

EMI Report

for the

Sugar Maple Wind Power Project



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1.0 Introduction

The proposed Sugar Maple Wind Power Project is located approximately 20 km southwest of Town of Antigonish and 7 km North of Garden of Eden Lake, Nova Scotia. The proposed project is expected to be built with wind turbine generators (WTGs) which will have hub heights up to 118 m and maximum rotor diameters of 163 m. For the purposes of this assessment, the Nordex N163 6.X WTG rated at 7.0 MW was used as it has a similar hub height to the other WTGs under consideration for the project and has the largest rotor diameter of the WTGs being considered.

This Electromagnetic Interference (EMI) Study is designed to apply the guidelines identified by the joint Radio Advisory Board of Canada and Canadian Wind Energy Association Technical Information and Coordination Process Between Wind Turbines and Radiocommunication and Radar Systems¹ (herein after referred to as the RABC). The technical guidelines have been developed to apply a consistent approach to determining if wind energy developments may impact existing radio, telecommunication and radar systems. Radio communication system locations were obtained from Industry Canada Spectrum Direct website². The proposed turbine positions used in this analysis are summarized in Table 1 (including the updated location for WTG S10).

Table 1: Sugar Maple Power Project Proposed Turbine Locations

Id	Model	Easting (m)*	Northing (m)*
S1	N163 6.X	560,047	5,034,628
S2	N163 6.X	558,751	5,034,733
S3	N163 6.X	558,041	5,035,211
S4	N163 6.X	558,515	5,035,890
S5	N163 6.X	557,678	5,036,180
S6	N163 6.X	558,577	5,036,948
S7	N163 6.X	559,745	5,035,971
S8	N163 6.X	560,957	5,036,249
S9	N163 6.X	561,605	5,034,810
S10R	N163 6.X	561,602	5,036,905
S11	N163 6.X	564,428	5,038,216
S12	N163 6.X	563,307	5,038,318
S13	N163 6.X	564,543	5,037,219
S14	N163 6.X	564,890	5,036,561
S15	N163 6.X	564,927	5,034,956
S16	N163 6.X	565,981	5,035,320

* UTM NAD83(CSRS), Zone 20

2.0 Point-to-Point Systems above 890 MHz

The existing RABC guidelines describe consultation zones for Point-to-Point Systems above 890 MHz which include a 1 km consultation zone around existing transmitters and receivers as well as a variable “cylinder” between links that are based on the distance between links and the licensed radio frequencies.

A variable consultation zone along the line of sight between the transmitter and receiver recommended by RABC is calculated using the following formula:

$$L_C = R + 52\sqrt{D/F}$$

Where:

D = Path length in kilometers

F = Frequency in gigahertz

L_C = Diameter of the cylinder in meters

R = Wind turbine rotor diameter in meters

Data obtained from the Industry Canada Technical and Administrative Frequency Lists accessed through the Spectrum Management System web site² are summarized in Figure 1. The 1 km and variable cylinder consultation zones near the proposed project are shown.

One turbine is proposed within the consultation zone of a Point-to-Point microwave link. The proponent has notified the link operator and is engaged in ongoing consultation.

3.0 Broadcast Transmitters

3.1 AM Transmitters

A 15 km consultation zone is recommended by RABC for AM radio transmitters is required. A review of existing AM Radio licenses was completed and there are no AM radio transmitters located within 15 km of the proposed wind project.

There are no AM Radio Transmitters located within 15 km of the proposed Sugar Maple Wind Power Project.

3.2 FM Transmitters

For proximity reasons, the RABC suggests a 2 km consultation zone around existing FM transmitters. Two FM transmitters are located in the Town of Antigonish and another one is in Plymouth. These transmitters are more than 20 km from the closest proposed turbine.

The proposed wind project is not within the 2 km consultation zone recommended by RABC for FM transmitters.

3.3 TV Transmitters

The closest TV Transmitters are located approximately 6.9 km north of the proposed wind project and are located at Rossfield, NS. Two transmitters are located on the same tower. A 2 km consultation zone is recommended by the RABC.

Table 2: TV Transmitters Located Near the Proposed Sugar Maple Wind Power Project.

Channel	Call Sign	Latitude	Longitude
25 (UHF)	CJCB-DT-2	45.5455° N	62.2606° W
9 (VHF)	CJCB-TV-2	45.5455° N	62.2606° W

The proposed wind project is not within the 2 km consultation zone recommended by RABC for TV transmitters.

