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<b>To</b>	Impact Assessment Agency of Canada
<b>From</b>	Cedar LNG Partners LP
<b>Date</b>	May 15, 2024
<b>Subject</b>	Decision Statement Conditions 4.5, 10.9, and 10.11 – Wildlife Follow-up Program
<b>Document No.</b>	PC21258A-EV-MEM-00002
<b>Revision No.</b>	0

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# 1 Introduction

Cedar LNG Partners LP, by its general partner Cedar LNG Partners (GP) Ltd. (Cedar), a Haisla Nation-led partnership with Pembina Pipeline Corporation (Pembina), is planning to construct and operate a floating liquefied natural gas export facility within the District of Kitimat, British Columbia (BC) (the Project). The Project is subject to the requirements of the provincial *Environmental Assessment Act* and federal *Impact Assessment Act* and underwent a substituted environmental assessment from 2019 to 2023. Cedar received Environmental Assessment Certificate #E23-01 from the Environmental Assessment Office (EAO) on March 13, 2023, and a positive Decision Statement from the Impact Assessment Agency of Canada under the *Impact Assessment Act* on March 15, 2023.

The Decision Statement issued under the *Impact Assessment Act* includes conditions of approval that Cedar must address.<sup>1</sup> Condition 2.8.2 states that where a follow up program is a requirement of a condition set out in the decision statement, the Proponent shall:

- Conduct monitoring and analysis to verify the accuracy of the impact assessment as it pertains to the particular condition and/or to determine the effectiveness of any mitigation measure.

Conditions 4.5, 10.9, and 10.11 require Cedar to develop and implement follow-up programs with respect to wildlife. Specifically, these conditions state:

- **Condition 4.5:** The Proponent shall develop, prior to construction and in consultation with Indigenous groups, Environment and Climate Change Canada and British Columbia Coast Pilots Limited, and implement, during all phases of the Designated Project, a follow-up program with respect to migratory birds and their habitat. As part of the follow-up program, the Proponent shall determine the effectiveness of the mitigation measures used to comply with [Decision Statement]

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<sup>1</sup> <https://iaac-aeic.gc.ca/050/evaluations/document/146928?culture=en-CA>

conditions 4.1 to 4.3 during the phase of the Designated Project to which each mitigation measure pertains, including by:

- Condition 4.5.1: monitoring changes to the habitat for marbled murrelet (*Brachyramphus marmoratus*) in areas referred to in condition 4.4.
  - Condition 4.5.2: monitoring, during periods of inclement weather in the first two years of operation, for bird mortality or injury around the perimeter of Designated Project buildings and structures in the Marine Terminal Area and Facility Area during bird migration and breeding periods.
  - Condition 4.5.3: recording discovery of bird mortality or injury during routine inspections and maintenance activities in the Transmission Line Corridor.
  - Condition 4.5.4: documenting information on bird strike(s) and/or strandings(s) occurring on Designated Project-related LNG carriers.
  - Condition 4.5.5: developing and implementing modified or additional mitigation measures if the results of the monitoring referred to in conditions 4.5.1 and 4.5.2 or information recorded in accordance with condition 4.5.3 demonstrate that modified or additional mitigation measures are required to avoid harming migratory birds, their eggs and nests.
- **Condition 10.9:** The Proponent shall develop, prior to construction and in consultation with Haisla Nation and Environment and Climate Change Canada, and implement, during all phases of the Designated Project, a follow-up program with respect to adverse effects on western toad (*Anaxyrus boreas*) and coastal tailed frog (*Ascaphus truei*). The Proponent shall take into account the recommendations for post-salvage monitoring set out in British Columbia's Best Management Practices for Amphibian and Reptile Salvages in British Columbia when developing and implementing the follow-up program... The Proponent shall:
    - Monitor changes to habitat for western toad (*Anaxyrus boreas*) and coastal tailed frog (*Ascaphus truei*) caused by the Designated Project and their use of relocation sites referred to in condition 10.6.1 and 10.8.1 and any restored, enhanced or created wetland referred to in condition 10.12.1.2.
  - **Condition 10.11:** The Proponent shall develop, prior to construction and in consultation with Haisla Nation and Environment and Climate Change Canada, and implement, during construction a follow-up program with respect to adverse effects on little brown myotis (*Myotis lucifugus*) and their habitat.

In addition, Decision Statement conditions 2.5 through 2.9 specify the kinds of required information that must be included in a follow-up program. In summary, follow-up program requirements include:

- Monitoring and analysis to verify the accuracy of the impact assessment as it pertains to the particular condition and/or to determine the effectiveness of any mitigation measure.
- Targets that will be used to assess the achievement of expected outcomes.
- Methods, location, frequency, timing, and duration of monitoring.

- Threshold of change relative to baseline that would require modifications to existing measures, or adoption of new measures.
- Proposed modifications to, or additional mitigation measures, if the threshold of change has been reached or exceeded.
- Reporting scope and frequency.
- Follow-up program review, consultation, and updates.

Per the EAO Assessment Report for the Project (“Assessment Report”), Cedar’s wildlife follow-up program is to consider:

- Comparison of the as-built change in habitat to the effects predicted in the Application for marbled murrelet (nesting habitat), old forest songbird community (breeding habitat), young forest songbird community (breeding habitat), western toad (breeding habitat), coastal tailed frog (year-round habitat), and little brown myotis (roosting habitat).
- Verification of potential project effects on marbled murrelet summer breeding habitat using results from a habitat suitability model.
- Tracking and reporting of wildlife interactions, injuries, and mortalities associated with the facility and transmission line.
- Documentation of the location, date, species, and evidence of cause for bird strandings or mortalities associated with lit infrastructure; monitoring for the first two years of operation and reporting to occur annually in the first two years of operations.
- Reporting of any observed instances of bird strikes and strandings by LNG carriers, as coordinated, and discussed with BC [Coast] Pilots.
- Reporting to be provided to the Impact Assessment Agency of Canada (Agency), Environment and Climate Change Canada (ECCC), Haisla Nation, Gitga’at First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, Lax Kw’alaams Band, Metlakatla First Nation, Métis Nation British Columbia, and Haida Nation.

This memorandum describes how Cedar intends to undertake a wildlife follow-up program to satisfy the Decision Statement conditions, including follow-up program requirements described in conditions 2.5 through 2.9 and the EAO Assessment Report recommendations. ECCC, Haisla Nation, Gitga’at First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, Lax Kw’alaams Band, Metlakatla First Nation, Métis Nation British Columbia, and Haida Nation were invited to comment on an earlier version of this memorandum and this document has been revised in consideration of the comments provided.

## 2 Follow-up Program

The wildlife follow-up program has two main objectives:

- 1) Verify the accuracy of the impact assessment as it pertains to migratory birds and their habitat, western toad and coastal tailed frog, and little brown myotis.
- 2) Determine the effectiveness of mitigation measures and whether modifications to existing measures, or adoption of new measures, are needed.

The purpose of follow-up program monitoring under the *Impact Assessment Act* is to measure the predicted impacts on valued components where there is uncertainty in the conclusions of the assessment or uncertainty in the effectiveness of mitigation measures. Cedar's Environmental Assessment Certificate Application stated there was a high prediction confidence for the conclusions of the assessment on wildlife and wildlife habitat. This follow-up program describes the approach that Cedar will take to verify the accuracy of the impact assessment and determine the effectiveness of mitigation measures. Cedar will use both incidental observations and systematic<sup>2</sup> surveys to collect data during the follow-up program.

