FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

Appendix 10

Noise and Vibration

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APPENDIX 10.1

Glossary of Acoustic Terminology

Ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
Background noise	The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$).
Broadband	Sounds that contain energy distributed across a wide range of frequencies.
dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micropascals (20 μPa).
Free-field	These are conditions in which the radiation from sound sources is unaffected by the presence of any reflecting boundaries or the source itself. In practice, it is a field in which the effects of the boundaries are negligible over the frequency range of interest. In environmental noise, true free-field measurement conditions are seldom achieved and generally the microphone will be positioned at a height between 1.2 and 1.5 metres above ground level. To minimise the influence of reflections, measurements are generally made at least 3.5 metres from any reflecting surface other than the ground.
Hertz (Hz)	The unit of sound frequency in cycles per second.
Impulsive	A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.
L_{Aeq}	The average level recorded over the sampling period. The closer the L_{Aeq} value is to either the L_{A10} or L_{A90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background.

L_{A10}	Refers to those A-rated noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period. It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of traffic.
L_{A90}	Refers to those A-rated noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to estimate a background level.
Noise	Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise.
Noise Sensitive Location (NSL)	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other installation/facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Octave band	A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards.
Sound Pressure Level	Sound pressure refers to the fluctuations in air pressure caused by the passage of a sound wave. It may be expressed in terms of sound pressure level at a point, defined as: $$Lp = 20log\frac{P}{P_0}\text{dB}$$ Where: P is the sound pressure; P_0 is a reference pressure for propagation of sound in air and has a value of $2x10^{-5}$ Pa.

Sound Power Level (Lw)

The logarithmic measure of sound power in comparison to a referenced sound intensity level of one picowatt (1pW) per m^2, defined as:

$$Lw = 10log\frac{P}{P_0}\text{dB}$$

Where: p is the rms value of sound power in pascals; and P_0 is 1 pW.

Tonal

Sounds which cover a range of only a few Hz which contains a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.

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APPENDIX 10.2

Noise Monitoring Equipment Calibration Certificates

e-mail: calibration@svantek.com.pl Tel.: +48 22 51 88 322 www.svantek.com

SVANTEK

Calibration Laboratory
SVANTEK
04-872 Warsaw, ul. Strzygłowska 81
POLAND

PCA Polskie Centrum Akredytacji >o< Wzorcowanie
AP 146

Calibration laboratory accredited by
Polish Center for Accreditation, a signatory to EA MLA and ILAC MRA
that include recognition of calibration certificates
Accreditation No AP 146

ilac-MRA

CALIBRATION CERTIFICATE

Date of issue: 21st November, 2024 **Certificate No:** 00096926/02/2024 **Page:** 1/6

OBJECT OF CALIBRATION	Noise monitoring station type SV 307A, number 119173, manufacturer SVANTEK with microphone type ST 30Av2, number 132625, manufacturer SVANTEK.
APPLICANT	Fehily Timoney Unit 3/4, Northwood House, Northwood Cres Nortwood Ave, Santry Demesne D09 X899 Dublin 9
PLACE OF CALIBRATION	Calibration Laboratory SVANTEK 04-872 Warsaw, ul. Strzygłowska 81
CALIBRATION METHOD	Method described in instruction IN-02 "Calibration of the sound level meter", issue number 15 date 23.08.2019, written on the basis of international standard EN IEC 61672-3:2013 Electroacoustics. Part 3: Periodic tests.
ENVIRONMENTAL CONDITIONS	Temperature: (21,8 ÷ 21,9) °C Ambient pressure: (98,6 ÷ 98,7) kPa Relative humidity: (49 ÷ 52) %
DATE OF CALIBRATION	21st November, 2024
TRACEABILITY	This certificate is issued under the agreement EA MLA in the field of calibration and provides traceability of measurement results to the standards maintained in the Central Office of Measures.
CALIBRATION RESULTS	The results apply only to the calibrated object and are given on pages 2 ÷ 6 of this certificate including measurement uncertainty.
UNCERTAINTY OF MEASUREMENTS	Uncertainty of measurement has been evaluated in compliance with EA-4/02 M:2022. The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor $k = 2$.

