



Battery Noise Assessment

Mitigated Report

AMP Clean Energy Ltd.

Prepared by:

SLR Consulting Limited

15 Middle Pavement, Nottingham, NG1 7DX

SLR Project No.: 403.065318.00001

9 February 2024

Revision: 1

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0	9 February 2024	Chris Iannicelli	Chris Iannicelli	Michelle Dawson
1	9 th February	Chris Iannicelli	Chris Iannicelli	Michelle Dawson

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with AMP Clean Energy Ltd. (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.



Table of Contents

Basis of Report	i
1.0 Introduction	3
2.0 Noise Sources	4
3.0 Mitigated Noise Model Predictions	8

Tables in Text

Table 2-1: Sound Data	5
Table 3-1: Mitigated $L_{Aeq,T}$ dB Noise Level at Stated Distance and Ground Absorption Value	12



1.0 Introduction

The application will include the installation of BYD Battery Boxes. At this stage it is anticipated that this Report will provide sufficient information to inform the Local Authority as to the potential noise impact of the proposals.

The Report is structured as follows:

- A description of the Battery Box Noise Sources.
- Noise Model Predictions.

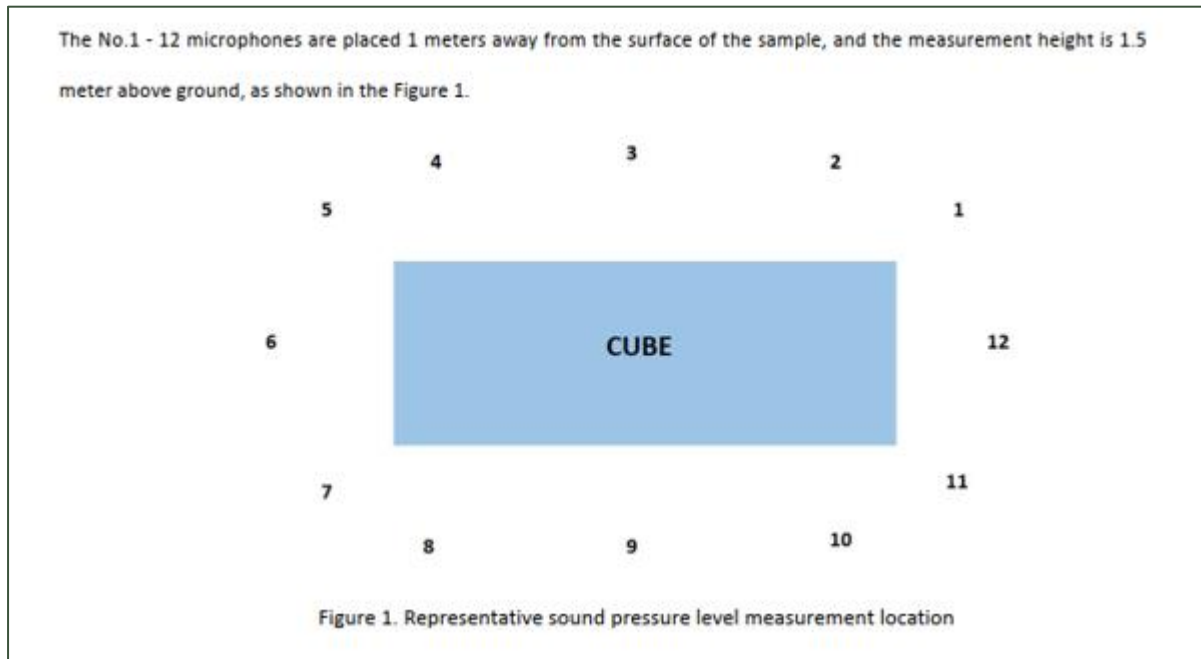
The information provided in this Report may be used to indicate the specific noise level that may be expected at the nearest Noise Sensitive Receptors to the Site.



2.0 Noise Sources

A 10-battery unit has been measured by the Manufacturer at a height of 1.5m in 12 different locations around the battery as shown in Figure 2-1.

Figure 2-1: Measurement Locations



The sound data provided at each monitoring position can be seen in Table 2-1.