## 2.1 Verifying the Accuracy of the Impact Assessment

Cedar will undertake monitoring and analysis to verify the accuracy of the impact assessment as it pertains to Impact Statement conditions 2.8.2, 4.5, 10.9, and 10.11. That is, Cedar will compare the as-built change in habitat to the effects predicted in the Application for the following species and species groups:

- Marbled murrelet (nesting habitat).
- Old-forest songbird community (breeding habitat).
- Young-forest songbird community (breeding habitat).
- Western toad (breeding habitat, overwintering habitat).
- Coastal tailed frog (year-round habitat).
- Little brown myotis (roosting habitat).

The same methods as described in Section 7.5.7.2 of the Application for predicting Project-related change in habitat availability will be used to determine the as-built change in habitat availability for these species and species groups. The as-built clearing boundaries will be overlain on the habitat mapping for the species and species groups to quantify the amount of clearing (i.e., habitat loss) that occurred for the Project. This spatial analysis will be completed using ArcGIS following species and species-group specific habitat models (based on terrestrial ecosystem mapping; RIC 1998) for predicting change in habitat for the Application. The analysis will then compare the predicted change in habitat relative to baseline for these species and species groups reported in the Application to the as-built change in habitat relative to baseline following the completion of construction activities.

Per condition 4.4 of the Decision Statement, Cedar will complete ground-based surveys, under the direction of a Qualified Professional (QP), to verify whether the biophysical attributes that describe

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<sup>2</sup> surveys completed using a pre-defined protocol and replicated at specified intervals



nesting critical habitat for marbled murrelet are present. Habitat assessments will follow methods for ground plot surveys described in ECCC's *Guidance and Tools to Support the Identification of Potential Marbled Murrelet Suitable Nesting Habitat* (Manning et al. 2018). Site- and landscape-level biophysical attributes data will be collected using the nesting habitat assessment form used in RIC (2001) and Manning et al. (2018). Each plot will be assigned a likelihood rating per Table 8 in the Amended Recovery Strategy (ECCC 2023a). The habitat availability mapping presented in the Application will be updated and used to assess predicted change in habitat availability and for comparison with the predicted as-built change in habitat availability.

Therefore, a three-step approach will be taken to verify the accuracy of the impact assessment for marbled murrelet: 1) a comparison of as-built change in habitat availability relative to baseline as reported in the Application, 2) a comparison of as-built change in habitat availability based on verified mapping, and 3) a comparison of the results from steps 1 and 2.

The environmental monitor will track compliance with permitted clearing boundaries during construction. Cedar will work with a QP and the construction manager to identify the cause of any boundary breach and adjust survey or clearing practices to avoid future boundary breaches. Boundary breaches will be documented in the environmental inspection reports.

Cedar will assess the final change in habitat availability within 12 months of completion of construction to determine whether as-built change in habitat availability differs from the predicted change in habitat availability reported in the Application. The 12-month window allows time for preparation of final as-built spatial data of the construction footprint.<sup>3</sup>

The comparison of as-built change in habitat availability with predicted change in habitat availability in the Application will be provided in the annual report for the year the analysis is completed (see Section 1.1). The annual report will include a table to present the numerical amount (in hectares) and percentage of area predicted in the Application for each of the species and species groups. It will also document any boundary breaches that occurred.

## **2.2 Determining the Effectiveness of Mitigation Measures**

### **2.2.1 CONDITION 4.5: MIGRATORY BIRDS AND THEIR HABITAT**

The following subsections describe the proposed follow-up program for migratory birds and their habitat.

#### *2.2.1.1 Mitigation Monitoring – Migratory Bird Nests*

Mitigation measures for migratory birds during construction are described in the Construction Environmental Management Plan (CEMP). These include:

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<sup>3</sup> Cedar will complete the comparison analysis as soon as the as-built footprint spatial data are available, which could be sooner than 12 months from completion of construction.

1. Avoiding clearing and grubbing activities during the nesting period (April 4 to August 18)
2. If the schedule cannot avoid the nesting period, the use of non-intrusive nest surveys and the implementation of setbacks (Appendix A) around active nests or nesting areas

Conditions 4.1 to 4.3 refer to mitigations for the protection of migratory birds, as follows:

- Condition 4.1: The Proponent shall carry out the Designated Project in a manner that protects migratory birds and avoids injuring, killing or harassing migratory birds or destroying, taking or disturbing their eggs, or damaging, destroying, removing or disturbing their nests. In this regard, the Proponent shall take into account Environment and Climate Change Canada's *Guidelines to avoid harm to migratory birds*.
- Condition 4.2: If the Proponent identifies nest(s) protected under the *Migratory Birds Convention Act, 1994* and its regulations and/or the *Species at Risk Act* that may be adversely affected by any Designated Project activity, the Proponent shall delineate, as determined by and under the direction of a Qualified Professional and in a manner described in condition 4.1, spatial restriction(s) around the nest(s) within which that activity shall not happen. The Proponent shall implement the spatial restriction(s) before and during the activity occurring.
- Condition 4.3: The Proponent shall schedule vegetation clearing required for the Designated Project outside of the applicable regional nesting periods for the Designated Project. Where vegetation clearing is planned during the nesting periods, the Proponent shall use non-intrusive survey methods, prior to starting vegetation clearing and under the direction of a Qualified Professional and in a manner described in condition 4.1, to determine whether migratory birds are breeding in any of the areas to be cleared.
  - 4.3.1: For any vegetation clearing planned during the nesting periods, the Proponent shall prohibit working within the spatial restriction(s) established around active migratory bird nest(s), unless the Proponent develop additional feature-specific mitigation measures (as determined by and under the direction of a Qualified Professional and in a manner described in condition 4.1) and implement them before and during vegetation clearing. The Proponent shall provide any such measure to the Agency [Impact Assessment Agency of Canada] prior to implementing them.

Details on how mitigation for migratory birds and their habitat will be monitored are provided below.

#### 2.2.1.1.1 Mitigation Measures

Mitigations will be implemented hierarchically, starting with avoidance of clearing during the nesting period. If avoidance is not feasible, additional mitigations will be implemented, such as nest surveys to identify and implement nest-specific setbacks.

##### 1. Avoidance

Wherever possible and practical, clearing will be scheduled outside of the nesting period (i.e., clearing will occur before April 4 or after August 18; Condition 4.3). Complete avoidance of the nesting period may not be possible or practical for a variety of reasons. Winter weather in Kitimat tends to be very wet, making

work on steep slopes a high-risk activity for workers and increasing potential for soil erosion and slope failure, with risk of impacts to soil, water quality, fish, vegetation, and wildlife habitat. The Project will be subject to multiple timing considerations for multiple resources as well as worker safety considerations.

