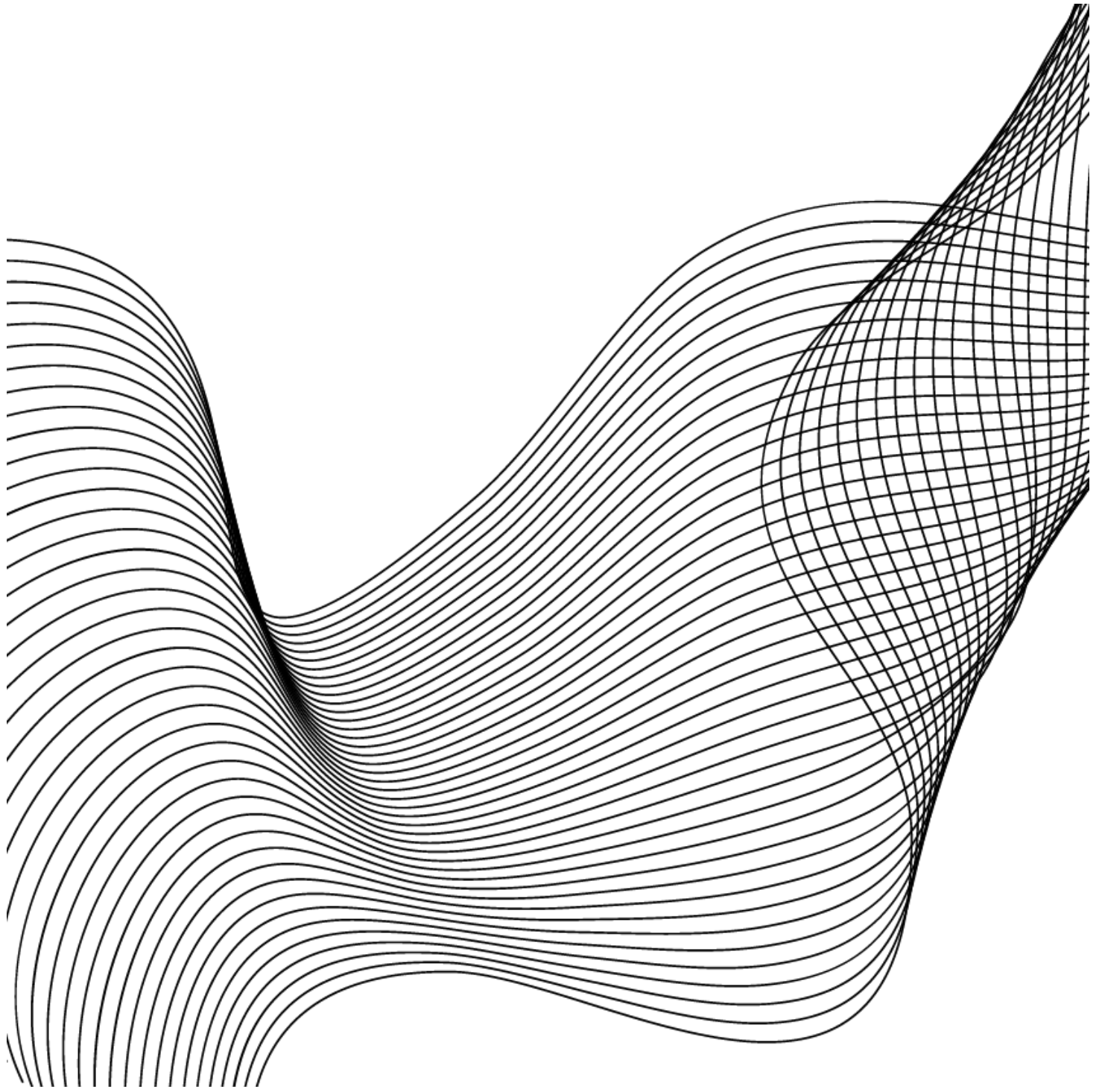


ROD Engineering

Noise Impact Assessment - Flexible Generation Facility, Stowmarket

Issued





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Executive Summary

The noise impact assessment initially assessed the existing site operations and demonstrated that it currently operates with little or no impact on nearby noise sensitive receptors. This is borne out by the fact that no noise complaints have been received.

The assessment further determined that there is no change to the magnitude of impact as a result of the proposed change to the operational hours.

