



# Marathon Palladium Project Environmental Impact Statement Addendum

## VOLUME 1 OF 2

### 2.0 Project Scoping

Prepared for:

**GENERATIONPGM**

Prepared by:



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Environmental Assessment by Review Panel under CEAA 2012

Reference Number 54755

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## Abbreviations

CEAA	Canadian Environmental Assessment Agency
CRA	Commercial, Recreational and Aboriginal
EA	Environmental Assessment
EIS	Environmental Impact Statement
IAAC	Impact Assessment Agency of Canada
IR	Information Request
LSA	Local Study Area
RSA	Regional Study Area
SSA	Site Study Area
VC	Valued Component
VEC	Valued Ecosystem Component

## 2.0 PROJECT SCOPING

For the purposes of this EIS Addendum, the “Project” includes all components and activities of the Marathon Palladium Project proposed by GenPGM, as described in Section 1.5 of this report and in the supporting documentation.

### 2.1 FACTORS CONSIDERED

The factors considered in this EIS Addendum are the same as those in the original EIS (2012) and subsequent IRs. The following additional factors were included in the EIS Addendum to address any ‘changes’ that have occurred since the original assessment of environmental effects:

- Changes to the characterization of existing conditions since the previous baseline studies
- Changes to applicable criteria, standards, guidelines and/or thresholds for determining the significance of potential residual effects
- Refinements to the Project, including changes to project components and activities

### 2.2 SCOPE OF THE FACTORS

The scoping of boundaries, both spatial and temporal, establishes a frame of reference for the identification and assessment of potential residual environmental effects. The boundaries applied to this assessment are discussed in Sections 2.4 and 2.5 of this report.

This EIS Addendum uses the same factors as the original EIS to characterize potential residual environment effects, specifically magnitude, spatial extent, duration, frequency, reversibility, and direction. Although timing as a factor was embedded in assessment of effects for specific VECs, this factor has been highlighted to provide greater clarity on the characterization of potential residual environmental effects, specifically:

- **Timing** – to characterize when the residual environmental effect is anticipated to occur. This is important as some receptors have critical life stages (e.g. species nesting, breeding, spawning and caving) that, when avoided, can mitigate environmental effects.

Further discussion of these factors and how they are considered in the effects assessment will be provided in Section 6.1.3 of the EIS Addendum (Volume 2).

## 2.3 VALUED ECOSYSTEM COMPONENTS

### 2.3.1 Definition of Valued Ecosystem Component

As identified in the original EIS (2012), a Valued Ecosystem Component or VEC can be defined as:

*“an environmental element of an ecosystem that is identified as having scientific, ecological, social, cultural, economic, historical, archaeological or aesthetic importance. The value of an ecosystem component may be determined on the basis of cultural ideals or scientific concern.”*

Since completion of the EIS, the term VEC has been replaced by the term “Valued Component” or VC in standard environmental assessment terminology and in associated guidance documents. According to various CEAA / IAAC guideline documents<sup>1</sup>, a VC is defined as:

*“environmental features that may be affected by a project and that have been identified to be of concern by the proponent, government agencies, Aboriginal peoples or the public. The value of a component not only relates to its role in the ecosystem, but also to the value people place on it. For example, it may have been identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.”*

Functionally, these terms are similar and for the purposes of maintaining consistency with terminology used in the EIS Guidelines (2011) and original EIS (2012), we have continued to use the term VEC in the EIS Addendum.

### 2.3.2 Use of VECs in the EA Process

VECs are tools that are used to measure the potential effects of a project on the environment. Given the large number of species, habitats and other elements that could potentially occur within the EA study boundaries, it is neither possible, nor particularly useful, to attempt to measure effects on all possible receptors. Rather, the impact assessment focuses on those elements that have been deemed to be of some importance (i.e., the VECs).

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<sup>1</sup> Select references include: (a) CEAA (2018). Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012 - Interim Technical Guidance; (b) CEAA (2018). Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012 - Interim Technical Guidance. (c) CEAA (2013). Practitioners Glossary for the Environmental Assessment of Designated Projects Under the Canadian Environmental Assessment Act, 2012.

### 2.3.3 VEC Selection Process for the Marathon Palladium Project EA

Factors considered when selecting VECs were identified in Section 2.3.3 of the original EIS (2012) as:

- prior experience with similar projects
- data that were collected as part of the baseline environmental program
- information available with regards to species that are afforded protection by legislation
- guidance from regulatory agencies (e.g., EIS Guidelines)
- direct consultation with stakeholders and Indigenous communities

For the purposes of this EIS Addendum, rationale for the selection of VECs is deferred to the original EIS (2012).

### 2.3.4 VECs for the Project EA

For the purposes of the EIS Addendum, no changes to the identified VECs have been made relative to those included in the original EIS (2012). The EIS Addendum is relying on the list of VECs, and rationale for their selection, as outlined and assessed in the original EIS (Section 2.3.4 and Section 6.0).

