CarbonFree Rainy River Project

Acoustic Assessment Report

H375916-0000-846-066-0001

					
2026-03-13	**0**	**Approved for Use**	**M. Andargie**	**M. Choy**	**S. Thompson**
DATE	**REV.**	**STATUS**	**PREPARED BY**	**CHECKED BY**	**APPROVED BY**
				Discipline Lead	**Functional Manager**

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Table of Concordance

The following table of concordance describes the scope of the report herein as per the requirements identified in Table 1 of O. Reg. 359/09 [1].

Item	Document	Requirement per Table 1 of O. Reg. 359/09	Project Type
8	Noise study report	Report to be prepared in accordance with Appendix A of the publication of the Ministry of the Environment and Climate Change entitled, “Basic Comprehensive Certificates of Approval (Air) – User Guide”, dated April 2004, as amended from time to time and available from the Ministry.	Class 3 solar facility

Abbreviations and Definitions

AAR	Acoustic Assessment Report
AC	Alternating Current
dB	Decibel
dBA	A-weighted sound level
DC	Direct Current
IEEE	Institute of Electrical and Electronics Engineers
km	Kilometre
kV	Kilovolt
Leq	Equivalent sound level
m/s	Metre per second
MECP	Ministry of the Environment, Climate, and Parks
MVA	Megavolt-ampere
MW	Megawatt
NEMA	National Electrical Manufacturers Association
NPC	Noise Pollution Control
O. Reg.	Ontario Regulation
INV	Inverter System (combined inverter and medium-voltage transformer)
POR	Point of Reception
PV	Photovoltaic
PWC	Predictable Worst Case
REA	Renewable Energy Approval

Table of Contents

List of Tables

List of Appendices

1. Introduction

CarbonFree Rainy River Ltd. (CarbonFree) is proposing to develop a 60 megawatt (MW) Class 3 solar photovoltaic (PV) project on lands located in the township of Chapple, Ontario (approximately 40 kilometres (km) northwest of Fort Frances).

The proposed CarbonFree Rainy River Project (hereinafter referred to as 'the Facility') is a renewable energy generation facility which will use solar PV technology to generate electricity. Electricity generated by solar PV panels will be converted from direct current (DC) to alternating current (AC) by inverters and then stepped up (via pad-mounted inverters, medium-voltage transformers and a main substation transformer) to 115 kilovolts (kV) prior to being connected to the existing Hydro One Networks Inc. transmission line.

The Project aims to contribute to the government of Ontario's goal of accelerating new electricity generation from renewable sources to support the province's growing energy needs. Accordingly, CarbonFree intends to enter into an agreement for the sale or supply of electricity, the quantity of which will be commensurate with the name plate capacity of the facility.

Construction of the Project will commence in early 2027 once the Renewable Energy Approval (REA) and other required permits have been obtained. This Acoustic Assessment Report (AAR) provides an evaluation of the community noise impact of the Facility under predictable worst-case (PWC) noise-emitting operating conditions.

1.1 Approach to Noise Assessment

The AAR follows the Province of Ontario regulations and guidelines: O. Reg. 359/09 [1], PIBS 8472e – "Technical Guide to Renewable Energy Approvals" [2], PIBS 4391e01 – "Basic Comprehensive Certificates of Approval (Air)" [3], and NPC-300 [4]. The Facility's noise performance limit is established as the higher of the 1-hour a-weighted equivalent sound level (Leq) identified for the applicable exclusion limit or the background sound level. No background measurements were taken, so the noise limit has been set to the applicable exclusion limit based on the surrounding receptor classifications. A review of the surrounding community identifies all noise sensitive receptors as Class 3.

A community noise model of the Facility has been developed to assess the noise impact of the nearest points of reception (PORs). The noise study area for modelling was extended 1 km from the outermost noise sources consistent with the approach outlined in the "Technical Guide to Renewable Energy Approvals" [2]. Participating and non-participating receptors were identified including receptors for vacant lots. Acoustic modelling was completed on a PWC basis that determined the equivalent 1-hour noise impact on the identified PORs. There are no other surrounding solar facilities within 1 km of the boundary of the Facility.

1.2 Vibration Sources

The Facility does not have any significant stationery or moving ground-borne vibration sources. As such, a vibration assessment is not required.

2. Facility Description

The Facility is located in the township of Chapple, Ontario (approximately 40 km northwest of Fort Frances) (Appendix A).

The proposed 60-MW solar facility is comprised of two solar panel arrays spread over four properties. Each array is isolated by its own switch gear. The panels are routed into 14 SunGrow SG4400, 4.4 megavolt-ampere (MVA) inverter system (INV) modules. Each switch gear feeds the proposed high-voltage substation located at the north end of the Facility. The Facility is designed to operate during sunlight hours, 7 days a week. The proposed layout of the Facility is included in Appendix B.

2.1 Operational Flexibility

The Facility is seeking the inclusion of operational flexibility with its REA application as described under section 9 of PIBS 8472e [2]. Operational flexibility allows the Facility to make limited modifications to its operations or works without having to seek an amendment to the REA. These permissible operational flexibility changes include:

- Noise from site maintenance equipment including vegetation control, panel washing, snow clearing, access road and infrastructure maintenance.
- In-kind equipment replacements (panels, tracker motors, inverter systems, transformer, switches, etc.).
- Decreasing the number of project components.

3. Noise Source Summary

3.1 Panel Arrays

Panel racks will be fitted with a single axis tracker. The proposed Facility will have one motor per tracker. A sample tracker is provided in Appendix C. The tracker motor operates briefly to tilt the panels into an optimal position for solar radiation exposure. Due to their relatively small size and brief operation, the tracker motors are considered insignificant community noise emission sources.

3.2 Inverter With Integrated Medium-Voltage Transformer

The 4.4 MW AC inverters convert the DC supplied by the PV modules to AC. A 4.4 MVA, 3-phase, liquid-filled transformer will then ‘step up’ the voltage to 34.5 kV. Each installation will consist of a SunGrow Solar Inverter Skid SG4400 or equivalent inverter system (INV) that combines the inverter and medium-voltage transformer in single container skid.

Noise from the inverter system comes from its air-cooling fans while noise from its medium-voltage transformer is largely from the magnetostriction hum. Due to the tonal nature of the magnetostriction hum, a 5 decibel (dB) tonal penalty is added to the noise emission of entire inverter system. Full calculations can be found in Appendix C.

3.3 Switchgear

The local panel array and substation switchgears are a combination of switches, fuses and circuit breakers used to safely isolate arrays or the entire facility for maintenance. Switchgear control panel cooling fans are small and are located indoors. Therefore, the switchgears are considered insignificant community noise emission sources.

3.4 Substation Transformer

The Facility contains one large 68 MVA transformer that will 'step up' the voltage from 34.5 kV to 230 kV. The substation transformer noise was calculated using the NEMA TP-80050 standard [5] with a 5 dB tonal penalty added for its magnetostriction hum. Calculations to characterize the sound emission of the substation transformer can be found in Appendix C. Transformer noise was modelled as a point source at half the height of the transformer.

Additional substation yard components such as the switchgear, communication tower, and line reactors are considered insignificant noise sources.

3.5 Other Nearby Solar Facilities and External Anthropic Noise Sources

There are no adjacent solar facilities within 1 km of the Facility. As such, a cumulative noise impact study that incorporates adjacent solar facilities, as recommended in Ontario's *Technical Guide to Renewable Energy Approvals* [2], is not required.

A desktop review of Access Environment did not identify any Environmental Compliance Approvals for industrial applications within 1 km of the Facility. The land-use map included with Appendix A identifies that the site is surrounded by agricultural land. As such, additional external anthropic noise may include farming equipment. However, these external anthropic noise sources need not be included with the AAR.

3.6 Ancillary Distribution Lines

Aboveground ancillary distribution lines connecting the local panel switchgears to the substation will not emit significant amounts of isolator corona noise due to a relatively low AC line current and voltage (34.5 kV). Therefore, the noise from the ancillary distribution lines is considered insignificant.

3.7 Excluded Noise Sources

Insignificant and non-applicable noise sources were excluded from this assessment. Table 3-1 lists noise sources insignificant or outside the scope of this assessment.

Table 3-1: Excluded Noise Sources

Source	Reason for Exclusion
Vehicular Traffic	Noise exclusions identified in accordance with O. Reg. 359/09 [1] and the Technical Guide to Renewable Energy Approvals [2]
Maintenance and Service Activities	
Emergency Conditions	
Construction and Decommissioning	

3.8 Noise Source Summary Table

Table 3-2 lists the significant noise sources from the Facility. The noise source layout is presented in Appendix B.

