

Comments from the Federal Review Team on Marten Falls Community Access Road Project (Project) revised Wildlife and Birds Study Plans – August 11, 2021

It is essential that the Impact Statement for the Marten Falls Community Access Road Project (the Project) address all requirements outlined in the Tailored Impact Statement Guidelines (the Guidelines), and that the study plans outline a clear approach to achieving these requirements. The Impact Assessment Agency of Canada (the Agency) has highlighted sections of the Guidelines where requirements were not met in the draft study plans submitted to the Agency. Note that this is not an exhaustive list of Guidelines requirements and the Guidelines should be reviewed in its entirety, including the sections identified below.

General Comments from the Impact Assessment Agency of Canada on the Marten Falls Community Access Road Draft Study Plans – July 2, 2020					
#	Tailored Impact Statement Guidelines Section ¹	Required Action for Proponent	Proponent Response	Final Study Plan Section Reference	Agency comments on Response
GC-01	Section 5 - Public Participation and views (including 5.1, 5.2)	<p>Provide a clear description in the study plans of how public engagement opportunities have been and/or will be integrated into the impact statement phase. This must include detail on how the public will have opportunities to provide input to contribute to the development of the Impact Statement, as required in Section 5 of the Guidelines.</p> <p>Describe what engagement with the members of the public listed in the Public Participation Plan has been done in the development of the study plans, and/or any planned engagement with members of the public on the proposed study plans.</p>	<ul style="list-style-type: none"> - Section 4: describes how the Proponent will provide Project notices and opportunities with members of the public listed in the Public Partnership Plan. This will also include the opportunity to provide input on the existing environment, VCs, effects assessment methods, effects assessment results, and mitigation and follow-up program measures as applicable. A variety of activities will be offered so that members of the public are informed of the IS / EA Report as it progresses and are aware of the opportunities and means to provide their input. - The study plans have recognized public and agency input received on the Project to date. 	Section 4.1 “A variety of activities will be offered so that members of the public are informed of the IS / EA Report as it progresses and are aware of the opportunities and means to provide their input.”	<p>Section 4.1 of the study plan mentions that “a variety of activities will be offered”, however, no details on the likely engagement activities are provided.</p> <p>As required by Sections 5 and 6 of the Guidelines, the Impact Statement must provide a record of engagement that describes all efforts taken to seek the views of local communities and other stakeholders with respect to the Project, including on the study plans. This record of engagement is to include all engagement activities undertaken prior to the submission of the Impact Statement, including prior to and during the planning phase, and in the preparation of the Impact Statement.</p> <p>Provide details on the timeline for public engagement relative to the project workplan, including engagement relative to the schedule for baseline work, and in consideration of the project team’s timeline for the development of the Impact Statement.</p>
GC-02	Section 6 - Description of Engagement with Indigenous Groups (including 6.1, 6.2, 6.3)	<p>Provide a clear description in the study plans of how all Indigenous groups listed in the Indigenous Engagement and Partnership Plan will have opportunities to provide Indigenous knowledge, including the validation of how information they provided was applied. The study plan should include a description of the proposed methods for data collection, management of confidentiality, and information storage. This should also include a methodology for tracking information that has been approved by the group, to demonstrate that the guidance outlined in Section 6.2 of the Guidelines has been</p>	<ul style="list-style-type: none"> - In Section 4.2 it is noted that the Proponent will provide Project notices and opportunities for consultation and engagement with Indigenous communities identified in the Indigenous Partnership and Engagement Plan. A variety of activities will be offered so that Indigenous communities are informed of the IS / EA Report as it progresses and are aware of the opportunities, means and timelines to provide their input. - Section 2.1.1 outlines the approach to handling confidential information, by means of permission from Indigenous communities to include indigenous Knowledge in the IS / EA Report, regardless of the source of the Indigenous Knowledge. - The study plans have recognized Indigenous community input received on the Project to date. 	Section 4.2 “A variety of activities will be offered so that Indigenous communities are informed of the IS / EA Report as it progresses and are aware of the opportunities, means and timelines to provide their input” “Indigenous communities will have the opportunity to comment on components of the study plans throughout the IS / EA Report consultation and engagement process”	<p>Section 4.2 of the study plan states that “a variety of activities will be offered”, however, no details on the planned engagement activities are provided.</p> <p>Section 4.2 of the study plan also states that “Indigenous communities will have the opportunity to comment on components of the study plans throughout the IS / EA Report consultation and engagement process”, however, it is unclear on which components of the study plans the project team plans to engage. It is also unclear whether Indigenous groups will be provided with a meaningful opportunity to provide input on a preliminary approach/method for baseline data collection, as required in Section 6 of the Guidelines, or if engagement will take place after the baseline data collection is complete.</p> <p>Provide details on the timeline for Indigenous engagement on the study plans for wildlife and birds, including engagement relative to the schedule for baseline work, and spatial and temporal boundaries determinations, and particularly in relation to collection of Indigenous knowledge, and in consideration of the project team’s timeline for the development of the Impact Statement.</p>

¹ Refer to complete sections of the Guidelines for more context

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		<p>incorporated into the study plans.</p> <p>Describe what engagement with all the Indigenous groups listed in the Indigenous Engagement and Partnership Plan has been done in the development of the study plans, and/or any planned engagement with Indigenous groups on the proposed study plans, particularly in relation to collection of Indigenous knowledge (i.e. develop the work plan in collaboration with those Indigenous groups that would need to provide knowledge).</p>			
GC-03	<p>Section 6.2 - Analysis and response to questions, comments, and issues raised</p>	<p>Revise the study plans to include an approach to handling confidential information that demonstrates adherence to the guidance provided in Section 6.2 of the Guidelines.</p>	<ul style="list-style-type: none"> - Section 2.1.1: Section has been updated to include information regarding both confidentiality and permission information on all collected Indigenous Knowledge, regardless of the source. - This section also includes how information regarding the Indigenous Knowledge Sharing Agreements will be established by the Proponent and Indigenous community participating in the Program. 	<p>Section 2.1.1 “Sensitive and / or confidential information collected through Indigenous Knowledge Sharing Agreements will be protected from public or third-party disclosure and will be established between the Proponent and Indigenous communities participating in the Indigenous Knowledge Program prior to the sharing and use of any sensitive information. Instances where Indigenous Knowledge sharing has taken place during consultation activities (e.g., meetings) will be recorded in the Record of Consultation and Engagement, including where Indigenous Knowledge was incorporated into Project decisions and into the IS / EA Report (i.e., specifics will not be included in the Record of Consultation and Engagement given the potential sensitivity and / or confidentiality of the information shared)”</p>	<p>As required in Section 6 of the Guidelines, incorporate in the Impact Statement content that describes the confidential information provided by each Indigenous group. Present the content in sufficient detail to support understanding of the potential effects and impacts on rights, while also protecting confidential/sensitive specifics and respecting stipulations in the confidentiality agreements (e.g, use buffer areas instead of specific locations, etc.).</p> <p>Provide to the Agency, in the form of a letter from the Indigenous group that shared confidential information, a letter confirming that:</p> <ul style="list-style-type: none"> • the Indigenous group that provided confidential information is satisfied with the way the Impact Statement was informed; • the Indigenous group that provided confidential information is satisfied with the way the issue was solved or addressed.
GC-04	<p>Study plans spatial boundaries</p>	<p>Describe the approach to be implemented to demonstrate how the definitions of the</p>	<ul style="list-style-type: none"> - Section 6.2: General information on study areas for the Project, including a detailed list of what was considered to develop the discipline-specific local and region study areas, is included in each study plan. Each 	<p>Section 6.2.1 “The preliminary LSA currently being considered within the scope of the ongoing provincial regulatory review process generally includes the area within 2.5 km of the</p>	<p>The “general” Local Study Area described in Section 6.2.1 of the study plans for wildlife and birds is inconsistent with the “VC specific” Local Study Area presented in Section 6.2.2. Ensure that information provided is consistent throughout.</p> <p>As required in Section 7 of the Guidelines, provide details to demonstrate that the Regional Study Area² encompasses the anticipated boundaries of the Project’s effects,</p>

² For a definition of the Regional Study Area please see: <https://iaac-aeic.gc.ca/default.asp?lang=En&n=43952694-1&toc=show&offset=11>

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		<p>proposed study area boundaries:</p> <ul style="list-style-type: none"> encompass the anticipated boundaries of the Project's effects, including all potentially impacted local communities, municipalities and all Indigenous groups listed in the Indigenous Engagement and Partnership Plan; and take into account community knowledge and Indigenous knowledge; current or traditional land and resource use by Indigenous groups; exercise of Aboriginal and Treaty rights of Indigenous peoples, including cultural and spiritual practices; physical, ecological, technical, social, health, economic and cultural considerations; and the size, nature and location of past, present and foreseeable future projects and activities. 	<p>study area has been proposed taking into consideration community knowledge and Indigenous Knowledge, current or traditional land and resource use by Indigenous communities, and the exercise of Aboriginal and Treaty Rights of Indigenous peoples, including cultural and spiritual practices, physical, ecological, technical, social, health, economic and cultural considerations available at this time.</p> <p>- The proposed discipline-specific study areas are preliminary. The proposed study areas will be consulted and engaged on early in the IA / EA process. In addition, the Indigenous Knowledge Program provides additional opportunities for community knowledge and Indigenous Knowledge, current or traditional land and resource use by Indigenous communities, and the exercise of Aboriginal and Treaty Rights of Indigenous peoples to be shared in greater detail.</p>	<p>centreline of Alternative 1 and Alternative 4"</p> <p>Section 6.2.2 "Using the methods outlined above it was found that the LSA boundary should extend to 2.8 km from the limits of the PDA. We have rounded the LSA to 3 km on either side of centreline to capture the 100 m PDA."</p>	<p>including all potentially impacted local communities, municipalities and all Indigenous groups listed in the Indigenous Engagement and Partnership Plan. Note that the Regional Study Area must encompass the spatial boundary of cumulative effects.</p> <p>As required in Section 7.4.1 of the Guidelines, provide information regarding how the following were/will be taken into account in defining the spatial boundaries: community knowledge and Indigenous knowledge; current and traditional land and resource use by Indigenous groups; exercise of Aboriginal and Treaty rights, including cultural and spiritual practices; physical, ecological, technical, social, health, economic and cultural considerations; and the size, nature and location of past, present and reasonably foreseeable future projects and activities.</p> <p>Provide the above information in a way that allows those who provided the knowledge to the proponent and the Agency to see their input reflected in the Impact Statement. It is not sufficient to state that "input from participants will be/was taken into account".</p>
GC-05	<p>Section 7 - Baseline Methodologies (Including 7.1, 7.2, 7.3, 7.4)</p>	<p>Provide clear descriptions in the study plans of the proposed study areas and the criteria used to define the study areas for each valued component.</p> <p>Provide clear descriptions of the timing of previously collected data (days/month/year) and future approximate (month/year or season/year) for every field work planned and the criteria used to tailor the temporal boundaries to the valued components under consideration.</p> <p>Describe how all Indigenous groups listed in the Indigenous</p>	<ul style="list-style-type: none"> Local Study Area (LSA) and Regional Study Area (RSA) for each valued component are described in Table 6-1, including rationale used to define the area. Study plans have been designed considering historical information, where applicable and available. Study plans will be updated with appended Work Plans, to be submitted at a future date, which will detail upcoming planned field activities. As detailed in both Section 4.2 and Section 6.2 the Proponent will continue to provide opportunities for neighbouring Indigenous communities and interested persons to provide input and inform the effects assessment, including the LSAs and RSAs. Government agencies and interested persons will have the opportunity to comment on component of the study plans throughout the IS / EA Report consultation and engagement process 	<p>Sections 4.2 and 6</p>	<p>To ensure that baseline data collection will meet the requirements of the Guidelines, the Agency advises the project team to share a map or detailed information on the locations of data sampling, as well as the timing of data collection for previously and newly collected data and future data collection activities (month/year or season/year). If it is not possible to provide this information in the study plans or workplans, the Agency requires an opportunity to review the collected baseline data prior to the preparation of the Impact Statement documentation.</p>

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		<p>Engagement and Partnership Plan will be, or have been, engaged to provide input on spatial and temporal boundaries.</p> <p>Explain how the Agency will be provided opportunities to validate spatial and temporal boundaries.</p>			
GC-06		<p>Provide further details in the study plans on how GBA+ has been integrated into all aspects of data collection methodology, as per Section 7.1 of the Guidelines, and into the assessment of effects and impacts, as mentioned in Sections 13, 20, 21, and others, related to effects assessments of the Guidelines</p>	<p>- Section 4.3 has been updated to include the consideration of Identity and Gender-Based Analysis Plus (GBA+) including both Indigenous communities and their relevant subpopulations and non-Indigenous communities and their subpopulations. During consultation and engagement activities these groups (and any others defined during consultation) will be engaged with on targeted input.</p>	Section 4.3	<p>Describe how GBA+ has been or will be applied to the consideration of engagement activities. Identify specific methods targeted to specific subgroups.</p> <p>Provide detail on how GBA+ has been integrated into all aspects of data collection methodology, as per Section 7.1 of the Guidelines, and into the assessment of effects and impacts, as mentioned in Sections 13, 20, 21, and others, related to effects assessments of the Guidelines.</p> <p>It is not sufficient to mention that Gender-Based Analysis Plus will be applied to the assessment. Clear descriptions of how GBA+ was integrated (including to which variables, method, and how it influenced results' interpretation) are needed in the Impact Statement.</p>
GC-07	Section 13 - Effects Assessment (including 13.1, 13.2)	<p>Provide details to demonstrate how the Project's potential effects will be considered, as per the requirements in Sections 13 to 19 of the Guidelines. Ensure that the effects assessment considers the effects of each of the project components and physical activities, in all phases, and that it is based on a comparison to the proposed baseline work.</p> <p>Provide detail on how engagement with all Indigenous groups listed in the Indigenous Engagement and Partnership Plan and the public will inform the effects assessment and the selection of mitigation measures and follow-up program measures.</p>	<p>- Project environmental interaction are separated into Project phases, and Project activities for each environmental discipline in their VC-specific study plan listed as Table 9-1.</p> <p>- Information collected through the various activities (e.g., field studies and programs, effects assessments) of each discipline area (e.g., wildlife, vegetation, cultural heritage) will be shared with the Indigenous Knowledge Program leads. This will support the establishment of the existing environment and the effects assessment for the Aboriginal and Treaty Rights and Interests environmental discipline, as well as the identification of potential mitigation measures and monitoring programs.</p>	Throughout the study plan, Section 9	<p>As required in Sections 7 and 13 of the Guidelines, ensure that the effects assessment considers the effects of each of the project components (including but not limited to all alternative routes brought forward in the Impact Statement, all aggregates sources, access roads, etc.) and physical activities, in all phases, and that the assessment is based on a comparison to the data and information gathered during the proposed baseline work.</p> <p>Clarify the level of information that will be shared with, and explained to, the Indigenous Knowledge Program leads and whether study plans will be made available to all Indigenous groups listed in the Indigenous Engagement and Partnership Plan.</p>
GC-08	Section 13.1	<p>Provide clear descriptions of the rationale behind the assumptions, including but not limited to the assumed average daily traffic and</p>	<p>- Section 10: Current assumptions to be used in the effects assessment have been identified. Any additional assumptions will be identified and rationale will be provided in the IS / EA Report.</p>	Section 10	<p>Before conducting the effects assessment analysis, the Agency advises the proponent to seek the Federal Review Team's confirmation of the assumptions that will be used in the analysis or, at a minimum, to discuss the type of assumptions that will be considered.</p>

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		vehicles composition during the construction and operation phases that will be considered for the effects assessment and the cumulative effects assessment.			As required by Section 13.1 of the Guidelines, ensure that the Impact Statement clearly outlines the assumptions used for the assessment of effects, including cumulative effects, on each valued component.
GC-09	Section 19.2 - Impacts on the Exercise of Aboriginal and Treaty Rights	Describe an approach for identifying the potentially impacted rights of Indigenous peoples of Canada that are recognized and affirmed by section 35 of the <i>Constitution Act, 1982</i> , and for integrating the potential impacts on those rights into the collection of baseline information and the effects assessment.	<ul style="list-style-type: none"> - All study plans reference how potential effects on Indigenous rights will be assessed in the Aboriginal and Treaty Rights and Interests Study Plan. - Impacts on Rights considerations are explained in the rationale for defining a Local Study Area and Regional Study Area for Aboriginal and Treaty Rights and Interests VCs. Further information for this is listed in Section 6.2.2 in the Aboriginal and Treaty Rights and Interests Study Plan. 	Section 5, and Section 6.2.2 in the Aboriginal and Treaty Rights and Interests Study Plan	Feedback will be provided in the Federal Review Team's comments package on the Aboriginal and Treaty Rights and Interests Study Plan.
GC-10	Section 20 - Mitigation and enhancement measures	Provide detail on the approach to meeting the requirements of Section 20 of the Guidelines regarding the identification of mitigation and enhancement measures.	<ul style="list-style-type: none"> - Section 9: Approach to mitigation and enhancement measures, specifically noting that once potential effects have been identified, the effects assessment will explore technically and economically feasible mitigation measures to avoid or minimize the identified negative effects and enhancement measures to increase positive effects. 	Section 9.5.1	<p>Section 9.5.1 of the study plan is listing the requirements outlined in Section 20 of the Guidelines.</p> <p>Ensure that the Impact Statement provides a description of the method or approach followed to meet the requirements of Section 20 of the Guidelines.</p>
GC-11	Section 25 – Description of the Project's contribution to sustainability	Provide detail on the approach to meeting the requirements of Section 25 of the Guidelines regarding the description of the Project's contribution to sustainability.	<ul style="list-style-type: none"> - Section 9: the sustainability assessment for the Project will be undertaken on the preferred alternative and will characterize the Project's contribution to sustainability incorporating the requirements set out in Section 25 of the TISG. 	Section 9.7	<p>Section 9.7 of the study plan is listing the requirements outlined in Section 25 of the Guidelines.</p> <p>Ensure that the Impact Statement provides a description of the method or approach followed to meet the requirements of Section 25 of the Guidelines.</p>
GC-15	Concordance with Federal Guidance	Provide a separate concordance table containing all requirements of the Guidelines. This is required to show how all requirements of the Guidelines, including the interactions of effects and interconnectedness of valued components, would be addressed.	<ul style="list-style-type: none"> - Please refer to Table 11-1, Table 11-3 and the General Comments Table Response. 	Section 11	<p>The Agency has identified inconsistencies between the cross-references presented and the information contained in the study plans. For example, the peatland study plan indicates that long- and short-term habitat changes and food sources of wetland fauna will be described and documented including changes in terms of the health, integrity and availability of habitats related to migratory and non-migratory birds will be described in the wildlife plan. However, this information appears to be in the birds study plan.</p> <p>Provide a separate concordance table that describes the content of each study plan. This is needed to cross-check all plans against the Guidelines and demonstrate how all requirements of the Guidelines would be met.</p>