Laboratorium Wzorcujące AP 146

Technical and Quality Manager
Anna Domańska, M. Sc.

e-mail: calibration@svantek.com.pl Tel.: +48 22 51 88 322 www.svantek.com

SVANTEK

Calibration Laboratory
SVANTEK
04-872 Warsaw, ul. Strzygłowska 81
POLAND

Calibration laboratory accredited by
Polish Center for Accreditation, a signatory to EA MLA and ILAC MRA
that include recognition of calibration certificates
Accreditation No AP 146

PCA Polskie Centrum Akredytacji >o< Wzorcowanie
AP 146

ilac-MRA

CALIBRATION CERTIFICATE

Date of issue: 25th November, 2024 **Certificate No:** 00096928/02/2024 **Page:** 1/6

OBJECT OF CALIBRATION	Noise monitoring station type SV 307A, number 119092, manufacturer SVANTEK with microphone type ST 30Av3, number 125153, manufacturer SVANTEK.
APPLICANT	Fehily Timoney Unit 3/4, Northwood House, Northwood Cres Nortwood Ave, Santry Demesne D09 X899 Dublin 9
PLACE OF CALIBRATION	Calibration Laboratory SVANTEK 04-872 Warsaw, ul. Strzygłowska 81
CALIBRATION METHOD	Method described in instruction IN-02 "Calibration of the sound level meter", issue number 15 date 23.08.2019, written on the basis of international standard EN IEC 61672-3:2013 Electroacoustics. Part 3: Periodic tests.
ENVIRONMENTAL CONDITIONS	Temperature: (21,2 ÷ 21,5) °C Ambient pressure: (98,6 ÷ 98,8) kPa Relative humidity: (39 ÷ 45) %
DATE OF CALIBRATION	22nd November, 2024
TRACEABILITY	This certificate is issued under the agreement EA MLA in the field of calibration and provides traceability of measurement results to the standards maintained in the Central Office of Measures.
CALIBRATION RESULTS	The results apply only to the calibrated object and are given on pages 2 ÷ 6 of this certificate including measurement uncertainty.
UNCERTAINTY OF MEASUREMENTS	Uncertainty of measurement has been evaluated in compliance with EA-4/02 M:2022. The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor $k = 2$.

Laboratorium Akredytowane AP 146

Head of the Laboratory
Andrzej Podgórski, Ph. D.

