

# Appendix **A**

## **Draft Criteria & Indicators for Alternatives Evaluation**

| Environmental Discipline                              | Criteria  | Indicator   | Potential Data Sources   |
|---|---|---|--|
| <b>Natural (Physical and Biophysical) Environment</b> |   |   |  |
| <b>Atmospheric Environment</b>                        | <ul style="list-style-type: none"> <li>▪ Air Quality</li> </ul>   | <ul style="list-style-type: none"> <li>▪ NO<sub>x</sub></li> <li>▪ CO</li> <li>▪ SO</li> <li>▪ TSP</li> <li>▪ PM<sub>10</sub></li> <li>▪ PM<sub>2.5</sub></li> <li>▪ Selected VOCs</li> </ul> | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Ontario Ministry of the Environment, Conservation and Parks (MECP) Regulation 419/05</li> <li>▪ Canadian Ambient Air Quality Standards (CAAQS)</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>▪ GHG Emissions</li> </ul>   | <ul style="list-style-type: none"> <li>▪ CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O</li> </ul>  |  |
| <b>Acoustic Environment</b>                           | Noise   | <ul style="list-style-type: none"> <li>▪ Noise Levels</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Guidance for Evaluating Health Impacts in Environmental Assessment: Noise (Health Canada)</li> <li>▪ “Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning” (MOECC, 2013)</li> </ul>   |
|   | Vibrations  | <ul style="list-style-type: none"> <li>▪ Vibration Levels</li> </ul>  |  |
| <b>Physiography, Geology, Terrain and Soils</b>       | Local Geology, Terrain and Soils  | <ul style="list-style-type: none"> <li>▪ Bedrock</li> <li>▪ Terrain and Topography</li> <li>▪ Natural hazards</li> <li>▪ Soil quality</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Data from government agencies (e.g., Ontario Geological Survey)</li> </ul>  |
| <b>Surface Water</b>                                  | Surface Water   | <ul style="list-style-type: none"> <li>▪ Surface Water Quality</li> <li>▪ Surface Water Quantity</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Ontario Integrated Hydrology Data</li> <li>▪ Land Information Ontario</li> <li>▪ Natural Heritage Information Centre (MNRF, 2019)</li> <li>▪ Ontario Flow Assessment Tool Version 3 (OFAT III)</li> <li>▪ Hydrometric data from Water Survey of Canada and MECP, or from Ontario Hydro</li> <li>▪ Archived water quality data from the MECP Provincial (Stream) Water Quality Monitoring Network</li> <li>▪ MECP Source Protection Information Atlas</li> <li>▪ Archived water taking data from the MECP Permits to Take Water Database</li> <li>▪ MECP Water Well Inventory</li> </ul> |
| <b>Ground Water</b>                                   | Ground Water  | <ul style="list-style-type: none"> <li>▪ Ground Water Quantity</li> <li>▪ Ground Water Quality</li> </ul>   |  |
| <b>Vegetation</b>                                     | Wetland Ecosystems  | <ul style="list-style-type: none"> <li>▪ Availability</li> <li>▪ Distribution</li> <li>▪ Function and Composition</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Ecological Land Classification of vegetation communities</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Atlas of the Mammals of Ontario (Dobbyn, 1994)</li> <li>▪ Natural Heritage Information Centre (MNRF, 2019)</li> <li>▪ iNaturalist</li> <li>▪ Forest Management Plans &amp; Inventory Mapping</li> <li>▪ Far North Mapping</li> <li>▪ Crown Land Use Policy Atlas</li> <li>▪ Land Information Ontario</li> <li>▪ MECP Species at Risk Range Maps</li> </ul>  |
|   | Upland Ecosystems   | <ul style="list-style-type: none"> <li>▪ Availability</li> <li>▪ Distribution</li> <li>▪ Function and Composition</li> </ul>  |  |
|   | Designated Areas (ANSIs [Areas of Natural and Scientific Interest], Critical Landform/ Vegetation Associations [CLVAs]) | <ul style="list-style-type: none"> <li>▪ Availability</li> <li>▪ Distribution</li> <li>▪ Function and Composition</li> </ul>  |  |