Response to Previous Comments from the Impact Assessment Agency of Canada on the Marten Falls Community Access Wildlife Study Plan – July 10, 2020							
#	Draft Study Plan Section	Tailored Impact Statement Guidelines Section ³	Context	Required Action for Proponent	Proponent Response	Final Study Plan Reference	FRT comments on Response
Editorial Comment	Section 4.1.2.1 2019 Golder Bat Surveys “Wildlife Acoustics Song Meter SM4BAT FS acoustic monitors were deployed at 167 stations within the LSA in suitable habitats to record bat activity during the maternity roosting period (June 1 to June 30) to determine if SAR bats are present in these communities. The acoustic detectors were set to record from 30 minutes before sunset to 30 minutes after sunrise for a period of at least 10 days. The detectors were set up June 13-17, 2019 in the maternity roosting window and collected from September 2-4, 2019. One bat detector failed to function, and another bat detector was stolen, therefore data was collected from 15 stations.”	Editorial Comment	Typo in either the number of units deployed (167) or the number from which data were collected (15)	Clarify the number of acoustic monitors deployed and from which monitors data were collected.	The Study Plan has been updated from 167 to 17.	Section 7.2.1.2.2	Clarification has been provided on the number of ARUs deployed in 2019 (17). It is unclear where information about malfunctions and the number from which data were collected will be reported. Indicate where information on malfunctions and the number from which the data were collected will be reported.
WH-01	Section 3: Spatial Boundaries: Study Areas “The LSA currently being considered for wildlife within the scope of the ongoing regulatory review process generally includes the area within 2.5 km of the centreline of Alternative 1 and Alternative 4, with the exception of studies related to Wolverine (Gulo gulo) where 10 km beyond the PSA will be considered as per the TISG. The Study Area generally allows for the documentation of existing conditions and prediction of potential environmental effects for the Project. A 5 km wide Study Area also allows for route refinements during development of Project design (e.g., adjustment of the alignment to avoid sensitive features). The PSA encompasses the 100 m wide CAR right-of-way, temporary construction”	Section 7.4.1 “Delineate spatial boundaries (i.e., regional study area, local study area, and project study area) to meet the following objectives: a. range of land cover types should be representative of the defined spatial extent; b. the spatial pattern of the land cover types should be well distributed across the defined spatial extent (e.g., revise if one or more land cover types is concentrated in one sub-area and uncommon in other parts of the area); and c. low to moderate rate of change in the prevalence of one or more land cover types with increasing distance from the (i.e., to use land cover patterns to constrain the distances within which comparisons should be made)... For Species valued components: The local study area should correspond to the project study area plus a buffer defined with objectives a-c above. Use simulation	It is unclear if the planned PSA, LSA, or RSA boundaries were defined with respect to items a-c in Section 7.4.1 of the Guidelines, including if simulation modelling was used. Omission of project components other than the route itself are likely to provide an incomplete understanding of baseline conditions relating to the overall project. LSA is defined to include PSA adjustments, but if PSA is adjusted, the LSA should also be adjusted to encompass changes in expected direct effects from new PSA. PSA should encompass all potential project footprints and LSA expand beyond that. To assist with providing the information needed, an illustration is offered relating to land cover analysis to help define transect lengths.	Provide details to demonstrate that the planned PSA, LSA or RSA boundaries were defined with respect to the requirements described in Section 7.4.1 of the Guidelines. Provide details to demonstrate that project components other than the route itself will be included in the PSA and consequently what areas are included in surveys discussed as relating to the PSA.	Study Plan Section 6.2 indicates that the Project Development Area (PDA) encompasses the 100 metre-wide CAR right-of-way (ROW), temporary construction access roads, work areas, worker camps, and long-term aggregate sources and associated access roads. The specific location of Project components, including the roadway, pits and quarries, aggregate source areas and temporary infrastructure, are not yet known and will be included in the IS / EA Report.	Birds and Wildlife Study Plans: Section 6.2	The appropriate steps were implemented for determining the spatial study area boundaries. However, while it is stated that most project components would likely occur within the LSA, there is still risk of incomplete understanding of baseline conditions, especially related to pits and quarries, if those components are located outside of the LSA. The absence of baseline surveys at locations that are then used as quarries or other project's components will risk incorrect assessment of wildlife occurrence, abundance and project impacts, especially in relation to eskers. Sections 7.4.1 and 8.9 of the Guidelines require that spatial boundaries are defined to include foreseeable project activities and components. Include in the PSA spatial boundaries all potential areas of quarries and aggregate sources. These could be identifiable using geological layers.

³ Refer to complete sections of TISG for more context

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	<p>Section 7 Concordance with federal and provincial guidance “Project components other than the route itself are unknown at this time”</p>	<p>modeling to help define a buffer that captures objectives a-c for each species or species group.”</p> <p>Section 8.9</p> <p>“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....</p> <p>Design suggestions for Project Study Area and Local Study Area scales... 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.”</p>	<p>The following is an illustration of the land cover analysis referred to in this section of the Guidelines, for the purpose of defining study area boundaries in relation to the Esker VC.</p> <ol style="list-style-type: none"> 1. Identify the eskers and similar geological features (e.g. moraines) potentially affected by the project. For those features, identify the land cover types that occur within the geologically defined esker (or moraine) polygon. 2. Identify the major land cover types by calculating, across all the individual eskers (and moraines) potentially affected by the project, the types of land cover that make up 80% or more of the surface area of these features. 3. For each esker (or moraine), determine the individual percentages of each of the major land cover types within the PSA on each esker (and moraine). 4. In increments (e.g. 100 metres) extend a buffer from the edge of the PSA to 15 kilometres from the edge of the PSA, and calculate the percentage of each of the major land cover types within each increment. 5. For each major land cover type, calculate the rate of change between successive buffer increments in land cover composition (i.e. the difference in percentages between a given buffer increment and the increment one step closer to the PSA boundary). For the first buffer increment, calculate the percent difference between the PSA and that buffer increment. 				

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			<p>6. For each major land cover type, determine the maximum calculated rate of change across all buffer increments (i.e. 100 metres to 15 kilometres out from PSA boundary).</p> <p>7. The LSA boundary for each esker or moraine would then be defined as the buffer width that is the maximum of:</p> <ul style="list-style-type: none"> a. 500 metres from the PSA boundary, or b. the buffer increment where <ul style="list-style-type: none"> i. All major land cover types have a rate of change in land cover composition of less than or equal to 5% of the maximum rate of change found in (5), and ii. The increment is beyond (i.e. further away from the PSA) where the maximum rate of change found in (5). <p>8. This approach is intended to lead to LSA boundaries for eskers and similar geological features that include the esker-related land cover types, the rapid land cover change that occurs along the edges of these features, and a portion of the broader landscape matrix. An ecologically defined LSA should therefore serve as a useful reference for comparing patterns and survey results with the PSA and the RSA.</p> <p>This approach could be used to define LSA boundaries for the Wetland VC and any other habitat VCs.</p>				
WH-02	<p>Section 4.1.1 Birds “Bird surveys were performed for the purpose of the project in 2018 by Zoetica and in 2019 by Golder. A summary of their methods and results are included herein”</p>	<p>Section 7.2 “With regard to field studies, survey work must be planned to include multiple sampling locations and multiple visits to each location to support all required assessment analyses. Existing data should be considered as a limited augmentation of this new data.... Baseline data must be collected in a manner that enables reliable analysis,</p>	<p>The 2018, 2019 bird survey data were collected prior to the development to the TISG. The designs do not appear to be compliant with the Guidelines but, if used correctly, may be useful for the proponent in their efforts to develop a TISG-compliant design. More detail would be required to evaluate and provide advice about the</p>	<p>Provide detail about the final 2018 and 2019 designs and how ECCC advice was incorporated, as well as results and analysis plans, and detailed plans for using those data to inform upcoming survey designs.</p>	<p>The Study Plan is updated to outline the 2018 and 2019 study designs in greater detail including coordination with ECCC. Sample sizes have been added where appropriate. Results have been incorporated into determining the sampling frequency for ARU use. Results will also be used for</p>	<p>Birds Study Plan: Section 7.2.1.2</p>	<p>The comment was partially addressed. See the comments on the Birds Study Plan, particularly BI-06 and BI-09.</p>

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		<p>extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options. Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to</p> <p>Baseline data must be collected in a manner that enables reliable analysis, extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options.”</p>	<p>use of those data. ECCC provided advice on early designs for these surveys that was consistent with the principles outlined in the TISG, but did not receive revised plans.</p> <p>The 2018 and 2019 surveys were conducted prior to development of the Guidelines. As such they should be treated as existing data for the IA. They can be of use (e.g. estimates of variance) in developing a bird focused survey design and assessing sample sizes. They can also be included in modelling of baseline conditions to help incorporate more than two years of surveys, so long as the limitations of the survey design are accounted for, in the analysis.</p>		developing preliminary models that will be further refined with additional field data.		
WH-03	<p>Section 4.2 Desktop Assessment “The background review....as well as identifying potential rare, SAR and species of Indigenous importance that may be present within the Study Areas.”</p> <p>Section 4.3.4 Mammals “The terrestrial mammals currently of importance to our study will be determined using SAR data, ecological composition of the Study Areas and Indigenous Knowledge provided from consultation.”</p> <p>Section 7</p>	<p>Section 6 “The proponent must engage with all Indigenous groups that may be impacted by the Project. The Indigenous Engagement and Partnership Plan, issued by the Agency, is available to assist the proponent in further developing or refining their engagement strategy and supporting ongoing trust and relationship-building. In addition to the requirements set out in section 6.1, 6.2 and 6.3, the proponent must provide Indigenous groups with an opportunity to: provide Indigenous knowledge during baseline</p>	<p>It is unclear what information about species of Indigenous importance will be collected through the desktop assessment and what will be collected through engagement. As per Section 6 of the Guidelines, the Agency expects the proponent to engage with, at a minimum, the Indigenous groups listed in the Indigenous Engagement and Partnership Plan.</p>	<p>Provide details to demonstrate that all of the Indigenous groups listed in the Indigenous Engagement and Partnership Plan will be engaged with and provided opportunities to provide input on current use of terrestrial wildlife as a source of country foods and where use or harvesting has Indigenous cultural importance. This includes incorporating into the plan where Indigenous groups will be provided with opportunities to:</p>	<p>A summary of the consultation plan for Indigenous communities, government agencies, and interested persons has been provided in Section 4 of the Study Plan; further details can be found in the IS / EA Consultation Plan included as Appendix B of the Proposed ToR. Specific consultation and engagement activities and schedules are currently in development and will be shared with MECP and the Agency once available.</p>	<p>Wildlife and Birds Study Plans: Section 4.2 and Section 5.</p>	<p>This comment has been addressed.</p>

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	<p>“Documentation of the historic and current use of terrestrial wildlife resources will be identified as a source of country food or of cultural importance to indigenous peoples, including harvesting of fur bearing mammals....</p> <p>...potential adverse effects to species of indigenous significance and their habitat will be collected through desktop assessment and provided in the IA/EA.”</p>	<p>data collection; comment on the list of valued components and indicators...”</p> <p>Section 8.10 “describe the historic and current use of terrestrial wildlife as a source of country foods (traditional foods) or where use has Indigenous cultural importance (e.g., black bear, caribou, deer, moose, beaver, arctic fox, fisher, wolverine, rabbits, marten, muskrat, and otter)... ...describe the use and harvesting of fur-bearing species and whether its harvesting has Indigenous cultural importance”</p> <p>Section 15.3 “describe the potential adverse effects of the Project on species noted as important to Indigenous groups and local communities and their habitat that are not currently listed under the Species at Risk Act or provincial statutes”</p>		<ul style="list-style-type: none"> • provide Indigenous knowledge during baseline data collection; • comment on the list of valued components and indicators; • inform the effects assessment and review its conclusions; and • inform the development of mitigation measures and follow-up programs. 			
WH-04	Section 4.1.2.1 2019 Golder Bat Surveys	Section 8.11 “clearly describe methods used to define a bat “pass” and be consistent with the definition used for any comparison group. Provide a rationale for the chosen method; o clearly describe methods used for acoustic identification, including any validation procedures used, criteria used for deciding on species classifications, and software used (including versions and settings);”	It is unclear what methods and rationale were used to define a bat pass in the 2019 Bat Surveys.	<p>Provide details to demonstrate the methods used to define a bat “pass” during the 2019 Bat Surveys.</p> <p>Provide a rationale, as required in Section 8.11 of the Guidelines.</p>	The Study Plan is updated to incorporate the 2019 bat surveys and the definition for a “bat pass”. Methods rationale will be provided in the IS / EA Report.	Wildlife Study Plan: Section 8.1	<p>The comment was not addressed.</p> <p>Provide details to demonstrate the methods used to define a bat “pass” during the 2019 Bat Surveys.</p> <p>Ensure that the workplan provides a rationale, as required in Section 8.11 of the Guidelines.</p>
WH-05	Section 4.3 Study Methods	Section 8.11 “survey protocols should provide a rationale for the scope of and the methodology used for surveys including design, sampling protocols and data manipulation”	Rationales are not always present or clear for all surveys in Section 4.3 of the study plan.	Provide details to ensure that survey protocols, design, methodology, sample size, and data manipulation are clearly explained and rationalized in terms of appropriateness and adequacy to address requirements of the Guidelines.	The Study Plan is updated to include details on survey protocols, design, methodology and data manipulations, which are explained and rationalized in terms of appropriateness and adequacy to address requirements of the Guidelines. Sample sizes have been added to the fur bearers.	Birds and Wildlife Study Plans: Section 7.2	<p>The comment was not addressed.</p> <p>Little supporting information was provided to assess whether sample sizes and designs are appropriate and adequate.</p> <p>Provide details to ensure that survey protocols, design, methodology, sample size, and data manipulation are clearly explained and rationalized in terms of appropriateness and adequacy to address requirements of the Guidelines, particularly Section 8.11.</p>
WH-06	Section 4.3.1.1 Field Study Design “Data collected will generally be consistent with methods employed by Golder (2019) for forest birds and bog / fen birds and other wetlands	Section 8.9 “Collect explanatory (i.e., covariate) data necessary for modeling in such a way as to adequately represent the following spatial and temporal sources of variation: o spatial variation in:	<p>Clarifications on the survey design advice and intended uses of modeling and simulations are offered.</p> <p>Section 8.9 of the Guidelines describes and recommends tools and approaches for Design Planning, including developing and selecting a survey design from design options.</p>		The Study Plan is updated to incorporate details on survey design and data analysis recommendations including simulation modelling per	Birds and Wildlife Study Plans: Section 8	<p>The comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-09.</p>

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	<p>birds due to the abundance of such habitats...</p> <p>A point count survey location will be conducted within each vegetation community identified for Ground Investigations, within 1 km of helicopter landing pads. Note that pre-selected Ground Investigation locations may be revised based on site conditions observed during field investigations.”</p> <p><i>(Comment is relevant to several sections of 4.3.1.1 in the proponent’s plan that relate to the intended sampling)</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> land cover composition <input type="checkbox"/> soil type, geomorphology <input type="checkbox"/> hydrological processes, and <input type="checkbox"/> climatic conditions; and, o temporal, especially annual, variation in local weather inter- and intra-annual climatic variability. <p>Collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional study areas) and in time (i.e., across years):</p> <ul style="list-style-type: none"> • design surveys so that they represent the spatial and temporal targets of modeling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of mitigation effectiveness. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project study area, local study area, and regional study area), any departures from predictions, and the effectiveness of mitigations. Justify the selection of modeling techniques based on current and recent scientific literature; • survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: <ul style="list-style-type: none"> o collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is suggested as a minimum. As the number of sampling years increases so does the understanding of natural variability; o 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 habitat heterogeneity of the regional study area, and to yield multiple 	<p>The intention of this section of the Guidelines for the Design Planning phase is to identify a series of principles that should be used to guide and evaluate survey design options; offer detailed design elements as inputs and as a starting point for developing alternative design options; and recommend modeling, using existing and/or simulated data to evaluate those design options against a series of criteria that would include the design principles.</p> <p>An important element is that the proponent is uniquely able to include information and data specific to the project (e.g. detailed plans of road construction and routing, detailed imagery and existing proponent-collected data). Integrating this proponent-held information enables the proponent to develop design options (or scenarios) that incorporate detailed local information along with the Guidelines-derived design principles and tools. Departures from the offered design should be justified, explained in detail and should clearly demonstrate how the chosen design adheres to the design principles provided in the Guidelines. Detailed descriptions of design process and design outcomes (including maps, sample sizes overall and by landcover type) are required to understand and evaluate the design relative to the Guidelines. Following this approach should lead to a detailed platform for evaluating the sufficiency of the selected design, for communicating the rationale for choosing that design, and for communications regarding clarifications, suggestions and recommendations.</p> <p>Simulation modeling is the process of generating and analysing hypothetical data, often in the context or with the purpose of comparing with actual data. Evaluation of survey design options can benefit from a simulation modeling approach through comparison of the representativeness of a potential sampling design relative to more intensive design options. This is a broad and diverse field but a search in the ecological literature (e.g. with keywords power analysis) should produce relevant examples of approaches and methods. Survey results from the 2018 and 2019 preliminary data collection can be very useful to assess sample size sufficiency and guide simulations, so long as analysis and interpretations account for the limitations of these designs and surveys.</p> <p>(NOTE: Detail provided is insufficient to fully understand the 2018, 2019 designs and results.)</p> <p>Section 8.9 of the Guidelines describes and recommends tools and approaches for data analysis, including conducting analysis using the data, both pre-existing and those data collected during the bird (or other) surveys.</p> <p>The intention of Section 8.9 of the Guidelines for data analysis is to guide data acquisition to ensure that the necessary quantitative data would be available to ensure appropriate analysis and reliable interpretations and ensure these covariates</p>		Section 8.8 of the TISG (the Agency 2020a).	and Section 9.4.	

