Comment Form – Draft Permitting Plan and Draft Tailored Impact Statement Guidelines – Federal Review Team

Northern Road Link Project

All comments should be submitted via the Submit a Comment feature available on the Project's Canadian Impact Assessment Registry page (https://iaac-aeic.gc.ca/050/evaluations/proj/84331). Documents can be uploaded using this feature. If you have any difficulties submitting this way, please contact the Registry directly at registry-registre@iaac-aeic.gc.ca. All comments submitted using this form will be posted on the Registry website for the Project.

Please note that this is your opportunity to customize the Tailored Impact Statement Guidelines. The Agency is required to issue the final Guidelines and plans no later than day 180 of the planning phase (August 20, 2023).

Department/Agency:	Environment and Climate Change Canada (ECCC)		
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Section 1 – Draft Permitting Plan:

1. Confirm that all applicable legislative and regulatory oversight that may apply to the Project, under the authority of your department or agency, is accurately listed in the draft Permitting Plan.

See Table 1 – ECCC Comments on Draft Permitting Plan – Northern Road Link Project on page 2.

2. Indicate whether your department or agency has identified any power that it will be unable to exercise to allow the Project to proceed, in whole or in part. For more information, please refer to subsection 17(1) of the IAA.

ECCC has not identified any power that it will be unable to exercise at this time.

Section 2 – Draft Tailored Impact Statement Guidelines:

1. Comments on draft Tailored Impact Statement Guidelines (the Guidelines)

See Table 2 – ECCC Comments on Draft Tailored Impact Statement Guidelines – Northern Road Link on page 4.

Table 1 – ECCC Comments on Draft Permitting Plan – Northern Road Link

Department – Comment ID	Permitting Plan Section	Context and Rationale (provide a clear and detailed explanation of your comments and recommendations)	Recommendation: provide text to be inserted or deleted. Be specific on the location (page, paragraph, bullet #) within the draft Permitting Plan that the text would be added/deleted.
ECCC-01	3. Required Regulatory Instruments Identification and Justification	Recommended changes to clarify: • the footnote pertains to terrestrial species at risk, to fit within the context of footnote 1, which is about aquatic species at risk • residences of species at risk are protected through SARA Permits could also be required should prohibitions be put in place on non-federal land within the project area and should be added to this section.	ECCC recommends the following edits to the text of the second footnote of paragraph 1, page 2 of section 3 (new text in bold, deleted text in strikethrough): Footnote [2] - Based on current project information, SARA permits **for terrestrial species** likely will not be required, given there is no federal land, and currently no order in place to bring prohibitions into effect on non-federal land, within the project area. However, it may be possible that a SARA permit could be required should chimney swifts nest or roost in the project area. **As a migratory bird, r**esidences (nests and roosts) of this species are protected year-round under **SARA wherever they occur** ~~*Migratory Birds Convention Act, 1994*~~. The Proponent should contact Environment and Climate Change Canada regarding potential SARA permitting requirements, if chimney swift residences may be destroyed during site clearing **or other project activities**. **Furthermore, prohibitions may come into force on land other than federal land pursuant to orders or regulations under SARA. It is possible that further prohibitions may come into force in the future through orders in Council for individuals, residences and/or critical habitat on non-federal lands.**
ECCC-02	3.4 Authorization under Paragraph 73(1) of the *Species at Risk Act*	The general prohibitions only include those related to individuals and residences. Critical habitat prohibitions are not considered a 'general' prohibition and should be removed from this section.	ECCC recommends the following edits to the text in paragraph 1, page 3 of section 3.4 (deleted text in strikethrough): A permit is required by those persons that conduct project activities affecting species listed on Schedule 1 of SARA as Extirpated, Endangered, or Threatened, and which contravene the SARA ~~general~~ prohibitions where they are in force.
ECCC-03	4.2.2.1 Application submission for works	Addition of SARA permit application details for ECCC, which differ from DFO.	ECCC recommends the following edits to the text in paragraph 1, page 14 of section 4.2.2.1 (new text in bold):

			To seek a permit under SARA from DFO, the Proponent must submit an application to the relevant regional office of the Fish and Fish Habitat Protection Program. The Proponent determines the timing of when the application is submitted. If the Proponent also seeks a *Fisheries Act* Authorization, the process to apply for a SARA permit can be combined with the process to seek an authorization under the *Fisheries Act*. **To seek a permit under SARA from ECCC, the Proponent must submit an application using the online Species at Risk Act Permit System: https://splep-saraps.az.ec.gc.ca/index.cfm?fuseaction=permit.list**

Table 2 – ECCC Comments on Draft Tailored Impact Statement Guidelines (TISG) – Northern Road Link

Department – Comment ID	Draft Guidelines Section	Context and Rationale (provide a clear and detailed explanation of your comments and recommendations)	Recommendation: provide text to be inserted or deleted. Be specific on the location (page, paragraph, bullet #) within the draft Guidelines that the text would be added/deleted.
ECCC-01	General comment	Potential residual and cumulative effects to wetlands, bird habitat, and species at risk related to this project are possible. It is therefore important that the Tailored Impacts Statement Guidelines (TISG) presents clear and understandable guidance to the proponents on describing baseline conditions, estimating potential effects, and selecting appropriate mitigation measures for these valued components (VCs). In addition, Environment and Climate Change Canada (ECCC) has been providing advice to the proponents, through the Webequie Supply Road (WSR) and Marten Falls Community Access Road (MFCAR) projects,	The recommended changes and edits to the TISG in this comment table represent very few new requirements beyond what was required in the WSR and MFCAR TISGs. The edits strive to clarify requirements and present clear, understandable guidance for the proponents, based on best practices, improved wording and communications, and technical discussion and reviews with the proponents that have evolved over the past 3.5 years since the WSR and MFCAR TISGs were finalized.

		on what the TISG requirements related to these VCs mean and how best to meet them, that needs to be reflected in the TISG for the Northern Road Link (NRL) project in order to maintain the evolution of understanding that has occurred. It has been demonstrated that aspects of WSR and MFCAR TISGs are not well understood. This was highlighted in technical discussions with the proponents (6-10 hours of meetings with each proponent), review of multiple study plans, and review of existing conditions reports. As a result, the comments provided by ECCC are aimed at providing the proponents with a clear, logical, understandable TISG. This will help streamline Phase 2 work and provide the proponents with the instruction and guidance needed to prepare the Impact Statement (IS).	
3.2 Project Location			
ECCC-02	3.2 Project location	All relevant information regarding project location should be included in the TISG.	ECCC recommends the following edits to the text below the seventh major bullet, page 10 of section 3.2 (new text in bold):

		This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	• all waterbodies, including intermittent and ephemeral waterbodies, and their location on a map, as well as flow direction; • **wetlands as per the province's Ontario Land Cover Compilation v.2.0;**
3.4 Project Components			
ECCC-03	3.4 Project Components	The footprint, location discharge location(s) and their receiving environment should be provided for all components. It is also unclear whether the proponent is being asked to identify the receiving environment for discharges. ECCC needs to understand the receiving environment (receiving water body and watercourse) in order to assess the environmental impact of discharges on the receiving environment.	ECCC recommends the following edits to the text in paragraph 2, page 12 of section 3.4 (new text in bold, deleted text in strikethrough): • water management infrastructure to divert, control, collect and discharge surface drainage and groundwater discharges, ~~including~~ **and any** seepage**,** ~~to the~~ **(including footprint, location, discharge locations and their receiving environment**); ECCC recommends the following edits to the text in paragraph 2, page 13 of section 3.4 (new text in bold): • treatment facilities for potable water, sewage, wastewater and effluent (including proposed treatment technologies, footprint, location, discharge locations **and their receiving environment**);
7.1 Baseline Methodology			
ECCC-04	7.1 Baseline Methodology	Eskers and peatlands should be included under habitat type. This is consistent with updated approved language in other TISGs.	ECCC recommends the following edits to the text in paragraph 4, page 33 of section 7.1 (new text in bold, deleted text in strikethrough): In describing the biophysical environment, the Impact Statement must take an ecosystem approach that ~~consider~~ **considers** how the Project may affect the structure and functioning of biotic and abiotic components within the ecosystem using scientific, community and Indigenous Knowledge, as applicable. The Impact Statement must provide a description of the indicators and measures used to determine ecosystem health and integrity, identified during early planning, and reflected in the Guidelines. The presence of

			rare, limited and/or significant habitat (e.g., federal[33], provincial, or Indigenous protected areas, ANSIs[34], ~~RAMSAR~~ **Ramsar** sites[35], **identified or proposed** critical habitat **in SARA recovery strategies or action plans** ~~identified under SARA~~, etc.), such as but not limited to spawning shoals, aquatic vegetation, overwintering pools, **eskers or peatlands**, potentially affected by the Project should be included in the description of the biophysical baseline conditions.
ECCC-05	7.1 Baseline Methodology	It is important to evaluate and understand changes across all three study areas. Since the LSA is defined as the area where project effects may extend and the RSA is defined as the region where cumulative effects may extend, baseline and predicted changes to conditions within these areas are directly relevant to the assessment and should be included. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the first bullet on page 34 of section 7.1 (new text in bold): • include baseline data collected for all valued components to assess changes to environmental, health, social and economic conditions, and clearly demonstrate that these have been collected in a way that makes analyses, extrapolations, and reliable predictions possible, and are suitable to estimate pre-project baseline conditions, to predict effects from the Project, and to evaluate post-project changes in the conditions within and across the project area**, local study area, and regional study area.**
ECCC-06	7.1 Baseline Methodology	Simply indicating if gaps exist is not useful to the assessment but describing them and their importance is useful. This is a data sparse region so there are lots of gaps; not all are equally important to descriptions of baseline conditions.	ECCC recommends the following edits to the text of the third bullet on page 34 of section 7.1 (new text in bold): • indicate if baseline data gaps exist**, the importance of those gaps,** and additional steps taken to address gaps in information**, where necessary**;

ECCC-07	7.1 Baseline Methodology	It is important to include all factors for reviewing and providing advice on model outputs. Also, to ensure the applicability of those outputs and conclusions to the project study areas. Finally, information on the software used and validation of the models should be included. This is consistent with updated approved language in other TISG. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the first paragraph under the bullets on page 34 of section 7.1 (new text in bold, deleted text in strikethrough): If the baseline data have been extrapolated or otherwise manipulated to depict environmental, health, social and/or economic conditions within the study area, modelling methods must be described and must include assumptions, ~~calculations of margins of~~ error **estimates** and other relevant statistical information**, as well as the software used (including program and version). Where model uncertainty is high, field data should be considered to reduce uncertainty.**
ECCC-08	7.1 Baseline Methodology	This text is out of place in the baseline methodology section. Move to section 7.4.1 Spatial boundaries.	ECCC recommends the following text at the end of page 34 and start of page 35 of section 7.1 be moved to section 7.4.1 Spatial Boundaries: Study area boundaries must encompass the spatial boundaries of the Project, including any associated project components or activities, and the anticipated boundaries of the project effects. Considerations in defining appropriate study areas or boundaries would include, but not be limited to: • areas potentially affected by changes to water quality and quantity or changes in flow in the watershed and hydrologically connected waters; • areas potentially affected by airborne emissions or odours; • air zone(s) and airsheds under the Air Quality Management System; • areas determined by dispersion and deposition modelling; • areas within the range of vision, light and sound; • the locations and characteristics of the most sensitive receptors or areas; • species habitat areas, usage timing and migratory patterns • emergency planning and emergency response zones;

			• the geographic extent of local and regional services; • any impacted local communities, including municipalities; • all potentially affected Indigenous communities; • areas of known Indigenous land36, cultural, spiritual and resource use; and • existing affected infrastructure.
7.2 Sources of Baseline Information			
ECCC-09	7.2 Sources of baseline information	The end goal is to support reliable conclusions. In addition to methods, there are many reasons (e.g., species distributions, habitat differences) why using data from a different place could be possible but lead to incorrect conclusions. Suggest this wording change to capture appropriate methods but also capture the other reasons why extrapolating from one area to this area may or may not be useful and reliable. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the third paragraph on page 38 of section 7.2 (new text in bold): If using existing data sources, the Impact Statement must provide justification to show that the data sources are relevant in spatial and temporal coverage to the Project**, and will lead to reliable conclusions.**
7.3 Considerations and Methodology in Selecting Valued Components			
ECCC-10	7.3 Considerations and methodology in selecting	Review of study plans should be included. It is critical to ensure the proponent is on track to meeting the expectations and	ECCC recommends the following edits to the text of the last paragraph on page 40 of section 7.3 (new text in bold): The valued components must be described in sufficient detail to allow the reviewer to understand their relevance to the assessment and to assess the potential adverse and

	valued components	requirements within the TISG and avoiding information requests later in the process. This is consistent with requirements for study plans for MFCAR and WSR.	positive environmental, health, social and economic effects and impacts arising from the Project activities. **For each of the valued components that will be assessed in the Impact Statement, it is recommended that the proponent create a study plan and a work plan to be reviewed by the Agency.**
7.4 Spatial and Temporal Boundaries			
ECCC-11	7.4.1 Spatial boundaries	The area beyond the Project Study Area (PSA) where project effects may extend is not always 'immediately' beyond the PSA (e.g., watershed boundaries as Local Study Area (LSA), caribou and wolverine LSA) therefore, the text should be amended to exclude immediacy. This is consistent with how this term has been defined and implemented for the WSR and MFCAR projects.	ECCC recommends the following edits to the text of the second numbered bullet on page 40 of section 7.4.1 (deleted text in strikethrough): 2) Local Study Area (LSA): defined as the area ~~immediately~~ beyond the project area where project effects may extend; and
ECCC-12	7.4.1 Spatial boundaries	When assessing effects, it is important consideration be given to selecting appropriate spatial boundaries. Therefore, the text in this section should be amended to include the appropriate language pertaining to LSA and RSA.	ECCC recommends the following edits to the text of the second bullet on page 41 of section 7.4.1 (new text in bold): • For habitat-related valued components potentially affected by the Project, a land cover analysis, including freshwater environments, should be conducted to determine appropriate ecological boundaries and buffer distances. **The spatial extent of habitat and habitat functions should influence the determination of an appropriate LSA and RSA.** ECCC recommends the following edits to the text of the third bullet on page 41 of section 7.4.1 (new text in bold):

		This is consistent with requirements in the WSR and MFCAR TISGs.	• Where a valued component is a species, the LSA should correspond to PSA plus a buffer defined in consideration of direct and indirect project effects to species and their habitats, changes to connectivity, alteration of predator/prey dynamics, mortality, sensory disturbance, and pollution. **Simulation modelling may be used to help define buffers that address the species or species group being assessed.**

ECCC-13	7.4.1 Spatial boundaries	Specific advice for Eastern Migratory Caribou (EMC) was added based on collaring data presented by the proponent for both the MFCAR and the WSR. Eastern migratory caribou were collared for both projects and observed within the project study area of all 3 proposed road developments. EMC has been assessed by COSEWIC as endangered and is in consultation to be listed under SARA. Regardless of the population, caribou are sensitive to disturbance, habitat destruction, and specific to EMC, severing of migration corridors. Impacts to this population are likely and could differ from those to boreal caribou (BOCA) and thus could require different considerations and mitigation measures.
		