| Environmental Discipline     | Criteria  | Indicator   | Potential Data Sources  |
|------------------------------|---|---|---|
| <b>Wildlife</b>              | Breeding Birds (including SAR-olive-sided flycatcher, rusty blackbird and common nighthawk) | <ul style="list-style-type: none"> <li>▪ Habitat availability</li> <li>▪ Habitat distribution</li> <li>▪ Survival and Reproduction (Population state)</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Atlas of the Mammals of Ontario (Dobbyn, 1994)</li> <li>▪ Natural Heritage Information Centre (MNR, 2019)</li> <li>▪ Ontario Breeding Bird Atlas (Bird Studies Canada et al., 2006)</li> <li>▪ Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019)</li> <li>▪ eBird</li> <li>▪ iNaturalist</li> <li>▪ Bat Species Range Mapping (Bat Conservation International, 2019)</li> <li>▪ Forest Management Plans &amp; Inventory Mapping</li> <li>▪ Far North Mapping</li> <li>▪ Crown Land Use Policy Atlas</li> <li>▪ Land Information Ontario</li> <li>▪ MECP Species at Risk Range Maps</li> </ul> |
|                              | Bats (including SAR-Little Brown Myotis and Northern Myotis)                                |   |   |
|                              | Fur Bearers (American Marten and SAR Wolverine)   |   |   |
|                              | Raptors (including SAR-bald eagle)  |   |   |
|                              | Amphibians and Reptiles   |   |   |
| <b>Ungulates</b>             | Moose   | <ul style="list-style-type: none"> <li>▪ Habitat Availability</li> <li>▪ Habitat Distribution</li> <li>▪ Species Population</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Forest Management Plans &amp; Inventory Mapping</li> <li>▪ Far North Mapping</li> <li>▪ Crown Land Use Policy Atlas</li> <li>▪ Land Information Ontario</li> <li>▪ MECP Species at Risk Range Maps</li> <li>▪ Provincial Best Management Practices</li> </ul>  |
|                              | Caribou   | <ul style="list-style-type: none"> <li>▪ Habitat Availability</li> <li>▪ Habitat Distribution</li> <li>▪ Species Population</li> <li>▪ Spatial extent and distribution of category 1, 2 and 3 habitats</li> <li>▪ Relative significance of sub-range habitat features</li> <li>▪ Cumulative range disturbance</li> <li>▪ Relative tolerance of the range to alteration/risk</li> <li>▪ Consideration of the density of linear and non-linear disturbances</li> <li>▪ Direct and indirect impacts of the project on individuals</li> </ul> |   |
| <b>Fish and Fish Habitat</b> | Lake Sturgeon   | <ul style="list-style-type: none"> <li>▪ Habitat Quantity and Quality</li> <li>▪ Habitat Distribution and Connectivity</li> <li>▪ Survival and Reproduction</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Field investigations</li> <li>▪ Indigenous Knowledge</li> <li>▪ Data from previous environmental assessments</li> <li>▪ Natural Heritage Information Centre rare species records and Make a Map: Natural Heritage Areas application (MNR, 2019)</li> <li>▪ Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Maps</li> <li>▪ iNaturalist</li> <li>▪ Forest Management Plans &amp; Inventory Mapping</li> <li>▪ Far North Mapping</li> <li>▪ Crown Land Use Policy Atlas</li> <li>▪ Land Information Ontario</li> <li>▪ MECP Species at Risk Range Maps</li> <li>▪ Ontario Ministry of Natural Resources and Forestry (MNR) Fish Online</li> </ul>  |
|                              | Walleye   |   |   |
|                              | Brook Trout   |   |   |
|                              | Northern Pike   |   |   |
|                              | Lake Whitefish  |   |   |