## 2. Nest Surveys and Setbacks

As required by Condition 4.3, pre-clearing nest surveys will be used to determine whether migratory birds are breeding in areas to be cleared. A QP will prepare a detailed Project-specific nest survey protocol that lays out the procedures to be followed during nest surveys, the timing and frequency of nest surveys, and the required qualifications of personnel completing nest surveys. Nest surveys will be led by a surveyor with experience in identifying species and nests that are expected in the Project area. Cedar will explore opportunities for members of affected Indigenous groups to participate in field surveys. The nest survey protocol will describe visual and auditory indicators of bird breeding behaviours and will be based on nest survey protocols that have been approved and implemented on similar projects, such as Stantec (2018) and EDI (2014). If an active nest is detected by project personnel or contractors outside of the primary nesting period, the nest will be avoided and appropriate mitigation will be implemented.

If a nest is identified, it will be characterized as 'protected' and requiring a setback if it:

- Contains a live bird or viable egg
- Is a nest protected as a 'residence' under the *Species at Risk Act* (SARA)
- Is a nest of a species listed in Schedule 1 of the Migratory Birds Regulations
- Is a nest protected year-round under the provincial *Wildlife Act* (e.g., bald eagle)

Individual setbacks and duration will be determined by a QP. The characteristics of each nest (i.e., species, sensitivity, nest stage, date of discovery, construction activity type and duration, habitat, topography) will be considered to determine the size, shape, and duration of the setback for that nest. A summary of potentially suitable setback distances is provided in the CEMP and in Appendix A and will be reviewed for completeness when the CEMP is finalized. A typical setback for most songbirds is 30 m.

As specified in the CEMP, clearing may begin after setbacks have been delineated, preferably within 24 to 48 hours of the nest survey and no more than 7 days after. If clearing and grubbing has not started within 7 days of the nest survey, another nest survey will be completed by a QP if within the nesting period. Any protected nest discovered incidentally will be documented and reported, and a setback delineated if the nest could potentially be affected by Project construction.

Cedar assumes that maintenance of the setback will be effective at protecting active migratory bird nests (Condition 4.1 and Condition 4.2) and no ongoing monitoring of active nests will be undertaken to avoid disturbing the birds or attracting potential nest predators. No surveys will be undertaken to establish nest fate or to document bird behavioural responses within setbacks unless otherwise discussed and agreed upon with the relevant regulatory authority.



### 2.2.1.1.2 Monitoring Objectives and Measures

Objectives and measures for monitoring mitigation of disturbance to nesting birds are summarized in Table 1. Mitigation measures are in order that will be implemented. If a target is not achievable, then Cedar will implement the next mitigation in order, following the mitigation hierarchy. Monitoring design considers the principles of effectiveness monitoring described in Noble (2020).

**Table 1 Summary of Monitoring Methods and Targets for Migratory Bird Nest Mitigations**

Mitigation (in order implemented)	Objective	Monitoring Type	Monitoring Method	Measure	Target
1. Avoid clearing during primary nesting period	Clearing occurs outside primary nesting period as much as practical and safe	Implementation	Record number of days of clearing during primary nesting period	Number of days within primary nesting period that clearing occurred, by year	Zero days within primary nesting period that clearing occurred, where possible
2. If Mitigation 1 is not achieved, then undertake pre-clearing nest surveys	Nests or suspected nest areas are identified	Implementation	Record dates and areas covered by pre-clearing surveys and compare to pre-clearing dates and areas	Number of hectares cleared in nesting season without a pre-clearing nesting survey supervised by a QP	Zero hectares cleared during the primary nesting period without a pre-clearing sweep
3. If a nest or suspected nest area is found, then implement nest setbacks	Nests or nest sites are buffered from disturbance	Effectiveness	Monitor setbacks and record any breaches by construction personnel or activities	Number of nest setbacks breached within nest's activity period	Zero occurrences of unauthorized breaches of setbacks

The first mitigation for migratory bird nests is avoidance of clearing during the nesting period.<sup>4</sup> As a measure of the implementation of Mitigation 1, Cedar will report the number of days that vegetation clearing occurred during the nesting season (implementation monitoring).

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<sup>4</sup> As described in the CEMP, pre-clearing surveys for wildlife habitat features, including but not limited to bird nests that remain protected when inactive, may be done outside of the nesting season. Setbacks will be applied to those nests as they are identified, at all times of the year.



Effectiveness monitoring is considered unnecessary for Mitigation 1 as avoidance of clearing is assumed to entirely mitigate the potential for effects on nesting birds from vegetation clearing. If clearing during the nesting season cannot be avoided, Mitigation 2 and Mitigation 3 will be undertaken.

The second mitigation for migratory bird nests is the completion of nest surveys before clearing, if clearing must occur during the primary nesting period. The implementation of Mitigation 2 will be monitored. Cedar will confirm and document that no clearing occurred within the nesting period unless a nest survey was completed first and that either no nesting activity was detected or setbacks were applied to protect nests, per the CEMP. Cedar will confirm and document that a QP oversaw/supervised a nest survey prior to clearing. If an active nest or nest area is identified, an appropriate setback will be prescribed by the QP and established for the duration that the nest is active. If an area is cleared without a pre-clearing nest survey, a review will be triggered as an opportunity for adaptive management. The review will document the reason, spatial extent, and duration for clearing, evaluate gaps in the protocol or whether the protocol was not followed, and describe what corrective measures were implemented. The results of the review will be used to determine if protocol changes are needed. Results will be reported to ECCC and Indigenous Nations as part of the annual report (Section 2.2.1.3).

The third mitigation is the application of setbacks to protected nests if clearing or grubbing occurs during the nesting period. The effectiveness of this mitigation will be monitored. The measure of effectiveness of this mitigation will be that the setback established in Mitigation 2 is maintained for the duration that each identified nest or nest area is active or otherwise protected (e.g., pileated woodpecker nest cavities; barn swallow residence period). Cedar will confirm that the setback is maintained until the nest is complete. If the setback is breached without EI/QP authorization (i.e., authorization based on the nature and duration of the breach and the condition of the nest at the time), a review of setback procedures will be triggered as an opportunity for adaptive management. The review will document the reason, nature, and duration of the breach, establish whether protocols were followed, describe what corrective measures were implemented, and describe any observable effects of the breach on the nest. The results of the review will be used to determine if changes to the protocol are needed. Results will be reported to ECCC and Indigenous Nations as part of the annual report (Section 2.2.1.3).

#### 2.2.1.2 *Monitoring Bird Mortalities, Stranding and Injuries*

Cedar will monitor and report incidents involving migratory bird mortalities and injuries related to:

- Collisions with project buildings and structures during bird migration and breeding periods
- Collisions or electrocutions with the transmission line
- Strikes or strandings associated with LNG carriers and escort tugs.

Monitoring of bird mortalities, strandings, and injuries will be undertaken in three ways:

- 1) Incidental observations made by construction and operation workers during Project activities (Section 2.2.1.2.1)
- 2) Bird mortality surveys using standardized methods and undertaken periodically by the environmental inspector (EI) or designate (Section 2.2.1.2.2)



### 3) Reporting vessel strikes and strandings aboard LNG carriers and other Project-associated vessels (Section 2.2.1.2.3)

The objective of monitoring migratory bird mortalities and injuries is to confirm the Application's prediction of the magnitude of risk to migratory birds (defined qualitatively in the Application) from collisions with buildings, the transmission line, or Project-associated vessels. Observational data collected as described in the following subsections will be categorized into low, moderate, and high per defined in the Application.

