aercoustics

Aercoustics Engineering Ltd.
1004 Middlegate Road, Suite 1100
Mississauga, ON L4Y 0G1

Tel: 416-249-3361
Fax 416-249-3613
aercoustics.com

EASR ACOUSTIC ASSESSMENT REPORT – **Project: 23021.00**

Almonte Battery Energy Storage Site

Windsor, ON

Prepared for:

Walker BESS 4 Inc.
192 Spadina Ave. Suite 506
Toronto, ON, M5T 2C2

Prepared by:

Hillary Fung, B.A.Sc.

Duncan Halstead, B.A.Sc., P.Eng

May 31, 2024

Revision History

Version	Description	Author	Reviewed	Date
- -	Initial Report	HF	DH	May 31, 2024

Important Notice and Disclaimer

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Executive Summary

Aercoustics Engineering Limited was retained by Walker BESS 4 Inc. to prepare an Acoustic Assessment Report, as required by the Ministry of the Environment, Conservation and Parks (MECP), to support an application for registration under the Environmental Activity and Sector Registry (EASR) for Almonte Battery Energy Storage Site.

The purpose of this study is to assess the noise impact of existing and proposed noise sources on the affected points of noise reception in the area and to outline noise mitigation measures as required to satisfy the applicable MECP sound level limits.

The proposed facility will house several battery storage units which will be located outdoors. The surrounding area is mainly rural and agricultural and the closest noise-sensitive receptor located to the northeast of the site.

An Acoustic Assessment Summary Table has been included in Appendix A, which summarizes the predicted noise impact.

With the facility operations outlined in this report, it was determined that the combined sound level resulting from sound discharged from the facility at each affected point of reception, as determined using an acoustic assessment, is less than or equal to the applicable sound level limit set out in Chapter 3 of the EASR Publication.

Table of Contents

1 Introduction

Aercoustics Engineering Limited (Aercoustics) was retained by Walker BESS 4 Inc. to prepare an Acoustic Assessment Report (AAR), as required by the Ministry of the Environment, Conservation and Parks (MECP), to support an application for registration under the Environmental Activity and Sector Registry (EASR) for Almonte Battery Energy Storage Site.

The purpose of this study is to assess the noise impact of existing and proposed noise sources on the affected points of noise reception in the area and to outline noise mitigation measures as required to satisfy the applicable MECP sound level limits. Where the predicted levels were found to exceed the MECP sound level limits, noise control measures are proposed to satisfy these limits.

An Acoustic Assessment Summary Table has been included in Appendix A, which summarizes the predicted noise impact.

A scaled area location map is provided in Figures 1A and 1B, indicating the location of the site and surrounding receptors. A scaled site plan is provided in Figure 2, indicating the locations of the noise sources.

Appendix B contains an AAR Checklist and a Statement of Accuracy of Information, both signed by the applicant.

Zoning maps are provided in Appendix C, which show a zoning for the site of Rural (RU) and Agricultural (A).

This report was prepared in accordance with O. Reg. 1/17.

1.1 Applicable NAICS Codes

The applicable North American Industry Classification System (NAICS) code for this facility is:

- 221121 – Electric bulk power transmission and control

The above NAICS code is not included in the Schedule to O. Reg. 1/17.

1.2 Statement of Accurate Information

Based on information provided to Aercoustics, the information in this report is accurate as of the date it is signed and sealed. This report and associated calculations underwent a comprehensive internal review process to ensure minimization of errors and omissions.

1.3 Legal Name of Owner and Facility Operator

The legal name of the both the owner and the operator of the facility is:

- Walker BESS 4 Inc.

1.4 Facility Site Name and Address

The name of the facility and the facility address is:

- Almonte BESS
  6299 County Road 29
  Mississippi Mills, ON
  K0A 1A0

1.5 Hours of Operation

The hours of operation of the facility are understood to be during daytime, evening, or nighttime hours (24-hour operation).

2 Facility Description

Almonte Battery Energy Storage Site is situated on the south side of County Road 29, midway between Rae Road and Drummond Road, in the Municipality of Mississippi Mills. Figure 1A provides a key plan showing the location of the facility and surrounding area. The municipal address of the facility is 6299 County Road 29, Mississippi Mills, Ontario.

Surrounding land uses include rural uses (RU) to the south, rural residential (RR) to the south, and agricultural zoning (A) all around the site.

This facility will consist of several battery energy storage containers, and medium-voltage pad mount transformers.

3 Noise Source Summary

The noise sources associated with this facility include battery energy storage containers – comprised of battery cells, an inverter, and associated cooling equipment – as well as medium-voltage pad mount transformers. The noise sources of concern are summarized in the Noise Source Summary Table included in Appendix D and the locations of these sources are identified in Figure 2. Sound data was based on equipment dimensions as well as manufacturer-tested sound data.

<u>Battery Storage Containers:</u>

- Tesla Megapack 2XL four-hour duration, operating in a 5-fan, 60% fan speed cooling configuration during the daytime, and a 5-fan, 40% fan speed cooling configuration during the evening / nighttime.
- Sound power level is based on sound data provided by Tesla.

Medium-Voltage Pad Mount Transformers:

- Sound power level is based on similarly sized 5 MVA pad mount transformers from Aercoustics' database.

The noise from minor electrical equipment and on-site small vehicle movements was considered acoustically insignificant. All acoustically insignificant noise sources are listed in Appendix D.

4 Points of Reception

There are several dwellings to the north, west, and east, identified as Receptors R01 to R14, surrounding the facility.

The receptor height and setback distance from the nearest noise source for each of the receptors are shown in Table 1. The affected points of noise reception were determined in accordance with Chapter 3 of the EASR Publication.

Table 1: Summary of Points of Reception

Receptor	Description	Height	Distance
R01	Existing 1-storey dwelling	1.5 m	550 m NE
R01g	Outdoor points of reception associated with R01	1.5 m	530 m NE
R02	Existing 2-storey dwelling	4.5 m	700 m NE
R02g	Outdoor points of reception associated with R02	1.5 m	670 m NE
R03	Existing 1-storey dwelling	1.5 m	710 m N
R03g	Outdoor points of reception associated with R03	1.5 m	690 m N
R04	Existing 2-storey dwelling	4.5 m	670 m N
R04g	Outdoor points of reception associated with R04	1.5 m	660 m N
R05	Existing 1-storey dwelling	1.5 m	620 m W
R05g	Outdoor points of reception associated with R05	1.5 m	600 m W
R06	Existing 2-storey dwelling	4.5 m	710 m W
R06g	Outdoor points of reception associated with R06	1.5 m	690 m W
R07	Existing 1-storey dwelling	1.5 m	700 m SW
R07g	Outdoor points of reception associated with R07	1.5 m	690 m SW
R08	Existing 2-storey dwelling	4.5 m	510 m SW
R08g	Outdoor points of reception associated with R08	1.5 m	480 m SW
R09	Existing 2-storey dwelling	4.5 m	710 m S
R09g	Outdoor points of reception associated with R09	1.5 m	680 m S
R10	Existing 2-storey dwelling	4.5 m	720 m S
R10g	Outdoor points of reception associated with R10	1.5 m	690 m S

