

Higgins Mountain Wind Farm Project

Point Count Locations - 2021 Breeding

Study Area

Assessment Area

Point Count

Transportation

Trans-Canada Highway

Road

Unpaved Road

Utilities (line)

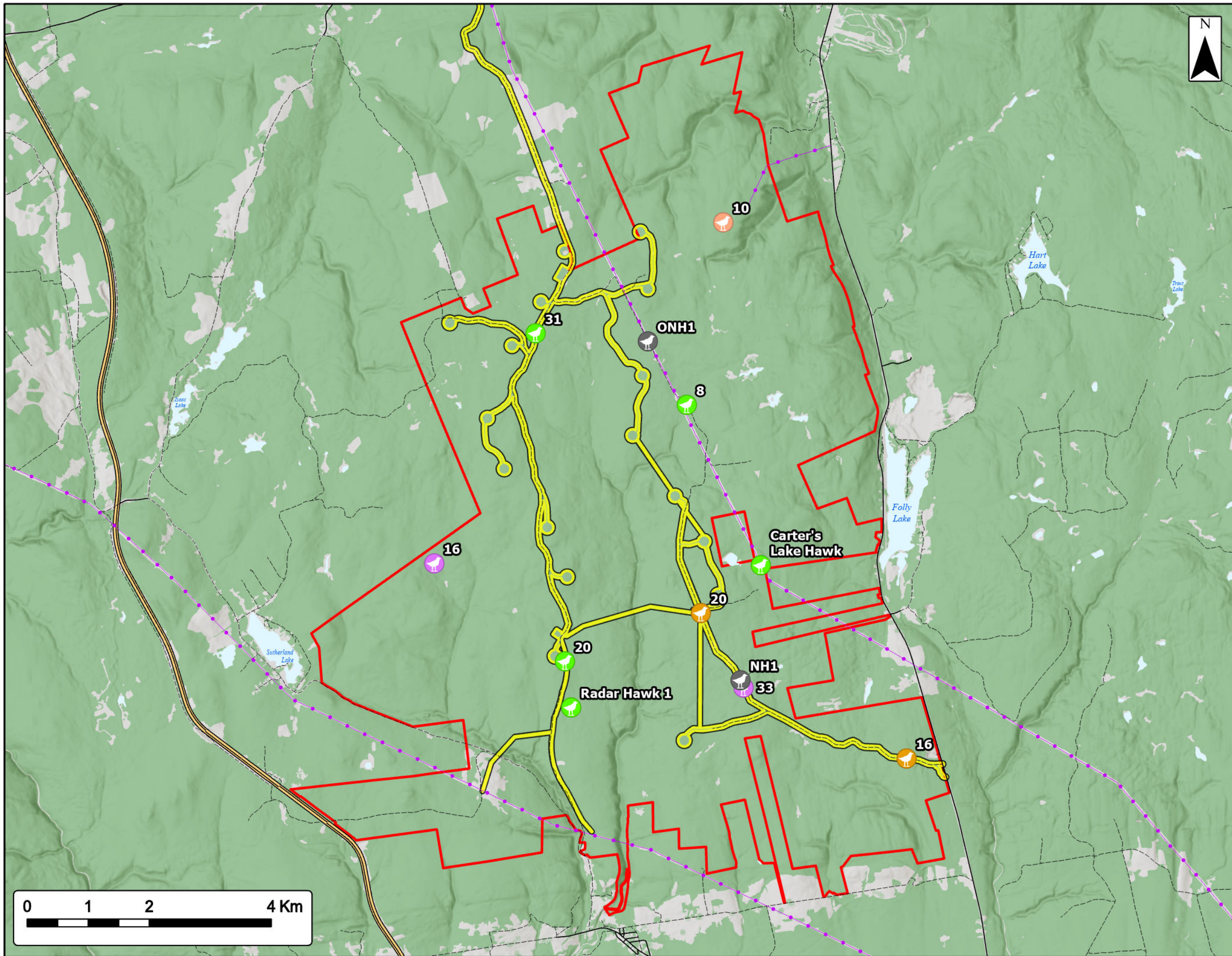
Existing Transmission Lines

Water Features

Mapped Lakes and Rivers

Coordinate System: NAD83 UTM Zone 20N		Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCAN	
Date:	Mar 2023	Project #:	20-7376
Scale:	1:60,000	Drawing #:	7.30
Drawn By:	P. Opra		
Checked By:	S. Dickey		

Engineering - Surveying - Environmental
Bedford - Antigonish - Moncton - St. John's