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		<p>survey locations per land cover or habitat class, without requiring aggregation of habitat classes post-hoc;</p> <ul style="list-style-type: none"> ○ sampling effort per unit area - field survey effort should be most intensive within the project study area. The level of effort per unit area may be similar or somewhat less within the remainder of the local study area, but should be scaled to the likelihood that project effects will impact birds within that zone. Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project study area, local study area and regional study area are unbiased and as precise as possible; ○ rare species require more survey effort to detect than common species, and species rarity should be accounted for in survey design by increasing the number and duration of surveys; and ○ simulation modelling should be used to assess bias and precision between project study area, local study area, and regional study area to ensure the estimates are useful for comparison. Field surveys should occur within the regional study area since there are few existing sources of data that effectively describe regional bird populations in areas, including this area, that are distant from road networks. <ul style="list-style-type: none"> ● at minimum, the combined information from existing data and field surveys needs to be detailed enough to describe the distribution and abundance of all bird species in relation to the study areas; ● submit complete data sets from all survey sites. These should be in the form of complete and quality assured relational databases, with precisely georeferenced site information, precise observation/visit information and with observations and 	<p>were included in the analysis of the collected bird (and perhaps other) survey data.</p> <p>The purposes of these covariate data are to enable the evaluation of their influence on the bird (or other) survey results, and to quantify that influence and account for it in the extrapolation and results-interpretation stages. Doing so reduces the chance that interpretations about the birds are made in error through a misunderstanding of the patterns and statistical results.</p> <p>For example, if the esker sites A, B and C were surveyed on days with no wind and the peatland sites D, E and F on days with light wind and occasional rain (which may affect both detection and bird vocal behaviour), the lower bird species richness of sites D,E and F might be entirely (and mistakenly) attributed to habitat differences. Modeling that included wind and rain covariates would be more likely to differentiate these effects and lead to better extrapolations and interpretations of the data. Likewise, surveying in one or two years increases the risk having unexplained abundances in the baseline estimate. For example if surveys were conducted in a year that involved a 'masting' event, measured abundances of baseline conditions could be much higher than an average across several years. A similar event could occur if surveys were only conducted in a particularly cold or warm season, relative to the long-term average.</p> <p>Resources and examples for the use of covariates in modelling are abundantly available through scientific journals and statistical texts. Examples of potential key words for searches include: hierarchical modeling, generalized linear (mixed) models, boosted regression trees, Bayesian modeling. Modelling should aim to generate predictive estimates of abundance (or density/occurrence if justified) across the LSA, PSA, and RSA and to provide predictive estimates with associated margins of error at scales that are justified at the scale and shape of the study areas. Total area may not be an appropriate measure of scale for linear projects that are small scale at any point, but stretch along a large area due to length. Modelling should be able to predict local effects along the project as well as larger scale patterns along the length of the project. Useful predictions require data inputs from each of the study areas to which extrapolations will be made.</p> <p>Submit an updated survey design in consideration of the project context and the instructions provided.</p>				

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		<p>measurements in un-summarized form. Databases and GIS files should be accompanied by detailed metadata that meets ISO 19115 standards ;</p> <ul style="list-style-type: none"> provide documentation and digital files for all results of analyses that allow for a clear understanding of the methods and a replication of the results (raw scripts or workflows are preferred in place of descriptive documentation); provide raw survey data and analysis results for 1) all birds, 2) each valued component, and 3) Bird Conservation Region Priority Species showing the species ranked according to: <ul style="list-style-type: none"> frequency of occurrence³⁴ , abundance, abundance in each habitat type, and map showing areas of highest concentrations of species.” <p>[Also Applicable or partly applicable to other sections of the Guidelines that refer to modeling and/or simulations, e.g. 7.1, 7.2, 7.4.1, 8.1, 8.2, 8.5, 8.11, 13.1, and 21]</p>					
WH-07	<p>Section 4.3.1.1 Field study design “Prior to field investigations and as part of study design, vegetation communities will be characterised (pre-typed) and delineated by GIS analysts and vegetation specialists through a desktop exercise for both the PSA and LSA. Following which, a representative subset of vegetation communities (upland, wetland and riparian) will be selected for field verification through a stratified random sampling technique...”</p> <p>(Comments relevant to other text in the Design section of the plan)</p>	<p>Section 8.9 Collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional study areas) and in time (i.e., across years):...</p> <p>...design suggestions for Project Study Area and Local Study Area scales: Use a standardized design approach during survey planning. The resulting design details will serve as the basis to develop alternative designs, evaluate options for particular design details, and to identify potential efficiencies. The approaches and tools suggested elsewhere in this document (e.g., land cover analysis, data simulations) should be considered during the planning phase. The following should be considered as inputs to design planning and evaluation...”</p> <p>(see list that follow in the Guidelines for all requirements)</p>	<p>Adding bird sampling to a design that was created for the purposes of a vegetation study is not likely to provide robust bird results as per the Guidelines. The planned bird survey design should be described in such a way as to enable an evaluation of the steps taken to create the design and clearly describe sample sizes and locations.</p> <p>Design the study of birds using point count and ARU locations in a way that is not dependent on the study design for vegetation verification. The goals are different between the two and therefore sample sizes and distribution of samples will need to differ between the two studies.</p> <p>A series of ground level photos at each site visited for bird</p>	<p>Provide details about the proposed bird survey design that includes the steps taken to determine the sample sizes and locations. Provide ground level photos and Ecosite typing at each site visited for bird surveys.</p>	<p>The Study Plan is updated to include a revised study design for birds that is independent of the Vegetation VC Study Plan and outlines the steps taken to determine sample size and survey locations. Habitat will be documented with photographs as described in the Guidelines and classified by ELC Ecosite or Canadian Wetland Classification Class as described under the Vegetation Study Plan for modelling purposes.</p>	<p>Birds and Wildlife Study Plans: Section 7.2</p> <p>Vegetation Study Plan</p>	<p>Comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-05, BI-06, BI-09, BI-10, BI-11, BI-13.</p>

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			surveys and Ecosite typing of each site visited for the bird surveys using the ground level photos is required, as per the requirements in Section 8.9 of the Guidelines. FNLC should be used as land cover input.				
WH-08	Section 4.3.1.1 Field Study Design “To reduce potential bias associated with selecting locations where access can be achieved by helicopter and for a robust subset of sites, a secondary analysis will be run to determine if any vegetation community types will be missed through this approach to assure all individual pre-typed vegetation communities are represented. Should additional sites require Ground Investigations, additional helipads may need to be cut. This approach will be used to assure that rare habitats and features receive adequate sampling that is not biased due to limited access.”	Section 8.9 “use simulation modelling prior to sampling to ensure coverage is broad enough to estimate and account for detection error as well as provide unbiased estimates of abundance and distributions.”	It is unclear if simulation modelling has been used prior to sampling to ensure coverage is broad enough to provide unbiased estimate of abundance and distribution, as required in Section 8.9 of the Guidelines. Refer to comment WH-06 for further clarifications on the survey design advice and intended uses of modeling and simulations. Limiting bird sample locations to those easily accessible will likely lead to habitat biases in the sample.	Provide details about survey design and simulation modelling used to demonstrate how habitat bias will be avoided.	The Study Plan is updated to incorporate details on survey design and data analysis recommendations including simulation modelling and methods to avoid bias.	Birds and Wildlife Study Plans: Section 8 and Section 9.4 Vegetation Study Plan	Comment was partially addressed. See comments on Birds Study Plan, especially, especially BI-06, BI-09, BI-10, BI-13.
WH-09	Section 4.3.1.1 Field Study Design “PSA Based on the anticipated size of the PSA (greater than 4000 hectares [ha]), the intent of the field program is to complete field verification on 15-25% of the vegetation communities within the PSA. This percentage represents a Survey Intensity Level 4 according to the <i>Standard for Terrestrial Ecosystem Mapping in British Columbia</i> (EWG 1998). Although these guidelines originate in British Columbia, a similar guideline to provide consistency across projects has not been developed for Ontario and therefore should be an acceptable approach. This sampling intensity is the survey intensity level recommended for most mapping and is appropriate for a Project of this size and represents a respectable compromise between costs and meaningful data collection.”	Section 8.9 [Also applicable or partly applicable to other sections of the TISG that refer to modeling and/or simulations, e.g. 7.1, 7.2, 7.4.1, 8.1, 8.2, 8.5, 8.11, 13.1, and 21]	The sampling intensity guideline referenced in the study plan (i.e. <i>Standard for Terrestrial Ecosystem Mapping in British Columbia</i> ; EWG 1998) is for ecosystem or vegetation mapping at a 1:20000 to 1:50000 scale. This does not provide acceptable justification for sample size or distribution when it comes to collecting bird data and modelling bird abundances or distributions.	Provide details about survey design and simulation modelling used to demonstrate that the proposed sampling intensity will provide unbiased estimates of abundance and distributions, as per the requirements in Section 8.9 of the Guidelines.	The Study Plan is updated to incorporate details on survey design and describes methods proposed to avoid bias.	Birds and Wildlife Study Plans: Section 8 and Section 9.4 Vegetation Study Plan	Comment was partially addressed. See comments on Birds Study Plan, especially BI-09.

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WH-10	Section 4.3.1.1 Field Study Design “PSA & LSA Although every effort will be made to adhere to this sampling intensity, the Project is located in a remote part of Canada with limited access. Access to vast portions of the proposed CAR will only be available by air, therefore survey locations will be limited to where a helicopter is capable of landing (i.e., cut helicopter landing pads, grassy riparian areas).”	Section 8.9 “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.” [Also applicable or partly applicable to other sections of the TISG that refer to modeling and/or simulations, e.g. 7.1, 7.2, 7.4.1, 8.1, 8.2, 8.5, 8.11, 13.1, and 21]	The study plan should designate, according to the design principles in the Guidelines, oversample locations to assist with situations of limited access. This will help reduce the potential for bias in the collected data, while still accommodating some degree of access limitation.	Provide details to demonstrate how the potential of bias will be reduced when issues related to limited access occur.	The Study Plan includes oversample locations selected using Generalized Random Tessellation Stratified (GRTS) to assist with situations of limited access.	Birds Study Plan: Section 7.2.2.1	Comment was partially addressed. See comments on Birds Study Plan, especially BI-09.
WH-11	Section 4.3.1.1 Field Study Design “RSA Baseline information for the RSA will need to be robust enough to support an assessment of indirect effects on vegetation. Considering the level of existing information on vegetation communities within the RSA (FNLC and FRI mapping), field investigations for vegetation will not be conducted within the broader RSA. Effects on vegetation with the RSA are not expected to be wide ranging and therefore effects can adequately be assessed using the existing and desktop derived information” Section 7 Conformance with Federal and Provincial Guidance “The requirement cannot be addressed as: – It should be sufficient to collect background data for the regional study area and extrapolate results from the project and local study area.”	Section 8.9 “Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project study area, local study area and regional study area are unbiased and as precise as possible... ...sample size must be planned to support a robust evaluation of the project study area within the context of the local study area and regional study area... “Simulation modelling should be used to assess bias and precision between project study area, local study area, and regional study area to ensure the estimates are useful for comparison. Field surveys should occur within the regional study area since there are few existing sources of data that effectively describe regional bird populations in areas, including this area, that are distant from road networks.”	It is unclear how the text provided in Section 4.3.1.1 of the study plan is related to the bird survey. It is not clear what level of sampling will take place in RSA for wildlife VCs. The rationale provided is in relation to vegetation sampling. The study plan does not indicate that bird surveys will be done in the RSA. More detail is needed to determine how the requirements of Section 8.9 will be met. Sample sizes and designs must support evaluation of the three study area scales (PSA, LSA, RSA), so detailed information is needed that shows intended sampling within each of these scales along with estimates of variability within each of those scales.	Provide details to demonstrate how the text in Section 4.3.1.1 is relevant to the bird survey. Provide detail to demonstrate how the requirement in Section 8.9 of the Guidelines regarding field surveys in the regional study area will be met. Detailed information is needed showing the intended sample size within each of the study area scales, along with estimates of the variability in expected metrics (e.g. species level abundance, species richness) within each of those scales.	- A simulation was completed which indicates that the LSA is representative of the RSA based on the percentage composition of land cover types. - Results of simulation modelling using data collected in the LSA provides unbiased models for making predictions in the RSA. The Study Plan describes how models will be used to extrapolate abundance of bird species in each Bird VC to the RSA scale based on habitat availability.	Birds Study Plan: Section 9.4.2	Comment was not addressed. See comments on Birds Study Plan, especially BI-05.
WH-12	Section 4.3.1.1 Field Study Design “Bird indicator are to be collected to account for temporal sources of variation including among years (two years minimum), within and among seasons (e.g., spring migration, breeding season, and late summer / fall migration), and within a 24-hour daily cycle.” Section 4.3.1.8 Data Collection	Section 7.4.2 “For valued components related to wetlands, eskers, birds, wildlife, and Species at Risk, define temporal boundaries in a manner that enables detection of all species that use the project study area, local study area, and regional study area throughout the year and between years, and to estimate their temporal pattern of use (e.g., breeding, or migrants stopping on northward and/or southward migration). Baseline data collection for all biophysical valued	More information is needed to determine how the requirements in Sections 7.4.2 and 8.9 related to temporal sources of variation will be met. It is unclear how the approach provided in Section 4.3.1.8 will account for the temporal sources of variation. Singing frequency may be less during spring migration than during the nesting phase. Singing	Provide specific detail, including methods and approaches, to demonstrate how these requirements related to temporal boundaries and collection of data required in the Guidelines will be achieved.	The Study Plan has been revised to include ARU deployment during spring migration (April 15-May 31), fall migration (August 1-September 30) and early winter (December 1-December 31) or late winter (March 1-31). Proposed winter sampling is reduced due to temperature limitations of ARU.	Birds Study Plan: Section 7.2.2	Comment not addressed. See comments on Birds Study Plan, especially BI-01.

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	“During migration (spring and fall), three 3-minute segments per week will be randomly selected from the Morning Period (1 hour before sunrise to 5 hours after sunrise).”	<p>components is to be provided for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls).”</p> <p>Section 8.9 “collect bird data to adequately represent the following temporal sources of variation:</p> <ul style="list-style-type: none"> • among years; • within and among seasons (e.g., spring migration, breeding, fall migration, overwintering); and • within the 24 hour daily cycle. <p>...collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is suggested as a minimum. As the number of sampling years increases so does the understanding of natural variability;”</p>	frequency may be much less during fall migration but migrating mixed-species flocks do call regularly enough to be detected and identified by appropriate sampling of acoustic files and with skilled interpreters. Recordings may need to be evaluated to determine if planned sampling frequency is sufficient.		<p><input type="checkbox"/>Planned sampling frequency and analysis proposed during spring and fall migration and early winter (i.e., three 3-minute segments randomly selected from the Morning Period per week) is in line with recommendations in section 8.9 of the Guidelines (page 54).</p> <p><input type="checkbox"/>Specific locations and dates of ARU deployment will be provided at a later date.</p>		
WH-13	<p>Section 4.3.1.1 Field Study Design “The location of survey sites is expected to be spatially uneven due to differences in habitat diversity across the RSA. Furthermore, the proposed routes are remote with limited access to important habitats and features. To reduce potential bias associated with selecting locations where access can be achieved by helicopter and for a robust subset of sites, a secondary analysis will be run to determine if any vegetation community types will be missed through this approach to assure all individual pre-typed vegetation communities are represented. Should additional sites require Ground Investigations, additional helipads may need to be cut. This approach will be used to assure that rare habitats and features receive adequate sampling that is not biased due to limited access.”</p>	<p>Section 8.9 “1. Within each sampling year, ARUs should be deployed at sites as long as possible, with a minimum period of May 1 through July 10 (Breeding Recordings). Use deployments that maximize full use of battery and sound card capacity; 2. 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 sites.”</p>	It is unclear if the requirements in Section 8.9 of the Guidelines will be met. More information is needed to identify the locations of ARU deployments and a detailed treatment of the location schedule.	Provide details to demonstrate an alignment with the Guidelines, including numbers of ARUs, specific dates of their deployment and re-deployment to new locations, and explanations of the rationale for the selected schedules.	<p>- The Study Plan has been revised to include ARU deployment during spring migration (April 15-May 31), fall migration (August 1-September 30) and early winter (December 1-December 31) or late winter (March 1-31). Proposed winter sampling is reduced due to temperature limitations of ARU.</p> <p>- Planned sampling frequency and analysis proposed during spring and fall migration and early winter (i.e., three 3-minute segments randomly selected from the Morning Period per week) is in line with recommendations in Section 8.9 of the TISG (the Agency 2020a).</p> <p>- Specific locations and dates of ARU deployment will be provided at a later date.</p>	Birds Study Plan: Section 7.2.2	<p>The comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-09.</p>

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WH-14	<p>Section 4.3.1.1 Field Study Design “Bird indicator data will be collected within the following important habitats and features identified in the TISG:</p> <ul style="list-style-type: none"> • Water bodies, wetlands, watercourses; • Riparian habitat; • Riverbanks of eroded habitats; • Artificial water sources; • Forest, forest patches, solitary trees (especially old decaying trees); • Forest edges and tree rows; • Ridges, including eskers; • Cliffs, rock outcrops, exposed bedrock, talus, and other karst topography; • Building, bridges, and other anthropogenic features; and • SAR critical habitat.” 	<p>Section 7.2 “Information sources and data collection methods used for describing the baseline environmental, health, social and economic setting may consist of the following sources of information. For specific sources of baseline information, see Appendix 1.</p> <p>important habitats and features to include:</p> <ul style="list-style-type: none"> - water bodies, wetlands, watercourses; - riparian habitat; - river banks or other eroded habitats; - artificial water sources; - forest, tree patches, solitary trees (especially old decaying trees); - forest edges and tree rows; - ridges, including eskers; - caves and mines; - cliffs, rock outcrops, exposed bedrock, talus, and other karst topography; - buildings, bridges, and other anthropogenic features, including linear features; - sources of artificial lighting attracting insects; - critical habitat; and - and any other habitat features known to be important in the area.” 	<p>Detail on proposed survey location selection is sufficient, but it does not align with the Guidelines.</p> <p>This plan uses the list of important habitats and features in Section 7.2 of the Guidelines as an explanation of survey location selection, but that is not how the list was presented in the Guidelines. The Guidelines present this list with respect to potential sources of baseline information in general. It is not intended as a basis for sampling or a list of recommended features to survey for birds.</p>	<p>Provide details to demonstrate that the proposed survey design, including location selection and data collection, will meet the requirements in Section 8.9 of the Guidelines.</p>	<p>Important habitats described in Section 4.3.1.1 of the TISG (the Agency 2020a) have been integrated into the breeding bird study design using point counts and ARUs (forests, forest edges, ridges/eskers, riparian, watercourses) or through marshbird call playback (wetlands), species-specific surveys (river banks, cliffs, rock outcrops, exposed bedrock, talus, and other karst topography), and aerial surveys (wetlands, waterbodies, watercourses).</p>	<p>Birds Study Plan: Section 7.2.2.1 and Table 7.2.</p>	<p>Comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-06, BI-09, BI-10, BI-13.</p>
WH-15	<p>Section 4.3.1.1 Field Study Design “A point count survey location will be conducted within each vegetation community identified for Ground Investigations, within 1 km of helicopter landing pads. Note that pre-selected Ground Investigation locations may be revised based on site conditions observed during field investigations....</p> <p>...Based on the anticipated size of the PSA (greater than 4000 hectares [ha]), the intent of the field program is to complete field verification on 15-25% of the vegetation communities within the</p>	<p>Section 7.2 “Baseline data must be collected in a manner that enables reliable analysis, extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options.”</p>	<p>Rationale is provided for this level of sampling in relation to mapping vegetation communities, but rationale is needed to indicate that this sampling intensity is adequate for each wildlife VC.</p>	<p>Provide detail to demonstrate how the requirements in Section 7.2 of the Guidelines will be integrated into survey design, including providing a rationale for the selected sample size for all surveys discussed in Section 4.3 of the study plan.</p>	<p>- Simulation modelling using preliminary bird data was conducted to determine the total number of site visits required to adequately sample the various bird VCs and bird SAR VCs beyond the initial 2018-2019 field season. The upcoming work plan will provide a breakdown of the number of survey stations by land cover. The sample frequency and intensity for various bird SAR have been provided based on a beta diversity analysis / species accumulation curve using preliminary data or a binomial</p>	<p>Wildlife Study Plan: Section 7.2.1.2 and Section 7.2.3.2 Birds Study Plan: 7.2.2.1 and 7.2.2.5</p>	<p>Comment was partially addressed for birds.</p> <p>See comments on Birds Study Plan, especially BI-05, BI-06, BI-09, BI-10, BI-11, BI-13,</p> <p>*****</p> <p>Comment was not addressed for other wildlife.</p> <p>Rationales/justifications (i.e., details to substantiate the claim) that sample sizes and designs are adequate and meet the requirements of Section 7.2 of the Guidelines are not provided.</p> <p>Table 11-1: Study Plan Federal Concordance – Conformance with Requirements, p70 indicates that the proponent “will include details on modeling methods and discuss confidence in</p>

