



**ACOUSTIC**  
CONSULTANTS LTD

# Noise Impact Assessment

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**Wiltshire Police  
Old Sarum, Salisbury**

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**Client**

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|                 |                              |              |                      |                          |                          |

The report has been prepared in good faith, with all reasonable skill and care, based on information provided or available at the time of its preparation and within the scope of work agreement with the Client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties.

The report limits itself to addressing solely on the noise, acoustic, and vibration aspects as included in this report. We provide advice only in relation to noise, vibration and acoustics. It is recommended that appropriate expert advice is sought on all the ramifications (e.g. CDM, structural, condensation, fire, legal, etc.) associated with any proposals in this report or as advised and concerning the appointment. It should be noted that noise predictions are based on the current information as we understand it and, on the performances noted in this report. Any modification to these parameters can alter the predicted level. All predictions are in any event subject to a degree of tolerance of normally plus or minus three decibels. If this tolerance is not acceptable, then it would be necessary to consider further measures.

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# 1. Introduction

Ridge and Partners LLP appointed Acoustic Consultants Limited to provide a noise impact assessment for the outline planning application for a new police station in Old Sarum, Salisbury.

A noise survey was undertaken to establish typical baseline noise levels at a location representative of the nearby noise-sensitive dwellings.

This noise impact assessment comments on the suitability of the site for development and provides plant limits that, if met, will satisfy the requirements of the relevant British Standard and Wiltshire Council.

The noise impact assessment has been undertaken in accordance with the guidance in the National Planning Policy Framework (NPPF), Noise Policy Statement for England (NPSE), Planning Practice Guidance (PPG), British Standard 4142:2014+A1:2019 (BS4142) and British Standard 8233:2014.

## 2. Site and Location

The proposal is for the development of a new police station located in Old Sarum village, which is approximately 3 kilometres from Salisbury city centre. The site lies to the west of the village of Old Sarum and consists of currently vacant land.

Overall, the site is within the built form of Old Sarum part of the Wiltshire Local Plans mixed-use development area, with close functional links to Salisbury.

There are existing residential properties bordering the site to the north east along Castle Well Road and Castle Well Drive. A care centre adjoins the site to the south. The A345 lies 250 metres away to the west.

External plant has the potential to operate 24/7.

The site location and approximate layout plan are shown in the figures below.

All design elements shown are indicative of a potential design approach that may be taken by the PCC and will be developed at the Reserved Matters stage.

Figure 1: Site location





## 3. Planning and Noise

### 3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was originally published in March 2012 and has subsequently been revised, most recently in August 2026. The 2026 Framework replaces the previous version published in December 2024. Noise is addressed within Chapter 17, 'Pollution, public protection and security'.

Chapter 17 states the *"The objective of the policies in this chapter is to ensure that new development is appropriate for its location, taking into account risks posed by pollution and other hazards; that any impacts which development might have are taken into account; and that sufficient provision is made for development required for public safety and security."*

The relevant sections for noise are within Policy P1, P3 and P4 for a proposed noise sensitive development or proposed noise generating development, the extracts from these policies that relate to noise are as follows:

#### ***P1: Planning for clean and safe places***

1. *To support efforts to avoid and mitigate risks from natural and man-made hazards, minimise levels of pollution and create clean, liveable and safe places for people to live, work and visit, development plans should:*
  - a. *Allocate land for development where, taking into account the potential for mitigation:*
    - iii. *Development proposals will not cause unacceptable levels of pollution, either alone or in combination with other pollution sources, taking into account communities which may be particularly vulnerable to its effects, such as children and older people, as well as habitats and species which may be vulnerable to pollution; and*
    - iv. *The intended uses will not place unreasonable restrictions on the operation of existing businesses, community facilities, public services, defence and security activities.*

### ***P3: Living conditions and pollution***

- 1. Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in its vicinity. In assessing the potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people).*
- 2. Within this context development proposals should:*
  - a. Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;*
  - b. Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting);*
  - c. Sustain and contribute to compliance with relevant limit values or national objectives and targets for air pollutants including PM2.5. Development proposals should take account of Air Quality Management Areas and be consistent with the objectives of relevant Air Quality Action Plans, Clean Air Plans and Local Air Quality Strategies;*
  - d. Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason);*
- 3. In applying this policy, it should be assumed, unless there is clear evidence to the contrary, that separate regulatory regimes for the control of pollution will operate effectively, as set out in policy DM7. This means that it will be appropriate to take into account emissions limits set through those other regimes.*