Table 2-1: Sound Data

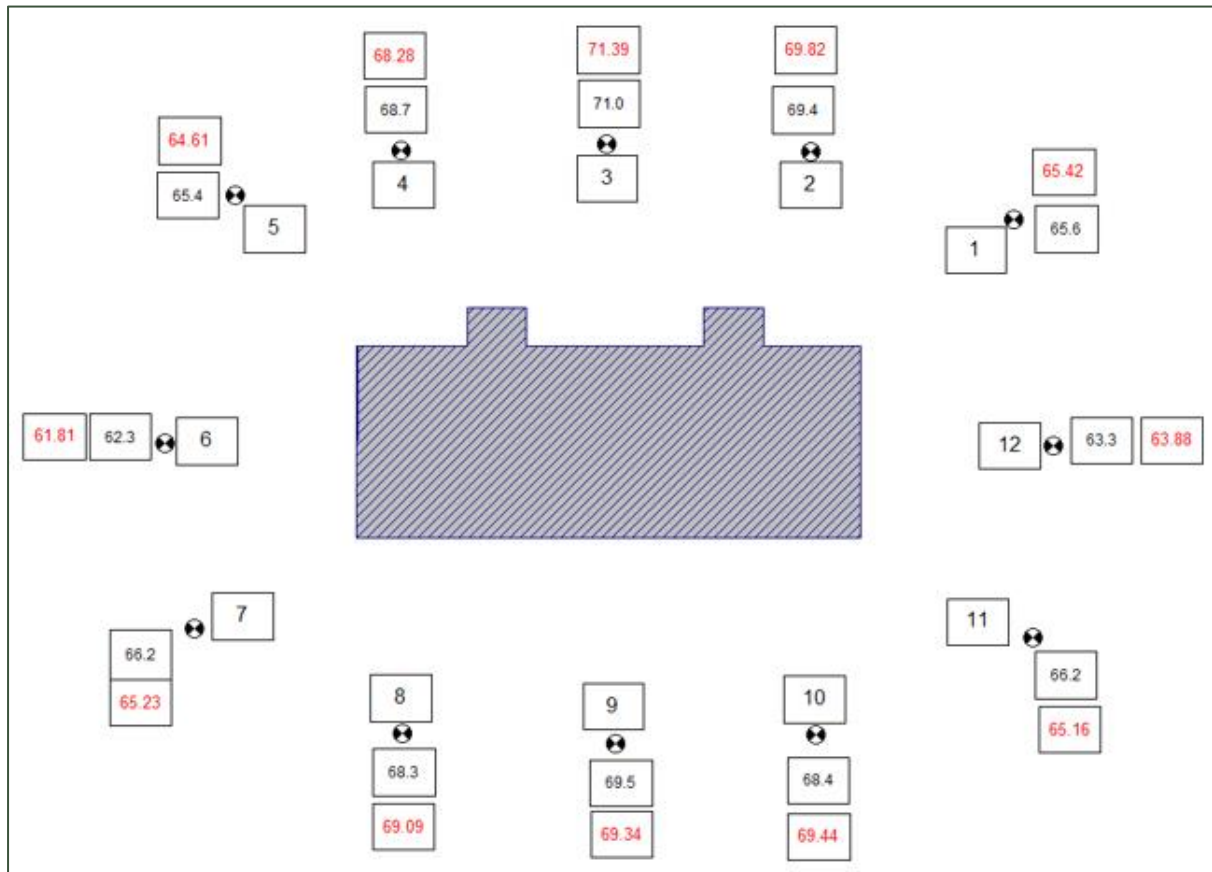
Name	Type	W	Frequency Hz																									dB(A)		
			25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k		8k	10k
L1	Lw (c)	A	25.8	30.4	34.8	39.0	43.8	43.1	43.2	46.6	48.8	48.6	51.2	53.4	54.4	57.6	54.5	55.5	55.8	54.2	53.0	51.6	52.0	50.1	48.0	46.3	42.9	39.3	35.6	65.4
L2	Lw (c)	A	24.3	30.2	33.0	36.4	44.6	42.5	45.9	54.2	56.0	53.7	55.5	56.8	59.1	60.1	59.4	59.1	58.3	59.2	57.6	56.7	57.3	56.3	54.4	53.8	50.0	46.3	43.5	69.8
L3	Lw (c)	A	23.9	29.6	32.2	36.0	43.4	42.3	48.1	55.5	58.2	54.7	56.4	59.0	59.6	61.9	60.5	62.5	59.2	60.2	60.1	58.3	57.8	56.7	56.3	55.7	51.0	47.8	46.2	71.4
L4	Lw (c)	A	22.8	27.9	31.1	36.0	42.3	41.4	45.9	50.0	52.5	52.4	54.6	56.5	56.7	57.4	57.0	58.4	57.0	58.0	57.1	55.9	55.6	54.5	53.4	53.4	48.7	43.7	39.8	68.3
L5	Lw (c)	A	21.7	26.4	30.0	32.3	35.5	39.1	39.0	43.3	47.7	50.3	51.9	52.3	53.5	55.9	53.6	54.6	55.4	53.2	52.8	50.9	49.0	49.1	47.4	50.8	42.6	37.8	35.3	64.6
L6	Lw (c)	A	21.2	25.5	29.0	33.6	35.6	34.9	38.1	41.2	44.7	47.2	48.2	50.4	51.2	52.0	51.2	51.7	51.0	50.2	51.4	49.3	47.6	47.3	45.4	45.2	42.2	37.5	32.9	61.8
