Noise Impact Assessment

Site: Davy Way, Llay
Reference: 51-173-R1-2
Date: May 24



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EXECUTIVE SUMMARY

Site Address	Davy Way, Llay LL12 0PG
National Grid Reference	E 332625, N 356748.
Proposed Development	Proposed commercial development comprising 11,613 sqm GEA along with associated infrastructure and works, including estate roads, yards, parking, footpaths, internal hard and soft landscaping and drainage works.
Surveys Completed	E3P have undertaken an unattended background and ambient sound survey in a position considered representative of the closest existing receptors over a full weekday and weekend time period.
Assessments Completed	A 3D noise model has been constructed to assess potential commercial sound impact associated with the development. The model has been used to predict the Rating Level at the receptors which has been compared with the lowest typical background sound level, accounting for any acoustic characteristics associated with the sound in accordance with BS 4142:2014+A1:2019.
Mitigation Recommendations	The assessment determined that the predicted rating levels would fall well below the existing typical measured background sound level, during daytime and night-time periods, at all receptors. As such, no adverse impact is predicted, and no mitigation measures are required.
Conclusion and Discussion	This assessment has shown that no adverse impact is predicted during the day and night at the receptors due to the proposed scheme. As such, sufficient information has been provided in order to consider potential noise impact and found no adverse impact is expected.

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by RA & CE Platt Limited to undertake a Noise Impact Assessment for an outline planning application for a proposed commercial development on land at Davy Way in Llay, to be referred to hereafter as '*the Site*'.

This assessment looks to determine the key noise sources associated with the proposed development and to assess their impact, if any, upon existing residential receptors and to specify mitigation measures, where required.

1.2. REPORT OBJECTIVES

The objectives of this report are as follows:

- Quantify baseline levels of noise at the closest receptors.
- Consider worst-case operations at the site and use 3D noise modelling to predict noise at receptors.
- Provide advice on mitigation measures.

1.3. PROPOSED DEVELOPMENT

The client is looking to submit an outline planning application for a proposed commercial development comprising 11,613 sqm GEA along with associated infrastructure and works, including estate roads, yards, parking, footpaths, internal hard and soft landscaping and drainage works.

The key source of sound associated with the proposed development will be service yard activity and Heavy Goods Vehicle (HGVs) movements.

An indication of how employment development could come forward on the Site is shown in Figure 1.

Figure 1 Illustrative Layout



SCHEDULE OF ACCOMMODATION

Unit Name	Ground Floor GIA	First Floor (Offices) GIA	Overall GIA	Car Parking (inc. disabled spaces)	Parking Ratio
Unit 01	9,550 ft² / 888 m²	950 ft² / 89 m²	10,500 ft² / 977 m²	20 (2)	1:50
Unit 02	28,000 ft² / 2,602 m²	3,000 ft² / 279 m²	31,000 ft² / 2,881 m²	36 (3)	1:80
Unit 3a	6,490 ft² / 603 m²	1,520 ft² / 142 m²	8,010 ft² / 745 m²	11 (1)	1:67
Unit 3b	4,800 ft² / 446 m²	750 ft² / 70 m²	3,925 ft² / 365 m²	8 (1)	1:45
Unit 3c	4,800 ft² / 446 m²	750 ft² / 70 m²	5,550 ft² / 516 m²	8 (1)	1:64
Unit 3d	4,890 ft² / 455 m²	750 ft² / 70 m²	5,640 ft² / 525 m²	12 (1)	1:43
Unit 04	40,470 ft² / 3,760 m²	4,170 ft² / 388 m²	44,640 ft² / 4,148 m²	63 (3)	1:65
Total Development			109,245 ft² / 10,157 m²	158 (12)	1:64

2. ASSESSMENT METHODOLOGY

2.1. PLANNING POLICY WALES (2018)

Noise can affect people's health and well-being and have a direct impact on wildlife and local amenity. Noise levels provide an indicator of local environmental quality. The objective of a policy for noise is to minimise emissions and reduce ambient noise levels to an acceptable standard. Noise Action Plans, drawn up by the Welsh Ministers in relation to Wales under the Environmental Noise Directive, and the Wales Regulations, aim to prevent and reduce environmental noise where necessary and preserve environmental noise quality where it is good.

Noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to the existing transportation infrastructure to facilitate access, should be designed in such a way as to limit noise levels within and around those developments. Such development should be located away from existing sources of significant noise including air transport and some industrial activities or programmed development such as improved or new roads. Policies should also be designed to ensure, as far as possible, that potentially noisy developments are in areas where noise will not be such an important consideration or where its impact can be minimised.

Noise can be a material planning consideration, for example in proposals to use or develop land near an existing source of noise or where a proposed new development is likely to generate noise. Local planning authorities should make a careful assessment of likely noise levels and have regard to any relevant Noise Action Plan before determining such planning applications and in some circumstances, it will be necessary for a technical noise assessment to be provided by the developer.

Special consideration is required where noise-generating development is likely to affect a protected species, or is proposed in or near statutorily designated areas, including urban 'quiet areas' designated in Noise Action Plans. The effect of noise on the enjoyment of other areas of landscape, wildlife and historic value should also be considered.

2.2. NOISE AND SOUNDSCAPE ACTION PLAN 2018-2023

The noise action plan for Wales has a broader focus than simply controlling the level of noise. It links to the notion of creating appropriate soundscapes, meaning the right acoustic environment in the right time and place. The towns and cities serve us in a variety of ways, and it is believed should therefore contain a variety of soundscapes appropriate to the land use.

The Action Plan draws from information provided in Professional Practice Guidance (ProPG) and the relevant British Standards to recommend that placemaking, soundscapes and good acoustic design are considered and incorporated into the design and development of any new sites. It provides guidance on numerous sources of sound but does not set any guidelines, beyond those given in the British Standards.

It does relate to the European noise indices of the day-evening-night level, L_{den}, and the night level, L_{night}, which are used in the World Health Organisation's Environmental Noise Guidelines for the European Region (2018) but does not go so far as to stipulate the criterion from the guidelines. As such, and following discussions with Wrexham County Borough Council, the assessment that follows will primarily focus on the British Standards.

2.3. BRITISH STANDARD BS 4142: 2014+A1:2019 - METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes.
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

The procedure detailed in the standard compares the measured or predicted specific noise level from any of the above with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is typical.

The specific noise level also acknowledges the reference time intervals depending upon whether the noise source operates during daytime (1-hour) or night-time (15-minute) periods.

There are several 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound level under investigation as follows:

Tonality

- +2 dB: where the tonality is just perceptible.
- +4 dB: where the tonality is clearly perceptible; and
- +6 dB: where the tonality is highly perceptible.

Impulsivity

- +3 dB: where the impulsivity is just perceptible.
- +6 dB: where the impulsivity is clearly perceptible; and
- +9 dB: where the impulsivity is highly perceptible.

Intermittency

- +3dB: where the intermittency is readily distinctive against the acoustic environment.

In addition to the above, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment. BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background sound level can yield the following commentary:

- Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of 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; and
- 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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

3. SURVEY RESULTS

3.1. UNATTENDED BACKGROUND AND AMBIENT SOUND SURVEY

E3P has undertaken an unattended background and ambient sound survey in a position considered representative of the existing surrounding residential receptors. The survey was carried out over the following period:

- 10:00 Thursday 11th April to 07:00 Tuesday 15th April 2024.

The following noise measurement position was chosen for the Background and Ambient Sound Survey:

- Noise Measurement Position 1 (NMP1): Located on the north eastern boundary of the site in a location representative of the surrounding residential receptors. The microphone was installed in free-field conditions and at a height of 1.5 m. The sound climate was dominated by road traffic along the local road network.

Table 1 details the range of measured background sound levels and the statistical median value for each period. The full hourly data is shown in Appendix III and full datasets are available upon request. Levels highlighted in bold represent those to be used in the assessment.