Some re-organization has occurred in the EIS Addendum to group similar VECs throughout the assessment in order to simplify and clarify the discussion of potential effects. In one case, Human Health has been separated out as a standalone VEC (originally included under the social environment) in order to provide a more targeted discussion on potential human health effects and to reflect the additional focus on human health made in updates to applicable guidelines (including consideration of how changes to air quality, noise, drinking water and country foods may affect human health). Further, in order to reflect changes to the *Fisheries Act*, consideration of potential effects no longer focuses on commercial, recreational and aboriginal (CRA) fisheries but rather on the fish and fish habitat itself, while corresponding CRA fisheries are considered under the Socio-economic VEC and Indigenous Considerations accordingly.

The VECs addressed in the EIS Addendum are summarized in Table 2.3-1.

**Table 2.3-1: Summary of Valued Ecosystem Components**

Valued Environmental Component	Scope of VEC
Atmospheric Environment (previously included under physical environment)	Components of the atmospheric environment, including:
	• Air Quality
	• Dustfall
	• Ambient Light Levels
	• Climate Change (Greenhouse Gas)

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**Table 2.3-1: Summary of Valued Ecosystem Components**

<b>Valued Environmental Component</b>	<b>Scope of VEC</b>
Acoustic Environment (previously included under physical environment)	Components of the acoustic environment, including:
	<ul style="list-style-type: none"> <li>Noise</li> </ul>
Water Quality and Quantity (previously included under physical environment)	Components of water quality and quantity, including:
	<ul style="list-style-type: none"> <li>Surface Water Quantity</li> </ul>
	<ul style="list-style-type: none"> <li>Surface Water Quality</li> </ul>
	<ul style="list-style-type: none"> <li>Groundwater Quantity</li> </ul>
Fish and Fish Habitat (previously described as Aquatic Resources)	Components of fish and fish habitat, including:
	<ul style="list-style-type: none"> <li>Fish Habitat</li> <li>Benthic Invertebrates</li> </ul>
Terrain and Soil (previously included under Physical Environment)	Components of ground conditions, including:
	<ul style="list-style-type: none"> <li>Terrain and Soils</li> </ul>
Vegetation	Vegetation communities and species, including:
	<ul style="list-style-type: none"> <li>Forest Cover</li> </ul>
	<ul style="list-style-type: none"> <li>Non-forest Cover, including wetlands and rock barrens</li> </ul>
	<ul style="list-style-type: none"> <li>Regionally Rare Species</li> </ul>
	<ul style="list-style-type: none"> <li>Provincially Rare Species</li> <li>Protected Species</li> </ul>
Wildlife	Wildlife and wildlife habitat, including:
	<ul style="list-style-type: none"> <li>Furbearers</li> </ul>
	<ul style="list-style-type: none"> <li>Moose</li> </ul>
	<ul style="list-style-type: none"> <li>Grey Wolf</li> </ul>
	<ul style="list-style-type: none"> <li>Black Bear</li> <li>Migratory Birds (songbirds and waterfowl)</li> </ul>
Species at Risk	Species at Risk and associated habitat, including:
	<ul style="list-style-type: none"> <li>Woodland Caribou</li> </ul>
	<ul style="list-style-type: none"> <li>Little brown myotis/ Northern myotis</li> </ul>
	<ul style="list-style-type: none"> <li>Canada Warbler</li> </ul>
	<ul style="list-style-type: none"> <li>Rust Blackbird</li> </ul>
	<ul style="list-style-type: none"> <li>Bald Eagle</li> </ul>
	<ul style="list-style-type: none"> <li>Olive-sided Flycatcher</li> <li>Common Nighthawk</li> </ul>

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**Table 2.3-1: Summary of Valued Ecosystem Components**

Valued Environmental Component	Scope of VEC
	<ul style="list-style-type: none"> <li>• Whip-poor-will</li> <li>• Peregrine Falcon</li> <li>• Lake Sturgeon</li> </ul>
Socio-economic Environment (compilation of Social Environment, Economic Environment, and Land, Water and Resource Use)	Economy and employment, including: <ul style="list-style-type: none"> <li>• Demographics</li> <li>• Employment and Income</li> <li>• Government Revenue</li> <li>• Economic and Business Development (including commercial fisheries)</li> </ul> Infrastructure and services, including: <ul style="list-style-type: none"> <li>• Housing</li> <li>• Education and Training</li> <li>• Infrastructure</li> <li>• Community Services</li> <li>• Health and Emergency Services</li> <li>• Traffic</li> </ul> Land and resource uses, including: <ul style="list-style-type: none"> <li>• Recreation and Tourism (including recreational fisheries)</li> <li>• Forestry</li> <li>• Agriculture</li> <li>• Commercial Development</li> <li>• Navigable Waters</li> </ul>
Human Health (previously included under Social Environment)	Components of human health, including: <ul style="list-style-type: none"> <li>• Air Quality</li> <li>• Noise</li> <li>• Drinking Water</li> <li>• Country Foods</li> </ul>
Physical and Cultural Heritage	Components of the physical and cultural heritage, including: <ul style="list-style-type: none"> <li>• Built and Cultural Heritage</li> <li>• Archaeological Resources</li> </ul>
Indigenous Considerations	Considerations of indigenous interests and rights, including: <ul style="list-style-type: none"> <li>• Indigenous and Treaty Rights</li> <li>• Traditional Land and Resource Uses, including Country Foods and Indigenous fisheries</li> <li>• Preponderance of Traditional Dietary Habits</li> </ul>