4.0 Over-the-Air Television Reception

As of August 31, 2011, the CRTC had required that all TV transmitters that serve markets with a population greater than 300,000 (Mandatory Markets) be

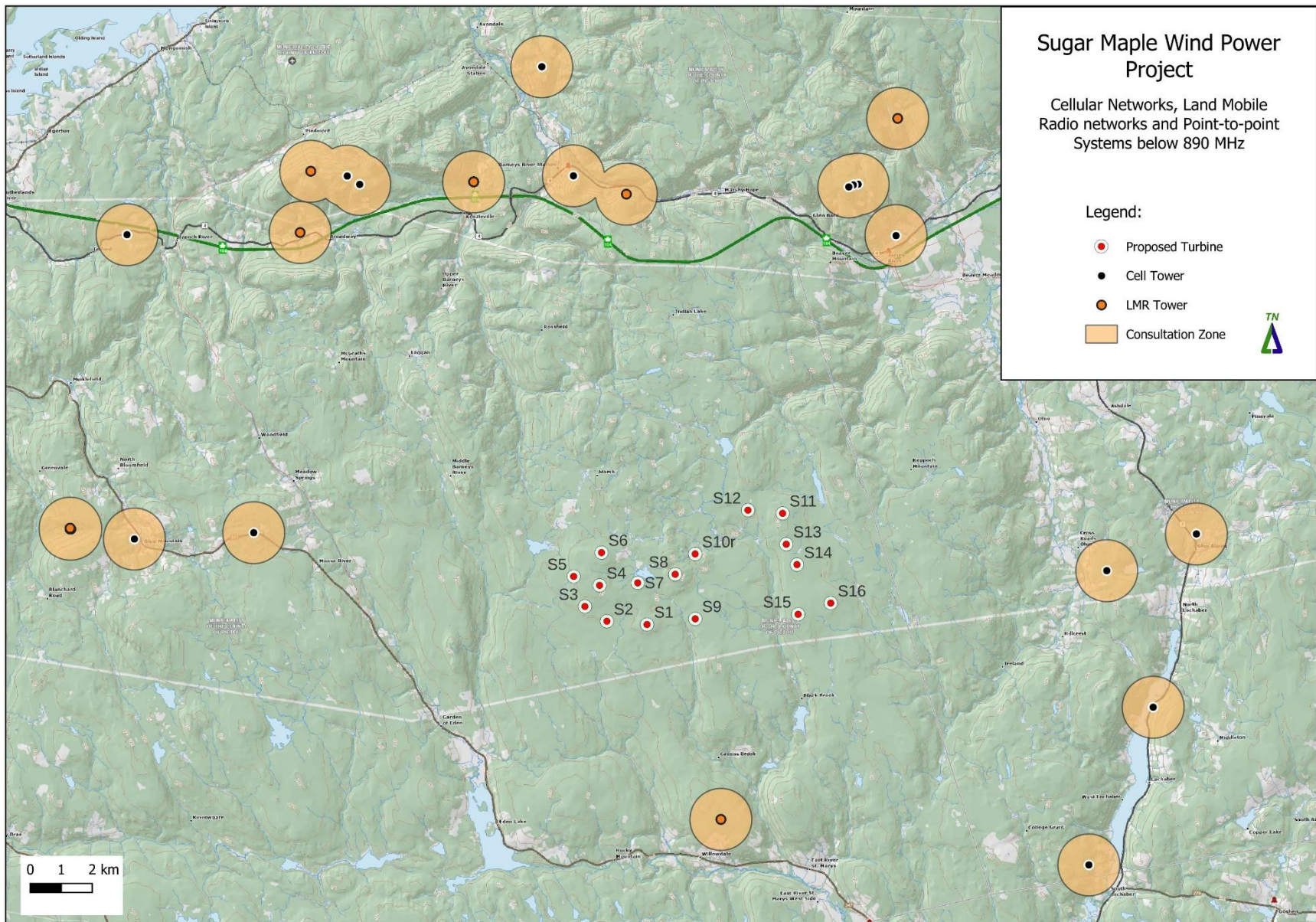


Figure 2: Cellular, Land Mobile Radio and Point-to-Point Networks (Below 890 MHz).

converted to digital technology. In most cases, transmitters in larger urban areas have been upgraded to digital and re-transmitters that serve smaller population bases continue to operate with analog equipment.