| Environmental Discipline                             | Criteria   | Indicator  | Potential Data Sources  |   |
|--|--|--|---|---|
| <b>Indigenous Knowledge</b>                          |  |  |   |   |
| <b>Indigenous Knowledge and Land Use<sup>1</sup></b> | Traditional Use of Land and Resources and Aboriginal and Treaty Rights | <ul style="list-style-type: none"> <li>▪ Value of animal harvesting areas / sites to Indigenous people:</li> <li>▪ Value of plant harvesting areas / sites to Indigenous people</li> <li>▪ Number and value of waterbody features used to harvest fish</li> <li>▪ Number of habitation sites (cabins / camps / village / trading posts)</li> <li>▪ Number of trap line crossings</li> <li>▪ Number and value of travel routes (trail / canoe / walking)</li> </ul> | <ul style="list-style-type: none"> <li>▪ Existing Indigenous Knowledge data that is shared with Marten Falls First Nation (MFFN)</li> <li>▪ Community Based Land Use Planning initiatives</li> <li>▪ Indigenous Knowledge data collected through the Project-specific Indigenous Knowledge Studies</li> <li>▪ Previous land claims (historic and outstanding)</li> </ul>  |   |
|  | Cultural/Spiritual Areas and Sites (Indigenous)                        | Number and significance of culturally sensitive sites and areas: <ul style="list-style-type: none"> <li>▪ Ceremonial Sites</li> <li>▪ Graves</li> <li>▪ Sacred Sites</li> <li>▪ Gathering Areas</li> <li>▪ Spiritual Sites</li> <li>▪ Points of Interest</li> <li>▪ Worship Areas</li> </ul>   |   |   |
|  | Indigenous Landscape   | <ul style="list-style-type: none"> <li>▪ Number and significance of Place Names<sup>1</sup></li> <li>▪ Number of Orientation Points<sup>2</sup></li> <li>▪ Number of important ecological areas (e.g., moose calving area)</li> <li>▪ Number and significance of shared areas (i.e., territorial overlap)</li> </ul>   |   |   |
|  | Reserve Land   | <ul style="list-style-type: none"> <li>▪ Reserve Land other than MFFN</li> </ul>   |   | <ul style="list-style-type: none"> <li>▪ Canada Lands Survey</li> </ul>   |
|  | Land Claims  | <ul style="list-style-type: none"> <li>▪ Indigenous Land Claims</li> </ul>   |   | <ul style="list-style-type: none"> <li>▪ Provincial: Negotiations Branch Ministry of Indigenous Affairs</li> <li>▪ Federal: Crown–Indigenous Relations and Northern Affairs Canada</li> </ul> |
| <b>Socio-Economic and Built Environment</b>          |  |  |   |   |
| <b>Social</b>  | Housing and Accommodation  | <ul style="list-style-type: none"> <li>▪ Housing demand</li> <li>▪ Housing supply</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Statistics Canada data on housing</li> <li>▪ Municipal, provincial and Indigenous government websites</li> <li>▪ Municipal plans and reports</li> <li>▪ Provincial plans and reports</li> <li>▪ Municipal, provincial and Indigenous government websites (e.g., Ministry of Transportation Ontario (MTO) traffic counts)</li> <li>▪ Municipal plans and reports</li> <li>▪ Provincial plans and reports</li> <li>▪ Local service providers (e.g., Airports)</li> <li>▪ Industry reports</li> <li>▪ Previous Environmental Assessments</li> </ul> |   |
|  | Community Services and Infrastructure                                  | <ul style="list-style-type: none"> <li>▪ Demand for services and infrastructure</li> </ul>   |   |   |
|  | Transportation   | <ul style="list-style-type: none"> <li>▪ Road transportation network use</li> <li>▪ Air transportation use</li> </ul>  |   |   |

1. Place names are representative of shared local and cultural knowledge based on experiential and physical interaction with a specific place, thus they are tied to traditional land uses. Significance may be related to the nature of the place name and the oral traditions within which it is rooted.