Receptor	Description	Height	Distance
R11	Existing 2-storey dwelling	4.5 m	740 m S
R11g	Outdoor points of reception associated with R11	1.5 m	720 m S
R12	Existing 2-storey dwelling	4.5 m	710 m S
R12g	Outdoor points of reception associated with R12	1.5 m	680 m S
R13	Existing 1-storey dwelling	1.5 m	650 m S
R13g	Outdoor points of reception associated with R13	1.5 m	620 m S
R14	Existing 2-storey dwelling	4.5 m	1040 m E
R14g	Outdoor points of reception associated with R14	1.5 m	1020 m E
VL15	Noise sensitive zoned lot	4.5 m	790 m E

A scaled area location map is provided in Figures 1A and 1B, indicating the locations of the site and the surrounding receptors.

4.1 Vacant Lots

The EASR Publication document requires consideration for potential receptors on vacant lots.

A noise sensitive zoned lot was identified to the east of the proposed facility. The agriculturally zoned lot permits the construction of a single detached dwelling, which is identified as VL15. Zoning maps are provided in Appendix C.

5 Noise Criteria

5.1 Acoustical Classification

Affected points of noise reception R01 to R09, R14, and VL15 have been assessed a Class 3 (Rural) designation as defined by Chapter 3 of the EASR Publication. In a Class 3 area, the acoustical environment is dominated by natural sounds with little or no road traffic and infrequent human activity.

Affected points of noise reception R10 to R13 are located in a residential subdivision and expected to have an ambient acoustical environment consistent with the Class 2 (Urban) designation as defined by Chapter 3 of the EASR Publication. In a Class 2 area, the background sound levels during the daytime are dominated by the activities of people, usually road traffic, and during evening and nighttime periods the background sound levels are defined by natural sounds. In this case, the man-made noise sources primarily include road traffic on Ramsay Concession 8 as well as other sources typically present in a residential subdivision.

5.2 Applicable Sound Level Limits

The MECP exclusion limits for each receptor are summarized in Table 2 below:

Table 2: Noise Exclusion Limits – Class 2

Time of Day	Sound Level Exclusion Limit* Plane of Window	Sound Level Exclusion Limit* Outdoors
Daytime (07:00 to 19:00)	50 dBA	50 dBA
Evening (19:00 to 23:00)	50 dBA	45 dBA
Nighttime (23:00 to 07:00)	45 dBA	- -

*or the minimum existing hourly background sound level Leq, whichever is higher

Table 3: Noise Exclusion Limits – Class 3

Time of Day	Sound Level Exclusion Limit* Plane of Window	Sound Level Exclusion Limit* Outdoors
Daytime (07:00 to 19:00)	45 dBA	45 dBA
Evening (19:00 to 23:00)	40 dBA	45 dBA
Nighttime (23:00 to 07:00)	40 dBA	- -

*or the minimum existing hourly background sound level Leq, whichever is higher

The MECP sound level limit is determined by the applicable exclusion limit listed above or the minimum hourly equivalent background sound level, whichever is higher. The background sound level may increase the sound level limit for some of the receptors in this study, particularly those near busy roads. For conservatism and simplicity, the exclusion limit was used for all receptors in this study.

5.3 Predictable Worst Case

The assessment of noise impact requires the determination of the "predictable worst-case". Therefore, the worst-case one-hour equivalent sound level (1-hr L_{eq}) has been predicted based on all equipment operating simultaneously during the hour with the lowest ambient noise.

6 Noise Impact Assessment

The noise impact calculations were performed using DataKustik's CadnaA environmental noise prediction software. The calculations are based on established prediction methods including the standard ISO 9613-2: "Acoustics – Attenuation of sound during propagation outdoors".

Noise levels were predicted using flat topography under conditions of downwind propagation, generally with hard ground (G-0) modelled in applicable areas such as paved roads, gravel lots, and open water and soft ground (G=1) conditions elsewhere. The directivity of noise emission for applicable noise sources was considered.

The transformer sources were assumed to be tonal and as such a 5 dB tonal penalty was applied. A total of 1 medium-voltage transformer was modeled. The Megapacks were evaluated to be tonal when operating at a fan duty cycle of 50% or higher. This was

determined based on third-octave manufacturer data, using Annex C of the ANSI S12.9-2005 standard. A 5 dB tonal penalty was applied to the Megapacks when appropriate. A total of 6 Megapack 2XL's were modeled on the site.

Appendix E contains sound power data. Appendix F contains a more detailed description of the noise prediction methodology. Appendix G contains Point of Reception (POR) tables, sample stationary source calculations, and sample sound power calculations.

The predicted worst-case hourly sound level at each affected point of noise reception from stationary noise sources is presented in the Acoustic Assessment Summary Table, based on the template provided by the MECP, located in Appendix A. Figure 3 includes an illustration of the noise impact contours at a height of 4.5 m for the existing equipment.

Based on the noise predictions, the facility is predicted to be in compliance with the MECP sound level limits.

7 Conclusion

Aercoustics Engineering Limited was retained by Walker BESS 4 Inc. to prepare an Acoustic Assessment Report, as required by the Ministry of the Environment, Conservation and Parks (MECP), to support an application for registration under the Environmental Activity and Sector Registry (EASR) for Almonte Battery Energy Storage Site.

Based on the information available, the conclusions of this report are accurate as of the date it was signed and sealed. This report and associated calculations underwent a comprehensive internal review process to ensure minimization of errors and omissions.

It was determined that the combined sound level resulting from sound discharged from the facility at each affected point of noise reception, as determined using an acoustic assessment, is less than or equal to the applicable sound level limit set out in Chapter 3 of the EASR Publication.