#### 2.2.1.2.1 Incidental Observations

Cedar will provide informational materials to on-site personnel on the importance of avoiding project-related wildlife mortalities and injuries, and in reporting such occurrences, as part of the on-site orientation. Information provided will include a summary of relevant legislation, reporting and communication channels, on how to record and report wildlife incidents. Wildlife observations and incidents, including migratory bird mortalities and injuries, will be documented and reported using the Wildlife Observation Form (Appendix B), which will be made available to on-site personnel during the Designated Project phases.

Information to be documented includes the species, number of individuals, time and location of the incident, possible cause of the incident, and any actions taken. The EI will review the Wildlife Reporting Forms, determine whether follow-up is needed (e.g., modified mitigations), and will track mortalities and injuries in Cedar's Wildlife Reporting Database. The EI will consult with a QP if needed, to determine whether new or modified mitigation measures are required.

#### 2.2.1.2.2 Bird Mortality Surveys

The EI or designate, as appropriate, will undertake surveys and document the survey effort and findings on the Wildlife Survey Form (Appendix C) as follows:

- During bird migration and breeding periods (effectively, March 6 to October 31) in the first two years of operation, a systematic visual search for bird mortalities or injuries will be completed around the perimeter of buildings and structures in the facility area based on methods described in Hager and Cosentino (2014). The survey will be completed once per month during mild weather conditions and daily during and immediately following inclement weather (i.e., fog, storms). Bird mortalities or injuries, and specific locations of incidences, will be documented and reviewed in the context of future risk of recurrence. Adaptive management mitigations (e.g., changes to lighting, installation of external window screens or grills) may be recommended for buildings or structures identified as having increased risk of bird strikes.
- Incidental discoveries of bird mortalities or injuries will be documented during routine inspections and maintenance activities in the transmission line corridor. A photograph and the location of any birds discovered will be documented on the Wildlife Survey Form (Appendix C).
- Completed Wildlife Survey Forms will be reviewed by the QP, if needed, to verify species and adaptive management mitigations.

A QP will provide training to the EI or designate undertaking mortality surveys. Training will include data collection protocols, survey routes, survey duration and timing, and guidance on what to do if injured or dead wildlife is found, following the BC Wildlife Health guidelines. The Wildlife Survey Form (Appendix C) includes contact information for the Canadian Wildlife Service, the Terrace Raven and Crow Rehab Sanctuary, the BC Conservation Officer Service, and the BC Interagency Avian Mortality Investigation Hotline. These contacts will provide additional information or assistance in dealing with injured or dead wildlife as needed.

#### 2.2.1.2.3 Vessel Strikes and Strandings

Cedar is investigating the possibility for monitoring bird strikes or strandings on the LNG carriers during their transit between the Triple Island pilot boarding station and the floating liquified natural gas facility. Based on discussions with environmental consulting firms and BC Coast Pilots, there are several technical challenges with monitoring potential bird strike and strandings on LNG carriers including:

- **Safety:** To undertake a monitoring program with a high level of confidence, surveys for bird strikes and strandings should be completed by a biologist or technician that can identify the bird species that may be found on a carrier. Boarding or disembarking the LNG carrier could be done safely by a biologist or technician while at berth at the Cedar LNG facility. However, monitoring for bird strikes and strandings on the deck during transits and boarding/disembarking the LNG carrier at the Triple Island Pilot Station would not be safe activities during most sea conditions. Due to the risk of injury, this approach to monitoring is not a technically feasible option.
- **Qualifications of Monitors:** As noted above, to have a high level of confidence in a monitoring program, the bird strike and stranding surveys should be completed by a biologist or technician. While it is possible that the surveys could be completed by a pilot or crew member under the direction of a biologist, this is not a technically feasible option. The pilot's role is to safely guide the LNG carrier in its transit from Triple Island to the LNG terminal and back to Triple Island. It is not viable to add environmental monitoring responsibilities to the pilot's duties. Similarly, each crew member has a job on the LNG carriers and there may not be time to add monitoring duties as the vessel approaches the terminal. Further, there is not guarantee that the LNG carrier or its crew will be on a regular route to the Cedar LNG terminal and it this could require training a new crew member for each LNG carrier visiting the terminal. As such, using the LNG carrier's crew to conduct the monitoring is not a considered a technically feasible option and, if it was possible, it would yield significant variability in the results between monitors.

As the schedule and workflow for berthing and loading LNG carriers is established, Cedar will investigate the potential for a member of the terminal's environmental team to conduct sweeps of the LNG carrier deck for potential bird strike and strandings. If this is deemed technically feasible (i.e., safety, security and time limitations allow for a technically defensible survey to be completed), Cedar will advise the Impact Assessment Agency of Canada, provide a monitoring procedure, and conduct the monitoring for the first two years of operation. Results will be included in the annual report as outlined below.

### 2.2.1.3 *Reporting on Condition 4.5*

Follow-up program reporting is described in detail in Section 1.1. Reporting specific to Condition 4.5 will include:

- Results of bird mortality surveys
- Information on compliance with Decision Statement conditions
- Number of days on which clearing occurred during the bird nesting season
- Proposed adaptive management measures
- Comparison of the magnitude of Project-related changes to the risk of injury or mortality of migratory birds to the magnitude of changes predicted in the Application.

If bird nest surveys are undertaken per condition 4.3, the annual report will include a summary of survey methods, active nests identified, setbacks and restricted activity periods implemented, implementation monitoring results, results of any protocol reviews triggered, and adaptive management implemented. If monitoring of bird strikes or strandings on the LNG carriers is undertaken, observations of migratory bird mortalities, injuries, and strandings on vessels.

Incidents of migratory bird mortalities or injuries or accidental nest disturbances will be reported to Canadian Wildlife Service following the BC Interagency Wild Bird Mortality Investigation Plan protocol<sup>5</sup> and included in the annual report. Modification of any mitigation measures that are proposed as the result of the follow-up monitoring program will be documented in the annual report. Any changes to mitigation measures during the construction phase of the Project will be incorporated into the CEMP.

## 2.2.2 **CONDITION 10.9: WESTERN TOAD AND COASTAL TAILED FROG**

Condition 10.9.1 requires development of a follow-up program, with input from ECCC and the Haisla Nation, for monitoring of:

- Changes in habitat for western toad and coastal tailed frog
- Western toad and coastal tailed frog use of relocation (salvage) sites and of restored, enhanced, or created wetlands.<sup>6</sup>

ECCC provided comments on an early draft of this memorandum, and Haisla Nation reviewed the follow-up program.

### 2.2.2.1 *Changes to Amphibian Habitat*

Potential impacts on amphibians and amphibian habitat may result from clearing and construction activities that overlap breeding sites, are within 30 m of breeding sites, or overlap overwintering habitat for western toad, and are in watercourses or within 30 m of a watercourse occupied by coastal tailed frog.

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<sup>5</sup> [https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/wildlife-wildlife-habitat/wildlife-health/wildlife-health-documents/wild\\_bird\\_mortality\\_investigation\\_protocol.pdf](https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/wildlife-wildlife-habitat/wildlife-health/wildlife-health-documents/wild_bird_mortality_investigation_protocol.pdf)

<sup>6</sup> No wetland creation or restoration is planned for the Project.

Section 2.1 describes the methods that will be used to verify the Application's predicted effects on the availability of habitat for western toad and coastal tailed frog.

