

Dunbia Llanybydder

Llanybydder, Carmarthenshire



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Noise Report

July 2021



Control Sheet

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This report is produced solely for the benefit of Dunbia Llanybydder and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise. This report refers, within the limitations stated, to the condition of the site at Llanybydder, Carmarthenshire at the time of the assessment. No warranty is given as to the possibility of future changes in the condition of the site.

Dunbia Llanybydder

Llanybydder, Carmarthenshire

Noise Report

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1.0 Introduction

Dunbia Llanybydder are extending the existing abattoir and processing facility at Llanybydder.

OES were commissioned by Dunbia Llanybydder to undertake an assessment of noise associated with the extension.

The assessment follows the methodology set out in British Standard 4142:2014 Method for Rating and Assessing Industrial and Commercial Sound. This is considered to be the most relevant piece of guidance for the situation and the assessment is described in the following sections.

1.1 Assessment Methodology

BS4142 presents a method for determining the likelihood of complaints arising from noise levels associated with fixed sources. The procedure set out in the standard involves the comparison of two noise levels at a noise sensitive location, these are,

<i>Rating Noise Level:</i> $L_{A,T,r}$	The level of noise produced by the plant equipment when it has been corrected for tonal and temporal components.
<i>Background Noise Level:</i>	The background noise measured as an L_{A90} (the noise exceeded for 90% of the time) when the plant equipment is not operating.

The assessment periods defined by BS4142 are 1-hour periods during the daytime hours between 07:00 and 23:00, and 15-minute periods at night between 23:00 and 07:00.

If the plant noise has any distinguishing characteristics such as tonal (e.g., whine, hiss, hum etc) or impulsive components (e.g. bangs, clicks, thumps etc), or if the noise is irregular enough to attract attention, then a penalty is applied depending on the severity of the characteristic.

To assess the likelihood of complaints, the difference between the *Rating Level* and the *Background Sound Level* is calculated. A simple comparison of these levels provides the outcome of the assessment as shown in Table 2.

TABLE 1: SUMMARY OF BS4142 ACOUSTIC CHARACTERISTIC PENALTIES

Acoustically Distinguishing Characteristic	Size of Penalty	Assessment Methodologies
Tonality	0 dB to +6 dB	Subjective Method 1/3 Octave Method Reference Method
Impulsivity	Up to +9 dB	Subjective Method Reference Method
Other sound characteristics	3 dB	Subjective Method
Intermittency	3 dB	Subjective Method

TABLE 2: SUMMARY OF BS4142:2014 ASSESSMENT METHOD

Level Difference (Rating – Background)dB(A)	Assessment Conclusion
Around +10 or more	Likely to be an indication of a significant adverse impact, depending on the context
Around +5	Likely to be an indication of an adverse impact, depending on the context
Zero or less	Indication of the specific sound source having a low impact, depending on the context

The assessment conclusions are all subject to taking into consideration the context of the ambient sound at the site, the character of the specific sound and the sensitivity of the receptors.

Where the assessment takes place prior to the specific source of noise being installed, it is permitted to predict the noise level at the noise sensitive location.

1.2 Other Design Criteria

The document entitled Planning Policy Wales (PPW) sets out the Welsh Assembly's planning policies for Wales and how these are expected to be applied.

PPW is supplemented by a series of Technical Advice Notes (TANs). PPW does not contain quantitative acoustic criteria but summarises national planning policy advice and articulates the Assembly's vision of sustainable development. It provides a framework within which councils can provide their own local plans, which reflect the needs and priorities of their communities.

In respect of noise and vibration, PPW states that planning policies and decisions should aim to:

- *ensure, as far as is practicable, that noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to existing transportation infrastructure to facilitate access, are designed in such a way as to limit noise levels within and around those developments.*
- *ensure, as far as possible, that potentially noisy developments are located in areas where noise will not be such an important consideration or where its impact can be minimised.*
- *adopt policies to prevent potentially noisy developments in areas which have remained relatively undisturbed by noise;*
- *have regard to any relevant Noise Action Plan, including the need to protect urban 'quiet areas' against an increase in noise.*

With regards to 'adverse effects' and 'significant adverse effects', PPW refers to the Technical Advice Note 11 (TAN 11).

Technical Advice Note 11 (TAN 11)

TAN 11 seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The advice note applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long-term vision of the Welsh Assembly's noise policies and outlines some of the main considerations which local planning authorities should take into account when

determining planning applications for development which will either generate noise or be exposed to existing noise sources.