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Project ID: 23021.00	**Project Name**
Scale: NTS Drawn by: HF Reviewed by: DH Date: May 30, 2024 Revision: 1	Almonte Battery Energy Storage System
	Figure Title Site Location and Surrounding 1000m Area

Figure 1A

aercoustics	Project ID: 23021.00 Scale: NTS Drawn by: HF Reviewed by: DH Date: May 30, 2024 Revision: 1	**Project Name** Almonte Battery Energy Storage System **Figure Title** Site Location and Surrounding Area

Figure 1B

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Scale: NTS
Drawn by: HF
Reviewed by: DH
Date: May 30, 2024
Revision: 1

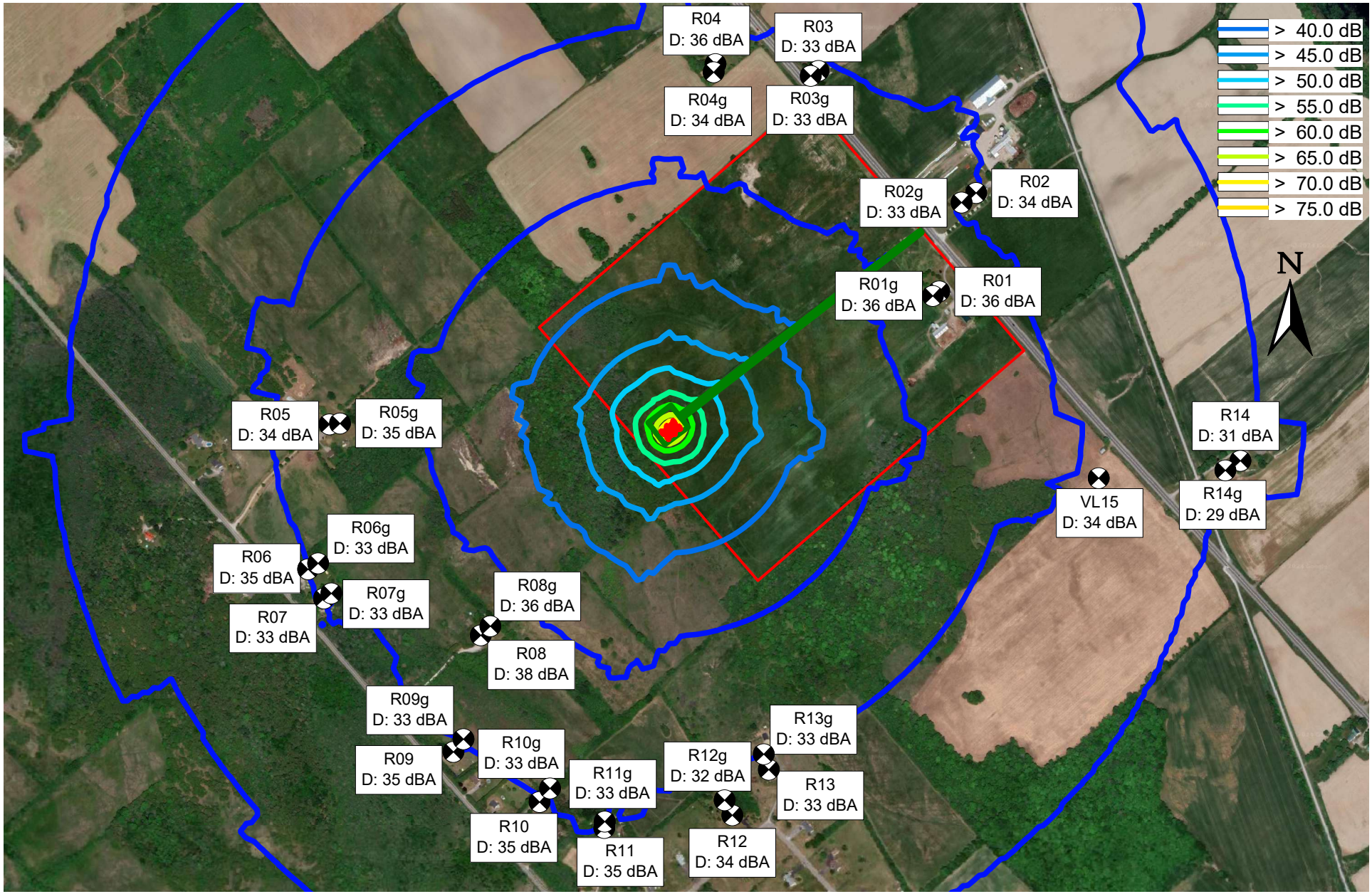
Project Name

Almonte Battery Energy Storage System

Figure Title

Site Location with Sources

Figure 2



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Project ID: 23021.00

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Drawn by: HF
Reviewed by: DH
Date: May 30, 2024
Revision: 1

