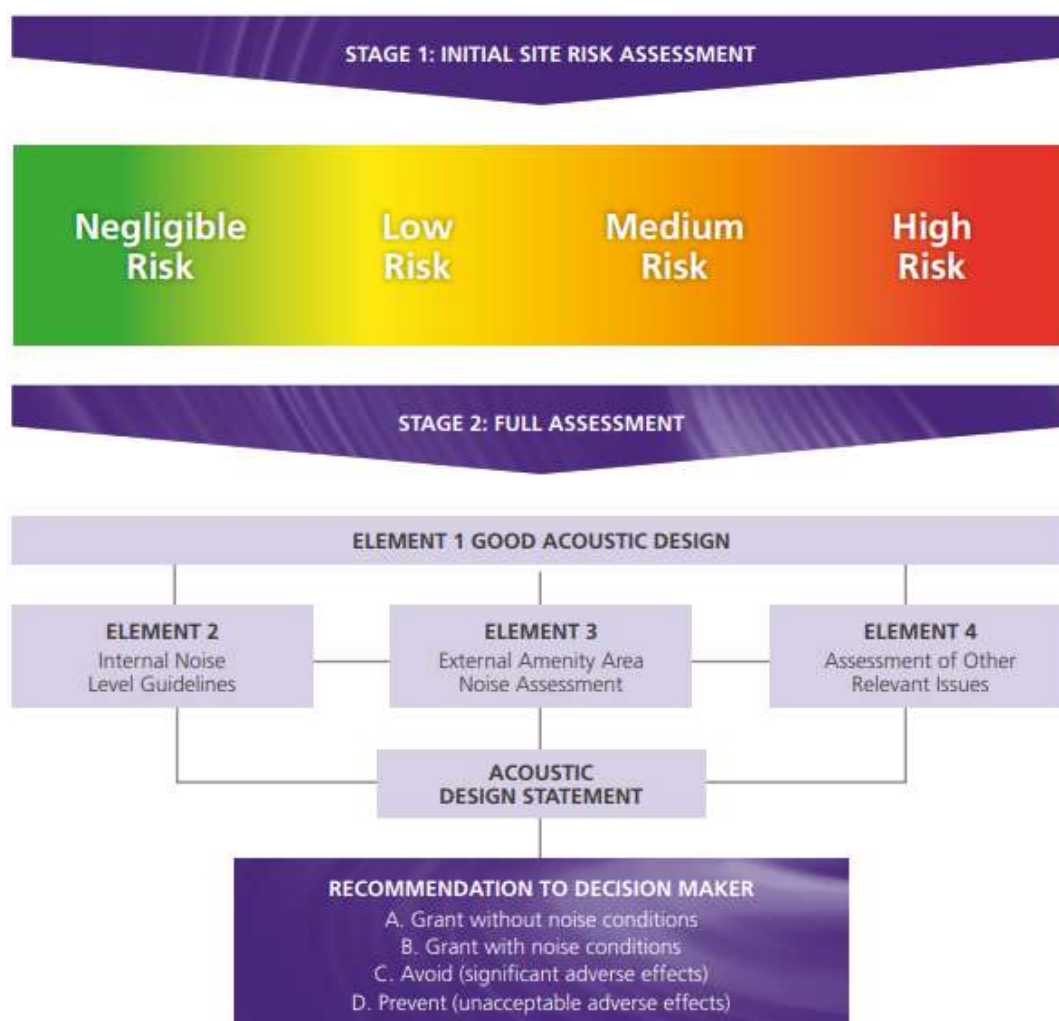
4. NOISE AFFECTING THE DEVELOPMENT

4.1 Specific guidance on the assessment of noise affecting new residential development is given in ProPG: Planning and Noise for New Residential Development, May 2017 (ProPG). The process within ProPG is considered to be current 'best practice' and therefore has been followed for the assessment. The assessment process can be summarised as follows:

- Stage 1 – measure noise levels at the site and carry out an initial noise risk assessment of the proposed development site based on the measured levels.
- Stage 2 – where a higher noise risk is identified, carry out a detailed assessment including the following four considerations:
 - Element 1 – the overall acoustic design and layout of the site
 - Element 2 – internal noise levels in habitable areas
 - Element 3 – noise levels in external amenity areas
 - Element 4 – consideration of other relevant issues
- Based on the results of the Stage assessment, provide a recommendation to the decision maker on whether planning permission can and should be granted.