**Higgins Mountain
Wind Farm Project**
Avifauna Species at Risk - Observation Locations



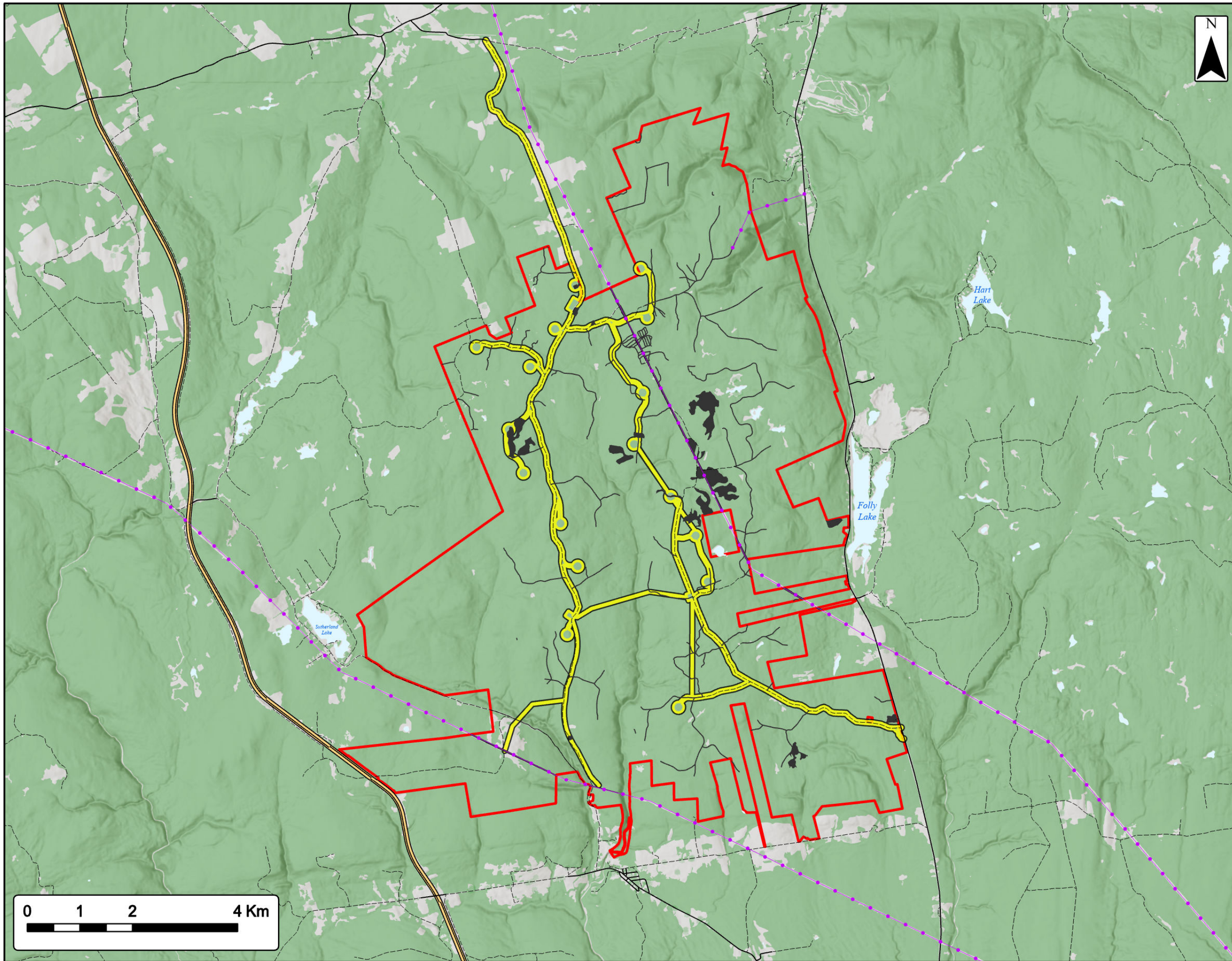
- Study Area
- Assessment Area
- Breeding (2020)
- Breeding Nocturnal (2020)
- Fall Migration (2020)
- Winter (December 2020)
- Spring Migration (2021)
- Transportation**
- Trans-Canada Highway
- Road
- Unpaved Road
- Utilities (line)**
- Existing Transmission Lines
- Water Features**
- Mapped Lakes and Rivers



Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCan

Date: Mar 2023	Project #: 20-7376
Scale: 1:60,000	Drawing #: 7.31
Drawn By: P. Opra	
Checked By: S. Dickey	





Higgins Mountain Wind Farm Project
Potential Common Nighthawk Breeding Habitat

Study Area

Assessment Area

Common Nighthawk

Transportation

Trans-Canada Highway

Road

Unpaved Road

Utilities (line)