Breeding habitat for western toad is expected to be limited within the Project footprint; however, small ephemeral water bodies (e.g., wetted ditches, vernal pools) may exist temporarily within the Project footprint and provide breeding sites for western toad. It is predicted, in the Application, that a very small area (< 0.1 ha) of mapped wetland may be lost due to access road construction for the transmission line; however, this loss could be averted through road alignment design. Overwintering habitat is likely more widespread but specific to certain features and micro-sites (e.g., ground burrows); in the Application it is predicted that construction will result in the removal 40 ha of upland forest that could be suitable overwintering habitat. Following the completion of construction, the amount of western toad breeding and overwintering habitat within the as-built footprint will be compared to that predicted to be affected in the Application.

Construction of the Project will require the ditching or culverting of ephemeral non-fish-bearing watercourses at the Facility Area, as well as around the marine terminal and at several watercourse crossing for construction of the transmission line. Thirteen of the 25 watercourses that intersect the Project have potential for coastal tailed frog occurrence, and five watercourses have been confirmed as occupied by coastal tailed frog. Following completion of construction, the number of watercourses that support coastal tailed frog that were culverted or had vegetation cleared within 30 m will be summarized and compared to the effects predicted in the Application.

#### 2.2.2.1.1 Mitigation Measures

Mitigation measures for amphibians during construction are described in the CEMP. Mitigation measures will be implemented within 30 m of:

- Known or potential breeding habitat for western toad from approximately April 1 to October 30 (active period); the start and end timing will depend largely on water and air temperatures that regulate the western toad active period in the Project area
- Watercourses known to be or potentially occupied by coastal tailed frog.<sup>7</sup>

Mitigations will be implemented hierarchically, starting with avoidance. If avoidance is not feasible, additional mitigations will be implemented, such as erosion and sediment control (ESC) measures, installing temporary exclusion fencing, and undertaking salvage and relocation. The mitigation strategy and monitoring plan considers best management practices for amphibian salvages in BC (MFLNRO 2016), such as exclusion fencing, salvage timing, relocation, and post-salvage monitoring. The target is that few or no amphibians are harmed during Project activities. If an amphibian is accidentally injured or killed, Cedar will document the incident in the Wildlife Observation Form (Appendix B) and include it in a permit report to FrontCounter BC. Cedar will review the details of the incident and risk of recurrence with a QP and, if necessary, make appropriate changes to construction activities and mitigation measures to reduce the future likelihood of a similar incident. Monitoring of mitigations is summarized in Table 2.

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<sup>7</sup> Watercourses potentially occupied by coastal tailed frog are those that are wetted at the time of construction, have a cobble or boulder substrate, and have gradients of at least 2% (MOE 2015).

**Table 2 Summary of Monitoring for Western Toad and Coastal Tailed Frog Mitigations**

Mitigation (in order implemented)	Objective	Type <sup>1</sup>	Monitoring Method	Measure	Target
<b>Western Toad Breeding Sites During Active Period (approximately April to October)</b>					
1. Avoid construction within 30 m	No construction occurs within 30 m	I	EI to record number of days of construction is within 30 m	<ul style="list-style-type: none"> <li>Number of days construction is within 30 m</li> </ul>	<ul style="list-style-type: none"> <li>Zero days of construction within 30 m, where possible.</li> </ul>
2. If works will occur within 30 m but no in-water work is planned and no salvages are needed, implement ESC measures	ESC measures implemented	I	EI to inspect ESC measures	<ul style="list-style-type: none"> <li>Dates and locations that ESC measures implemented</li> </ul>	<ul style="list-style-type: none"> <li>ESC measures implemented for works within 30 m of breeding sites</li> </ul>
3. If works could result in injury or mortality to western toad, install exclusion fencing and undertake pre-construction surveys	Exclude western toad from construction footprint and reduce potential for mortality of western toad	I/M/E	Record dates and locations of installed exclusion fencing and amphibian surveys; compare to construction dates and locations.  EI to complete maintenance checks of exclusion fencing.	<ul style="list-style-type: none"> <li>Dates and locations of pre-construction mitigation</li> <li>Confirm exclusion fencing installed and maintained per permit specifications</li> <li>Number and life stage of western toads detected.</li> </ul>	<ul style="list-style-type: none"> <li>Exclusion fencing is installed and maintained prior to construction and per permit specifications; exclusion fencing to be removed once salvages are complete and risk of mortality is at pre-construction condition</li> <li>Surveys are completed prior to construction preferably during egg or larvae stages and per permit specifications.</li> </ul>

Mitigation (in order implemented)	Objective	Type <sup>1</sup>	Monitoring Method	Measure	Target
4. If western toad is detected, undertake pre-construction salvages	Reduce potential for mortality of western toad	I	Record dates and locations of pre-construction amphibian salvages or as determined by the permit	<ul style="list-style-type: none"> <li>Dates and locations of salvages; compare to dates and locations of construction</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction salvages are completed for sites where in-water work occurs; salvages are started at least 2 weeks prior to construction, preferably during egg or larvae stage or as determined by the permit.</li> <li>Few or no amphibians are harmed during Project activities.</li> </ul>
5. Relocate salvaged western toads to suitable release site	Reduce potential for mortality of western toad and maintain the local population	I/E	EI to measure water quality, assess predation risk, and check for presence of western toad at release site(s) prior to release and up to two years following release or as determined by the permit	<ul style="list-style-type: none"> <li>Water quality parameters (and compare to salvage sites or as determined in the permit</li> <li>Qualitative measure of predation risk</li> <li>Presence/not detected survey for western toad</li> </ul>	<ul style="list-style-type: none"> <li>Water quality targets as determined by the permit.</li> <li>Predation risk at relocation site is similar to or less than salvage site prior to and up to two years following release.</li> <li>Western toad is present and breeding at relocation site.</li> </ul>
<b>Western Toad Overwintering Sites During Inactive Period (approximately November to March)</b>					
1. Avoid construction within 30 m of wetlands and watercourses and specific hibernacula features identified by a QP	No construction occurs within 30 m, where possible	I	EI to record number of days construction is within 30 m	<ul style="list-style-type: none"> <li>Number of days construction is within 30 m</li> </ul>	<ul style="list-style-type: none"> <li>Zero days of construction within 30 m, where possible.</li> </ul>



Mitigation (in order implemented)	Objective	Type <sup>1</sup>	Monitoring Method	Measure	Target
2. If works will occur within 30 m, then exclusion fencing will be temporarily installed and salvages will be undertaken prior to the onset of inactive period (i.e., mitigation is completed in late summer when western toads are detectable)	Exclude western toad from overwintering site prior to onset of inactive period and reduce potential for mortality of western toad during overwintering period	I/M	Record dates and locations of installed exclusion fencing and amphibian salvages; compare to construction dates and locations.  EI to complete maintenance checks of exclusion fencing.	<ul style="list-style-type: none"> <li>Dates and locations of pre-construction mitigation completed prior to inactive period.</li> <li>Confirm exclusion fencing installed and maintained per permit specifications.</li> <li>Number and life stage of western toads salvaged</li> </ul>	<ul style="list-style-type: none"> <li>Exclusion fencing is installed in late summer and per permit specifications. Exclusion fencing is to be removed after onset of inactive period when toads are hibernating.</li> <li>Salvages are completed in late summer and per permit specifications.</li> </ul>
3. Relocate salvaged western toad	Reduce potential for mortality of western toad and maintain the local population	I/E	EI to assess predation risk and check for presence of western toad at release site(s) prior to release and up to two years following release	<ul style="list-style-type: none"> <li>Qualitative measure of predation risk</li> <li>Presence/not detected survey for western toad</li> </ul>	<ul style="list-style-type: none"> <li>Predation risk at release site is similar to or less than salvage site prior to and up to two years following release.</li> <li>Western toad is present and breeding at release site(s).</li> </ul>
<b>Watercourses Known to Be or Potentially Occupied by Coastal Tailed Frog – Year-Round</b>					
1. Avoid construction within 30 m of watercourses	No construction occurs within 30 m of watercourses, where possible	I	EI to record number of days construction is within 30 m	<ul style="list-style-type: none"> <li>Number of days construction is within 30 m</li> </ul>	<ul style="list-style-type: none"> <li>Zero days of construction is within 30 m, where possible.</li> </ul>