4.2 The process is shown visually in Figure 2 below

Figure 2 ProPG Assessment Process



- 4.3 It should be noted that the guidance in ProPG relates primarily to noise from transportation sources, i.e. road traffic, aircraft, rail etc. Noise from Shurgard Self-Storage is discussed further below.

Stage 1 – Noise survey and initial assessment

- 4.4 A noise survey was carried out at the site on 1st November 2019 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2. Based on a desktop review of the site and surrounding area, noise levels at the site from road traffic were not expected to be particularly high (certainly not high enough to preclude residential development, for example; there are existing residential properties on Swansea Road and Northfield Road that would be subject to the same levels of road traffic noise) and therefore the primary objective of the survey was to gain a detailed understanding of the operations and noise emissions associated with the Shurgard self-storage facility. However, for completeness daytime road traffic noise levels were measured during the survey and have been assessed in accordance with the ProPG guidance. This is discussed further below.
- 4.5 Average and maximum noise levels across the site were generally dictated by road traffic on Swansea Road and Northfield Road. Background noise levels (LA90) across the site were dictated by constant road traffic noise from surrounding roads, including Swansea Road and Northfield Road. In the absence of frequent car passes on these roads, background noise levels were dictated by more distant sources including road traffic on Caversham Road.
- 4.6 Noise was also identified from distant aircraft, sirens and trains, however, noise from these sources was generally insignificant when compared with noise from road traffic.
- 4.7 Areas of the development at the southern and western edges of the site will be subject to the highest noise levels. The noise survey results show that the daytime noise levels at these positions are as follows:
- Southern and western edge of the site facing Swansea Road or Northfield Road:
 - Average noise levels during the daytime ~ 56 dB LAeq,0700-2300hrs;
 - Typical maximum noise levels during the night-time ~ 69 dB LMax.
- 4.8 It has been assumed that the typical night-time maximum noise level will be dictated by car passes on the adjacent roads. This is based on the results of the noise survey, Shurgard Self-Storage operating hours (06:00 to 23:00), and previous experience of similar sites.
- 4.9 The measured noise levels can be compared with Figure 3 below to assess the ‘noise risk’ of the site. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels may be achievable with no specific acoustic design measures.

Figure 3 Noise Risk Assessment (Adaption of Figure 1 from ProPG)



- 4.10 It can be seen from a comparison of the measured noise levels in paragraph 4.7 above with Figure 3 that the site is a 'Low' risk in relation to daytime noise levels. This is unsurprising given the site location and clearly residential development of the site should not be precluded.