Table 1 Measured background sound levels at NMP1

DATE	ASSESSMENT PERIOD	RANGE OF MEASURED BACKGROUND SOUND LEVELS, $L_{A90,T}$ (dB)	MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
Friday 19th April 2024	Daytime	37.2-53.4	50
	Night-time	39.8-50.3	44
Saturday 20th April 2024	Daytime	36.4-46.1	42
	Night-time	32.2-42.3	35
Sunday 21st April 2024	Daytime	32.6-44.1	**41**
	Night-time	32.0-53.6	**33**
Monday 22nd April 2024	Daytime	35.6-52.8	48
	Night-time	32.2-54.9	36

Weather forecasts were monitored throughout the surveys to ensure no adverse conditions as the location of the Site was not suitable for the installation of an unattended weather station. During the survey, conditions remained dry and wind speeds rarely exceeded 10 mph.

Figure 2 below shows the measurement location.

Figure 2 Noise Measurement Positions



The equipment outlined in Table 2 was used for the noise survey.

Table 2 Noise Measurement Equipment and Calibration Dates

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER & TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
NMP1	Sound Level Meter	Norsonic Nor145	14529152	13th June 2025
	Pre-amplifier	Nor1209	22293	
	Microphone	Nor1227	332220	
	Calibrator	Nor1225	125525208	6th June 2024

The sound level meter was field calibrated on site using the above-mentioned calibrator prior to and after noise measurements were taken. No significant drift was witnessed as noted above. Calibration certificates are available upon request.

4. NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2023 MR2, to determine the impact of noise from the proposed sources of sound. It is assumed that the site can operate 24/7.

The following inputs have been included in the model:

- Proposed Illustrative Masterplan (13361-AEW-SI-XX-DR-A-0005) Rev P9.
- HGV loading/unloading is inputted as point sources at the building openings and as indicated on the site plan. A sound power level of 75 dB is used based on previously measured data for similar operations and extensive experience.
- Car parks and vehicle movement areas are inputted as a parking lot source within the noise model with the number of spaces used twice in any one-hour daytime period and once in any 15 minute night-time period.
- It is assumed that noise within the units would not exceed 80 dB and, as such, any noise break-out would be minimal and negligible compared to the external sources above.
- Fixed plant items are unknown at this stage and, as such, limits are set later in the report.
- Ground elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- Existing buildings have been included in the model and assumed to have a structured façade.
- A reflection order of 1 has been used in all calculations.
- Soft ground proportion is set at 10%.
- Noise levels generated using ISO 9613-1 and ISO 9613-2 "*Acoustics – Attenuation of sound during propagation outdoors*" as incorporated into CadnaA software.

For the BS 4142:2014 assessments, penalties are applied to the specific sound level to provide the rating level. Given the nature of the proposed units within an existing industrial setting with similar and identical sources of noise already audible at the receptors, no corrections are applicable here. As such, the rating level is output from the noise model.

Figures 3 and 4 in the appendix of this report details the rating level during daytime and night-time periods respectively.

4.1. DAYTIME ASSESSMENT – 07:00-23:00

Table 3 details the resultant rating level with external garden areas at each surrounding receptor, with the rating level output from the model. The grid noise map can be seen in Figure 3 of Appendix II.

The lowest median background sound level across the daytime periods has been used for each corresponding receptor, this is to inform a worst-case assessment. Levels correspond to worst case garden noise levels.

In order to protect the sound climate at the receptors an assessment criteria of $L_{A,r} = L_{A90} - 5$ dB.

Table 3 BS 4142: 2014+A1:2019 - Daytime

RECEPTOR	PREDICTED RATING LEVEL, $L_{A,r}$ (dB)	LOWEST MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)	CRITERION, $L_{A,r} = L_{A90} - 5$ dB (dB)	DIFFERENCE +/- (dB)
R1 – North West	28	41	36	-8
R2 – South East	16			-20

As can be seen in Table 3, no exceedances of the assessment criteria has been found. As such, adverse impact is not expected with the proposed scheme in place. No mitigation measures are required.