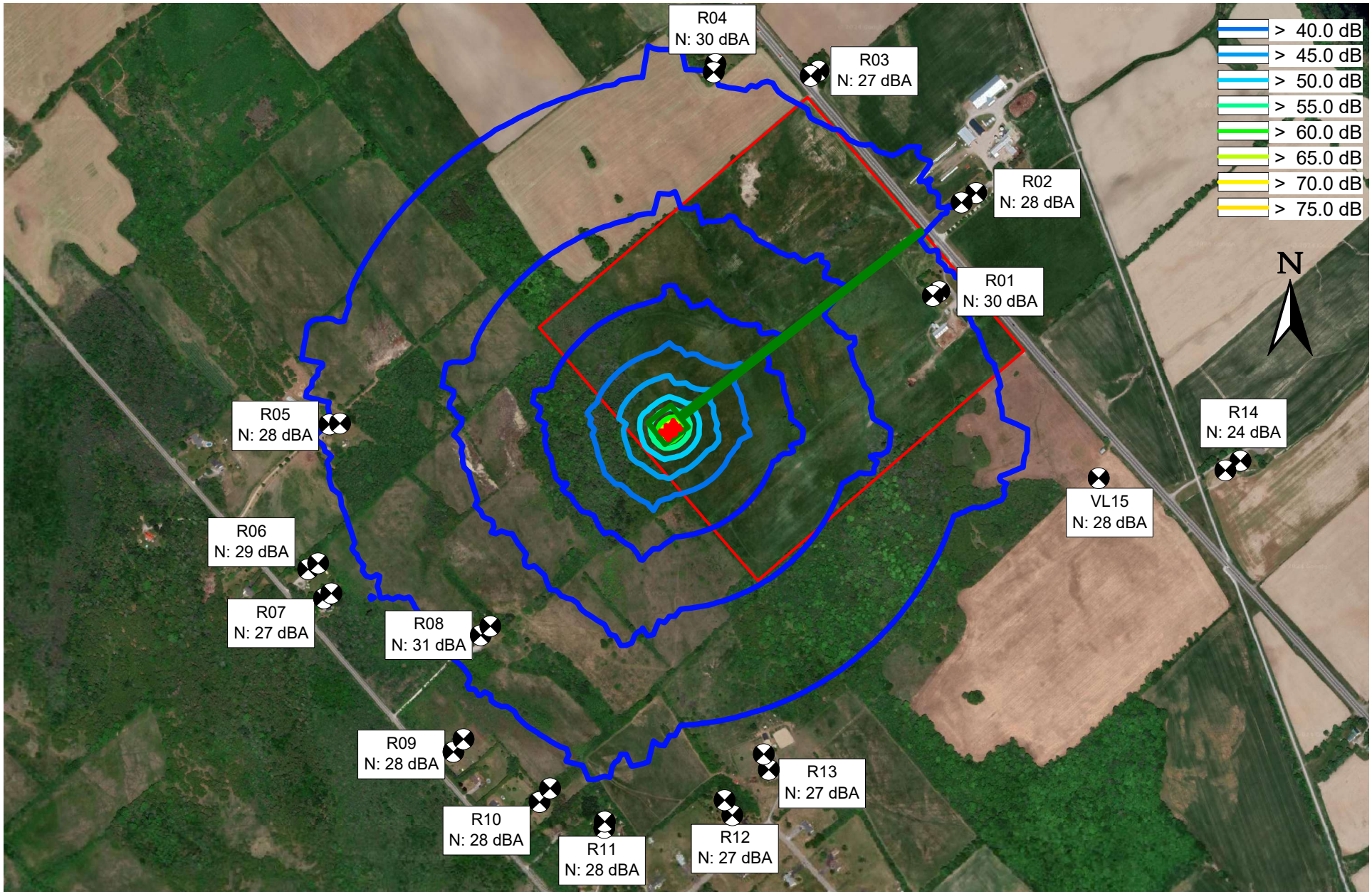
Project Name

Almonte Battery Energy Storage System

Figure Title

Impact of Proposed Site (Daytime) - 4.5m Height Noise Contours

Figure 3



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Project ID: 23021.00

Scale: NTS
Drawn by: HF
Reviewed by: DH
Date: May 30, 2024
Revision: 1

Project Name

Almonte Battery Energy Storage System

Figure Title

Impact of Proposed Site (Evening / Nighttime) - 4.5m Height Noise Contours

Figure 4

Appendix A
Acoustic Assessment Summary Table

Acoustic Assessment Summary Table

Project: Almonte Battery Storage System
Date: May-2024

POR ID	POR Description	Time of Day	Sound Level at POR (dBA)(Leq) or (dBAI)(LLM)	Sound Level Limit (dBA)(Leq) or (dBAI)(LLM)	Compliance with Sound Level Limit?	Class Number	Verified by Acoustic Audit
R01	Existing 1-storey dwelling 550 m northeast	Day	35	45	Yes	Class 3	No
		Evening	25	45	Yes	Class 3	No
		Night	25	40	Yes	Class 3	No
R01g	Outdoor points of reception associated with R01 530 m northeast	Day	35	45	Yes	Class 3	No
		Evening	25	45	Yes	Class 3	No
R02	Existing 2-storey dwelling 700 m northeast	Day	34	45	Yes	Class 3	No
		Evening	24	45	Yes	Class 3	No
		Night	24	40	Yes	Class 3	No
R02g	Outdoor points of reception associated with R02 670 m northeast	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
R03	Existing 1-storey dwelling 710 m north	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
		Night	22	40	Yes	Class 3	No
R03g	Outdoor points of reception associated with R03 690 m north	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
R04	Existing 2-storey dwelling 670 m north	Day	35	45	Yes	Class 3	No
		Evening	24	45	Yes	Class 3	No
		Night	24	40	Yes	Class 3	No
R04g	Outdoor points of reception associated with R04 660 m north	Day	34	45	Yes	Class 3	No
		Evening	23	45	Yes	Class 3	No
R05	Existing 1-storey dwelling 620 m west	Day	34	45	Yes	Class 3	No
		Evening	24	45	Yes	Class 3	No
		Night	24	40	Yes	Class 3	No
R05g	Outdoor points of reception associated with R05 600 m west	Day	35	45	Yes	Class 3	No
		Evening	24	45	Yes	Class 3	No
R06	Existing 2-storey dwelling 710 m west	Day	35	45	Yes	Class 3	No
		Evening	24	45	Yes	Class 3	No
		Night	24	40	Yes	Class 3	No
R06g	Outdoor points of reception associated with R06 690 m west	Day	33	45	Yes	Class 3	No
		Evening	23	45	Yes	Class 3	No
R07	Existing 1-storey dwelling 700 m southwest	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
		Night	22	40	Yes	Class 3	No

Acoustic Assessment Summary Table

Project: Almonte Battery Storage System
Date: May-2024

POR ID	POR Description	Time of Day	Sound Level at POR (dBA)(Leq) or (dBAI)(LLM)	Sound Level Limit (dBA)(Leq) or (dBAI)(LLM)	Compliance with Sound Level Limit?	Class Number	Verified by Acoustic Audit
R07g	Outdoor points of reception associated with R07 690 m southwest	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
R08	Existing 2-storey dwelling 510 m southwest	Day	38	45	Yes	Class 3	No
		Evening	27	45	Yes	Class 3	No
		Night	27	40	Yes	Class 3	No
R08g	Outdoor points of reception associated with R08 480 m southwest	Day	36	45	Yes	Class 3	No
		Evening	26	45	Yes	Class 3	No
R09	Existing 2-storey dwelling 710 m south	Day	35	45	Yes	Class 3	No
		Evening	23	45	Yes	Class 3	No
		Night	23	40	Yes	Class 3	No
R09g	Outdoor points of reception associated with R09 680 m south	Day	33	45	Yes	Class 3	No
		Evening	22	45	Yes	Class 3	No
R10	Existing 2-storey dwelling 720 m south	Day	35	50	Yes	Class 2	No
		Evening	24	45	Yes	Class 2	No
		Night	24	45	Yes	Class 2	No
R10g	Outdoor points of reception associated with R10 690 m south	Day	33	50	Yes	Class 2	No
		Evening	22	45	Yes	Class 2	No
R11	Existing 2-storey dwelling 740 m south	Day	35	50	Yes	Class 2	No
		Evening	23	50	Yes	Class 2	No
		Night	23	45	Yes	Class 2	No
R11g	Outdoor points of reception associated with R11 720 m south	Day	33	50	Yes	Class 2	No
		Evening	22	45	Yes	Class 2	No
R12	Existing 2-storey dwelling 710 m south	Day	34	50	Yes	Class 2	No
		Evening	24	50	Yes	Class 2	No
		Night	24	45	Yes	Class 2	No
R12g	Outdoor points of reception associated with R12 680 m south	Day	33	50	Yes	Class 2	No
		Evening	22	45	Yes	Class 2	No
R13	Existing 1-storey dwelling 650 m south	Day	33	50	Yes	Class 2	No
		Evening	23	50	Yes	Class 2	No
		Night	23	45	Yes	Class 2	No