Mitigation (in order implemented)	Objective	Type <sup>1</sup>	Monitoring Method	Measure	Target
2. Implement ESC mitigation as specified by QP if construction will occur within 30 m (Table 3)	ESC measures implemented	I	EI to inspect ESC measures	<ul style="list-style-type: none"> <li>Dates and locations that ESC measures implemented</li> </ul>	<ul style="list-style-type: none"> <li>. ESC measures implemented for works within 30 m of watercourses</li> </ul>
3. If in-stream work is planned, install exclusion fencing and complete salvages (Table 3)	Reduce potential for mortality of coastal tailed frog	I/M	Record dates and locations of in-stream works and pre-construction installation of exclusion fencing and salvages and compare to construction dates and locations or as determined by the permit	<ul style="list-style-type: none"> <li>Number of days of in-stream works.</li> <li>Confirm exclusion fencing installed and maintained during in-stream works.</li> <li>Number and location of pre-construction salvages and number of coastal tailed frogs salvaged.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal tailed frogs are excluded from areas of in-stream works.</li> <li>Pre-construction salvages are completed for areas of in-stream work.</li> <li>Few or no amphibians are harmed during Project activities.</li> </ul>
4. Relocate salvaged coastal tailed frog; exclusion fencing removed after completion of in-stream works	Reduce potential for mortality of coastal tailed frog and maintain the local population within watercourses	E	EI to check presence of coastal tailed frog at release reach(es) prior to release and up to two years following release	<ul style="list-style-type: none"> <li>Presence of coastal tailed frog in relocation reach(es) and, following completion of in-stream works, presence of coastal tailed frog in salvaged reach(es)</li> </ul>	<ul style="list-style-type: none"> <li>Coastal tailed frog is present in relocation reach(es) and salvaged reach(es) are recolonized by coastal tailed frog after completion of in-stream works</li> </ul>
<p>NOTE:</p> <p>E – effectiveness monitoring; M – maintenance monitoring; I – implementation monitoring</p>					

**Table 3 Mitigation for Coastal Tailed Frog in Relation to Construction Type and Watercourse Characteristics**

Previous Detections of Coastal Tailed Frog	Watercourse Suitable for Coastal Tailed Frog	Type of Construction	
		Clearing, Grubbing, or Grading within 30 m of Watercourse but No In-channel Work	Instream Work
Yes	Yes	Implement additional ESC per QP direction	Undertake exclusion fencing and salvage
No	Yes	Implement additional ESC per QP direction	Plan exclusion fencing and salvage if species detected
No	No	Implement standard ESC	Implement standard ESC

**2.2.2.2 Amphibian Salvages and Relocations**

If salvages of western toad or coastal tailed frog are necessary, Cedar will prepare and submit a permit application and Animal Care Application to FrontCounter BC for the salvage and relocation of amphibians. The methods will be described in the permit application and will be consistent with standards for amphibian salvage and animal care used in British Columbia (BC MOE 2014; BC MFLNRO 2016; CHHWG 2017; MECCS 2020; CCAC 2021). Resource specialists who will undertake salvages will be identified in the Animal Care Application. Salvages will continue daily under favorable conditions for detections as determined by the QP, generally until capture rates steadily decrease to few or no individuals detected (BC MFLNRO 2016).

The methods used for amphibian salvage and relocation will be finalized during the permitting process and will likely include:

- A QP will prepare a salvage plan in accordance with anticipated permit conditions and following best practices for salvages (FLNRO 2016). Salvage planning will be done on a case-by-case basis that considers the type of impact (permanent or temporary) and the most appropriate timing and type of mitigation as described in MECCS (2020), FLNRO (2016), and MOE (2014).
- Coastal tailed frog larvae will be salvaged at least 3 days prior to instream work. Exclusion fencing will be installed at both ends of the salvaged stream reach to prevent adults and larvae from entering the affected reach. Salvaged larvae will be relocated in their original stream, approximately 100 m upstream of planned disturbance and where suitable habitat (cover objects) is present (FLNRO 2016).
- The EI will regularly monitor the integrity of installed amphibian exclusion fencing and undertake repairs as needed.

- Relocation sites will be approved by a QP in areas that the Project (and reasonably foreseeable projects) will not interact with, based on suitable habitat conditions.
- A QP will assess candidate relocation sites for western toad based on similarity with salvage sites (e.g., size, water depth, water permanence, water chemistry, presence of vegetation cover and egg-laying substrates, bottom substrate, degree of shading, connectivity to upland habitat, and proximity of roads). Preferred characteristics of relocation sites will be based on descriptions of suitable western toad breeding habitat described in COSEWIC (2012) and characteristics of salvage sites (FLNRO 2016).
- The risk of predation will be assessed qualitatively at potential relocation sites based on the habitat and surrounding area, and whether fish-bearing. This will be assessed again up to two years post-release.
- Suitable upland (non-breeding, hibernating) habitat for western toad will be identified based on criteria determined during the salvage permitting process, likely based on descriptions provided in COSEWIC (2012) and Wind (2021) within 500 m of release sites. Relocation sites will be within 500 m (if possible) of salvage sites so that local population movement patterns and genetics are maintained and potential diseases are not inadvertently transmitted to other populations (FLNRO 2016). Per provincial standards (FLNRO 2016), release sites could be up to 5 km from source sites if nearby sites are either not available or are not suitable.
- Water quality parameters to be measured at salvage sites and candidate relocation sites will be determined during the salvage permitting process. They will likely include pH, water temperature, dissolved oxygen, and conductivity, which are easily measured in the field and are known to affect amphibian habitat quality (Sparling 2010). Suitable relocation sites will be determined based on similarity to the salvage sites. pH levels considered acceptable at relocation sites will be those greater than 4 per the values provided for western toad in the BC pH Water Quality Guidelines (MECCS 2021).

Salvage crews will follow provincial hygiene standards for amphibian handling (MOE 2008). This measure, along with prioritizing relocation sites in close proximity to salvage sites, will reduce the risk of spreading disease. The measure of effectiveness of this mitigation measure will be that salvages and relocations are undertaken as follows:

- Cedar will confirm and document that additional mitigation measures (e.g., installation of exclusion fencing for isolation of breeding sites) are undertaken or supervised by the QP and will remain in place and effective for the duration per the anticipated permit conditions.
- A QP will supervise amphibian surveys and complete habitat quality assessments, including water chemistry parameters and predation risk, at candidate relocation sites prior to and up to two years following release of amphibians; if the habitat quality degrades over the two years, Cedar will work with the QP, ECCC, and Haisla Nation to determine if additional or modified mitigation measures are required.
- Cedar will confirm and document that no clearing, grubbing, or grading occurred within setbacks unless an amphibian survey and salvage was completed in accordance with permit conditions.

