Fferm Solar Larnog

Environmental Statement

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Issue Sheet

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Document Title

Volume IV, Appendix 8A: Baseline Sound Level Survey

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1. Baseline Sound Level Survey

1.1. Introduction

1.1.1. A baseline sound level survey was undertaken at locations representative of the nearest Noise Sensitive Receptors (NSRs) to the proposed Larnog Solar Farm ('the Proposed Development').

1.1.2. The survey was undertaken to inform the noise assessment forming part of the Environmental Impact Assessment (EIA) to accompany the planning application for the Proposed Development (see **Chapter 8: Noise and Vibration** of the Environmental Statement (ES)).

1.1.3. The sound level survey was conducted between 06 March and 13 March 2026 to quantify and characterise baseline sound conditions at the NSRs. Unattended long-term monitoring was undertaken at two locations, and meteorological conditions were measured using a weather monitor collocated with one of the monitors.

1.1.4. This appendix describes the methodology and results from the baseline sound level survey.

1.2. Survey Methodology

1.2.1. The survey was conducted with reference to BS 7445-1:2003[1] and BS 4142:2014+A1:2019[2]. **Figure 8.1: Noise and Vibration Study Area, Receptors and Baseline Monitoring Locations** of the ES (see Volume III) identifies the Noise Monitoring Locations (NMLs) and the nearest NSRs. Details of the monitoring locations are provided in **Table 1** below, and photographs of the measurement equipment *in-situ* at NML1 and NML2 are presented in **Figure 1: Photos of Monitoring Equipment at NML1** and **Figure 2: Photos of Monitoring Equipment at NML2** of this appendix, respectively.

Table 1 – Description of monitoring locations

Location	Location Description
NML1	The monitoring equipment was located within the private garden of Baruch, a residential property located on Fort Road. The microphone was positioned at the western boundary of the private garden at a height of approximately 1.5 m above ground level in free field conditions.
NML2	The monitoring equipment was located at The Bay Caravan Park, within the tennis courts towards the north of the site. The microphone position is

[1]British Standards Institution (2003). BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Basic quantities and procedures.
[2]British Standards Institution (BSI). (2019). *BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound*. London: BSI Standards Limited.

Location	Location Description
	representative of the closest receptors at this location to the substation location forming part of the Proposed Development. The microphone was positioned in free field conditions at a height of approximately 1.5 m above ground level.

Figure 1 – Photos of Monitoring Equipment at NML1









Figure 2 – Photos of Monitoring Equipment at NML2









1.2.2. All instrumentation was within standard laboratory calibration intervals, and field calibration checks were performed on the monitoring equipment at the beginning and end of each set of measurements. No significant drift was observed. Details of the monitoring equipment are provided in **Table 2**.

Table 2 –Monitoring equipment

Position	Equipment	Serial No.	Last Calibration	Certificate No.
NML1	Rion NL52 Sound Level Meter	01021291	28/11/2025	UCRT25/2680
	NH25 Preamplifier	21333		
	UC59 Microphone	04347		
	Rion NC-74 Sound Calibrator	00830766	19/03/2025	UCRT25/1433
NML2	Rion NL52 Sound Level Meter	1021288	20/08/2025	UCRT25/2208
	NH25 Preamplifier	21330		
	UC59 Microphone	08198		
	Rion NC-74 Sound Calibrator	35173440	19/08/2025	UCRT25/2201

1.2.3. Weather data comprising wind speed, wind direction and rainfall was measured throughout the survey using a weather monitor, collocated with the monitoring equipment at NML2.

1.2.4. Weather conditions varied during the survey period. Most of the monitoring period was dry with low wind speeds, however there were periods of rain on 11 and 13 March 2026. Monitoring periods adversely affected by periods of rain have been excluded from the analysis. The weather data and associated exclusions are presented on the time history charts provided in **Figure 3: Monitoring Results: Time History at NML1** and **Figure 4: Monitoring Results: Time History at NML2** of this appendix.

1.3. Monitoring Results

NML1

1.3.1. Summaries of the measured sound levels at NML1 are provided below in **Table 3** for the daytime (07:00 to 19:00 hrs), evening (19:00 to 23:00 hrs) and night-time (23:00 to 07:00 hrs) periods.

Table 3 – Summary of measured sound levels at NML1

Parameter	Background Sound Level, dB $L_{A90,T}$			Residual Sound Level, dB $L_{Aeq,T}$		
	Day	Evening	Night	Day	Evening	Night
Range	37 - 55	28 - 48	19 - 47	44 - 58	38 - 52	29 - 61
25th Percentile	45	35	26	50	45	37
Median	47	38	30	52	47	40
75th Percentile	50	42	36	55	49	44
Arithmetic Average	47	38	31	52	46	41
Log. Average	-	-	-	53	47	49

Subjective Observations

1.3.2. During installation and collection of the equipment at NML1, subjective observations of the ambient acoustic environment indicated that road traffic noise from the B4267 was dominant. The background sound environment noted on-site consisted primarily of birdsong, with some occasional sound from wind in distant flora.