Table 3-2: Noise Source Summary Table

Source ID	Equipment Description	NV dB Library Source	Sound Power (Lw) Un-Weighted Octave Band Spectrum, Hz (dB)									Overall (dBA)	Source Location	Sound Charac-teristic	Noise Control Measure	UTM Zone 16	
			31.5	63	125	250	500	1,000	2,000	4,000	8,000					E	N
INV01	Inverter System No 01	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434819	5397989
INV02	Inverter System No 02	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434574	5397895
INV03	Inverter System No 03	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434543	5397895
INV04	Inverter System No 04	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434399	5397695
INV05	Inverter System No 05	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434407	5397424
INV06	Inverter System No 06	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434402	5397263
INV07	Inverter System No 07	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	B	434402	5397091
INV08	Inverter System No 08	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	434205	5397091
INV09	Inverter System No 09	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433526	5397102
INV10	Inverter System No 10	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433786	5397149
INV11	Inverter System No 11	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433858	5397432
INV12	Inverter System No 12	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433881	5397432
INV13	Inverter System No 13	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433853	5397597
INV14	Inverter System No 14	INV	90	87	91	92	95	88	88	93	80	97	O	S, T	U	433885	5397598
ST01	Substation Transformer	TR_68	100	106	108	103	103	97	92	87	80	104	O	S, T	U	434119	53.97361

*Spectra and Overall levels do NOT include tonal penalties. A 5 dB tonal penalty is added in the model for all sources with tonal sound characteristics.
1. O: located/installed outside the building, including on the roof, I: located/installed inside the building.
2. S: Steady; Q: Quasi Steady Impulsive; B: Buzzing; T: Tonal; C: Cyclic.
3. S: Silencer, Acoustic Louvre, Muffler; A: Acoustics lining, Plenum; B: Barrier, Berm, Screening; L: Lagging; E: Acoustic Enclosure; O: Other; U: Uncontrolled.

4. Points of Reception

PORs representing the worst-case community noise sensitive dwellings and vacant lots were identified around the Facility. In accordance with O. Reg. 359/09 [1] and the Technical Guide to Renewable Energy Approvals [2], the noise study area extent for POR identification was set to 1 km from each of the noise sources.

All PORs, participating receptors and vacant lots within 1 km of a Facility noise source were identified and included in the noise assessment. Though O. Reg. 359/09 [1] Clause (6) notes that a "*noise receptor does **not** include a location on a parcel of land if any part of the renewable energy generation facility will be located on that parcel of land once the facility is installed, constructed or expanded*," these participating receptors are identified herein, but noise compliance for them have not been evaluated.

Each POR was modelled at 1.5 m above ground for single-storey dwellings or 4.5 m above ground for two-storey dwellings to represent a plane of window on the building façade. Building façade POR IDs are identified with a "f" suffix. Outdoor living areas are modelled at 1.5 m above ground within 30 m of a façade of the dwelling. Outdoor living POR IDs are identified with an "o" suffix. Table 4-1 lists the PORs impacted by the Facility. The layout of identified PORs is shown in Appendix D.

Table 4-1: Point of Reception Locations

POR ID	Description	UTM Coordinates (Zone 16)	
		Easting	Northing
Points of Reception			
R01_f	947 Mather Road Existing residential dwelling	432662	5398595
R01_o		432676	5398567
R02_f	1784 ON-71 Existing residential dwelling	432611	5397147
R02_o		432642	5397140
R03_f	1790 ON-71 Existing residential dwelling	432609	5397068
R03_o		432632	5397070
R04_f	1778 ON-71 Existing residential dwelling	432616	5396947
R04_o		432634	5396946
R05_f	1764 ON-71 Existing residential dwelling	432623	5396834
R05_o		432637	5396834
R06_f	1754 ON-71 Existing residential dwelling	432676	5395945
R06_o		432695	5395967
R07_f	1568 ON-71 Existing residential dwelling	434537	5398746
R07_o		434536	5398715

POR ID	Description	UTM Coordinates (Zone 16)	
		Easting	Northing
R08_f	576 Mather Road Existing residential dwelling	434865	5398674
R08_o		434865	5398644
R09_f	576 Mather Road Existing residential dwelling	435712	5398988
R09_o		435689	5398967
R10_f	535 Cates Road Existing residential dwelling	435798	5398990
R10_o		435798	5398960
RN11_f	572 Cates Road Existing residential dwelling	435798	5398990
RN11_o		435798	5398960
VN01	Vacant lot	432474	5398587
VN02	Vacant lot	432473	5396938
VN03	Vacant lot	432472	5396838
VN04	Vacant lot	432633	5396424
VN05	Vacant lot	433405	5395319
VN06	Vacant lot	434221	5395309
VN07	Vacant lot	435810	5396808
VN08	Vacant lot	435828	5396908
VN09	Vacant lot	435033	5396812
VN10	Vacant lot	435016	5396913
VN11	Vacant lot	434892	5396812
VN12	Vacant lot	436178	5398564
VN13	Vacant lot	435828	5398556
VN14	Vacant lot	435829	5398667
VN15	Vacant lot	435028	5398575
VN16	Vacant lot	435025	5398675
VN17	Vacant lot	434367	5398681
VN18	Vacant lot	433824	5398586
VN19	Vacant lot	433811	5398687
VN20	Vacant lot	433424	5398590
VN21	Vacant lot	433407	5398690
Participating Receptors			
VP01	Vacant lot	434916	5396923
VP02	Vacant lot	434226	5398583

5. Mitigation Measures Summary

Table 5-1 lists the noise mitigation features proposed to be incorporated into the design. The evaluation of the community noise impact presented in Section 7.3 includes these mitigation features. The locations of these noise mitigation features are identified in Appendix D.

It should be noted that the noise control features proposed herein may be subject to change prior to the final regulatory submission for alignment with the latest Project information.

Table 5-1: Mitigation Summary Table

Mitigation ID	Targeted Noise Source	Description	Details
NB01	INV07	Noise barrier at INV07	5 m tall, 15 m total length, two-sides, minimum 20 kg/m^2

6. Assessment Criteria

The MECP publications; *NPC-300 - Environmental Noise Guideline - Stationary and Transportation Sources - Approval and Planning provides guidance on control of industrial noise emissions for Ontario* [4] and *Technical Guide to Renewable Energy Approvals* [2] provide noise limits according to the surrounding POR classification. Table 6-1 shows the Class 3 performance limits for rural receptors at different times of the day. A conservative assessment limit of 40 dBA was used at all receptor locations under the likely potential for the Facility to operate, sometime throughout its lifecycle, at full power generation for at least 1 hour during the evening period.

Table 6-1: Class 3 Performance Limits

Class 3 Area	
Time Period	**Sound Level Limit – Leq [1 hour] (dBA)**
07:00 to 19:00 (Daytime)	45
19:00 to 23:00 (Evening)	40
23:00 to 07:00 (Night-time)	40

7. Acoustic Assessment Summary

7.1 Analysis Methodology

To model the community noise impact of the project, a noise model was developed using CADNA-A software application. The ISO 9613-2 [6] algorithm was implemented using CADNA-A to evaluate the environmental noise exposure from stationary sources.

The assumptions used in the noise model are in accordance with Section 9.2 of the *Technical Guide to Renewable Energy Approvals* [2] and are as follows:

- The model is assessed at 10°C and 70% relative humidity.
- The noise study area extends 1 km from each noise source.
- Ground absorption was modelled with a global value of G=0.7.
- All equipment on-site operates continuously steady during daytime, and for at least 1 hour during evening and night periods without impulsive noise emissions.
- The substation transformer was modelled as point sources at half the height of the transformer and sound power data was estimated based on National Electrical Manufacturers Association (NEMA) [5] and Institute of Electrical and Electronics Engineers (IEEE) [6] standards.

7.2 Predictable Worst-Case Assessment Scenario

Acoustic modelling was completed on a PWC basis that determined the equivalent 1-hour noise impact on the identified noise PORs. The following worst-case scenario was analyzed as described in Table 7-1.

Table 7-1: Assessment Scenarios

Scenario	Description
Predictable Worst-Case (PWC)	14 INV units. One 68 MVA substation transformer. Panels as noise obstructions not modelled. All equipment operates simultaneously at design for 1 hour during the evening/nighttime period. Conservative noise limit of 40 dBA at all receptors, modelled 4.5 m above ground.

7.3 Noise Modelling Results

Table 7-2 summarizes the noise assessment results at each of the noise sensitive POR locations. Participating receptors are listed but not compared to the noise criteria as noted under Clause (6) of O. Reg. 359/09 [1] (Section 4). All applicable PORs are compliant with the NPC-300 40 dBA noise criteria for a Class 3 receptors during the evening and nighttime periods. To visualize the predicted noise emissions from the Facility, refer to the noise contour plot in Appendix D.