#### ***P4: Impact of development on existing activities***

- 1. Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were established. This means that development proposals should be capable of being integrated effectively with existing business, community and public service activities and infrastructure in their vicinity (including, but not limited to, uses such as pubs, music venues, places of worship, sports clubs, blue light services, defence, electricity network infrastructure and industrial and waste sites).*
- 2. Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should:*
  - a. Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the 'agent of change') and those existing uses which could be affected by the proposal to inform the scope for mitigation; and*
  - b. Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures.*
- 3. This policy applies to new development involving changes of use of land and property, as well as to new construction, and includes situations where new development may interfere with the operation of electronic communications networks. Both lawful current and permitted levels of operation of existing activities should be taken into account when applying this policy.*

In summary:

- Policy P1, states that efforts should be made to minimise levels of pollution, i.e. noise impact, and not place unreasonable restrictions on the operation of existing businesses, community facilities, public services, defence and security activities, i.e. the Agent of Change process.
- Policy P3, states that development proposals should provide healthy living conditions for occupiers and users and avoid exposure to levels of noise which could have an unacceptable adverse effect on health and quality of life. This would equate to not result in a Significant observed adverse effect level.
- Policy P4, relates to the Agent of Change process and protecting existing business community facilities, public services and defence and security activities from noise complaints as a result of new developments.

Annex B Glossary also states: “**Significant observed adverse effect level:** *This is the level of noise exposure above which significant adverse effects on health and quality of life occur.*”

The NPPF does not prescribe specific numerical noise criteria or an assessment methodology. The assessment of noise impacts should therefore be undertaken with reference to appropriate technical guidance and standards, as applicable to the nature of the development and noise source, relevant British Standards and other recognised acoustic guidance.

The NPPF does not prescribe any assessment methodology or criteria to assess the Significant observed adverse effect level. *The NPPF incorporates the principles of the Noise Policy Statement for England (2010) through requiring actions relating to differing Adverse Effect Levels. Further guidance on the Adverse Effect Levels is provided in Planning Practice Guidance, Noise (2019).*

### 3.2. Noise Policy Statement for England

The NPPF refers to the Noise Policy Statement for England (NPSE). This was published in March 2010 and aims to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion and applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

The NPSE sets out the long-term vision of Government noise policy. This long-term vision is supported by three noise policy aims as follows:

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

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

The NPSE introduces the concept of “Significant adverse” and “Adverse” impacts of noise which relate to the noise policy aims. These are applied 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 Noise Policy Statement for England (NPSE) states that noise levels above the Lowest Observed Adverse Effect Level are acceptable in planning where reduced to a minimum.

With regard to where there is potential for noise impact it states the following in relation to the second noise policy aim:

*"The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It 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 (paragraph 1.8). This does not mean that such adverse effects cannot occur."*

The NPSE does not provide any assessment criteria for the noted effect levels and each case must be considered on its merits.

The NPSE does, however, emphasise that in dealing with noise Local Planning Authorities are required to take a balanced approach in considering the benefits of development as against any adverse effects which arise. Paragraph 2.18 of the NPSE is particularly relevant in this respect and states:

*"There is a need to integrate consideration of the economic and social benefits 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 focusing solely on the noise impact without taking into account other related factors."*

The planning need is outside the scope of noise and acoustics and will need to be addressed by others.

### 3.3. Planning Practice Guidance, Noise

The Planning Practice Guidance (PPG) on noise referred to here is based on the current version (July 2019) as provided on the Planning Guidance Website. It states that, *"Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment."*

It provides generic guidance on how to determine the noise impact and what factors could be a concern.

It includes the option types to mitigate any adverse effects of noise stating that there are four broad types of mitigation. These are engineering, layout, using planning conditions or obligations and noise insulation.