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	PSA. This percentage represents a Survey Intensity Level 4 according to the Standard for Terrestrial Ecosystem Mapping in British Columbia (EWG 1998). Although these guidelines originate in British Columbia, a similar guideline to provide consistency across projects has not been developed for Ontario and therefore should be an acceptable approach. This sampling intensity is the survey intensity level recommended for most mapping and is appropriate for a Project of this size and represents a respectable compromise between costs and meaningful data collection. Ground Inspections and Visual Checks will be conducted in accordance with the survey intensity levels (EWG 1998) at a ratio of 25:75 respectively. Although every effort will be made to adhere to this sampling intensity, the Project is located in a remote part of Canada with limited access. Access to vast portions of the proposed CAR will only be available by air, therefore survey locations will be limited to where a helicopter is capable of landing (i.e., cut helicopter landing pads, grassy riparian areas)."				expansion of published detection probabilities. - The Study Plan is updated to provide detail on how the sampling locations for bat surveys are determined by habitat suitability in the desktop review. Wolverine aerial tracking survey transects are based on a modified protocol for aerial caribou surveys (MNR 2018), due to the relatively low density of wolverine. Survey design for furbearer winter tracking, motion sensitive camera tracking, and wolverine hair snag trap surveys are described in the Study Plan.		using desktop and/or field studies when describing baseline conditions in the IS / EA Report". Without this information, not enough detail is provided to assess whether the planned studies will meet the requirements of Section 7.2 of the Guidelines. Provide detail to demonstrate how the requirements in Section 7.2 of the Guidelines will be integrated into survey design, and include the rationale for the selected sample size for all surveys discussed in the study plan.
WH-16	Section 4.3.1.2 Breeding Bird Point Counts "Only observers skilled in bird identification by sight and sound will be used for breeding bird surveys. Furthermore, additional bias will be removed by recording all bird vocalizations during breeding bird surveys using a high-quality portable recording device mounted on a tripod. Observer and recorder data will be compared for further analysis."	Section 8.9 "Observers should be skilled in bird identification by sight and sound, and should use 1- minute intervals within the 10-minute point count duration such that each individual bird is entered in the first minute interval in which it was detected. Estimated distances from observers to each bird should be recorded as: 0-50m, 50m-100m, and beyond 100m... acoustic files should be analysed by interpreters skilled in identifying birds by sound and familiar with bird communities of the region sampled. Interpretation of acoustic files should be done using the Wildtrax interface"	Observers should have skills in relation to northern Ontario birds since bird communities differ geographically and some species sing with regional dialects. Recordings using the Zoom H2n digital recorder or equivalent in conjunction with observers is an appropriate approach.	Provide details to demonstrate that the observers have skills specifically related to northern Ontario birds.	The Study Plan is updated to indicate that only observers skilled in Northern Ontario bird identification by sight and sound will be used for breeding bird point counts, and will capture bird calls using the Zoom H2n digital recorder to remove additional bias.	Birds Study Plan: Section 7.2.2.1	Comment was addressed.
WH-17	Section 4.3.1.3 Marsh Bird Call Playback Surveys "where suitable habitat is encountered during the breeding bird point counts"	Section 8.9 "Collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional	It is unclear how the requirements in Section 8.9 of the Guidelines related to survey design and sampling will be met.	Provide details to demonstrate how the survey design requirements in Section 8.9 of the Guidelines were integrated into the	Marshes account for less than 0.1% of the LSA and will be examined separately from the breeding bird survey design due to their small numbers. To	Birds Study Plan: Section 7.2.2.3	Comment was partially addressed. See comments on Birds Study Plan, especially BI-10.

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		study areas) and in time (i.e., across years).... design suggestions for Project Study Area and Local Study Area scales: Use a standardized design approach during survey planning. The resulting design details will serve as the basis to develop alternative designs, evaluate options for particular design details, and to identify potential efficiencies. The approaches and tools suggested elsewhere in this document (e.g., land cover analysis, data simulations) should be considered during the planning phase. The following should be considered as inputs to design planning and evaluation....”		Marsh Bird Call Playback Surveys described in Section 4.3.1.3 of the study plan.	survey the largest number of marshes that can practicably be reached, a desktop review combined with aerial reconnaissance were used to identify suitable marsh habitat in proximity to breeding bird survey stations selected using the Generalized Random Tessellation Stratified Study Design. A total of 10 survey stations were identified. Efforts will be made to identify additional marsh bird call playback survey stations.		
WH-18	Section 4.3.1.8 Data Collection “During the breeding season, one 3-minute segment per week will be randomly selected from the Night Period (midnight to 1 hour before sunrise), two 3-minute segments per week from the Morning Period (1 hour before sunrise to 5 hours after sunrise), and one 3-minute segment per week from the Dusk Period (30 minutes before sunrise to 2 hours after sunset).”	Section 7.2 “The Impact Statement must provide detailed descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental, health, social and economic condition that is described, in order to corroborate the validity and accuracy of the baseline information collected.” Section 8.9 “survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options:”	The information provided in Section 4.3.1.8 of the study plan does not align with the requirements in Sections 7.2 and 8.9 of the Guidelines. More information is needed to corroborate the validity and accuracy of the baseline information collected	Provide detailed descriptions of the survey protocols and methods followed to demonstrate that the planned survey will enable modelling for reliable conclusions about breeding bird abundances. Provide anticipated sample sizes.	- The Study Plan is updated to include details on survey protocols, design, methodology and data manipulations to address requirements of the Sections 7.2 and 8.9 of the TISG (the Agency 2020a). - Additional information regarding sampling dates and locations will be provided at a later date.	Birds Study Plan: Section 8 and Section 9.4	Comment was not addressed. See comments on Birds Study Plan, especially BI-11.
WH-19	Section 4.3.2.2 Acoustic Surveys “Acoustic surveys will be designed to account for inter-annual and within-season variability in habitat use by taking place during multiple nights in the late spring, summer and fall seasons to capture bat dispersal and identify breeding and roosting habitats. Field surveys will be conducted over a minimum of two years to improve the understanding of natural variability in populations.” Section 4.3.2.3 Data Collection “The acoustic surveys targeted for maternity roosting structures will be conducted using Wildlife Acoustic	Section 8.11 “to augment existing information sources and collect data able to robustly establish baseline conditions and assess impacts, undertake site-specific surveys to: <ul style="list-style-type: none"> • compile a species inventory (species present/not detected); • quantify baseline 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; • document baseline conditions within the project Area and Local Assessment Area to support study of impacts; 	Section 4.3.2.2 indicates that acoustic surveys will take place in spring, summer, and fall; however Section 4.3.2.3 only provides information for surveys in June and potentially August, if suitable hibernacula habitat is discovered. In addition, targeting survey locations to only suitable roosting and hibernacula habitat may not capture dispersal and travel corridors.	Clarify and provide rationale for how bat survey design meets the requirements in Section 8.11 of the Guidelines.	- The bat study design includes a desktop habitat suitability exercise to locate and identify maternity roosts, foraging areas, dispersal and travel (migration) corridors and hibernacula. - This section has been revised to indicate that acoustic surveys will take place in spring (maternity) and fall (swarming). - As discussed during the technical discussion on September 11, 2020, methods for bat migration surveys are not currently described in Ontario’s guidance document,	Wildlife Study Plan: Section 7.2.2.1	Comment was partially addressed. Some level of seasonal quantification of SAR bat activity would be useful and appreciated by ECCC to evaluate relative use of different habitats or features and document baseline conditions. However, given the lack of established methodologies for identifying and surveying migration routes and travel corridors, as well as MECP’s offer to advise on these study designs, we will defer appropriateness of this approach to MECP. Note [“A protocol for bat migration surveys is not currently described in Ontario’s guidance documents and migration surveys are not common in scientific literature. In the absence of a protocol or other guidance, bat migration

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	<p>Song Meter SM4BAT monitors. ARUs will be programmed to record ultrasonic activity nightly beginning 30 minutes before sunset to 30 minutes after sunrise for at least 10 days during the maternity roosting period of June 1 to June 30.</p> <p>In addition to maternity roost surveys, any suspected bat hibernacula features documented during the background review or aerial reconnaissance exercises will require similar acoustic surveys. The potential hibernacula will be searched to identify all possible entrances and ARUs will be installed within 10 m of all openings following the above stated procedures during the peak swarming period of August 1 to August 31. They will be programmed to commence recording at dusk for five hours for up to 10 nights from August 1 to August 31, or until evidence of bat presence is found, whichever occurs sooner.”</p>	<p>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...”</p>			<p>so potential migration corridors will be identified solely through desktop analysis</p>		<p>field surveys (if conducted) would likely not be effective at identifying migratory corridors. Given that the study areas are intersected by abundant watercourses which may be used as travel corridors, potential migration or travel and movement corridors (e.g., continuously treed river or stream valley, ridge-tops, treelines; Lausen et al. 2010, Government of Alberta 2013) will be identified through desktop review of aerial imagery and surficial geology (KGS Group 2019).”]</p> <p>Note: MECP indicated that they would provide bat migration survey examples to the Consultant Team.</p>
WH-20	<p>4.3.3 Amphibians and reptiles “Through the course of the field program, any incidental amphibian and reptile encounters will be documented. The distribution and location, abundance and population status, information on life cycles and movements and habitat requirements of species identified by these practises will be quantified wherever possible.”</p> <p>Section 4.3.4 Mammals “Any mammal species that are likely to be directly or indirectly effected by the activities taking place within the PSA and LSA will be identified. The distribution and location, abundance and population status, information on life cycles and movements and habitat requirements of species identified will be quantified and recorded where possible.”</p>	<p>Section 8.10 “identify wildlife species, other than avian species, of ecological, economic or human importance (particularly to Indigenous peoples), within the study area (including moose, rabbit, beavers, otters, muskrat, and frogs), that are likely to be directly or indirectly effected and describe each species: biodiversity, distribution and location; abundance and population status; life cycle; seasonal ranges, migration and movements; habitat requirements; and sensitive periods (e.g., seasonal, diurnal and nocturnal). For the species identified above, describe and quantify the habitat type, including its: function; location; suitability; structure; diversity; relative use, natural inter-annual and seasonal variability, and; abundance as it existed before project construction”</p>	<p>It is unclear under what circumstances it would not be possible to provide the required information.</p> <p>It is unclear how baseline data will be collected for amphibians and reptiles that will allow for comparison to the “Expression of Change” listed in Table 6-1 if only incidental observations are being documented.</p> <p>It is unclear how the requirements in Section 8.10 will be met in relation to frogs if only incidental observations are being documented.</p> <p>Additionally, biodiversity, seasonal ranges, migration, movements, sensitive periods and habitat type also need to be described, as per Section 8.10 of the Guidelines.</p>	<p>Provide detail to demonstrate that biodiversity, distribution and location; abundance and population status; life cycle; seasonal ranges, migration and movements; habitat requirements; sensitive periods (e.g., seasonal, diurnal and nocturnal) and habitat type will be described for wildlife species, other than avian species, of ecological, economic or human importance (particularly to Indigenous peoples), per Section 8.10 of the Guidelines.</p> <p>Provide information regarding the methods and approaches used for each aspect of the requirement and each species.</p>	<p>Amphibian acoustic surveys are proposed as a systematic approach to collect data over space and time during the breeding and non-breeding season. Mammal data analysis methods have been updated to fit requirements of Section 8.10 of the TISG (the Agency 2020a).</p>	<p>Wildlife Study Plan: Section 7.2.2, Section 8.2, Section 7.2.3.2, and Section 8.3.</p>	<p>Comment was partially addressed.</p> <p>Further detail is required to meet the requirements of Section 8.10 of the Guidelines.</p> <p>See also comment WH-41.</p>

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WH-21	<p>Section 5.2 Birds</p> <p>“The number of species detected by different methods at the same time and at the same point will be compared using a multiple regression statistical analysis, such as a Generalized Linear Mixed Model, with survey point ID defined as a subject and various survey methods as repeated measurements. We will compare the number of species detected during breeding bird point counts, breeding bird point counts corrected by a high-quality portable recording device, and ARU performed at the same time. In the model, we will include survey type (breeding bird point counts, breeding bird point counts corrected by a high-quality portable recording device, and ARU), observer, and habitat type.</p> <p>....</p> <p>Species diversity in each habitat type will be calculated using the Shannon-Weiner Diversity Index (Shannon and Weaver 1949) during spring migration, the breeding season, and fall migration.”</p>	<p>Section 8.9</p> <p>“Identify the biodiversity metrics, biotic and abiotic indicators that are used to characterize the baseline avifauna biodiversity and discuss the rationale for their selection:</p> <ul style="list-style-type: none"> o species communities should not be collapsed into diversity metrics or the focus narrowed to indicator species. <p>Species identity, distribution, abundance and where possible estimates of breeding status should be the primary targets of quantification.</p> <ul style="list-style-type: none"> o biodiversity metrics for each valued component should include: <ul style="list-style-type: none"> - distribution in space; - frequency of occurrence; - patterns of occurrence and abundance in time; - abundance and, if possible, density; and - associated habitat type(s) and strength of associations.” 	The study plan does not align with the Guidelines. Differences in species detection based on sampling method should be incorporated directly into the species community modelling.	Provide detail to demonstrate how differences in species detection will be incorporated into the species community modelling, as required to be compliant with Section 8.9 of the Guidelines.	The Study Plan is updated to include paired sampling from breeding bird point counts and handheld recorders (a surrogate for ARUs) to estimate statistical offsets that correct biases in ARU data relative to human observers. These offsets will be used to calibrate count data by ARUs using the methods of Val Wilgenburg et al. (2017) and Bombaci and Pejchar (2018). For surveys with human observers only, the observer will be added as a covariate in modelling.	Wildlife Study Plan: Section 8.1 Birds Study Plan: Section 8	This comment has been addressed.
WH-22	<p>Section 5.2 Birds</p> <p>“Rare species will be accounted for in the statistical analysis recognizing that they may be more difficult to detect.”</p>	<p>Section 8.9</p> <p>“rare species require more survey effort to detect than common species, and species rarity should be accounted for in survey design by increasing the number and duration of surveys”</p>	The survey design must address sampling for rare species. An intention to account for rare species in the statistical analyses does not replace ensuring that sufficient data has been collected via the survey design to enable modeling their abundance and distribution.	Provide detail to demonstrate how species rarity has been accounted for in the survey design, as per the requirement in Section 8.9 of the Guidelines.	The Study Plan is updated to include two approaches for sampling for rare species in the study design for ARUs. The first is based on a beta diversity analysis / species accumulation curve of preliminary breeding bird data in 2018 which indicated that a sample size of 15 was sufficient to identify rare species. This is used as a general ARU sampling frequency per season (winter, spring migration, breeding, fall migration). The second is specific to rare species identified only through ARUs where scientific literature is available on species-specific detection rates using ARUs (Common Nighthawk, Eastern Whip-poor-will, Yellow Rail). A binomial expansion of these detection rates targeting a 95% cumulative probability of	Birds Study Plan: Section 7.2.2.	Comment was not addressed. See comments on Birds Study Plan, especially BI-10, BI-11, BI-13.

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					detection is used for these species.		
WH-23	Section 6.1 Indicators and Expression of Change [Table 6-1. column Expression of Change]	Section 7.1 “In describing the biophysical environment, the Impact Statement must take an ecosystem approach that considers how the Project may affect the structure and functioning of biotic and abiotic components with the ecosystem using scientific, community and Indigenous knowledge regarding ecosystem health and integrity, 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 TISG. The presence of habitat, such as but not limited to spawning shoals, aquatic vegetation or overwintering pools, potentially affected by the Project should be included in the description of the biophysical baseline conditions.”	It is unclear whether these are potential mechanisms of change that will not be measured or whether these are responses that will be measured. If these are intended as measured responses, justification for these should be provided, explanations of why more common measures (e.g. relative abundance) are not being used, and detailed explanations of methods should be provided.	Provide details to clarify and justify the measures chosen for the expression of change and provide detailed explanations of the methods that will be used.	The Study Plan is updated to clearly show that the indicators have been selected and how they were selected. Expressions of change are quantifiable and measurable, and relative abundance has been added as expression of change.	Table 9-2	Comment was partially addressed. Expressions of change are now called indicators, but it is still unclear what role the proponent intends these indicators to play in the effects assessment. Provide further details to clarify the indicators and explain the methods that will be used. See also comment WH-43.
WH-24	Section 6.1 Indicators and Expression of Change “The indicators and rationale for selection and measurement of potential effects, to be used to assess and evaluate the alternative routes in the IA / EA are provided in Table 6-1. Breeding Birds (including SAR-olive-sided flycatcher, rusty blackbird and common nighthawk)”	Section 8.9 “the following groups of migratory and non-migratory birds should be considered as valued components: o forest birds; o raptors; o shorebirds; o waterfowl; and o bog/fen birds, and other wetland birds.” Section 15.2 “analyze predicted effects for all birds, each valued component, and for Bird Conservation Region Priority Species and include relevant effects from Appendix 2 and 3. Include separate analyses for each project activity, component, and phase. Incorporate sources of error for all analyses to insure final impacts estimates show the best available estimate of precision”	As valued components, each specified bird group should be included in the effects assessment.	Provide detail about the effects assessment methodology for each valued component identified in the Guidelines related to this study plan (birds, wildlife, species at risk).	The Study Plan is updated to indicate that breeding birds are categorized into their respective bird group (including species at risk) in the effects assessment. Methods for the effects assessment are described for each group.	Birds Study Plan: Table 9-2 and Section 9.2	Comment was partially addressed. See comments on Birds Study Plan, especially BI-04.
WH-25	Table 6-1: Wildlife Indicators, “Habitat availability and distribution <ul style="list-style-type: none"> Survival and reproduction (Population state) Disruption to breeding behaviour Fragmentation of habitat Effects to prey population or access to food 	Section 15.2 “account for indirect effects such as the increased movement of predators in the predictions of mortality effects”	It is unclear if the effects of increased movement of predators in the predictions of mortality effects will be included.	Provide detail to demonstrate how the requirement to account for increased movement of predators in the prediction of mortality effects will be addressed, per Section 15.2 of the Guidelines.	Predictions of mortality effects from increased predator movements will be estimated using motion sensitive tracking camera data. Pre- construction data of predators and herbivores along planned linear features	Wildlife Study Plan: Section 8.3.4	Comment was partially addressed. It is unclear how motion sensitive tracking camera data will be used to assess changes in predator movements. It is also unclear whether the selected proxies for the Fur Bearer VC (marten, beaver, and wolverine) will be able to adequately predict potential changes to wolf populations and