4.2. NIGHT-TIME ASSESSMENT – 23:00-07:00

Table 4 details the resultant rating level at first floor facades at each surrounding receptor, with the rating level output from the model. The grid noise map can be seen in Figure 4 of Appendix II.

The lowest median background sound level across the night-time periods has been used for each corresponding receptor, this is to inform a worst-case assessment. Levels correspond to worst case garden noise levels.

In order to protect the sound climate at the receptors an assessment criteria of $L_{A,r} = L_{A90} - 5$ dB.

Table 4 BS 4142: 2014+A1:2019 – Night-time

RECEPTOR	PREDICTED RATING LEVEL, $L_{A,r}$ (dB)	LOWEST MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,15mins}$ (dB)	CRITERION, $L_{A,r} = L_{A90} - 5$ dB (dB)	DIFFERENCE +/- (dB)
R1 – North West	26	33	28	-2
R2 – South East	17			-11

As can be seen in Table 4, no exceedances of the assessment criteria has been found. As such, adverse impact is not expected with the proposed scheme in place. No mitigation measures are required.

5. CONCLUSIONS AND DISCUSSION

E3P were commissioned to undertake a Noise Impact Assessment for a proposed development at Davy Way in Llay.

An unattended background and ambient sound survey has been undertaken to be representative of the closest residential receptors to the site.

A 3D noise model has been constructed to assess potential commercial sound impact associated with the proposed scheme.

The model has been used to predict the Rating Level at the receptors which has been compared with the lowest typical background sound level, accounting for any acoustic characteristics associated with the sound in accordance with BS 4142:2014+A1:2019.

The assessment determined that the predicted rating levels would fall well below the existing typical measured background sound level, during daytime and night-time periods, at all receptors. As such, no adverse impact is predicted and no mitigation measures are required.

As such, sufficient information has been provided in order to consider potential noise impact and found no adverse impact is expected.

END OF REPORT

APPENDIX I
LIMITATIONS



GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.

6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.

7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

9. E3P does not warrant work/data undertaken/provided by others.

APPENDIX II
GLOSSARY



NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the "A"-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 5 Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain

ACOUSTIC TERMINOLOGY

Table 6 Terminology

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq, T	LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
LAmax	LAmax is the maximum A-weighted sound pressure level recorded over the period stated. LAmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L10 and L90	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L90 is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