1.0 Introduction

Enfonic were commissioned to conduct an Environmental Noise Impact Assessment of the effect of changing the operational periods of the existing flexible generation site.

This report describes the assessment undertaken of the potential noise from the proposed development at Stowmarket Business Park on the local residential amenity. The proposed development includes 28no. diesel generators.

The nearest noise sensitive receivers are located approximately 690m to the northwest, 230m to the north and 365m to the east of the site.

1.1 Fundamental of Acoustics

The audible range of sounds can be expressed in terms of Sound Pressure Levels (SPL) and ranges from 0dB (for the threshold of hearing) to 120dB (for the threshold of pain). It should be noted that a doubling in sound energy (such as may be caused by a doubling of traffic flows) increases the SPL by 3dB.

The frequency of sound is the rate at which a sound wave oscillates is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity is most sensitive to the frequency range of language (300Hz-3,000Hz) and decreases substantially as frequency falls.

It is necessary to adjust the measured noise level by an instrument to reflect the sensitivity response of human hearing and the 'A-weighting' system has been defined in the international standard, BS ISO 226:2003 Acoustics to do this. SPL's measured using 'A-weighting' are expressed in terms of dB(A).

An indication of the level of some common sounds on the dB(A) scale is presented in Figure 1, which shows a quiet bedroom at around 20dB(A), a nearby noisy traffic at 90dB(A) and a pneumatic drill at about 100dB(A).

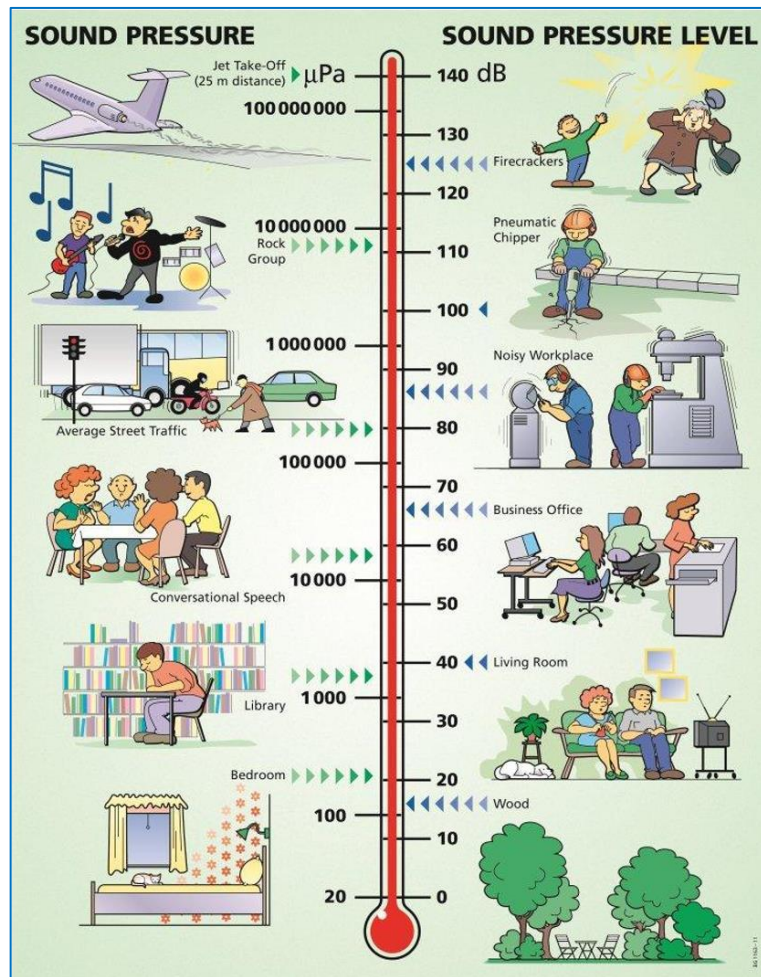


Figure 1. Typical levels of common sounds, expressed in decibels (dB) and Pascals (Pa).
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2.0 Methodology

The assessment of impacts for the proposed development have been undertaken with reference to the most appropriate guidance documents relating to environmental noise which are set out below.

2.1 Legislative context

2.1.1 National Planning Policy Framework

The revised National Planning Policy Framework [1] sets out government's planning policies for England and how these are expected to be applied.