Existing Transmission Lines

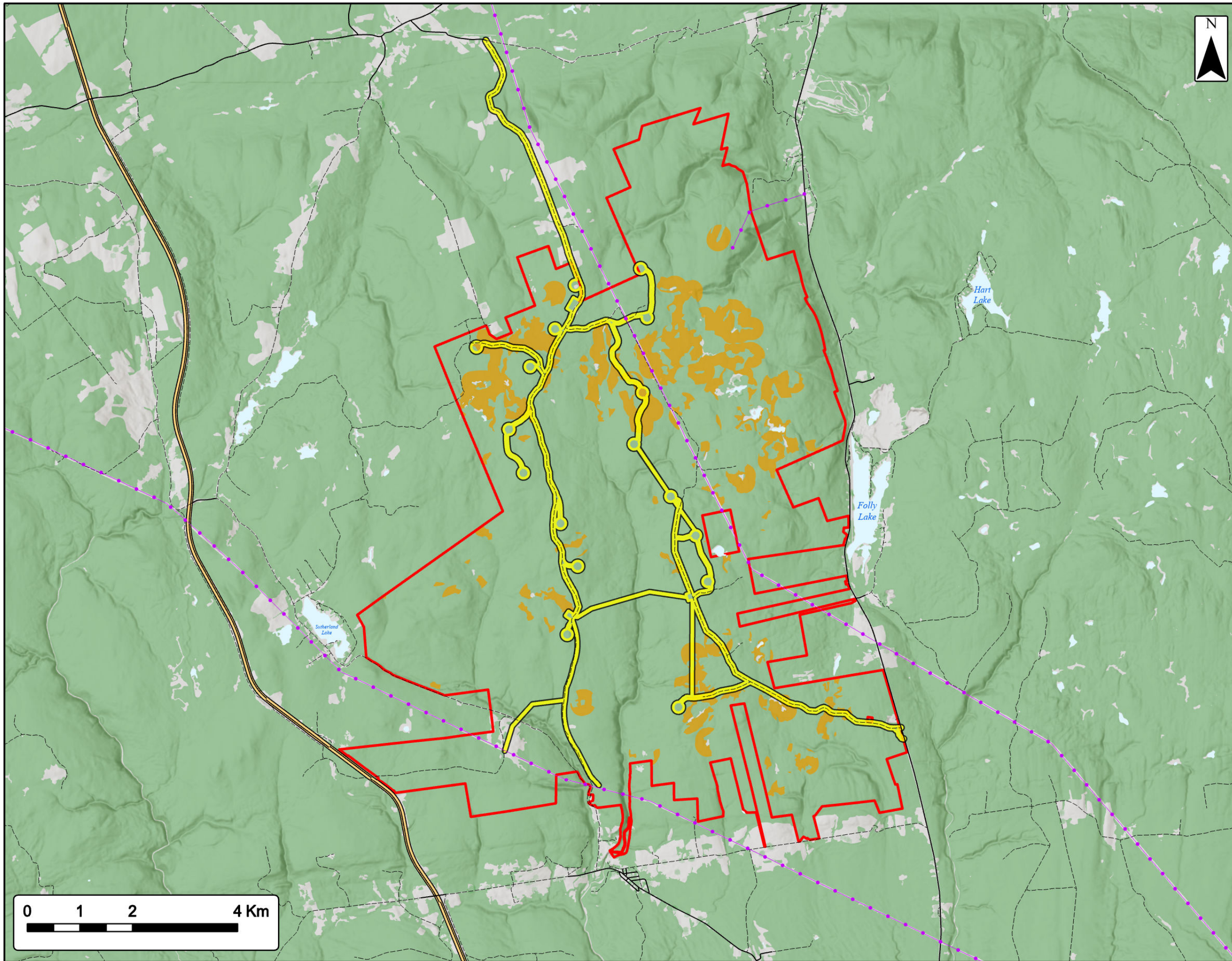
Water Features

Mapped Lakes and Rivers

Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCan

Date:	Mar 2023	Project #:	20-7376
Scale:	1:70,000	Drawing #:	7.32A
Drawn By:	P. Opra		
Checked By:	S. Dickey		

Strum
 CONSULTING
 Engineering - Surveying - Environmental
 Bedford - Antigonish - Moncton - St. John's



