



Reference: NHS Wood Green, Phase 2

Project No: 2220954

Date: 2nd December 2022

Technical Note

Re: Standby Generator Compound

Introduction

Sharps Redmore are appointed to provide acoustic consultancy services for Phase 2 of the NHS Diagnostics Centre which is being located in the basement of the existing The Mall shopping centre in Wood Green, as the scheme has developed, a need for standby backup power generation has been determined.

To achieve this, an emergency generator is being proposed with installation along the boundary of the existing service yard in the location of a redundant security hut, the generator will only be operational in an emergency or when being routinely tested during the day.

Background

Planning consent for the main scheme itself has been previously granted by Haringey Council (Application Reference: HGY/2022/2364) and a condition with regard to noise from items of building services associated with the development has been set as part of the consent. This condition is summarised below,

6. The design and installation of new items of fixed plant hereby approved by this permission shall be such that, when in operation, the cumulative noise level L_{Aeq} 15 min arising from the proposed plant, measured or predicted at 1m from the facade of nearest residential premises shall be a rating level of at least 5dB(A) below the background noise level L_{AF90} . The measurement and/or prediction of the noise should be carried out in accordance with the methodology contained within BS 4142: 1997.

Upon request by the local planning authority a noise report shall be produced by a competent person and shall be submitted to and approved by the local planning authority to demonstrate compliance with the above criteria.

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Such a condition is common for developments of this nature and considered reasonable.

However, considering the standby generator will be operational only in an emergency or for routine testing, usually during the day (classified here as 07:00-19:00 hours), noise generation is generally perceived as having a much lower impact on existing noise sensitive properties and alternative noise limits would be usually be considered suitable.

Relevant Assessment Methodology

National Policy

The National Planning Policy Framework (NPPF), July 2021, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 185 of the NPPF states the following:

"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*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".*

Guidance on the interpretation of the policy aims contained within the NPPF is contained within the National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on the likely average response to noise. The guidance contained in the NPPG is summarised in the table below.

Table 1 – NPPG

Perception	Example 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. Affect 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 the change in acoustic character of the area.	Significant observed adverse effect level	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress of physiological effects, e.g. Regular sleep deprivation/awakening; loss of appetite.	Unacceptable adverse effect	Prevent

The NPPF reinforces the March 2010 DEFRA publication, “Noise Policy Statement for England” (NPSE), which states three 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.”

It also outlines the concepts from toxicology utilised for noise impacts and extended to derive a ‘significant’ level for the purposes of the NPSE.

- NOAL: No Observed Effect Level: The level below which no effect can be detected. There is no detectable effect on health and quality of life due to noise. avoid significant adverse impacts on health and quality of life;
- LOAEL: Lowest Observed Adverse Effect Level: The level above adverse effects on health and quality of life can be detected.
- SOAEL: Significant Observed Adverse Effect Level: For these purposes, the level above which significant adverse effects on health and quality of life occur.

Taking into consideration the aims and guidance of the national policy when considering the impact of noise, the fact that sound can be heard and causes impact, is not reason alone for refusal of an application as consideration should also be given to the significance of the impact and the mitigation measures available.

It is possible to apply objective standards to the assessment of noise and the effect produced, the introduction of a certain noise source may be determined by several methods, as follows:

- i.) The effect may be determined by reference to guideline noise values, such as those contained in the World Health Organisation (WHO) “Guidelines for Community Noise”.
- ii.) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, to the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.

- iii.) Another method is described within British Standard 4142:2014 +A1:2019 '*Method for rating industrial and commercial sound*' (BS 4142) to determine the significance of sound impact from sources of industrial and/or commercial nature. The sources that the revised standard is intended to assess are sound from industrial and manufacturing processes, sound from fixed plant installations, sound from loading and unloading of goods at industrial and/or commercial premises and the sound from mobile plant and vehicles, such as forklift, train or ship movements.

Surveying and Generator Noise Limits

Noise surveying to determine existing background noise levels at nearby noise sensitive properties has been previously undertaken and for more information on the methodology used, the reader is referred to report reference: R2-8.8.22-Phase 2 NHS Diagnostics Centre - Noise Impact-2220954-PJB.

The measurement locations are however shown in Figure 1 below and also summarised in Table 2.

Figure 1: Plan showing survey locations



Table 2: Noise Survey Data

Location	Daytime (0700-2300)		Night (2300-0700)	
	Ambient L_{Aeq}	Background L_{A90}	Ambient L_{Aeq}	Background L_{A90}
L1	52 -59 dB	52 dB	49 - 54 dB	49 dB
L2	50 - 67 dB	49 dB	47 - 54 dB	46 dB

The nearest noise sensitive receivers to the proposed new plant items are considered as the existing dwellings on Mayes Road. Based on noise data obtained from the environmental noise survey, plant noise limits at these worst affected noise sensitive receivers have been set out in Table 3. A limit of 10 dB above typical minimum background L_{A90} noise levels during the day and night are proposed, such a limit is common for emergency equipment in London Boroughs and is in SR opinion a more reasonable limit for such equipment.

It is also worth noting that the limit recommended, is aof a similar level to the measured existing ambient L_{Aeq} noise level which is an indication of noise from such items having negligible impact on the local environment.

Table 3: Minimum background noise levels and plant noise limits

Receptor	Period	Typical Minimum L_{A90} dB	Cumulative plant noise limit rating dB $L_{Ar,Tr}$
All NSR's	0700-2300	L_{A90} , 15 minutes $\approx$ 49	59
	2300-0700	L_{A90} , 5 minutes $\approx$ 46	56

Emergency Equipment Noise Impact

Noise from operation of the standby generator has been assessed in accordance with BS 4142 against the limits proposed above (Table 3), the predicted levels are summarised below. Detailed calculations are available upon request.

Table 4: Predicted noise level from emergency plant at worst affected locations

	Predicted Noise Level
Details	Mayes Road
Predicted Emergency Plant Noise Rating Level $L_{Ar,Tr}$	Worst case (night-time)
	54 dBA
Typical Background L_{A90} dB	46 dBA
Proposed Plant Rating Limit $L_{Ar,Tr}$	56 dBA
Result	-2 dBA

The comparison in Table 4 indicates that operation of the proposed standby generator will be of a level less than 10 dB above typical minimum background L_{A90} noise levels. Such a level for short term operation of emergency equipment would be unlikely to prove problematic to local residents, it is also noted that the predicted level falls below commonly enforced limits for similar items of emergency/standby plant within different Boroughs of London.