APPENDIX III
MEASURED SOUND PRESSURE LEVELS



Table 7 Measured Sound Pressure Levels

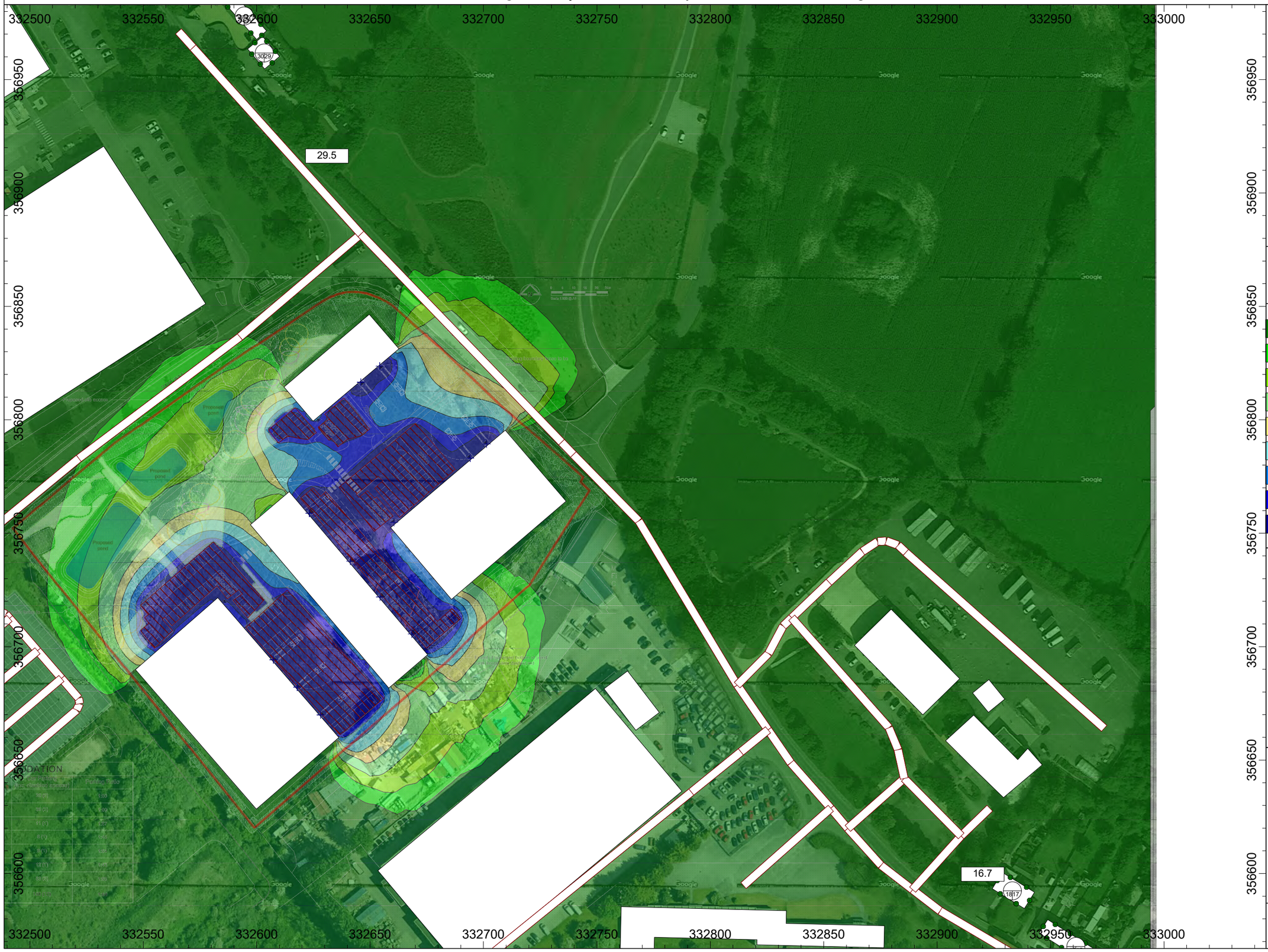
PERIOD START	MEASURED AMBIENT SOUND PRESSURE LEVEL, $L_{Aeq,1hr}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
19/04/2024 11:00	58.3	51.6
19/04/2024 12:00	58.6	52.9
19/04/2024 13:00	59.3	52.1
19/04/2024 14:00	58.9	53.2
19/04/2024 15:00	59.1	53.4
19/04/2024 16:00	58.3	52.0
19/04/2024 17:00	56.3	49.2
19/04/2024 18:00	54.5	44.0
19/04/2024 19:00	52.6	41.3
19/04/2024 20:00	50.8	38.2
19/04/2024 21:00	49.6	37.2
19/04/2024 22:00	48.9	39.4
19/04/2024 23:00	46.2	40.8
20/04/2024 00:00	46.2	41.0
20/04/2024 01:00	46.6	42.5
20/04/2024 02:00	47.6	42.6
20/04/2024 03:00	48.5	43.0
20/04/2024 04:00	54.2	46.7
20/04/2024 05:00	55.6	48.8
20/04/2024 06:00	54.8	44.8
20/04/2024 07:00	53.1	42.0
20/04/2024 08:00	53.2	41.6
20/04/2024 09:00	54.2	42.3
20/04/2024 10:00	56.4	42.4
20/04/2024 11:00	55.0	42.2
20/04/2024 12:00	53.1	42.8
20/04/2024 13:00	53.5	43.9
20/04/2024 14:00	54.8	44.8
20/04/2024 15:00	54.0	45.3
20/04/2024 16:00	55.5	46.1
20/04/2024 17:00	54.6	44.4
20/04/2024 18:00	52.8	41.1
20/04/2024 19:00	50.6	38.7
20/04/2024 20:00	49.1	37.9
20/04/2024 21:00	48.9	37.1
20/04/2024 22:00	48.4	36.4
20/04/2024 23:00	46.1	35.8
21/04/2024 00:00	45.5	35.2
21/04/2024 01:00	44.6	35.0
21/04/2024 02:00	44.7	33.4
21/04/2024 03:00	43.7	32.6
21/04/2024 04:00	53.0	37.3
21/04/2024 05:00	52.2	38.9
21/04/2024 06:00	50.2	39.3
21/04/2024 07:00	52.9	38.9
21/04/2024 08:00	54.0	40.0
21/04/2024 09:00	52.2	40.9
21/04/2024 10:00	52.6	41.4
21/04/2024 11:00	53.8	42.4