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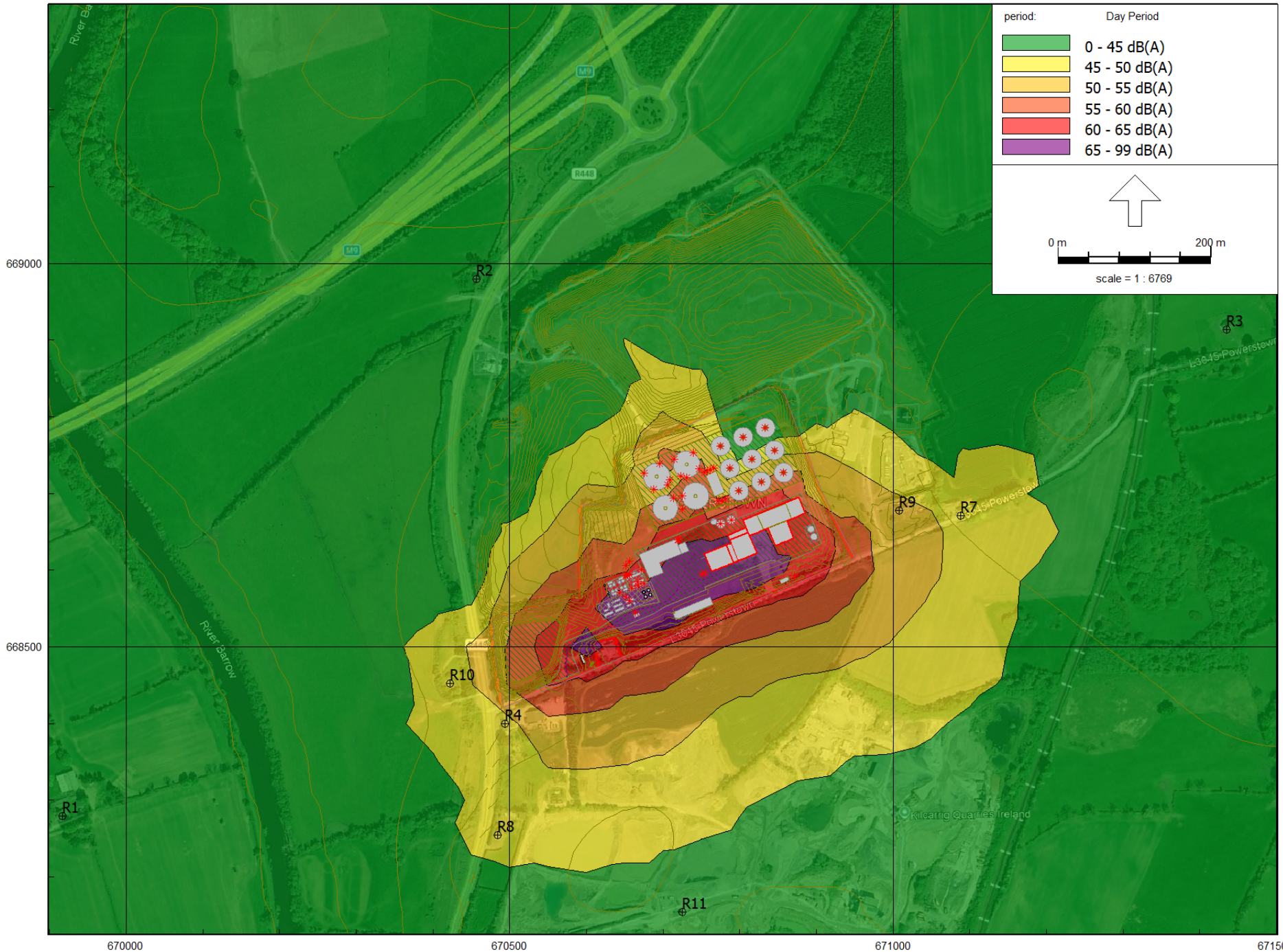
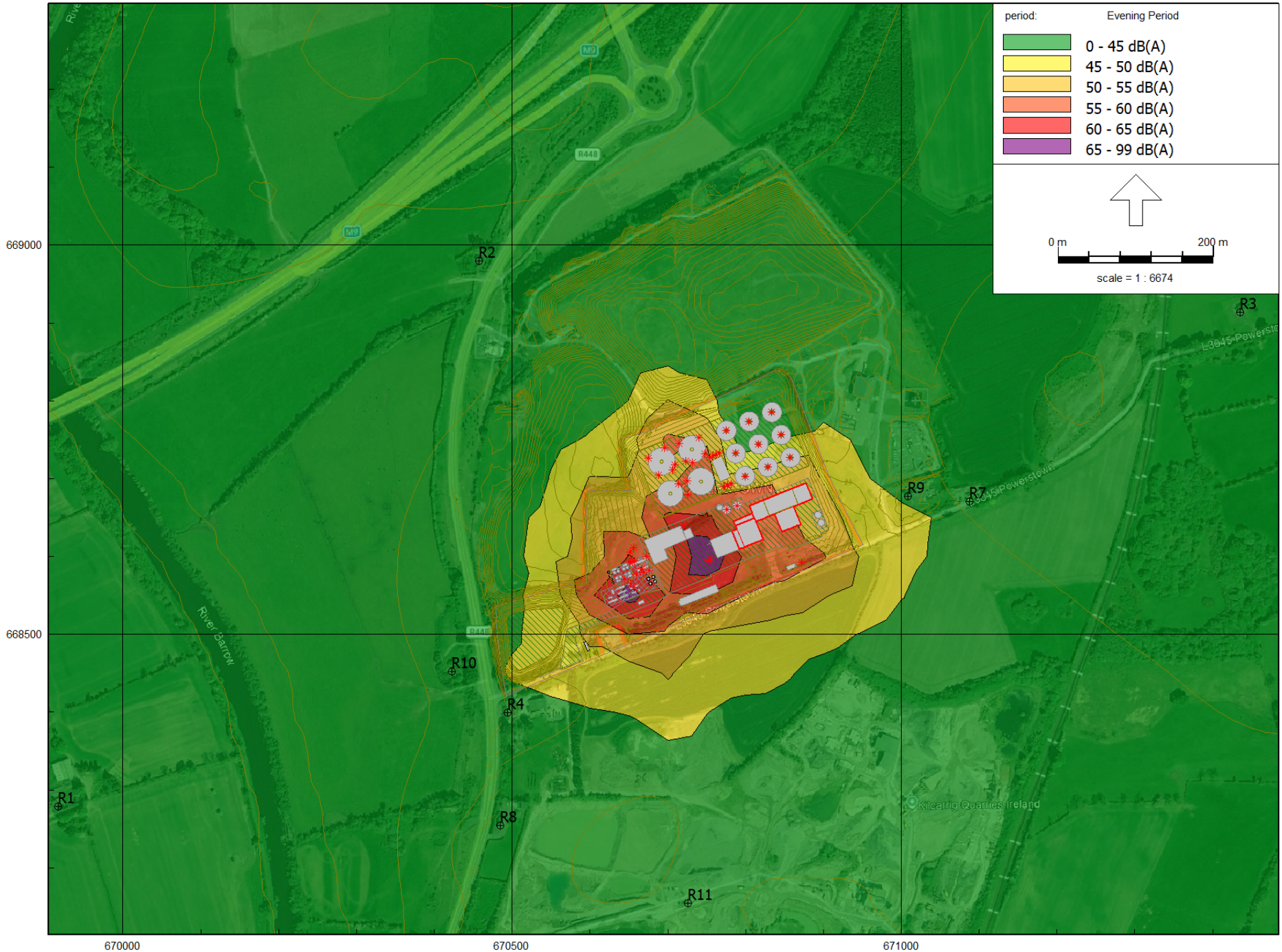
APPENDIX 10.3