		The text for boreal and eastern migratory caribou LSA aligns with the current approach, approved in the Crawford Nickel Project TISG, which allows for tailored
			ECCC recommends the following edits to the text of the last bullet on page 41 of section 7.4.1 (new text in bold, deleted text in strikethrough):
			
			• ~~for caribou, the local study area should be at a minimum: project study area plus a 10-40-kilometre buffer. Simulation modeling may indicate a larger buffer. In addition to assessing project and cumulative effects at the scale of the three study areas defined above, also assess at the scale of the implicated Ontario caribou ranges (Missisa, Ozhinski, Nipigon and Pagwachuan), and the federal Far North caribou range~~
			• **For boreal caribou:**
			  ○ **the local study area should be at a minimum: project study area plus a buffer that includes home range size estimates for the local population if available, or provincial/national estimates as a proxy, considering best available data. Any buffer size chosen should encompass the maximum home range size estimate. Best available data includes, but is not limited to:**
			  ▪ **any recent and historical observations, surveys (aerial, fecal), telemetry data, and Indigenous Knowledge;**
			  ○ **the regional study area should encompass the provincial range boundaries of Ozhiski, Missisa, and James Bay Range.**
			• **For eastern migratory caribou:**
			  ○ **the local study area should be the same as the boreal caribou LSA;**
			  ○ **the regional study area should be defined as the federal range boundary for the Southern Hudson Bay sub-population, with the addition of known telemetry locations for recently collared migratory caribou (i.e., an extension of the federal range boundary south to encompass the best available data for eastern migratory caribou in Ontario).**
			
			The proponent should consult with federal, provincial and/or local government authorities to verify appropriate boundaries for wildlife species.
			
			ECCC also recommends the addition of a footnote and reference pertaining to the above listed Southern Hudson Bay sub-population: https://species-registry.canada.ca/index-en.html#/documents/3274

		spatial boundaries according to the best available data and known ecology for the local population(s) of caribou. Text to define the boreal caribou RSA was added to give more specific and concise direction for the proponent and reduce errors and redundancy throughout the TISG (e.g., give precision for an appropriate area to assess cumulative effects). All 3 provincial ranges were added, including James Bay which is downstream of the project, due to recent data analyses (telemetry and fecal DNA survey results), showing where local populations of caribou are found, and their movement patterns. Text to define the eastern migratory caribou RSA is based on the current federal range boundaries and the recent existing collaring data; which approximates the best available information as to where cumulative effects to eastern migratory caribou may extend for this project. Consultation with experts could be done through review of study plans.	

		The inclusion of eastern migratory caribou has been discussed through technical discussions and reviews of study plans with the WSR and MFCAR proponents.	
7.5 Effects Assessment Methodology			
ECCC-14	7.5.1 Methodology	Important consideration to ensure any thresholds, categories, and benchmarks are established independently of the effect size and not tailored to support a particular outcome. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text at the end of the second full paragraph on page 43 of section 7.5.1 (new text in bold): The environmental, health, social or economic effects should be described in terms of the context, magnitude, geographic extent, ecological context timing, duration and frequency, and whether effects are reversible or irreversible. The spatial scoping of the assessment should vary depending on the valued component and should be consistent with the spatial boundaries that were established for baseline data collection. **Any thresholds, categories, or benchmarks must be selected, described, and rationale provided prior to conducting the effects assessment.**
7.6 Mitigation and Enhancement Measures			
ECCC-15	7.6 Mitigation and enhancement measures	Strengthens language and provides a definition of the mitigation hierarchy, which is referred a number of times in various sections of the TISG. This is consistent with recent approved updates to language	ECCC recommends the following edits to the text of the third paragraph on page 45 of section 7.6 (new text in bold): The proponent is encouraged to use an approach based on the avoidance and reduction of the adverse effects at the source**, and should demonstrate that the mitigation hierarchy has been followed:** **1. <u>AVOID</u>: refers to avoidance of effects, such as by changing the location, design, or timing of the project and related activities.**

		on the mitigation hierarchy and improves clarity of requirements from the WSR and MFCAR TISGs.	2. **<u>MINIMIZE</u>: aims to reduce effects to the extent possible, for example, by modifying the most adversely impactful project activities or components or by taking measures specific to the potential effects. There may still be effects where measures are not sufficient to avoid or eliminate the effects, or where their absolute effectiveness is uncertain.** 3. **<u>RESTORE ON-SITE</u>: these are measures to restore disturbed areas of the project that remain after considering the avoidance and minimization measures.** 4. **<u>OFFSET</u>: measures implemented outside the project area to offset remaining adverse effects.** The proponent must engage with Indigenous communities when developing mitigation measures. The proponent is also encouraged to work with the local communities and Indigenous communities to align project goals, with an aim to enhance positive project effects. Such an approach may include the modification of the design of the Project or relocation of project components.
ECCC-16	7.6 Mitigation and enhancement measures	Defining the mitigation hierarchy enables shortening this bullet, which does not provide definition of the terms.	ECCC recommends the following edits to the text of the fourth major bullet on page 47 of section 7.6 (new text in bold, deleted text in strikethrough): • provide **the** best technically and economically feasible mitigation approaches to habitat mitigation that follow the **mitigation** hierarchy **and provide justification for moving from one mitigation alternative to the next**: o ~~avoid potential impact;~~ o ~~minimize potential impact;~~ o ~~provide biodiversity offsets to address any residual adverse environmental effects that cannot be avoided or sufficiently minimized; and~~ o ~~provide justification for moving from one mitigation alternative to the next~~
ECCC-17	7.6 Mitigation and enhancement measures	Additional information is required to assess mitigation measures and determine if offsetting is appropriate. Provides greater clarity on requirement for baseline information at compensation site(s). Current wording is not clear.	ECCC recommends the following edits to the text of the last major bullet on pages 47-48 of section 7.6 (new text in bold, deleted text in strikethrough): • provide offsetting or compensation plans to address all residual effects to species at risk, and their critical habitat, migratory birds, fish and fish habitat and/or wetland functions (if applicable) for review during the impact assessment process; the plans should: o describe the baseline condition of the species at risk, critical habitat, migratory birds and wetland functions potentially impacted by the Project;

			○ apply the mitigation hierarchy **and explain and justify the hierarchy of mitigation measures considered prior to offsetting**; ○ identify a compensation ratio with rationale, including how any policies or guidance provided by federal authorities, provincial authorities and Indigenous communities have been considered; ○ identify the location and timing of implementation of compensation projects (where feasible); ○ identify and describe the success criteria; ○ identify and detail non-habitat measures; ○ describe how the proposed measures align with published provincial and federal recovery, management, or action plans and strategies for species at risk; ○ identify the parties responsible for implementation, including monitoring and review; ○ identify indicator species for setting compensation objectives. Identification should be based on baseline data, Bird Conservation Strategies, and other information where available (note: species at risk should not be used as indicator species; compensation efforts need to be directed specifically to these species); ○ describe the functions gained at the compensation site(s); ○ provide evidence that functions can be replaced by the proposed offset activities; ○ describe the process of selecting proposed compensation site(s) ~~and associated baseline condition(s);~~ ○ **describe baseline conditions at selected or proposed compensation site(s)** ○ describe information on any offset credits that have been or will be obtained, including the offset regime that issued the credits, project type, project start date and vintage year. Proponents may also provide information on their intent to acquire or generate international offset credits; ○ describe information on habitat banks or any habitat credits that have been or will be obtained, including the regime that issued them, project type, project start date and vintage year. Proponents may also provide information on their intent to acquire or generate international habitat credits; ○ provide a description of the monitoring schedule and activities to be completed to monitor the success of compensation activities; and ○ note that offsets are required to address residual effects. Environment and Climate Change Canada (ECCC) guidance on conservation allowances should be used[54]

7.7 Cumulative Effects Assessment			
ECCC-18	7.7 Cumulative effects assessment	Reflects changes to caribou study areas made in section 7.4.1.	ECCC recommends the following edits to the text of the first major bullet on page 51 of section 7.7 (new text in bold, deleted text in strikethrough): • in relation to caribou: assess cumulative effects to **boreal and eastern migratory** caribou at the scale of the three study areas[57], ~~as well as the implicated Ontario caribou ranges,~~ and **for boreal caribou,** the federal Far North caribou range;
8.2 Atmospheric, Acoustic and Visual Environment			
ECCC-19	8.2.2 Effects to the atmospheric, acoustic, and visual environment	The draft TISG mentions that a comprehensive list of project activities that could affect ambient air quality in the region, such as heavy machinery and vehicles used during construction, will be provided. ECCC recommends the proponent be required to include the make, the model, the power output and the model year of these vehicles, if available, to ensure that the best available technology is selected.	ECCC recommends the following edits to paragraph one, page 58 of section 8.2.2 (new text in bold): • provide **the make, ~~the~~ model, ~~the~~ power output and ~~the~~ model year of ~~their~~ heavy-duty machinery used throughout thei~~r~~ project** to thei~~r~~ comprehensive list of project activities that may affect ambient air quality. ~~(To insure best available technology is selected)~~
ECCC-20	8.2.2 Effects to the atmospheric, acoustic, and visual environment	Dust or particulate matter emissions from unpaved roads (haulage) may represent 75 to 80% of all particulate matter emissions. Commonly used mitigation measures, such as water spraying, have varying efficiencies that may not be uniform or consistent over time. Furthermore, models can use unrealistic control efficiencies (as high as 98 %),	ECCC recommends the following edits to the text in bullet 1, page 59 of section 8.2.2 (new text in bold): • provide justification for all control efficiencies used to reduce emission rates of sources within the model, including details of all assumptions associated with the related mitigation measures, and their achievability; o **model particulate matter emissions from gravel/unpaved road dust both with and without implementation of mitigation measures during the construction and operation phases. Various mitigation measures control efficiency scenarios should be modeled such as 50% and 70% control efficiency.**

		inducing unrealistic modeled concentrations. The requirement in the TISG to "*provide justification for all control efficiencies used to reduce emission rates of sources within the model, including details of all assumptions associated with the related mitigation measures, and their achievability*", allows for the modeling of the best-case scenario with optimally functioning mitigation measures. Taking into account the above concerns, it should be specified in the requirements that modeling be conducted with and without emission control measures to provide more realistic results and a more accurate understanding of potential adverse effects of particulate matter emissions.	
8.5 Riparian and Wetland Environments			
ECCC-21	8.5.1 Baseline conditions (Riparian and wetland environments)	It is important that baseline information is representative of current conditions and that any decision to not carry out additional studies is well justified.	ECCC recommends the following edits to the text of the last two bullets on page 62 of section 8.5.1 (new text in bold): • **provide baseline information that is representative of current conditions. Where necessary, focused field studies may be required to obtain missing or higher resolution data to improve confidence in the prediction of residual effects and the appropriate selection of mitigation;**

		This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects. Consistent requirement to identify and rationalize metrics and indicators across VCs. This is consistent with requirements in the WSR and MFCAR TISGs. Since the RSA is defined as the region where cumulative effects may extend, baseline descriptions and maps of existing wetlands within the RSA are directly relevant to the assessment. This is consistent with updated approved language in other TISGs.	• **identify the metrics and biotic and abiotic indicators that are used to characterize the baseline biodiversity and discuss the rationale for their selection;** • provide pre-project characterization of the shoreline, banks, current and future flood risk areas, wetland catchment boundaries; • **Use the Ontario Land Cover Compilation v.2.0 to** quantify, map and describe wetlands (shallow open waters, swamps, fens, marshes, peat lands, bogs, etc.) within the local study area **and regional study area** potentially directly, indirectly and/or cumulatively affected by the Project in the context of:
ECCC-22	8.5.1 Baseline conditions (Riparian and wetland environments)	Moved this bullet up from page 65 as it is helpful to have the bullets about defining study areas together.	ECCC recommends the following edits to the text of the first major bullet on page 63 of section 8.5.1 (new text in bold): • define a local study area that takes into account watershed area and hydrological connectivity of wetlands within or bisected by the project area; • **identify wetlands located outside of the LSA that may be affected by hydrological changes as a result of cumulative effects.**

ECCC-23	8.5.1 Baseline conditions (Riparian and wetland environments)	Provides greater clarity and highlights the importance of carbon sequestration functions in this particular landscape. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the fifth major bullet on page 63 of section 8.5.1 (new text in bold): • identify and describe wetland capacities to perform hydrological and water quality functions, provide for wildlife and wildlife habitat or other ecological functions**, such as carbon sequestration**;
ECCC-24	8.5.1 Baseline conditions (Riparian and wetland environments)	Provides greater clarity on the expectations of the wetland functions assessment. The wetland function assessment is relevant to understanding effects and appropriate mitigation measures for species at risk or migratory birds that use wetland habitat. Consistent with advice provided on WSR and MFCAR through reviews of study plans and baseline reports. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of	ECCC recommends the following edits to the text of the sixth major bullet on page 63 of section 8.5.1 (new text in bold): • provide a wetland functions assessment in accordance with the guiding principles of Wetland Ecological Functions Assessment: An Overview of Approaches[66] or any subsequent approved guidelines by which to determine the most appropriate functions assessment methodology to use (see Appendix 1 for more guidance on conducting a wetland function assessment): ○ **complete a Level 1 assessment across the RSA using the Ontario Land Cover Compilation v2.0, and a Level 2 assessment for a representative selection of wetlands that the Project would directly impact and of wetland(s) that are hydrologically connected.** ○ **At a minimum, the assessment must consider hydrological, biogeochemical, habitat, and climate functions. Climate functions may be nested within the hydrological and biogeochemical functions or considered separately, depending on the methodology selected.**

		study plans and is being implemented for those projects.	
ECCC-25	8.5.1 Baseline conditions (Riparian and wetland environments)	The requirement about planning and design of surveys is not clear as written. The criteria for choosing survey plot locations are critical to effectively evaluate survey design and therefore associated results. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the second and third sub-bullets on page 64 of section 8.5.1 (new text in bold, deleted text in strikethrough): ○ ~~survey protocol~~ **the** planning **and design of surveys of** ~~for~~ representative wetlands should include **the development of statistical models** ~~modeling~~ and **use of** simulations to estimate sampling requirements, and ~~analysis~~ **analyses** to evaluate resulting design options; ~~and~~ ○ sample size must be planned to support evaluation of the project study area within the context of the local study area and regional study area. Appropriate design of surveys will need to consider multiple survey locations in order to represent the wetland heterogeneity of the regional study area, and to yield multiple survey locations per wetland type, without requiring aggregation of habitat classes post-hoc; **and** ○ **describe all criteria used to choose survey locations.**
ECCC-26	8.5.1 Baseline conditions (Riparian and wetland environments)	Given the emphasis on using existing data, including from the WSR and MFCAR projects, throughout the TISG, it is important to ensure that data has been collected in a rigorous fashion to describe the direct, incidental, and cumulative effects of the project on wetland environments. This information will be used to inform the appropriate mitigation strategies, including potential offsetting, based on type and extent of effects.	ECCC recommends the following edits to the text below the last sub-bullet on page 64 of section 8.5.1 (new text in bold): ○ A supporting rationale and detailed description of the methods used in completing the wetland functions assessment, including sampling design. ○ **describe all data sources and data collection methods, and provide a rationale for why the chosen data, methods, analyses, and modelling approaches are the most appropriate for the project;** ○ **designed data collection is more likely to ensure goals are met and bias minimized. Data collection for the wetland function assessment should be designed based on a thorough review of the available scientific literature pertinent to the region and anticipated effects;**

		This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	
ECCC-27	8.5.1 Baseline conditions (Riparian and wetland environments)	Addition of a useful resource. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the last bullet on page 64 of section 8.5.1 (new text in bold): • determine if other wetland conservation policies, regulations or wetland compensation guidelines apply (contact provincial and/or local government authorities)**. See also resources available from** The Wetland Network; and,
ECCC-28	8.5.1 Baseline conditions (Riparian and wetland environments)	Suggested this bullet is re-located to page 63 so that study area requirements are together.	ECCC recommends the following text in the first bullet on page 65 of section 8.5.1 be moved to page 63: • identify a regional study area of sufficient size to capture effects to wetlands within the larger drainage area and include wetlands located outside of the local study area that may be affected by hydrological changes as a result of cumulative effects.
ECCC-29	8.5.2 Effects to riparian and wetland environments	Establish a consistent format for this bullet across all biophysical environment VCs. Some say 'all potential effects', some say 'the potential direct, indirect, and cumulative effects', some say 'direct, incidental or cumulative predicted positive and/or adverse effects'. Some do not have a general statement about describing effects. Amend to include all potential direct, incidental and	ECCC recommends the following edits to the text of the first bullet on page 65 of section 8.5.2: • describe all potential **direct, incidental and cumulative** effects due to the project, for all phases, to riparian and wetland environments;

		cumulative effects due to the project for all phases.	