**Table 2.3-1: Summary of Valued Ecosystem Components**

Valued Environmental Component	Scope of VEC
	<ul style="list-style-type: none"> <li>• BN Trapline</li> </ul>
	<ul style="list-style-type: none"> <li>• Indigenous Archaeological Resources</li> </ul>
	<ul style="list-style-type: none"> <li>• Indigenous Heritage Resources</li> </ul>

\* Coloured text indicates that a component of the table has been updated since the original assessment.

For the purposes of the EIS Addendum, the assessment of potential effects on these VECs will be organized in EIS Addendum (Volume 2), as follows:

- Atmospheric Environment (Section 6.2.1)
- Acoustic Environment (Section 6.2.2)
- Water Quality and Quantity (Section 6.2.3)
- Fish and Fish Habitat (Section 6.2.4)
- Terrain and Soils (Section 6.2.5)
- Vegetation (Section 6.2.6)
- Wildlife (Section 6.2.7)
- Species at Risk (Section 6.2.8)
- Socio-economics (Section 6.2.9)
- Human Health (Section 6.2.10)
- Physical and Cultural Heritage Resources (Section 6.2.11)
- Indigenous Considerations (Section 6.2.12)

## 2.4 SPATIAL BOUNDARIES OF THE ASSESSMENT

Spatial boundaries were identified in the original EIS (2012) to assist in the quantification of environmental effects by framing the geographic extent of the assessment. Three spatial scales were considered in the EIS, including (a) the Site Study Area (SSA), (b) the Local Study Area (LSA) and (c) the Regional Study Area (RSA). The spatial boundaries vary among VECs depending on the nature of the potential environmental effects, and reflect the geographic range over which the Project’s potential environmental effects may occur, recognizing that some environmental effects will extend beyond the SSA. These spatial boundaries for the purposes of the EIS Addendum have been defined as follows (with any refinements identified below):

- **Site Study Area:** The SSA is the direct footprint of the Project. Based on refinements to the Project design and corresponding footprint, a refined SSA has been developed that encompasses

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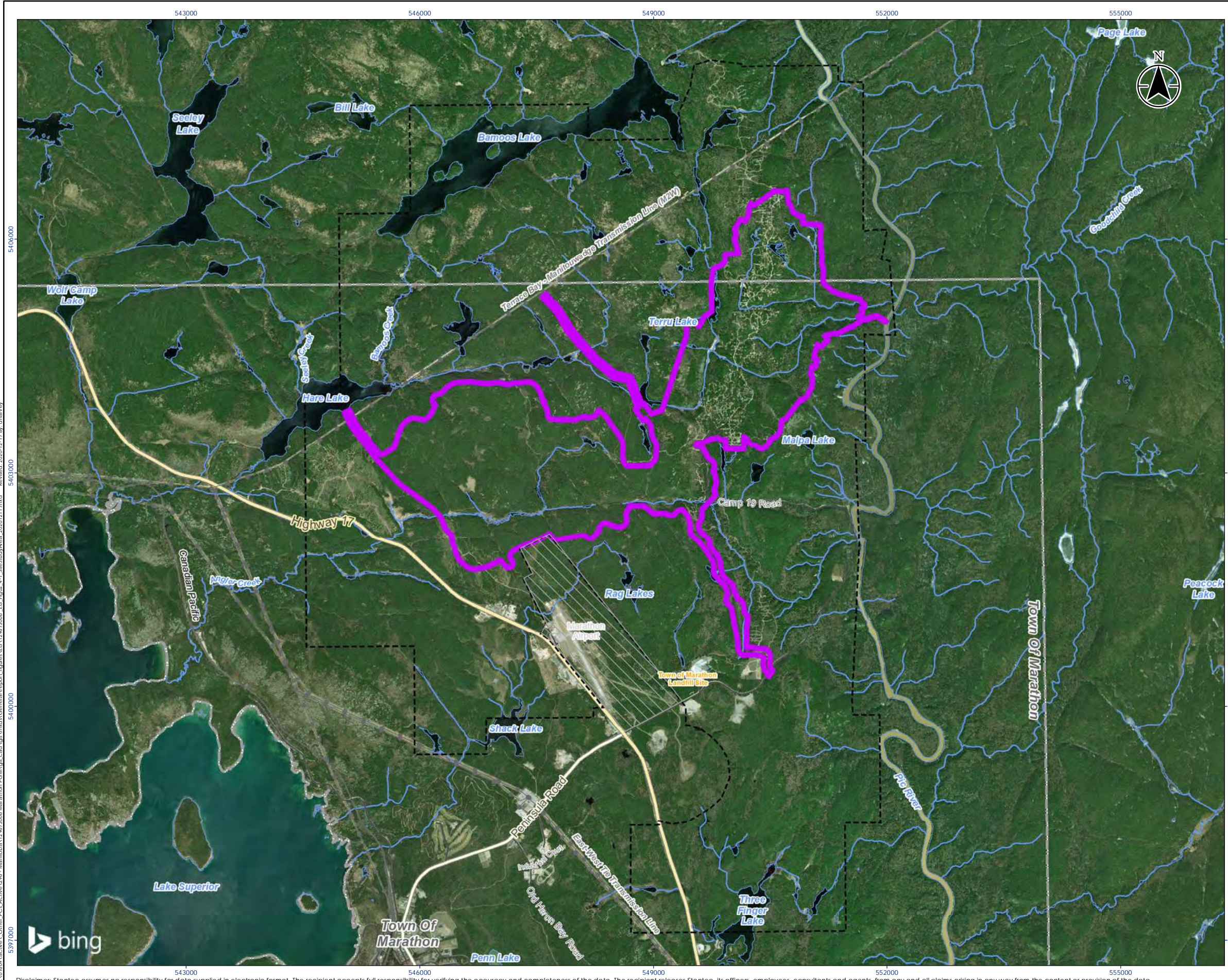
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the immediate area in which Project activities and components may occur based on the conceptual design of the Project as described in Section 1.5 and, as such, represents the area within which direct physical disturbance may occur as a result of the Project, whether temporary or permanent. The SSA is consistent for all VECs as depicted on Figure 2.4-1.