Table 7-2: Acoustic Assessment Summary Table

POR ID	Description	Sound Level (dBA)		Verified by Acoustic Audit	Performance Limit (dBA)		Compliance (Yes/No)
		Day	Night/ Evening		Day	Night/ Evening	
Points of Reception							
RN01_f	947 Mather Road	28	28	No	45	40	Yes

POR ID	Description	Sound Level (dBA)		Verified by Acoustic Audit	Performance Limit (dBA)		Compliance (Yes/No)
		Day	Night/ Evening		Day	Night/ Evening	
RN01_o	Existing residential dwelling	29	29	No	45	40	Yes
RN02_f	1784 ON-71 Existing residential dwelling	31	31	No	45	40	Yes
RN02_o		29	29	No	45	40	Yes
RN03_f	1790 ON-71 Existing residential dwelling	33	33	No	45	40	Yes
RN03_o		33	33	No	45	40	Yes
RN04_f	1778 ON-71 Existing residential dwelling	33	33	No	45	40	Yes
RN04_o		33	33	No	45	40	Yes
RN05_f	1764 ON-71 Existing residential dwelling	32	32	No	45	40	Yes
RN05_o		32	32	No	45	40	Yes
RN06_f	1754 ON-71 Existing residential dwelling	32	32	No	45	40	Yes
RN06_o		32	32	No	45	40	Yes
RN07_f	1568 ON-71 Existing residential dwelling	25	25	No	45	40	Yes
RN07_o		28	28	No	45	40	Yes
RN08_f	576 Mather Road Existing residential dwelling	37	37	No	45	40	Yes
RN08_o		35	35	No	45	40	Yes
RN09_f	576 Mather Road Existing residential dwelling	35	35	No	45	40	Yes
RN09_o		35	35	No	45	40	Yes
RN10_f	535 Cates Road Existing residential dwelling	27	27	No	45	40	Yes
RN10_o		25	25	No	45	40	Yes
RN11_f	572 Cates Road Existing residential dwelling	26	26	No	45	40	Yes
RN11_o		24	24	No	45	40	Yes
VN01	Vacant lot	27	27	No	45	40	Yes
VN02	Vacant lot	34	34	No	45	40	Yes
VN03	Vacant lot	33	33	No	45	40	Yes
VN04	Vacant lot	30	30	No	45	40	Yes
VN05	Vacant lot	23	23	No	45	40	Yes
VN06	Vacant lot	25	25	No	45	40	Yes
VN07	Vacant lot	32	32	No	45	40	Yes
VN08	Vacant lot	33	33	No	45	40	Yes
VN09	Vacant lot	38	38	No	45	40	Yes
VN10	Vacant lot	39	39	No	45	40	Yes
VN11	Vacant lot	39	39	No	45	40	Yes
VN12	Vacant lot	24	24	No	45	40	Yes
VN13	Vacant lot	27	27	No	45	40	Yes
VN14	Vacant lot	26	26	No	45	40	Yes
VN15	Vacant lot	37	37	No	45	40	Yes
VN16	Vacant lot	36	36	No	45	40	Yes
VN17	Vacant lot	38	38	No	45	40	Yes
VN18	Vacant lot	38	38	No	45	40	Yes

POR ID	Description	Sound Level (dBA)		Verified by Acoustic Audit	Performance Limit (dBA)		Compliance (Yes/No)
		Day	Night/ Evening		Day	Night/ Evening	
VN19	Vacant lot	37	37	No	45	40	Yes
VN20	Vacant lot	36	36	No	45	40	Yes
VN21	Vacant lot	36	36	No	45	40	Yes
Participating Receptors							
VP01	Vacant lot	40	40	No	45	40	N/A
VP02	Vacant lot	39	39	No	45	40	N/A

8. Conclusion

An acoustic assessment of the proposed Rainy River 60 MW Class 3 solar PV facility has been completed. Based on this AAR's approach and noise mitigations included with the design, the proposed Project is expected to be compliant with the community noise limits identified in the MECP *Technical Guide to Renewable Energy Approvals* [2] and *Environmental Noise Guidelines NPC-300* [4] for the PWC operating condition.

9. References

[1] Province of Ontario, O. Reg 359/09 - *Renewable Energy Approvals under Part V.0.1 of the Environmental Protection Act*, 2016.

[2] Province of Ontario, PIBS 8472e – *Technical Guide to Renewable Energy Approvals*, 2013.

[3] Province of Ontario, PIBS 4391e01 – *Basic Comprehensive Certificates of Approval (Air)*, 2011.

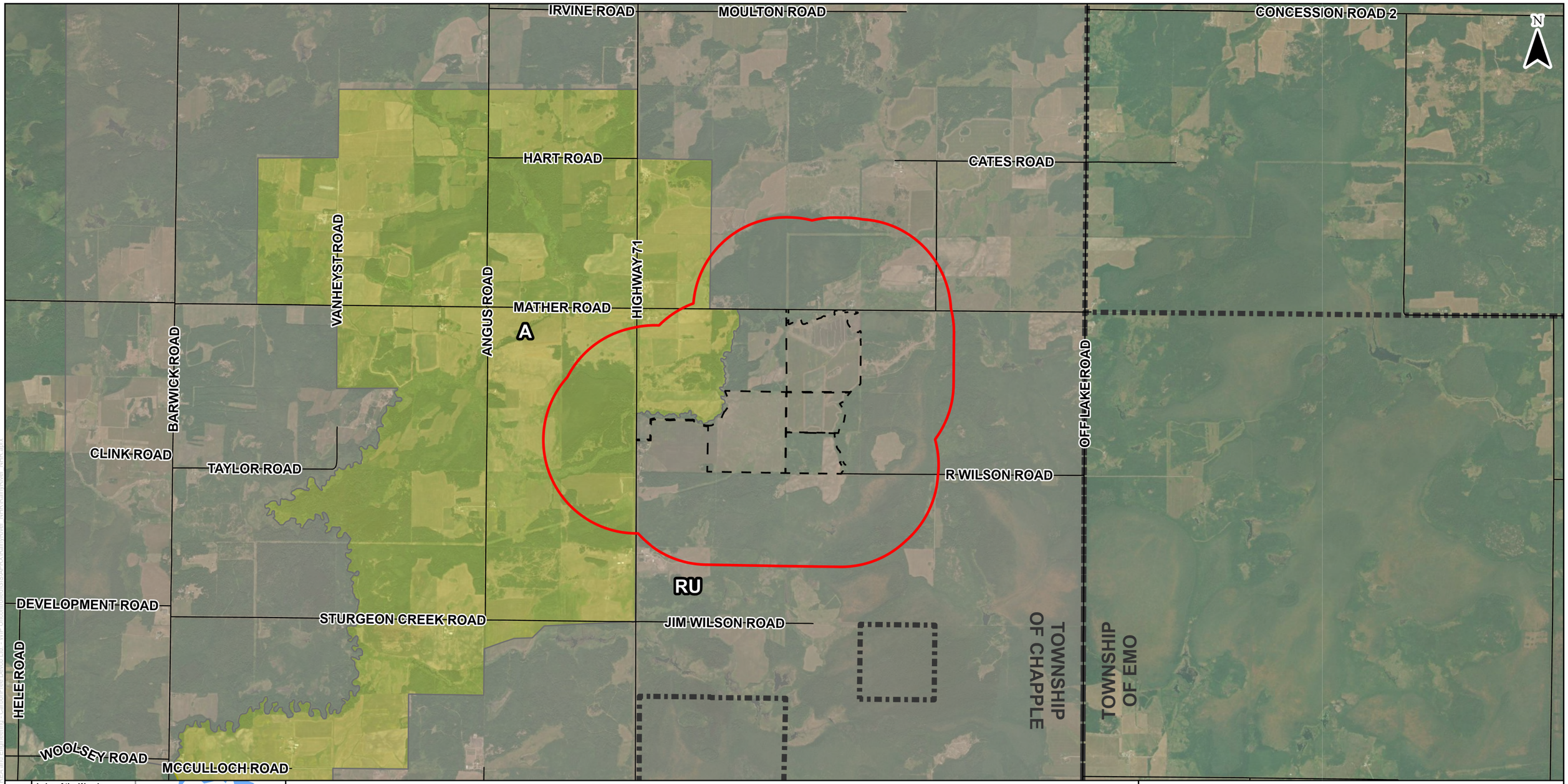
[4] Ontario Ministry of the Environment, Climate, and Parks (MECP), NPC-300 - *Environmental Noise Guideline – Stationary and Transportation Sources*, 2013.

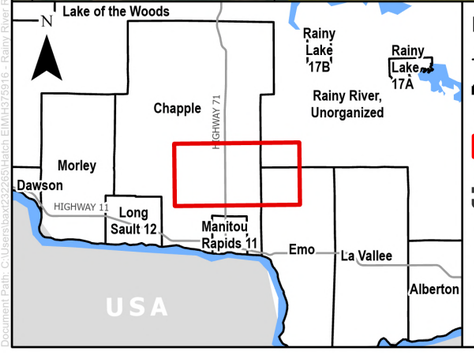
[5] National Electrical Manufacturers Association, "NEMA TP-80050-2013 (R2024): Transformers, Step Voltage Regulators, and Reactors," NEMA, Rosslyn, VA, USA, 2013.

[6] Institute of Electrical and Electronics Engineers, C57.12.90 Standard Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers, 2010.