L7	Lw (c)	A	21.8	27.3	28.7	32.8	36.9	38.8	40.9	43.8	49.2	49.5	51.2	52.9	55.2	56.8	54.0	55.3	54.5	54.4	53.7	51.8	50.0	48.8	48.8	52.0	43.0	37.8	35.6	65.2
L8	Lw (c)	A	21.8	27.0	29.5	33.6	39.2	40.1	44.0	49.8	55.7	53.3	54.3	58.0	58.2	60.1	58.9	58.8	57.6	58.3	57.3	55.9	53.1	52.8	52.4	55.7	49.3	40.4	42.9	69.1
L9	Lw (c)	A	21.6	25.9	29.0	33.4	38.9	39.4	43.3	49.6	55.4	53.9	56.0	57.4	57.8	61.7	58.0	59.2	57.5	57.9	57.6	55.1	53.2	53.2	53.8	57.3	48.5	40.4	39.2	69.3
L10	Lw (c)	A	21.2	25.7	29.5	34.4	39.7	39.7	46.5	53.5	55.4	53.8	56.4	58.4	59.1	60.4	59.1	57.5	60.0	58.5	56.6	55.2	52.0	54.2	51.6	55.4	46.0	41.6	37.0	6.4
L11	Lw (c)	A	22.7	28.0	29.9	33.0	37.8	40.1	40.9	44.1	45.8	49.9	51.5	55.0	53.8	56.6	54.0	54.5	54.8	53.3	52.7	53.4	51.1	51.8	49.9	48.4	44.3	37.0	37.1	65.2
L12	Lw (c)	A	20.4	25.6	29.4	32.7	38.3	40.7	40.3	43.3	46.6	51.4	50.9	54.9	53.3	54.1	52.8	52.9	52.7	52.1	51.7	51.8	48.2	49.4	47.8	46.6	41.7	35.1	31.7	63.4
Top ¹	Li	A	24.6	31.7	36.1	39.5	41.7	43.5	46.2	48.8	59.7	61.6	54.4	59.1	61.6	59.3	59.5	60.2	59.5	59.9	60.5	58	56.4	54.8	52.7	49.1	45.9	45.1	38.3	