Commercial noise – Shurgard Self-Storage

- 4.11 It is also important to consider the type of noise at the site. In this case the site is also in close proximity to Shurgard Self-Storage. Noise from commercial or industrial uses, which is often intermittent, impulsive or tonal, is often more annoying to residents than noise from transportation sources at similar levels (e.g. road traffic, railways, aircraft etc). It is therefore necessary to assess the potential impact of this noise on the development separately. This would often involve an assessment in line with the methodology in BS4142:2014 – *Methods for rating and assessing industrial and commercial sound*, however due to the noise source being typical road traffic noise (as discussed further below) this is not considered appropriate in this case. Noise from Shurgard Self-Storage is discussed and assessed below.
- 4.12 As can be seen in Figure 1, the majority of storage spaces are some distance from the site. In addition, the nearest façade of the proposed dwellings is around 10m from the Shurgard site boundary and around 20m from the nearest area of the Shurgard site that is used by vehicles. This is due to storage units running along the site boundary and therefore providing 'acoustic screening' to the proposed new residential units.
- 4.13 The operation of the Shurgard Self-storage facility was discussed with Shurgard staff during the site noise survey. It is understood that they operate between 6am to 11pm. Customers are able to let themselves in to the site with a pin code to deposit or collect items in the storage spaces. The customers who use the site most frequently typically visit around once a day, whereas many customers will not visit the facility for days or weeks. The busiest hour of daily operation is understood to typically be around 6 – 7 pm.
- 4.14 Noise is occasionally generated by people moving their possessions into the storage units however, based on our observations, this activity does not typically generate significant noise levels. In addition, the site does not provide power to the storage units and prohibits noise generating uses from the storage spaces (e.g. the playing of musical instruments, etc). Therefore we are able to conclude that noise from operation of the site typically comprises noise from vehicles driving onto the site, idling engines and vehicles driving off the site.
- 4.15 From the results of the site noise survey, the absolute noise level of cars driving into the self-storage facility was found to be low (~54 dBA LAeq,5mins at the site boundary). This noise will be lower at the façades of the proposed dwellings and in the external amenity areas due to the increased distance from the storage facility and/or acoustic screening by the intervening buildings.
- 4.16 Furthermore, as the general noise environment in the area is dictated by vehicle movements on public roads, noise from vehicle movements in the storage facility is not likely to be particularly intrusive or distinguishable from other vehicle movements in the area. Given the relatively low levels and benign characteristics of the noise, we believe this noise is unlikely to disturb future residents of the development.
- 4.17 It should also be noted that, for the majority of the time, we expect that there will be no audible noise from the Shurgard Self-storage facility, either due to periods when there are no customers accessing the facility or due to those visiting the storage units at a significant distance from the proposed dwellings.

- 4.18 In summary of the above, noise from the Shurgard Self-Storage is not expected to adversely impact future residents of the development based on the findings of our noise survey, our understanding of the operations of the facility, the inherent screening between the facility and the new dwellings and the design and layout of the development.
- 4.19 It should also be noted that there are existing residential properties located a similar distance from the Shurgard Self-Storage facility and will be subject to similar levels of Shurgard Self-Storage facility noise. As far as we are aware, there have been no reported issues with noise from the facility at the positions of these residential properties. Importantly, it also means that the proposed new development will not add any additional constraint on the operations of the Shurgard Self-Storage or the noise levels they can generate under their existing planning consent. This is important for compliance with the 'Agent of Change' principle set out in Section 182 of the NPPF (refer Section 3 above).
- 4.20 Noise from the Shurgard Self-Storage facility at the site is therefore considered to be acceptable for the proposed development.

Stage 2 – Element 1 – Overall acoustic design of the site

- 4.21 As above, the layout of the site in relation to the adjacent Shurgard Self-Storage is considered well designed. The screening provided by the storage units will reduce the impact of any commercial noise, especially for the gardens. In addition, the façades of the new dwellings have been designed to be as far away as practical from the boundary with Shurgard Self-Storage. The car parking area, which will not be noise sensitive, has been located in the eastern portion of the site adjacent to Shurgard Self-Storage. The overall design of the site is therefore well considered with regards to noise.
- 4.22 It is worth also noting that the proposed development will also replace a series of car garages with residential dwellings. This will likely provide a net acoustic benefit to the area and surrounding dwellings by removing a source of potential noise disturbance. This point is noted in the pre-application advice from Reading Borough Council (191018/PREAPP).

Stage 2 – Element 2 - Internal noise levels

- 4.23 Appropriate design criteria for acceptable noise levels in acoustically sensitive areas of new developments are given in BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'.
- 4.24 Relevant BS8233 design criteria are summarised in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

- 4.25 It is also considered appropriate in this case to assess the potential impact of noise emissions from individual vehicle passes on the adjacent roads on the bedrooms of the development during the

night-time. This is in line with guidance given in BS8233:2014 and ProPG, which both point out that regular individual noise events during the night have the potential to cause sleep disturbance.