Acoustic Assessment Summary Table

Project: Almonte Battery Storage System
Date: May-2024

POR ID	POR Description	Time of Day	Sound Level at POR (dBA)(Leq) or (dBAI)(LLM)	Sound Level Limit (dBA)(Leq) or (dBAI)(LLM)	Compliance with Sound Level Limit?	Class Number	Verified by Acoustic Audit
R13g	Outdoor points of reception associated with R13 620 m south	Day	34	50	Yes	Class 2	No
		Evening	23	45	Yes	Class 2	No
R14	Existing 2-storey dwelling 1040 m east	Day	29	50	Yes	Class 2	No
		Evening	18	50	Yes	Class 2	No
		Night	18	45	Yes	Class 2	No
R14g	Outdoor points of reception associated with R14 1020 m east	Day	27	50	Yes	Class 2	No
		Evening	17	45	Yes	Class 2	No
VL15	Noise sensitive zoned lot 790 m east	Day	34	45	Yes	Class 3	No
		Evening	23	50	Yes	Class 3	No
		Night	23	40	Yes	Class 3	No
R_Outer	All receptors outside of 300 m	Day	< 40	45	Yes	Class 3	No
		Evening	< 40	45	Yes	Class 3	No
		Night	< 40	40	Yes	Class 3	No

Appendix B

MECP Acoustic Assessment Report Checklist and Statement of Accuracy of Information

Ontario

Ministry of the Environment, Conservation and Parks

Acoustic Assessment Report Check-List

Company Name

Walker BESS 4 Inc.

Company Address

Unit Number	Street Number	Street Name	PO Box
506	192	Spadina Avenue	

City/Town	Province	Postal Code
Toronto	Ontario	M5T 2C2

Location of Facility
6299 County Road 29, Mississippi Mills, Ontario

The attached Acoustic Assessment Report was prepared in accordance with the guidance in the ministry document "Information to be Submitted for Approval of Stationary Sources of Sound" (NPC-233) dated October 1995 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

Company Contact

Company Contact
Walker BESS 4 Inc.

Last Name	First Name	Middle Initial
Cheszes	Jonathan	

Title	Telephone Number
President	647 234-3124

Signature	Date (yyyy/mm/dd)
	2024-05-31

Technical Contact

Technical Contact
Duncan Halstead

Last Name	First Name	Middle Initial
Halstead	Duncan	

Representing	Telephone Number
Aercoustics Engineering Limited	647 931-9037

Signature	Date (yyyy/mm/dd)
	2024.05.31

	Required Information	Submitted	Explanation/Reference
1.0	**Introduction (Project Background and Overview)**	☑ Yes	
2.0	**Facility Description**		
	2.1 Operating hours of Facility and significant Noise Sources	☑ Yes	
	2.2 Site Plan identifying all significant Noise Sources	☑ Yes	
3.0	**Noise Source Summary**		
	3.1 Noise Source Summary Table	☑ Yes	
	3.2 Source noise emissions specifications	☑ Yes	
	3.3 Source power/capacity ratings	☑ Yes	
	3.4 Noise control equipment description and acoustical specifications	☑ Yes	
4.0	**Point of Reception Noise Impact Calculations**		
	4.1 Point of Reception Noise Impact Table	☑ Yes	
	4.2 Point(s) of Reception (POR) list and description	☑ Yes	
	4.3 Land-use Zoning Plan	☑ Yes	
	4.4 Scaled Area Location Plan	☑ Yes	
	4.5 Procedure used to assess noise impacts at each POR	☑ Yes	
	4.6 List of parameters/assumptions used in calculations	☑ Yes	
5.0	**Acoustic Assessment Summary**		
	5.1 Acoustic Assessment Summary Table	☑ Yes	
	5.2 Rationale for selecting applicable noise guideline limits	☑ Yes	
	5.3 Predictable Worst Case Impacts Operating Scenario	☑ Yes	
6.0	**Conclusions**		
	6.1 Statement of compliance with the selected noise performance limits	☑ Yes	
7.0	**Appendices (Provide details such as)**		
	Listing of Insignificant Noise Sources	☑ Yes	
	Manufacturer's Noise Specifications	☐ Yes	N/A
	Calculations	☑ Yes	
	Instrumentation	☐ Yes	N/A
	Meteorology during Sound Level Measurements	☐ Yes	N/A
	Raw Data from Measurements	☐ Yes	N/A
	Drawings (Facility / Equipment)	☑ Yes	