Paragraph 5 of the PPG provides a table identifying the effect level and examples of effect relating to the impact effect levels provided in the NPSE. The table is duplicated below:

Table 1: PPG Noise – Perception of Effect Levels

| Perception                                       | Examples of Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                  | Increasing Effect Level             | Action                           |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|
| <b>No Observed Effect Level</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                                  |
| Not present                                      | No Effect                                                                                                                                                                                                                                                                                                                                                                                                                                             | No Observed Effect                  | No specific measures required    |
| <b>No Observed Adverse Effect Level</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                                  |
| Present and not intrusive                        | Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life                                                                                                                                                                                                                           | No Observed Adverse Effect          | No specific measures required    |
| <b>Lowest Observed Adverse Effect Level</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                                  |
| Present and intrusive                            | Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life. | Observed Adverse Effect             | Mitigate and reduce to a minimum |
| <b>Significant Observed Adverse Effect Level</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                                  |
| Present and disruptive                           | The noise causes a material change in behaviour, attitude or other physiological response, 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,                                                                                                 | Significant Observed Adverse Effect | Avoid                            |

| Perception                      | Examples of Outcomes                                                                                                                                                                                                                                                                                     | Increasing Effect Level     | Action  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|
| <b>No Observed Effect Level</b> |                                                                                                                                                                                                                                                                                                          |                             |         |
|                                 | premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.                                                                                                                                                                 |                             |         |
| Present and very disruptive     | Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory. | Unacceptable Adverse Effect | Prevent |

The table does not provide any objective assessment which equates to the noted effect levels. However, the PPG identifies that where noise is audible, it is not necessarily intrusive. The effect and impact on people are based primarily on the level of noise.

## 4. Assessment Criteria

The following sections identify guidance which is considered to provide noise criteria equivalent to or below the LOAEL described in the PPG and NPSE, i.e. *"Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life."*

### 4.1. External Plant Noise

For industrial and commercial noise, the most relevant guidance is provided within British Standard 4142:2014+A1:2019. The methods described in the British Standard use outdoor sound levels to assess the likely effects of sound upon people who might be inside or outside a dwelling or other premises used for residential purposes.

The initial estimate principle is that of establishing the 'difference' between the 'rating level' and the 'background sound level'. The 'rating level' is the 'specific sound level' of the source over a period of one hour during the day (07:00 to 23:00 hours) and over a period of 15 minutes during the night (23:00 to 07:00 hours). Clause 9 entitled 'Rating Level' states:

*"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level."*

An acoustic character correction should be added to the 'specific sound level' if it exhibits any tonality, impulsivity, intermittency and/or other specific characteristics at the assessment location. The value of the character correction varies, dependent on the prominence of the character of the sound source at the assessment location. In Clause 11 of the Standard, entitled 'Assessment of The Impacts', it states:

*"Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level (see Clause 8) from the rating level (see Clause 9) and consider 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."*

Based on the initial assessment outcomes of BS4142, and depending on context, it is our opinion that the NOEL, LOAEL and SOAEL levels stated in the Noise Policy Statement for England would generally fall within the following categories when considered in conjunction with the effect levels of the PPG Noise.

Table 2: BS4142 Difference in Relation to Effect Levels

| <b>BS4142+A1:2019<br/>Assessment Difference</b> | <b>Corresponding Effect Level*</b>        | <b>Action*</b>                   |
|-------------------------------------------------|-------------------------------------------|----------------------------------|
| -10 dB                                          | No Observed Effect                        | No specific measures required    |
| -9.9 dB to 0 dB                                 | No Observed Adverse Effect                | No specific measures required    |
|                                                 | Lowest Observed Adverse Effect Level      |                                  |
| 0.1 dB to 5 dB                                  | Observed Adverse Effect                   | Mitigate and reduce to a minimum |
|                                                 | Significant Observed Adverse Effect Level |                                  |
| 5.1 dB to 10 dB                                 | Significant Observed Adverse Effect       | Avoid                            |
| 10.1 dB                                         | Unacceptable Adverse Effect               | Prevent                          |

\* BS4142+A1:2019 states that "where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration". Therefore, the assessment levels and effect levels above are not definitive and can be modified due to context.

