



Verizon
Reading International Business Park

Plant Noise Assessment Report

24 January 2022

For
PD & CL Building Services Ltd
Unit 3 Belvedere Court
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SUMMARY

A new generator is proposed on the Verizon site in Reading. Reading Borough Council has external noise requirements for new items of building services plant, requiring a background noise survey and plant noise assessment to be undertaken.

A noise survey has been undertaken by **auricl** to determine background noise levels that are representative of the nearest noise sensitive properties.

External plant noise limits have been proposed, to be achieved at the nearest residential properties, based on the noise survey data and the Reading Borough Council requirements.

A noise assessment has been undertaken to predict noise emissions associated with the proposed generator at the nearest noise sensitive properties.

The predicted noise levels comply with the Reading Borough Council requirements.

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1.0 Introduction

A new generator is proposed on the Verizon site in Reading. Reading Borough Council has external noise requirements for new items of building services plant, requiring a background noise survey and plant noise assessment to be undertaken.

auricl has been instructed to undertake a background noise survey and acoustic assessment of noise emissions from the new roof plant, in relation to the Reading Borough Council requirements.

This report presents the methodology and results of a noise survey to determine background noise levels that are representative of the nearest noise sensitive properties, as well as an acoustic assessment of the plant to address the Reading Borough Council requirements.

2.0 Description of Site and Proposals

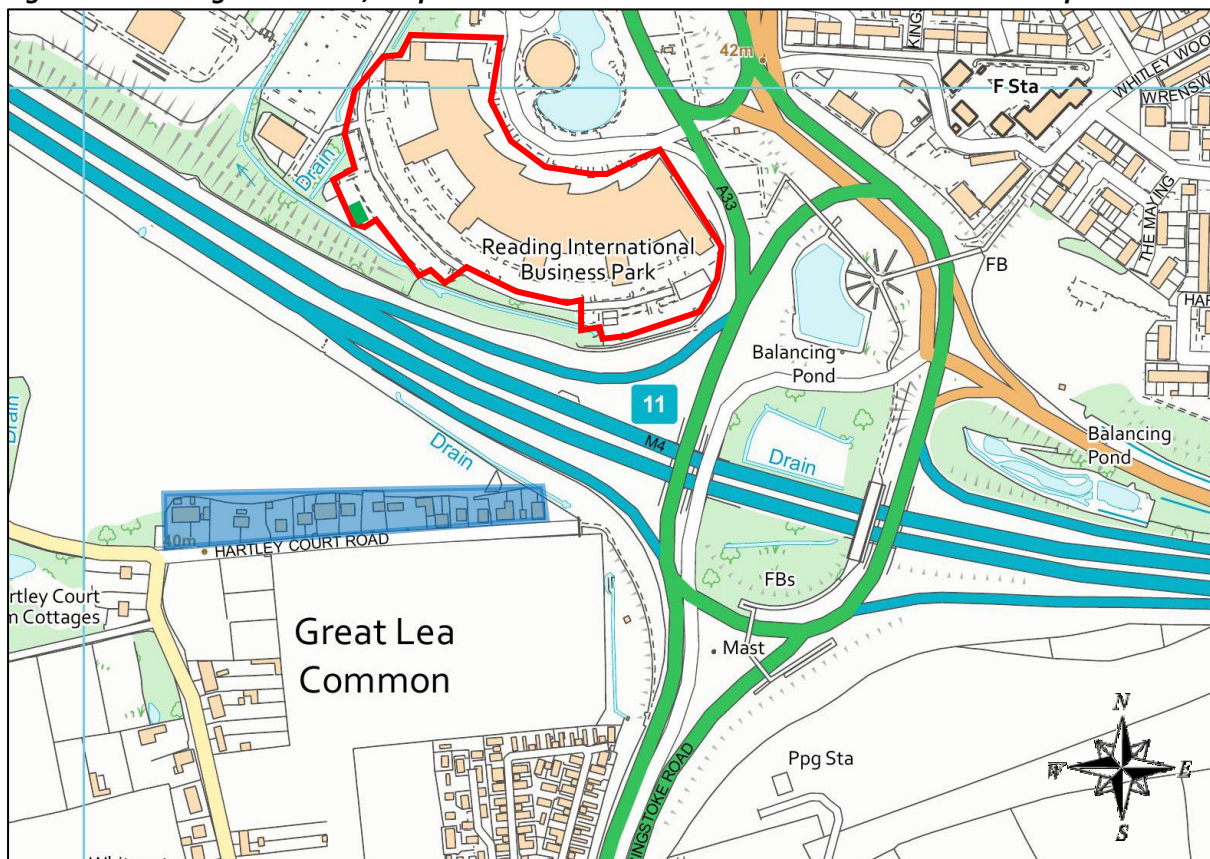
The Verizon site is occupied by a large office building and associated car parking, to the north-east of the M4 motorway (close to junction 11) on the outskirts of Reading.