The RABC recommends television receiver consultation zones based on the whether the broadcast is delivered using analog or digital signals with consultation zones of 15 km and 10 km respectively.

Concerns related to potential interference with television transmitters or reception will be managed through the Project's Complaint Resolution Plan.

5.0 Cellular Networks, Land Mobile Radio Networks and Point-to-Point Systems below 890 MHz

5.1 Cellular Networks

There are no cellular communication towers located within the recommended 1.0 km consultation zones.

There are no Cellular/mobile data Network tower sites located within 1 km of the proposed wind project.

5.2 Land Mobile Radio Networks

Licensed mobile radio links within 20 km of the proposed wind project were mapped and 1 km consultation zones were generated (Figure 2).

There are no Land Mobile Radio Network tower sites located within 1 km of the proposed wind project.

5.3 Point-to-Point Systems Below 890 MHz

Existing low frequency Point-to-Point radio systems were mapped to determine if the locations of existing tower systems are within the 1.0 km consultation zone. After completing the analysis, it was concluded that there are no Point-to-Point Systems below 890 MHz located within the recommended consultation zone.

There are no low frequency Point-to-Point System transmitter or receiver sites located within 1 km of the proposed wind project.

6.0 Satellite Systems

6.1 Satellite Ground Stations

A review of satellite ground stations was completed.

There are no satellite ground stations located within the RABC recommended 500 m consultation zone.

6.2 DTH Receivers

A preliminary review of Direct to Home Satellite receivers has been completed. The analysis is based on the physical turbine dimensions which are:

Hub Height = 118 m

Rotor Diameter = 163 m

The RABC recommends the following formula for determining the size of the cone:

$$L_{c(m)} = R + 104\sqrt{D}/F$$

where:

L_c = Diameter of the cylinder (m)

D = Distance from the ground satellite receiver (km)

F = Frequency in GHz (11.7)

R = Rotor Diameter (163 m)

$$L_c (1 \text{ km}) = 210.7 \text{ m}$$

$$L_c (10 \text{ km}) = 313.7 \text{ m}$$

A cone based on 11.7 GHz was calculated and the satellite data from Table 3 were used for the analysis. The analysis involved identifying both horizontal and vertical zones where dwellings may be impacted by the wind project. The intersect of these two zones resulted in the final consultation zone highlighted in Figure 3.

There are no buildings that are located within the DTH consultation zones.