It should be noted that the numerical outcome only represents the initial estimate of impact, as stated in the first paragraph of Clause 11, and that contextual matters should be considered before determining what the potential impact is. This paragraph states:

*"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. 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."*

The second part of Clause 11 sets out three contextual matters that should be taken into account once the initial numerical estimate has been determined. It is important to note that the three listed are not exhaustive and all pertinent factors should be considered.

## 4.2. Indoor Ambient Noise Levels

British Standard 8233:2014 entitled "Guidance on sound insulation and noise reduction for buildings" came into effect on 28<sup>th</sup> February 2014. The criteria below are based on BS8233 and provide the cumulative level of both external sources outside (such as road traffic) and building services. These are upper limits and a lower limit may be more desirable.

Table 3: British Standard 8233:2014 Internal Noise Criteria within offices

| Objective                                                                           | Location                          | Design Range<br>$L_{Aeq,T}$ dB |
|-------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|
| Typical noise levels for acoustic privacy in rooms for work requiring concentration | Meeting room/<br>Executive office | 35-45 dB $L_{Aeq,T}$           |
| Typical noise levels for acoustic privacy in shared spaces                          | Open Plan Offices                 | 45-50 dB $L_{Aeq,T}$           |

The above are considered to be appropriate guidelines for the open plan offices and cellular offices.

We have therefore assessed the suitability of the site in relation to noise from external sources affecting the proposed development, having regard to typical recommended internal noise levels for office environments and in accordance with BS8233. Based on our experience of comparable schemes, we would expect Police own-brand standards to be broadly aligned with these criteria.

## 4.3. Wiltshire Council

Typically, Wiltshire Council apply specific criteria for the introduction of new industrial or commercial noise sources. The Wiltshire Council 'Planning Consultation Guidance Note – Noise and Vibration' states:

*"The development should be designed so as to achieve a rating level of 5dB ( $L_{Aeq}$ ) below the typical background ( $LA_{90}$ ) level at the nearest noise sensitive location."*

In our assessment we will work to this criterion.

## 5. Noise Monitoring

A fully attended noise monitoring was undertaken at the site on the 21<sup>st</sup> of April 2026 in accordance with British Standard 4142:2014.

### 5.1. Monitoring Equipment

Sound Pressure Levels were measured using a Class 1 sound level meter with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards.

This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 4: Equipment used and calibration status

| <b>Equipment Description,<br/>Manufacturer &amp; Model</b> | <b>Serial<br/>Number</b> | <b>Calibration<br/>Date</b> | <b>Calibration Certificate<br/>Number</b> |
|------------------------------------------------------------|--------------------------|-----------------------------|-------------------------------------------|
| SLM, NTI, XL2                                              | A2A-20250-E0             | 14/04/2026                  | 1517027-1                                 |
| Pre-Amp, NTI, MA220                                        | 10592                    | 14/04/2026                  | 1517027-1                                 |
| Microphone, NTI, MC230A                                    | A22596                   | 14/04/2026                  | 1517027-1                                 |
| Calibrator, Larson Davis, CAL200                           | 19741                    | 22/05/2025                  | 1512320-1                                 |

The measurement system was checked with the above noted calibrator before and after use and no significant drift was detected.

### 5.2. Weather Conditions

The weather conditions during the survey were dry and clement. The air temperature was 7 degrees Celsius with a 5m/s south-easterly wind. These weather conditions are not expected to have adversely affected the measured data.

### 5.3. Monitoring Procedure

A fully attended noise survey was conducted at a location representative of the nearest noise sensitive receivers (NSRs). The microphone was positioned on a tripod 1.5m above the ground in a free field location. Measurements were taken from 13:00-15:00 and 22:00-00:00 hours.

The main sources of noise at the monitoring location were distant road traffic along the road networks to the west and east. Infrequent road traffic along the local road networks to the south of the monitoring location was also audible. Low level plant noise from the care home and air traffic also contributed to noise environment.

The measurement location is shown in the figure below.

Figure 4: Monitoring Location



## 5.4. Measured Noise Levels

Below the tables show the measured equivalent noise level ( $L_{Aeq,15min}$ ) and background noise level ( $L_{A90,15min}$ ) in dB(A) over the evening / night period survey.