### 2.2.2.3 Reporting on Condition 10.9

Amphibian surveys, salvages, and relocations, mitigations implemented and their assessed effectiveness, and adaptive management measures implemented (if any), will be included in an annual report (Section 1.1). Additionally, a summary of amphibian capture and handling activities will be submitted to FrontCounter BC as anticipated by permit conditions. The report will include the location of the salvage sites and the species, number of individuals in each life stage, and any mortalities or injuries. The salvage data and report will also be submitted to the Wildlife Species Inventory database as anticipated by permit conditions.

## 2.2.3 CONDITION 10.11: LITTLE BROWN MYOTIS

Condition 10.11 requires that a follow-up plan be developed for little brown myotis in consultation with ECCC and the Haisla Nation. ECCC provided comments on an earlier version of this memorandum, and Haisla Nation also reviewed the follow-up program.

Conditions pertaining to little brown myotis are:

- **10.10.** The Proponent shall give preference to avoiding vegetation clearing required for the Designated Project during risk timing windows for little brown myotis (*Myotis lucifugus*) set out in British Columbia's *Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia*. Where the Proponent plans to undertake vegetation clearing during these periods, the Proponent shall conduct pre-vegetation clearing surveys, under the direction of a Qualified Professional, to identify if any roost, hibernacula or maternity roost site is present in any of the areas to be cleared.
- **10.10.1.** If any roost, hibernacula or maternity roost site is identified in any of the areas to be cleared during the surveys undertaken in accordance with condition 10.10, the Proponent shall have a Qualified Professional determine if additional or modified species-specific mitigation measures are required to protect little brown myotis (*Myotis lucifugus*). The Proponent shall implement any such measure before and during vegetation clearing occurring in that area and provide the measure(s) to the Agency prior to their implementation.

The critical timing periods for little brown myotis given in *Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia* (MFLNRO 2014; 'maternity roost sites, May 15 – September 30; hibernaculum sites, October 1 to May 31') span the entire year, so avoiding vegetation clearing during critical timing periods as described in Condition 10.10 is not possible. The more-recent provincial best management practices guidance for bats (MOE 2023) recommends avoiding activities affecting maternity sites from June 1 to September 1; for mitigation, this date range will be considered the most important period for avoidance of construction within potential tree-roosting habitat.

Condition 10.10.1 refers to both roosts and maternity roosts; for Project mitigation both will be considered under the general category of 'roosts'. Little brown myotis may roost in tree cavities, tree bole cracks, under bark, or within crevices in rock faces or cutbanks (ECCC 2018b; MOE 2016). Little brown myotis on the North Coast may preferentially roost in anthropogenic habitat rather than in natural sites (Willie et al. 2018). Individual roosts in forests or steep terrain are very difficult to find or assess by surveyors on the ground.

Condition 10.10 and Condition 10.10.1 do not distinguish between active and inactive roosts. Tree roosts are considered ephemeral (remaining suitable for a relatively short period of time) and little brown myotis frequently switch roosts (ECCC 2018b Randall 2014; Slough and Jung 2020); therefore single-day occupancy surveys are not a suitable criterion for identifying suitable roost microsites (i.e., inactive roosts). Field surveys were undertaken to identify potential roost features in suitable roosting habitat planned to be cleared for the facility and stockpile. Potential bat roost features identified included live and dead trees, stumps and a rock outcrop. Surveys to identify potential roost features will be completed prior to clearing in other areas of the Project (e.g., transmission line) when clearing is scheduled.

Little brown myotis in Canada use roost trees averaging at least 33 cm diameter at breast height (Barclay and Kurta 2007), therefore, potentially suitable tree-roosting habitat is defined at the stand scale as structural stage 6 and 7 (mature and old) forest. Mitigation will also be applied to individual features identified during field surveys as having high potential for providing roosts ('potential bat roost features').

Hibernacula for little brown myotis have been found in caves, mines, wells, tunnels, rock crevices, talus, and small openings in the ground (ground hibernacula) under tree roots and stumps (Blejwas et al. 2021; ECCC 2018; Neubaum 2018). No caves, mines, wells, or tunnels are known present within the clearing area so potential hibernacula, for the purposes of mitigation, are defined as rock crevices and talus slopes. Identification of ground hibernacula is not practical at the scale of the Project because potentially suitable microsites are ubiquitous in forested habitat. Clearing along the transmission line corridor will not include grubbing (except along the service road) so underground hibernacula may remain intact after clearing.

The following subsections describe the proposed follow-up program for little brown myotis. Mitigations will be implemented hierarchically, starting with avoidance of clearing during the roosting period. If avoidance is not feasible, additional mitigations will be implemented, such as implementing setbacks for potential roost sites or undertaking surveys to verify that bats are not occupying a feature before the feature is cleared. A summary of mitigation monitoring is presented in Table 4.

**Table 4 Summary of Monitoring for Little Brown Myotis Mitigation**

Mitigation (in order implemented)	Objective	Type	Monitoring Method	Measure	Target
Bat Roosts					
1. Avoid clearing potential bat tree-roosting habitat (structural stage 6 and 7 forest) during bat roosting period (May 15 to September 30)	Clearing of structural stage 6 and 7 forest occurs outside the bat roosting period as much as practical and safe.	I	Record number of days of clearing of structural stage 6 and 7 forest from May 15 to September 30	Number of days from May 15 to September 30 that clearing of structural stage 6 and 7 forest occurred, by year	Zero days from May 15 to September 30 that clearing occurred within structural 6 and 7 forest, where possible
2. Implement setbacks for potential bat roost features during period of occupancy (Appendix A)	Avoid clearing potential bat roost features during period of occupancy	I	Monitor setbacks and record unauthorized breaches during period of occupancy	Number of unauthorized breaches of setbacks	Zero unauthorized breaches of setbacks
3. Undertake acoustic surveys and/or visual inspections to assess occupancy of identified potential bat roost features during period of occupancy; only clear roost feature when confirmed unoccupied and within 24 hours of confirmation surveys	Avoid clearing occupied bat roosts	I	Document surveys completed per survey criteria for identified potential roost features	Number of identified potential roost features cleared without meeting two-survey criteria described in Section 2.2.3.2	Zero identified potential roost features removed without meeting two-survey criteria described in Section 2.2.3.2
4. If the roost feature is confirmed unoccupied but clearing of the feature cannot be completed within 24 hours, install exclusion to keep bats out of the feature if practical and as determined by the QP	Where practical exclude bats from entering the roost feature if the feature is determined unoccupied	I	Document exclusion type and date installed	Number of roost features with exclusion installed	Zero roost features removed without meeting two-survey criteria and exclusion installed