[7] International Organization for Standardization, "ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation," ISO, Geneva, Switzerland, 1996.

Appendix A
Zoning/Land-Use Siting Map





LEGEND

- Road
- Project Boundary
- Study Area (1km Buffer)
- Municpal Boundary

Municipal Zone

- Agricultural Area (A)
- Rural Area (RU)

NOTES:
1. Produced by Hatch, contains information licensed under the Open Government Licence – Ontario
2. Spatial referencing: NAD 1983 UTM Zone 15N
3. Zoning digitized from the Township of Chapple's Official Plan, 2013

0 500 1,000 2,000 m

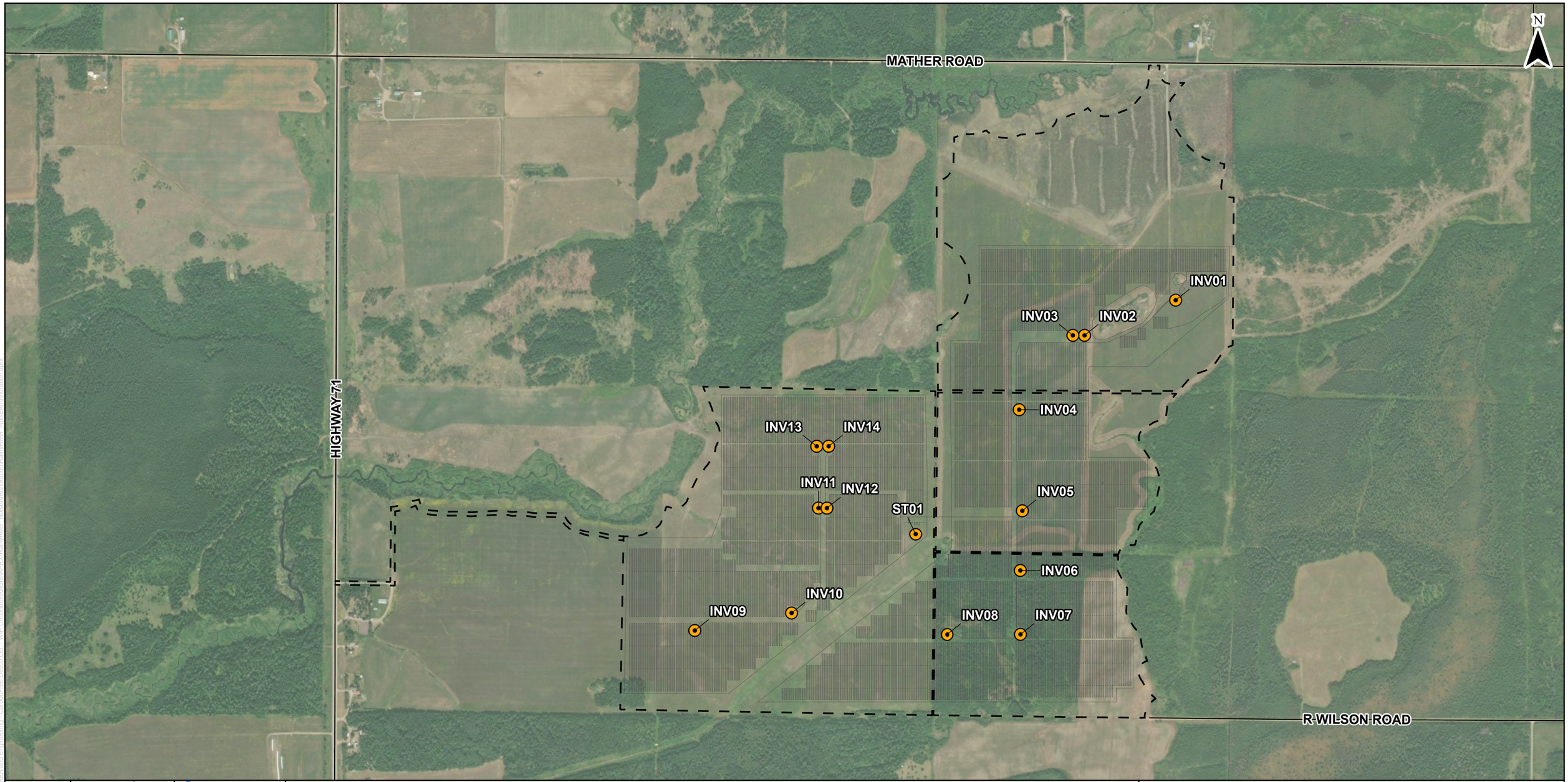
1:40,000

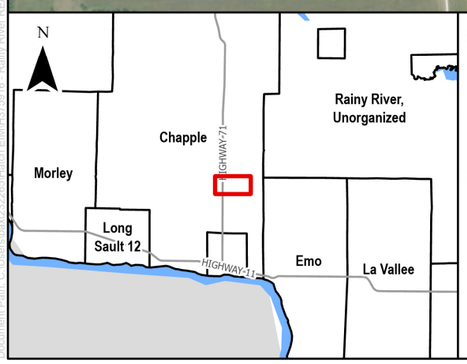
PROJECT:	Rainy River Solar Project
FIGURE TITLE:	Municipality Zoning Information
CLIENT:	CarbonFree Rainy River LTD

DWG BY:	CHK BY:	FIG NO.:	REV NO.:
V. BAXTER	C. SEHL	1	1
DATE: 14/01/26	**PAGE:** 1		

HATCH

Appendix B
Site and Noise Source Layout





LEGEND

- Noise Source
- PV Array
- Road
- Project Location

NOTES:
1. Produced by Hatch, contains information licensed under the Open Government Licence – Ontario
2. Spatial referencing: NAD 1983 UTM Zone 15N

0 125 250 500 m

1:10,000

PROJECT:	Acoustic Assessment Report Rainy River Solar Project
FIGURE TITLE:	Noise Source Layout
CLIENT:	CarbonFree Rainy River LTD

DWG BY:	CHK BY:	FIG NO.:	REV NO.:
V. BAXTER	M. ANDARGIE	1	1
DATE: 09/03/26	**PAGE:** 1		

HATCH

Appendix C
Noise Source Sound Power Levels and Equipment Vendor Information

Equipment Type	Solar Inverter Skid		NV dB	INV	Project Tags: INV xx
Manufacturer	Sungrow				
Power	4400	kW	Date	25/2/2026	
Flow	-	(m^3/s)			
Pres	-	kPA	Source	Sungrow SG4400UD	
Temperature	-	(^{0}C)		2025-05-08 Test report	

	31.5	63	125	250	500	1000	2000	4000	8000	OVL(A)
Derrived Lw	90	87	91	92	95	88	88	93	80	97

Figure 1. Photo of Solar Inverter Skid (Looking South)

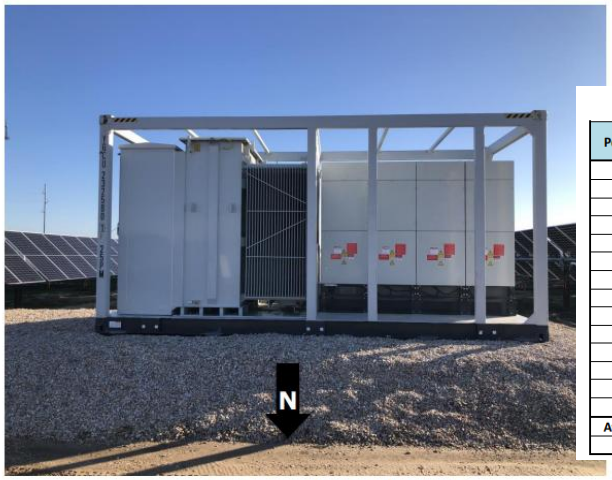
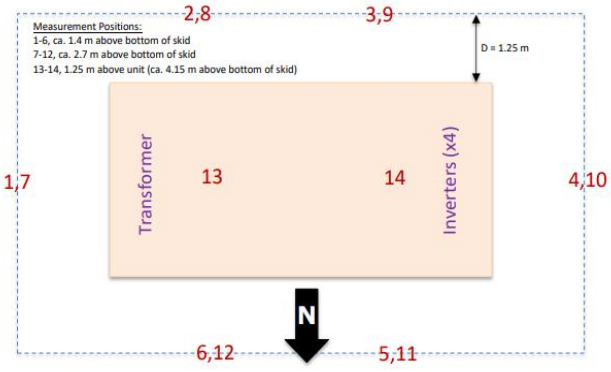