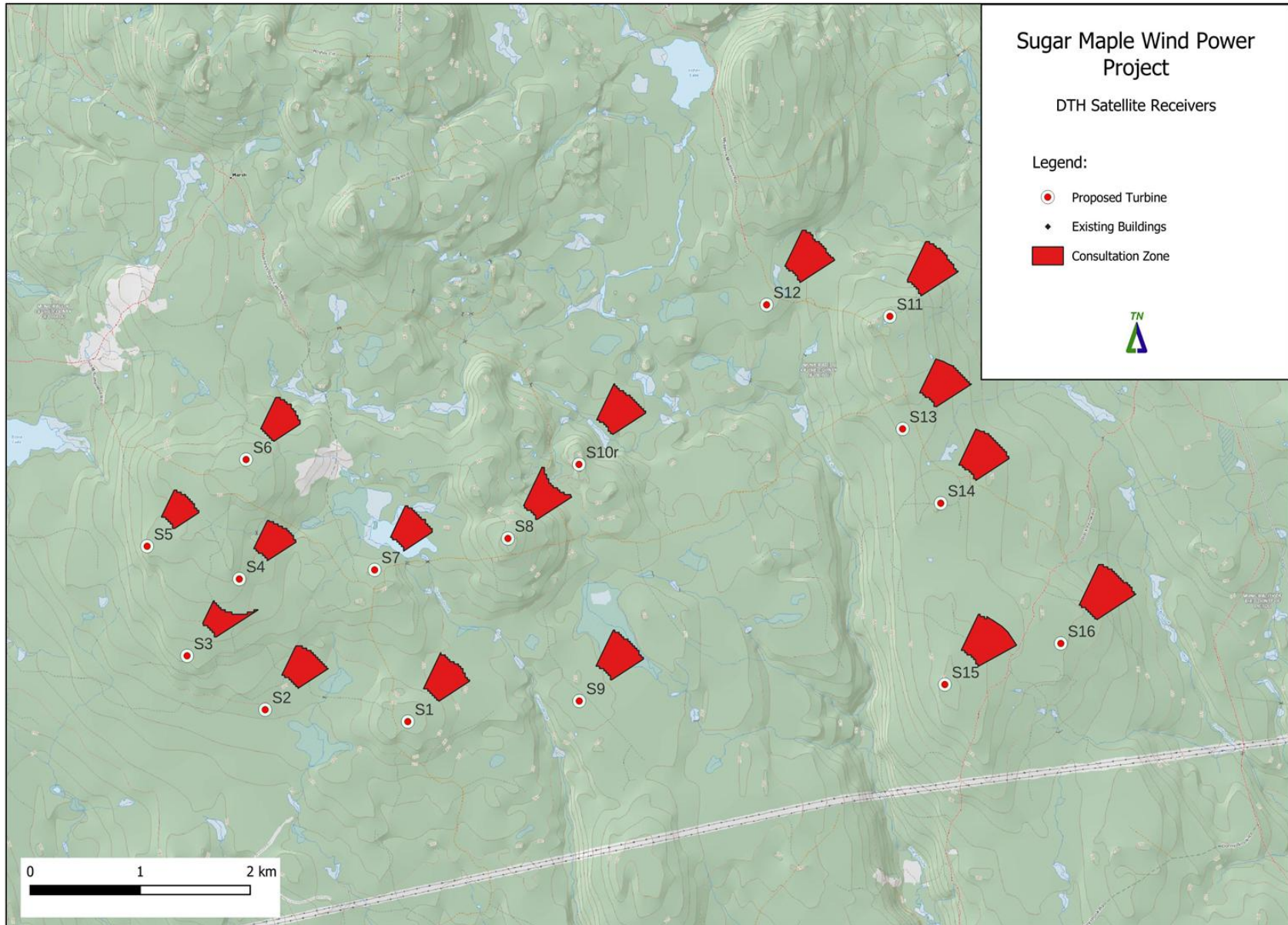


Figure 3: RABC Guideline Consultation Zones for Satellite Receivers Based on Line of Sight Cones

Table 3: Direct-To-Home Geostationary Satellite Parameters.

Service Provider	Satellite ID	Geostationary Satellite Orbit (Lat, Long)	Local Azimuth (True North)	Local Inclination
Bell Direct	Nimiq 4	0° N, 82° W	206.8°	34.1 °
	Nimiq 6	0° N, 91.1° W	217.7°	30.4 °
Shaw Direct	Anik F1R	0° N, 107.3° W	234.6 °	21.6 °
	Anik F4	0° N, 111.1° W	238.1 °	19.2 °

There are no buildings located within the RABC recommended DTH receiver consultation zones identified in this analysis.

7.0 Radar Systems

7.1 Air Defence Radar

DND has been contacted and completed an internal analysis to determine if the proposed wind project may impact existing radar installations. DND has not yet responded to the notification of the proposed wind project.

DND has been contacted and advised of the proposed wind project. DND provided a letter of non-objection.

7.2 Vessel Traffic Radar

The Canadian Coast Guard (CCG) monitors vessel traffic through a series of radar installations. The RABC has recommended a 60 km consultation zone around existing stations. The Canadian Coast Guard has been contacted, and they do not anticipate any interference issues.

CCG has been contacted and has responded that there are no anticipated issues.

7.3 Air Traffic Control Radars

Air Traffic Control utilizes several radar systems to manage aircraft surveillance and navigation. Nav Canada was contacted about the proposed wind farm and they are currently completing an internal analysis of the proposed wind farm.

Nav Canada has been contacted and responded that there are no anticipated impacts on their existing radar systems

7.4 Weather Radars

Environment and Climate Change Canada (ECCC) operate a network of Doppler radar sites across the country that collectively is known as the Canadian Weather Radar Network. The radars are used for meteorological forecasting and detecting severe weather events as they occur. Weather radar picks up the Doppler signal from the tips of the rotating blades and the wake turbulence produced as the blades pass through the air.