This long-term vision is divided into three key sections:

- *Noise-generating development*
- *Noise-sensitive development*
- Measures to mitigate the impact of noise

The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

Other Guidance

In addition, we have also considered BS8233:2014 and the World Health Organisation guidance for noise levels which offer good external amenity. A good standard of external amenity is considered to be 55 dB(A) LAeq and below.

Furthermore, we would expect neighbouring dwellings to maintain reasonable internal noise levels with windows open for ventilation. The BS8233 guidance for reasonable internal noise during the day within a dwelling is 40 dB(A) LAeq. We would normally expect 10-15 dB(A) reduction through an open window and hence we would not expect the noise level from new plant equipment to exceed 50 dB(A)

LAeq measured 1 m from the external building façade where there is an opening window.

The most onerous of the available criteria are expected to apply.

2.0 Assessment Methodology

2.1 Application of Standards and Guidance

The relevant values taken from the available guidance are summarised in Table 3 below.

TABLE 3: SUMMARY OF GUIDELINE OUTDOOR NOISE LEVELS

Situation	Criterion Value	Outcome
Continuous noise, outdoors during daytime and evening in amenity areas	55 dB(A) $L_{Aeq,T}$	Few people seriously annoyed
Continuous noise, outdoors at night outside opening windows	45 dB(A) $L_{Aeq,T}$	To avoid sleep disturbance inside with the windows open
Individual noise events, outdoors at night outside opening windows	60 dB(A) L_{AFMax}	To avoid sleep disturbance inside with the windows open
Plant Noise associated with the building at nearest neighbour	No greater than pre-development background sound levels	Low impact due to noise, subject to context.

2.2 Existing Background Sound Level

There are no restrictions on the minimum duration of measurement of the Background Sound Level in BS4142, albeit to say they should represent the “Typical” background level when the new equipment will be in operation. We understand that the equipment will operate at 100% duty cycle during the daytime period only (i.e. 7am to 11pm).

A survey of the pre-development noise environment was undertaken in locations considered representative of the pre-development Background Sound Levels at the nearest noise sensitive receptors, in free-field conditions.

The background and ambient sounds at site (location 1) are dominated by passing vehicular traffic on the A485, the existing noise from the site and birdsong.

The background and ambient sound at the nearest neighbour (location 2) are dominated by passing vehicular traffic on the A485.

A summary of the overall sound levels measured is provided in Table 4.

TABLE 4: SUMMARY OF MEASURED NOISE LEVELS (FREE-FIELD)

Location	Day Time Period		Night-Time Period	
	LAeq,1hr	LA90,1hr	LAeq,15min	LA90,15min
Survey Location No 1	59	46	57	45
Survey Location No 2	66	38	--	--

It was not possible to site equipment securely for an extended survey off-site and therefore we installed our equipment securely on site in the best practicable location.

We also carried out a 30-minute measurement at the nearest neighbour. The results indicate the background levels at Location No 2, some 250 m to the North East from Location No. 1, are 15 dB lower than the measurements obtained at location 1 during the two measurement periods. The measurement periods are defined, in this instance, as the last 1 hr of the 24-hour survey and the next 30-minute period immediately following the 24-hour survey.

We therefore propose applying this offset to our measured data at Location No. 1. In this instance, the night-time measurements represent the worst-case scenario.

For our assessment at the nearest noise sensitive neighbour, therefore, the lowest measured *Background Sound Level* of 30 dB(A) LA90,T has been used to represent the worst case scenario in a free field over a 24hr period and 33 dB(A) between the hours of 05:00 – 23:00.

We have assessed the uncertainty associated with the measurement of the background noise level based on the measurement tolerance of a Class 1 sound level meter which conforms with IEC61672-1:2002. The largest calculated uncertainty based on the frequency spectrum of the measured background level is ± 1 dB(A). We have included the uncertainty in our assessment.

3.0 Assessment of Noise Impact

The equipment selected is similar in type and operation the equipment already in use at the site and will be accommodated within the proposed extension, sited to the south of the eastern end of the building.

Information on equipment type and rating has been provided by the site as follows:

Equipment Type	Sound Power Level
Paunch Press @1m	70 dB
Screw Press @ 1m	70 dB
Compressor @ 1m	79 dB
Blood Tank @ 1m	64

The proposed locations of the equipment are indicated on a marked-up plan included in the appendix to this letter.