Table 1. Sound Measurement Data, dB

Position	Octave Band Center Frequency, Hz									dBA	dBZ, Calculated
	31.5	63	125	250	500	1000	2000	4000	8000		
1	67.9	64.7	67.9	61	54	47.3	46.7	51.8	36	58.5	72.3
2	64.9	65	69.1	70.3	75	68.5	68.3	67.3	59.7	75.8	78.9
3	68.5	65.9	71.5	77.4	80	72.2	72.9	71.6	63.8	80.4	83.7
4	65.4	63.8	67.3	67.2	67.8	61.7	63	67.4	53.5	71.5	75.0
5	62.9	64.3	66.8	67.9	66.5	61.5	64.7	78.8	62.5	79.9	80.1
6	60	65.8	68.9	62.4	58.7	58.1	60	68.4	53	70.4	73.8
7	61.4	63.1	69.1	56.3	53.8	46.5	47.2	49.9	35.2	57.5	70.9
8	66.1	63.9	70.9	68.3	75.1	68.3	66.8	65.9	55.6	75.2	78.7
9	67.8	65.7	71.4	76.3	77.9	71.6	69.5	67.1	56.5	78	82.0
10	64.9	62.9	70.4	66.8	67.2	60.9	61.9	65.3	51.9	70.2	75.1
11	63.9	63.2	68.2	67	64.6	59.5	64.6	74.2	60.4	75.8	77.0
12	59.4	64.7	66.2	64.9	59	55.7	57.5	68.9	52.5	70.5	73.2
13	69.1	62.3	71.6	62.1	64.8	59.7	58.5	66.2	49	69.3	75.4
14	76.3	68.1	68.6	68.1	70.8	64.9	63.5	68.8	53.2	73.3	79.4
Average	**68.1**	**64.8**	**69.5**	**70.3**	**72.7**	**65.9**	**65.9**	**70.8**	**57.6**	**75.1**	**78.3**
L_w	**90.0**	**86.7**	**91.4**	**92.2**	**94.6**	**87.8**	**87.7**	**92.6**	**79.5**	**97.0**	**100.2**

Figure 2. Measurement Positions, Overhead View



Equipment Type	150 kV BIL 68 MVA Transformer ONAN		NV dB	TR_68	Project Tags ST01
Manufacturer	Larson Electronics				
Power	68	MVA	Date	2026.03.09	
Flow	-	(m^3/s)			
Pres	-	kPA	Source	NEMA TR1-1993 (R2000), Oil Filled- Forced Air	
Temperature	-	(^{0}C)		Larson Electronics 68 MVA 150 kV BIL MT-PSTC-R7-3P	

	31.5	63	125	250	500	1000	2000	4000	8000	OVL
Derrived Lw	100	106	108	103	103	97	92	87	80	104

From Handbook of Noise and Vibration Control (Crocker, 2007, page 1335-1336, Eq. 18 and Table 20)

Average LpA	77	dBA	Based on NEMA TR1-1993 (R2000), Table 0-4, Oil Filled, Naturally Air Cooled
Estimated surface area	270.5	m^2	Estimated based on Larson Electric specifications

	31.5	63	125	250	500	1000	2000	4000	8000	OVL (dBA)
STEP 1: Correction factors										
C1 Outdoors, indoors in mechanical room over 140 m^3	-11	-5	-3	-8	-8	-14	-19	-24	-31	
C2 - Indoors	-11	-2	3	-2	-2	-11	-19	-24	-31	
C3 - Serious Noise Problems	-11	-2	3	2	2	-4	-9	-14	-21	

STEP 2: Sound Power Level calculated as Lw=Average LpA + Awt + 10*log(Estimated surface area) + C + 10										
C1 based [dB]	100	106	108	103	103	97	92	87	80	104
C2 based [dB]	100	109	114	109	109	100	92	87	80	109
C3 based [dB]	100	109	114	113	113	107	102	97	90	113
A-weightings	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1	

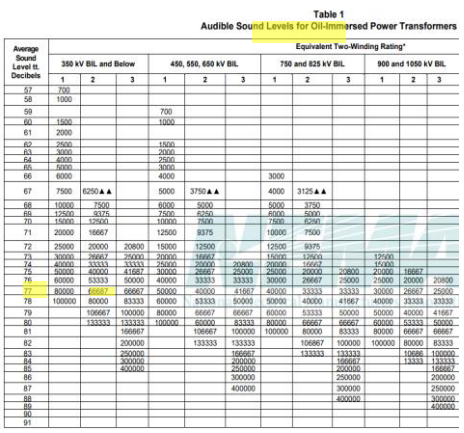
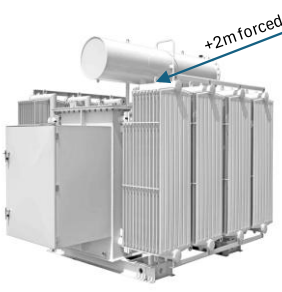


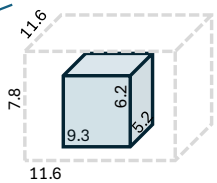
Table 1
Audible Sound Levels for Oil-Immersed Power Transformers

Average Sound Level tt. Decibels	Equivalent Two-Winding Rating*											
	350 kV BIL and Below			450, 550, 650 kV BIL			750 and 825 kV BIL			900 and 1050 kV BIL		
	1	2	3	1	2	3	1	2	3	1	2	3
57	700											
58	1000											
59				700								
60	1500			1000								
61	2000											
62	2500			1500								
63	3000			2000								
64	4000			2500								
65	5000			3000								
66	6000			4000			3000					
67	7500	6250▲▲		5000	3750▲▲		4000	3125▲▲				
68	10000	7500		6000	5000		5000	3750				
69	12500	9375		7500	6250		6000	5000				
70	15000	12500		10000	7500		7500	6250				
71	20000	16667		12500	9375		10000	7500				
72	25000	20000	20800	15000	12500		12500	9375				
73	30000	26667	25000	20000	16667		15000	12500		12500		
74	40000	33333	33333	25000	20000	20800	20000	16667		15000		
75	50000	40000	41667	30000	26667	25000	25000	20000	20800	21000	16667	
76	60000	53333	50000	40000	33333	33333	30000	26667	25000	25000	20000	20800
77	80000	66667	66667	50000	40000	41667	40000	33333	33333	30000	26667	25000
78	100000	80000	83333	60000	53333	50000	50000	40000	41667	40000	33333	33333
79		106667	100000	80000	66667	66667	60000	53333	50000	50000	40000	41667
80		133333	133333	100000	80000	83333	80000	66667	66667	60000	53333	50000
81			166667		106667	100000	100000	80000	83333	80000	66667	66667
82			200000		133333	133333		106667	100000	100000	80000	83333
83			250000			166667		133333	133333		10686	100000
84			300000			200000			166667		13333	133333
85			400000			250000			200000			166667
86						300000			250000			200000
87						400000			300000			250000
88									400000			300000
89												400000
90												
91												

Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

Withstand Time for Three-Phase Short Circuit: 2 seconds
Magnetizing Current: < 0.5 % of Full Load Current
Maximum RIV Level: 300 Micro Volts
Cooling Class: ONAN/ONAF/ONAF; Self-Cooled/Fan-Cooled
Forced Air (Fans): Included, two stages, Support frames to be directly attached to the tank (Not directly mounted on Radiators), Auto / Manual-Local/ Remote Controlled, 1 Phase 240 V AC, w/ Alarm/ controlrelay SEL 2414, Self-resetting MCB Protected
Finish Color: ANSI 70 Grey
Mounting: Pad Mounted
Conduit Opening: N/A
Tank Cover Access Handhole: N/A
Dimensions*: 365"-W x 205"-D x 245"-H
Dry Weight (w/o Oil)*: TBD
Total Weight (Liquid Filled)*: 276,790.37 lbs
*Please note that numbers are approximate and subject to change





Height x 1.25

	Pres. Bound	Acutal Dim
D	5.8 m	5.2 m
W	11.6 m	9.3 m
H	7.8 m	6.2 m
Area	270.5 m^2	

13.5.5 Sound power level calculation (L_w)

The sound power level shall be computed for each frequency band (A-weighted, one-third octave band, or discrete frequency) using Equation (34):

$$L_w = L_p + 10 \cdot \log_{10}(S) \quad (34)$$

The measurement surface area S is the vertical area (in square meters or square feet) enveloping the transformer (measurement surface) on which the sound measurement points are located plus the horizontal plane bounded by the vertical measurement surface.

Alternatively, for large transformers, the measurement surface area is approximately equal to 125% of the vertical area enveloping the transformer (measurement surface).