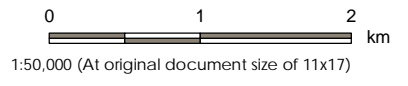
- **Local Study Area:** The LSA is the maximum area within which environmental effects from Project activities and components can be predicted or measured with a reasonable degree of accuracy and confidence. It consists of the SSA and adjacent areas where Project-related environmental effects are reasonably expected to occur based on available information and professional judgment. An LSA has been established for each VEC based on the reasonable geographic extent of environmental effects associated with the specific component. The various LSAs for VECs are depicted on Figure 2.4-2, Figure 2.4-3, and Figure 2.4-4. Chapter 6 of the EIS Addendum (Volume 2) will further define and rationalize the LSA for each VEC, and identify if and how any refinements to the LSA have been made relative to the original assessment.
- **Regional Study Area:** The RSA is the area within which residual environmental effects from Project activities and components may interact cumulatively with the residual environmental effects of other past, present and future (i.e., certain or reasonably foreseeable) physical activities. The RSA is based on the potential for interactions between the Project and other existing or future potential projects. An RSA has been established for each VEC based on the regional conditions to the component. The various RSAs for VECs are depicted on Figure 2.4-2, Figure 2.4-3, and Figure 2.4-4. Chapter 6 of the (EIS Volume 2) defines and rationalizes the RSA for each VEC.

For the purposes of the EIS Addendum, the refined spatial boundaries presented above will be considered in the determination of environmental effects to be included in Section 6.2 of EIS Addendum (Volume 2).





- Legend
- Project Boundary (MLAS, MENDM Changed 2017)
  - Site Study Area Boundary
  - Highway
  - Major Road
  - Minor Road
  - Hydro Line
  - Railway
  - Watercourse
  - Airport (Property Boundary)
  - Municipal Boundary, Lower Tier
  - Waterbody



- Notes
1. Coordinate System: NAD 1983 UTM Zone 16N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
  3. Orthography Imagery Source: © 2020 Microsoft Corporation © 2020 Maxar © CNES (2020) Distribution Airbus DS



Project Location: Marathon  
 Project Number: 129673006 REVA  
 Prepared by: DH on 2020-12-17