ECCC-30	8.5.2 Effects to riparian and wetland environments	Provide better continuity and connection between baseline conditions and effects assessment, so that comparison of the baseline conditions and estimated conditions with and without the project is clearer.
		
		This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.
			ECCC recommends the following edits to the text of the fourth bullet on page 65 of section 8.5.2 (new text in bold):
			
			• describe the key indicators used to assess project effects and the sensitivity of wetlands, and riparian and terrestrial environments to disturbance**, and provide a rationale for their selection, including a clear connection to indicators used to characterize baseline conditions**;
			• **quantify the area of riparian and wetland environments that may be cleared or otherwise disturbed, and the volume of peat disturbed, within the project study area during all phases of the Project, including a description of the disturbance and changes to:**
			  ○ **interior to edge habitat ratios;**
			  ○ **the availability of rare habitat; and**
			  ○ **functions within the remaining wetland complex;**

ECCC-31	8.5.2 Effects to riparian and wetland environments	Spread of invasive species and emissions including dust are both potential pathways for adverse effects to riparian and wetland areas. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text below the seventh major bullet on page 65 of section 8.5.2 (new text in bold): • describe any changes to permafrost conditions as a result of the Project; • **describe effects related to potential introduction of weed species or invasive species or due to the increase in the spread and prevalence of diseases or pests;** • **describe potential effects from project emissions, including dust, that may result in contamination and acidification of nearby land and waterbodies, including consideration of the sensitivity of vegetation communities, wetlands, and riparian and terrestrial environments to disturbance;**
ECCC-32	8.5.2 Effects to riparian and wetland environments	Move to section 8.6.2 because eskers are upland habitat rather than riparian or wetland habitat and fit more	ECCC recommends re-locating the following text from the eighth major bullet on page 65 of section 8.5.2 to section 8.6.2:

		with vegetation section than wetland section.	• describe any changes to eskers and similar geological features as a result of the Project;
ECCC-33	8.5.3 Mitigation and enhancement measures (riparian and wetland environments)	Strengthens requirements for the mitigation hierarchy and makes it clear it must form major consideration in the selection of mitigation measures. Description of the effectiveness of mitigation measures specific to the effects being discussed is essential information to be able to evaluate measures and the potential for residual effects. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the first bullet on page 66 of section 8.5.3 (new text in bold, deleted text in strikethrough): • **demonstrate the use of the mitigation hierarchy to select appropriate mitigation measures by identifying all feasible measures and describing** and **justifying the** efforts **that** have been made to avoid and minimize temporary or permanent adverse effects to wetlands and riparian habitats. **Measures must be described in terms of the effectiveness of each measure to avoid the adverse effects and include a comprehensive science-based rationale for proposing the selected mitigation measure;** ~~and demonstrate that the mitigation hierarchy has been followed~~;
ECCC-34	8.5.3 Mitigation and enhancement measures (riparian and wetland environments)	These are all potential effects that will require well thought through mitigation measures. Requirement related to bank erosion fits better here in the riparian and wetland section than in vegetation section. This is consistent with updated approved language in other TISGs.	ECCC recommends the following edits to the text below the fifth major bullet on page 66 of section 8.5.3 (new text in bold): • describe measures to be used for stockpiling all stripped peat for use during site reclamation, or describe the plan for stockpiling stripped peat and mitigate effects related to its long-term stockpiling or removal; • **describe the proposed measures to mitigate bank erosion, including measures to eliminate the potential for erosion, such as bank stabilization using vegetation;**

ECCC-35	8.5.3 Mitigation and enhancement measures (Riparian and wetland environments)	Prefer this general bullet to specifying a minimum ratio. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the last sub-bullet on page 66 of section 8.5.3 (new text in bold, deleted text in strikethrough): ○ ~~use a minimum ratio of 2:1 of area of wetland restored/created to original wetland area;~~ **identify a compensation ratio with rationale, including how any policies or guidance provided by federal authorities, provincial authorities and Indigenous communities have been considered (refer to the Operational Framework for Use of Conservation Allowances** https://www.canada.ca/en/environment-climate-change/services/sustainable-development/publications/operational-framework-use-conservation-allowances.html**);**
8.6 Vegetation			
ECCC-36	8.6.1 Baseline conditions (Vegetation)	Important that baseline information is representative of current conditions and that any decision to not carry out additional studies is well justified. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text above the first major bullet on page 67 of section 8.6.1 (new text in bold): • **provide baseline information that is representative of current conditions. Where necessary, focused field studies may be required to obtain missing or higher resolution data or to improve confidence in the prediction of residual effects and the appropriate selection of mitigation;** • provide a description of the biodiversity, relative abundance and distribution of vegetation species and communities of ecological, economic or human importance within the local and regional study areas of the Project including:
ECCC-37	8.6.1 Baseline conditions (Vegetation)	Clearer, more specific guidance on what should be included in the description of disturbance on the landscape.	ECCC recommends the following edits to the text below the first two sub-sub-bullets on page 68 of section 8.6.1 (new text in bold, deleted text in strikethrough): ▪ level of habitat fragmentation

		This is consistent with requirements in the WSR and MFCAR TISGs.	▪ **current level of both anthropogenic and natural (e.g., fire, flood, drought)** ~~historical and current fire~~ disturbance **associated with vegetation, including a description of historical and current disturbance**; and
ECCC-38	8.6.2 Effects to vegetation	Establish a consistent format for this bullet across biophysical environment VCs. Some say 'all potential effects', some say 'the potential direct, indirect, and cumulative effects', some say 'direct, incidental or cumulative predicted positive and/or adverse effects'. Some do not have a general statement about describing effects. Amend to include all potential direct, incidental and cumulative effects due to the project for all phases. Provide better continuity and connection between baseline conditions and effects assessment, so that comparison of the baseline conditions and estimated conditions with and without the project is clearer. Additional important potential pathways for adverse effects to vegetation, including the text moved from section 8.5.2. This is consistent with updated approved language in other TISGs. It is also consistent with	ECCC recommends the following edits to the text below the first three bullets on page 68 of section 8.6.2 (new text in bold): • all potential **direct, incidental and cumulative** effects due to the project, for all phases, to vegetation; • the key indicators used to assess project effects and the sensitivity of vegetation communities disturbance **and provide a rationale for their selection, including a clear connection to indicators used to characterize baseline conditions**; • changes related to landscape disturbance including loss and fragmentation of habitats, including buffers or setbacks and project effects on areas of soil or ground instability;

		technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	
ECCC-39	8.6.3 Mitigation and enhancement measures (Vegetation)	Strengthens requirements for the mitigation hierarchy and clarifies that major consideration should be given to the selection of mitigation measures. Description of the effectiveness of mitigation measures specific to the effects being discussed is essential information to be able to evaluate measures and the potential for residual effects. Move bullet concerning mitigation measures for bank erosion to section 8.5.3. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the first major bullet on page 69 of section 8.6.3 (new text in bold, deleted text in strikethrough): • **demonstrate the use of the mitigation hierarchy to select appropriate mitigation measures to avoid and minimize temporary or permanent adverse effects to vegetation, including construction rights of way;** • ~~describe and justify the proposed measures to mitigate bank erosion, including measures to eliminate the potential for erosion, such as bank stabilization using vegetation~~;
8.7 Groundwater and Surface Water			
ECCC-40	8.7.1 Baseline conditions (Groundwater and surface water)	A minimum of two years of baseline data for surface water is optimal to demonstrate seasonal and inter-annual variability.	ECCC recommends the following edits to the text in bullet 2, page 71 of section 8.7.1 (new text in bold):

		The proponent is encouraged to utilize data collected for the assessments of the proposed MFCAR and the proposed WSR, to fulfill baseline requirements. This data has been collected for WSR and MFCAR but has not yet become available for ECCC review.	• It is recommended to provide **a minimum of two years of** baseline data[70] **and any other relevant sources of data (e.g. WSR, MFCAR)** that illustrates seasonal and inter-annual variability, as well as groundwater-surface water interactions, including:
8.9 Birds, Migratory Birds and their Habitats			
ECCC-41	8.9.1 Baseline conditions	Given the emphasis throughout the NRL TISG on using existing data, including from the WSR and MFCAR projects, these recommendations are important in order to understand the various data sources that will contribute to characterizing baseline conditions. This information is needed for ECCC to evaluate the information collected, draw conclusions, and provide advice at later stages of the assessment (e.g., the adequacy of the proposed mitigation measures). A similar requirement is used in section 8.8.1, page 75.	ECCC recommends an additional bullet following the second bullet, page 81 of section 8.9.1 (new text in bold): • **describe all data sources and data collection methods, and provide a rationale for why the chosen data, methods, analyses, and modelling approaches were deemed the most appropriate for the Project.**

ECCC-42	8.9.1 Baseline conditions	The bullet on predictive modelling is not clear as written. Suggested edits and additions improve clarity and understanding. This will clarify the information that needs to be provided and streamline Phase 2 preparation of the IS.
		
		Modelling that does not consider explanatory data and covariates may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures.
		
		This information is needed for ECCC to evaluate the information collected, draw conclusions, and provide advice at later stages of the assessment (e.g., the adequacy of the proposed mitigation measures).
			ECCC recommends the following edits to the third bullet, page 81 of section 8.9.1 (new text in bold, deleted text in strikethrough):
			
			• where predictive modelling is **used to portray baseline conditions and estimates of project effects,** ~~required~~, **describe and** provide the explanatory data (e.g., ~~covariables~~ **covariates** such as associated land cover~~, etc.~~)**.** ~~necessary for modeling in such a way as to adequately represent~~ It should be demonstrated that **explanatory data is sufficient for representing:** ~~spatial and temporal sources of variation:~~
			  ○ spatial variation **in**:
			  ▪ land cover composition
			  ▪ soil type, geomorphology
			  ▪ hydrological processes,
			  ▪ climatic conditions; and,

ECCC-43	8.9.1 Baseline conditions	Adding a heading titled 'Design Evaluation and Analysis Planning' will make clear the purpose of the bullets that follow. Understanding that the bullets under this heading relate to survey design rather than survey protocol or data	ECCC recommends the following edits to the fourth major bullet, page 81 of section 8.9.1 (new text in bold): **Design Evaluation and Analysis Planning must:** • Use data that enables reliable extrapolations in space (i.e., at minimum to project, local and regional study areas) and in time (i.e., across years)~~.~~**; if existing data are available for the study area, they can be used to complement the project. If existing data are intended to replace project-specific sampling, it**

		collection will improve clarity and make it easier for proponents to meet these requirements. Adequate evaluation of survey design and analysis planning are needed to ensure that the data collected can be used to effectively estimate baseline conditions and predict effects. If these requirements are not met, results of the assessment may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures. Given the emphasis on using existing data, including from the WSR and MFCAR projects, throughout the TISG, it is important to ensure that such data have been collected in a rigorous fashion that supports the assessment. Data resulting from surveys that do not meet these requirements may not sufficiently describe baseline conditions or contribute to estimating cumulative effects.	**must be demonstrated that these data and survey designs meet the requirements for new survey data collection;**

ECCC-44	8.9.1 Baseline conditions	Data resulting from surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures.	ECCC recommends adding the following bullet under the fourth major bullet, page 81 of section 8.9.1 (new text in bold) as well as re-locating the indicated text found on page 88 to be included among appropriate survey requirements: • **design surveys to produce data that meet the defined outcomes and goals for the Impact Statement. Relative to haphazard, opportunity or convenience-based sampling, designed data collection is more likely to ensure goals are met and bias minimized.** Avian surveys should be designed based on a thorough review of the available scientific literature pertinent to the specific region, bird groups and anticipated effects;
ECCC-45	8.9.1 Baseline conditions	Including the development of statistical models and simulations during the planning and design of surveys is an essential aspect of survey design required to develop scientifically defensible predictions. Data resulting from surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures. The proposed edits will improve clarity in areas that were not well understood in similar TISGs (e.g., these activities are not elements of survey protocols). This will clarify the information that needs to be provided and	ECCC recommends the following edits to the second sub-bullet of the fourth major bullet, page 81 of section 8.9.1 (new text in bold, deleted text in strikethrough): • ~~survey protocol should~~ include **during the planning and design of surveys the development of statistical models and use of** ~~modeling and~~ simulations ~~used~~ to estimate **the necessary** sampling requirements, and ~~include analysis used~~ to **quantitatively** evaluate ~~resulting~~ **the effectiveness of** design options:

		streamline Phase 2 preparation of the IS.	
ECCC-46	8.9.1 Baseline conditions	This addition is consistent with requirements in the NRL TISG section 8.11.1, page 96, as well as the WSR and MFCAR TISGs. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. A poor understanding of natural variability may affect forecasting, mitigation strategies and evaluations of mitigation effectiveness. Including 'comparable field data' allows for data from other sources to contribute to the two years of data, provided that it is comparable. The footnote addition clarifies that use of data from other projects is encouraged if that data contributes to making reliable conclusions about the NRL project.	ECCC recommends the following edits to the first sub-sub-bullet of the fourth major bullet, page 81 of section 8.9.1 (new text in bold): ○ use data[77] to represent the following temporal sources of variation: among years; within and among seasons (e.g., spring migration, breeding, fall migration, overwintering); and within the 24 hour daily cycle. **Collect comparable field data over at least two years to improve the understanding of natural variability in populations. As the number of sampling years increases, so does the understanding of natural variability. Repeated sampling of locations or spatial overlap of sampling between years is required to separate spatial variability from temporal variability**; ECCC recommends the following update to footnote 77: Baseline data may be found in secondary information sources. **To the extent reliable conclusions can be made,** the proponent is encouraged to utilize data collected for the assessments of the proposed Marten Falls Community Access Road and the proposed Webequie Supply Road, to fulfill baseline requirements.
ECCC-47	8.9.1 Baseline conditions	The referenced bullet is recommended to be a sub-bullet of "include during the planning and design of surveys the development of statistical	ECCC recommends the following edits to the last major bullet, page 82-83 of section 8.9.1 (new text in bold, deleted text in strikethrough): ○ ~~design suggestions for the PSA and LSA scales: Use a standardized design approach during survey planning. The resulting design details will serve as the~~

		models and use of simulations" rather than a major bullet, as it directly relates to that topic. It is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects. These edits clarify the purpose and intent of the information that needs to be provided to streamline Phase 2 preparation of the IS.	~~basis to develop~~ **A desktop exercise to compare** alternative **survey** designs **and identify those that most efficiently meet Impact Statement goals (see 7.1) should be undertaken as a phase of survey design planning.**~~, evaluate options for particular design details, and to identify potential efficiencies. The approaches and tools suggested elsewhere in this document (e.g., land cover~~ **Landcover** analysis~~,~~ **and** data simulations~~)~~ **can be helpful tools as part of such an exercise:** ~~should be considered during the planning phase. The following should be considered as inputs to design planning and evaluation;~~
ECCC-48	8.9.1 Baseline conditions	Adequate evaluation of survey design and analysis planning are needed to ensure that the data collected can be used to effectively estimate baseline conditions and predict effects. The addition of this bullet clarifies the purpose and intent of the bullets that follow. The proposed edits are consistent with the technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends adding the following sub-sub-bullet below the last major bullet, page 82-83 of section 8.9.1 (new text in bold): • **The following survey design is offered for consideration as a benchmark for evaluating alternative survey designs. The suggestion that follows is based on the achievement of landcover representation but only as a proxy for bird distributions. This suggestion does not replace the need to define survey objectives with respect to Impact Statement goals (see above). Suggest a desktop exercise to create a benchmark design that includes:**