We have used 1 No assessment locations as follows:

1. *Receiver No 1. Most exposed property to the North East of the proposed development. The property is a detached dwelling accessed off the A485 although the address is unknown. It is located approximately 250 m to the North East of the proposed plant equipment.*

The assessment locations are at 1 m from the façade of the receiver buildings.

We have added 3 dB to the measured data to represent the level expected at façade level, in accordance with the guidance set out in BS4142 and the ANC guidelines.

To give an idea of the distances involved, we have used an on-line mapping tool and drawings to estimate the distance between the assessment location and the proposed plant equipment location. The distance between the assessment location No 1 and the plant area is approximately 250 m.

We have not included a correction for temporal or tonal components on the basis that the equipment is new and will operate efficiently without tonal or impulsive components. Note that, should it transpire that the equipment has an undesirable acoustic characteristic, a penalty would be applied as described in BS4142.

The calculated maximum Rating Level of any proposed equipment at the assessment locations, at 1 m from the façade to achieve the guidance requirements, are summarised in Table 5.

TABLE 5: SUMMARY OF PREDICTED RATING LEVEL AT RECEIVERS (FAÇADE LEVEL)

Receiver Location	Period	Background Sound Level at façade dB(A) LA90	Maximum Rating Level at façade dB(A) LAr,Tr	Distance to Nearest Source (m)	Max Specific Sound Level at 1m dB(A)	Approx. Max TotalSound Power Level dB LWA
1	Operational 05:00 – 23:00	35	35	250	83	97

2	24-hr Operation	32	32	250	80	94
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The total sound power level indicated is an approximate level based on a correction between sound power level and pressure level at 1 m of +14 dB. This is an empirical relationship which is based on the typical dimensions of roof mounted plant and follows the principles of ISO 3744.

On this basis, based on the equipment selected, no mitigation is required to ensure that no adverse impacts arise at the closest affected buildings.

We have based our assessment on achieving a rating noise level that is no greater than the pre-development background noise achieving the BS4142 outcome of "a low impact depending on the context"

4.0 Conclusions

The context of the site is that of a large industrial premise within a wider rural area, with frequent vehicle movements on site and on the passing A485.

The proposed units are commercial in nature and will operate in a continuous manner, much like the daytime road traffic noise and other existing plant currently affecting the area.

We are of the opinion that the new sources would not be noticeable as out of character with the ambient noise in this area and no adjustment to the targets in the standard are necessary.

4.1 Effects of Uncertainty

Where available we have included uncertainty in our calculations. We have included the uncertainty in the measured values of *Background Sound Level*. There are other sources of uncertainty in our assessment, such as, tolerances to be applied to manufacturers data, the variation in *Background Sound Level* on a different day, and the calculation tolerances for the propagation model.

The ISO propagation model used is stated to give results that are “on average correct” although tolerances are given for individual octave bands. We therefore expect uncertainty to have only a small influence on the outcome.

The assessment is based on a worst-case scenario with all equipment operating.

The survey of the *Background Sound Level* has been undertaken in full accordance with BS7445 and ANC Green Book Guidance using laboratory calibrated measurement equipment. These precautions will minimise sources of uncertainty in the survey data. The current site conditions exhibit a low variability in the ambient and background sound levels and our data is considered to be a good representation of the site.

We do not expect the effects of uncertainty to have a significant effect on the outcome of our assessment.

4.2 Assessment Conclusion

We have undertaken an assessment of the proposed new fixed plant associated with the extension to the factory.

We have considered local planning policy and the methodology set out in BS4142:2014.

We have assessed purpose equipment in terms of potential for adverse impact at closest sensitive receptors and conclude that the installation of mechanical plant will not give rise to adverse impacts on the Nosie environment.

Attachment 1

Survey Details

Attachment 1 – SURVEY DETAILS...

Address:

Dunbia, Llanybydder, SA40 9QE

Date

14th – 15th April 2021

Measurement Location 1 – See Figure 2.

In a representative location of the nearest noise sensitive receiver to the North East of the development. The measurement was taken at the boundary of the site at ground level approx. 2.5 m above existing floor level. Free-Field.

Measurement Location 1

In a representative location of the nearest noise sensitive receiver to the North of the site located approx. 90 m to the North of the receiver. The measurement was taken at the layby adjacent to the road approx. 1.5 m above ground level. Free-Field.

FIGURE 1: PHOTOGRAPH OF MEASUREMENT LOCATION 1 (LOOKING APPROX. TO THE NORTH EAST)



Personnel

The survey was set up and managed by Ashley Punter of Red Twin Limited.