**Higgins Mountain
Wind Farm Project**
Potential Rusty Blackbird Breeding Habitat



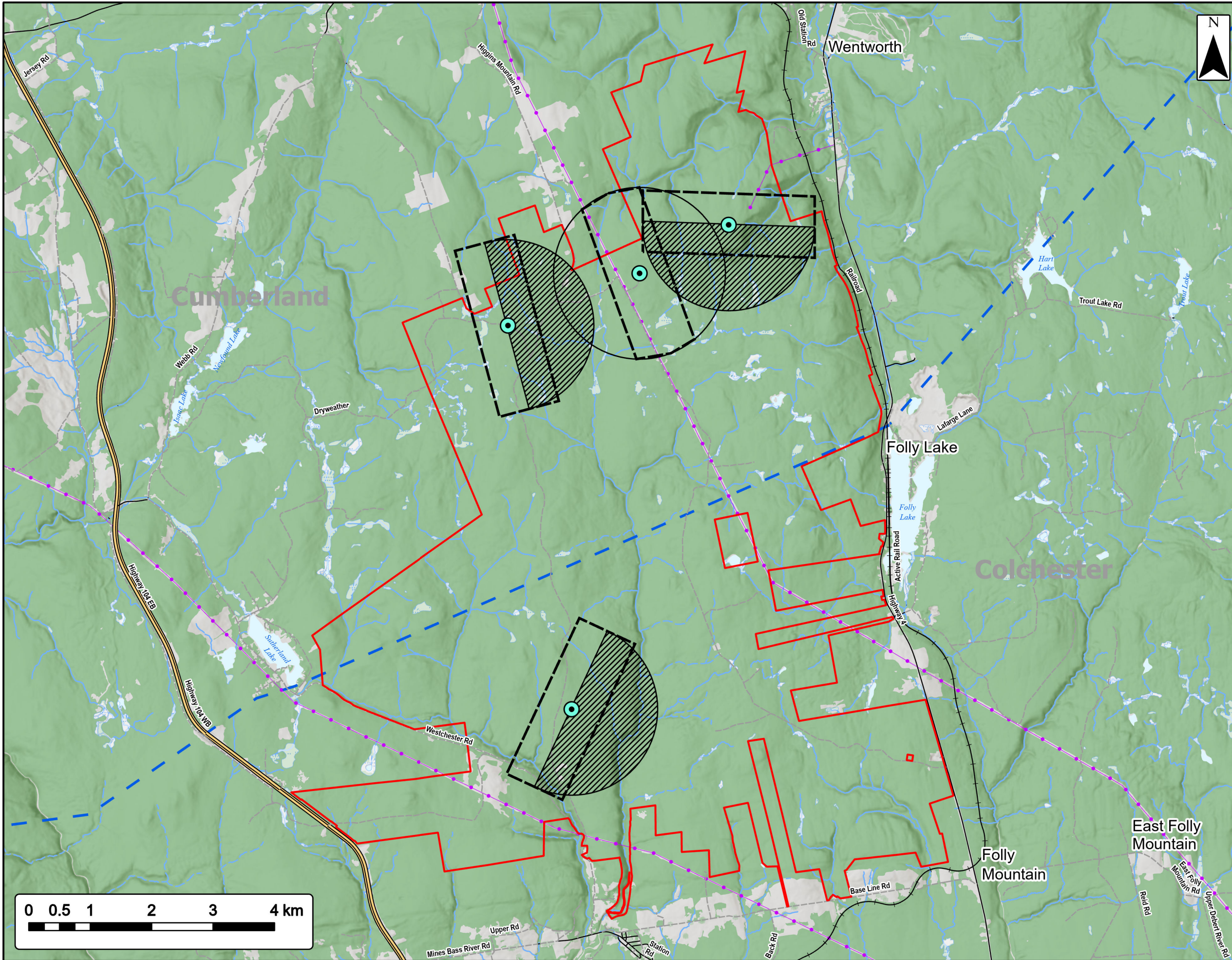
Study Area	
Assessment Area	
Rusty Blackbird	
Transportation	
Trans-Canada Highway	
Road	
Unpaved Road	
Utilities (line)	
Existing Transmission Lines	
Water Features	
Mapped Lakes and Rivers	



Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCan

Date:	Mar 2023	Project #:	20-7376
Scale:	1:70,000	Drawing #:	7.32B
Drawn By:	P. Opra		
Checked By:	S. Dickey		





Higgins Mountain Wind Farm Project

Bird Radar



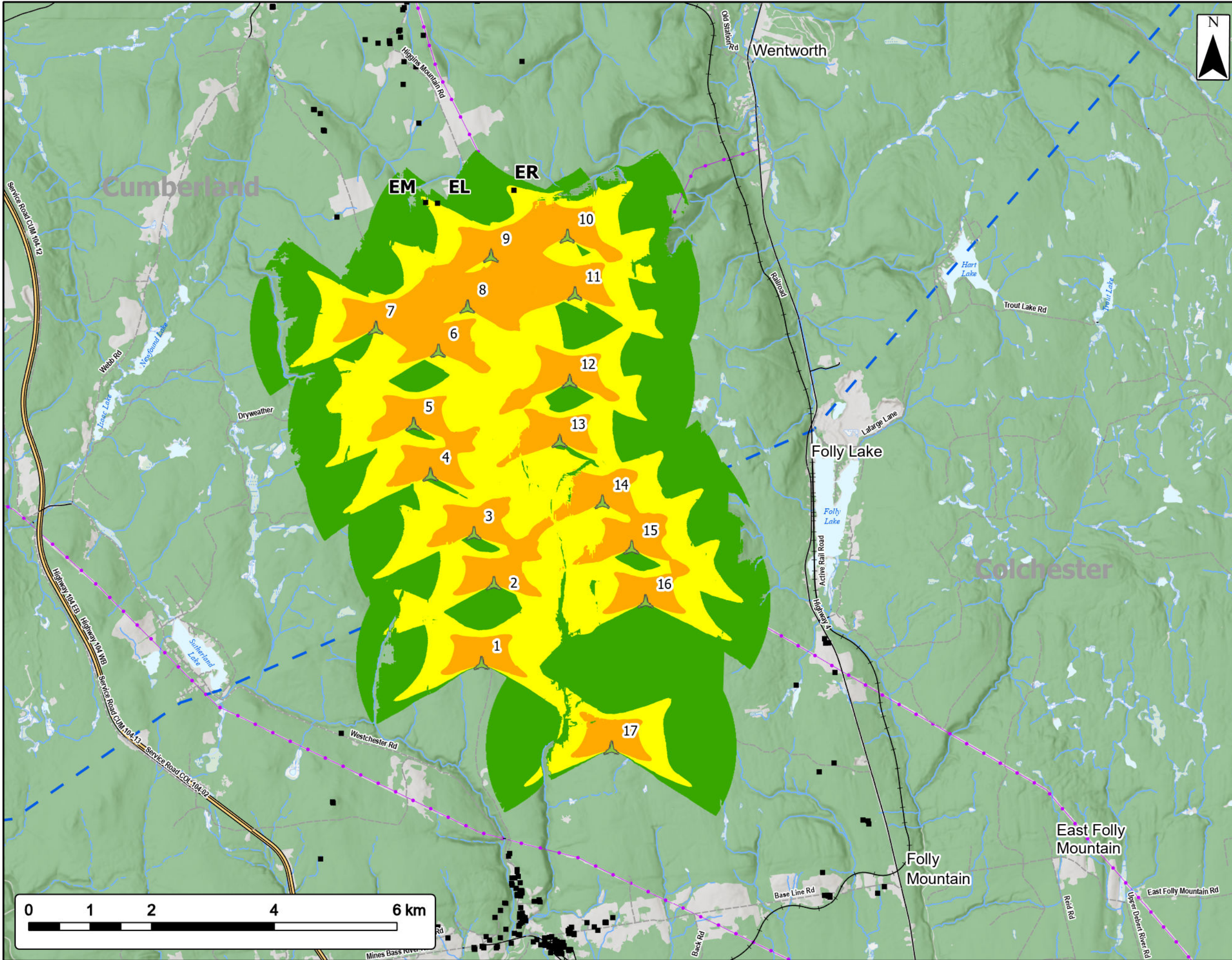
Study Area	
Bird Radar Locations	
Vertical Radar Survey Area	
Angled 90° above Horizon	
Horizontal Radar Survey Area	
Angled 15° above Horizon	
Parallel to Horizon	
County Boundary	
Utilities (line)	
Existing Transmission Lines	
Transportation	
Trans-Canada Highway	
Road	
Unpaved Road	
Railroad	
Water Features	
Mapped Stream	
Mapped Indefinite Stream	
Mapped Wet Area	
Mapped Lakes and Rivers	



Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCAN

Date:	March 2023	Project #:	20-7376
Scale:	1:60,000	Drawing #:	7.33
Drawn By:	M. Savelle		
Checked By:	M. Smith		









Higgins Mountain Wind Farm Project


Shadow Flicker - Worst Case Scenario





Proposed Turbine Location 

Predicted Shadow Hours per Year (Worst Case)





- 0-30 
- 30-100 
- 100+ 

Non Participating Receptors within 2km of Assessment Area 





County Boundary 

Existing Transmission Lines 

Transportation

- Trans-Canada Highway 
- Road 
- Unpaved Road 
- Railroad 

Water Features

- Mapped Stream 
- Mapped Indefinite Stream 
- Mapped Wet Area 
- Mapped Lakes and Rivers 

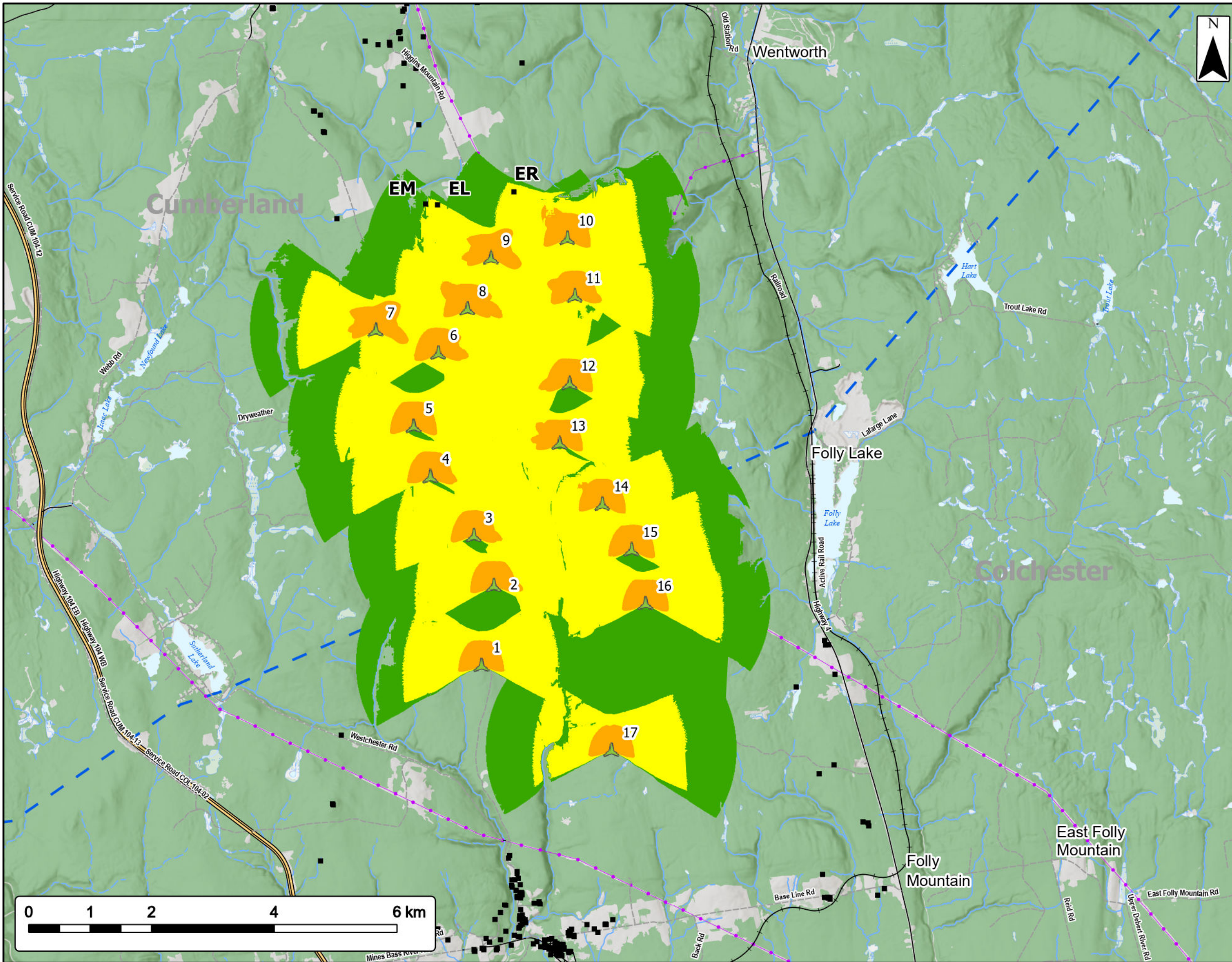


Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSDT, HERE, Garmin, USGS, NRCAN

Date:	March 2023	Project #:	20-7376
Scale:	1:60,000	Drawing #:	10.1A
Drawn By:	M. Savelle		
Checked By:	M. Smith		




Engineering - Surveying - Environmental
Bedford - Antigonish - Moncton - St. John's






Higgins Mountain Wind Farm Project


Shadow Flicker - Worst Case Scenario





Proposed Turbine Location 

Predicted Shadow Minutes per Day (Worst Case)