ECCC-49	8.9.1 Baseline conditions	ECCC notes that this requirement has not been well understood in similar TISGs. The proposed edits are to clarify the information that needs to be provided and streamline Phase 2 preparation of the IS. Adequate evaluation of survey design and analysis planning are needed to ensure that the data collected can be used to effectively estimate baseline conditions and predict effects.	ECCC recommends the following edits to the first sub-sub-bullet, page 83 of section 8.9.1 (new text in bold, deleted text in strikethrough): ▪ ~~transects and sites: ▫~~ • transects ~~should be~~ spaced every 2 kilometres along the **project** route, oriented perpendicular to the route, and with the mid-point of each transect located on the centreline of the route. A maximum length of 5 kilometres is likely suitable for sampling most habitat types~~, including those associated with eskers and similar linear features in alignment with the route. Transect lengths less than 5 kilometres may be suitable but should be justified with respect to an analysis of land cover that demonstrates no further change in land cover composition with increasing distance from the intersection of route and transect mid- point~~;
ECCC-50	8.9.1 Baseline conditions	ECCC has noted through lessons learned on similar projects that that these aspects are not required for adequate evaluation of survey design and analysis planning.	ECCC recommends the following edits to the third sub-sub-bullet, page 83 of section 8.9.1 (deleted text in strikethrough): • ~~every 100 kilometres of route should contain 50 transects. Of these, 20 transects should be sampled using ARU and 30 transects sampled by human observers (Point Count Transects); and~~ • project components other than the route itself should be sampled. Such components that are linear (e.g., access or service roads) should be surveyed using transects as above. Non-linear components (e.g., aggregate pits) should be surveyed using a grid of sites spaced 250 metres apart and be sufficient to cover the Project component, plus a maximum 3-kilometre buffer. ~~As with transect lengths, modification of buffer width to a minimum of 500 metres may be justifiable if land cover analysis demonstrates no further change in land cover classification with increasing buffer width;~~
ECCC-51	8.9.1 Baseline conditions	The addition of these bullets makes the purpose and use of this desktop exercise clear. It is consistent with technical	ECCC recommends adding the following bullets below the fourth sub-sub-bullet, page 83 of section 8.9.1 (new text in bold):

		discussion that have been held with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects. The bullets improve clarity in areas that were not well understood. This will clarify the information that needs to be provided and streamline Phase 2 preparation of the IS. Adequate evaluation of survey design and analysis planning are needed to ensure that the data collected can be used to effectively estimate baseline conditions and predict effects.	▪ **Using this design, conduct a detailed analysis of landcover based on a 100-metre buffer around the centroid of each site on each transect. If feasible, include topographic elements such as elevation. For evaluation of alternative survey designs, the results of this analysis would then be considered to be the benchmark, i.e., it will be a reliable representation of landcover and elevation for the linear and non-linear aspects of the Project.** • **Develop multiple alternative survey designs, conduct the same analysis of landcover and elevation and compare, for each landcover type and elevation class, the degree to which the proportions match those of the benchmark design. Use the results of these evaluations as one of the inputs to the selection of survey designs for implementation. Other inputs to design selection may include assessments of covariate representation, modelling simulation analyses and power analyses to detect patterns or effect sizes, or other suitable methods supported by current scientific literature.** • **Provide a detailed description of the process, software, analytical methods, and spatial data used, and provide graphs and tables sufficient to communicate the results and demonstrate the basis for choices leading to the implemented design.**
ECCC-52	8.9.1 Baseline conditions	The proposed edits improve clarity for this requirement. Not specifying the use of these standard and widely accepted sampling methodologies may result in the use of non-standard survey protocols. Data resulting from surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of	ECCC recommends the following edits to the 'bird sampling' bullet and first sub-bullet, page 83 of section 8.9.1 (new text in bold, deleted text in strikethrough): Bird sampling **methodology should align with the guidance that follows and the Impact Statement must provide justification for deviations from the following:** • ~~ARU Transects~~ **Autonomous Recording Units (ARUs)**: o Deployment of ARUs should be used to inform estimates of site use by birds across a broad range of dates (~~including~~ **i.e.,** seasons**, as defined above**) and times of day. ~~Since ARUs capture bird movements across dates and times, sampling on ARU Transects should be conducted on a subset of sites within transects. This subset should include the route centreline site, with the remaining sites at 500-metre spacing out to the transect endpoint:~~

		ineffective or unnecessary mitigation measures.	
ECCC-53	8.9.1 Baseline conditions	ECCC has noted through lessons learned on similar projects that this aspect is not required for ARU sampling methodology.	ECCC recommends the following edits to the 'bird sampling' bullet and second sub-bullet, page 83 of section 8.9.1 (deleted text in strikethrough): ○ ~~A subset of at least 50% of the ARU sites should have ARUs deployed to align with periods during which sites are used by birds in fall migration (August 1 through September 30) and during the winter (December 1 through March 31) (i.e., collectively, Fall/Winter Recordings). These fall and winter sites may be a subset of either entire ARU transects or sites along transects but land cover analysis should be used to ensure the subset is an unbiased sample of the population of ARU site~~
ECCC-54	8.9.1 Baseline conditions	It is ECCC's expert advice that the proposed edit, specifying the appropriate settings, will help ensure recordings from ARUs are usable. It has been noted that data resulting from ARU surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures.	ECCC recommends the following edits to the 'bird sampling' bullet and second sub-sub-bullet, page 84 of section 8.9.1 (new text in bold): ○ ARUs should be set to record using **an un-compressed .WAV file format, with** a sampling rate of 44.1kHz**, and from stereo channels (i.e., with two microphones)**.
ECCC-55	8.9.1 Baseline conditions	The proposed edit clarifies methodology for point counts. Data resulting from surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to	ECCC recommends the following edits to the 'Point Count Transects' sub-bullet and first sub-sub-bullet, page 84 of section 8.9.1 (new text in bold, deleted text in strikethrough): • Point **Counts** ~~Count Transects~~: ○ Each site **selected for human observer point count** should be ~~sampled by human observers~~ **done during favourable weather conditions (e.g., not heavy rain, calm winds)** using a standardized 10-minute point count. **Detection of**

		erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures.	**most breeding songbird species is likely to be highest between an hour before sunrise and five hours after sunrise (*).** ▪ To enable observer: recorder comparisons, observers should also record ~~the~~ **each** survey visit using a high quality portable recording device (i.e., with 360- degree **stereo** recording in ~~WAV~~ **un-compressed waveform audio file** format **(e.g., WAV)**, ~~selectable~~ sampling rate **of 44.1 kilohertz (kHz)**, and adjustable microphone gain), mounted on a tripod. ECCC recommends the addition of a footnote where indicated above (*): See additional guidance on point counts from the Ontario Breeding Bird Atlas: https://www.birdsontario.org/wp-content/uploads/Instructions-for-Point-Counts-June-2021.pdf
ECCC-56	8.9.1 Baseline conditions	Survey design and methodology requirements have been included in the WSR, MFCAR, and draft NRL TISGs for point counts and ARUs, which are methodologies appropriate to landbirds. These bullets are providing the same for waterfowl and waterbirds. These valued components must also be considered for possible effects and mitigation measures, if required. ECCC has noted that not specifying the use of these standard and widely accepted protocols, pertaining to survey methodology for waterfowl and waterbirds, has resulted in the use of non-standard	ECCC recommends adding the following bullets below the bullets related to 'Point Count Transects', page 84 of section 8.9.1 (new text in bold): • **Waterfowl and Waterbird Sampling:** ○ **Survey Seasons** ▪ **Spring Breeding Survey Window: Conduct surveys between early/mid-May and late-June. The survey period typically starts once ice-melt begins and open water becomes available to breeding pairs within a survey area. This survey window allows opportunity to detect both early-nesting and late-nesting waterfowl species that might be both breeding within, and still potentially migrating through, a survey area.** • **Observations should be carefully coded to enable assigning estimates of breeding birds (e.g., lone/single male duck [i.e., indicated breeding pair, IBP], male/female pair) and distinguish from possible non-breeding or migrant birds (flock/groups of males, males + females or males + females + immature birds, see Bordage et al. 2017).** • **Birds may be observed flushing off of, or near, nests throughout the survey window and this should be recorded. It is possible that broods of earlier-nesting species may be present toward the latter part of this survey window and should be recorded.**

		survey protocols and problems with baseline data collection. Data resulting from surveys that do not meet these requirements may not accurately estimate baseline conditions or accurately predict effects, leading to erroneous conclusions and potentially implementation of ineffective or unnecessary mitigation measures. The suggested edits will clarify the information that needs to be provided and streamline Phase 2 preparation of the IS.	• **Annual timing of the surveys will depend on spring weather conditions. Conducting 2 or more surveys separated by several weeks throughout this period may be required to adequately capture early-nesting and late-nesting species (e.g., survey 1 in early/mid-May, survey 2 in late-May/early-June, survey 3 in mid/late-June).** ▪ **Fall Migration Survey Window: Conduct surveys between mid-August and late-November. There will likely be use of the area by some migrant waterfowl during fall migration given there are ponds, lakes, rivers and wetland habitats in area.** • **During the fall survey window, recorded observations will consist of counts (for small aggregations) or visual estimates (for large aggregations) of the number of individuals of each species. At this time of year, the sex or age of individuals is not needed to identify breeding birds, so focus primarily on recording an accurate count of individuals for each species.** • **Conducting 3 or more surveys separated by several week throughout this period may be required to adequately capture changes in abundance due to varying migration chronologies of species using the survey area (e.g., survey 1 in late-August/early-September, survey 2 in early/mid-October, survey 3 in late-October/early-November, survey 4 in mid/late-November).** ○ **Survey Design** ▪ **Use aerial surveys to document the distribution and abundance of all species of waterfowl or other similar-sized, visible species of waterbirds (e.g., sandhill cranes, common loons, grebes, herons, bitterns, coots, gallinules, gulls and shorebirds), on all waterbodies (ponds, lakes, rivers) associated with wetlands (e.g., marshes, bogs, fens, and swamps) within the survey areas.** ▪ **Georeference each observation of each individual or group of birds, during all surveys.** ▪ **Spring Breeding Surveys: recommend following the standard operating procedures for the human observer approach for waterfowl surveys as outlined in Bordage et al. (2017).** ▪ **Fall Staging Surveys: recommend conducting transect-based surveys at a consistent speed (typically 90 knots) and altitude (typically 100 metres above water, but as high as 300 metres for winter eider surveys). For transect-based surveys, perception bias can be partly corrected using**

			distance sampling. To facilitate this, count birds within distance categories corresponding to inclinations below the horizon (e.g., at 100 metres above water, 60-25° = 44-163 metres; 25-10° = 164-432 metres, and 10-4° = 433-1000 metres). **○ Survey Crew and Equipment** **▪ For spring breeding surveys, recommend using a helicopter (equipped with pop-out floats) with capacity for at least 3 people including pilot. Helicopters are recommended over fixed-wing aircraft, due to the flexibility to fly at relatively slower speed, hover and circle back if observers require another look at certain features or birds, or to adjust positioning for better lighting/visibility as well as are well suited to areas with variable topography.** **▪ For fall staging (transect-based surveys) recommend using high-wing, fixed wing airplane with a crew capacity (including pilot) of at least 3 people.** **▪ Use at least 1 (back-up units recommended) Global Positioning System (GPS) to record a flight track of the survey at 1-second frequency.** **▪ Use at least 1 digital voice recorder (back-up units recommended), that is capable of time-stamping individual recording files, per experienced observers so recordings can be linked to the flight track to geo-reference all observed counts or use a laptop running voice recording software (e.g., PC Mapper or similar program) in flight that automatically geo-references recorded observations.** **▪ Use a survey crew consisting of a pilot highly familiar with wildlife surveys, and up to three observers experienced with identifying target species from the air.** **○ Daily Survey Timing** **▪ Start surveys no earlier than 1-2 hours after sunrise and end no later than 1-2 hours before sunset, to avoid glare from sun at low angles; between 0900h and 1600h is generally optimal.** **▪ Try to survey the entire study area (or distinct sub-sections of it) in one day to reduce bias from day-to-day changes in conditions and bird numbers.** **▪ Try to limit survey time to about 6 hours per day to limit observer fatigue, especially if surveys span multiple consecutive days.** **○ Field Methods**

			▪ **Methods highlighted and summarized below are largely based on the standard operating procedures outlined for inland breeding waterfowl surveys in Appendix 6 of Bordage et al. (2017).** ▪ **Safety is paramount for aerial surveys, and any guidelines below regarding flight safety, flight height or speed can be adjusted at the discretion of the pilot.** ▪ **No aerial surveys should be initiated when adverse weather is forecast (i.e., snowfall, moderate-to-heavy rain, fog, thunderstorms, gusty winds) or during low light levels due to smoke or heavy cloud cover or other conditions that lead to poor visibility or if wind exceeds 40 km/h (turbulence) and if there are any other safety concerns.** ▪ **Georeference each observation location, listing all species observed, and count or (for larger aggregations) estimate of the number of individuals present. If the age and sex of individuals is not pertinent to the particular survey window, focus primarily on recording an accurate count for each species. Digital voice recording can be useful for collecting data, but take care to first test settings to ensure clarity and accurate date/time settings.** ▪ **Follow a flight path that optimizes viewing conditions for the observer(s) and minimizes the likelihood of flushing birds.** ▪ **Aim to fly 15-50 metres above ground, unless a higher altitude is required for safety reasons, to meet permit conditions, or to avoid disturbance to birds or other animals (including livestock).** ▪ **Limit speed to <100 km/h along open, straight shorelines, and to <30 km/h along shorelines with extensive emergent vegetation, and over wetlands.** ▪ **Stay within 100 metres of open, straight shorelines, and within 50 metres of shorelines with more well-developed cover.** ▪ **Follow watercourses until open water is no longer visible, or the edge of the study area is reached.** ▪ **Avoid circling back over an area unless there are large flocks that cannot be accurately counted on the first pass, there is concern over misidentification errors, or the initial positioning or speed of the aircraft prevented observers from having a clear view.**
ECCC-57	8.9.1 Baseline conditions	ECCC notes frequency, abundance, distribution, density, etc. are not	ECCC recommends the following edits to the first sub-bullet of the first major bullet, page 86 of section 8.9.1 (new text in bold, deleted text in strikethrough):