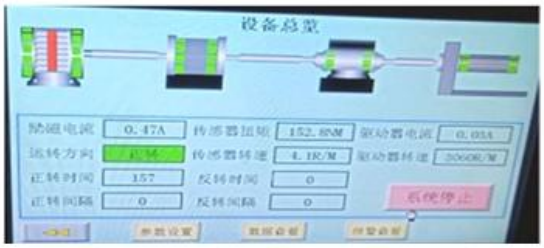
NEXTracker
A Flex Company

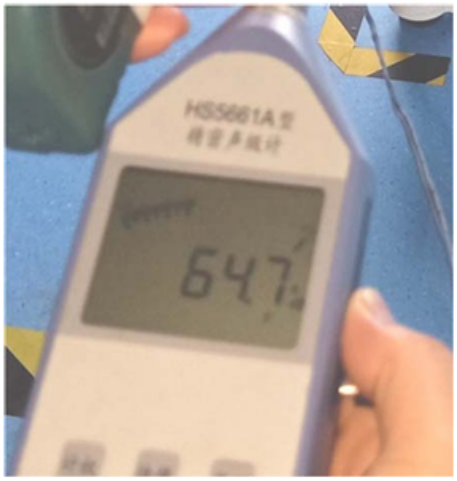
Nextracker Motor Sound Summary

Each Nextracker row uses a 24V DC motor powered by a Nextracker controller (SPC). To track the Sun, the motor operates for five to ten seconds every few minutes. The noise level of the motors is tested by the manufacturer. Test reports from the manufacturer indicate that the sound power level is approximately ~65dB. The sound level produced is low and essentially indistinguishable to surrounding site noises such as inverters, transformers, and HVAC units.

Below is a Motor test report from Nextracker Vendor.

Distance	Sound Level	Equivalent Sound
3m (9.8 ft)	~ 65dB	Normal Conversation, Quiet Suburb
30m (98 ft)	~ 45dB	Light Rain, Bird calls
300m (980 ft)	~ 25dB	Leaves Rustling, Whisper

Applicator	Lu Weijian	Department	Technical	Date	2020.04.14
Sample name		Drawing No.		Sample No.	2
Test purpose	Test gearbox motor can meet the noise standard				
Test process	1. The test motor shall be isolated from the aging table to prevent it from being affected by the noise of the aging table. The torque shall be set to 150N.m for 10min forward rotation, 1min stop, 10min reverse and 1min stop, work for 2 cycles. The noise meter should be 1m to the under test motor. 2. Acceptable standard: Noise during the test shall be ≤65dB				
Test equipment	300N.m dynamometer， noise meter				
Test cycle	1 day				
Process Description	1. Clamp the sample motor and test the corresponding data according to the above test methods 1-1 Ambient noise 56.1dB  1-2 Dynamometer parameter setting 150N.m  1-3 Test the motor noise when running as required, and the horizontal distance from the motor is 1m  1-4 Motor noise test result: 64.7dB				

			
Test report	No. B1 Motor noise 64.7 dB; No. F1 Motor noise 63.2 dB;		
Test result	According to the test results show that the stable operation of electric motor noise can meet the performance requirements;		
Operator	Sun Jieying	Audit	Lu Weijian

Appendix D
POR Noise Impact Table and Noise Contour Plot

Point of Reception Noise Impact Table

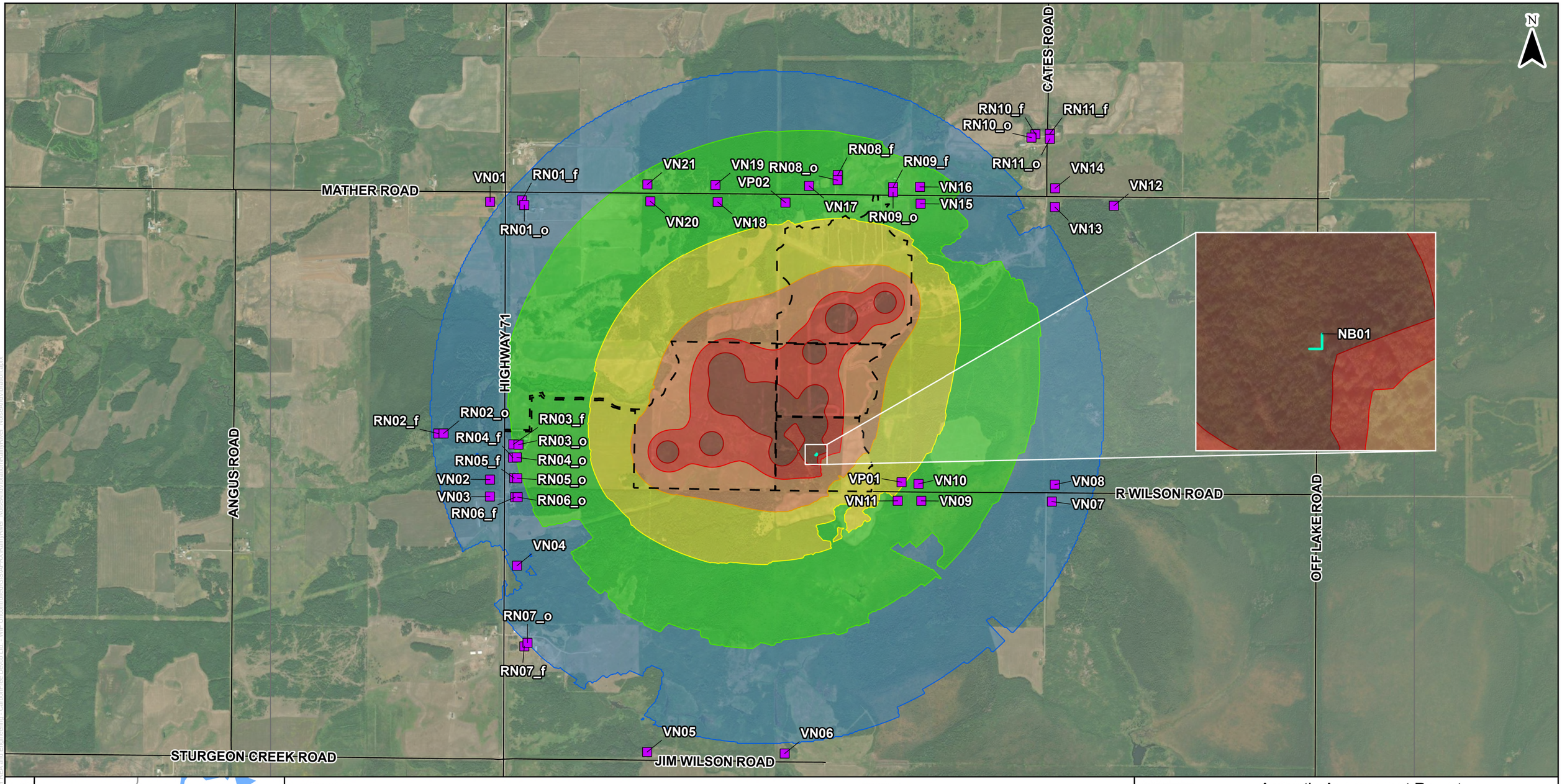
Receptor ID	Top Noise Sources										
	1	2	3	4	5	6	7	8	9	10	
RN01_f	ST01	INV09	INV10	INV13	INV14	INV11	INV12	INV04	INV01	INV02	Source ID
	26 dBA	17 dBA	16 dBA	16 dBA	16 dBA	15 dBA	15 dBA	13 dBA	0 dBA	0 dBA	Partial Level
	1910 m	1726 m	1832 m	1554 m	1579 m	1669 m	1685 m	1956 m	2240 m	2036 m	Distance
RN01_o	ST01	INV09	INV10	INV13	INV14	INV11	INV12	INV04	INV03	INV01	
	26 dBA	18 dBA	17 dBA	16 dBA	16 dBA	15 dBA	15 dBA	13 dBA	13 dBA	0 dBA	
	1881 m	1694 m	1801 m	1525 m	1550 m	1639 m	1656 m	1931 m	1984 m	2220 m	
RN02_f	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV01	INV02	INV03	
	28 dBA	23 dBA	20 dBA	20 dBA	20 dBA	20 dBA	16 dBA	0 dBA	0 dBA	0 dBA	
	1959 m	1364 m	1706 m	1729 m	1731 m	1762 m	1621 m	2765 m	2504 m	2474 m	
RN02_o	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV01	INV02	INV03	
	26 dBA	20 dBA	18 dBA	17 dBA	17 dBA	17 dBA	15 dBA	0 dBA	0 dBA	0 dBA	
	1928 m	1333 m	1676 m	1698 m	1701 m	1732 m	1590 m	2735 m	2474 m	2444 m	
RN03_f	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV06	
	29 dBA	25 dBA	21 dBA	21 dBA	21 dBA	20 dBA	19 dBA	16 dBA	15 dBA	14 dBA	
	1523 m	915 m	1279 m	1301 m	1321 m	1352 m	1174 m	1870 m	1594 m	1794 m	
RN03_o	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV06	
	29 dBA	26 dBA	21 dBA	21 dBA	21 dBA	21 dBA	19 dBA	16 dBA	16 dBA	14 dBA	
	1493 m	885 m	1249 m	1271 m	1293 m	1323 m	1144 m	1841 m	1564 m	1764 m	
RN04_f	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	29 dBA	25 dBA	21 dBA	21 dBA	20 dBA	20 dBA	19 dBA	16 dBA	15 dBA	14 dBA	
	1538 m	917 m	1301 m	1322 m	1352 m	1381 m	1179 m	1896 m	1595 m	1793 m	
RN04_o	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	29 dBA	25 dBA	21 dBA	21 dBA	21 dBA	20 dBA	19 dBA	16 dBA	16 dBA	14 dBA	
	1516 m	894 m	1279 m	1300 m	1331 m	1360 m	1157 m	1874 m	1573 m	1770 m	
RN05_f	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	29 dBA	25 dBA	20 dBA	20 dBA	20 dBA	20 dBA	19 dBA	16 dBA	15 dBA	14 dBA	
	1559 m	923 m	1333 m	1354 m	1398 m	1426 m	1187 m	1934 m	1595 m	1792 m	
RN05_o	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	29 dBA	25 dBA	21 dBA	20 dBA	20 dBA	20 dBA	19 dBA	16 dBA	16 dBA	14 dBA	
	1542 m	905 m	1317 m	1338 m	1382 m	1411 m	1169 m	1917 m	1577 m	1774 m	
RN06_f	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	28 dBA	25 dBA	20 dBA	20 dBA	20 dBA	19 dBA	19 dBA	15 dBA	15 dBA	14 dBA	
	1587 m	942 m	1372 m	1393 m	1448 m	1476 m	1205 m	1974 m	1603 m	1798 m	
RN06_o	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV04	INV08	INV07	
	29 dBA	25 dBA	20 dBA	20 dBA	20 dBA	19 dBA	19 dBA	16 dBA	15 dBA	14 dBA	
	1573 m	928 m	1360 m	1380 m	1436 m	1464 m	1191 m	1961 m	1589 m	1784 m	
RN07_f	INV09	INV08	INV10	INV11	INV12	ST01	INV01	INV02	INV03	INV04	
	22 dBA	18 dBA	16 dBA	14 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	
	1435 m	1910 m	1637 m	1899 m	1913 m	2021 m	2961 m	2721 m	2699 m	2456 m	