Equipment

Brüel & Kjær handheld analyser Type 2250, serial No 2685348 with Type 4189 microphone, serial No 2676519. The microphone was fitted with a Type UA-1404 windshield and the equipment calibration was checked using a Brüel & Kjær Type 4231 acoustic calibrator serial 3012516 before and after the measurements. A drift in sensitivity of -0.04 dB was observed during the survey. This is not considered significant, and no corrections have been made to the measured data. The B&K meter and microphone was laboratory calibrated on 05.06.2020, and the calibrator on 27.04.2020. Calibration certificates are available on request.

Weather

The prevailing weather condition throughout the survey period was satisfactory for noise monitoring, being dry, warm and with little to moderate breeze. Wind speed, although not recorded, were much less than 5 m s⁻¹ throughout the survey period.

Results

The survey measurements are summarised in Table 6.

TABLE 6: MEASURED NOISE DATA – LOCATIONS 1 & 2 (FREE-FIELD)

Location	Start Time	Duration	Parameter dB(A)		
			LAMax	LAeq	LA90
1	12:34:58	01:00:00	80.2	57.8	50.2
	13:34:58	01:00:00	78.0	55.4	49.0
	14:34:58	01:00:00	77.6	55.3	49.9
	15:34:58	01:00:00	71.6	54.5	50.3
	16:34:58	01:00:00	74.7	55.7	49.9
	17:34:58	01:00:00	72.5	54.7	49.8
	18:34:58	01:00:00	65.7	55.6	48.7
	19:34:58	01:00:00	68.2	52.9	46.9
	20:34:58	01:00:00	64.0	51.8	46.9
	21:34:58	01:00:00	66.8	50.4	46.6
	22:34:58	00:25:02	61.6	53.3	48.2
Day 1 Total	12:34:58	10:25:02	80.02	57.8	46.9
1	23:00:00	00:15:00	62.1	50.1	47.4
	23:15:00	00:15:00	63.6	49.1	47.4
	23:30:00	00:15:00	60.2	51.7	47.6
	23:45:00	00:15:00	63.2	50.8	46.5
	00:00:00	00:15:00	59.5	52.4	45.4
	00:15:00	00:15:00	49.8	46.5	45.7
	00:30:00	00:15:00	52.9	46.6	45.5
	00:45:00	00:15:00	59.1	52.5	46.2
	01:00:00	00:15:00	61.3	48.4	45.5
	01:15:00	00:15:00	52.9	46.2	45.1
	01:30:00	00:15:00	58.6	47.7	45.3
	01:45:00	00:15:00	62.5	52.0	46.6
	02:00:00	00:15:00	52.0	46.7	45.7
	02:15:00	00:15:00	59.7	50.7	46.0
	02:30:00	00:15:00	57.2	49.5	46.6
	02:45:00	00:15:00	52.5	48.3	46.1
	03:00:00	00:15:00	67.2	49.3	46.4
	03:15:00	00:15:00	62.1	51.2	46.4
	03:30:00	00:15:00	67.8	51.1	46.4
	03:45:00	00:15:00	68.2	50.5	45.8
	04:00:00	00:15:00	64.3	51.5	45.4
	04:15:00	00:15:00	64.4	52.1	46.4
	04:30:00	00:15:00	67.6	54.7	47.8
	04:45:00	00:15:00	75.5	54.8	50.2
	05:00:00	00:15:00	65.7	54.2	47.8

	05:15:00	00:15:00	69.3	53.5	48.3
	05:30:00	00:15:00	69.9	54.7	48.4
	05:45:00	00:15:00	68.6	57.5	49.7
	06:00:00	00:15:00	66.5	54.9	48.5
	06:15:00	00:15:00	70.6	56.2	50.8
	06:30:00	00:15:00	73.1	56.0	50.7
	06:45:00	00:14:40	75.9	56.7	48.3
	06:59:40	00:15:00	68.6	55.9	48.4
Night Total	23:00:00	12:51:02	92.9	57.5	45.0
1	07:00:00	01:00:00	73.1	55.9	48.7
	08:00:00	01:00:00	73.1	55.6	50.5
	09:00:00	01:00:00	80.1	57.9	52.6
	10:00:00	01:00:00	74.3	57.0	53.1
	11:00:00	00:51:02	92.9	58.8	52.4
Day 2 Total	07:00:00	04:51:02	92.9	58.8	48.7
2	12:00:00	00:30:35	86.4	66.5	37.7
Total	12:00:00	00:30:35	86.4	66.5	37.7

Survey Comments

The site was operational at the time of the survey and all measurements are free-field levels. The predominant sources of noise at site are the traffic noise from the A485 to the South of the site, and noise associated with the existing facilities at the site (Location 1) and traffic noise and birdsong (Location 2).