		biodiversity metrics, but rather metrics that apply to individual species. This clarification is needed to ensure scientific advice and requirement are correctly interpreted and understood. Additionally, requirements are focused on the most relevant information to the assessment with less essential requirements removed.	○ ~~biodiversity~~ metrics for ~~each valued component~~ **individual species** should include: ▪ frequency ~~and timing~~ of occurrence; ▪ ~~life cycle, seasonal ranges, migration, movements;~~ ▪ ~~seasonal and annual variation in abundance,~~ distribution **in space** ~~and habitat use~~; ▪ abundance ~~(including relative abundance in each habitat type), population status,~~ **and** density~~, distribution, and patterns of~~ ▪ occurrence and abundance **trends** in time; ▪ habitat type(s)~~, habitat association(s)~~ **associated with species occurrence and abundance**, **and estimated** strength **and certainty** of **those** associations~~, and requirements for all relevant life cycle stages~~; and ▪ ~~sensitive periods (e.g., seasonal, time of day).~~
ECCC-58	8.9.2 Effects to birds, migratory birds and their habitats	Establish a consistent format for this bullet across biophysical environment VCs. Some say 'all potential effects', some say 'the potential direct, indirect, and cumulative effects', some say 'direct, incidental or cumulative predicted positive and/or adverse effects'. Some do not have a general statement about describing effects. Amend to include all potential direct, incidental and cumulative effects due to the project for all phases.	ECCC recommends the following edits to the text of the first major bullet on page 88 of section 8.9.2 (deleted text in strikethrough): • describe direct, incidental and cumulative ~~predicted positive and/or adverse~~ effects, the interaction between the project and birds (especially migratory birds and avian species of importance to the Indigenous communities) and their habitats for all project phases, including but not limited to ECCC recommends addition of the following text to section 8.9.2 (new text in bold): • **quantify the area of relevant habitat types for birds and migratory birds that may be cleared or otherwise disturbed within the project area during all phases of the Project, including a description of the disturbance and changes to:** ○ **interior to edge habitat ratios;** ○ **the availability of rare habitat; and** ○ **functions within the remaining habitat complex**
ECCC-59	8.9.2 Effects to birds, migratory	Additional important potential pathways for adverse effects to birds.	ECCC recommends the following edits to the text of the fifth sub-bullet on page 89 of section 8.9.2 (new text in bold): ○ **introduction of invasive species**

	birds and their habitats	This is consistent with requirements in the WSR and MFCAR TISGs.	○ **increased vehicle traffic;** ○ **increase in the spread and prevalence of diseases and other health concerns;** ○ **Habitat loss** ○ **noise, light, and** sensory disturbance**s and any resulting functional loss of habitat**;
ECCC-60	8.9.2 Effects to birds, migratory birds and their habitats	Provide better continuity and connection between baseline conditions and effects assessment, so that comparison of the baseline conditions and estimated conditions with and without the project is clearer. The term 'include' communicates that the three sub-bullets are items or ideas drawn from the Framework. This is not true for the first and third sub-bullets. These should be made major bullets rather than sub-bullets. The bullet on displacement is redundant with the last bullet in this section. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text above the first major bullet, as well as edits to first major bullet and sub-bullets, on page 89 of section 8.9.2 (new text in bold, deleted text in strikethrough): • **Describe the key indicators used to assess project effects and provide a rationale for their selection, including a clear connection to indicators used to characterize baseline conditions;** • ~~include the following, as presented in~~ **consider** the Framework for the Scientific Assessment of Potential Project Impacts on Birds[86]*,* when describing potential impacts to birds~~:~~**;** • **conduct** analyses of predicted effects for all birds, each valued component, and for Bird Conservation Region Priority Species. Include separate analyses for each project activity, component, and phase. Incorporate sources of error for all analyses to ensure final impacts estimates show the best available estimate of precision; • **consider** non-linear, indirect and synergistic responses to the Project, where reasonable; • ~~justification for any assumption of displacement, with scientific references and surveys provided as evidence that there is available habitat to accommodate displacement under a range of population scenarios. For example, it should be clear that a growing population will not be limited by the habitat loss along the project study area~~

ECCC-61	8.9.2 Effects to birds, migratory birds and their habitats	BAM maps have historically been unreliable in this region due to lack of baseline data. This will change as new data becomes available for the region, but there isn't currently a justification to point to them specifically at this moment for this region. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text above the second last major bullet on page 89 of section 8.9.2 (deleted text in strikethrough): • ~~consult the maps, data, and models developed through the Boreal Avian Modelling Project[87], and describe how these materials have been incorporated where relevant;~~
ECCC-62	8.9.2 Effects to birds, migratory birds and their habitats	Requirements are not clear as written. Adding additional important potential pathways related to changes to important habitats. Other bullets are moved up from below to be under the main bullet of '*describe the potential effects…including…*:' Removing requirements related to food sources as for most species, diet is poorly known, so quantifying changes would be difficult. These aspects are either consistent with requirements	ECCC recommends the following edits to the text of the last major bullet on page 89, and associated sub-bullets, of section 8.9.2 (new text in bold, deleted text in strikethrough): • describe the potential effects of the Project on birds (SAR migratory**,** and species of importance to the Indigenous communities), their nests and eggs**, including, but not limited to,** from**:** o short and long-term changes to habitats important for ~~breeding~~ **nesting**, foraging, ~~migration~~ **staging**, overwintering, rearing, and moulting, and **to movement corridors between habitat, and from habitat loss, fragmentation and structural change. Consider changes in terms of habitat type, quality, availability, distribution, and function.** o ~~on food sources of migratory birds and avian species of importance to the Indigenous communities (types of cover, ecological unit of the area in terms of quality, quantity, distribution and s), with a distinction made between these two birds categories and including:~~ o **changes to mortality risk for both diurnal and nocturnal birds, including as a result of collision of birds (migratory and non-migratory) with project infrastructure, buildings, flaring gas, overhead lines, vessels and vehicles, as a result of light attraction and from indirect effects, such as increased movement of predators or access to hunting;**

		in the WSR and MFCAR TISGs, but with improved clarity, or consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans.	○ **increased disturbance (e.g. sound, artificial light, presence of workers) considering the critical periods for the birds, including breeding, migration and overwintering;** ○ **activities most likely to result in disturbance, injury or take of birds (migratory and non-migratory), their nests and eggs, such as vegetation clearing or increased noise from industrial machinery; indicate the timing windows for those activities, the amount, duration, frequency, and timing of disturbances, and whether or not the activities would be permanent or non-permanent in the environment;** ○ **contaminants and bioaccumulation of contaminants, including those that may be consumed by Indigenous peoples;** ○ ~~effects from losses, structural changes and fragmentation of riparian habitat (aquatic grass beds, intertidal marshes), terrestrial environments (e.g., uplands, grasslands, forested, old growth, post fire) and wetlands frequented by birds; and~~ ○ ~~effects to habitat cover types and ecological units of the area in terms of quality, quantity, distribution and function;~~
ECCC-63	8.9.2 Effects to birds, migratory birds and their habitats	Added bullet is important information for understanding and assessing effects to bird habitat. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text below the first major bullet on page 90 of section 8.9.2 (new text in bold, deleted text in strikethrough): • describe the changes in terms of the health, integrity, and availability of habitats. Important habitats to consider include eskers, (and similar upland features), forest, riparian, bog/fen/peatlands, other wetlands, and open water; • **provide the relative abundance of habitat types in the project area, local study area and regional study area including the area and percentage of total lost of each type in each study area;** • ~~describe the changes to bird-habitat relationships and changes in biodiversity, abundance, and density of the avian community that utilise the various habitat types or ecosystems;~~ • account for changes in detection pre- and post-project construction. For instance, roads allow for greater detection distances and therefore any estimates of abundance or presence need to account for differential detectability[88]; • describe the effects caused by the new habitat types created in the project area by clearing vegetation. The new habitats created may attract migratory birds, which were not present before (such as the Eastern Whip-poor-will or the Common Nighthawk). Describe how these species at risk may be impacted by the Project.

			• describe the potential direct, incidental and cumulative adverse effects of the Project on migratory bird species (such as SARA-listed Yellow-Rail) who inhabit the project area during breeding season as well as during migration (as staging and stopover sites); • ~~describe the change in mortality risk, including as a result of collision of migratory birds with any project infrastructure, vessels and vehicles;~~ • ensure surveys cover temporal ~~window~~ **periods** that ~~incorporates a variety of road usage~~ **enable data to represent use of the road and road margins** by both diurnal and nocturnal species; • account for indirect effects such as the increased movement of predators in the predictions of mortality effects; • ~~describe the incidental effects caused by increased disturbance (e.g., sound, artificial light, presence of workers), relative abundance movements, considering the critical periods for the birds, including but not limited to breeding, migration and overwintering;~~ and • **in the event of bird displacement, any assumptions regarding temporary or permanent relocation should be justified using scientific evidence that there is available habitat within the local or regional study area to allow relocation under a variety of population scenarios, supported by monitoring within the applicable study areas as the Project proceeds. For example, it should be clear that a growing population will not be limited by habitat loss (direct or indirect due to sensory or other disturbance) in the study areas.** ~~support any assumption of temporary displacement during construction and operation of the Project through evidence or through study and monitoring within the project study area.~~
ECCC-64	8.9.2 Effects to birds, migratory birds and their habitats	Moved from section 8.9.1 as it relates to estimates of effects. Added note on causality to ensure conclusions of effects are causal related and not correlative.	ECCC recommends the following edits above the last paragraph on page 90 of section 8.9.2 (new text in bold): **The analysis of predicted effects on birds should:** • **include separate analyses for each activity, component, and project phase;** • **consider sources of error for all analyses;** • **explore, wherever possible, non-linear, indirect, and synergistic responses to the Project; and** • **outline effects on bird species or groupings, and of the effectiveness of mitigation measures.**

ECCC-65	8.9.3 Mitigations and enhancement measures (Birds, migratory birds and their habitats)	Strengthens requirements for the mitigation hierarchy and makes it clear it must form major consideration in the selection of mitigation measures. Description of the effectiveness of mitigation measures specific to the effects being discussed is essential information to be able to evaluate measures and the potential for residual effects. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the first major bullet on page 91 of section 8.9.3 (new text in bold): • **demonstrate the use of the mitigation hierarchy to select appropriate mitigation measures by describing and justifying the efforts that have been made to avoid and minimize temporary or permanent adverse effects** • describe the measures to mitigate adverse effects to migratory and non-migratory birds and their habitat, including their eggs and nests**. Measures must be described in terms of the effectiveness of each measure to avoid the adverse effects and include a comprehensive science-based rationale for proposing the selected mitigation measures**;
ECCC-66	8.9.3 Mitigations and enhancement measures (Birds, migratory birds and their habitats)	Residual and cumulative effects to bird habitat are possible, making offsetting plans a possibility that should be included.	ECCC recommends the following edits to the text below the last major bullet on page 91 of section 8.9.3 (new text in bold): • describe measures for preventing the deposit of substances harmful to migratory birds in areas frequented by migratory birds; and address mitigation of effects to eskers and related features rich in aggregate material, as these features are likely to be strongly impacted, to a degree much higher than their prevalence on the landscape. Describe, at a landscape scale rather than a single assessment of multiple hectares, how these measures address this uncommon high value landcover for forest birds during migration and breeding. • **provide details of any compensation or offsetting plans proposed, if effects to bird habitat cannot otherwise be avoided or mitigated;**
8.10 Terrestrial wildlife and their habitat			
ECCC-67	8.10.1 Baseline conditions	The word biodiversity does not make sense in this context and should be removed.	ECCC recommends the following edits to the text of the first sub-bullet of the last major bullet on page 91 of section 8.10.1 (deleted text in strikethrough):

	(Terrestrial wildlife and their habitat)		• identify wildlife species, other than avian species, of ecological or Indigenous importance (e.g., black bear, caribou, deer, moose, beaver, arctic fox, fisher, wolverine, rabbit, marten, muskrat, and otter), that are likely to be directly or indirectly affected, and describe each species: o ~~biodiversity~~ distribution and location;
ECCC-68	8.10.2 Effects to terrestrial wildlife and their habitat	Provide better continuity and connection between baseline conditions and effects assessment, so that comparison of the baseline conditions and estimated conditions with and without the project is clearer. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text above the second major bullet on page 93 of section 8.10.2 (new text in bold): • **Describe the key indicators used to assess project effects and provide a rationale for their selection, including a clear connection to indicators used to characterize baseline conditions;** • describe effects to terrestrial wildlife biodiversity considering biodiversity metrics, effects of habitat fragmentation, changes to regional biodiversity;
ECCC-69	8.10.3 Mitigation and enhancement measures (Terrestrial wildlife and their habitat)	Strengthens requirements for the mitigation hierarchy and makes it clear it must form major consideration in the selection of mitigation measures. Description of the effectiveness of mitigation measures specific to the effects being discussed is essential information to be able to evaluate measures and	ECCC recommends the following edits to the text of the first major bullet on page 94 of section 8.10.3 (new text in bold): • **demonstrate the use of the mitigation hierarchy to select appropriate mitigation measures by describing and justifying the efforts that have been made to avoid and minimize temporary or permanent adverse effects to wildlife;** • identify all feasible measures to prevent and mitigate the risk of harmful, destructive or disruptive activities in key sensitive periods and/or locations to wildlife and wildlife habitat, including residences and critical habitat. Include a description of the measures in terms of the effectiveness of each measure in avoiding negative effects **and include a comprehensive science-based rationale for proposing the selected mitigation;**

		the potential for residual effects. This is consistent with requirements in the WSR and MFCAR TISGs.	
8.11 Species at Risk			
ECCC-70	8.11.1 Baseline conditions (Species at risk)	Keeping terms consistent with those defined in section 7.4.1.	ECCC recommends the following edits to the text of the last major bullet on page 94 of section 8.11.1 (new text in bold): • provide a list of all species at risk that are likely to be in the project **study** area and the **local** study area, including:
ECCC-71	8.11.1 Baseline conditions (Species at risk)	Two populations of caribou (Rangifer tarandus) occur in Ontario, the boreal population and the eastern migratory population. Recent collaring data from 2021 shows that the Northern Road Link project footprint overlaps movement patterns for both populations. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans.	ECCC recommends the following edits to the text of the fourth sub-bullet under the first major bullet on page 95 of section 8.11.1 (new text in bold, deleted text in strikethrough): o Caribou (Rangifer tarandus ~~caribou; Provincial: Missisa, Ozhiski, Nipigon, and Pagwachuan ranges; Federal: Far North range~~) ▪ **Boreal population: provincial ranges of Ozhiski, Missisa, and James Bay; federal Far North range** ▪ **Eastern migratory population: federal subpopulation of Southern Hudson Bay**
ECCC-72	8.11.1 Baseline conditions (Species at risk)	It is important that baseline information is representative of current conditions and that any decision to not carry out additional studies is well justified.	ECCC recommends the following edits to the text of the second major bullet on page 95 of section 8.11.1 (new text in bold): • provide baseline information that is representative of current conditions**, with justification (statistical analyses, simulations, organized reasoning) if additional studies are deemed not necessary to improve confidence in the prediction of residual effects and the appropriate selection of mitigation;**