Noise Model Contours



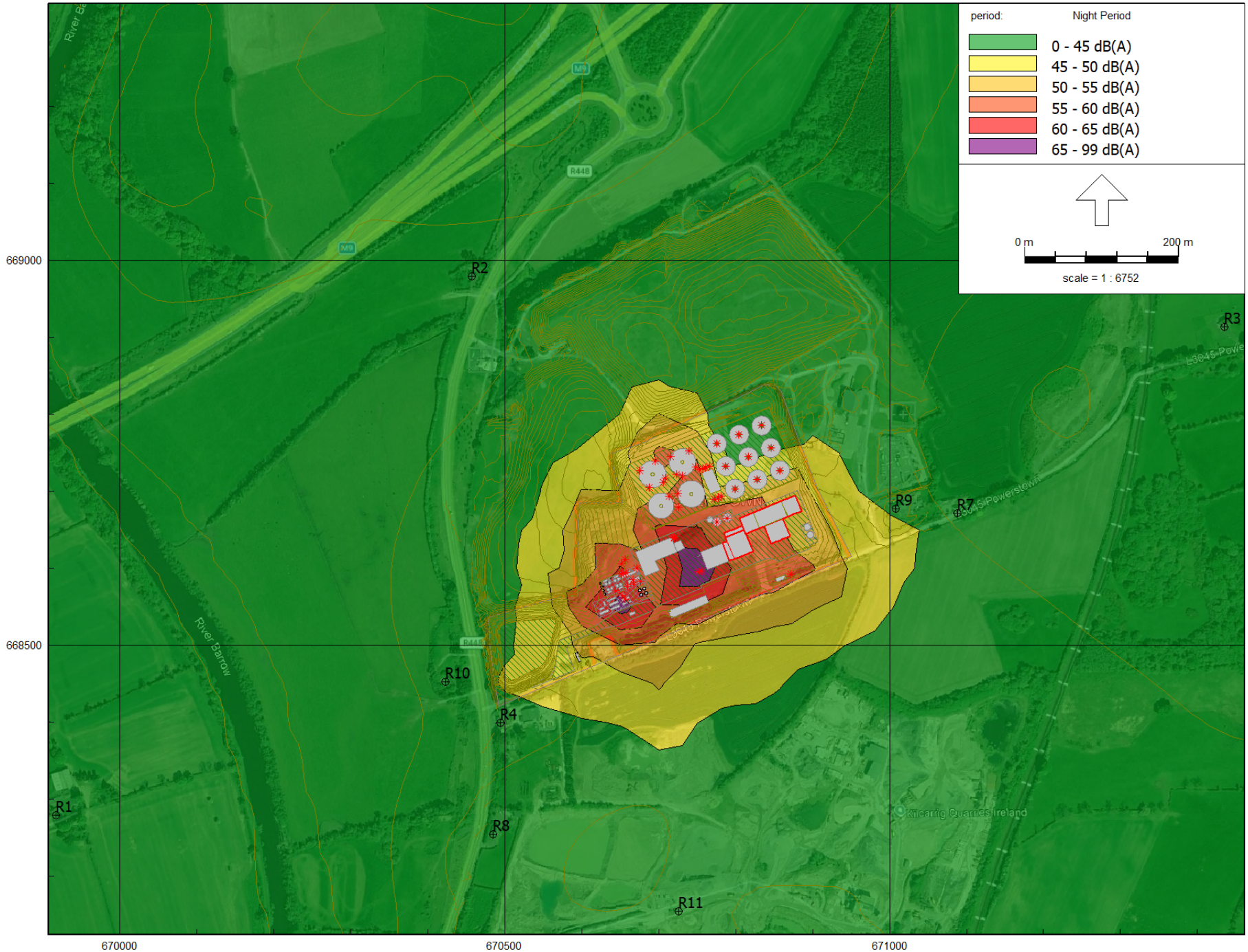
Operational Noise Model Daytime

Fehily Timoney & Company, Ireland



Operational Noise Model Evening

Fehily Timoney & Company, Ireland


period:
Night Period
0 - 45 dB(A)
45 - 50 dB(A)
50 - 55 dB(A)
55 - 60 dB(A)
60 - 65 dB(A)
65 - 99 dB(A)
0 m
200 m
scale = 1 : 6752
669000
668500
670000
670500
671000
R1
R2
R3
R4
R7
R8
R9
R10
R11
River Barrow
M9
R448
L3045-Powerstown
Kilcarrig Quarries Ireland

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www.fehilytimoney.ie