Attachment 2

Figures



Legend

8 Osborne Promenade
Warrenpoint, BT34 3NQ
T: +44 28 4177 2578 E: info@oes.ie

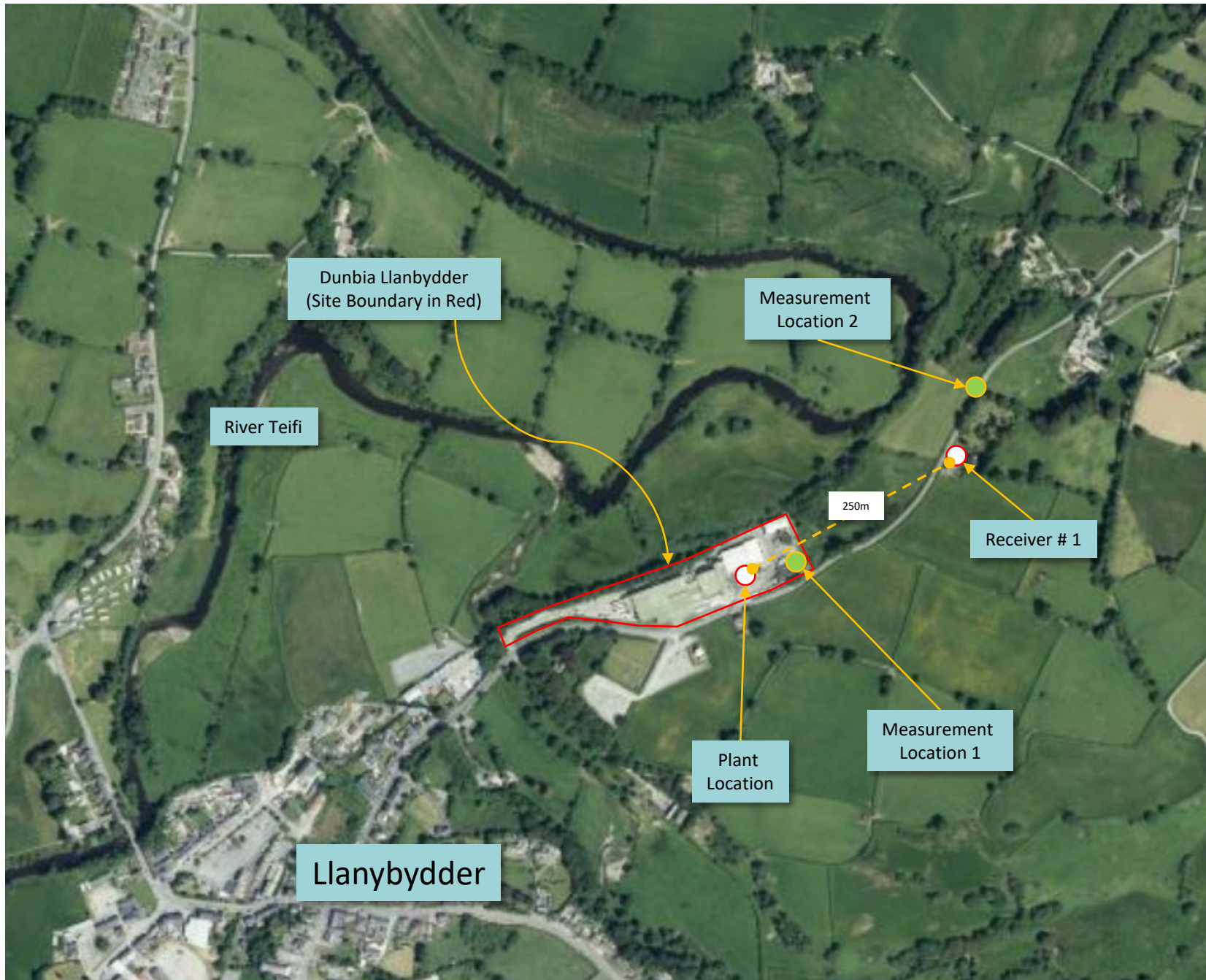
Client
Dunbia Meats

Project
Llanbydder Extension Noise Assessment

Title
Site Location Map

Scale	NTS	
Ref.	Figure 1	
OES Ref.	1319/01	
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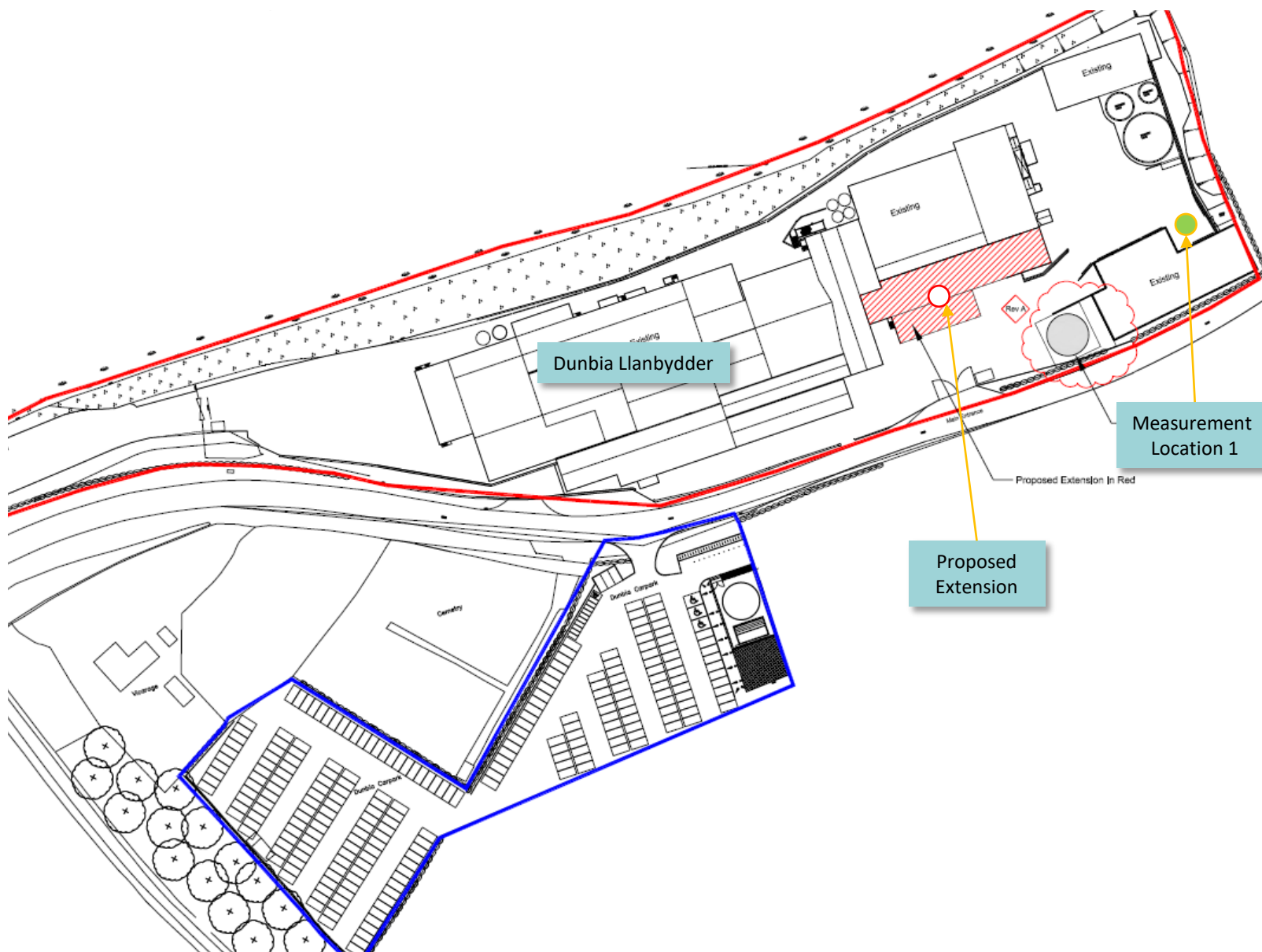
Client
Dunbia Meats

Project
Llanbydder Extension Noise
Assessment

Title
Site Location Aerial View

Scale	NTS	
Ref.	Figure 2	
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Project
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Assessment

Title
Site Plan showing Extension

Scale	NTS	
Ref.	Figure 3	
OES Ref.	1319/01	
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