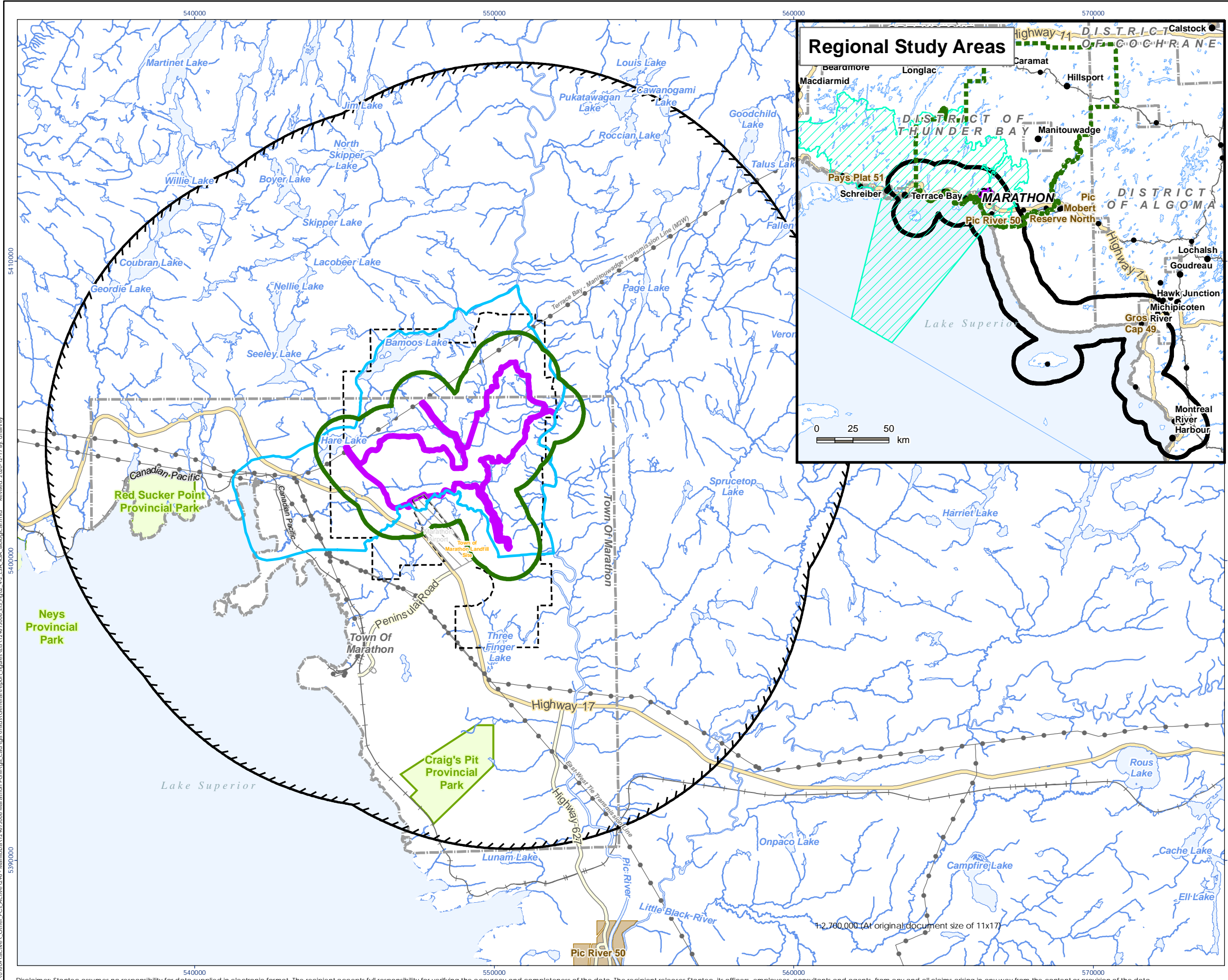
Client/Project:  
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Figure No.  
 2.4-1

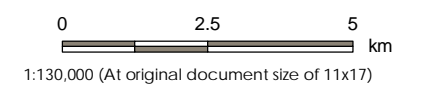
Title  
 Site Study Area

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- Legend
- Project Boundary (MLAS, MENDM Changed 2017)
  - Site Study Area Boundary
  - Highway
  - Major Road
  - Hydro Line
  - Railway
  - Watercourse
  - Airport (Property Boundary)
  - First Nations Reserve
  - Municipal Boundary, Lower Tier
  - Provincial Park
  - Waterbody
  - Caribou, LSA
  - Caribou, RSA
  - Fish, LSA
  - Vegetation and Wildlife, LSA
  - Forest Dependant, RSA
  - Non-Forest Dependant, RSA