- 4.26 Appropriate design criteria for acceptable maximum noise levels in habitable rooms of new residential developments are given in the ProPG guidance, which states that *"In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB LA_{max,F} more than 10 times a night."*
- 4.27 The following acoustic design criteria have therefore been adopted for the development:
- Average noise levels in living rooms and dining rooms during the day should not exceed 35 dB LA_{eq,0700-2300hrs} and 40 dB LA_{eq,0700-2300hrs} respectively;
 - Average noise levels in bedrooms should not exceed 35 dB LA_{eq,0700-2300hrs} during the day and 30 dB LA_{eq,2300-0700hrs} during the night;
 - Maximum noise levels should not regularly exceed 45 dB LA_{max} in bedrooms during the night.
- 4.28 Full construction details for the development have not been finalised as the project is at an early design stage. It has therefore been assumed that the external walls of the development will be constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block) or a light-weight construction designed to achieve a similar level of sound insulation (this is technically achievable subject to detailed design). Consequently, internal noise levels would be dictated by external noise ingress via glazing and ventilators.
- 4.29 The ventilation scheme for the project has not yet been decided and therefore, for the purpose of the assessment, it has been assumed that units will be ventilated via trickle ventilators in the external facades with openable windows for the provision of purge ventilation (as per System 1 or System 3 from Building Regulations Part F).
- 4.30 Calculations were carried out using façade modelling software in accordance with the methodology given in BS8233:2014 to calculate the sound insulation performance required of the glazing and ventilation to achieve the nominated internal noise criteria in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels). The calculations included a 3 dBA design margin.
- 4.31 If acceptable internal noise levels can be achieved in 'worst case' habitable rooms then it follows that acceptable internal noise levels can be achieved in all other habitable rooms of the development using similar glazing and ventilator types.
- 4.32 The calculations were carried out based on the following typical dimensions/details for facade elements:
- Glazing – 3m² for bedrooms and 5m² for living rooms;
 - External walls – 8m² for bedrooms and 15m² for living rooms; and
 - Up to 2 in-frame trickle ventilators in bedrooms and up to 3 in-frame trickle ventilators in living rooms.
- 4.33 The results of the calculations are summarised in Table 2 below.

Table 2 Acoustic Requirements for 'Worst Case' Habitable Rooms

'Worst Case' Rooms	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements
Habitable rooms facing Swansea Road or Northfield Road	27 dB Rw+Ctr	31 dB D _{new,w} + Ctr

Note The requirements given are approximate only and should be confirmed at the detailed design stage when full design details are available.

- 4.34 The required sound insulation performance values in Table 2 could typically be achieved by the glazing and ventilator types shown in Table 3.

Table 3 Typical Glazing / Ventilator Acoustic Performances

Glazing (in Good Quality Sealed Frames)	Typical Weighted Sound Reduction (Rw + Ctr)
Standard thermal double glazing	27
Ventilators	Typical Acoustic Performance (D _{new} + Ctr)
Standard 'hit & miss' in-frame trickle ventilator	31

- 4.35 It can be seen from the above that acceptable internal noise levels will be achievable in the development with standard thermal double glazing and trickle ventilators. No specific treatment of the facades with therefore be required. It is our view therefore that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

Stage 2 – Element 3 – Noise levels in external amenity areas

- 4.36 BS8233 states that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq and that 55 dB LAeq,T should be regarded as a upper guideline value. BS8233 recognises however that these guideline values will not always be achievable in city centres or urban areas adjoining main roads or other transport sources. In these cases, BS8233 states that the development should be designed to achieve the lowest practical noise levels in the amenity spaces.
- 4.37 The noise survey results indicate that noise levels in external amenity areas will generally achieve the BS8233 recommended levels. However, noise levels in the gardens of Plots 5 & 9 are predicted to exceed the upper 55 dB LAeq,T limit by up to 4 dB. To reduce noise levels in these gardens as far as practicable, it is recommended that minimum 1.8m high close-boarded timber fencing is used around these gardens. We expect this will reduce noise levels in the gardens by around 7 dB, resulting in BS8233 compliant noise levels in all gardens of the development.

Stage 2 – Element 4 – Other relevant issues

- 4.38 In our view the proposed development is in line with both local and national noise policy. It is common for residential properties to be situated near to roads and smaller commercial units and this is an acceptable scenario in this case based on the assessed noise environment.