- 0-30 
- 30-100 
- 100+ 

Non Participating Receptors within 2km of Assessment Area 





County Boundary 

Existing Transmission Lines 

Transportation

- Trans-Canada Highway 
- Road 
- Unpaved Road 
- Railroad 

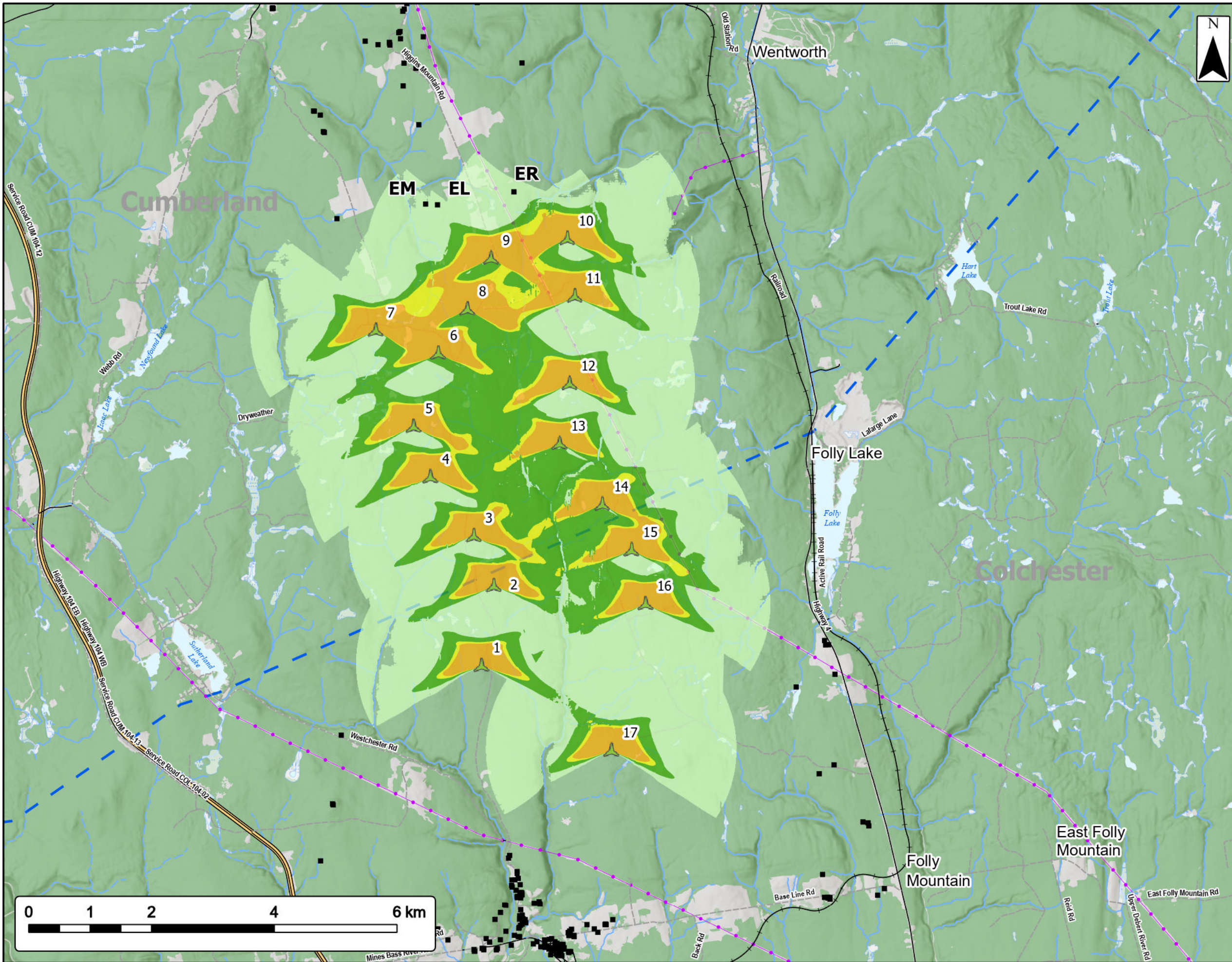
Water Features

- Mapped Stream 
- Mapped Indefinite Stream 
- Mapped Wet Area 
- Mapped Lakes and Rivers 



Coordinate System: NAD83 UTM Zone 20N		Sources: ESRI Basemaps, GeoNOVA, NSDT, HERE, Garmin, USGS, NRCAN	
Date:	March 2023	Project #:	20-7376
Scale:	1:60,000	Drawing #:	10.1B
Drawn By:	M. Savelle		