- Notes
- Coordinate System: NAD 1983 UTM Zone 16N
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Project Location: Marathon  
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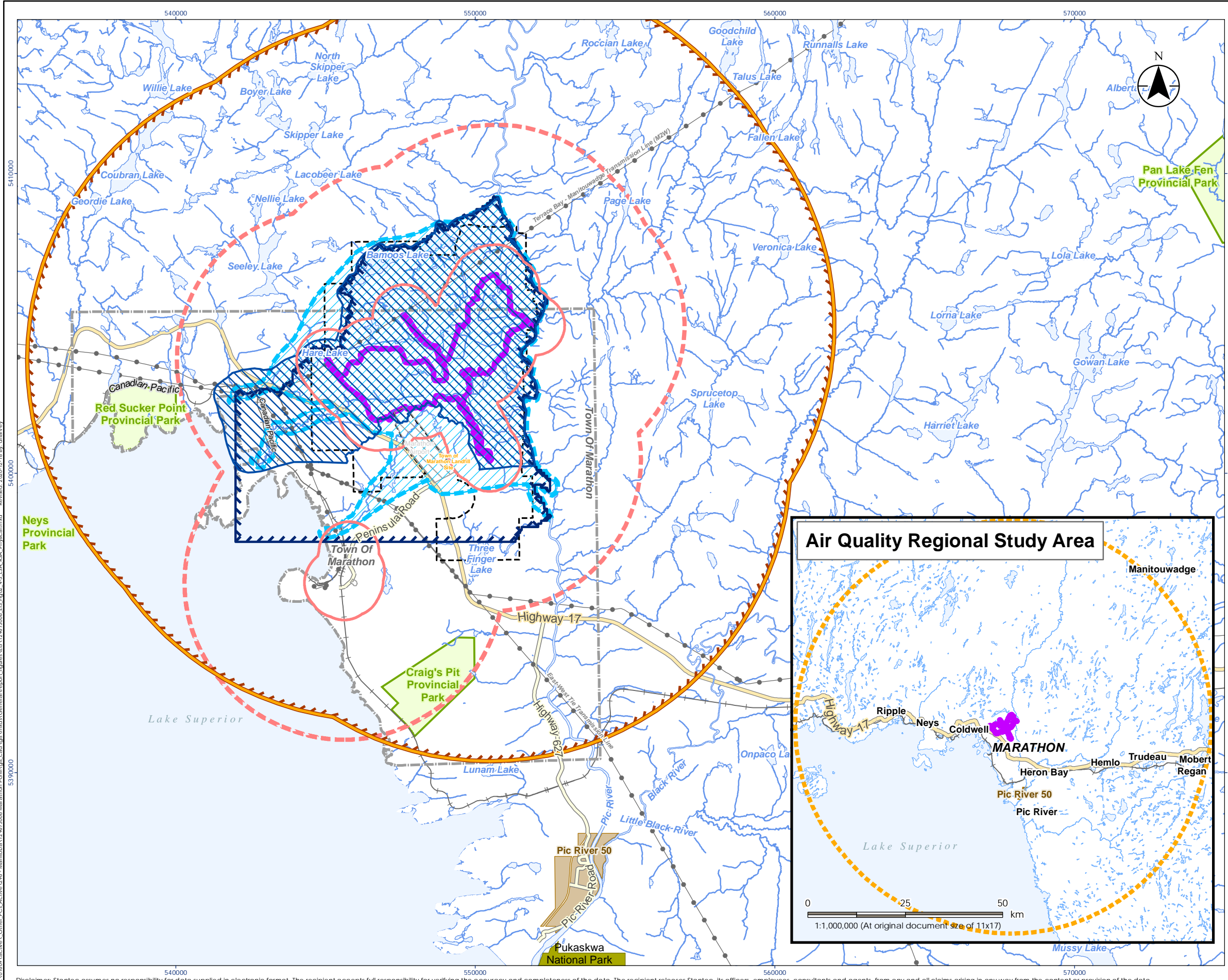
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Figure No. 2.4-2

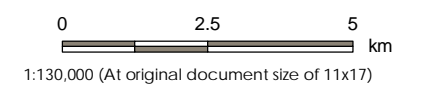
Title: Local and Regional Study Areas- Biological

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- Legend
- Project Boundary (MLAS, MENDM Changed 2017)
  - Site Study Area Boundary
  - Highway
  - Major Road
  - Hydro Line
  - Railway
  - Watercourse
  - Airport (Property Boundary)
  - Municipal Boundary, Lower Tier
  - National Park
  - First Nations Reserve
  - Provincial Park
  - Waterbody
  - Acoustic LSA
  - Acoustic RSA
  - Atmospheric LSA
  - Atmospheric RSA
  - Hydrology LSA
  - Hydrology RSA
  - Hydrogeology LSA/ RSA
  - Soils LSA/ RSA
  - Surface Water LSA