Table 5: Measured equivalent and background noise levels across daytime survey

| Time  | $L_{Aeq}$ / dBA | $L_{A90}$ / dBA |
|-------|-----------------|-----------------|
| 13:00 | 47              | 41              |
| 13:15 | 47              | 43              |
| 13:30 | 46              | 42              |
| 13:45 | 47              | 42              |
| 14:00 | 46              | 42              |
| 14:15 | 47              | 43              |
| 14:30 | 47              | 43              |
| 14:45 | 47              | 43              |

Table 6: Measured equivalent and background noise levels across evening and night survey period

| Time  | $L_{Aeq}$ / dBA | $L_{A90}$ / dBA |
|-------|-----------------|-----------------|
| 22:00 | 38              | 35              |
| 22:15 | 37              | 33              |
| 22:30 | 39              | 35              |
| 22:45 | 39              | 34              |
| 23:00 | 36              | 33              |
| 23:15 | 36              | 32              |
| 23:30 | 36              | 32              |
| 23:45 | 36              | 32              |
| 00:00 | 55              | 33              |

Based on the above, the representative background sound levels have been determined as follows:

Table 7: Representative background sound levels

| Assessment Period   | Representative Background Sound Level |
|---------------------|---------------------------------------|
| Day (07:00-23:00)   | 33 dB $L_{A90,1hour}$                 |
| Night (23:00-07:00) | 32 dB $L_{A90,15minute}$              |

The levels taken are the lowest 15-minute periods as recorded during the survey in order to present a robust assessment.

## 6. Suitability of the Site for Development

Based on the measured data, the site is considered suitable for development in terms of noise. Measured daytime equivalent noise levels of 47 dB  $L_{Aeq,T}$  indicate a relatively quiet baseline environment and are acceptable in the context of the proposed use.

Internal ambient noise levels within the building can be controlled through standard construction techniques and façade design. Ventilation is also likely to be able to be provided via open windows when considering BS8233 internal noise limits of a typical office space.

On this basis, the site is considered suitable for this development in terms of noise.

## 7. Plant Noise Limits

Plant noise associated with the proposed development could impact the surrounding dwellings. At this stage, plant is yet to be selected. As such, we have provided noise limits based on the monitoring data obtained above and British Standard 4142:2014+A1:2019.

Based on the above criteria and the assessment time periods stated, the maximum rating level of noise from the site are as follows.

These cumulative limits should be determined as the free-field level at the façade of the NSRs.

Table 8: Plant noise limits

| <b>Assessment Period</b> | <b>Representative Background Sound Level</b> | <b>Plant Rating Noise Limit / <math>L_{A,T}</math> dB</b> |
|--------------------------|----------------------------------------------|-----------------------------------------------------------|
| Day (07:00 – 23:00)      | 33                                           | 28                                                        |
| Night (23:00 -07:00)     | 32                                           | 27                                                        |

The above limits have been set in order to achieve a cumulative plant noise level not exceeding the -5 dB below the background sound level at the dwellings. The site has potential to operate 24/7 and as such both day and night time limits have been provided.

The Rating Level of plant noise from the site is to include any acoustic feature correction as applicable in accordance with Section 9 of BS4142:2014 for any tonality, impulsivity, intermittency or other sound characteristics. With these limits being met the impact will be low in terms of BS4142:2014+A1:2019.

The above should apply to the cumulative noise level of all plant on site as observed at the dwellings.

## 8. Summary and Conclusions

Ridge and Partners LLP appointed Acoustic Consultants Limited to provide a noise impact assessment for the outline planning application for a new police station in Old Sarum, Salisbury.

This report comments on the suitability of the site for development and provides plant limits for the proposed scheme based on an environmental noise survey to establish background levels at the site.

The internal ambient levels of the development can be controlled via standard façade construction techniques. It is also expected that with appropriate design, typical recommended internal office noise levels will be met using natural ventilation.

The plant limits, if met, will satisfy the conditions in the relevant British Standard.

On the basis of the above, when the plant limits set out above are met, the development achieves the aims of the NPPF and is acceptable in terms of plant noise.