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	<ul style="list-style-type: none"> Change in wildlife behaviour (during and after construction) Change in wildlife mortality (due to increase anthropogenic stressors; hunting, trapping, vehicle travel, etc.)” 				(i.e., the routes and secondary access roads) will be compared against estimates based on a desktop review to account for increased movement of predators in predictions of mortality effects.		<p>movements, as per requirements related to caribou.</p> <p>Provide details on the study design to demonstrate how changes to predator movements will be assessed as well as how predator/prey dynamics related to caribou, wolves, and moose will be assessed.</p> <p>See also comment WH-42.</p>
WH-26	<p>Section 6.1 Indicators and expression of change “Effects to SAR will consider potential direct, incidental and cumulative adverse effects of the Project on SAR and, where applicable, its critical habitat.”</p> <p>Section 7 Conformance with Federal and Provincial Guidance “...will be analyzed and addressed in the IA/EA”</p>	Section 15.4	<p>Section 15.4 of the Guidelines includes additional specific considerations for the effects assessment, as well as considerations when describing potential and predicted effects.</p> <p>It is unclear if all relevant requirements from Section 15.4 of the Guidelines will be addressed for each species at risk.</p>	Provide detail to demonstrate that all requirements from Section 15.4 of the Guidelines will be met for all SAR. Describe the methods and approaches taken to meet the requirements for each SAR.	The Study Plan has been updated to describe the methods for meeting the requirements in Section 15.4 of the TISG (the Agency 2020a) with respect to data collection and considerations for the effects assessment are generally described for SAR. Specific methods and approaches will be described in greater detail in the IS / EA Report.	Wildlife and Birds Study Plans: Sections 8 and 9.4.2.	This comment has been addressed.
WH-27	<p>Section 6.2 Methods for predicting future conditions “Modelling methods, error estimate and assumption will be reported when possible.”</p> <p>6.2.1.3 Model Confidence and Resolution “That being said, models will be based on best available science and will be thoroughly described including assumptions, calculations of margins of error and other relevant statistical information when possible.”</p>	<p>Section 7.1 Methodology “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 and other relevant statistical information. Models that are developed should be validated using field data from the appropriate local and regional study areas”</p> <p>Section 8.9 “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). Use of hypothesis testing p - values is generally not appropriate in this context and their use should be justified”</p>	<p>It is unclear if estimates of confidence or error for all estimates of abundance and distribution of birds will be provided, as per the requirement in Section 8.9 of the Guidelines. Published studies are unlikely to be sufficient replacement for data collection, data analysis and area specific modeling for this project area.</p> <p>Section 7.1 of the Guidelines requires that modelling methods be described and must include assumptions, calculations of margins of error and other relevant statistical information.</p> <p>It is unclear under what circumstances it would not be possible to provide this information. The Agency would like to reiterate that the Impact Statement is expected to address all requirements from the Guidelines.</p>	Provide detail to demonstrate that estimates of confidence and error for all estimates of abundance and distribution of birds will be provided. Ensure that modelling methods, including assumptions, calculations of margins of error and other relevant statistical information are provided for any quantitative model used (including for other wildlife presented in this study plan).	The Study Plan is updated to provide the modelling methods, including assumptions, calculations of margins of error and other relevant statistical information for all models proposed for birds and other wildlife.	Wildlife and Birds Study Plans: Section 9.4.1	<p>Comment was partially addressed.</p> <p>Table 11-1: Study Plan Federal Concordance – Conformance with Requirements, indicates that the proponent “<i>will include details on modeling methods and discuss confidence in using desktop and/or field studies when describing baseline conditions in the IS / EA Report</i>”.</p> <p>Without this information, not enough detail is provided to assess whether the planned studies will meet the requirements in Section 7.1 of the Guidelines.</p> <p>See comments on Birds Study Plan, especially BI-09, BI-10, BI-13.</p> <p>For other wildlife VCs, provide additional support for the choice of sample size. To more clearly describe simulation results, show parameter estimates and error estimates separately. Evaluate and show the topics of bias and precision. Clearly distinguish repeated visits from visits to new sites in the sample size calculations.</p>

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WH-28	<p>Section 6.2.1 Wildlife Habitat Development</p> <p>“HSI models will be developed by gathering background information on wildlife indicators which will be summarized into species accounts, developing wildlife habitat ratings based on this background information, and evaluating the models against field conditions.</p> <p>HSI models are a simplification of the relationships among environmental parameters and habitat quality based on expert opinion. These models are limited by the extent of knowledge about a species, species-specific habitat use, and the ecosystems. The HSI models developed will be based on the evaluation of ELC units and their assumed relationships to a wildlife VC’s habitat suitability in the LSA. That being said, models will be based on best available science and will be thoroughly described including assumptions, calculations of margins of error and other relevant statistical information when possible.”</p>	<p>Section 7.1</p> <p>“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 and other relevant statistical information. Models that are developed should be validated using field data from the appropriate local and regional study areas.”</p> <p>Section 7.2</p> <p>“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. Some data sources may have good coverage in Southern Ontario or existing road networks but be unsuitable as a baseline for these northern areas where there are not roads.... Existing data should be considered as a limited augmentation of this new data.”</p>	<p>It is not clear whether and how collected data will be incorporated into the process described in this section. Qualitative information can often be valuable to augment data but the Guidelines recommends the collection and analysis of study-area specific, quantitative data, using current and accepted quantitative analytic approaches.</p> <p>It should be made clear how assumptions based on published information, much of which is likely to be of limited or unknown relevance to the particular project area, will be sufficiently valid in the absence of quantitatively including collected, local data.</p>	<p>Provide details to demonstrate how collected data will be incorporated into the process described in Section 6.2.1 of the study plan.</p> <p>Provide details to demonstrate how the data sources are relevant in spatial and temporal coverage to the Project and how the models will be validated using field data from the study areas, as per the requirements in Sections 7.1 and 7.2 of the Guidelines.</p>	<p>The Study Plan is updated to describe how the quantitative, locally collected data will be incorporated in model development and that all data sources will be spatially and temporally relevant to the Project.</p>	Wildlife Study Plan: Section 9.4.2	<p>Comment was partially addressed.</p> <p>While a clearer picture of proposed models and the data that will feed them is presented, much of the information needed to be able to assess whether the requirements in Sections 7.1 and 7.2 of the Guidelines have been met has not been provided.</p> <p>See comments related to the required supporting information related to models (WH-05, WH-09, WH-15, WH-27, WH-41).</p>
WH-29	<p>Section 6.2.2 Predicted Effects of the Project</p> <p>“For migratory birds, <i>A Framework for the Scientific Assessment of Potential Project Impacts on Birds</i> (Hanson et al. 2009) will be consulted to assist in analyzing predicted effects for all birds including non-linear, indirect and synergistic responses where possible and applicable. Any assumptions of displacement will be justified with scientific references and best management practices.”</p>	<p>Section 8.9 [all content]</p> <p>Section 15.2</p> <p>“analyze predicted effects for all birds, each valued component, and for Bird Conservation Region Priority Species and include relevant effects from Appendix 2 and 3. Include separate analyses for each project activity, component, and phase. Incorporate sources of error for all analyses to insure final impacts estimates show the best available estimate of precision;”</p>	<p>Based on the information provided in Section 6.2.2 of the study plan, It is unclear if <i>A Framework for the Scientific Assessment of Potential Project Impacts on Birds</i> (Hanson et al. 2009) will be consulted to assist in analyzing predicted effects for all birds or migratory birds only.</p> <p>To reliably analyze predicted effects, per Section 15.2 of the Guidelines, baseline data must be designed, collected, and analyzed according to the direction provided in Section 8.9 of the Guidelines. Detailed descriptions of design process and design outcomes (including maps, sample sizes overall and by landcover type) are required to understand and evaluate the design relative to the Guidelines.</p>	<p>Provide details to demonstrate that baseline data will be collected according to the direction provided in Section 8.9 of the Guidelines.</p> <p>Generate predictive estimates of abundance (or density/occurrence if justified) across the LSA, PSA, and RSA and provide predictive estimates with associated margins of error at scales that are justified at the scale and shape of the study areas through modelling. Total area may not be an appropriate measure of scale for linear projects that are small scale at any point, but stretch along a large area due to length. Use modelling to predict local effects along the project as well as larger scale patterns</p>	<p>The Study plan is updated to show that Hanson et al. (2009) will be consulted for all indicators. This includes detailed descriptions of the design process and outcomes.</p>	Birds Study Plan: Section 8	<p>Comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-09.</p>

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				along the length of the project. Useful predictions require data inputs from each of the study areas to which extrapolations will be made.			
WH-30	Section 7 Conformance with Federal and Provincial Guidance “Outlined as Indicators and Expressions of Change. To be addressed in the IA/EA”	Section 15.3 “describe changes to insects, pollinating species in particular”	Section 7 of the study plan states that changes to insects is outlined as indicators and expressions of change. It is not clear how the indicators and expressions of change in Sections 6.1 and 6.2 will enable description of changes to insects.	Provide detail to demonstrate how changes to insects will be described, as per the requirement in Section 15.3 of the Guidelines.	Changes to insect habitat availability and spatial and temporal distribution will be assessed in the effects assessment.	Wildlife Study Plan: Sections 8.4 and 9.2	Comment was partially addressed. It is unclear how the desktop review and incidental observations will be used to characterize existing habitat availability and distribution, and subsequently how these parameters will be predicted to change. Provide detail to demonstrate how the data will be used to predict changes.
WH-31	Section 7 Conformance with Federal and Provincial Guidance “This requirement is partially addressable as: – Overwintering surveys are not feasible as the lower limit of a SM3BAT operating temperature is - 20 degree Celsius”	Section 8.9 “•Collect bird data to adequately 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.”	The model noted in the plan text (i.e. SM3BAT) is for bat monitoring and is not suitable for surveying birds. ARUs can be deployed in late winter to provide an index of overwintering bird use of sites. Although extreme cold impair some individual programmed recording events, site use by overwintering birds should not be eliminated from data collection efforts ⁴ .	Provide details to demonstrate how overwintering surveys will be conducted, as per the requirements in Section 8.9 of the Guidelines and the information provided in the context column.	The Study Plan is updated to indicate that ARUs will be deployed in either early winter (December 1 to December 31) or late winter (March 1 to March 31). ARU bird studies are outlined in detail in the Study Plan to meet section 8.9 of the guidelines with respect to overwintering bird surveys.	Birds Study Plan: Section 7.2.2 and Table 7-3	This comment has been partially addressed. Provide additional details on specific timing of ARU deployment in the workplan.
WH-32	Section 7 Conformance with Federal and Provincial Guidance “The requirement cannot be addressed as: – Project components other than the route itself are unknown at this time”	Section 8.9 “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”	A sampling plan was not presented for baseline conditions in relation to service roads, aggregate pits and project components other than the road itself. Information about these project components and sampling plans enable the evaluation of the plans relative to the Guidelines. Section 8.9 of the Guidelines require that project components other than the route itself are sampled. If the exact locations of the other components are not known at this time, the study plan should outline how this requirement will be met once the locations are confirmed. Include potential project components in the study design. For example, Figure 1-2 in	Provide details to demonstrate how project components, other than the route itself, will be sampled. Include information about the methods and approaches that will be used to address the requirement in Section 8.9 of the Guidelines.	Study Plan Section 6.2 indicates that the PDA encompasses the 100 m wide CAR right-of-way, temporary construction access roads, work areas, worker camps, and long-term aggregate sources and associated access roads. The specific location of Project components, including the roadway, pits and quarries, aggregate source areas and temporary infrastructure, are not yet known and will be included in the IS / EA Report.	Birds and Wildlife Study Plans: Section 6.2	Comment was partially addressed. While it is stated that most project components would likely occur within the LSA, there is still risk of incomplete understanding of baseline conditions, especially related to pits and quarries, if those components are located outside of the LSA. Including potential locations of additional components would be helpful to enable verification of likelihood of adequate sampling. Ensure that sampling is representative of all potential areas impacted by the project, including quarries and aggregate sources. These could be identifiable using geological layers.

⁴ Wildlife Acoustics. Climate Change Canada – Landbird Monitoring Along Winter Roads. <https://www.wildlifeacoustics.com/customer-stories/climate-change-canada-landbird-monitoring-along-winter-roads>

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			document IA#13143E, the detailed project description shows potential sources of aggregate.				
WH-33	<p>Section 7 Conformance with Federal and Provincial Guidance “This requirement is partially addressable as: – According to the Atlas of the Breeding Birds of Ontario, the window for the standard breeding surveys (e.g., point counts) in northern Ontario is June 1 to July 10 and in the Hudson Bay Lowlands is June 1 to July 17. – Overwintering surveys not feasible as lower limit of SM3BAT operating temperature is - 20 degree Celsius”</p>	<p>Section 8.9 “Regarding “bird sampling”...a) Within each sampling year, ARUs should be deployed at sites as long as possible, with a minimum period of May 1 through July 10 (Breeding Recordings). Use deployments that maximize full use of battery and sound card capacity; b)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 though 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 sites; c)ARU deployments for Breeding Recordings should be programmed to record daily or every 2nd day, with a morning and an evening schedule. Recording should occur in two phases to avoid single recordings spanning two dates. Phase 1 would start at 00:00 (HH:MM), with a schedule of 3-minutes On and 12-minutes Off until 5 hours beyond local sunrise (i.e., SR+5hr). Phase 2 would start 30 minutes before local sunset, with a schedule of 3-minutes On and 12-minutes Off until 23:56 (HH:MM); d)ARUs should be set to record using a sampling rate of 44.1 kHz. ”</p>	<p>Species vary in their peak breeding and detectability periods. Guidelines from the 2nd Ontario Breeding Bird Atlas were intended to focus human surveys within a period of peak breeding by many or most species. Sampling with ARUs should capture the full extent of the breeding period, not only the restricted peak time for most species.</p> <p>Since eskers may serve as migration corridors for many bird species, use ARUs to sample earlier spring and fall periods to provide information on migrating species using the project area.</p>	Provide details to demonstrate how sampling with ARUs will be conducted, as per the requirements in Section 8.9 of the Guidelines and the information provided in the context column.	<p>The Study Plan has been revised to include ARU deployment during spring migration (April 15-May 31), fall migration (August 1- September 30) and early winter (December 1- December 31) or late winter (March 1-31). Proposed winter sampling is reduced due to temperature limitations of ARU.</p> <p>Planned sampling frequency and analysis proposed during spring and fall migration and early winter (i.e., three 3-minute segments randomly selected from the Morning Period per week) is in line with recommendations in Section 8.9 of the TISG (the Agency 2020a).</p> <p>Specific locations and dates of ARU deployment will be provided at a later date.</p>	Birds Study Plan: Section 7.2.2.4	<p>This comment has been partially addressed.</p> <p>Provide additional details on specific timing of ARU deployment in the workplan.</p>
WH-34	<p>Section 7 Conformance with Federal and Provincial Guidance “Data will be collected in ways that enable reliable extrapolations in space and in time. Surveys will be destined to represent the spatial and temporal targets of modeling and extrapolations...”</p> <p>Sample size will be planned to support evaluation of the project within the context of the local study area and regional study area. Study</p>	<p>Section 8.9 “Collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional study areas) and in time (i.e., across years): • design surveys so that they represent the spatial and temporal targets of modeling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of mitigation effectiveness. Survey designs should be sensitive enough to detect and</p>	<p>Information provided in the study plan is not sufficient to verify the assertion that data will be collected in ways that enable reliable extrapolations in space and time, and represent the spatial and temporal targets of modeling and extrapolations.</p> <p>Detailed descriptions of design process and design outcomes (including maps, sample sizes overall and by landcover type)</p>	Provide specific details to demonstrate how the data collection design incorporates and addresses the requirements in Section 8.9 of the Guidelines.	<p>The Study Plan is updated to provide the modelling methods, including assumptions, calculations of margins of error and other relevant statistical information for all models proposed for birds and other wildlife.</p>	Wildlife and Birds Study Plans: Sections 7 and 9.4.1	<p>Comment was partially addressed.</p> <p>See comments on Birds Study Plan, especially BI-09, BI-10, BI-11, BI-13.</p>

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	<p>designs will implement multiple survey locations to cover multiple habitat classes and land cover types....</p> <p>Survey design sampling effort will be most intense within the project study area. Efforts outside the PSA will be carefully implemented to remove biases when comparing areas from within the PSA.”</p>	<p>quantify the impacts at the spatial and temporal scales identified above (i.e., project study area, local study area, and regional study area), any departures from predictions, and the effectiveness of mitigations. Justify the selection of modeling techniques based on current and recent scientific literature;</p> <p>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 habitat heterogeneity of the regional study area, and to yield multiple survey locations per land cover or habitat class, without requiring aggregation of habitat classes post-hoc;</p> <p>Sampling effort per unit area - field survey effort should be most intensive within the project study area. The level of effort per unit area may be similar or somewhat less within the remainder of the local study area but should be scaled to the likelihood that project effects will impact birds within that zone. Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project study area, local study area and regional study area are unbiased and as precise as possible.”</p>	<p>are required to understand and evaluate the design relative to the Guidelines. Following this approach should lead to a detailed platform for evaluating the sufficiency of the selected design, for communicating the rationale for choosing that design, and for communications regarding clarifications, suggestions and recommendations.</p>				
WH-35	<p>Section 7 Conformance with Federal and Provincial Guidance “A point count survey location will be conducted within each vegetation community identified for Ground Investigations, within 1 km of helicopter landing pads. Study design will not implement point count survey sites along 5 km-long transects for the following reasons: – Length of transect not reasonable / feasible method given landscape (e.g., dense forest, blow down, water features, etc.) and field staff health and safety considerations, – Evenly spaced transects conflicts with randomized selection of habitats or if specific (i.e., rare habitats are to be targeted).”</p>	<p>Section 8.9 “design suggestions for Project Study Area and Local Study Area scales: Use a standardized design approach during survey planning. The resulting design details will serve as the basis to develop alternative designs, evaluate options for particular design details, and to identify potential efficiencies. The approaches and tools suggested elsewhere in this document (e.g., land cover analysis, data simulations) should be considered during the planning phase. The following should be considered as inputs to design planning and evaluation; – transects and sites: • transects should be spaced every 2 kilometers along the route, oriented perpendicular to the route, and with the mid-point of each transect located on the</p>	<p>The suggested design was offered as a foundation for modification, with justifications. Adjustments of suggested design are anticipated and application of proponent-held knowledge and information is likely necessary for those adjustments.</p> <p>Adding bird counts to a Vegetation Study design is unlikely to address the bird information needs described in the Guidelines.</p> <p>Remote fieldwork can often be challenging but can be done safely. Direct and recent field experience by the reviewers and</p>	<p>Provide detail to demonstrate how the design suggestions in Section 8.9 of the Guidelines were used as a basis to develop alternative designs in the study plan. Provide rationale for any modifications.</p>	<p>Planned sampling frequency and analysis proposed during spring and fall migration and early winter (i.e., three 3-minute segments randomly selected from the Morning Period per week) is in line with recommendations in section 8.9 of the Guidelines (page 54).</p>	<p>Birds Study Plan: Section 7</p>	<p>Comment was partially addressed. See comments on Birds Study Plan, especially BI-09.</p>