Checked By:	M. Smith		










Higgins Mountain Wind Farm Project


Shadow Flicker - Real Case Scenario




Proposed Turbine Location 

Predicted Shadow Hours per Year (Real Case)





- 0-20 
- 20-40 
- 40-50 
- 50+ 

Non Participating Receptors within 2km of Assessment Area 





County Boundary 

Existing Transmission Lines

Transportation

- Trans-Canada Highway 
- Road 
- Unpaved Road 
- Railroad 

Water Features

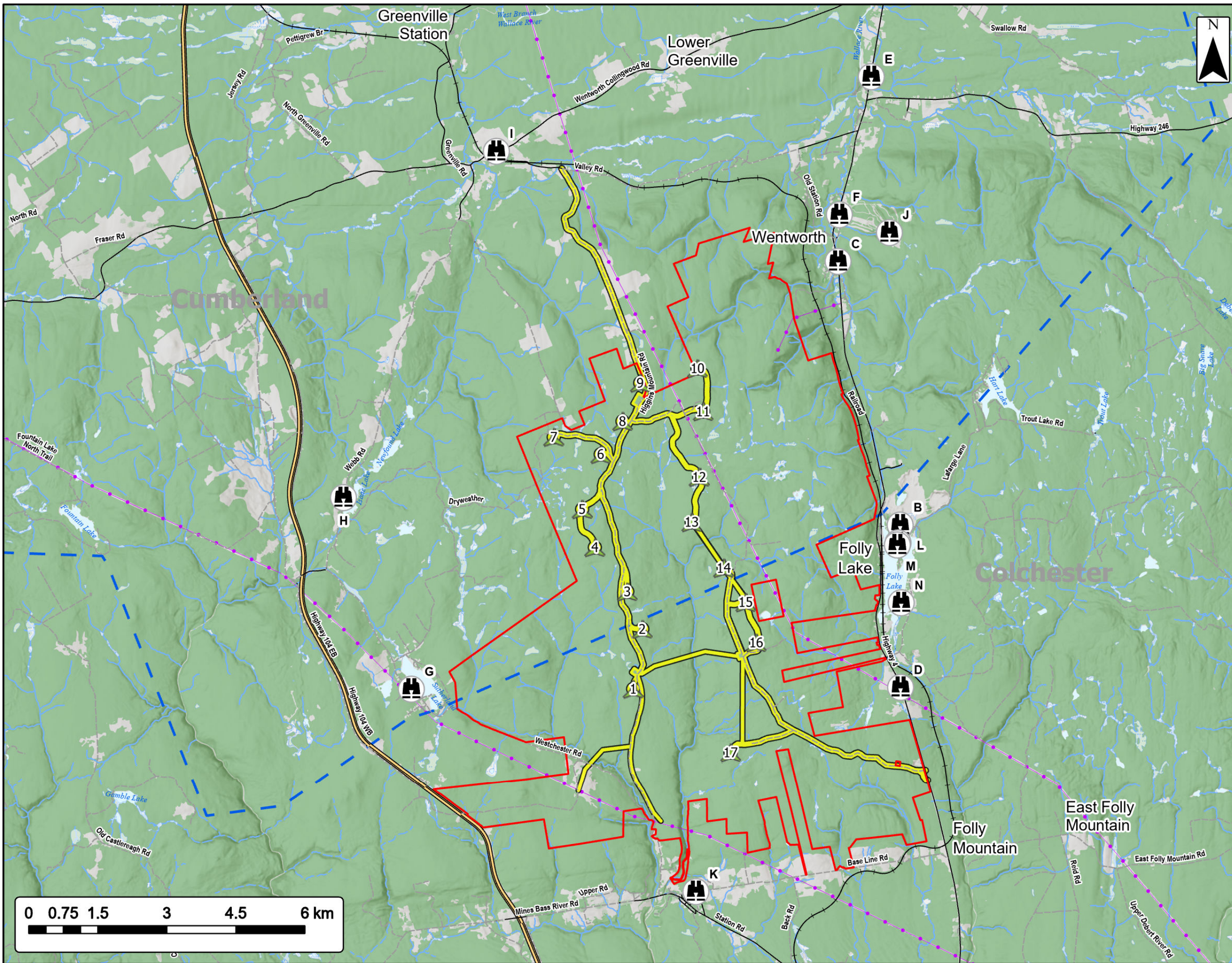
- Mapped Stream 
- Mapped Indefinite Stream 
- Mapped Wet Area 
- Mapped Lakes and Rivers 



Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSDT, HERE, Garmin, USGS, NRCAN

Date:	March 2023	Project #:	20-7376
Scale:	1:60,000	Drawing #:	10.1C
Drawn By:	M. Savelle		
Checked By:	M. Smith		





Higgins Mountain Wind Farm Project

Visual Simulations



- Proposed Turbine Location
- Study Area
- Assessment Area
- Camera Locations
- County Boundary
- Utilities (line)**
- Existing Transmission Lines
- Transportation**
- Trans-Canada Highway
- Road
- Unpaved Road
- Railroad
- Water Features**
- Mapped Stream
- Mapped Indefinite Stream
- Mapped Wet Area
- Mapped Lakes and Rivers



Coordinate System: NAD83 UTM Zone 20N Sources: ESRI Basemaps, GeoNOVA, NSTD, HERE, Garmin, USGS, NRCAN

Date: March 2023	Project #: 20-7376
Scale: 1:80,000	Drawing #: 10.2A
Drawn By: M. Savelle	10.2A
Checked By: M. Smith	

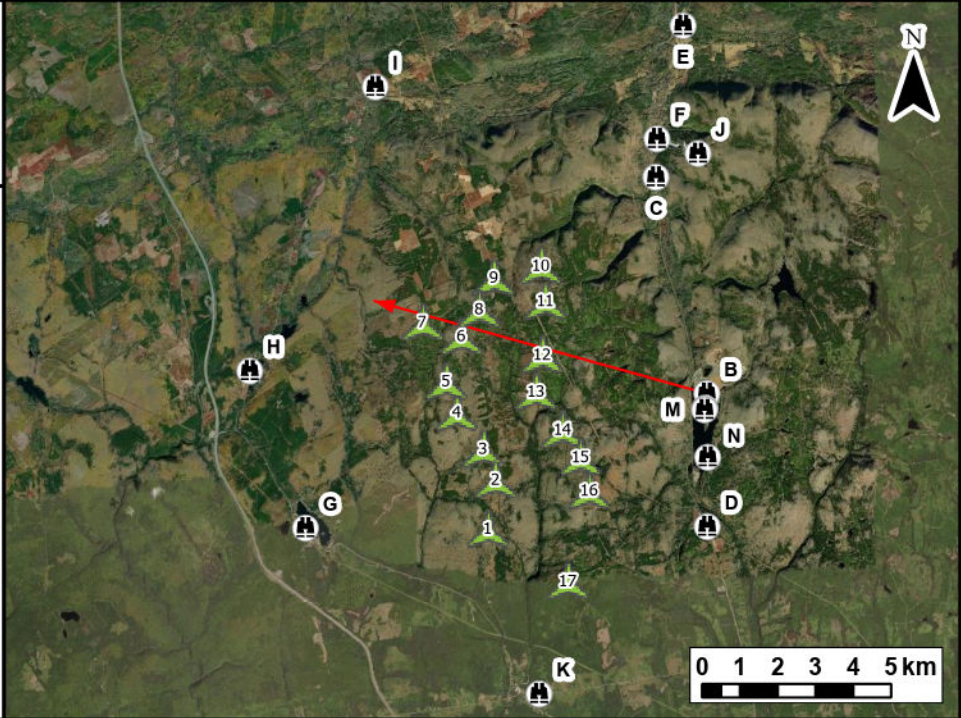




Notes:
 1. Data Sources: GeoNova, Client
 2. Basemaps: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
 3. Projection: NAD83 UTM Zone 20

Legend

- Camera Locations
- Camera Bearing
- Proposed Turbine Location
- Turbines Visible
- Turbines Hidden by Topography
- Turbines Hidden by Foliage



TECHNICAL INFORMATION	
Visual Simulation Location:	North of Folly Lake
View Coordinates:	Latitude: 45° 32' 56.000" N Longitude: 63° 32' 40.000" W Easting: 457501.14 m Northing: 5044072.08 m
Distance to Nearest Turbine:	3.8 km
Direction of View:	Northwest, Heading 280°
Camera Make/ Model:	Canon EOS REBEL T7
Lens:	33 mm
Image Resolution:	6000x4000
Weather Conditions:	Clear Sky
Date of Photo:	2021/09/20
Time of Photo:	11:01
Photo Credit:	Eric Johnson, Strum Consulting

Higgins Mountain Wind Farm - Visual Simulation Folly Lake

Date:	Project #:
March 2023	20-7376
Scale:	Drawing #:
1:200,000	10.2B
Drawn By:	
M. Savelle	
Checked By:	
M. Smith	