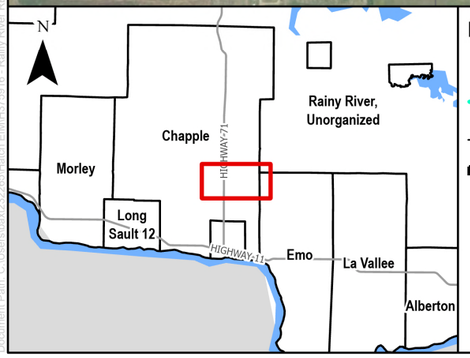
Receptor ID	Top Noise Sources									
	1	2	3	4	5	6	7	8	9	10
RN07_o	ST01	INV09	INV08	INV10	INV11	INV12	INV13	INV01	INV02	INV03
	26 dBA	20 dBA	16 dBA	15 dBA	13 dBA	13 dBA	12 dBA	0 dBA	0 dBA	0 dBA
	1993 m	1406 m	1882 m	1608 m	1870 m	1884 m	2000 m	2932 m	2692 m	2671 m
RN08_f	ST01	INV01	INV02	INV03	INV04	INV14	INV05	INV13	INV12	INV11
	32 dBA	29 dBA	28 dBA	28 dBA	26 dBA	23 dBA	23 dBA	23 dBA	22 dBA	22 dBA
	1446 m	808 m	851 m	851 m	1059 m	1320 m	1327 m	1336 m	1469 m	1479 m
RN08_o	ST01	INV01	INV02	INV03	INV04	INV05	INV12	INV11	INV06	INV07
	30 dBA	27 dBA	26 dBA	26 dBA	24 dBA	21 dBA	20 dBA	20 dBA	19 dBA	18 dBA
	1417 m	779 m	821 m	820 m	1029 m	1297 m	1441 m	1451 m	1458 m	1629 m
RN09_f	ST01	INV01	INV02	INV03	INV04	INV12	INV11	INV05	INV14	INV06
	29 dBA	28 dBA	26 dBA	26 dBA	23 dBA	18 dBA	18 dBA	18 dBA	16 dBA	16 dBA
	1510 m	687 m	831 m	843 m	1084 m	1585 m	1599 m	1331 m	1455 m	1485 m
RN09_o	ST01	INV01	INV02	INV03	INV04	INV12	INV11	INV05	INV14	INV06
	29 dBA	29 dBA	27 dBA	26 dBA	23 dBA	18 dBA	18 dBA	18 dBA	17 dBA	16 dBA
	1484 m	657 m	803 m	815 m	1057 m	1562 m	1576 m	1303 m	1433 m	1457 m
RN10_f	INV01	INV02	INV03	INV04	ST01	INV05	INV06	INV07	INV08	INV09
	23 dBA	21 dBA	21 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1340 m	1578 m	1601 m	1843 m	2277 m	2037 m	2166 m	2305 m	2423 m	2888 m
RN10_o	INV01	INV02	INV03	INV04	ST01	INV05	INV06	INV07	INV08	INV09
	21 dBA	19 dBA	18 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1309 m	1547 m	1570 m	1812 m	2246 m	2006 m	2136 m	2275 m	2393 m	2857 m
RN11_f	INV01	INV02	INV03	INV04	ST01	INV05	INV06	INV07	INV08	INV09
	22 dBA	20 dBA	20 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1400 m	1642 m	1665 m	1906 m	2339 m	2094 m	2220 m	2356 m	2479 m	2954 m
RN11_o	INV01	INV02	INV03	INV04	ST01	INV05	INV06	INV07	INV08	INV09
	20 dBA	18 dBA	18 dBA	13 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1379 m	1622 m	1646 m	1886 m	2318 m	2071 m	2197 m	2332 m	2456 m	2935 m
VN01	INV13	INV14	INV11	INV09	INV12	INV10	ST01	INV01	INV02	INV03
	20 dBA	20 dBA	19 dBA	19 dBA	19 dBA	18 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1698 m	1724 m	1804 m	1821 m	1821 m	1948 m	2053 m	2421 m	2212 m	2182 m
VN02	ST01	INV09	INV11	INV12	INV13	INV14	INV10	INV07	INV05	INV08
	30 dBA	26 dBA	22 dBA	22 dBA	21 dBA	21 dBA	18 dBA	18 dBA	18 dBA	15 dBA
	1700 m	1066 m	1471 m	1492 m	1530 m	1559 m	1330 m	1936 m	1995 m	1739 m
VN03	ST01	INV09	INV11	INV12	INV13	INV14	INV07	INV10	INV08	INV06
	30 dBA	25 dBA	22 dBA	21 dBA	21 dBA	21 dBA	18 dBA	18 dBA	15 dBA	14 dBA
	1728 m	1086 m	1507 m	1528 m	1576 m	1604 m	1946 m	1350 m	1751 m	1976 m
VN04	ST01	INV09	INV08	INV07	INV10	INV11	INV12	INV13	INV14	INV06
	25 dBA	25 dBA	20 dBA	19 dBA	18 dBA	16 dBA	16 dBA	16 dBA	15 dBA	14 dBA
	1757 m	1120 m	1707 m	1890 m	1361 m	1586 m	1603 m	1693 m	1716 m	1957 m
VN05	INV09	INV08	INV10	ST01	INV01	INV02	INV03	INV04	INV05	INV06
	19 dBA	18 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1787 m	1944 m	1869 m	2164 m	3022 m	2829 m	2817 m	2576 m	2332 m	2185 m