Recommendation to decision maker

4.39 It is our view that planning permission may be granted.

5. CONCLUSIONS

- 5.1 Cass Allen Associates was instructed by Elstree Land to assess the suitability of the site for the proposed development with regards to noise. The assessment was carried out in accordance with relevant local and national planning guidance.
- 5.2 Noise levels at the site are dictated by road traffic noise emissions from Swansea Road and Northfield Road. Occasional noise from the adjacent Shurgard self-storage facility was observed at the site boundary, however this noise is due to vehicle movements and is sufficiently low level and frequency that it is not expected to adversely impact future occupants of the development.
- 5.3 The proposed new development will not add any additional constraint on the operations of the Shurgard Self-Storage or the noise levels they can generate under their existing planning consent.
- 5.4 The overall design of the site is well considered with regards to noise although it is recommended that 1.8m close-boarded timber fencing is installed along the western edge of the gardens to Plots 5 & 9 to reduce noise levels in these gardens.
- 5.5 In summary of the above it is our view that the site is suitable for the development in terms of noise levels and that planning permission may be granted.
- 5.6 It is worth also noting that the proposed development will also replace a series of car garages with residential dwellings. This will likely provide a net acoustic benefit to the area and surrounding dwellings by removing a source of potential noise disturbance.

Appendix 1 Site Layout



Appendix 2 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise measurements and unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and occasionally by sporadic noise from the adjacent Shurgard Self-Storage units

Survey Date:

01/11/2019

Survey Objectives:

- To identify noise sources that contribute to ambient noise levels at the site;
- To measure noise levels around the site over a typical period.

Equipment Used (Appendix 2, Table 1):

Type	Manufacturer	Model	Serial Number
Sound level meter ¹	Bruel & Kjaer	2250	3007539
Calibrator	Bruel & Kjaer	4231	2115551
Sound level meter ¹ (noise logger)	Rion	NL-32	00623765
Calibrator	Rion	NC-74	34551703

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

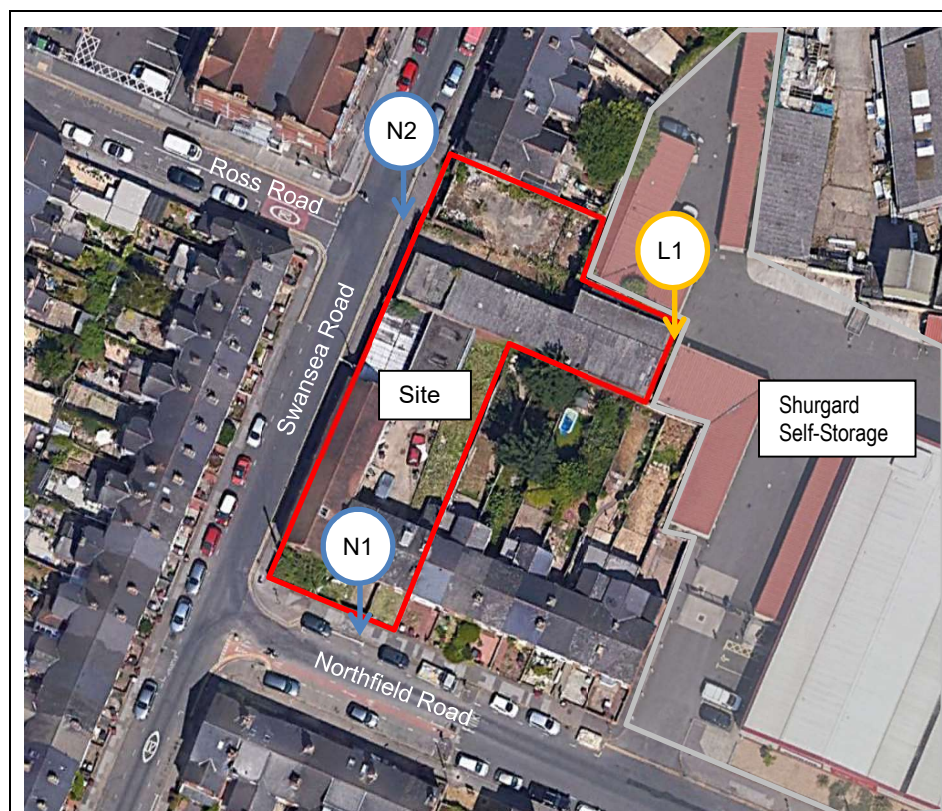
Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain)