- Notes
- Coordinate System: NAD 1983 UTM Zone 16N
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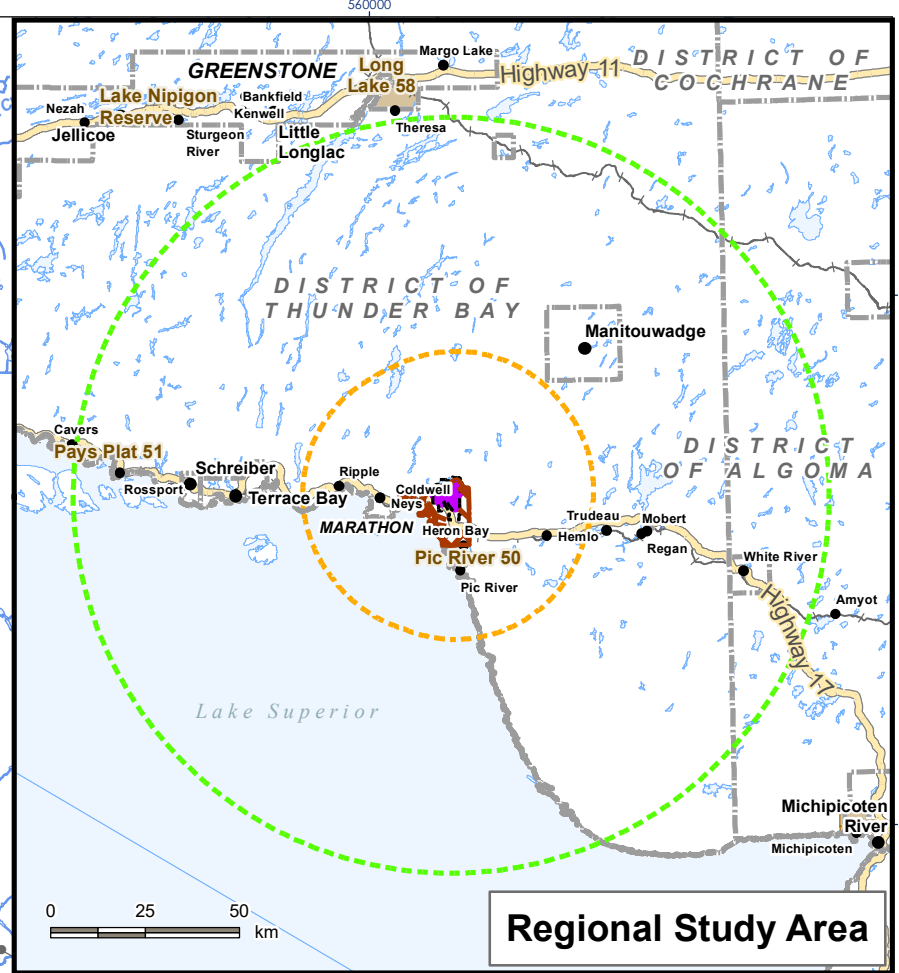
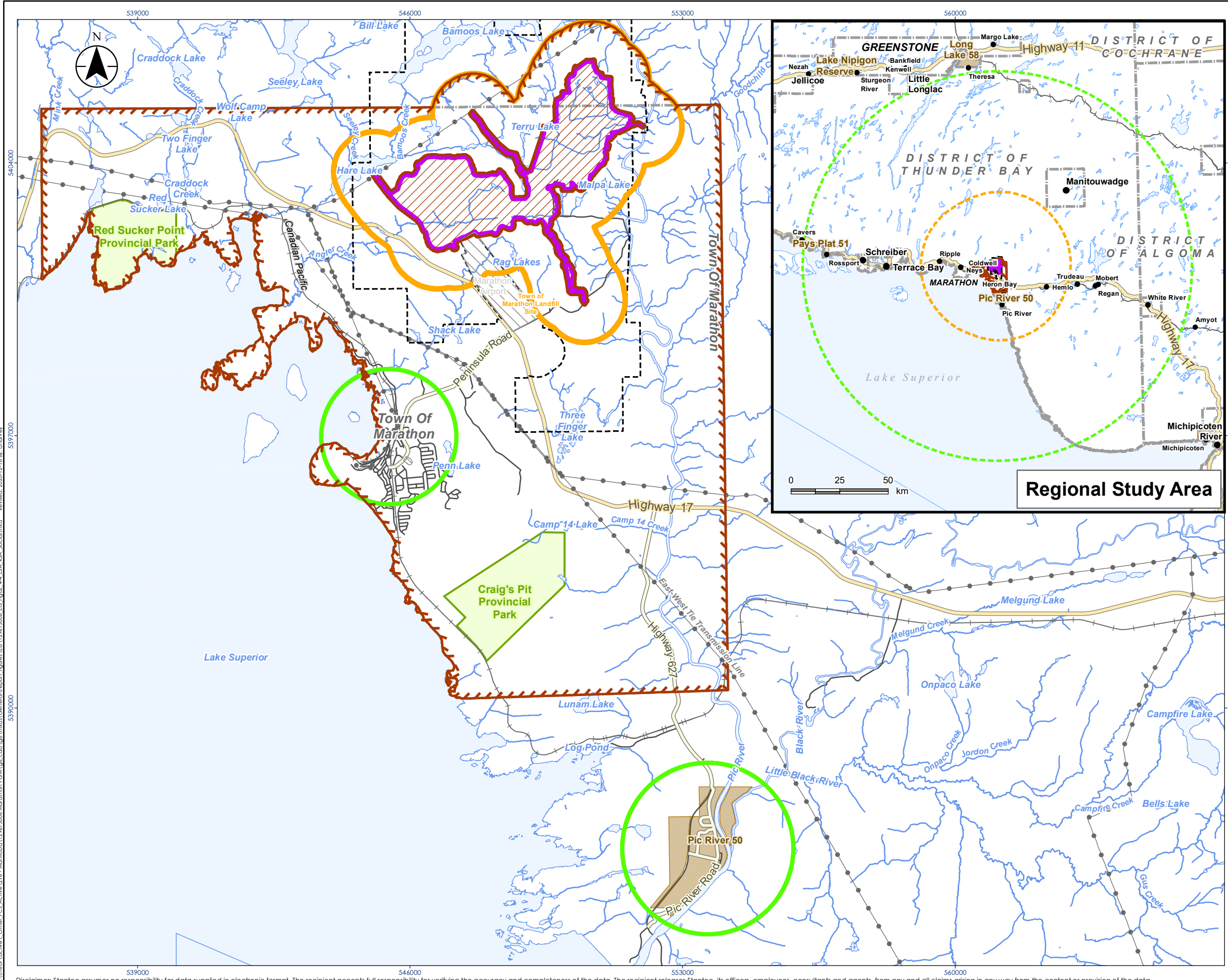