1.3.3. Construction activity was noted to be taking place approximately 300 m northeast of NML1 during the surveying. Sounds of sporadic construction activity, including moving of materials and reversing sirens of site vehicles, could be heard only faintly during installation of the equipment on 06 March 2026. The contribution from the construction activity was noted to be less significant than the noise from road traffic and birdsong. Construction noise was inaudible during collection on 13 March 2026. It is therefore deemed that construction noise did not confound the measurement data.

NML2

1.3.4. Summaries of the measured sound levels at NML2 are provided below in **Table 4** for daytime (07:00 to 19:00 hrs), evening (19:00 to 23:00 hrs) and night-time (23:00 to 07:00 hrs) periods.

Table 4 – Summary of measured sound levels at NML2

Parameter	Background Sound Level, dB $L_{A90,T}$			Residual Sound Level, dB $L_{Aeq,T}$		
	Day	Evening	Night	Day	Evening	Night
Range	28 - 52	25 - 49	20 - 46	37 - 55	30 - 51	24 - 56
25th Percentile	33	29	27	43	35	41
Median	37	31	31	46	38	46

Parameter	Background Sound Level, dB $L_{A90,T}$			Residual Sound Level, dB $L_{Aeq,T}$		
	Day	Evening	Night	Day	Evening	Night
75th Percentile	45	38	39	49	43	48
Arithmetic Average	38	33	32	46	39	43
Log. Average	-	-	-	48	42	47

Subjective Observations

1.3.5. During installation and collection of the equipment at NML2, subjective observations of the ambient acoustic environment indicated that noise from occasional passing vehicles on the entrance road of The Bay Caravan Park was most prominent. During installation of the equipment on 06 March 2026, distant sounds from a lawnmower engine were observed to be slightly audible. During collection of the equipment on 13 March 2026, the sound of materials being moved in a maintenance yard at The Bay Caravan Park, located approximately 200 m to the west, were noted to be slightly audible.

1.3.6. The background sound environment was observed to be primarily affected by birdsong, wind in nearby flora, and distant waves crashing at the coastline approximately 300 m south of the monitoring location.

Time History Charts

1.3.7. Time history charts showing the measured sound levels over the whole monitoring period at NML1 and NML2 are presented overleaf in **Figure 3: Monitoring Results: Time History at NML1** and **Figure 4: Monitoring Results: Time History at NML2,** respectively.

1.3.8. The time history graphs display the maximum (dB, $L_{Afmax,15min}$), ambient (dB, $L_{Aeq,15min}$) and background (dB, $L_{A90,15min}$) sound levels. The time history graphs also display the concurrent weather data: average wind speed, wind direction and precipitation. Periods excluded due to the influence of adverse weather conditions are also indicated.