SLR has developed a two-unit noise model of the battery in CadnaA. The sound data in Table 2-1 has been included in the model as a worst case (sound data is from a 10-unit configuration).

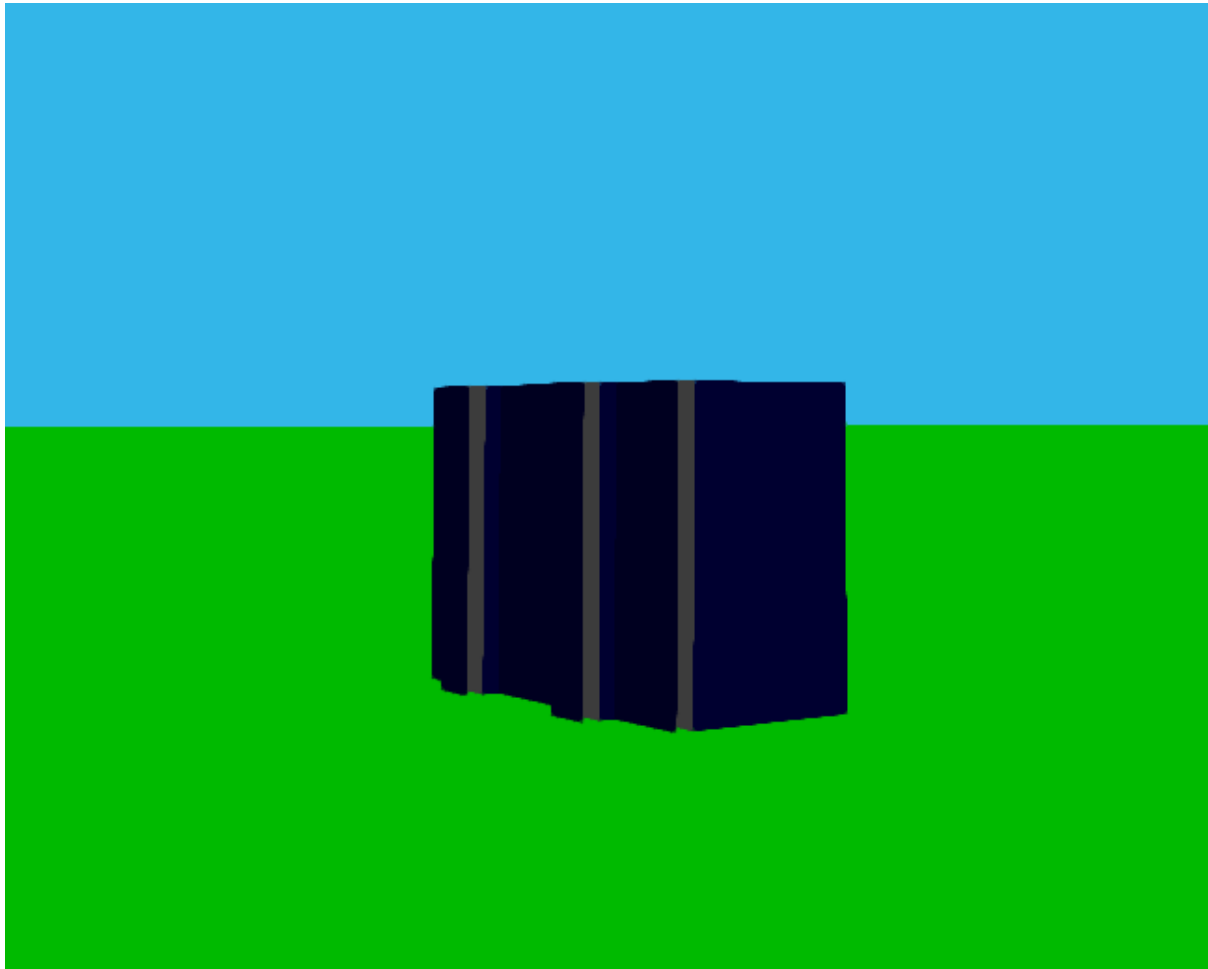
Figure 2-2 details the 2-unit battery in CadnaA. The A weighted level at the measurement position is shown in red, whilst the modelled value is shown in black. At each position the modelled value is within 1d(A) of the measured value.

Figure 2-2: CadnaA Output $L_{Aeq,T}$ dB(A)



The layout of the battery in the model can be seen in Figure 2-3.

Figure 2-3: Battery View in Noise Model



3.0 Mitigated Noise Model Predictions

This Section of the Report presents details the calculated noise level from **a 2-battery unit** at stated distances with the inclusion of a 2.4m high acoustic fence (Smooth façade/Reflective barrier) at 1m from the unit. Figure 3-1 to 3-3 details the $L_{Aeq,T}$ dB noise levels with hard ground (ground absorption 0), mixed ground cover (ground absorption value 0.5), and soft ground cover (ground absorption value 1).