With regards to local noise planning policies, Section 11 paragraph 123 of the NPPF 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 upon them because of changes in nearby land uses since they were established;
- 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.'

Reference is made to the DEFRA Noise Policy Statement for England 2010 (NPSfE). This latter document is intended to apply to all forms of noise other than that which occurs in the workplace and includes environmental noise and neighbourhood noise in all forms.

The NPSfE advises that the impact of noise should be assessed on the basis of adverse and significant effect but does not provide any specific guidance on assessment methods or limit sound levels. Moreover, the document advises that it is not possible to have 'a single objective noise-based measure...that is applicable to all sources of noise in all situations'. It further advises that the sound level at which an adverse effect occurs is 'likely to be different for different noise sources, for different receptors and at different times'.

In the absence of specific guidance for assessment of environmental noise within the NPPF and the NPSfE, it is considered appropriate to base assessment on current British Standards and national guidance. These are considered to be Local Authority guidance, BS 4142 [2] and BS 8233 [3] [4] guidelines.

2.1.2 BS 4142: 2014

BS 4142:2014 [2] describes a method for assessing the impact of a proposed or existing industrial or commercial sound source. Its principal uses are to assess noise from new or changed industrial or commercial premises, to accompany a planning application, or to assess noise which may be giving rise to complaints.

The standard is basic in principle, but the details can be complex. In the simplest terms, the procedure rates the noise levels from an operation (the 'Specific' noise) and compares it with the 'Background' noise levels in the absence of the noise source(s) under investigation. The level difference is an indication of the impact that the operation might have.

If for example, if the 'Rated' noise level (the Specific noise + any penalties for particular noise characteristics) exceeds the Background noise by 10dB or more, it is likely to be an indication of a significant adverse impact. A difference of around 5dB indicates an adverse impact. If the level does not exceed the background, it is likely to have a low impact.

This however is dependent on the 'context' of the site and its environs e.g. time of day, nature of the neighbourhood, local attitudes to the development etc. There is also a degree of uncertainty applicable to the results e.g. for weather,



instrumentation, measurement duration, calculation errors etc which ought to be considered.

3.0 Site Description

3.1 Existing Site

The Application Sites comprise existing Flexible Generation Facilities, which provide back-up energy supply to the National Grid. The site consists of two developments but as they may be required to operate simultaneously, this assessment considers them as one.

The site is located adjacent to Stowmarket Business Park, which is situated on the south-eastern edge of Stowmarket. More specifically, the sites are immediately to the south of the buildings currently occupied by Buildbase Stowmarket and Treadfirst.

The site is situated just outside the town boundary, as indicated in the Stowmarket Area Action Plan. Both sites are accessed from Needham Road via a shared access road which extends through the eastern area of the business park.

The surrounding site context comprises a combination of industrial and commercial uses extending along the B113 Road and agricultural land to the west and south.

3.2 Proposed Development

Precise Energy Ltd and Valence Power Ltd are applying for variations to the existing planning permissions (DC/18/05096 and DC/18/05102) to allow for changes to the permitted operating hours. The applications are being made to Mid-Suffolk District Council under section 73 of the Town and Country Planning Act 1990 (as amended).

The Section 73 applications are seeking a variation in the permitted hours of operation which are set out in Condition No. 2 of the 2019 Decision Notices.

The permitted hours of operation are no more than 2 hours between 07:00 – 22:30 and it is proposed to vary condition No. 2 to refer to an earlier start time of 06:00 hours and to allow the Flexible Generation Facilities to operate for up to 4 hours during any 24-hour period.

This report assesses the noise impact of the proposed operating conditions.

4.0 Noise Survey

A previous acoustic survey was carried out at the proposed development site between 11-5-2016 and 18-5-2016. This established the prevailing environmental noise conditions local to the site, so as to determine noise emission limits.

The site and survey location are shown in Figure 2.



Figure 2. Site boundary and Background noise survey location.

The results of the noise survey quantified the existing background noise levels over the proposed operational hours of the development. These were compiled into Daytime and Night-time periods following BS 4142 guidance and are presented in Table 1 below.