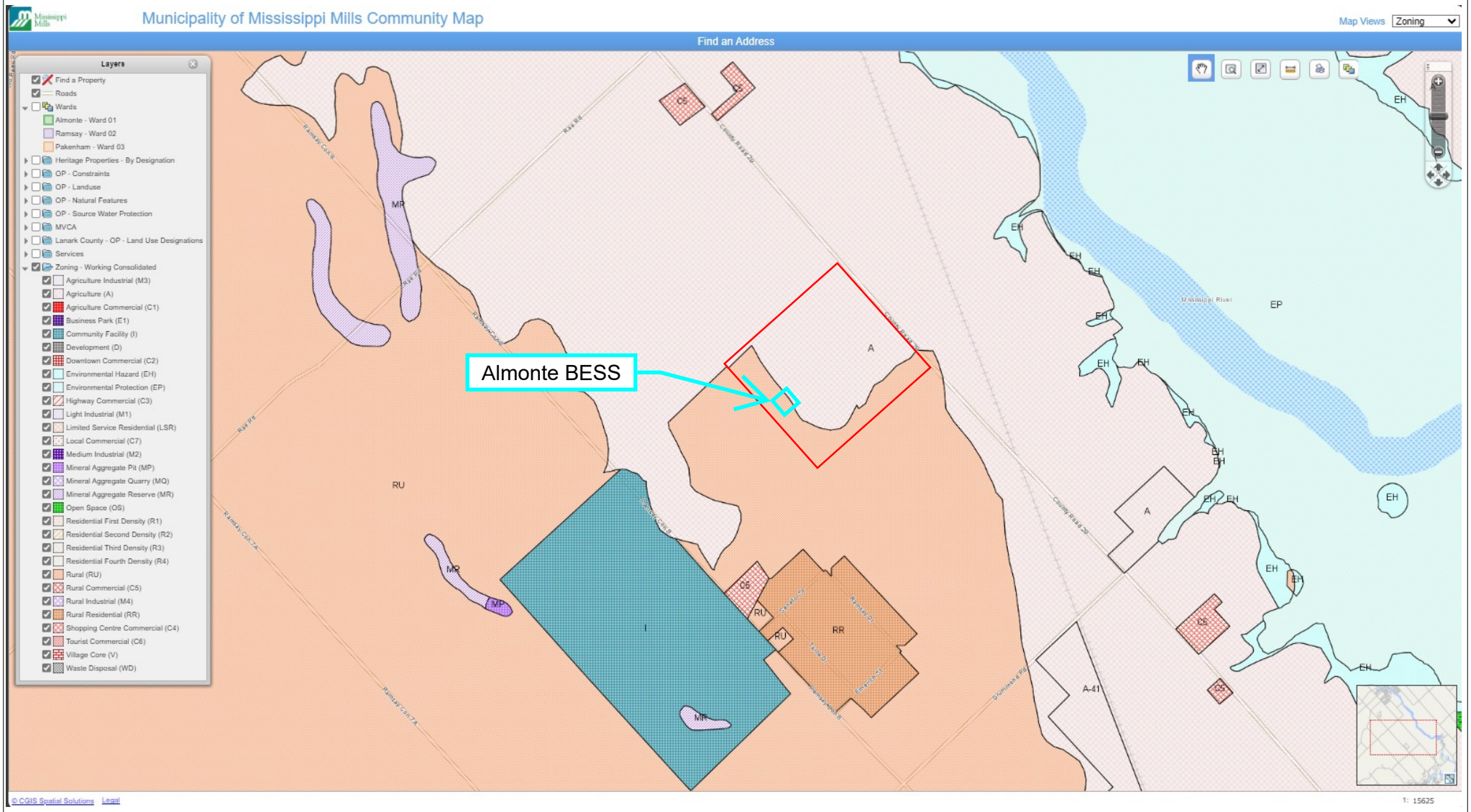
Statement of Accuracy of Information

I, Jonathan Cheszes, confirm that as a representative of Walker BESS 4 Inc., all the information I have provided to Aercoustics Engineering Limited in order to prepare the noise report for the facility located at 6299 County Rd 29, Mississippi Mills, K0A 1A0, is complete and accurate to the best of my knowledge.

Signature

May 30, 2024
Date

Appendix C
Zoning Maps and Site Plan



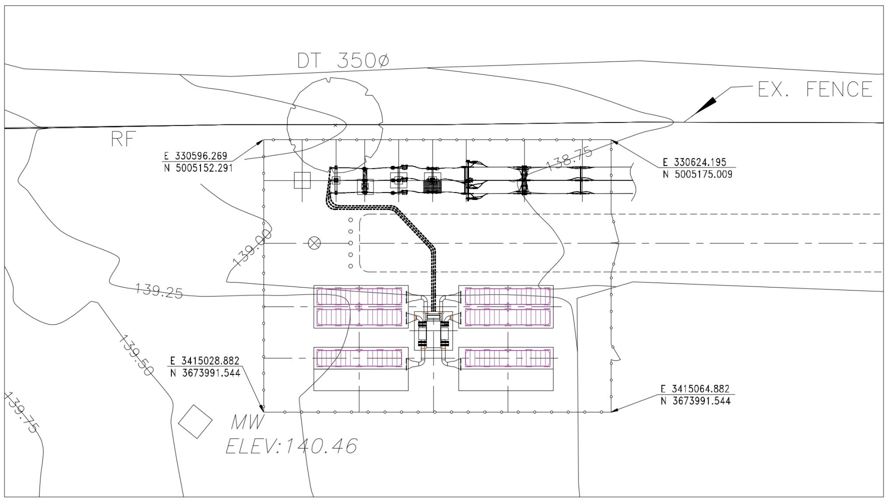
aercoustics	Project ID: 23021.00 Scale: NTS Drawn by: HF Reviewed by: DH Date: May 22, 2024 Revision: 1	**Project Name** Almonte Battery Energy Storage System **Figure Title** Zoning Map

Figure C.1

OVERALL SITE LAYOUT PLAN

NOTES:

1. FOR EQUIPMENT LAYOUT PLAN, SEE DWG# 2350–E101.
2. COORDINATE SYSTEM : UTM84 ZONE 17N.
3. ALL DIMENSIONS AS SHOWN ARE METRIC IN MILLIMETER EXCEPT COORDINATES ARE IN METER U.N.O.



BESS AREA

REV.	REMARKS	DATE	DRAWN	CHECKED	APPROVED
B	ISSUE FOR REVIEW	04/19/2024	EH	SB	KW
A	PRELIMINARY ISSUE	03/20/2024	HB	SB	KW

ISSUE FOR REVIEW

COMPASS ENERGY CONSULTING

Black & McDonald

BLACK & McDONALD LTD.
31 PULLMAN CRT.
SCARBOROUGH, ONT.
M1X 1E4
TEL. (416) 291-8200
FAX (416) 291-2282

Chimax Inc. Engineering Company

ENG. SEAL

COMPASS ENERGY ALMONTE BESS

ALMONTE 4.99 MW BESS
SITE LAYOUT PLAN

CLIENT DRAWING NUMBER 42110045-1000-ELE-LYD-0002

DRAWING NUMBER		REVISION	SHEET
2350-C01		B	0001

DATE	DRAWN:	CHECKED:	APPROVED:	SCALE:
03/20/2024	HB	SB	KW	1:50

aercoustics

Project ID: 23021.00

Scale: NTS
Drawn by: HF
Reviewed by: DH
Date: May 30, 2024
Revision: 1

Project Name

Almonte Battery Energy Storage System

Figure Title

Site Plan

Figure C.2

Appendix D
Noise Source Summary Table and
Insignificant Noise Sources

Noise Source Summary Table

Source ID	Source Description	Sound Power Level (dBA)	Source Location[1]	Sound Characteristic[2]	Noise Control Measures[3]
DT_Megapack	Battery Storage Container - 4-hour, 60% fan speed Megapack 2XL (Tesla)	99*	O	T	U
NT_Megapack	Battery Storage Container - 4-hour, 40% fan speed Megapack 2XL (Tesla)	87	O	S	U
MVTX	Medium-Voltage Transformer - 6MVA	89*	O	T	U

*Includes attenuation due to silencing and/or penalty adjustment.

1. O: located/installed outside the building, including on the roof, I: located/installed inside the building
2. S: Steady; Q: Quasi Steady Impulsive; I: Impulsive; B: Buzzing; T: Tonal; C: Cyclic
3. S: Silencer, Acoustic Louvre, Muffler; A: Acoustics lining, Plenum; B: Barrier, Berm, Screening; E: Acoustic Enclosure; O: Other; U: Uncontrolled R: Removed from Service

Insignificant Noise Sources

Source Description	Location	Reasoning
Minor electrical equipment	Site wide	Low sound level
Small vehicle movements	Site wide	Infrequent and low sound level

Appendix E
Sound Power Data

Sound Power Data

Source ID	63	125	250	500	1000	2000	4000	8000	A	Lin
DT_Megapack	73	74	90	86	87	86	83	72	**94**	**112**
NT_Megapack	68	71	81	79	81	80	76	65	**87**	**105**
MVTX	60	72	75	80	77	73	68	59	**84**	**92**

Note:

- Octave-band and overall sound power levels do not include the 5 dB tonal penalty.
- Octave-band and overall sound power levels for the Megapack represent a single unit and as such, the 3 dB adjustment is not included.

Appendix F
Noise Prediction Methodology

Noise Prediction Methodology

The relevant noise sources were identified and a one-hour L_{EQ} was defined for each of them.