2. Orientation points or markers are features that may be used to guide traditional land users when out on the land and serve an important function in traditional land use.

| <b>Environmental Discipline</b> | <b>Criteria</b>             | <b>Indicator</b>  | <b>Potential Data Sources</b>  |
|---------------------------------|-----------------------------|---|--|
|                                 | Community Well-being        | <ul style="list-style-type: none"> <li>▪ Nuisance (e.g., noise, vibrations)</li> <li>▪ Community satisfaction</li> <li>▪ Community cohesiveness</li> <li>▪ Family and social ties</li> <li>▪ Perceived safety and security</li> </ul> | <ul style="list-style-type: none"> <li>▪ Other Environmental Assessment studies</li> <li>▪ Primary data</li> <li>▪ Statistics Canada well-being index</li> <li>▪ Non-Government Organization and Interest groups on community well-being</li> <li>▪ Municipal, provincial and Indigenous government websites</li> <li>▪ Municipal plans and reports</li> <li>▪ Provincial plans and reports</li> <li>▪ Local service providers</li> </ul>  |
| <b>Economy</b>                  | Regional Economy            | <ul style="list-style-type: none"> <li>▪ Economic opportunity</li> <li>▪ Procurement opportunities</li> <li>▪ Price of goods</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Statistics Canada on economic sectors</li> <li>▪ Municipal, provincial and Indigenous government websites</li> <li>▪ Municipal plans and reports on economic development</li> <li>▪ Provincial plans and reports on regional sector development</li> <li>▪ Local service providers such as infrastructure and utility providers</li> <li>▪ Regional economic development reports;</li> <li>▪ Regional tourism reports</li> <li>▪ Industry report (e.g., mining and forestry)</li> <li>▪ Previous Environmental Assessments</li> </ul> |
|                                 | Labour Force and Employment | <ul style="list-style-type: none"> <li>▪ Employment</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Statistics Canada labour force and employment data</li> <li>▪ Municipal, provincial and Indigenous government websites</li> <li>▪ Municipal plans and reports on labour gaps and markets</li> <li>▪ Provincial plans and reports on labour gaps and markets</li> <li>▪ Industry reports</li> <li>▪ Previous Environmental Assessments</li> </ul>  |
|                                 | Government Finances         | <ul style="list-style-type: none"> <li>▪ Expenditure</li> <li>▪ Revenue</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Municipal and Indigenous community financial statements</li> <li>▪ Provincial plans and reports</li> </ul>  |
| <b>Land and Resource Use</b>    | Land Use Compatibility      | <ul style="list-style-type: none"> <li>▪ Compatibility with existing land uses</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ Spatial data on existing planned land uses</li> <li>▪ Land use plans (municipal, provincial and federal)</li> <li>▪ Community-based land use planning</li> </ul>  |
|                                 | Parks and Protected Areas   | <ul style="list-style-type: none"> <li>▪ Natural, cultural and recreational values</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data on the land used for protected areas</li> <li>▪ Provincial reports and plans (e.g., Park management documents)</li> <li>▪ Community-based land use planning</li> </ul>  |
|                                 | Extractive Industry         | <ul style="list-style-type: none"> <li>▪ Land use and access</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data on existing mining and aggregate areas</li> <li>▪ Municipal reports and plans</li> <li>▪ Provincial reports and plans</li> <li>▪ Community land use planning</li> <li>▪ Regional industry sector reports</li> <li>▪ Non-Government Organization and academic reports</li> </ul>   |