Table 1. Summary of background Noise Levels

Period	Background Noise Level L _{A90} dB
07:00 – 22:30 (Daytime)	47
06:00 – 07:00 (Night-time)	46

As has been set out in 3.2 above, the existing permitted operational hours are 07:00 – 22:30hrs with a maximum of 2 hrs running duration. The revised application is to increase the operational hours to 4 hrs running duration from 06:00hrs. For the purposes of this assessment, the proposed change to the running duration is immaterial as it exceeds the reference time (1hr) of BS 4142. Therefore, only the 06:00 – 07:00hrs period ought to be assessed. This period falls into the night-time criteria of BS4142. To aid comparison, the two periods are presented together.

4.1 Noise Sensitive Areas

A noise sensitive area is defined as landscapes or buildings where the occupiers are likely to be sensitive to noise as a result of the proposed redevelopment, including residential areas.

The nearest noise sensitive locations are identified as existing residential dwellings at:

1. Shelley Close (approximately 690m to the northwest)
2. Stowmarket Road (approximately 230m to the north)
3. Stowmarket Road (approximately 365m to the east)

The locations are indicated in Figure 3 below.



Figure 3. Nearest noise sensitive receptors.

It should be noted that the background noise measurements in Table 1 are considered to be a worst-case representation of the background noise levels at the residential dwellings along Stowmarket Road, to the north and east of the proposed development site, as these properties are located at closer distances to Stowmarket Road and the railway line.

In addition, the surrounding noise climate at the properties to the east were observed to include contributions from the adjacent industrial unit, including truck / HGV movements. As such, background noise levels at these locations would be expected to be higher than those measured at the survey location.

4.2 Local Noise Environment

The surrounding noise climate at the nearest residential receptor along Shelley Close is predominantly formed of distant road traffic noise from the immediate road network to the east, including Stowmarket Road (B1113), Needham Road (A1308) and the A1120 to the east.

The surrounding noise climate at 1 & 2 New Cottages and Pomeltrees & Woodland are predominantly formed of road traffic noise from Stowmarket Road. The noise climate at Pomeltrees & Woodland was also observed to included contributions from the adjacent industrial unit including frequent truck / HGV movements.

It should also be noted that bird sound was reported as being audible.

5.0 Impact Assessment

Following the BS 4142:2014 guidance the Specific noise level at the nearest noise sensitive receptors as a result of the emissions of the proposed development is

compared with the measured Background noise levels. The larger the difference the greater the likely impact.

5.1 Background Noise

The background levels have been set out in Table 1 and the most appropriate way of determining the Specific noise emission levels is to develop a noise propagation model of the study area. The Predictor_LimA software implements the principles of the ISO 1913-2 [4] to predict the sound pressure level at a specific receiver point taking into consideration distance attenuation, the screening provided by the acoustic fence, buildings, and any ground effects.

5.2 Generator Noise

The installed generator sets are FG Wilson model P1700P2 housed within Acoustic Enclosures. An acoustic fence in place on the western end of the site and Figure 4 illustrates the site layout.