Measurement Positions (Appendix 2, Table 2):

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Swansea Road
N2	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Northfield Road
L1	Unattended noise logging position. 3m above ground level. Façade level. Direct line of sight to Shurgard Self-Storage

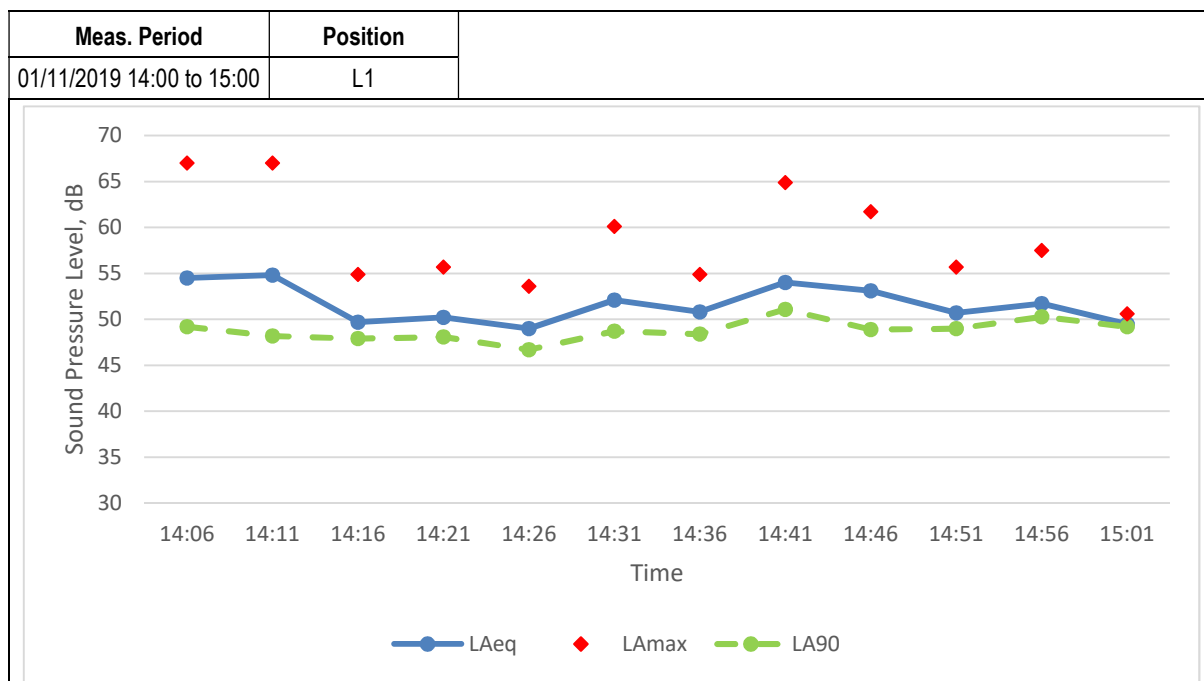
Site Plan showing Measurement Positions (Appendix 2, Figure 1):



Attended Noise Monitoring Results (Appendix 2, Table 3):

Date	Position	Time	Meas. Length	LAeq, dB	LAmix, dB	LA90, dB	Observations
01/11/2019	N1	13:14	5 mins	59	75	46	Noise dictated by road traffic from Northfield Road, typical car max 71 – 74 dB
01/11/2019	N1	13:20	5 mins	57	72	48	
01/11/2019	N2	13:25	5 mins	59	78	46	Noise dictated by road traffic from Swansea Road, typical car max 74 – 77 dB
01/11/2019	N2	13:31	5 mins	59	75	46	
01/11/2019	N1	13:42	5 mins	59	74	50	Noise dictated by road traffic from Northfield Road, max at 74 dB dictated by HGV
01/11/2019	N2	13:48	1 min	73	79	65	Noise dictated by road traffic, including fast car pass on Swansea Road and UPS vehicle accelerating from Ross Road to Swansea Road
01/11/2019	N2	13:48	5 mins	59	75	47	Noise dictated by road traffic from Swansea Road, typical car max 74 – 75 dB

Unattended Noise Monitoring Results (Appendix 2, Figure 4):





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