Figure 3-1: Mitigated $L_{Aeq,T}$ dB Noise Level at Distance (Height of Receiver 1.5m) Hard Ground



Figure 3-2: Mitigated $L_{Aeq,T}$ dB Noise Level at Distance (Height of Receiver 1.5m) Mixed Ground

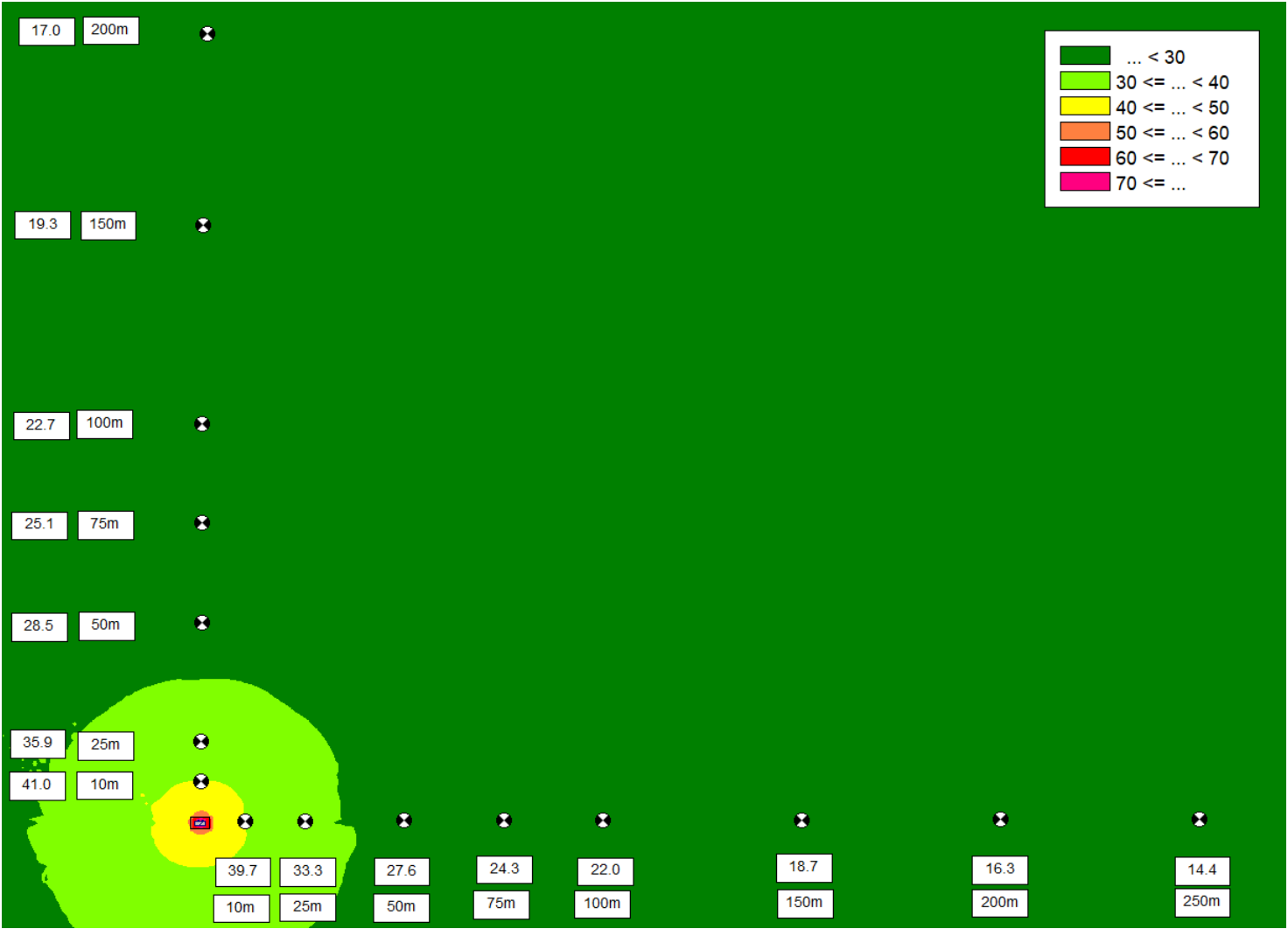


Figure 3-3: Mitigated $L_{Aeq,T}$ dB Noise Level at Distance (Height of Receiver 1.5m) Soft Ground