PERIOD START	MEASURED AMBIENT SOUND PRESSURE LEVEL, $L_{Aeq,1hr}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
21/04/2024 12:00	52.0	41.5
21/04/2024 13:00	52.5	41.9
21/04/2024 14:00	52.6	42.5
21/04/2024 15:00	52.4	41.9
21/04/2024 16:00	52.8	44.1
21/04/2024 17:00	57.0	43.2
21/04/2024 18:00	51.2	40.5
21/04/2024 19:00	52.6	38.8
21/04/2024 20:00	50.3	36.9
21/04/2024 21:00	48.3	34.1
21/04/2024 22:00	48.3	32.6
21/04/2024 23:00	43.0	32.4
22/04/2024 00:00	43.2	32.8
22/04/2024 01:00	40.5	32.3
22/04/2024 02:00	41.8	32.3
22/04/2024 03:00	46.0	33.5
22/04/2024 04:00	56.2	41.8
22/04/2024 05:00	56.5	44.8
22/04/2024 06:00	58.7	51.5
22/04/2024 07:00	58.8	52.8
22/04/2024 08:00	57.2	49.1
22/04/2024 09:00	56.5	48.8
22/04/2024 10:00	55.7	48.3
22/04/2024 11:00	55.9	47.8
22/04/2024 12:00	57.1	48.0
22/04/2024 13:00	57.2	48.7
22/04/2024 14:00	57.8	50.1
22/04/2024 15:00	58.3	51.5
22/04/2024 16:00	58.0	52.5
22/04/2024 17:00	55.4	45.3
22/04/2024 18:00	53.4	43.6
22/04/2024 19:00	51.8	41.7
22/04/2024 20:00	50.1	37.8
22/04/2024 21:00	48.8	36.8
22/04/2024 22:00	45.8	35.6
22/04/2024 23:00	44.9	35.8
23/04/2024 00:00	45.3	35.0
23/04/2024 01:00	40.2	32.8
23/04/2024 02:00	42.9	33.1
23/04/2024 03:00	47.1	33.7
23/04/2024 04:00	53.2	40.0
23/04/2024 05:00	56.3	43.6
23/04/2024 06:00	59.4	50.4
23/04/2024 07:00	60.4	52.3
23/04/2024 08:00	56.4	46.9
23/04/2024 09:00	55.6	45.5
23/04/2024 10:00	57.0	45.7

APPENDIX IV
FIGURES



Figure 3 - Daytime Grid Noise Map - Calculation at 1.5m above ground level



Project:
Davy Way, Llay

Project-No:
51-173

Client:
RA & CE Platt Limited

Rating Level, LA,r (dB)

- ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ...