Figure 3 – Monitoring Results: Time History at NML1

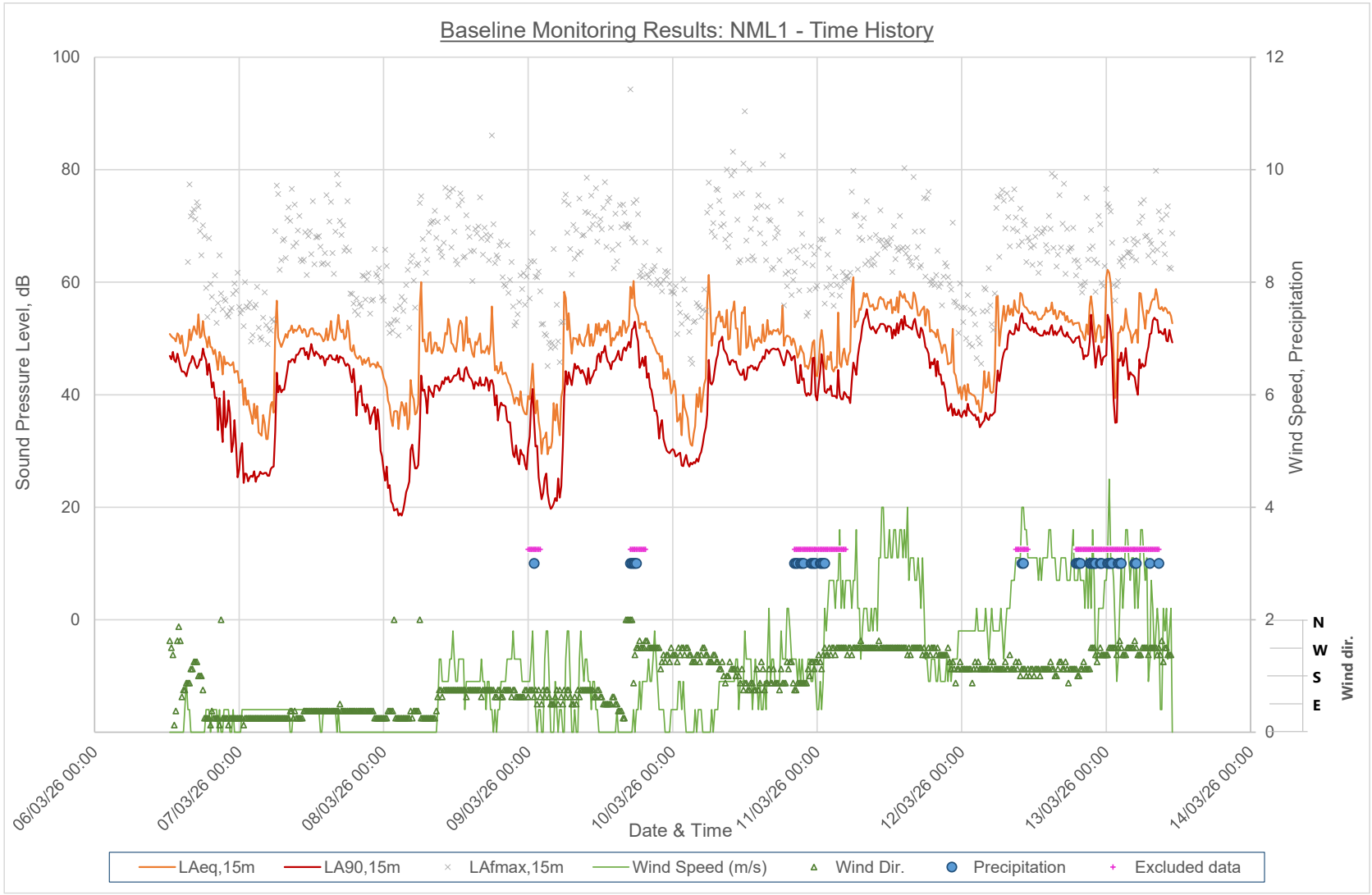
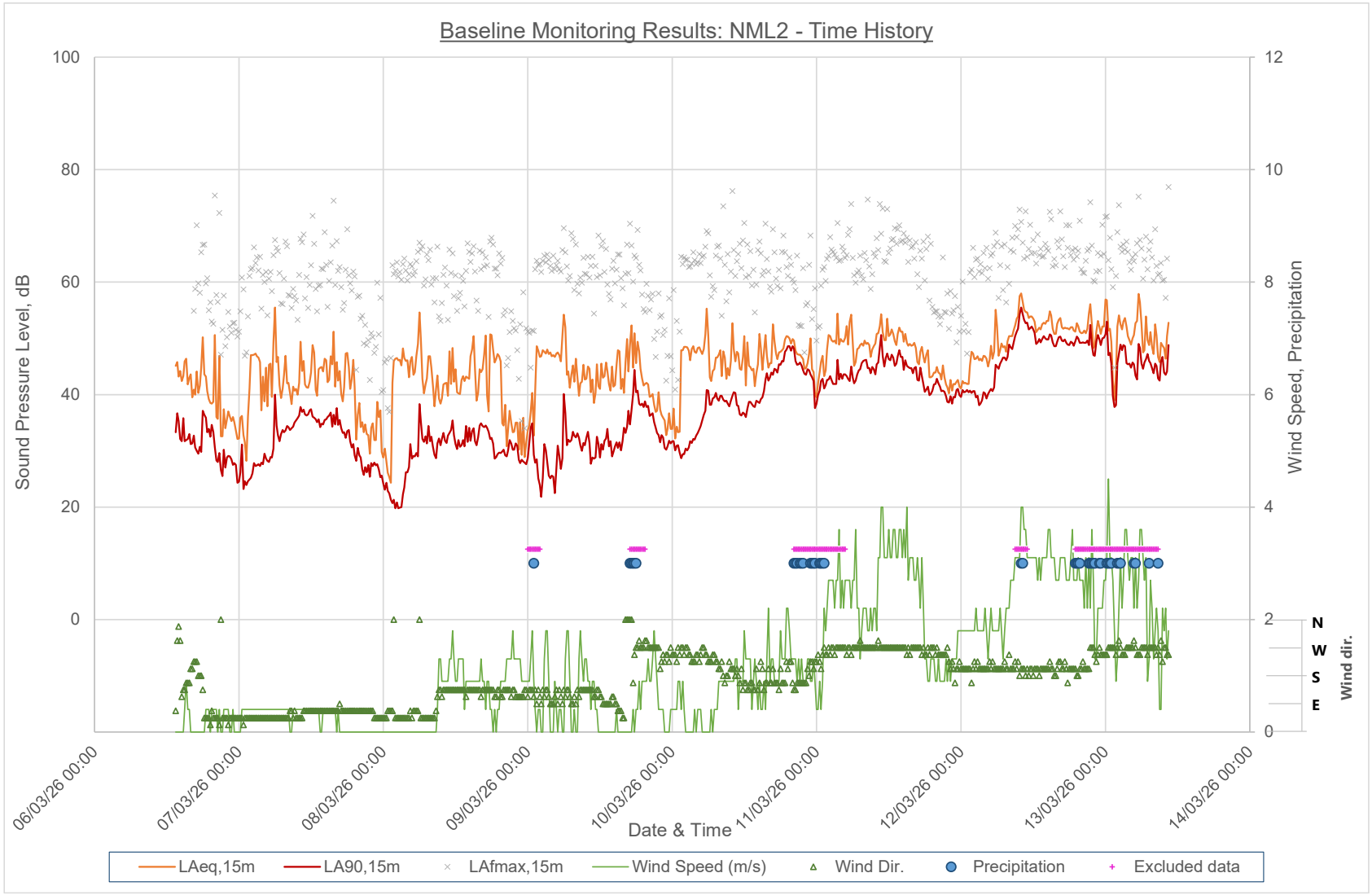