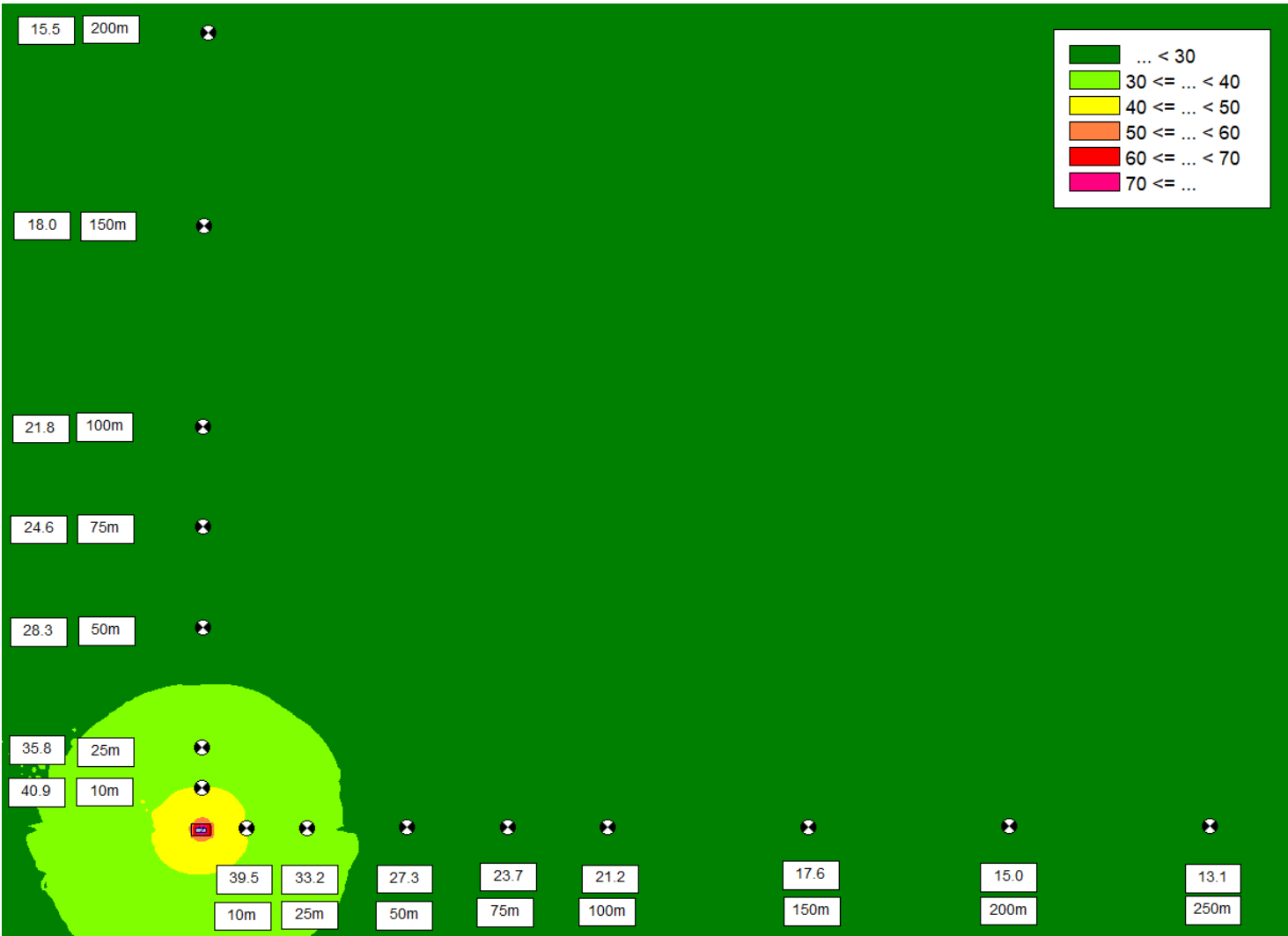


Table 3-1 presents the data in Figures 3-1 to 3-3 in tabular format. The higher value from the two planes assessed has been taken for each distance.

Table 3-1: Mitigated $L_{Aeq,T}$ dB Noise Level at Stated Distance and Ground Absorption Value

Distance	Hard Ground	Mixed Ground	Soft Ground
10m	41.2	41.0	40.9
25m	36.0	35.9	35.8
50m	28.7	28.5	28.3
75m	25.3	25.1	24.5
100m	22.9	22.7	21.8
150m	19.6	19.3	18.0
200m	17.3	17.0	15.5

It must be noted that the data presented in Table 3-1 is considered a worst case as:

- The sound data used to calibrate the model was of a larger 10 battery unit.
- .





Making Sustainability Happen