There are two Doppler weather radar stations that are in Nova Scotia and one in New Brunswick (Table 4). The closest weather radar site is located 124 km away from the proposed wind project and is located at Halifax, NS. This site is located outside of the 60 km consultation zone recommended by RABC and ECCC and have been contacted to discuss any potential issues or concerns about the proposed wind project.

Table 4: Nearest Weather Radar Sites.

ID and Location	Latitude	Longitude	Distance to Wind Project (km)
CXGO Halifax, NS	45.0985° N	63.7043° W	124
CXMB Marion Bridge, NS	45.9496° N	60.2055° W	174
CXNC Chipman, NB	46.2222° N	65.6992° W	204

There are no ECCC Doppler radar sites located within the RABC recommended consultation zone. ECCC has been contacted and has completed an internal analysis of potential interference issues. ECCC does not expect problematic interference issues and therefore do not oppose the proposed wind project.

8.0 VHF Omnidirectional Range (VOR)

VHF Omnidirectional systems are ground based, short distance navigation aids which provide pilots with 360-degree directional information to or from a station. The frequency range is 108.1 to 117.956 MHz.

The Charlottetown (113.8 MHz) VOR site is located 115 km from the proposed wind project and consists of VOR beacon with distance measuring equipment (Table 5).

Table 5: Closest VOR Sites.

Site	Type	Latitude	Longitude	Distance to Wind Project (km)
Charlottetown	VOR-DME	46.2892° N	63.1153° W	115
Halifax	VOR-DME	44.9231° N	63.4019° W	121
Sydney	VOR-DME	46.1614° N	60.0481° W	186
Moncton	VOR-DME	46.1161° N	64.6786° W	205
Saint John	VOR-DME	45.4072° N	65.8708° W	287

There are no VOR sites located within the RABC recommended 15 km consultation zone. Nav Canada has been contacted.

9.0 Summary

Table 6: Summary of Results from the EMI Review.

System	RABC Consultation Requirement	Result
Point-to-Point Systems above 890 MHz	1 km of transmitters/receivers A consultation cylinder based on link parameters	There are no radio link transmitters or receivers that are within 1 km of the proposed wind project. There is a link that passes close to a proposed turbine. Discussions are ongoing between the developer and link operator.
Broadcast Transmitters	AM: 15 km FM: 2 km TV: 2 km	No AM transmitters within the 15 km consultation zone. No FM Transmitters are located within the 2 km consultation zone. No TV Transmitters within the 2 km consultation zone.
Over-the-Air Reception	Digital Transmitters: 10 km Analog Transmitters: 15 km	Concerns related to potential interference with TV transmitters or receivers will be addressed through the Project's Complaint resolution Plan
Cellular Type Networks	1 km of Cell Towers	No cellular towers are located within the 1 km consultation zones.
Land Mobile Radio Networks and Point-to-point Systems below 890 MHz	1 km	No Land Mobile Radio towers and Point-to-Point systems are located within the 1 km consultation zones.
Satellite Systems	0.5 km around satellite transmit/receive locations Consultation cone based on turbine and satellite locations	No ground satellite stations located within 500 m of the proposed wind farm. No dwellings or buildings are located within the projected consultation cones.
Air Defence Radars, Vessel Traffic Radars, Air Traffic Control Radars and Weather Radars	DND Air Defence radar: 100 km Air Traffic Control Primary Surveillance Radar 80 km Air Traffic Control Secondary Surveillance Radar 10 km DND Precision Approach radar : 40 km Canadian Coast Guard Vessel Traffic radar: 60 km Airfield: 10 km ECCC Weather Radar: 50km	Proponent and CBCL conducted consultation with DND, NAV Canada, Canadian Coast Guard and ECCC per the RABC & CanWEA Guidelines (2025). Further details are provided in the Environmental Assessment registration document.
VOR	VOR Beacon: 15 km	There are no VOR sites located within the 15 km consultation zone. NAV Canada contacted and details outlined in the Environmental Assessment registration document.

10.0 References

- [1] Radio Advisory Board of Canada and Canadian Wind Energy Association (CanWEA), *Technical Information and Coordination Process Between Wind Turbines and Radiocommunication and Radar Systems*, Updated February 18, 2025
- [2] Spectrum Management System data base, Industry Canada, <<https://sms-gs.ic.gc.ca/frequencySearch/searchByGeographicArea?execution=e2s1>>, Accessed March, 2026.