		This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	• **identify the metrics and biotic and abiotic indicators that are used to characterize the baseline biodiversity and discuss the rationale for their selection;**
ECCC-73	8.11.1 Baseline conditions (Species at risk)	This requirement and the associated sub-bullets are relevant to all SAR, not just bird SAR. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text of the first major bullet on page 96 of section 8.11.1 (new text in bold, deleted text in strikethrough): • for each ~~bird~~ species of conservation concern, locate on an appropriately scaled map the potential habitats, survey locations, records of the species, residences and critical habitat, except where locations and records are considered sensitive information: o identify federal species at risk/critical habitat in the study area; o identify migratory birds listed under SARA to which the Species at Risk Protection Statement applies (see Appendix 1); o identify provincial species at risk; o identify any species assessed as at risk by COSEWIC in Canada[94]; o identify any sites that are likely to be sensitive locations and habitat for **species of conservation concern** ~~birds~~ or environmentally specific areas such as Areas of Natural and Scientific Interest, Migratory Bird Sanctuaries or other priority areas or sanctuaries ~~for birds~~; o illustrate on the map the Project's footprint, identifying temporary and permanent infrastructure; and o locate the highest concentrations or areas of use by species;
ECCC-74	8.11.1 Baseline conditions (Species at risk)	Given the emphasis on using existing data, including from the WSR and MFCAR projects, throughout the TISG, it is important to ensure that such data have been collected in rigorous fashion that supports the assessment.	ECCC recommends the following edits to the text above the first sub-bullet under the third major bullet on page 96 of section 8.11.1 (new text in bold): o **design surveys to produce data that meet the defined outcomes and goals for the Impact Statement. Designed data collection is more likely to ensure goals are met and bias minimized. Wildlife surveys should be designed based on a thorough review of the available scientific literature pertinent to the specific region, wildlife, and anticipated effects;**

		This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	○ **if recent existing data are available for the study area, it can be used to complement the data collected in the field. If existing data are intended to replace project-specific sampling, a demonstration should be presented that show these data and survey designs meet the requirements outlined in this TISG;** ○ collect field data over at least two years[95]. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is being suggested as a minimum. As the number of sampling years increases so does the understanding of natural variability; ○ **describe all criteria used to choose survey locations**
ECCC-75	8.11.1 Baseline conditions (Species at risk)	Hibernating is another critical period worth specifically including. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the first sub-bullet on page 97 of section 8.11.1 (new text in bold): ○ identify critical periods (e.g. denning, rutting, spawning, calving, breeding, roosting**, hibernating**), setback distances, or other restrictions related to these species;
ECCC-76	8.11.1 Baseline conditions (Species at risk)	Important consideration given the location of the project along the edge of two ecozones. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the third sub-bullet on page 97 of section 8.11.1 (new text in bold): ○ a habitat-stratified random sampling approach should be used. Sample sites should be selected with a randomization procedure such as a GIS grid overlay**. Sampling should include edges and transitions between habitat types and should not be focused exclusively within homogeneous patches of a given habitat type**; and

ECCC-77	8.11.1 Baseline conditions (Species at risk)	These are foundational aspects of sound survey design. These aspects are either consistent with requirements in the WSR and MFCAR TISGs or with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and are being implemented for those projects.	ECCC recommends the following edits to the text below the first major bullet on page 97 of section 8.11.1 (new text in bold): • ensure that the combined information from existing data and field surveys describe the population status, distribution and abundance (including relative abundance in each habitat type) of species at risk in relation to the study areas • **describe the source of the Species at Risk data, including the survey design, sampling protocols, and data handling;** • **the planning and design of surveys should include the development of statistical models and use of simulations to estimate the necessary sampling requirements and to quantitatively evaluate the effectiveness of design options;** • **provide the criteria and document any simulations used to select sample sites and sample sizes;** • **design surveys so that they represent the spatial and temporal targets of modelling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of the effectiveness of mitigation measures. Survey should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project area, LSA, RSA), any departures from predictions, and the effectiveness of mitigation measures. Justify the selection of modeling techniques based on current and recent scientific literature;** • **if necessary to constrain or adjust site selection based on access limitations, simulation modelling should provide evidence that this sampling strategy has not resulted in the introduction of bias. Minimize, quantify, and describe bias that may influence estimates of abundance affect the reliability of extrapolations and statistical inferences;** • **provide estimates of confidence or error for all estimates of abundance and distribution. Estimates should be defined (e.g., mean across years, mean across sites, modeled prediction) and, if appropriate, confidence or other intervals should be defined (e.g., 95% confidence intervals, credible intervals);**
ECCC-78	8.11.1 Baseline conditions	Hibernating is another critical period worth specifically including.	ECCC recommends the following edits to the text of the second major bullet on page 98 of section 8.11.1 (new text in bold, deleted text in strikethrough):

	(Species at risk)	This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	• provide information and mapping at an appropriate scale (~~The~~ **the** project study area and local study area, as defined above for each valued component, constitute the appropriate scale~~.~~) for residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified or proposed critical habitat and/or recovery habitat (where applicable). Describe the general life history of species at risk (e.g., breeding, foraging**, hibernating**) that may occur in the project area, or may be affected by the Project; and
ECCC-79	8.11.1 Baseline conditions (Species at risk)	Important requirements for understanding baseline conditions related to bat SAR. The removed bullet is redundant with the sub-sub-bullet below it. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the last two major bullets on page 98 and associated sub-bullets on page 99 of section 8.11.1 (new text in bold, deleted text in strikethrough): In relation to providing required information for bats, the Impact Statement must: • ~~quantify baseline bat activity (e.g., using acoustic detection to calculate an index of bat activity) to evaluate relative use of different habitats or features in the project area to help support and evaluate project siting decisions or impact predictions. In addition, locate and confirm use of high-value features such as roosts, foraging areas and hibernacula.~~ • follow the survey requirements specific to bats: o to augment existing information sources and collect data able to establish robustly baseline conditions and assess impacts, undertake site-specific surveys to: ▪ compile a species inventory (species present/not detected); ▪ quantify baseline bat activity **(e.g., using acoustic detection to calculate an index of bat activity)** to evaluate relative use of different habitats or features in the project area and to help support and evaluate project siting decisions and impact predictions**. In addition, locate and confirm use of high value features such as roosts, foraging areas and hibernacula**; ▪ document baseline conditions within the project ~~Area and Local Assessment Area~~ **study area, local study area, and regional study area** to support study of impacts; ▪ locate and confirm use of high value habitat features such as roosts (including cavity trees and buildings with potential for roosting) and hibernacula. **Where artificial roost structures (i.e., buildings) are rare in the landscape, particular attention should be paid to identifying natural roost structures.** This could be done using desktop habitat suitability modelling with field surveys to confirm presence in high potential areas;

			▪ **describe relative abundance of roosting habitat in the project area, LSA, and RSA;** ▪ **provide information and mapping at an appropriate scale for any hibernacula and roosting habitat including the results of surveys undertaken as outlined in *Bat and Bat Habitats: Guidelines for Wind Power Projects, 2011;*** ▪ identify potential regional migration corridors; and ▪ identify site-specific travel corridors and movement patterns.
ECCC-80	8.11.1 Baseline conditions (Species at risk)	Important requirements for understanding baseline conditions related to bat SAR. Continuous recording throughout the night, ensures that the complete window for nighttime activity is sampled during key periods of the active season. This advice is adapted from guidance published by the Ontario government (Bats and bat habitats: guidelines for wind power projects | ontario.ca) and tailored to meet the specific objectives of the current project. As it is not practical to conduct exit surveys, in-person at all candidate maternity roost trees, an appropriate sample effort with acoustic recorders during breeding and pup rearing will provide important data to evaluate the presence of maternity roosting SAR bats at the project site. A similar approach should be taken to	ECCC recommends the following edits to the text below the first sub-bullet on page 99 of section 8.11.1 (new text in bold): ○ the following types of surveys are required: ▪ acoustic surveys, ensure study design is statistically valid, conducted in spring, summer, and fall to capture dispersal and migration (travel corridors), breeding, and roosting; ▪ **continuous acoustic monitoring throughout the night (at least sunset to sunrise; 30 minutes before sunset to 30 minutes after sunrise recommended) active season (spring dispersal/ migration, breeding summer/ fall migration and swarming), as well as appropriate hibernaculum surveys;** ▪ locate and assess potential hibernacula and roosts for use by bats, accounting for inter-annual and within-season variability in use. This could be done using desktop habitat suitability modelling with field surveys to confirm presence in high potential areas; and ▪ refer to provincial recommendations for guidelines on survey methodology[98]

		evaluate the species presence/absence during spring migration, swarming, and fall migration. Potential hibernacula should be evaluated for bat usage using visual observations or acoustic monitoring, as appropriate. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	
ECCC-81	8.11.1 Baseline conditions (Species at risk)	Helps clarify requirements related to acoustic detection. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the third sub-bullet on page 100 of section 8.11.1 (new text in bold, deleted text in strikethrough): o clearly describe methods used for acoustic identification, including any validation procedures used, criteria used for **determining species call identification** ~~deciding on species classifications~~, and software used (including versions and settings); and
ECCC-82	8.11.1 Baseline conditions (Species at risk)	Telemetry data recently collected by the proponents of WSR, MFCAR, and the province can be spatially analyzed to provide this baseline information. Previous discussions with	ECCC recommends the following edits to the text of the first three major bullets on page 100 of section 8.11.1 (new text in bold, deleted text in strikethrough): • ~~describe boreal caribou use of the study areas (e.g., distribution, movement) over time using surveys to complement existing data if data within the project study areas are insufficient or unavailable to be able to understand how caribou use the habitat. Involve province of Ontario for data and survey requirements. Consider Indigenous~~

		proponents have indicated that data sharing will occur. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans. Updated reference to the final amended recovery strategy for boreal caribou, rather than the proposed version. Other changes are consistent with updated approved language in other TISGs that provide greater clarity to requirements that are consistent with those in the WRS and MFCAR TISGs. Make the bullet about conducting surveys a sub-bullet as it relates to the type and spatial extent of biophysical attributes.	~~Knowledge and community knowledge~~ **provide the best available information about use of the study areas by boreal and eastern migratory caribou (e.g., distribution, movement, timing) over project timelines; and supplement this information with data from additional baseline studies where there are gaps in information, as necessary to build confidence with conclusions (having consulted the Government of Ontario and ECCC on the state of existing data, survey methodology, and the development of any study plans)**; ○ **for boreal and eastern migratory caribou: using existing telemetry data from a minimum of 30 collared caribou from each population, collected within the last 5 years, identify calving grounds, nursery grounds, winter habitat and travel corridors within the study areas.** • ~~provide a justification for the sensitive periods considered in the assessment. Sensitive periods are associated with caribou life stages such as calving, wintering, and travel. Ontario has specific sensitive time periods for caribou that are used in the identification, delineation, and consideration of habitat features~~ **evaluate whether caribou have potential to interact with the Project or be impacted by the project activities during sensitive periods associated with caribou life stages, such as calving, overwintering, and any seasonal movements over project timelines**; • describe**, over project timelines,** the type and spatial extent of biophysical attributes **and permanent alterations present in the study areas**, as defined **for boreal caribou** in Appendix H of the ***Amended Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population, in Canada;*** ~~of the 2019 proposed amended boreal caribou recovery strategy[99] present in the study areas;~~ ○ conduct surveys to complement existing data if data within the project study areas are insufficient or unavailable, to be able to understand where the biophysical attributes occur. Note that identification of biophysical attributes is not dependent on ~~Boreal Caribou~~ **boreal caribou** currently being present in the area; and
ECCC-83	8.11.1 Baseline conditions (Species at risk)	Specifying requirements that pertain to BOCA and EMC vs just BOCA. Range disturbance metrics are calculated using different methods federally and provincially. A note was	ECCC recommends the following edits to the text of the last major bullet and sub-bullets on page 100 of section 8.11.1 (new text in bold, deleted text in strikethrough): • provide the best available information from the **Government of** Ontario ~~Ministry of the Environment, Conservation and Parks~~ **and ECCC regarding boreal and eastern migratory caribou population sizes, habitat condition,** ~~on the~~ level of disturbance (anthropogenic vs fire) in the range, **and population trends within the study areas;**

		added to acknowledge these differences, and provide additional guidance for the proponent for clarity. Other changes are consistent with updated approved language in other TISGs that provide greater clarity to requirements that are consistent with those in the WRS and MFCAR TISGs.	○ **in some instances, provincial methodologies may differ from federal recommendations. Consider both methodologies in order to apply the federal 35% habitat threshold, and to determine the amount of habitat disturbance. If provincial disturbance information applies more recent information (i.e., best available), this information should also be considered (*);**~~consistent with the methodology developed by Environment Canada (2011)[1 oo]~~. • **For boreal caribou, include a map and description of General Habitat Categories within the project area, LSA, and RSA, using Ontario's General Habitat Description for the Forest-Dwelling Caribou and identify permanent alterations. The description must** ○ **provide relevant information on the habitat** ○ **include the number and area of each habitat type** ○ **provide information on category 1 habitat separately for nursery area, winter use areas, and travel corridors** • **For eastern migratory caribou, identify and describe demographic information that can be obtained from existing data, for example, survival/mortality, recruitment / reproduction;** • **describe the current state of connectivity of caribou habitat within the LSA and RSA, as determined appropriate through technical discussions with the Agency and its federal expert advisors prior to submitting the Impact Statement, and the projection of caribou habitat connectivity in the absence of the Project over project timelines;** • **describe the current state of predator and/or alternate prey access into otherwise undisturbed areas within the LSA;** • ~~Follow the survey requirements specific to caribou:~~ ○ ~~provide the best available information from the relevant jurisdiction concerning baseline range population size and trend;~~ • consult with experts of the relevant jurisdiction on appropriate survey methodologies for caribou. Provide a justification for the selected methodologies; ECCC also recommends including the 2020 recovery strategy as a footnote where indicated above (*): https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/woodland-caribou-boreal-2020.html

ECCC-84	8.11.1 Baseline conditions (Species at risk)	This information is better incorporated above with the bullet regarding providing best information from Ontario and ECCC.	ECCC recommends the following edits to the text of the first paragraph on page 101 of section 8.11.1 (deleted text in strikethrough): ~~In some instances, provincial methodologies may differ from federal recommendations. Consider both methodologies in order to apply the federal 35% habitat threshold, and to determine the amount of habitat disturbance. If provincial disturbance information applies more recent information (i.e., best available), this information should also be considered.~~
ECCC-85	8.11.2 Effects to species at risk and their habitat	Provides better continuity and connection between baseline conditions and effects assessment, so that comparison of the baseline conditions and estimated conditions with and without the project is clearer. This is consistent with updated approved language in other TISGs. It is also consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text below the first major bullet on page 101 of section 8.11.2 (new text in bold): • describe the potential direct, incidental and cumulative adverse effects of the Project on species at risk listed under Schedule 1 of SARA and, where applicable, its critical habitat (including its extent, availability and presence of biophysical attributes). The analysis of potential effects should be provided separately for each species at risk, including separate analyses for each activity, component and phase of the Project; • **describe the key indicators used to assess project effects and the sensitivity of species at risk to disturbance. Provide a rationale for their selection, including a clear connection to the indicators used to characterize baseline conditions;** ECCC recommends addition of the following text to section 8.11.2 (new text in bold): • **quantify the area of relevant habitat types for species at risk that may be cleared or otherwise disturbed within the project area during all phases of the Project, including a description of the disturbance and changes to:** ○ **interior to edge habitat ratios;** ○ **the availability of rare habitat; and** ○ **functions within the remaining habitat complex**
ECCC-86	8.11.2 Effects to species at risk and their habitat	Hibernating is another critical period worth specifically including.	ECCC recommends the following edits to the text of the second major bullet on page 102 of section 8.11.2 (new text in bold):