Residential properties are located along Hartley Court Road, to the south-west of the M4 motorway.

A packaged generator is proposed in a new enclosure near the western corner of the Verizon site, approximately 240m from the residential properties. The generator will operate during power outages and for periodic testing.

Figure 2.1 shows the approximate Verizon site extent in **red**, the proposed generator location in **green** and the nearest noise sensitive properties in **blue**.

Figure 2.1 Existing Site Extent, Proposed Plant Location and Nearest Noise Sensitive Properties



3.0 Reading Borough Council Requirements

Reading Borough Council has advised the following noise requirements for the proposed generator:

“The predicted specific sound level ($L_{Aeq,Tr}$) (with reference to BS:4142) as measured at a point 1 metre external to the nearest noise-sensitive facade shall be at least 10dB below the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation. The predicted rating level, $L_{Ar,Tr}$ (specific sound level plus any adjustment for the characteristic features of the sound) as measured at a point 1 metre external to the nearest noise-sensitive façade (habitable window of a dwelling) shall not exceed the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation.”

It has been confirmed that the reference to the background noise level above relates to the typical background noise level.

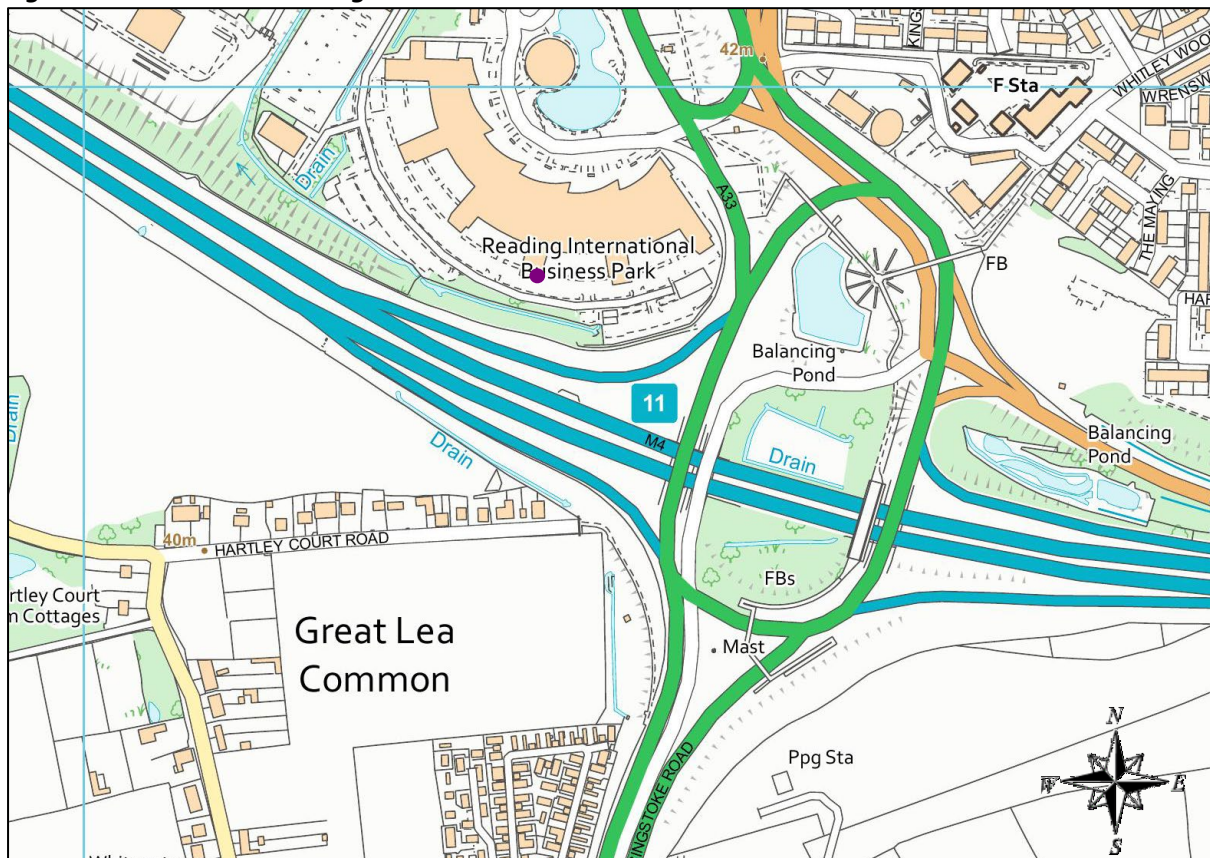
4.0 Noise Survey Methodology

An unmanned environmental noise survey was undertaken at the site between Friday 7 January 2022 and Tuesday 11 January 2022, to assess existing background noise levels at a position considered representative of the nearest noise sensitive properties to the proposed generator.

L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey over 15-minute intervals.

Noise levels were measured at one position at roof level at the eastern end of ‘Spur C’ on the Verizon site, as indicated in **purple** on Figure 4.1.

Figure 4.1 Site Plan Indicating Measurement Location



Due to the lack of a secure, accessible measurement position close to the nearest noise sensitive (residential) properties along Hartley Court Road, to the south-west of the M4, a position with similar vicinity to the M4 carriageway was selected on the Verizon site.

The measurement position was agreed with Reading Borough Council in advance of the noise survey.

The equipment used for the noise survey is described in Table 4.1.

Table 4.1 Description of Equipment used for Noise Survey

Item	Make & Model	Serial Number
Type 1 sound level meter	01 dB FUSION	12032
Type 1 ½" microphone	GRAS 40 CD	330829
Calibrator	01 dB CAL21	86020

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning of the survey period, there was noted to be very little cloud with dry, still and clear conditions. These conditions are understood to be representative of the majority of the survey period and are considered appropriate for undertaking environmental noise measurements.

5.0 Noise Survey Results