Receptor ID	Top Noise Sources									
	1	2	3	4	5	6	7	8	9	10
VN06	INV08	INV07	INV09	INV10	INV06	ST01	INV01	INV02	INV03	INV04
	19 dBA	19 dBA	18 dBA	14 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1782 m	1791 m	1922 m	1890 m	1962 m	2054 m	2745 m	2609 m	2605 m	2393 m
VN07	ST01	INV06	INV05	INV01	INV02	INV03	INV04	INV07	INV08	INV09
	30 dBA	22 dBA	21 dBA	21 dBA	20 dBA	20 dBA	20 dBA	16 dBA	16 dBA	0 dBA
	1779 m	1480 m	1532 m	1542 m	1646 m	1669 m	1667 m	1436 m	1630 m	2303 m
VN08	ST01	INV06	INV01	INV05	INV02	INV03	INV04	INV07	INV08	INV09
	30 dBA	22 dBA	22 dBA	21 dBA	21 dBA	21 dBA	20 dBA	16 dBA	16 dBA	0 dBA
	1767 m	1469 m	1478 m	1511 m	1595 m	1620 m	1631 m	1437 m	1633 m	2310 m
VN09	ST01	INV06	INV05	INV04	INV02	INV03	INV01	INV07	INV08	INV10
	36 dBA	29 dBA	28 dBA	25 dBA	24 dBA	24 dBA	24 dBA	23 dBA	23 dBA	19 dBA
	1065 m	775 m	875 m	1087 m	1176 m	1188 m	1196 m	689 m	874 m	1291 m
VN10	ST01	INV06	INV05	INV04	INV02	INV01	INV03	INV07	INV08	INV12
	36 dBA	30 dBA	29 dBA	26 dBA	26 dBA	25 dBA	25 dBA	24 dBA	24 dBA	19 dBA
	1003 m	707 m	796 m	997 m	1077 m	1094 m	1090 m	639 m	831 m	1248 m
VN11	ST01	INV06	INV05	INV04	INV08	INV02	INV03	INV07	INV01	INV10
	37 dBA	31 dBA	29 dBA	26 dBA	25 dBA	25 dBA	25 dBA	25 dBA	24 dBA	20 dBA
	948 m	666 m	781 m	1012 m	742 m	1128 m	1137 m	564 m	1179 m	1156 m
VN12	INV01	INV02	INV03	INV04	ST01	INV05	INV06	INV07	INV08	INV09
	22 dBA	15 dBA	15 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1475 m	1737 m	1766 m	1980 m	2384 m	2106 m	2202 m	2307 m	2462 m	3029 m
VN13	INV01	INV02	INV03	INV04	INV05	INV06	ST01	INV07	INV08	INV09
	25 dBA	18 dBA	18 dBA	16 dBA	15 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1157 m	1417 m	1445 m	1668 m	1816 m	1925 m	2085 m	2044 m	2187 m	2723 m
VN14	INV01	INV02	INV03	INV04	INV05	ST01	INV06	INV07	INV08	INV09
	24 dBA	17 dBA	17 dBA	15 dBA	14 dBA	0 dBA	0 dBA	0 dBA	0 dBA	0 dBA
	1216 m	1473 m	1500 m	1729 m	1888 m	2151 m	2002 m	2126 m	2263 m	2785 m
VN15	ST01	INV01	INV02	INV03	INV04	INV14	INV13	INV12	INV11	INV05
	32 dBA	32 dBA	28 dBA	28 dBA	25 dBA	22 dBA	21 dBA	21 dBA	20 dBA	19 dBA
	1517 m	623 m	818 m	836 m	1082 m	1504 m	1529 m	1620 m	1636 m	1308 m
VN16	ST01	INV01	INV02	INV03	INV04	INV14	INV13	INV12	INV11	INV10
	31 dBA	30 dBA	28 dBA	27 dBA	25 dBA	21 dBA	21 dBA	20 dBA	20 dBA	18 dBA
	1596 m	717 m	901 m	917 m	1163 m	1569 m	1592 m	1690 m	1706 m	1966 m
VN17	ST01	INV03	INV02	INV01	INV04	INV14	INV13	INV05	INV12	INV11
	33 dBA	29 dBA	29 dBA	28 dBA	26 dBA	24 dBA	24 dBA	24 dBA	23 dBA	23 dBA
	1343 m	806 m	814 m	827 m	987 m	1186 m	1199 m	1258 m	1341 m	1349 m
VN18	ST01	INV13	INV14	INV03	INV02	INV04	INV11	INV01	INV12	INV05
	34 dBA	26 dBA	26 dBA	26 dBA	26 dBA	26 dBA	25 dBA	25 dBA	25 dBA	23 dBA
	1260 m	989 m	990 m	997 m	1020 m	1060 m	1155 m	1160 m	1156 m	1300 m
VN19	ST01	INV03	INV13	INV14	INV02	INV04	INV01	INV11	INV12	INV05
	33 dBA	25 dBA	25 dBA	25 dBA	25 dBA	25 dBA	24 dBA	24 dBA	24 dBA	22 dBA
	1361 m	1078 m	1090 m	1092 m	1100 m	1152 m	1226 m	1256 m	1257 m	1396 m

Receptor ID	Top Noise Sources									
	1	2	3	4	5	6	7	8	9	10
VN20	ST01	INV13	INV14	INV11	INV12	INV03	INV04	INV02	INV10	INV09
	32 dBA	25 dBA	25 dBA	24 dBA	24 dBA	23 dBA	23 dBA	23 dBA	22 dBA	22 dBA
	1412 m	1081 m	1094 m	1237 m	1245 m	1317 m	1323 m	1344 m	1486 m	1492 m
VN21	ST01	INV13	INV14	INV11	INV12	INV03	INV02	INV04	INV01	INV09
	32 dBA	24 dBA	24 dBA	23 dBA	23 dBA	22 dBA	22 dBA	22 dBA	21 dBA	21 dBA
	1508 m	1181 m	1193 m	1337 m	1345 m	1387 m	1413 m	1405 m	1577 m	1593 m
VP01	ST01	INV06	INV05	INV04	INV02	INV03	INV01	INV07	INV08	INV10
	37 dBA	32 dBA	30 dBA	27 dBA	26 dBA	26 dBA	26 dBA	25 dBA	25 dBA	20 dBA
	909 m	616 m	714 m	930 m	1031 m	1041 m	1071 m	540 m	731 m	1152 m
VP02	ST01	INV03	INV02	INV01	INV04	INV14	INV13	INV05	INV12	INV11
	34 dBA	29 dBA	29 dBA	28 dBA	27 dBA	26 dBA	26 dBA	24 dBA	24 dBA	24 dBA
	1226 m	757 m	771 m	839 m	904 m	1042 m	1053 m	1172 m	1202 m	1208 m

Microsoft, Vantor, Vantor





LEGEND

- Point of Reception
- Noise Barrier
- Road
- Project Location

Noise Contour (dBA)

30-35 | 35-40 | 40-45 | 45-50 | 50-55 | >55

NOTES:
1. Produced by Hatch, contains information licensed under the Open Government Licence – Ontario
2. Spatial referencing: NAD 1983 UTM Zone 15N
3. Noise contours were generated based on a 10 x 10m grid at a 4.5m elevation above ground

0 250 500 1,000 m

1:22,000

PROJECT:	Acoustic Assessment Report Rainy River Solar Project
FIGURE TITLE:	Noise Contours at 4.5m Above Ground
CLIENT:	CarbonFree Rainy River LTD

DWG BY:	CHK BY:	FIG NO.:	REV NO.:
V. BAXTER	M. ANDARGIE	1	1
DATE: 09/03/26	**PAGE:** 1		

HATCH

Appendix E
Acoustic Assessment Report Checklist

Ministry of the Environment | Ministère de l'Environnement

Ontario

ACOUSTIC ASSESSMENT REPORT CHECK-LIST

Company Name: CarbonFree Rainy River Ltd.

Company Address: 1 St Clair Ave W#801
Toronto, Ontario M4T 1Y5

Location of Facility: Rainy River, 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: Doug Deeks
Name: Doug Deeks
Title: Vice President - Projects
Phone Number: 647-408-9680
Signature: _____
Date: _____

Technical Contact: Hatch Ltd
Name: Mervyn Choy
Representing: Hatch Ltd.
Phone Number: 289-326-2740
Signature: 
Date: 2026-03-13

ACOUSTIC ASSESSMENT REPORT CHECKLIST

	Required Information		
		Submitted	Explanation/Reference
1.0	**Introduction** (Project Background and Overview)	☒ Yes	Section 1
2.0	**Facility Description**		
	2.1 Operating hours of facility and significant Noise Sources	☒ Yes	Section 2
	2.2 Site Plan identifying all significant Noise Sources	☒ Yes	Appendix B
3.0	**Noise Source Summary**		
	3.1 ***Noise Source Summary Table***	☒ Yes	Table 3-4
	3.2 Source noise emissions specifications	☒ Yes	Appendix C
	3.3 Source power/capacity ratings	☒ Yes	Appendix C
	3.4 Noise control equipment description and acoustical specifications	☐ Yes	Section 5
4.0	**Point of Reception Noise Impact Calculations**		
	4.1 ***Point of Reception Noise Impact Table***	☒ Yes	Appendix D
	4.2 Point(s) of Reception (POR) list and description	☒ Yes	Table 4-1
	4.3 Land-use Zoning Plan	☒ Yes	Appendix A
	4.4 Scaled Area Location Plan	☒ Yes	Appendix A / B
	4.5 Procedure used to assess noise impacts at each POR	☒ Yes	Section 7.1
	4.6 List of parameters/assumptions used in calculations	☒ Yes	Section 7.1
5.0	**Acoustic Assessment Summary**		
	5.1 ***Acoustic Assessment Summary Table***	☒ Yes	Table 7-2
	5.2 Rationale for selecting applicable noise guideline limits	☒ Yes	Section 5
	5.3 Predictable Worst Case Impacts Operating Scenario	☒ Yes	Section 7.2
6.0	**Conclusions**		
	6.1 Statement of compliance with the selected noise performance limits	☒ Yes	Section 8
7.0	**Appendices** (Provide details such as)	☒ Yes	
	Listing of Insignificant Noise Sources	☒ Yes	Section 3
	Manufacture's Noise Specifications	☒ Yes	Appendix C
	Calculations	☒ Yes	Appendix C
	Instrumentation	☐ Yes	n/a
	Meteorology during Sound Level Measurements	☐ Yes	n/a
	Raw Data from Measurements	☐ Yes	n/a
	Drawings (Facility / Equipment)	☒ Yes	Appendix B