Noise levels for the work cycles were taken as continuous throughout the design hour, unless indicated otherwise.

Predictable worst-case scenarios were defined on the basis of maximum noise impact at each of the representative points of reception. Propagation paths were defined in terms of topography, distances and elevations. Noise levels were predicted using the methodology of the International Standard ISO 9613-2 Acoustics - Attenuation of Sound During Propagation Outdoors.

Standard point source distance attenuation was applied to all noise sources. Barrier attenuation was calculated using standard diffraction theory. Single barrier attenuation was limited to 20 dB while double barrier attenuation was limited to 25 dB. Attenuation from air absorption and ground effect was included in the predictions. Noise levels were predicted under conditions of downwind propagation with a mild temperature inversion. It is under these conditions that the noise impact will typically be at a maximum.

Parameters of noise impact predictions are included in protocol tables for the sensitive points of reception and are included to illustrate the methodology.

Appendix G
Sample Calculations and Point of Reception Tables

Project: Almonte Battery Storage System
Project Number: 23021

Source ID	Source Name	Point of Reception R01		Point of Reception R01g		Point of Reception R02		Point of Reception R02g		Point of Reception R03		Point of Reception R03g	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
DT_Megapack04	60% Megapack	549	28	534	28	704	28	673	26	710	26	696	26
DT_Megapack06	60% Megapack	549	28	535	29	704	28	672	27	708	23	694	23
DT_Megapack03	60% Megapack	549	28	535	28	704	28	672	26	707	27	693	27
DT_Megapack02	60% Megapack	563	28	549	28	720	24	688	23	723	23	709	23
DT_Megapack01	60% Megapack	564	25	550	25	719	24	687	24	721	23	707	23
DT_Megapack05	60% Megapack	564	25	550	25	719	24	688	24	720	27	706	27
MVTX	MVTX	557	17	542	17	712	18	680	16	716	16	702	16
Total Level [dBA]			**35**		**35**		**34**		**33**		**33**		**33**

Source ID	Source Name	Point of Reception R04		Point of Reception R04g		Point of Reception R05		Point of Reception R05g		Point of Reception R06		Point of Reception R06g	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
DT_Megapack04	60% Megapack	676	25	661	23	636	26	617	26	723	25	702	23
DT_Megapack06	60% Megapack	673	28	657	26	634	24	614	24	722	24	701	23
DT_Megapack03	60% Megapack	671	29	656	28	632	28	613	29	722	28	701	27
DT_Megapack02	60% Megapack	687	25	671	24	624	25	605	26	709	28	688	26
DT_Megapack01	60% Megapack	683	25	668	24	622	27	602	27	708	26	687	24
DT_Megapack05	60% Megapack	682	30	667	28	621	28	601	28	707	28	686	27
MVTX	MVTX	680	17	664	15	628	15	609	16	715	17	694	16
Total Level [dBA]			**35**		**34**		**34**		**35**		**35**		**33**

Source ID	Source Name	Point of Reception R07		Point of Reception R07g		Point of Reception R08		Point of Reception R08g		Point of Reception R09		Point of Reception R09g	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
DT_Megapack04	60% Megapack	718	24	702	24	522	31	498	29	722	28	692	26
DT_Megapack06	60% Megapack	717	23	701	23	523	27	499	26	723	25	693	24
DT_Megapack03	60% Megapack	717	26	701	26	524	27	499	26	724	24	694	23
DT_Megapack02	60% Megapack	703	26	687	26	507	31	483	29	707	27	677	26
DT_Megapack01	60% Megapack	702	25	686	25	508	31	484	30	709	29	679	28
DT_Megapack05	60% Megapack	702	26	686	26	508	31	484	28	710	26	680	24
MVTX	MVTX	709	14	693	14	515	20	490	19	715	14	685	14
Total Level [dBA]			**33**		**33**		**38**		**36**		**35**		**33**

Source ID	Source Name	Point of Reception R10		Point of Reception R10g		Point of Reception R11		Point of Reception R11g		Point of Reception R12		Point of Reception R12g	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
DT_Megapack04	60% Megapack	731	27	701	25	747	28	735	27	719	28	690	26
DT_Megapack06	60% Megapack	734	29	704	26	750	26	738	24	723	26	694	25
DT_Megapack03	60% Megapack	735	24	705	23	752	24	740	22	725	24	696	23
DT_Megapack02	60% Megapack	718	27	689	26	736	29	724	27	712	28	683	27
DT_Megapack01	60% Megapack	721	29	691	26	739	26	727	24	716	26	687	25
DT_Megapack05	60% Megapack	722	25	692	24	740	24	728	23	717	24	688	23
MVTX	MVTX	726	16	696	16	743	16	731	14	718	18	689	15
Total Level [dBA]			**35**		**33**		**34**		**33**		**34**		**33**

Project: Almonte Battery Storage System
Project Number: 23021

Source ID	Source Name	Point of Reception R13		Point of Reception R13g		Point of Reception R14		Point of Reception R14g		Point of Reception VL15	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
DT_Megapack04	60% Megapack	651	27	621	28	1043	23	1017	21	785	28
DT_Megapack06	60% Megapack	655	25	626	26	1046	20	1019	19	788	26
DT_Megapack03	60% Megapack	657	23	628	24	1047	20	1021	19	790	23
DT_Megapack02	60% Megapack	645	27	616	28	1054	23	1028	21	796	28
DT_Megapack01	60% Megapack	650	25	620	26	1057	20	1031	19	799	26
DT_Megapack05	60% Megapack	651	23	622	24	1058	20	1032	19	800	23
MVTX	MVTX	650	16	621	16	1051	10	1024	10	793	15
Total Level [dBA]			**33**		**34**		**29**		**27**		**34**

Receiver: R01

Project: Almonte Battery Storage System
Project Number: 23021

Time Period	Total (dBA)*
Day	35

Receiver Name	Receiver ID	X	Y	Z
R01	R01	408467 m	5004524 m	1.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
DT_Megapack04	60% Megapack	407980.1	5004270.8	2.8	0	99	0.0	A	65.8	0.0	3.3	0.0	1.9	0.0	0.0	0.0	0.0	0.0	28
DT_Megapack06	60% Megapack	407977.6	5004274.4	2.8	0	99	0.0	A	65.8	0.0	3.3	0.0	1.9	0.0	0.0	0.0	0.0	0.0	28
DT_Megapack06	60% Megapack	407977.6	5004274.4	2.8	1	99	0.0	A	66.0	0.0	3.0	2.9	1.9	0.0	0.0	0.0	0.0	6.3	19
DT_Megapack03	60% Megapack	407976.5	5004276.0	2.8	0	99	0.0	A	65.8	0.0	3.3	0.0	1.9	0.0	0.0	0.0	0.0	0.0	28
DT_Megapack02	60% Megapack	407968.0	5004261.5	2.8	0	99	0.0	A	66.0	0.0	2.9	0.0	1.9	0.0	0.0	0.0	0.0	0.0	28
DT_Megapack01	60% Megapack	407965.6	5004265.2	2.8	0	99	0.0	A	66.0	0.0	3.0	3.0	1.9	0.0	0.0	0.0	0.0	0.0	25
DT_Megapack05	60% Megapack	407964.4	5004266.6	2.8	0	99	0.0	A	66.0	0.0	2.9	2.9	1.9	0.0	0.0	0.0	0.0	0.0	25
MVTX	MVTX	407972.3	5004268.0	2.7	0	89	0.0	A	65.9	0.0	3.2	1.2	1.6	0.0	0.0	0.0	0.0	0.0	17