## 9. Appendix 1 – Glossary of Acoustic Terminology

*A-weighted sound pressure  $p_A$*  – value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network.

*A-weighted sound pressure level,  $L_{pA}$*  – quantity of A-weighted sound pressure given by the following formula in decibels (dBA)

$$L_{pA} = 10 \log_{10} (p_A/p_0)^2$$

where:

$p_A$  is the A-weighted sound pressure in pascals (Pa);  
 $p_0$  is the reference sound pressure (20  $\mu$ Pa)

*Background sound level,  $L_{A90,T}$*  – A-weighted sound pressure level that is exceeded by the residual sound assessment location for 90% of a given time interval, T, measured using weighting F and quoted to the nearest whole number of decibels

*Break-in* - noise transmission into a structure from outside.

*Decibel (dB)* – The decibel is the unit used to quantify sound pressure levels. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). Therefore, a logarithmic scale is used to describe sound pressure levels and also sound intensity and power levels. The logarithms are taken to base 10. Hence an increase of 10 dB in sound pressure level is equivalent to an increase by a factor of 10 in the sound pressure level (measured in Pascals). Subjectively, this increase would correspond to a doubling of the perceived loudness of sound.

*Equivalent continuous A-weighted sound pressure level,  $L_{Aeq,T}$*  – value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval,  $T = t_2 - t_1$ , has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation:

$$L_{Aeq,T} = 10 \lg_{10} \left\{ (1/T) \int_{t_1}^{t_2} [p_A(t)^2/p_0^2] dt \right\} \quad (1)$$

where:

$p_0$  is the reference sound pressure (20  $\mu$ Pa); and

$p_A(t)$  is the instantaneous A-weighted sound pressure (Pa) at time  $t$

**NOTE** The equivalent continuous A-weighted sound pressure level is quoted to the nearest whole number of decibels.

*Facade level* – sound pressure level 1 m in front of the façade. Facade level measurements of  $L_{pA}$  are typically 1 dB to 3 dB higher than corresponding free-field measurements because of the reflection from the facade.

*Free-field level* – sound pressure level away from reflecting surfaces. Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source).

*Octave and Third Octave Bands* – The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz and is generally more sensitive to medium and high frequencies than to low frequencies within the range. There are many methods of describing the frequency content of a noise. The most common methods split the frequency range into defined bands, in which the mid-frequency is used as the band descriptor and in the case of octave bands is double that of the band lower. For example, two adjacent octave bands are 250 Hz and 500 Hz. Third octave bands provide a fine resolution by dividing each octave band into three bands. For example, third octave bands would be 160 Hz, 250 Hz, 315 Hz for the same 250 Hz octave band.

*Sound pressure level* – Sound pressure level is stated on many of the charts. It is the amplitude of the acoustic pressure fluctuations in a sound wave, fundamentally measured in Pascals (Pa), typically from 20 micro-Pascals to 100 Pascals, but commonly simplified onto the decibel scale.

*Sound reduction index,  $R$*  – laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

*Specific sound level,  $L_s = L_{Aeq,T_r}$*  – equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval,  $T_r$ .

*Structure-borne noise* – audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements.

*Rating level,  $L_{A,r,T_r}$*  – Specific sound level plus any adjustment for the characteristic features of the sound.

*Reverberation Time,  $T$*  – The reverberation time is defined as the time taken for a noise level in an enclosed space to decay by 60 dB from a steady level once the noise source has stopped. It is measured in seconds. Often a 60 dB decay cannot be measured so the reverberation time is measured over a lesser range and corrected back to the time for a 60 dB drop assuming a constant decay rate. Common parameters are T20 (time taken for a 20 dB decay multiplied by three) and T30 (time taken for a 30 dB decay multiplied by two).

*Vibration Dose Value,  $VDV$*  – measure of the total vibration experienced over a specified period of time.

*Estimated Vibration Dose Value,  $eVDV$*  – estimation of the total vibration experienced over a specified period of time. This is usually based on the number of events and shortened measurement data.

*Weighted sound reduction index,  $R_w$*  – Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. The weighted sound reduction index is used to characterize the insulation of a material or product that has been measured in a laboratory (see BS EN ISO 717-1).



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