Project Location: Marathon  
 Project Number: 129673006 REVA  
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Figure No.: 2.4-3

Title: Local and Regional Study Areas- Physical



Legend

- Project Boundary (MLAS, MENDM Changed 2017)
- Site Study Area Boundary
- Highway
- Major Road
- Minor Road
- Hydro Line
- Railway
- Watercourse
- Airport (Property Boundary)
- First Nations Reserve
- Municipal Boundary, Lower Tier
- Provincial Park
- Waterbody
- Heritage LSA
- Heritage RSA
- Land and Resource Use LSA
- Land and Resource Use RSA
- Socio-ec LSA
- Socio-ec RSA

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**Notes**  
 1. Coordinate System: NAD 1983 UTM Zone 14N  
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Figure No.  
**2.4-4**

Title  
**Local and Regional Study Areas- Social**

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## 2.5 TEMPORAL BOUNDARIES OF THE ASSESSMENT

Temporal boundaries identify when an environmental effect may occur in relation to specific Project activities and/or components. The temporal boundaries are based on the timing and duration of Project activities (as described in Section 1.5.2 of this report) and the nature of the interactions with each individual VEC. As in the EIS, the temporal boundaries for the proposed Project are defined by the duration of the individual Project phases (Phase I Site Preparation and Construction, Phase II Operations, and Phase III Decommissioning and Post-Closure).

Through refinements to the Project, the timing and duration of these phases have been revised, as follows:

- **Phase I – Site Preparation and Construction:** This phase consists of pre-operation activities to prepare the site for extraction activities, which includes site preparation and construction activities to be completed concurrently over a period of 18 to 24 months (previously 18 months).
  - **Phase IA Site Preparation:** This phase consists of site clearing, grading and excavation to permit the subsequent construction.
  - **Phase IB Construction:** This phase consists of the building of the physical infrastructure and structures necessary to bring the Project into production.
- **Phase II – Operations:** This phase consists of the extraction and processing of selected minerals and will last for approximately 12.7 years (previously 11.5 years)
- **Phase III – Decommissioning and Closure:** While the site will be reclaimed on an on-going basis to the extent practical during all previous phases, this phase consists of the relatively intense period of reclamation and decommissioning upon cessation of mine operations and the duration of time required for the mine site to be stabilized following implementation of the closure plan.
  - **Phase IIIA – Decommissioning / Closure:** This phase will occur throughout the life of the project but the most intensive part (i.e., decommissioning activities), which will occur post-operation, will last for approximately 2 years (no change, previously 2 years).
  - **Phase IIIB – Post-Closure:** This phase will occur following substantial completion of all on-site decommissioning activities and will consist primarily of follow-up and monitoring programs and the subsequent stabilization of existing environmental conditions specific to each VEC (i.e., regeneration of vegetative cover, stabilization of water levels in the pits). For the purposes of the effects assessment, this phase is anticipated to last for up to approximately 45 years (to be confirmed based on the results of the effects assessment) (no change, previously 45 years).

Environmental monitoring activities will take place on the site thereafter in order to verify the success of reclamation and decommissioning activities, and also to confirm that on-site water quality has stabilized such that there are no longer-term geochemistry concerns.

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Activities associated with Site Preparation and Construction will occur concurrently over an 18-24 month period. While activities associated with site preparation and construction of infrastructure and buildings were identified as distinct yet concurrent phases of the Project in the original EIS (2012), these have been combined in the Project Description (see Section 1.5.2 of this report).

It is important to note that timing and duration are dependent on regulatory approvals, equipment availability and other factors outside of the control of GenPGM that can influence the timing and duration of these phases. As such, these project phases are approximate in nature but are based on past practice and experience.

For the purposes of the EIS Addendum, these revised temporal boundaries have been considered in the determination of environmental effects.