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		centerline of the route. A maximum length of 5 kilometers 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 kilometers 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”	colleagues indicates that it is feasible to deploy acoustic recorders at remote locations that have been pre-selected according to a random, spatially dispersed design. With helicopter drop-offs and overland travel, crews have deployed acoustic recorders on and across eskers, in peatlands, and at forest sites in remote parts of northern Ontario, including in the ecoregions of interest here. With some additional constraints (e.g. daylight, weather) this is also possible to do for bird point counts.				
WH-36	Section 7 Conformance with Federal and Provincial Guidance “Wildlife data will be collected to represent temporal sources of species variation (i.e. among years, among seasons and within 24 periods)’	Section 8.10 “Collect wildlife data to represent the following temporal sources of variation: – among years – Within and among seasons (e.g., spring dispersal, breeding, late summer/fall migration and swarming, hibernation); and – Within the 24-hour daily cycle. Rare species require more survey effort to detect than common species, and this needs to be accounted for in survey design by increasing the number and duration of surveys.”	More information is needed on the timing of surveys outlined in Section 4.3 to determine whether variation among years and seasons is represented.	Provide a schedule for all surveys to be conducted along with detailed survey designs that demonstrates how temporal variation requirements for wildlife data collection would be met, per Section 8.10 of the Guidelines.	The Study Plan has been updated with timing information, where available. Further information regarding future sampling locations and dates will be provided in the future Work Plan.	Wildlife Study Plan: Table 7-1 and Table 7-2 Birds Study Plan: Table 7-3, Table 7-4, and Table 7-5.	Comment was partially addressed. The timing of many surveys is still not clear and detailed survey designs that meet the requirements of Section 8.10 are not provided. Provide a schedule for all surveys to be conducted along with detailed survey designs to demonstrate how temporal variation requirements for wildlife data collection would be met, per Section 8.10 of the Guidelines.
WH-37	Section 7 Conformance with Federal and Provincial Guidance “Section 4.3.1.3?”	Section 8.9 “describe the use of (magnitude, timing) migratory and non-migratory birds as a source of country foods (traditional foods) or where use has Indigenous cultural importance (e.g., Canada Goose, Snow goose, Swans, Gyrfalcon, Loon, Peregrine Falcon, and duck species)”	It is unclear how or if the use of migratory and non migratory birds as a source of country foods and species that have Indigenous cultural importance will be described. Note: Table 7.1 has this requirement listed, but the “response” section is blank. Additionally, the referenced section in the study plan has a question mark, which may be an editorial error. However, there is no mention of country foods in the section that is referenced.	Provide detail to demonstrate how use of migratory and non migratory birds as a source of country foods and species that have Indigenous cultural importance will be described. Include information about the methods and approaches that will be used to meet the requirement in Section 8.9 of the Guidelines. Update table 7.1 to include a response to section 8.9 TISG requirements.	Specific locations and dates of ARU deployment will be provided at a later date.	Birds Study Plan: Section 7.2.1	This comment has not been addressed. Ensure that the Impact Statement provides information about birds species of Indigenous cultural importance and about the use of migratory and non-migratory birds as a source of country foods to meet the requirements of Section 8.9 of the Guidelines.
WH-38	Section 7 Conformance with Federal and Provincial Guidance “Long- and short-term habitat changes and food sources of wetland fauna will be described and	Section 15.2 “describe short term and long term changes to habitats and food sources of migratory and non-migratory birds (types of cover, ecological unit of the area in	It is unclear how all aspects of the requirement in Section 15.2 of the Guidelines will be met. The information provided in Section 7 only refers to	Provide detail to demonstrate how all aspects of the requirement in Section 15.2 of the Guidelines will be	Long- and short-term habitat changes and food sources of fauna will be described and documented including changes in terms of the	Birds and Wildlife Study Plans:	This comment has not been addressed. Ensure that the Impact Statement provides the information required by Section 15.2 of the

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	documented including changes in terms of the health, integrity and availability of habitats related to wildlife, migratory and non-migratory birds”	terms of quality, quantity, distribution and functions), with a distinction made between these two birds categories, including 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. Describe 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;”	wetlands, but the Guidelines require that riparian and terrestrial environments be described as well.	included in the effects assessment.	health, integrity and availability of habitats related to wildlife, migratory and non-migratory birds.	Section 9.4.2	Guidelines also for eskers (and similar upland features) and riparian environments.
WH-39	<p>Section 7 Conformance with Federal and Provincial Guidance “Will be accounted for in the IA/EA</p> <p>The expressions of change to newly created habitat through the activities of the project will be described in the IA/EA”</p>	<p>Section 15.2 “The Impact Statement must: ... • 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; • 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...”</p>	There is not enough information provided to determine if the requirements in Section 15.2 of the Guidelines will be met. There is no discussion about methodologies or studies that will take place.	Provide detail in the study plan to demonstrate the proposed approaches and methods to be used to integrate the requirements from Section 15.2 of the Guidelines into the assessment.	Post-construction survey requirement will be determined based on the results of the IA / EA, and changes in detectability will be accounted for in the IS / EA Report if impacts are determined.	Birds Study Plan: Table 11-3	<p>This comment has not been addressed.</p> <p>Ensure that the Impact Statement demonstrates how the requirements of Section 15.2 of the Guidelines will be met. Information related to the effects caused by the creation of new habitat types post –project construction should be provided.</p>
WH-40	<p>Section 7 “Biodiversity metrics for the Wildlife VC will consider: Distribution in space; Frequency of occurrence; Patterns of occurrence and abundance in time; Abundance and, if possible, density; and Associate habitat types and strength of associations”</p>	<p>Section 15.3 “describe effects to terrestrial wildlife biodiversity considering biodiversity metrics, effects of habitat fragmentation, changes to regional biodiversity”</p>	It is unclear how the effects of fragmentation on terrestrial wildlife biodiversity and changes to regional biodiversity will be studied.	Provide further detail to demonstrate how changes to regional biodiversity and the effect of fragmentation on terrestrial wildlife biodiversity will be described, as per the requirements in Section 15.3 of the Guidelines.	The Study Plan is updated to describe how the effect of fragmentation on biodiversity metrics will be examined pre- and post-construction at the PDA and LSA level.	Birds and Wildlife Study Plans: Section 9.4.1.2, 9.4.2	This comment has been addressed.

New comments on the Revised Wildlife Study Plan submitted in June, 2021.				
#	Study Plan Section	Tailored Impact Statement Guidelines Section (the Guidelines)	Context	Required Action for the Proponent
WH-41	<p>Section 7.2.2.1.1 Eight ARUs were deployed by Golder near wetland breeding habitats in 2019 to collect data on Eastern Whip-poor-will (<i>Antrastomus vociferus</i>) presence with a secondary objective of determining amphibian presence and distribution during the breeding season.</p> <p>Amphibian survey stations will coincide with the bird ARU stations located near suitable amphibian breeding habitats (e.g., marshes, beaver ponds).</p> <p>Section 8.2.1 Results will be extrapolated across the study areas; for instance, if a confirmed significant amphibian habitat is identified through acoustic surveys, it can be expected that similar such features within the same ecosites can be considered confirmed as well.</p>	<p>Section 7.2 “...Baseline data must be collected in a manner that enables reliable analysis, extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options...”</p>	<p>The approach described in the study plan does not provide data that enables reliable extrapolations and predictions.</p> <p>The study plan does not contain sufficient details to verify sufficient sample size and an appropriate survey design to reliably estimate the presence and distribution of amphibian species in the LSA among years.</p> <p>The absence of a clear and detailed survey design for these surveys will impair evaluations of the Impact Statement with respect to the risks of incorrect conclusions (due to imprecision and/or bias in the data).</p> <p>The approach described risks undersampling, which will impair decision-making by producing highly variable estimates of baseline conditions. There is also a risk of incorrect decisions based on biased estimates of baseline conditions and high uncertainty impact estimates due to insufficient sample sizes.</p> <p>Imprecise estimates can prevent calculation of predicted project impacts and prevent differentiation of any differences in populations between the PSA, LSA, & RSA. Additionally, designs that do not incorporate randomization and related principles can lead to bias in the data, which then lead to inaccurate estimates and erroneous conclusions.</p>	<p>Provide detail to show how all survey designs will produce data that are representative of study areas and that sampling was aligned with the requirements of the Guidelines.</p> <p>Ensure that the Impact Statement demonstrates that the desktop review and sampling yield the desired results for the target species.</p>
WH-42	<p>Section 7.2.3 American marten, beaver and wolverine will act as proxies to represent small and large fur bearers and will be examined more closely as part of the effects assessment.</p> <p>Any fur bearer that is likely to be directly or indirectly affected by the activities taking place within the LSAs will be identified.</p>	<p>Section 7.3 “...In selecting a valued component to be included, the following factors should be considered: whether the potential effects of the Project on the valued component can be measured and/or monitored or would be better ascertained through the analysis of a proxy [reviewer emphasis] valued component...”</p>	<p>In the study plan no rationale is provided as to how the potential effects of the Project would be better ascertained for fur bearers through these three proxy species.</p> <p>It is not clear how any fur bearer that is likely to be directly or indirectly affected by the activities taking place within the LSAs will be identified.</p>	<p>Provide details to show how furbearers are better represented by the proxy species identified as well as how any fur bearer likely to be affected by the activities will be identified.</p>
WH-43	<p>Section 9.4 Methods for Predicting Future Conditions</p>	<p>Section 13.1 “...The assessment of the effects of each of the project components and physical activities, in all phases, must be based upon a comparison of baseline environmental, health, social and economic conditions and the predicted future conditions with the Project and the predicted future conditions without the Project. Predictions must be made on clearly stated assumptions and the Impact Statement must clearly describe how it has tested each assumption...”</p>	<p>It is not clear from sections 9.3 Potential Effects or 9.4 Methods for Predicting Future Conditions whether the predicted future conditions with and without the Project for each indicator in Table 9-2 will be compared to the baseline conditions as described by the data outlined in section 7 for those indicators.</p> <p>There is also no mention of predator/prey dynamics within sections 9.3 and 9.4 of the study plan, making it unclear how potential changes to this indicator will be predicted.</p>	<p>Clarify how predicted future conditions with and without the Project for each indicator in Table 9-2 will be compared to the baseline conditions for those indicators.</p> <p>Ensure the list of indicators in Table 9-2 reflects all required components of the effects assessment.</p>
WH-44	<p>Section 9.3 Potential Effects</p> <p>Table 9-3 provides a preliminary identification of how changes to Wildlife may result in indirect effects to other environmental disciplines.</p>	<p>Section 15.3 “...The Impact Statement must: - describe the potential direct, incidental and cumulative adverse effects to other wildlife and wildlife habitat, including population level effects that could be caused by all project</p>	<p>Section 9.3 of the study plan indicates that Table 9-3 provides a preliminary identification of <i>how</i> changes to wildlife may cause indirect effects to other environmental disciplines. However, it appears that table 9.3 does not indicate <i>how</i> changes to wildlife may result in indirect effects to other environmental disciplines, but rather <i>whether</i> those interactions may occur.</p>	<p>Ensure that potential interactions that may result in indirect effects to wildlife are described in the Impact Statement.</p> <p>Clarify whether Table 9-3 indicates not how but whether indirect effects may occur.</p>

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		activities, including but not limited to: project noise and sensory disturbances, habitat alteration, air emissions and dust, increased predation, increased potential for spread of disease, invasive species introductions, poaching opportunities, any linear access corridors (roads, rights of way) particularly in the vicinity of wetland (including peatlands), lake and riparian habitats and on migratory corridors...	The more relevant consideration for this study plan is whether changes to other environmental disciplines/VCs may result in indirect effects to wildlife.	
WH-45	9.6 Residual Effects, Table 9-5 Definitions of 'negligible', 'low', 'medium', and 'high'	Section 13.1 "...The effects to each valued component outlined in sub-sections 14.3, 15.2, 15.3, 15.4 must be described using the following criteria..."	The criteria described in Section 13.1 of the Guidelines should be used to describe effects to valued components outlined in the Guidelines, Section 15.3 Terrestrial wildlife and their habitat. While the proposed criteria are similar, the definitions do not accommodate the entirety of possible combinations of scope and severity. For example, how would small scope and extreme severity be classified?	Use the criteria outlined in Section 13.1 of the Guidelines to describe effects to wildlife.
WH-46	Editorial - Footnote 10 "In February 2020 a regional assessment of the Ring of Fire region commenced; however, it is not sufficiently advanced at this time to inform the Project VCs. The VCs will be consulted and engaged on early in the IA/EA process and finalized taking into consideration the input received. Therefore, only information relevant to the Project that arises from the regional assessment of the Ring of Fire within an appropriate timeline will inform the VCs for the Project."		The statement in the footnote " <i>In February 2020 a regional assessment of the Ring of Fire region commenced; however, it is not sufficiently advanced at this time to inform the Project VCs.</i> " should be corrected to reflect the fact that the Regional Assessment in the Ring of Fire area has not yet begun.	Consider replacing the text in the footnote with " <i>In February 2020, the Minister of Environment and Climate Change determined that a regional assessment will be conducted in an area centred on the Ring of Fire mineral deposits in northern Ontario. However, at this time, the Regional Assessment in the Ring of Fire area is not sufficiently advanced to inform the Project VCs.</i> "
WH-47	Table 11-3: Study Plan Federal and Provincial Concordance – Requirement Deviations		Proposed amendments and/or deviations from the Guidelines will not be reviewed or approved during the study plans review process. The Agency will provide guidance on the process to propose amendments and/or deviations to the Guidelines to the project team.	

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BI-01	<p>Section 6.1 Temporal Boundaries Project Phases</p> <p>“Project phases, which are temporal boundaries, are developed to establish the timeframes within which potential effects of the Project will be considered in the IS / EA Report. The Project is planned to occur in two phases, which are briefly described below and shown in Figure 6-1.</p> <p>...</p> <p>There are currently no plans to decommission the CAR as there is no expected / known end date for its need. Therefore, future suspension, decommissioning and eventual abandonment of the CAR will not be considered in the IS / EA Report. It will be considered if and when a decommissioning or abandonment application is made for the road.</p> <p>In determining the temporal boundaries, in particular the long operations and maintenance phase, consideration was given to the long-term effects on the well-being of present and future generations (Sustainability Principle #28). The final temporal boundaries to be used in the IS / EA Report will be based on regulatory agency guidance, professional judgement and input received through the Project consultation process.”</p>	<p>Section 7.4.2 Temporal boundaries</p> <p>“For valued components related to wetlands, eskers, birds, wildlife, and Species at Risk, define temporal boundaries in a manner that enables detection of all species that use the project study area, local study area, and regional study area throughout the year and between years, and to estimate their temporal pattern of use (e.g., breeding, or migrants stopping on northward and/or southward migration). Baseline data collection for all biophysical valued components is to be provided for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls).”</p>	<p>Incorrect conclusions about baseline conditions and predicted impacts may result if biologically relevant temporal boundaries are not defined. Temporal scales need to be defined to capture Bird VC use of the study areas per the description in Section 7.4.2 of the Guidelines.</p>	<p>Define in a workplan the temporal boundaries for Bird VCs in biologically relevant ways (i.e. to enable detection of all bird species that use the PSA, LSA & RSA), as per Section 7.4.2 of the Guidelines.</p>
BI-02	<p>Section 6.2.1 Spatial Boundaries</p> <p>“The specific location of Project components, including the roadway, quarries, pits and temporary infrastructure, are not yet known and will be included in the IS / EA Report. While most of the Project components are expected to be located within the preliminary 5 km wide study area, benefits (e.g., reduced environmental disturbance, avoidance of sensitive features, technical considerations, concerns received through consultation) for locating Project components on lands outside of the 5 km wide study area may become known during the IA / EA process. If the need to locate Project components outside the 5 km wide study area is determined to be required or of benefit to the Project, the study area would be adjusted.”</p>	<p>Section 7.4.1 Spatial boundaries</p> <p>“The size, nature and location of past, present and foreseeable future projects and activities are factors that should be included in the definition of spatial boundaries.”</p>	<p>The absence of baseline surveys at locations that may be used for aggregates sources, lay down yards, worker camps, etc., risks incorrect assessment of bird occurrence, abundance and project impacts on migratory birds.</p>	<p>Include spatial boundaries that are defined with respect to all foreseeable project activities, as per Section 7.4.1 of the Guidelines.</p> <p>Use a Project Study Area that includes all project components, such as areas of quarries and aggregate sources. These could be identifiable using geological layers.</p>
BI-03	<p>Section 6.2.2 Bird Study Area</p>	<p>Section 7.4.1 Spatial boundaries</p> <p>“Delineate spatial boundaries (i.e., regional study area, local study area, and project study area) to meet the following objectives:</p> <ol style="list-style-type: none"> range of land cover types should be representative of the defined spatial extent; the spatial pattern of the land cover types should be well distributed across the defined spatial extent (e.g., revise if one or more land cover types is concentrated in one sub-area and uncommon in other parts of the area); and low to moderate rate of change in the prevalence of one or more land cover types with increasing distance from the (i.e., to use land cover patterns to constrain the distances within which comparisons should be made).” 	<p>Maps and figures are a clear way of displaying information. The inclusion of more figures to help illustrate the study areas would be beneficial.</p>	<p>The Proponent is encouraged to provide figures showing all survey locations for all bird species, in all study areas (Project, Local and Regional).</p>
BI-04	<p>Section 7.2 Study Methods</p> <p>Table 7-1: Bird Valued Components:</p> <ul style="list-style-type: none"> “Forest Birds (proxy VC of Red-eyed Vireo [<i>Vireo olivaceus</i>] for deciduous forest, Ovenbird [<i>Seiurus aurocapilla</i>] for mixedwood forest, Dark-eyed Junco [<i>Junco hyemalis</i>] for coniferous forest and disturbed forest 	<p>Section 8.9 Birds, migratory birds and their habitat</p> <p>“The Impact Statement must:...</p> <ul style="list-style-type: none"> at minimum, the combined information from existing data and field surveys needs to be detailed enough to describe the distribution and abundance of all bird species in relation to the study areas; ... 	<p>Regarding proxy VCs, Section 7.3 of the Guidelines supports the use of proxy indicator species in situations where a VC cannot be easily measured directly and use of a proxy would provide a better resolution. This is not the case for Bird VCs.</p>	<p>Include in the Impact Statement the data and analysis for all bird species, as per Sections 7.4.2 and 8.9 of the Guidelines.</p> <p>Develop and run models for all species, and for species where models fail, identify the causes (e.g. point to the</p>