		This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	identify critical timing windows (e.g., denning, rutting, spawning, calving, breeding, roosting**, hibernating**), setback distances, or other restrictions related to these species;
ECCC-87	8.11.2 Effects to species at risk and their habitat	Clarifying the kinds of open areas that should be considered as there is the potential to misinterpret as pertaining only to an open polygon surrounded by forest (i.e., colloquially a "clearing").	ECCC recommends the following edits to the text of the seventh major bullet on page 102 of section 8.11.2 (new text in bold): • describe clearings created for the Project**, including road surfaces, road margins, and other open areas,** that may create new habitat types thereby attracting species at risk which were not present before (such as the Eastern Whip-poor-will or the Common Nighthawk). Describe how new habitat types may impact species at risk in the project area;
ECCC-88	8.11.2 Effects to species at risk and their habitat	Important information to obtain in order to meet SARA obligations and assess effects to species at risk. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being implemented for those projects.	ECCC recommends the following edits to the text of the sub-bullets of the eighth major bullet on page 102 of section 8.11.2 (new text in bold): • describe the residual effects that are likely to result from the Project after avoidance and minimization measures have been applied, including the extent, duration and magnitude of the effects on: o the number of individuals killed, harmed, harassed; and o the number of residences damaged or destroyed o **the amount of critical habitat destroyed;**
ECCC-89	8.11.2 Effects to species at risk and their habitat	Provides greater specificity and clarity of requirements. These are requirements that should apply to all SAR, not just bats.	ECCC recommends the following edits to the text of the last paragraph on page 102 and first three major bullets on page 103 of section 8.11.2 (new text in bold, deleted text in strikethrough): ~~In relation to describing effects on bats, the Impact Statement must:~~ ~~• provide an assessment of potential adverse effects on bat individuals;~~

		The statement on adverse effects to individuals is covered on page 102. These aspects are either consistent with updated approved language in other TISGs or are consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans.	• provide the relative abundance of roosting**, nesting, calving, overwintering** and foraging habitats**, hibernacula, and travel corridors (as applicable to each species)** in the project area, LSA, and RSA, **and describe potential effects,** including the percentage of total lost in each study area; and • ~~describe the potential effects to hibernacula and travel corridors in the project area, LSA and RSA including the percentage lost in each study area~~; • **take into account any effects to habitat when assessing effects to local and regional populations.**
ECCC-90	8.11.2 Effects to species at risk and their habitat	Specifying requirements that pertain to BOCA and EMC.	ECCC recommends the following edits to the text of the bullets associated with the first paragraph on page 103 of section 8.11.2 (new text in bold, deleted text in strikethrough): In relation to describing effects on caribou, the Impact Statement must: • assess the effects of all linear disturbances (e.g., new road access or rights of way) on **boreal and eastern migratory** caribou, including movements between seasonal habitats to account for functional habitat loss and effects of increased predation~~.[105];~~**.** ○ **For boreal caribou:** ▪ **In this assessment, apply a 500-metre buffer to the mapped anthropogenic features to adequately represent the combined effects of increased predation and trends in disturbance trends on the critical habitat of caribou population at the national scale. Consult the Scientific assessment to inform the identification of critical habitat for woodland caribou (Rangifer tarandus caribou), boreal population, in Canada** ▪ use population-level modeling to assess the effects of proposed disturbance on caribou at the scale of federal range boundaries and provincial range boundaries. Increases in predation caused mortality rates need to be considered as do the anticipated exacerbating effects of climate change; ▪ with respect to effects on undisturbed habitat at the scale of ~~the~~ **each** range**, as appropriate**: • provide an account (and GIS file if available) of added project disturbance using a 500-metre buffer, using the following formula:

			(Project footprint + 500-metre buffer) - overlapping area(s) already considered disturbed habitat (see glossary in the federal recovery strategy); ~~and~~ • determine whether the Project is expected to compromise the ability of ranges to be maintained at the disturbance management threshold and provide a rationale for the conclusion[106]. o **For eastern migratory caribou:** ▪ **use population-level modeling to assess the effects of proposed disturbance on caribou at the scale of the RSA. Increases in predation caused mortality rates need to be considered, as well as relationships between climate and caribou vital rates (e.g., reproductive success and survival);** ▪ **assess the effects of habitat disturbance on eastern migratory caribou, considering best available data and technical discussions with ECCC caribou experts.** • with respect to effects on biophysical attributes as defined in Appendix H of the boreal caribou Recovery Strategy, determine whether the Project is expected to remove or alter biophysical attributes necessary for boreal caribou recovery or survival and provide a rationale for the conclusion (provide GIS file if available); • with respect to the effects of predation: determine whether the Project is expected to result in an increase of predator and/or alternate prey access to undisturbed areas and provide a rationale for the conclusion; • with respect to effects on individuals and population condition ~~at the range scale~~: o provide best available information from the Ontario **government** ~~Ministry of the Environment, Conservation and Parks~~ concerning baseline range population size and trend**, as available for both populations**; o provide an assessment of the potential adverse effects of the Project on the population condition of the range (i.e., size and trend) **for boreal caribou (Ozhiski, Missisa, James Bay provincial ranges, and the federal Far North range)**; ~~at both the provincial range scale and the federal range scale;~~ o **Provide an assessment of the potential adverse effects of the Project on eastern migratory caribou movement and habitat use;** o any sensory disturbance (e.g., noise, vibration, light) or sources of collisions that could affect individual ~~boreal~~ caribou, ~~if they are~~ **when** present, and assess if these could lead to avoidance of habitat; o provide an assessment of the potential adverse effects on ~~boreal~~ caribou individuals (e.g., sensory disturbance, mortality, pollution), including legal harvest from Indigenous communities.

			• provide an assessment of the potential adverse effects on boreal caribou habitat (e.g., at the range and sub-range scales) considering the direction provided in the RMP and GHD (see Section 8.11.1) and informed by NHIC information layers and the General Habitat Description Mapping Product (available through the Ontario Ministry of Environment, Conservation and Parks);
			• with respect to effects on connectivity:
			  ○ determine whether the Project is expected to result in a reduction of connectivity within or between ~~the~~ **boreal caribou** ranges and provide a rationale for the conclusion;
			  ○ evaluate habitat and range connectivity ~~at the local, regional and range scales~~ **for the LSA and RSA** using quantitative methods (e.g., habitat suitability analysis etc.); and
			
			ECCC also recommends editing footnote 106 to reference the current 2020 version of the recovery strategy: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/woodland-caribou-boreal-2020.html

ECCC-91	8.11.3 Mitigation and enhancement measures (Species at risk)	Strengthens requirements for the mitigation hierarchy and makes it clear it must form major consideration in the selection of mitigation measures. Description of the effectiveness of mitigation measures specific to the effects being discussed is essential information to be able to evaluate measures and the potential for residual effects. Reflects updated language from previous TISGs that improves clarity.	ECCC recommends the following edits to the text of the first paragraph and first five major bullets on page 106 of section 8.11.3 (new text in bold, deleted text in strikethrough): The Impact Statement must **demonstrate the use of the mitigation hierarchy to select appropriate mitigation measures by** ~~describe~~ **describing and justifying the efforts that have been made to avoid and minimize temporary or permanent adverse effects** ~~the measures for mitigating potential effects~~ on species at risk and their habitat, including: • describe the proposed mitigation measures, **including alternative means of carrying out the project, that would avoid or lessen potential adverse effects to species at risk and/or critical habitat. Measures must be described in terms of the effectiveness of each measure to avoid the adverse effects and include a comprehensive science-based rationale for proposing the selected mitigation measures.** ~~for potential adverse effects on species at risk and critical habitat, include the justification, based on scientific data, for the proposed measures;~~ • ~~demonstrate that avoidance and minimization measures will be applied for species at risk.~~ **Provide an account of how mitigation measures are consistent with any applicable recovery strategy, action plan or management plan.** Recovery Strategies will provide information such as Population and Distribution Objectives, and Strategic Direction for Recovery;

		Consolidates several bullets with similar requirements. This is consistent with requirements in the WSR and MFCAR TISGs.	~~• provide an account of how the Project and mitigation measures are consistent with the recovery strategy, action plan, or management plan for the species at risk;~~ ~~• describe all feasible measures that would be taken to eliminate the effects of the work or activity on species at risk and their habitats, particularly critical habitat;~~ ~~• identify and describe mitigation measures, including alternative means of carrying out the Project that would avoid or lessen potential adverse effects to terrestrial and aquatic species and/or critical habitat listed under Schedule 1 of SARA, including but not limited to Woodland Caribou (*Rangifer tarandus caribou*) and Lake Sturgeon (*Aciper fulvescens)*. These measures:~~ • ~~are to be consistent with any applicable recovery strategy, action plan or management plan and will also~~ identify and describe mitigation measures to avoid or lessen adverse effects to COSEWIC-assessed species; ~~and~~ ~~must be described in terms of the effectiveness of each measure to avoid the adverse effects and include a comprehensive science-based rationale for proposing the selected mitigation measures.~~
ECCC-92	8.11.3 Mitigation and enhancement measures (Species at risk)	Important mitigation requirements for this project in this landscape. This is consistent with requirements in the WSR and MFCAR TISGs.	ECCC recommends the following edits to the text below the first major bullet on page 107 of section 8.11.3 (new text in bold): • describe mitigation measures to reduce the risk of harmful, destructive or disruptive activities in sensitive times and places of importance to species at risk; • **describe measures to mitigate sensory disturbance and the functional habitat loss it may cause;** **describe all reasonable alternatives to the Project that would avoid the potential effects on species and their habitat, with particular attention to critical habitat, and important habitats such as upland habitat which is used as movement corridors by caribou, breeding areas for birds, and which contains roosting habitat for bats;**
ECCC-93	8.11.3 Mitigation and enhancement measures (Species at risk)	An important consideration for mitigation measures for bat roosts. This is consistent with technical discussion had with the WSR and MFCAR proponents during reviews of study plans and is being	ECCC recommends the following edits to the text of the seventh major bullet on page 107 of section 8.11.3 (new text in bold): • at a minimum, the following mitigation measures should be applied: o spatial avoidance (setbacks): o a buffer zone of 120 metre**s** is recommended; o for resting areas and nurseries in trees **(or anthropogenic structures as appropriate)**, apply a buffer zone to the entire complex of roosts and nurseries; and

		implemented for those projects.	○ for hibernacula apply the buffer zone to entire cave network.
ECCC-94	8.11.3 Mitigation and enhancement measures (Species at risk)	Requirements apply to EMC and BOCA. Requirements related to offsetting are consistent with updated approved language in other TISGs.	ECCC recommends the following edits to the text of the section "With respect to caribou" on page 108 of section 8.11.3 (new text in bold, deleted text in strikethrough): With respect to caribou: • demonstrate that measures to avoid and minimize effects would be applied for boreal caribou and its critical habitat**, and eastern migratory caribou and its habitat**; • describe mitigation measures, taking into account the Best Management Practices for Renewable Energy, Energy Infrastructure and Energy Transmission Activities and Woodland Caribou in Ontario107 and the Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits108; • assess mitigation measures at the scale of **the LSA and RSA, and the** ~~provincial ranges and~~ federal ranges **for boreal and eastern migratory caribou** and incorporate the results of population level analyses; • describe all reasonable alternative means of carrying out the Project that would avoid the adverse effects of the Project on ~~boreal~~ caribou; • describe how these alternative means have been considered, and provide a rationale to confirm that the best solution has been adopted to address adverse effects on ~~boreal~~ caribou; and • describe all feasible measures that will be taken to minimize the adverse effects of the Project on ~~boreal~~ caribou and its **habitat or** critical habitat**, as applicable**: ○ minimize the footprint of development and consider locations where habitat is already disturbed; ○ restore habitat to provide availability of undisturbed habitat over time; ○ avoid destruction of biophysical attributes (see Appendix H of the recovery strategy); ○ mitigate noise, light, smell, and vibrations; ○ develop ~~an access~~ **a** management plan**, as determined appropriate through discussions with the Agency and its federal expert advisors, including contingency measures that will be implemented if caribou are observed near the Project**; ○ use techniques to prevent predators from using the corridor; and ○ **design offsets for effects to caribou and habitat, as determined appropriate through technical discussions with the Agency and its federal expert advisors,**

			to be hosted by the Proponent prior to submission of the Impact Statement, that consider: ○ **the *Operational Framework for Use of Conservation Allowances* (Minister of the Environment, 2012);** ○ **an offset ratio that reflects the risk the project poses to the species and its critical habitat (as applicable); and** ○ **that the offset must account for time lags, probability of success, and how the measure(s) counterbalance the effects of the project; and specifically for boreal caribou, effects to the population and distribution objectives established in the Amended Recovery Strategy for the Woodland Caribou, Boreal Population, in Canada;** ○ **describe measures to progressively reclaim caribou habitat during operation, decommissioning and abandonment, taking into account Ontario's *best management practices for mineral exploration and development activities and Woodland Caribou in Ontario*;** ○ report on how the project and mitigation measures are consistent with the recovery strategy, action plan or management plan for the species.
8.12 Climate Change			
ECCC-95	8.12 Climate Change	Recommended changes to add clarity and consistency as related to the Strategic Assessment of Climate Change (SACC) guidance.	ECCC recommends the following edits to the text in paragraph 1, page 108 of section 8.12 (new text in bold, deleted text in strikethrough): ~~The following requirements are based on the SACC, developed by ECCC. The proponent must follow the directions and guidance contained in the most recent version of the SACC and the technical guides related to the SACC for each information requirement listed below, including the Guidance on quantification of net GHG emissions, impact on carbon sinks and mitigation measures. Other guidance related to GHG emissions and climate change is listed in Appendix 1.~~ **The following requirements are based on the Strategic Assessment of Climate Change (SACC) developed by Environment and Climate Change Canada. Additional guidance is provided in the draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment (hereafter 'the Technical Guide') published in August 2021. Other guidance related to GHG emissions and climate change is listed in Appendix 1.**

ECCC-96	8.12.1 GHG emissions	Recommended changes to add clarity and consistency related to SACC guidance.	ECCC recommends the following edits to the text in paragraph 1, page 109 of section 8.12.1 (new text in bold, deleted text in strikethrough): ~~The Impact Statement must provide:~~ • ~~a description of each of the Project's main sources of GHG emissions;~~ • ~~a description of large sources of GHG emissions that may be the consequence of accidents or malfunctions;~~ • ~~the estimated annual GHG emissions from each source over the lifetime of the Project, including calculation methods, assumptions and related parameters that would enable calculations to be reproduced; and~~ • ~~an estimate of yearly net GHG emissions for each phase of the Project based on a project's maximum throughput or capacity, including an uncertainty assessment (refer to Section 3.1.1 of the SACC).~~ **As described in section 5.1.1 of the SACC, with regards to GHG emissions, the Impact Statement must provide: :** • **a description of each of the project's main sources of GHG emission and their estimated annual GHG emissions over the lifetime of the project;** • **net GHG emissions by year for each phase of the project based on the project's maximum capacity for new projects (additional guidance at Section 2.1 of the Technical Guide);** • **each term of Equation 1 (Net GHG emissions = Direct GHG emissions + Acquired energy GHG emissions - Avoided domestic GHG emissions - Offset measures), per year for each phase of the project (additional guidance at Section 2.1 of the Technical Guide);** • **methodology, data, emission factors and assumptions used to quantify each element of the net GHG emissions (refer to Section 3.1.1 of the SACC and Section 2 of the Technical Guide); and** • **a discussion on the development of emissions estimates and uncertainty assessment (refer to Section 3.3 of the SACC).** **When applicable, a description of large sources of GHG emissions that may be the consequence of accidents or malfunctions.**
ECCC-97	8.12.2 Carbon sinks	Recommended changes to add clarity and consistency as	ECCC recommends the following edits to the text in paragraph 1, page 109 of section 8.12.2 (new text in bold, deleted text in strikethrough):

		related to SACC carbon sinks guidance.	~~With respect to carbon sinks, the Impact Statement must provide descriptions of the Project's positive or negative effects on carbon sinks, which must include:~~ ~~• a qualitative description of the Project's positive or negative effects on carbon sinks, including from the removal and alteration of wetlands, which must include;~~ ~~• description of project activities in relation to significant landscape features such as topography, hydrology and regionally dominant ecosystems;~~ ~~• land areas directly impacted by the Project, by ecosystem type (forests, grassland, wetlands) over the course of the Project lifetime;~~ ~~• initial carbon stocks in living biomass, dead biomass and soils (by ecosystem type) on land directly impacted by the Project over the course of the Project lifetime;~~ ~~• fate of carbon stocks on directly impacted land, by ecosystem type: immediate emissions, delayed emissions (timeframe), storage (e.g. in wood products); and~~ ~~• anticipated land cover on the impacted land areas after the project is in place.~~ **In terms of impact on carbon sinks, the Impact Statement must provide a quantitative and qualitative description of the project`s positive or negative impact on carbon sinks, as indicated in Section 5.1.2 of the SACC. Additional guidance on the methodology to estimate losses or gains to carbon sinks is provided in Section 4 of the Technical Guide. The Impact Statement must also provide any mitigation measures planned to restore disturbed carbon sinks as described under Section 3.5.3 of the Technical Guide.**
ECCC-98	8.12.3 Impact of the Project on federal emissions reduction efforts and global GHG emissions	Recommended changes to add clarity and consistency as related to SACC guidance and to simplify the wording.	ECCC recommends the following edits to the text in paragraph 1, page 109 of section 8.12.3 (new text in bold, deleted text in strikethrough): ~~The Impact Statement must describe:~~ ~~• how the Project may impact Canada's efforts to reduce GHG emissions, if applicable (e.g., the Impact Statement could explain how the Project would result in emission reductions in Canada by avoiding or replacing higher emitting activities) (refer to Section 5.1.3 of the SACC); and~~ ~~• how the Project could impact global GHG emissions, including if the Project is expected to displace emissions internationally (refer to Section 5.1.3 of the SACC). The6Impact Statement should describe how the Project is likely to result in global emission reductions. This could include for example:~~ ~~○ if there is a risk of carbon leakage if the Project is not built in Canada, the Impact Statement could include an explanation of the likelihood and possible magnitude of carbon leakage if the Project is not approved;~~