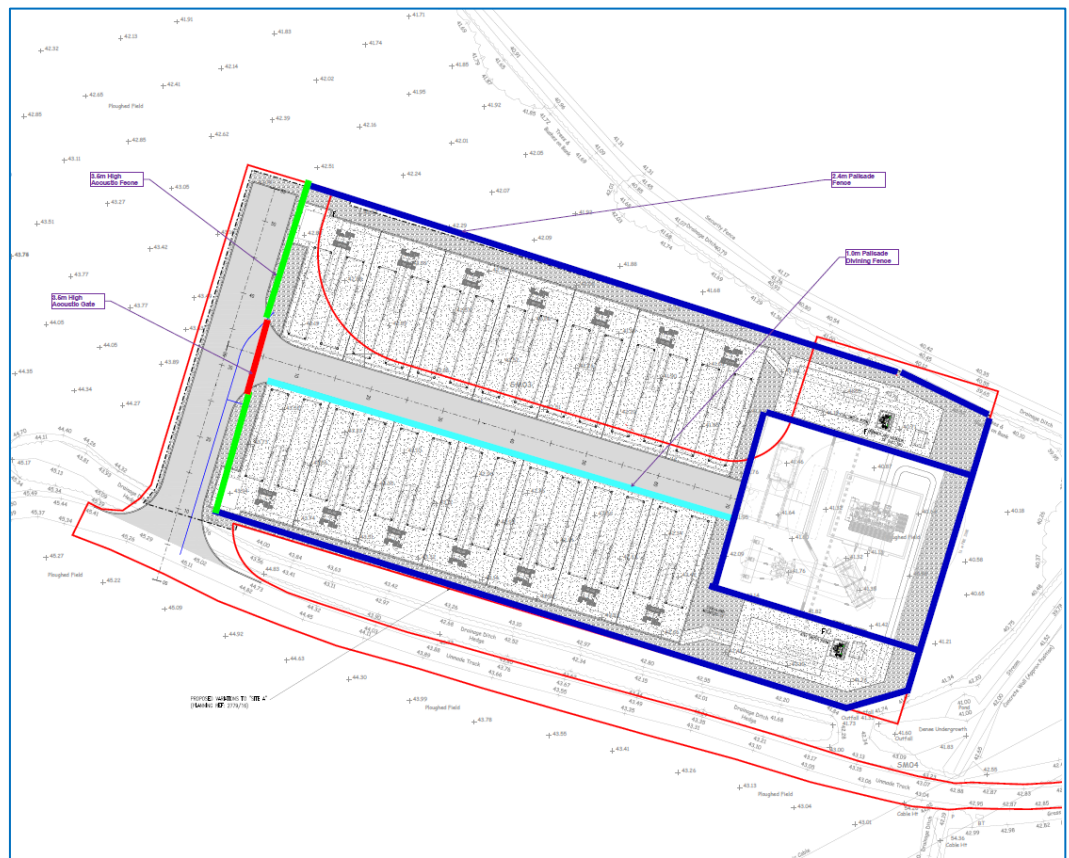


Figure 4. Site layout.

There are 28no. generator sets and the Sound Power Levels of each is used to predict the Sound Pressure Levels one metre from each of the residential façades. The sound power values used to model an individual generator set are given in Table 2.

Table 2. Generator Sound Power Levels

Generator	Sound Power Level per Octave Band Frequency in Hz								L _{WA} dB
	63	125	250	500	1000	2000	4000	8000	
Generator	93.2	97.2	101.2	98.2	101.2	103.2	93.2	86.4	108.0



There is no acoustic characteristic such as tonality, intermittency or impulsiveness associated with the noise sources so no penalties shall apply.

It is possible that on occasion all 28 generators will operate simultaneously which represents the worse-case scenario to be considered. Comparison of the background noise levels and predicted sound pressure levels of all 28no. generators at the identified residential locations is given in Table 3, Table 4 and Table 5 below.

Table 3. Summary of Noise Impact Assessment - Northwest

Northwest (Shelley Close)	Background Noise Level	Predicted Noise Level	Difference	Impact
Period	L _{A90, 1hr} dB	L _{Aeq} dB		
06:00 – 07:00	46	51	5	Low
07:00 – 22:30	47		4	Low

Table 4. Summary of Noise Impact Assessment - North

North (Stowmarket Rd)	Background Noise Level	Predicted Noise Level	Difference	Impact
Period	L _{A90, 1hr} dB	L _{Aeq} dB		
06:00 – 07:00	46	46	0	Nil
07:00 – 22:30	47		1	Nil

Table 5. Summary of Noise Impact Assessment - East

East (Stowmarket Rd)	Background Noise Level	Predicted Noise Level	Difference	Impact
Period	L _{A90, 1hr} dB	L _{Aeq} dB		
06:00 – 07:00	46	43	-3	Nil
07:00 – 22:30	47		-4	Nil

5.2.1 Discussion

The largest adverse impact is at Northwest Shelley Close albeit in the low category. The impact for the earlier operation period i.e. 06:00-07:00 is consistent with the existing impact during the daytime period i.e. a 1dB difference which is considered imperceptible. As such, there is no material difference between the existing impact and the impact for the additional operational period.

Furthermore, no complaints of noise from the site have been received for the existing permitted hours and this would be expected to be the case for the earlier period.

6.0 Conclusion

The background noise levels for the current earliest operational period i.e. 07:00 – 08:00 is within 1dB of the proposed earlier operational period of 06:00 – 07:00. There is therefore no material change to the noise impact for the extended period.



7.0 References

- [1] "National Planning Policy Framework, Department for Communities and Local Government, July 2021."
- [2] "BS 4142: 2014: 'Method for rating industrial and commercial sound'."
- [3] "BS 8233: 2014, 'Guidance on Sound Insulation and Noise Reduction for Buildings', BSI".
- [4] "ISO 9613-2: 1996, 'Acoustics - Attenuation of Sound during Propagation Outdoors - Part 2'."