Appendix B presents a time history graph showing the L_{Aeq} and L_{A90} sound pressure levels measured throughout the noise survey.

The typical (mode) measured background noise level was **66 dB L_{A90} (1 hour)** during daytime periods (07:00 – 23:00 hours) and **48 dB L_{A90} (15 min)** during night-time periods (23:00 – 07:00 hours).

We would consider the measured levels to be reasonable, taking into account the location of the measurement position and the dominant nearby noise sources.

Due to the nature of the unmanned noise survey, we are unable to comment on the exact noise climate throughout the entire survey period, however, at the beginning and end of the survey period, the daytime noise climate at the measurement position was noted to be dominated by road traffic noise emanating from the M4 motorway.

6.0 Plant Noise Emissions

This section presents our assessment and calculations of noise emissions from the proposed generator, in relation to the Reading Borough Council requirements.

6.1 Noise Limit

Based on the measured background noise levels and the Reading Borough Council requirements, the external plant noise limit **56 dB $L_{Ar, Tr}$** during daytime periods (07:00 – 23:00 hours) and **38 dB $L_{Ar, Tr}$** during night-time periods (23:00 – 07:00 hours)

The noise limit is to be achieved at a distance of 1m from the nearest noise sensitive property.

6.2 Proposed Plant

A packaged generator is proposed to be located in a hit-and-miss timber fenced enclosure near the western corner of the Verizon site, approximately 240m from the residential properties, as indicated on Figure 2.1.

The manufacturer's noise data for the generator states a sound pressure level of 76 dB L_{pA} at 1m.

The generator will operate during power outages and for periodic testing.

6.3 Nearest Noise Sensitive Properties

We have considered the nearest noise sensitive properties to be the residential properties located along Hartley Court Road, to the south-west of the M4 motorway, at a distance of approximately 240m from the proposed generator location.

There will be no line of sight between the generator and the nearest noise sensitive properties, therefore our calculations have included a minimum level of 5 dB screening attenuation.

6.4 Plant Noise Predictions

Our plant noise emission calculations are presented in Table 6.1.

Table 6.1 Plant Noise Calculations

Element	Level (L_{pA} dB)	
Generator Sound Pressure Level at 1m	76	
Distance Attenuation	-36	
Screening Attenuation	-5	
Predicted Sound Pressure Level at Nearest Noise Sensitive Properties	35	
Noise Limit	56 Daytime	38 Night-time

It can be seen that the predicted noise level associated with the proposed generator does not exceed the proposed noise limits during daytime or night-time periods and is therefore predicted to comply with the Reading Borough Council requirements.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
L_{A90} (15 min)	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15 minute period

Appendix B – Time History Graph