Figure 4 – Monitoring Results: Time History at NML2



1.4. Representative Baseline Sound Levels for the Assessment

1.4.1. Baseline datasets have been assigned to nearby NSR locations based on proximity to the B4267, which was found to be one of the primary sources of environmental noise influencing baseline conditions in the area. NML1 was in closer proximity to the B4267, therefore receptors which are in similar proximity to the B4267 are considered to be suitably represented by baseline data acquired at NML1. NML2 was further from the B4267, therefore receptors which are further from the B4267 are considered to be suitably represented by baseline data acquired at NML2. The assignment of representative baseline datasets for each receptor is set out in **Table 5**, below.

Table 5 – Representative baseline datasets

ID	Receptor	Representative Baseline Dataset
R01	The Bay Caravan Park	NML2
R02	Dros-y-Mor	NML2
R03	The Vineyard, Lavernock Road	NML1
R04	Baruch, Fort Road	NML1
R05	Ty'r Orsaf, Fort Road	NML1
R06	Sutton Farm, Fort Road	NML2
R07	Lavernock Point Holiday Estate	NML2
R08	Ysgol Llyn Derw	NML1

1.4.2. To inform the assessment of construction noise, daytime logarithmic residual/ambient sound levels measured over the 12-hour daytime period are used to establish baseline conditions.

1.4.3. To inform the assessment of operational noise, median background sound levels and the 25th percentile of the measured residual sound levels are considered to be representative and to provide a conservative basis for the assessment.

1.4.4. Based on the above, the representative baseline sound levels used in the assessment are summarised in **Table 6**, below.

Table 6 – Representative baseline sound levels used in the assessment

ID	Log. Avg. Daytime Ambient Sound Level, dB $L_{Aeq,12h}$	Background sound level, dB $L_{A90,T}$			Residual sound level, dB $L_{A90,T}$		
		D*	E*	N*	D*	E*	N*
R01	48	37	31	31	43	35	41
R02	48	37	31	31	43	35	41
R03	53	47	38	30	50	45	37
R04	53	47	38	30	50	45	37
R05	53	47	38	30	50	45	37
R06	48	37	31	31	43	35	41
R07	48	37	31	31	43	35	41

ID	Log. Avg. Daytime Ambient Sound Level, dB $L_{Aeq,12h}$	Background sound level, dB $L_{A90,T}$			Residual sound level, dB $L_{A90,T}$		
		D*	E*	N*	D*	E*	N*
R08	53	47	38	30	50	45	37
* - D: Daytime, E: Evening, N: Night-time.							

1.5. Summary

1.5.1. A baseline sound level survey was undertaken to quantify and characterise the baseline acoustic environment at locations representative of the nearest NSRs to the Proposed Development.

1.5.2. The survey was undertaken between 06 March and 13 March 2026, in accordance with the methodology agreed with the Vale of Glamorgan Council. The survey was undertaken following the guidance provided in BS 7445-1 and BS 4142:2014+A1:2019, at two NMLs for a duration of approximately seven days. Weather conditions were monitored for the duration of the survey and periods affected by adverse weather conditions were excluded from the dataset.

1.5.3. The results of the monitoring are provided in **Section 1.3**. Based on the monitoring results, the representative baseline sound levels used in the assessment are presented in **Section 1.4**. The monitoring results provide suitable data to inform an assessment of potential noise impacts due to the construction and operation of the Proposed Development.