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	<ul style="list-style-type: none"> - Raptors (proxy VC of Osprey [<i>Pandion haliaetus</i>] for diurnal raptors and Boreal Owl [<i>Aegolius funereus</i>] for nocturnal raptors) - Shorebirds (proxy VC of Wilson's Snipe [<i>Gallinago delicata</i>]) - Waterfowl (proxy VC of Mallard [<i>Anas platyrhynchos</i>]) - Bog / Fen Birds and Other Wetland Birds (proxy VC of Palm Warbler [<i>Setophaga palmarum</i>] for bogs, Common Yellowthroat [<i>Geothlypis trichas</i>] for fens; and Northern Waterthrush [<i>Parkesia noveboracensis</i>] for swamps). “ <p>Section 9.4.1 Bird Habitat Models “Bird habitat models will be developed for proxy VCs in the Forest Birds, Raptors, Bog / Fen and Other Wetland Birds, Waterfowl, and Shorebirds VCs including SAR (Table 7-1) when there are sufficient survey data. Ontario's Provincial Satellite Derived Disturbance Mapping digital resource will be utilized to describe fire disturbed land cover for potentially affected habitats of the Forest Birds VC and Bog / Fen Birds and Other Wetland Birds VC.”</p>	<ul style="list-style-type: none"> - provide documentation and digital files for all results and analyses that allow for a clear understanding of the methods and a replication of the results (raw scripts or workflows are preferred in place of descriptive documentation);... - species communities should not be collapsed into diversity metrics or the focus narrowed to indicator species. Species identity, distribution, abundance and where possible estimates of breeding status should be the primary targets of quantification. <p>Section 7.3 Consideration and methodology in selecting valued components “In selecting a valued component to be included, the following factors should be considered:....</p> <ul style="list-style-type: none"> - Whether the potential effects of the Project on the valued component can be measured and/or monitored or would be better ascertained through the analysis of a proxy valued component.” <p>Section 7.4.2 Temporal boundaries “For valued components related to wetlands, eskers, birds, wildlife, and Species at Risk, define temporal boundaries in a manner that enables detection of all species that use the project study area, local study area, and regional study area throughout the year and between years, and to estimate their temporal pattern of use (e.g., breeding, or migrants stopping on northward and/or southward migration). Baseline data collection for all biophysical valued components is to be provided for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls).”</p>	<p>Collapsing assessments into proxy species is likely to lead to inaccurate estimates of project impacts since the Project is expected to impact many bird species. Use of proxy (equivalent to focal or indicator) species is likely to lead to unreliable conclusions since the assumption of equal impacts to all species within groups is usually unfounded.</p> <p>Extrapolating from indicator species is generally not supported by the current scientific literature, as it often will fail to estimate impacts to individual species. This can lead to over- or under-estimation of expected impacts to other species in the group, and for a misrepresentation of the group as a whole.</p> <p>Section 7.4.2 of the Guidelines requires defining temporal boundaries in a manner that enables detection of all bird species in the study areas.</p> <p>Section 8.9 of the Guidelines directs the proponent to avoid narrowing the focus to indicator species. Focal/proxy/indicator species should not be used to represent multiple bird species. In addition, documentation and digital files, modelling results and simulations must be provided so that methods are clear and results are replicable for <u>all</u> species.</p>	<p>species frequency of occurrence and/or abundance in the summary of sampling results).</p> <p>Analyze all detected bird species, assess the analysis results and provide the documentation and digital files as parts of the Impact Statement.</p>
BI-05	<p>7.2.1 Field Surveys Figure 7-1 Breeding Bird Survey Locations (2018-2019)</p> <p>9.4.2 Predicted Effects of the Project</p> <p>“Models will be used to extrapolate abundance (i.e., mean across years or density when possible) and distribution (i.e., mean across sites) at the PDA, LSA and RSA scale.”</p>	<p>Section 8.9 Birds, migratory birds and their habitat “survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: ...</p> <ul style="list-style-type: none"> o sampling effort per unit area - field survey effort should be most intensive within the project study area. The level of effort per unit area may be similar or somewhat less within the remainder of the local study area, but should be scaled to the likelihood that project effects will impact birds within that zone. Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project study area, local study area and regional study area are unbiased and as precise as possible;... o simulation modelling should be used to assess bias and precision between project study area, local study area, and regional study area to ensure the estimates are useful for comparison. Field surveys should occur within the regional study area since there are few existing sources of data that effectively describe regional bird populations in areas, including this area, that are distant from road networks.” 	<p>The study plan does not indicate that sampling will occur within the regional study area (RSA), which will result in an inability to estimate potential impacts at the regional scale and will impair evaluations of potential impacts at the project study area (PSA) and local study area (LSA) scales.</p> <p>As noted in Section 8.9 of the Guidelines, there are few existing sources of data to describe regional bird populations. Therefore, sampling within the RSA is necessary to serve as a comparison with the LSA and PSA. Extrapolations to the RSA based exclusively on data from the LSA are unlikely to be reliable.</p> <p>An important part of the impact assessment process is data from the RSA. Failing to sample within the RSA will make a direct comparison with the LSA and PSA bird populations impossible and will increase the</p>	<p>Include data and analysis based on sampling within the RSA in the Impact Statement as per Section 8.9 of the Guidelines</p>

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			<p>risk of unreliable conclusions. Predicting abundances/densities in the RSA from models parameterized using LSA data alone will not lead to reliable comparisons across scales.</p> <p>In addition, if the RSA is not sampled there will be no comparable data from an unaffected but similar area to evaluate project effects within the PSA and LSA. It will also lead to an inability to assess the accuracy of extrapolations to the RSA from the LSA sampling.</p> <p>To illustrate: Consider a hypothetical scenario where there was no project effect on a species within the LSA or RSA, but the population of that species was declining in the region due to causes unrelated to the project. In the absence of sampling in the RSA, it would not be possible to evaluate if the declines were caused by the project or by regional effects unrelated to the project. However, if baseline and post-construction sampling was conducted in the LSA and RSA, the conclusion could reliably be made that the project <u>did not</u> affect the species.</p>	
<p>BI-06</p>	<p>Section 7.2.1.1.1 Study Design “Breeding bird point counts were conducted from June 5 to June 14, 2018 and June 28 to July 7, 2018 at 101 survey stations within the LSA (Zoetica 2018a). Breeding bird point counts were conducted at 70 survey stations from June 13 to June 17, 2019 to fill data gaps and minor realignments (Golder 2019). The allocation of breeding bird survey stations within each land cover type (riparian habitats excluded in the table) are shown in Table 7-2. Due to safety concerns from helicopter pilots or limited time, 101 of the 171 survey stations were visited at least twice as per CWS (2008) guidelines for a total of 273 site visits. Breeding bird survey stations are spatially distributed across the full extent of the current LSA with the exception of a 20.7-km route option added in August 2020...”</p>	<p>Section 8.9 Birds, migratory birds and their habitat “The Impact Statement must:...</p> <ul style="list-style-type: none"> - Collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional study areas) and in time (i.e., across years): <ul style="list-style-type: none"> o design surveys so that they represent the spatial and temporal targets of modeling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of mitigation effectiveness. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project study area, local study area, and regional study area), any departures from predictions, and the effectiveness of mitigations. Justify the selection of modeling techniques based on current and recent scientific literature; ... o provide documentation and digital files for all results of analyses that allow for a clear understanding of the methods and a replication of the results ... o provide a justification on the approach chosen. 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. Survey vegetation features of concern in a manner that is not disproportionate to other 	<p>There is a strong risk of incorrect conclusions if variations in data collection methods are not clearly explained, understood and accounted for, in the analysis.</p> <p>It is not possible to understand if designs described in section 7.2.1.1.1 of the study plan will affect the use of data collected from these sites. As currently written, section 7.2.1.1.1 does not sufficiently describe the 2019 sampling (e.g. to make it clear that GRTS was <u>not</u> used in 2019 site selection and that an ad hoc visual gap filling was performed).</p> <p>As a further example, it is not clear if point count/ARU locations are clustered and how specific locations within clusters were chosen.</p>	<p>As per Section 8.9 of the Guidelines, include documentation in the Impact Statement to demonstrate clearly the methods and survey design elements, and make explicit how the analysis of data successfully accommodated differing designs while minimizing bias. This includes a detailed description of all survey designs and gap evaluation procedures, as well as an evaluation of impacts on the data from the varied survey designs.</p> <p>Include detailed descriptions of each design and process for selecting sample locations in the Impact Statement.</p>

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		types. Avoid bias in estimates of abundance and impair extrapolation and statistical inference;”		
BI-07	<p>Section 7.2.1.1.1 Study Design “Three additional constraints were applied to the point count selection procedures: 1) minimum of 200 m between points to avoid double counting birds; ...”</p> <p>Section 7.2.1.1.3 Survey Protocol “Breeding bird point count surveys will be conducted at each station, separated by a minimum distance of 200 m where possible, twice during the breeding bird season (June 1 through July 10 in the Northern Ontario Ecozone; June 1 through July 17 in Hudson Bay Lowlands Ecozone), and 10 days apart.”</p>	<p>Section 8.9 Birds, migratory birds and their habitat “The Impact Statement must:...</p> <ul style="list-style-type: none"> design suggestions for Project Study Area and Local Study Area scales: Use a standardized design approach during survey planning. The resulting design details will serve as the basis to develop alternative designs, evaluate options for particular design details, and to identify potential efficiencies. The approaches and tools suggested elsewhere in this document (e.g., land cover analysis, data simulations) should be considered during the planning phase. The following should be considered as inputs to design planning and evaluation; ... transects and sites: ... <ul style="list-style-type: none"> survey sites along transect should be located as follows: 1 site on centreline of route, sites spaced every 250 metres up to 1 kilometre, then spaced every 500 metres to end of transect. A 5-kilometre transect should have 15 survey sites;...” 	<p>Survey sites spaced less than 250 m apart can result in double-counting of individual birds among sites. This can lead to incorrect analysis results.</p> <p>Both Forest Bird Monitoring Program and the Breeding Bird Atlas also recommend minimum 250 m.</p>	As per Section 8.9 of the Guidelines, increase spacing to a minimum of 250m for bird data collection. For any historic sampling locations, ensure between-point spacing is included in the analysis, to account for potential double-counting of individuals.
BI-08	<p>7.2.1.1.1 Study Design “Breeding bird survey stations are spatially distributed across the full extent of the current LSA with the exception of a 20.7-km route option added in August 2020 (Figure 7-1).”</p>	<p>Section 7.4.2 Temporal boundaries “...Baseline data collection for all biophysical valued components is to be provided for a minimum of two years, unless specified otherwise...”</p> <p>Section 8.9 Birds, migratory birds and their habitat “...The Impact statement must: -collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is suggested as a minimum. As the number of sampling years increases so does the understanding of natural variability;...”</p>	The Study Plan does not address how the lack of a year of sampling on this “20.7-km route option added in August 2020” will be addressed in future fieldwork. More detail is needed.	<p>Ensure that the analysis on impacts to birds in the Impact Statement is based on two years of data collection along the preferred route as required by Section 8.9 of the Guidelines.</p> <p>Provide details on when and how an additional year of detail data collection on the route option added in August 2020 will occur.</p>
BI-09	<p>Section 7.2.1.1.2 Study Design Bias and Representativity, p28 “The bird species models for the existing 273 site visits selected with the GRTS study design shows initial signs of decreasing variance (Appendix C). The mean and variance in the TISG benchmark study design is stable at a fairly low number of site visits (Appendix C). The variance in the other study design options stabilize by 573 site visits (Appendix C). This indicates that 300 additional site visits (two site visits at 150 survey stations) on top of the 273 site visits already completed (Zoetica 2018b, Golder 2019), is a reasonable “optimal” sample size that stabilizes the precision of model estimates and minimizes bias relative to the TISG benchmark study design. The GRTS study design is the preferable option for selecting additional survey stations based on the lower variance and mean bias by 573 site visits for SAR such as Canada Warbler and Olive-sided Flycatcher (Appendix C)”</p> <p>Appendix C MFFN Bird Study Design and Modelling Memo</p> <p>Section 6.2 Results “A total of 20 of 50 simulations selected 150 survey stations where elevation, aboveground biomass, change year, and dynamic</p>	<p>Section 8.9 Birds, migratory birds and their habitat</p> <ul style="list-style-type: none"> “survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: ... <ul style="list-style-type: none"> simulation modelling should be used to assess bias and precision between project study area, local study area, and regional study area to ensure the estimates are useful for comparison. Field surveys should occur within the regional study area since there are few existing sources of data that effectively describe regional bird populations in areas, including this area, that are distant from road networks.... provide documentation and digital files for all results of analyses that allow for a clear understanding of the methods and a replication of the results (raw scripts or workflows are preferred in place of descriptive documentation);” 	<p>Appendix C demonstrates a good direction and encouraging efforts to align with the Guidelines. Similar types of quantitative work is strongly encouraged.</p> <p>As described in the Guidelines, it will be important to show <u>clearly</u> in the Impact Statement how conclusions were reached.</p> <p>The work behind Appendix C is helpful and on the correct path, but adjustments will be required. As is, Appendix C does not yet provide sufficient support for the choice of 573 site-visits as being optimal.</p>	<p>As per Section 8.9 of the Guidelines, include the documentation and digital files in the Impact Statement that allow for a clear understanding of the methods used and allow a replication of the results.</p> <p>Describe clearly the simulation results by showing in the Impact Statement:</p> <ul style="list-style-type: none"> parameter estimates and error estimates separately, the topics of bias and precision evaluated separately, and repeat visits clearly and distinguished from visits of new sites in sample size calculations.

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	habitat that were similar to both the LSA and RSA. Surface roughness is highly skewed and difficult to represent completely with 150 survey stations, although one simulation (Simulation 2) did provide a relatively similar distribution for the LSA (Figure 4-1). Figure 4-1 is an example of a simulation showing an adequate distribution's Kolmogorov-Smirnov results for each covariate, the predicted relative abundance map across the LSA for Olive-sided flycatcher, and graphically displays the relative over/under-sampling representativity of the additional 150 survey stations."			
BI-10	<p>Section 7.2.1.2.2 Survey Protocol "ARUs will be the sole source of data collection for bird SAR (Common Nighthawk, Eastern Whip-poor-will, Short-eared Owl, and Yellow Rail) requiring species-specific surveys at dusk or during the evening due to safety concerns. ARUs will be deployed in suitable habitat for each of these species as identified during the desktop review with the sample size per species to be provided in the work plan. Golder (2019) deployed eight ARUs targeting Eastern Whip-poor-will in suitable habitat within a 2.5 km buffer LSA (Figure 7-2). ARU deployment in future programs will target the same locations and will identify additional locations in the expanded 3.0 km buffer LSA based on a desktop review.</p> <p>For bird SAR where ARUs are the sole source of data collection, survey windows and survey timing will be species-specific and located in suitable habitat as described in Section 7.2.1.5."</p> <p>Section 7.2.1.4.1 Desktop Review "Potential nesting habitat for Bank Swallow (i.e., vertical riverbanks and bluffs), Barn Swallow (i.e. man-made structures), Chimney Swift (i.e., hollow trees, tree cavities, caves) and Peregrine Falcon (i.e., cliffs close to large bodies of water) will be identified through interpretation of aerial imagery where possible."</p> <p>Section 7.2.1.4.2 Field Surveys "Potential nesting habitat identified through desktop review as well as locations where Bank Swallow, Barn Swallow, Chimney Swift and Peregrine Falcon were will be searched for within the PDA and LSA in conjunction with vegetation and bat habitat identification surveys as described in the VC-Vegetation Study Plan and VC-Wildlife Study Plan. Golder (2019) identified no suitable nesting habitat for Barn Swallow or Bank Swallow within a 2.5-km buffer LSA based on a desktop review and aerial / ground reconnaissance. Future desktop review and aerial / ground reconnaissance in will expand the search area to the additional 20.7 km route option (including the 3 km buffer LSA)."</p>	<p>Section 8.9 Birds, migratory birds and their habitat</p> <ul style="list-style-type: none"> “survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: ... <ul style="list-style-type: none"> rare species require more survey effort to detect than common species, and species rarity should be accounted for in survey design by increasing the number and duration of surveys; ... generate measures of abundance and distribution using spatially balanced, randomly selected sample locations. Sampling should include edges and transitions between habitat types and should not be focused exclusively within homogeneous patches of a given habitat type: ... <ul style="list-style-type: none"> use simulation modelling prior to sampling to ensure coverage is broad enough to estimate and account for detection error as well as provide unbiased estimates of abundance and distributions;” <p>Section 8.11 Species at Risk “The Impact Statement must: ...</p> <ul style="list-style-type: none"> account for the fact that rare species will require more survey effort to detect, which should be reflected in survey design by increasing the number and duration of surveys:” 	<p>The study plan does not contain sufficient details to show that the Impact Statement will have sufficient samples and an appropriate survey design to reliably model the abundance and density of the bird species targeted by these surveys.</p> <p>As described in the Guidelines, it is important to show how all survey designs will produce data that are representative of the study areas and that sampling was sufficient and aligned with the requirements of the Guidelines.</p> <p>The absence of a clear and detailed survey design for these targeted surveys will impair evaluations of the Impact Statement with respect to the risks of incorrect conclusions (due to imprecision and/or bias in the data).</p> <p>The approach described the risks of under sampling, which will impair decision-making by producing highly variable estimates of baseline conditions. There is also a risk of incorrect decisions based on biased estimates of baseline conditions and a high uncertainty of impact estimates due to insufficient sample sizes.</p> <p>Imprecise estimates can prevent the calculation of predicted project impacts and prevent the differentiation of any differences in populations between the PSA, LSA, and RSA. Additionally, designs that do not incorporate randomization and related principles can lead to bias in the data, which then lead to inaccurate estimates and erroneous conclusions. The proponent needs to address all these potential issues.</p>	<p>As per Section 8.9 of the Guidelines, base analysis on data collected according to the described survey design principles and practices. This also applies to targeted surveys.</p> <p>Demonstrate that a desktop review and the sampling undertaken will be sufficient for the target species and for assessing data sufficiency.</p>
BI-11	<p>Section 7.2.1.2.3 ARU Data Collection “ Survey sampling effort for Common Nighthawk, Eastern Whip-poor-will, Short-eared Owl, and Yellow Rail will be based on a binomial expansion (Correia 2015) of published detection probabilities that provide at least a 95% certainty of estimating their population sizes: $1-(1-p)^k$ Where: p = probability of detection k = sampling replicates</p>	<p>Section 8.11 Species at Risk “The Impact Statement must: ...</p> <ul style="list-style-type: none"> account for the fact that rare species will require more survey effort to detect, which should be reflected in survey design by increasing the number and duration of surveys:” 	<p>The Guidelines states that the number of interpreted segments should be higher for rare species and those that vocalize infrequently. A narrow focus on results from a single study in northern Alberta is not satisfactory; time periods need to be expanded beyond 2AM.</p>	<p>As per Section 8.11 of the Guidelines, more sampling for rare species is required. The analysis for rare species in the Impact Statement should be based on higher numbers of sample.</p> <p>Consider a first pass of automated processing targeting yellow rail, then validate with acoustic interpretation of</p>