| Environmental Discipline                 | Criteria   | Indicator   | Potential Data Sources   |
|--|--|---|--|
|  | Forestry Industry  | <ul style="list-style-type: none"> <li>▪ Land use and access</li> <li>▪ Disruption</li> </ul>                 | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data on forestry areas and facilities</li> <li>▪ Provincial reports and plans (e.g., Forestry management plans)</li> <li>▪ Community land use planning</li> <li>▪ Forestry Management Plans</li> </ul>   |
|  | Energy and Linear Infrastructure   | <ul style="list-style-type: none"> <li>▪ Land use and access</li> </ul>                                       | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data on utilities and other infrastructure or potential energy sites</li> <li>▪ Municipal reports and plans</li> <li>▪ Provincial reports and plans on energy requirements or projects</li> <li>▪ Community land use planning</li> <li>▪ Regional industry sector reports (e.g., Independent Electricity System Operator reports)</li> <li>▪ Non-Government Organization and academic reports</li> </ul> |
| <b>Recreation and Tourism</b>            | Recreation and Tourism   | <ul style="list-style-type: none"> <li>▪ Land use and access</li> </ul>                                       | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data including recreation and access points and polygons</li> <li>▪ Provincial reports and plans on tourism such as Ontario Ministry of Tourism Culture and Sport (MTCS) data</li> <li>▪ Community-based land use planning</li> <li>▪ Other impact assessments such as air quality, noise, surface water, wildlife, fish and fish habitat and vegetation and wildlife</li> </ul>                         |
|  |  | <ul style="list-style-type: none"> <li>▪ Environmental conditions</li> <li>▪ Resource availability</li> </ul> |  |
| <b>Human Health</b>                      | Personal Safety  | <ul style="list-style-type: none"> <li>▪ Project-related accidents</li> </ul>                                 | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ Non-Government Organization and Interest group reports</li> <li>▪ Municipal, provincial and Indigenous government websites</li> <li>▪ Provincial traffic volumes and data</li> </ul>  |
|  |  | <ul style="list-style-type: none"> <li>▪ Vehicular Accidents</li> </ul>                                       |  |
|  |  | <ul style="list-style-type: none"> <li>▪ Violence and harassment</li> </ul>                                   |  |
|  | Health   | <ul style="list-style-type: none"> <li>▪ Health services</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ Statistics Canada</li> <li>▪ Non-Government Organization and Interest group reports</li> <li>▪ Municipal, provincial and Indigenous government websites and reports</li> <li>▪ Local service providers</li> </ul>   |
|  |  | <ul style="list-style-type: none"> <li>▪ Substance abuse</li> </ul>   |  |
| Diet                                     | <ul style="list-style-type: none"> <li>▪ Food consumption</li> </ul>                       | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ Economic Assessment</li> </ul>               |  |
| Environmental Factors Influencing Health | <ul style="list-style-type: none"> <li>▪ Air quality</li> </ul>                            | <ul style="list-style-type: none"> <li>▪ Air Quality Assessment</li> </ul>                                    |  |
|  | <ul style="list-style-type: none"> <li>▪ Noise</li> <li>▪ Surface water quality</li> </ul> | <ul style="list-style-type: none"> <li>▪ Noise Assessment</li> <li>▪ Surface Water Assessment</li> </ul>      |  |
| <b>Visual Aesthetics</b>                 | Visual Character   | <ul style="list-style-type: none"> <li>▪ Visibility of the Project from sensitive locations</li> </ul>        | <ul style="list-style-type: none"> <li>▪ Primary data</li> <li>▪ First Nation government information</li> <li>▪ Spatial Data</li> <li>▪ Provincial reports and plans; and,</li> <li>▪ Community-based land use planning</li> </ul>   |

| Environmental Discipline           | Criteria                     | Indicator  | Potential Data Sources   |
|------------------------------------|------------------------------|--|--|
| <b>Cultural Environment</b>        |                              |  |  |
| <b>Cultural Heritage Resources</b> | Cultural Heritage Landscapes | <ul style="list-style-type: none"> <li>▪ Areas of importance to local communities</li> <li>▪ Areas of Historical Significance</li> <li>▪ Culturally Important Landscape Features</li> <li>▪ Areas of Religious or Spiritual Significance</li> </ul>                                  | <ul style="list-style-type: none"> <li>▪ Indigenous Knowledge</li> <li>▪ Recent and historical maps of the study area</li> </ul>   |
|                                    | Archaeological Resources     | <ul style="list-style-type: none"> <li>▪ Burial Sites</li> <li>▪ Historical Villages</li> <li>▪ Areas of Cultural Significance</li> <li>▪ Registered archaeological sites</li> <li>▪ Areas of importance to local communities</li> <li>▪ Areas of Historical Significance</li> </ul> | <ul style="list-style-type: none"> <li>▪ Recent and historical maps of the study area</li> <li>▪ Reports of previous Archaeological Assessments in proximity to the study area</li> <li>▪ The MTCS's Ontario Archaeological Sites Database (OASD) for a listing of registered archaeological sites within a 50 km radius of the study area</li> <li>▪ Existing Indigenous Knowledge data that is shared with MFFN</li> <li>▪ Community Based Land Use Planning initiatives</li> <li>▪ Indigenous Knowledge data collected through the Project-specific Indigenous Knowledge Studies</li> <li>▪ Field investigations</li> </ul> |