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Project: Almonte Battery Storage System
Project Number: 23021

Source ID	Source Name	Point of Reception R01		Point of Reception R01g		Point of Reception R02		Point of Reception R02g		Point of Reception R03		Point of Reception R03g	
		Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night
NT_Megapack04	40% Megapack	549	17	534	17	704	16	673	15	710	15	696	15
NT_Megapack03	40% Megapack	549	17	535	17	704	16	672	15	708	11	694	11
NT_Megapack06	40% Megapack	549	17	535	17	704	16	672	15	707	15	693	15
NT_Megapack02	40% Megapack	563	17	549	17	720	12	688	12	723	11	709	11
NT_Megapack01	40% Megapack	564	14	550	14	719	12	688	12	721	11	707	11
NT_Megapack05	40% Megapack	565	14	550	14	720	12	688	13	720	15	706	16
MVTX	MVTX	557	17	542	17	712	18	680	16	716	16	702	16
Total Level [dBA]			**25**		**25**		**24**		**23**		**22**		**23**

Source ID	Source Name	Point of Reception R04		Point of Reception R04g		Point of Reception R05		Point of Reception R05g		Point of Reception R06		Point of Reception R06g	
		Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night
NT_Megapack04	40% Megapack	676	13	661	12	636	14	617	15	723	13	702	12
NT_Megapack03	40% Megapack	673	16	657	15	634	13	614	13	722	12	701	11
NT_Megapack06	40% Megapack	671	18	656	16	632	17	613	17	722	17	701	15
NT_Megapack02	40% Megapack	687	13	671	12	624	14	605	14	709	16	688	15
NT_Megapack01	40% Megapack	684	13	668	12	622	16	602	16	708	14	687	13
NT_Megapack05	40% Megapack	682	18	667	16	620	17	601	17	707	16	686	15
MVTX	MVTX	680	17	664	15	628	15	609	16	715	17	694	16
Total Level [dBA]			**24**		**23**		**24**		**24**		**24**		**23**

Source ID	Source Name	Point of Reception R07		Point of Reception R07g		Point of Reception R08		Point of Reception R08g		Point of Reception R09		Point of Reception R09g	
		Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night
NT_Megapack04	40% Megapack	718	12	702	12	522	19	498	18	722	16	692	14
NT_Megapack03	40% Megapack	717	11	701	11	523	15	499	15	723	13	693	12
NT_Megapack06	40% Megapack	717	14	701	14	523	15	499	15	724	12	694	12
NT_Megapack02	40% Megapack	703	15	687	15	507	19	483	18	707	16	677	14
NT_Megapack01	40% Megapack	702	15	686	15	508	20	484	19	709	17	679	16
NT_Megapack05	40% Megapack	702	14	685	15	508	19	484	18	709	14	679	13
MVTX	MVTX	709	14	693	14	515	20	490	19	715	14	685	14
Total Level [dBA]			**22**		**23**		**27**		**26**		**23**		**22**

Source ID	Source Name	Point of Reception R10		Point of Reception R10g		Point of Reception R11		Point of Reception R11g		Point of Reception R12		Point of Reception R12g	
		Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night
NT_Megapack04	40% Megapack	731	16	701	14	747	17	735	15	719	16	690	15
NT_Megapack03	40% Megapack	734	17	704	14	750	14	738	13	723	14	694	13
NT_Megapack06	40% Megapack	735	12	705	11	752	12	740	11	725	12	696	11
NT_Megapack02	40% Megapack	718	16	689	14	736	17	724	16	712	16	683	15
NT_Megapack01	40% Megapack	721	17	691	15	739	14	727	13	716	14	687	13
NT_Megapack05	40% Megapack	722	13	692	12	740	13	728	12	718	12	688	11
MVTX	MVTX	726	16	696	16	743	16	731	14	718	18	689	15
Total Level [dBA]			**24**		**23**		**24**		**22**		**24**		**22**

Project: Almonte Battery Storage System
Project Number: 23021

Source ID	Source Name	Point of Reception R13		Point of Reception R13g		Point of Reception R14		Point of Reception R14g		Point of Reception VL15	
		Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night	Distance to POR (m)	Sound Level at POR (dBA) Night
NT_Megapack04	40% Megapack	651	16	621	16	1043	12	1017	10	785	16
NT_Megapack03	40% Megapack	655	14	626	14	1046	9	1019	8	788	14
NT_Megapack06	40% Megapack	657	12	628	12	1047	9	1021	8	790	11
NT_Megapack02	40% Megapack	645	16	616	16	1054	12	1028	10	796	16
NT_Megapack01	40% Megapack	649	14	620	14	1057	9	1031	8	799	14
NT_Megapack05	40% Megapack	651	12	622	12	1059	9	1032	8	801	11
MVTX	MVTX	650	16	621	16	1051	10	1024	10	793	15
Total Level [dBA]			**23**		**23**		**18**		**17**		**23**

Receiver: R01

Project: Almonte Battery Storage System
Project Number: 23021

Time Period	Total (dBA)*
Night	25

Receiver Name	Receiver ID	X	Y	Z
R01	R01	408467 m	5004524 m	1.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
NT_Megapack04	40% Megapack	407980.1	5004270.8	2.8	0	87	0.0	A	65.8	0.0	2.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	17
NT_Megapack03	40% Megapack	407977.6	5004274.4	2.8	0	87	0.0	A	65.8	0.0	2.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	17
NT_Megapack06	40% Megapack	407976.4	5004276.0	2.8	0	87	0.0	A	65.8	0.0	2.5	0.0	2.1	0.0	0.0	0.0	0.0	0.0	17
NT_Megapack02	40% Megapack	407968.0	5004261.5	2.8	0	87	0.0	A	66.0	0.0	2.1	0.0	2.1	0.0	0.0	0.0	0.0	0.0	17
MVTX	MVTX	407972.3	5004268.0	2.7	0	89	0.0	A	65.9	0.0	3.2	1.2	1.6	0.0	0.0	0.0	0.0	0.0	17

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

End of Report