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	<p>ARU data for Common Nighthawk, Eastern Whip-poor-will, Short-eared Owl, and Yellow Rail will be analyzed from species-specific time periods with the highest detection probability based on published literature. Detection of these species outside of specified time periods and during other analyses will be classified as incidental observations.</p> <p>...</p> <p>For Yellow Rail, ARU data collection will be partially based on the Marsh Monitoring Program (BSC 2000). ARUs will be placed near suitable Yellow Rail habitat in the LSA including graminoid fens, the herbaceous vegetation of bogs, and floodplains of rivers and streams (COSEWIC 2001). The number and location of survey stations will be provided at a later date. ARU data segments will be randomly selected from the breeding season between May 20 and July 5. Data segments will have no precipitation and wind speeds below 20 km/h (as per BSC 2000). Unlike the Marsh Monitoring Program, a one-minute ARU data segment will be randomly selected at 2:00 AM where a detection probability of 0.630 for Yellow Rail was reported in Northern Alberta (Hedley <i>et al.</i> 2020). Binomial expansion applied to the detection probability of 0.630 indicates that analyzing three data segments provides a 95.2% certainty of estimating the Yellow Rail population size (Table 7-4)."</p>		<p>An insufficient number of recording segments can result in biased and incorrect conclusions about species presence.</p> <p>The Correia 2015 reference, upon which the estimates of sampling sufficiency were based in the Study Plan, is in the online journal "e-Journal for Nondestructive Testing" that is not focused on the relevant fields of biology, ecology or survey design. The formula described does not in fact lead to "a 95% certainty of estimating their population sizes" and the formula is not relevant to estimations of population size. Therefore a different reference should be used.</p>	<p>segments selected from sites where the first pass suggested occupancy.</p>
BI-12	<p>7.2.1.2.3 ARU Data Collection</p> <p>"For Common Nighthawk...The number and location of survey stations will be provided at a later date"</p> <p>"For Yellow Rail...The number and location of survey stations will be provided at a later date.</p>	<p>Section 8.9 Birds, migratory birds and their habitat "- survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: ...</p> <ul style="list-style-type: none"> o 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 habitat heterogeneity of the regional study area, and to yield multiple survey locations per land cover or habitat class, without requiring aggregation of habitat classes post-hoc;" <p>Section 8.11 Species at Risk "- account for the fact that rare species will require more survey effort to detect, which should be reflected in survey design by increasing the number and duration of surveys:...</p> <ul style="list-style-type: none"> o design of surveys will need to consider multiple number of survey locations in order to represent the habitat heterogeneity of the regional study area, and to plan the number of survey locations per land cover or habitat class so that aggregation of habitat classes post-hoc is not required;" 	<p>The study plan indicates that locations of survey stations for Common Nighthawk and Yellow Rail, will be provided 'at a later date'.</p> <p>The lack of specific information on the location of survey stations limits the advice that the Federal Review Team can provide at this stage in terms of the suitability of the number of survey stations, and their spatial distribution within the study area, in order to confirm their acceptability with the Guidelines.</p>	<p>Include in the Impact Statement maps with all the locations of survey stations for every bird species surveyed.</p> <p>Provide in the Impact Statement a clear description of the timing and frequencies of data collection for every bird species surveyed, and how the survey protocols followed the requirements of the Guidelines.</p>
BI-13	<p>Section 7.2.1.5 Aerial Surveys Table 7-5: Sampling Effort for Aerial Bird Surveys</p> <p>Section 7.2.1.5.2 Survey Protocol "Aerial surveys will be conducted in the LSA on two occasions during spring and fall to capture early to late migration of waterfowl and shorebirds and on two occasions during the breeding season for waterfowl and raptors</p>	<p>Section 8.9 Birds, migratory birds and their habitat "The Impact Statement must: ...</p> <ul style="list-style-type: none"> o collect bird data to adequately represent the following temporal sources of variation: <ul style="list-style-type: none"> o among years; o within and among seasons (e.g., spring migration, breeding, fall migration, overwintering); and o within the 24 hour daily cycle. ... 	<p>The study plan does not contain adequate details to show that the Impact Statement will have sufficient samples and an appropriate survey design to reliably model the abundance and density of the birds targeted by these surveys.</p> <p>Materials discussed with the proponent about survey designs and using simulations</p>	<p>As per Section 8.9 of the Guidelines, base the Impact Statement on data collection methods according to designs that align with the described survey design principles and practices.</p> <p>Use sampling designs that are appropriate for producing reliable and sufficient data, in order to demonstrate that correct conclusions have been drawn.</p>

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	<p>Potential stopover / staging areas will be examined by circling areas of suitable open habitats and counting the number of individual waterfowl and shorebirds, identified to lowest taxonomic level possible. Aerial surveys conducted during the breeding season will focus on identifying breeding pairs / broods and incubating adults of conspicuous waterfowl species (Table 7-5).</p> <p>Zoetica (2018b) conducted aerial surveys to identify inactive stick nests during the late winter of 2018 with confirmation of nest activity during the spring and summer of 2018. All stick nests identified in 2018 and during planned spring migration aerial surveys will be verified during subsequent aerial and ground surveys to confirm breeding status. Raptor stick nests will be identified to species, where possible, based on nest and stick size if no raptors are found near the nest. The Universal Transverse Mercator (UTM) location of all waterfowl, shorebird, and raptors observations will be recorded to map their seasonal abundance and distribution by habitat type in the LSA.</p> <p>Aerial surveys will be conducted using helicopters if possible, as they are generally preferable to fixed-wing aircraft given the lower flight speed and better outward visibility and thereby improved ability to detect birds (Ministry of Environment, Lands and Park Resources Inventory Branch 1999). Surveys will be consistent as possible with respect to altitude, time of day, flight speed, etc. and conducted during calm weather conditions (little to no precipitation and wind speeds less than four on the Beaufort Scale)."</p>	<ul style="list-style-type: none"> • collect data in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional study areas) and in time (i.e., across years): <ul style="list-style-type: none"> ○ design surveys so that they represent the spatial and temporal targets of modeling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of mitigation effectiveness. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project study area, local study area, and regional study area), any departures from predictions, and the effectiveness of mitigations. Justify the selection of modeling techniques based on current and recent scientific literature; ○ survey protocol planning should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options: <ul style="list-style-type: none"> ... ▪ 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 habitat heterogeneity of the regional study area, and to yield multiple survey locations per land cover or habitat class, without requiring aggregation of habitat classes post-hoc; ▪ sampling effort per unit area - field survey effort should be most intensive within the project study area. The level of effort per unit area may be similar or somewhat less within the remainder of the local study area, but should be scaled to the likelihood that project effects will impact birds within that zone. Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project study area, local study area and regional study area are unbiased and as precise as possible; ▪ rare species require more survey effort to detect than common species, and species rarity should be accounted for in survey design by increasing the number and duration of surveys; and ▪ simulation modelling should be used to assess bias and precision between project study area, local study area, and regional study area to ensure the estimates are useful for comparison. Field surveys should occur within the regional study area since there are few existing sources of data that effectively describe regional bird populations in areas, including this area, that are distant from road networks." 	<p>to assess sampling sufficiency apply to the aerial survey for birds mentioned in the study plan. Section 8.9 of the Guidelines has additional guidance on principles for designing surveys on birds.</p> <p>Helicopter methods are generally recognized as necessary for the species level identifications of waterfowl, shorebirds and waterbirds that are required for the - specified species level analysis outlined in the Guidelines</p> <p>However, imprecise estimates can prevent calculation of predicted project impacts and prevent differentiation of any differences in populations between the PSA, LSA and RSA. Additionally, designs that do not incorporate randomization and related principles can lead to bias in the data, which then can lead to inaccurate estimates and erroneous conclusions.</p> <p>The absence of a clear and detailed survey design will impair evaluation of the Impact Statement, due to imprecision and/or bias in the data, which increases the risk of incorrect conclusions being drawn.</p>	
BI-14	<p>Section 9.2 Valued Components and Indicators Table 9-2 Bird Indicators "Rationale for Selection</p> <ul style="list-style-type: none"> - Cultural and social significance associated with this VC. - Functional role in the ecosystem and food web." 	<p>Section 2.4 Regulatory framework and the role of government "The Impact Statement must identify:...</p> <ul style="list-style-type: none"> • legislation and other regulatory approvals that are applicable to the Project at the federal, provincial, 	<p>The study plan does not mention the <i>Migratory Birds Convention Act, 1994</i> as a rationale for the selection of any of the selected Birds VCs.</p>	<p>Ensure that the Impact Statement includes references to the <i>Migratory Birds Convention Act, 1994</i>, as a federal legislative mechanism applicable to the Project.</p>

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		<p>regional and municipal levels or from any body—including a co-management body—established under a land claim agreement referred to in section 5 of the <i>Constitution Act, 1982</i>, or from an Indigenous governing body as defined in the <i>Impact Assessment Act</i> (IAA) that has powers, duties or functions in relation to the environmental effects of a project, including a list of the federal, provincial or territorial GHG legislation, policies or regulations that will apply to the Project, as per the Strategic Assessment of Climate Change;...”</p>		
<p>BI-15</p>	<p>Section 9.3 Indirect Effects “A direct effect occurs through the direct interaction of an activity with an environmental discipline. The Project-environment interactions currently anticipated, based upon preliminary analysis, to result in direct effects to Birds have been identified in Table 9-1. The potential direct effects resulting from the Project-environment interactions will be confirmed during the IA / EA process and will be based on input received through the Indigenous Knowledge Program and Consultation and Engagement Program, regulatory agency guidance, and professional judgement.</p> <p>An indirect effect occurs when a change to one environmental discipline resulting from a Project activity causes a change to another environmental discipline (e.g., changes in groundwater could indirectly affect birds). Table 9-3 provides a preliminary identification of how changes to Birds may result in indirect effects to other environmental disciplines.”</p>	<p>Section 15.2 Birds, migratory birds and their habitat “The Impact Statement must:</p> <ul style="list-style-type: none"> • describe direct, incidental and cumulative predicted positive and/or adverse effects to migratory birds and non-migratory birds, including population level effects that could be caused by all project activities... • consult A Framework for the Scientific Assessment of Potential Project Impacts on Birds Appendix 2 and 3 for overview of potential impacts to birds from road projects57; ... <ul style="list-style-type: none"> ○ non-linear, indirect and synergistic responses to the project should be explicitly explored where reasonable;” 	<p>Section 9.3 of the study plan indicates that Table 9-3 provides a preliminary identification of <i>how</i> changes to birds may cause indirect effects to other disciplines. However, it appears that table 9.3 does not indicate <i>how</i> changes to birds may result in indirect effects to other environmental disciplines, but rather <i>whether</i> those interactions may occur.</p> <p>The more relevant consideration for this study plan is whether changes to other environmental disciplines/VCs may result in indirect effects to birds.</p>	<p>Ensure that potential interactions that may result in indirect effects to birds are identified.</p> <p>Clarify that Table 9-3 indicates not how but whether indirect effects may occur.</p>
<p>BI-16</p>	<p>Section 9.6 Residual Effects Definitions of:</p> <ul style="list-style-type: none"> • Negligible: Small scope of effect and slight severity of effect to Bird VCs. • Low: Restricted scope of effect and moderate severity of effect to Bird VCs. • Medium: Large scope of effect and serious severity of effect to Bird VCs. • High: Large to pervasive scope and high to extreme severity of effect to Bird VCs. 	<p>Section 13.1 Methodology “The effects to each valued component outlined in sub-sections 14.3, 15.2, 15.3, 15.4 must be described using the following criteria:</p> <ul style="list-style-type: none"> • Scope, defined spatially as the proportion of the valued component’s occurrence or population within the study areas (project study area, local study area and regional study area) that can reasonably be expected to be affected by the predicted effect within 10 years. Characterize the scope of each predicted adverse effect on each valued component as follows: <ul style="list-style-type: none"> ○ pervasive: the effect is likely to be pervasive in its scope, affecting the valued component across all or most (71-100%) of its occurrence or population within the study areas; ○ large: the effect is likely to be widespread in its scope, affecting the valued component across much (31-70%) of its occurrence or population within the study areas; ○ restricted: the effect is likely to be restricted in its scope, affecting the valued component across some (11-30%) of its occurrence or population within the study areas; and ○ small: the effect is likely to be very narrow in its scope, affecting the valued component across a small proportion (1-10%) of its occurrence or population within the study areas. 	<p>As outlined in Section 15.2 of the Guidelines, the criteria described in Section 13.1 of the Guidelines need to be used to describe effects to valued components outlined in Section 15.2.</p> <p>While the proposed criteria are similar, the definitions do not accommodate the entirety of possible combinations of scope and severity. For example, how would small scope and extreme severity be classified?</p>	<p>Use the criteria found in Section 13.1 of the Guidelines to describe effects to birds from this project in the Impact Statement.</p>

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		<ul style="list-style-type: none"> • Severity, defined as, within the scope, the level of damage to the valued component from the effect that can reasonably be expected; typically measured as the degree of destruction or degradation within the scope or the degree of reduction of the population within the scope. Characterize the severity of each predicted adverse effect on each valued component as follows: <ul style="list-style-type: none"> ○ extreme: within the scope, the effect is likely to destroy or eliminate the valued component or reduce its population by 71-100% within ten years or three generations; ○ serious: within the scope, the effect is likely to seriously degrade/reduce the valued component or reduce its population by 31-70% within ten years or three generations; ○ moderate: within the scope, the effect is likely to moderately degrade/reduce the valued component or reduce its population by 11-30% within ten years or three generations; and ○ slight: within the scope, the effect is likely to only slightly degrade/reduce the valued component or reduce its population by 1-10% within ten years or three generations. • Irreversibility, or permanence, is defined as the degree to which the effect can be reversed and the valued component restored, if the effect no longer existed. Characterize the irreversibility of each predicted adverse effect on each valued component as follows: <ul style="list-style-type: none"> ○ very high: the effects cannot be reversed and it is very unlikely the valued component can be restored, and/or it would take more than 100 years to achieve this (e.g., wetlands converted to a shopping center); ○ high: the effects can technically be reversed and the valued component restored, but it is not practically affordable and/or it would take 21-100 years to achieve this (e.g., wetland converted to agriculture); ○ medium: the effects can be reversed and the valued component restored with a reasonable commitment of resources and/or within 6-20 years (e.g., ditching and draining of wetland); and ○ low: the effects are easily reversible and the valued component can be easily restored at a relatively low cost and/or within 0-5 years (e.g., off-road vehicles trespassing in wetland). • characterize the magnitude of each predicted adverse effect on each valued component as follows: <ul style="list-style-type: none"> ○ magnitude = scope x severity (see graph) • characterize the degree of each predicted adverse effect on each valued component as follows: <ul style="list-style-type: none"> ○ degree of effect = magnitude x irreversibility (see graph) 		
BI-17	Section 9.7 Consideration of Meeting Canada’s Environmental Obligations “Where the Project may contribute to Canada’s ability to meet these obligations, the ISA / EA Report will describe plans and	Editorial		Change occurrences of “ISA / EA Report” to “IS / EA Report”.

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	commitments to help to ensure that positive contributions are met.”			
BI-18	<p>Section 11 Concordance with Federal and Provincial Guidance Row 19 of the Concordance table “For each of the valued components that will be assessed in the Impact Statement, the proponent must create a study plan and a work plan to be validated by the Agency. Upon receipt of a study plan, the Agency may request that the proponent present and discuss the study plan at technical meetings, which will be scheduled during the impact statement phase.”</p> <p>“The Study Plan meets this requirement. A summary of the Technical discussions with agencies have been summarized in Section 3 of the Study Plan</p>	Editorial	To date only a study plan, and not a workplan, was submitted to the Agency for validation.	Provide a workplan to the Agency for validation that outlines how the data will be collected, such as information on location, scheduling, sequencing (i.e., how to action the study plan).
BI-19	<p>Section 11, Table 11-1 Federal Concordance – Conformance with Requirements, ID #54 “This information will be collected as described in the Land and Resource Use Study Plan. “ Study Plan Reference - Land and Resource Use Plan</p>	<p>Section 8.9 Birds, migratory birds and their habitat “...The Impact Statement must: – describe the use of (magnitude, timing) migratory and non-migratory birds as a source of country foods (traditional foods) or where use has Indigenous cultural importance (e.g., Canada Goose, Snow goose, Swans, Gyrfalcon, Loon, Peregrine Falcon, and duck species);...”</p>	The Land and Resource Use study plan does not address this requirement from Section 8.9 of the Guidelines regarding country foods, contrary to what Table 11-1 of the study plan suggests.	Correct this omission within the Land and Resource use study plan and/or Birds study plan to ensure that this part of Section 8.9 of the Guidelines is addressed.
BI-20	<p>Table 11-1: Study Plan Federal Concordance – Conformance with Requirements, ID #128 “This information will be collected as described in the Land and Resource Use Study Plan.” Study Plan Reference - Land and Resource Use Plan</p>	<p>Section 17.6 Culture “...The Impact Statement must assess potential impacts to surrounding communities, including local Indigenous communities. The spatial and temporal boundaries for the assessment should be determined with the input from the community based on pre-contact in consideration of aspects that are relevant to the community’s understanding of their culture. The Impact Statement must assess changes to: – Culturally significant plants or wildlife...”</p>	The Land and Resource Use Plan does not address this requirement from Section 17.6 of the Guidelines regarding culturally significant plants or wildlife, contrary to what Table 11-1 of the study plan suggests.	Correct this omission within the Land and Resource use study plan and/or the Birds Study plan to ensure that this part of Section 17.6 of the Guidelines is addressed.
BI-21	<p>Editorial - Footnote 10 “In February 2020 a regional assessment of the Ring of Fire region commenced; however, it is not sufficiently advanced at this time to inform the Project VCs. The VCs will be consulted and engaged on early in the IA/ EA process and finalized taking into consideration the input received. Therefore, only information relevant to the Project that arises from the regional assessment of the Ring of Fire within an appropriate timeline will inform the VCs for the Project.”</p>		The statement in the footnote “ <i>In February 2020 a regional assessment of the Ring of Fire region commenced; however, it is not sufficiently advanced at this time to inform the Project VCs.</i> ” should be corrected to reflect the fact that the Regional Assessment in the Ring of Fire area has not yet begun.	Consider replacing the text in the footnote with “ <i>In February 2020, the Minister of Environment and Climate Change determined that a regional assessment will be conducted in an area centred on the Ring of Fire mineral deposits in northern Ontario. However, at this time, the Regional Assessment in the Ring of Fire area is not sufficiently advanced to inform the Project VCs.</i> ”
BI-22	<p>Table 11-3: Study Plan Federal and Provincial Concordance – Requirement Deviations</p>		<p>Proposed amendments and/or deviations from the Guidelines will not be reviewed or approved during the study plans review process.</p> <p>The Agency will provide guidance on the process to propose amendments and/or deviations to the Guidelines to the project team.</p>	