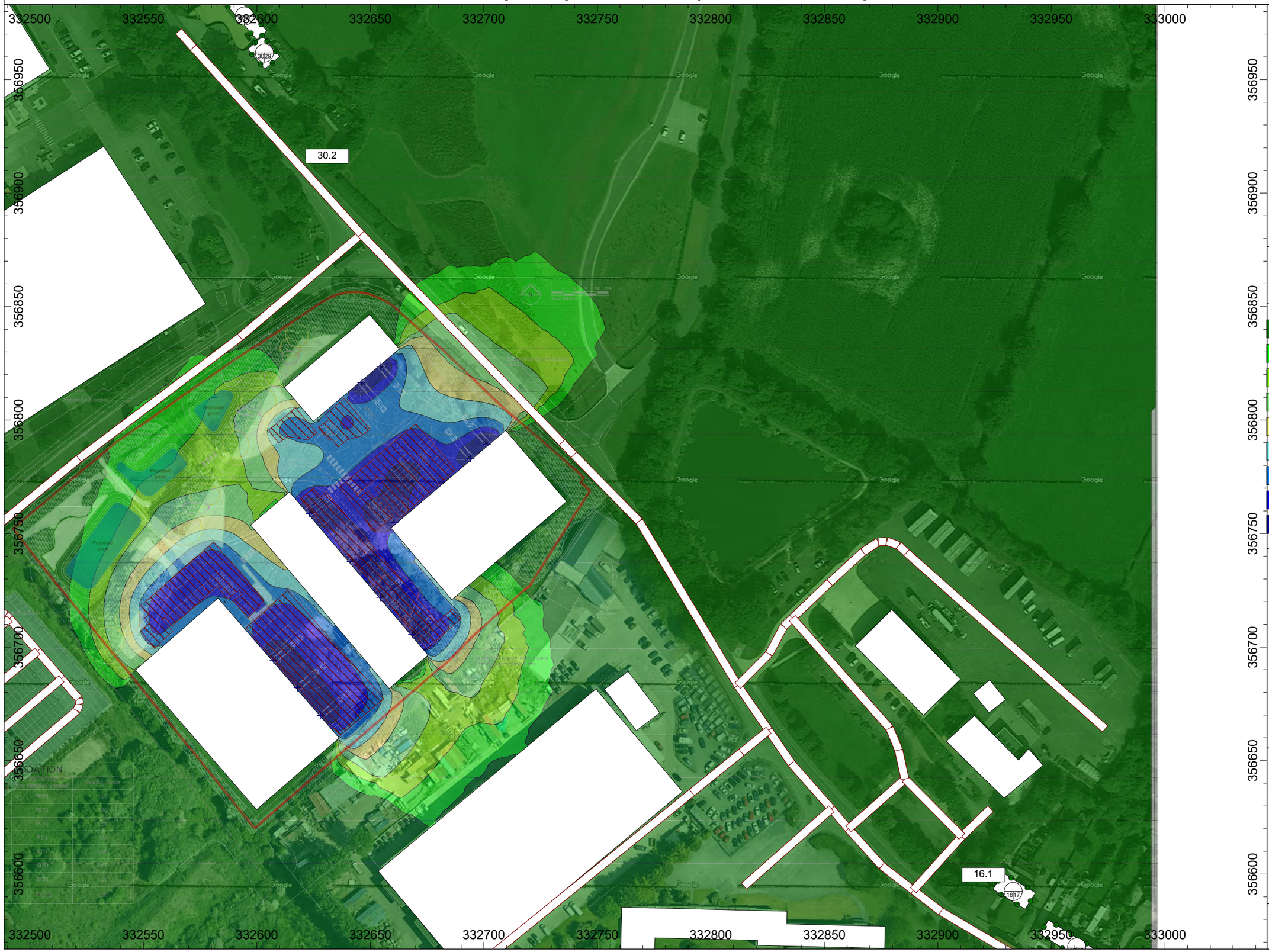
Noise Map Objects

- Point Source
- Road
- Parking Lot
- Building
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 23/04/2024

Figure 4 - Night-time Grid Noise Map - Calculation at 4 m above ground level



Project:
Davy Way, Llay

Project-No:
51-173

Client:
RA & CE Platt Limited

Rating Level, LA,r (dB)

- ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ...

Noise Map Objects

- Point Source
- Road
- Parking Lot
- Building
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 23/04/2024