			~~○ a project that enables the displacement of high-emitting energy abroad with lower-emitting energy produced in Canada could be considered as having a positive impact.~~ **In terms of the impact of the project on federal emissions reduction efforts and on global GHG emissions, the Impact Statement must provide an explanation of how the project may impact Canada's efforts to reduce GHG emissions as well as a discussion on how the project could impact global GHG emissions, if applicable. Additional guidance is provided in Section 5.1.3 of the SACC.**
ECCC-99	8.12.4 Mitigation for climate change and GHG emissions	Recommended changes to add clarity and consistency as related to SACC guidance, and to simplify the wording on mitigation measures by referring back to the SACC and Technical Guide.	ECCC recommends the following edits to the text in paragraph 1, page 110 of section 8.12.4 (new text in bold, deleted text in strikethrough): ~~The Impact Statement must describe the mitigation measures that will be taken to minimize GHG emissions throughout all phases of the Project. Emphasis must be placed on minimizing net GHG emissions as early as possible and throughout the project lifespan. The Impact Statement must provide:~~ ~~• the conclusions of the best available technologies and best environmental practices (BAT/BEP) determination process to identify and select the technically and economically feasible technologies, techniques or practices, including emerging technologies, to minimize GHG emissions throughout all phases of the Project. The result of this determination will include:~~ ~~○ the list of all potential GHG mitigation measures that were considered in the BAT/BEP determination process, such as anti-idling practices for mobile equipment, or continuous monitoring systems;~~ ~~○ the list of potential GHG mitigation measures selected at the end of the process that are considered for implementation in all phases of the Project (BAT/BEP and emerging technologies);~~ ~~○ measures included in the design of the Project to mitigate its GHG emissions. These could include design decisions such as the use of low-emitting technologies, the use of low-carbon or renewable fuel or carbon capture and storage;~~ ~~○ a rationale for eliminating each technology or practice that has not been selected for implementation;~~ ~~• The implementation schedule of the mitigation measures, considering equipment replacements must include;~~ ~~○ relevant data sources, assumptions, and information to support it; and~~

			~~○ a discussion on factors associated with the schedule such as schedule dependencies, constraints, and risk.~~ ~~• a description of any additional mitigation measures (such as direct air capture technology and afforestation) that will be taken to mitigate remaining GHG emissions, if applicable;~~ ~~• a description of any offset credits that have been or will be obtained to mitigate remaining GHG emissions, if applicable. Proponents may also provide information on their intent to acquire or generate international offset credits. Offset credits must comply with the criteria in Section 3.1.1 of the SACC, and will be considered as the last option in terms of GHG mitigation measures;~~ ~~• a description of measures taken to mitigate the Project's impact on carbon sinks, including measures to restore disturbed carbon sinks; and~~ ~~• depending on the public availability of information, a comparison of the Project's projected GHG emission intensity of similar projects in Canada and internationally that are a good examples of energy-efficiency or low-emissions projects. The comparison should explain why the emissions intensity may be different.~~ **In terms of mitigation measures and net-zero plan, the Impact Statement must include a Best Available Technologies / Best Environmental Practices (BAT/BEP) Determination, as described in Section 3.2 of the Technical Guide. This BAT/BEP Determination process will assess potential mitigation measures throughout all phases of the project and put the emphasis on minimizing net GHG emissions as early as possible and throughout the project lifetime as described in Section 5.1.4 of the SACC. The proponent must also provide a credible net-zero plan that would use and build off the BAT/BEP Determination to describe the mitigation measures that will be taken to minimize GHG emissions throughout all phases of the project and achieve net-zero emission by 2050, as described in Section 5.3 of the SACC. The net-zero plan must follow the principles and include the information outlined in Sections 3.5.1 and 3.5.2 of the Technical Guide, respectively.**
11 Effects of potential accidents or malfunctions			
ECCC-100	11.1 Risk assessment	A key aspect of dealing with environmental emergencies is responding to accidents and malfunctions in a timely function. When assessing the magnitude of an accident of	ECCC recommends the addition of sub-bullet under bullet 3, page 145 of section 1.1 (new text in bold): ○ **the length of time before an accident or malfunction is likely to be found;**

		malfunction it is important to consider the length of time before it is likely to be found. Given the remote nature of the roads it could be challenging to locate, as a result, the risk assessment should include contextual consideration of the duration of time needed to locate and respond to an incident.	
ECCC-101	11.1 Risk assessment	Given the nature and scope of the project, consideration of "*effects extending beyond Canada's jurisdiction*" is likely unnecessary. Removal is in alignment with TISGs from the previous two road projects in the same region (MFCAR and WSR projects).	ECCC recommends the following edits to the text in bullet 4, page 145 of section (deleted text in strikethrough): • identify and justify the spatial and temporal boundaries for the effects assessment associated with accidents and malfunctions. The spatial boundaries identified for effects from potential accidents and malfunctions will generally be larger than the boundaries for the project effects alone~~, and may extend beyond Canada's jurisdiction~~;
ECCC-102	11.1 Risk assessment	Replace proposed marine shoreline field guide reference with a new freshwater field guide, generated by ECCC's Science and Technology Branch.	ECCC recommends the following edits to the text in bullet 1, page 146 of section 11.1 (new text in bold, deleted text in strikethrough): • provide environmental sensitivity mapping that identifies site-specific conditions and sensitive receptors adjacent to project activities, including shores, streams and wetland areas frequented by fish and/or by migratory birds, and likely routes to them. Shoreline classification surveys and mapping must be conducted along major waterways where large spills are possible. The characterization criteria established by ECCC contained in the ~~*Field Guide for Intervention in the Event of an Oil Spill on Maritime Shores*~~ **Field Guide to Oil Spill Response on Freshwater Shorelines** constitutes a useful guide in this regard. ECCC requests that the term 'Major waterway' be defined in the TISG.

ECCC-103	11.2 Mitigation measures	Noting confusing phrase at the end of the parenthetical statement, ECCC recommends removal of the duplicative text.	ECCC recommends the following edits to the text in bullet 2, page 146 of section 11.2 (deleted text in strikethrough): • describe the mitigation measures for the potential adverse environmental, health, social and economic effects, including effects to Indigenous peoples, in the event of an accident or malfunction ~~(e.g., emergency responses that would be put in place in case of discharges to aquatic and terrestrial environments and on human health within spatial boundaries described for the study area)~~;
ECCC-104	11.3 Emergency management	Given the variability of the terrain in different seasons (spring, summer/fall, winter) consideration of seasonality for response strategies should be included, as this may change significantly over the course of a year.	ECCC recommends the following edits to the text in bullet 3, page 147 of section 11.3 (new text in bold): • document spill response strategies for each type of spill scenario, including strategic locations of spill response equipment relative to likely accident and malfunction sites**, consideration of the impacts of seasonality,** and/or likely pathways to sensitive environmental receptors;
ECCC-105	11.3 Emergency management	The draft TISG refers to detailing equipment that will be available to be deployed to respond to spills. Given that there are other types of accidents, aside from spills, the text should be amended to reflect all types of accidents and malfunctions.	ECCC recommends the following edits to bullet 4, page 147 of section 11.3 (new text in bold, deleted text in strikethrough): • detail the equipment that will be available to be deployed to respond to ~~spills~~ **accidents and malfunctions**;
13 Canada's ability to meet its environmental obligations and its climate change commitments			
ECCC-106	13 Canada's ability to meet its environmental obligations and its climate change commitments	Recommended changes to add clarity and consistency as related to SACC guidance.	ECCC recommends the following edits to the text in paragraph 2, page 148 of section 13, (new text in bold): In accordance with paragraph 22(1)(i) of the IAA, the Impact Statement should describe the effects of the project in the context of environmental obligations **and commitments in respect of climate change**, with a focus on Government of Canada obligations and commitments relevant to decision-making. **The Agency will identify applicable environmental obligations or commitments in respect of climate change that will require consideration in the Impact Statement.**

ECCC-107	13 Canada's ability to meet its environmental obligations and its climate change commitments	Recommended changes to add clarity and consistency as related to SACC guidance.	ECCC recommends the following edits to bullet point 7, page 149 of section 13 as follows (new text in bold, deleted text in strikethrough): • ~~the mitigation measures and follow-up programs related to those effects if the Project may adversely affect Canada's ability to meet its environmental obligations.~~ • **the Impact Statement should consider the need for mitigation and follow-up measures related to Canada's environmental obligations and its commitment in respect of climate change. Measures proposed to mitigate the adverse effects of a designated project may reduce a project's hindrance of an environmental obligation or climate change commitment. The implementation of mitigation or complementary measures may also result in a designated project contributing to the Government of Canada's ability to meet its environmental obligations or its commitments in respect of climate change. The proponent should refer to Agency guidance on this topic:** Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act - Canada.ca**.**
ECCC-108	13 Canada's ability to meet its environmental obligations and its climate change commitments	Recommended changes to add clarity and consistency as related to SACC guidance.	ECCC recommends the following edits to paragraph 1, page 149 of section 13 (new text in bold, deleted text in strikethrough): ~~Although it is not required, the proponent may provide its views in the Impact Statement on the extent to which the effects of the Project would hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change in order to inform the impact assessment.~~ **The Impact Statement must present the proponent's views on the extent to which project effects would hinder or contribute to the Government of Canada's ability to meet its environmental obligations, taking into consideration proposed mitigation measures. As outlined in Section 6 of the SACC, the Government of Canada will provide supplemental analysis on the project's net GHG emissions provided in the Impact Statement, in the context of Canada's emissions targets and forecasts, including Canada`s commitments under the Paris agreement, the goal for Canada to achieve net-zero emissions by 2050 and Canada`s 2030 emission targets.**

ECCC-109	13 Canada's ability to meet its environmental obligations and its climate change commitments	Section 8.12 outlines information required as part of GHG commitments but not climate resiliency, therefore ECCC recommends text be edited to indicate more specifically that Section 8.12 refers to GHG emissions commitments. Climate change resiliency commitments are recommended in section 12.	ECCC recommends the following edits to the second last paragraph, page 149 of section 13 (new text in bold): With respect to climate change commitments **related to GHGs**, Section 8.12 *Climate change* of this document outlines the information required as part of the Impact Statement.
15 Follow-up Programs			
ECCC-110	15.2 Follow-up program monitoring	These monitoring surveys are applicable to any VC with a follow-up program, not just bats.	ECCC recommends the following edits to the text of the first sub-bullet of the ninth major bullet on page 153 of section 15.2 (deleted text in strikethrough): • post-construction monitoring surveys should be undertaken for: o ongoing monitoring of project and control sites to evaluate whether there are changes in the ~~bat~~ valued component communities following project construction; and o evaluating the effectiveness of applied mitigation;
ECCC-111	15.2 Follow-up program monitoring	Necessary updates to include EMC. Including requirement for monitoring to ensure mitigations are implemented as intended, which is a standard best practice.	ECCC recommends the following edits to the text of the first major bullet and associated sub-bullets on page 154 of section 15.2 (new text in bold): • in relation to caribou: o monitor effects on boreal caribou and their critical habitat **and eastern migratory caribou and their habitat** to verify impact assessment predictions, ensure that mitigation measures are effective, and determine whether any unanticipated effects are occurring within the project area; o monitoring methods should follow standardized/established methods and include a robust before-after-control-impact design (or similar field-based approach) to allow for quantitative assessment of potential effects of the Project and identify any adaptive management that may be necessary; o the methodology provided should include the monitoring schedule;

			○ **describe environmental monitoring requirements to ensure that mitigation measures, best management practices, and commitments are being implemented as intended;** ○ the methodology should include a description of the performance indicators that will be used to evaluate the effectiveness of the mitigation measures; and ○ identify circumstances and mechanisms under which corrective/adaptive measures may be implemented to address any issue or problem identified through the follow-up programs or environmental monitoring. For example, if unanticipated effects occur or the effects are greater than anticipated;
Appendix 1			
ECCC-112	Appendix 1 – Resources and guidance Species at risk	Updating links and relevant references. Now that the final amended federal recovery strategy for BOCA from 2020 is available; the 2012 or proposed 2019 versions do not need to be referenced.	ECCC recommends the following edits to the text on page 165-166 of Appendix 1 (new text in bold, deleted text in strikethrough): **COSEWIC. 2017. COSEWIC assessment and status report on the Caribou Rangifer tarandus, Eastern Migratory population and Torngat Mountains population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvii + 68 pp. Available at: *https://species-registry.canada.ca/index-en.html#/documents/3274*** *Integrated Assessment Protocol for Woodland Caribou Ranges in Ontario* **(request from Ontario Ministry of Environment, Conservation and Parks).** ~~Available at https://files.ontario.ca/environment-and-energy/species-at-risk/Churchill-Range-EN.pdf~~ ***O. Reg. 230/08 : Species at Risk in Ontario List.* Government of Ontario. 2007. Available at *https://www.ontario.ca/laws/regulation/080230*** *Ontario's Woodland Caribou Conservation Plan* (CCP). Available at **https://www.ontario.ca/page/woodland-caribou-conservation-plan** ~~https://www.ontario.ca/page/woodland-caribou-conservation-plan#:~:text=The%20goal%20of%20the%20Caribou,the%20return%20of%20caribou%20to~~ ***Amended*** *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada*. **2020.** Available at **https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/woodland-caribou-boreal-2020.html** ~~https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/rs_caribou_boreal_caribou_0912_e1.pdf~~

			~~*Woodland Caribou, Boreal population (Rangifer tarandus caribou): amended recovery strategy* [proposed]. 2019. Available at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/woodland-caribou-boreal-2019.html~~