Mitigation (in order implemented)	Objective	Type	Monitoring Method	Measure	Target
Bat Hibernacula					
1. Implement setbacks (Appendix A) to identified potential bat hibernacula (rock crevices and talus)	Avoid disturbance of identified potential bat hibernacula	I/M	Monitor setbacks and record unauthorized breaches	Number of unauthorized breaches of setbacks	Zero unauthorized breaches of setbacks
2. Undertake acoustic surveys and/or visual inspections from August 15 to October 1 or March 15 to May 15 to assess occupancy of potential hibernacula	Avoid disturbance of confirmed bat hibernacula	I/M	Document surveys completed for identified potential hibernacula	Surveys completed at identified potential hibernacula	Zero occupied hibernacula disturbed during occupancy period
3. If hibernaculum is confirmed unoccupied, then feature is removed or install exclusion to keep bats out of the feature if practical and as determined by the QP	Avoid clearing occupied hibernacula	I	Document date feature is removed or exclusion installed	Number of hibernacula surveyed and exclusion installed	Zero hibernacula removed without occupancy survey and exclusion installed

### 2.2.3.1 *Mitigation Monitoring*

Mitigation measures for little brown myotis during construction are described in the CEMP and are focused on avoiding clearing, blasting, and road construction within setbacks of potential roost sites during sensitive periods (roosting: May 15 – September 30) and within setbacks of potential hibernacula during hibernation period (October 1 to May 31). Setback distances (Appendix A) will be implemented using guidance in MECCS (2019) and MOE (2016a). The monitoring measures of the mitigation will be that the appropriate setback is maintained as follows:

- Cedar will report the number of days that clearing occurred within potential bat roosting habitat (structural stage 6 and 7 forests) from May 15 to September 30
- Cedar will confirm and document that an appropriate setback (Appendix A) around potential roost features is clearly delineated and maintained for the duration of the sensitive period.
- Cedar will confirm and document that no clearing, blasting, or road construction occurred within roost feature setbacks during the sensitive periods unless a survey, supervised by a QP experienced with bat surveys, is completed to confirm that the site is not active (Section 2.2.3.2).
- The target for determining effectiveness will be that potential or confirmed active bat roost features are not removed or disturbed during the sensitive periods.
- Cedar will confirm and document that no clearing, blasting, or road construction occurred within setbacks (Appendix A) around potential hibernacula unless a survey, supervised by a QP experienced with bat surveys, is completed during the swarming period and no evidence of bat hibernation is found.

### 2.2.3.2 *Identifying Active Roost and Hibernation Sites*

Field surveys will be undertaken if tree clearing must occur during the sensitive roosting period within 100 m of suitable roosting habitat or within 100 m of potential hibernating features at any time. A QP will develop a survey work plan to assess the likelihood of presence of active roost sites or hibernacula within the clearing area and confirm occupancy, where feasible. The plan will be based on guidance provided in RISC (2022) and New Zealand Department of Conservation Bat Recovery Group (2021).

A resource specialist experienced with bat roost surveys will identify potential roost sites of little brown myotis (Barclay and Kurta 2007; MOE 2016; MECCS 2019; Government of BC 2024) during pre-construction surveys within the clearing area, such as:

- Live or dead trees of a relatively large diameter with cavities, cracks, defects, and sloughing bark
- Large root wads and stumps
- Human structures (e.g., bridges, buildings)
- Rock crevices and talus

Passive or active acoustic surveys based on methods described in RISC (2022) may be used to assess bat use of potential roost features. If clearing can be delayed, the QP will delineate a setback around the roost site to protect it during clearing of the surrounding area. Recommended setback distances are provided in Appendix A.

If roost occupancy must be confirmed, a resource specialist, under the direction of a QP, will deploy ultrasonic acoustic recording units during the roosting period and may visually inspect potential roosting structures for evidence of bats, guano, and urine. Passive acoustic surveys will be carried out using methods similar to those described in New Zealand Department of Conservation's Bat Recovery Group (2021) for two consecutive days and under appropriate weather conditions (i.e., no precipitation, no or low wind, temperature at sunset above 10°C [Nagorsen et al. 2014; RISC 2022]). A borescope or thermal image camera may be used to inspect potential roost structures (RISC 2022). If guano is present, the resource specialist will collect samples per collection methods described in the BC Community Bat Project DNA Sampling Protocol (BC Community Bat Project 2022) for analysis to confirm species for annual reporting purposes and to inform adaptive management such as additional mitigation measures for species at risk, where applicable. If the roost site is determined to be unoccupied for the two days of inspections, then the roost site can be cleared within 24 hours of inspections.

Setbacks of potential hibernaculum features will be permanent if possible. If a potential hibernaculum requires confirmation so that clearing or construction may occur within setbacks, a QP will prepare a plan to monitor the feature with an ultrasonic acoustic recording unit from August 15 to October 1 to cover the fall swarming period, or between March 15 and May 15 when bats are expected to emerge from hibernacula (RISC 2022). If no bat activity consistent with hibernation is documented, the setback may be removed. If bat activity consistent with hibernation is documented, Cedar will consult with ECCC, BC Ministry of Water, Land and Resource Stewardship, and Haisla Nation to determine if additional mitigation measures are needed.

#### 2.2.3.3 *Reporting on Condition 10.11*

The annual report will include:

- Results of surveys for high-potential bat habitat features
- Mitigations implemented and monitoring outcomes
- Adaptive management measures suggested or implemented (if any)
- Results of consultation with regulatory authorities and Indigenous groups in the event an active roost or hibernaculum is identified
- Results of DNA analysis of bat guano

Data from ultrasonic acoustic recording units will be analyzed using Kaleidoscope Pro (Wildlife Acoustics 2023) or a similar acoustic data analysis program, confirmed through review by an experienced bat acoustic analyst following methods as documented in RISC (2022) and summarized in the annual report.



## **2.3 Follow-up Program Reporting**

Cedar will prepare annual reports during each year of construction (starting in the first year when clearing occurs) and in the first two years of operation. Content of annual reports is described in Section 2.2.1.3, Section 2.2.2.3 and Section 2.2.3.3.

Cedar will provide annual reports to the Agency, ECCC and Indigenous Nations no later than March 31 following each reporting year during which the follow-up program is implemented.

## **2.4 Summary**

Cedar believes that, through the development and implementation of this wildlife follow-up program, Decision Statement conditions 4.5, 10.9, and 10.11 will be satisfied. If the Agency would like to discuss the contents of this follow-up program, Cedar would be pleased to arrange a meeting.

### 3 References

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## **Appendix A                      Recommended Setbacks and Sensitive Periods for Wildlife Habitat Features**

**Setbacks and Sensitive Periods for Wildlife Habitat Features Known or with Potential to Occur<sup>1</sup>**  
**(SOURCE: Table 20 in CEMP)**

<b>Wildlife Habitat Feature (if present)</b>	<b>Recommended Setback of the Feature</b>	<b>Sensitive Period when Setback is in Effect</b>	<b>Reference</b>
Migratory bird nest	As determined by the QP depending on species, nest type, surrounding area, and disturbance type	See Table 19 in the CEMP	ECCC 2023b
Bald eagle nest	200 m	Year-round	MOE 2013
	300 m (200 m year-round plus 100 m “quiet buffer” during the nesting period)	January 5 to August 31	
Marbled murrelet suitable nesting habitat	1,000 m (blasting) 100 m (road building, clearing, equipment operation)	April 1 to September 14	WLRS 2023b
Band-tailed pigeon mineral source site	Not established; recommend 200 m	Mid-summer to October	COSEWIC 2008 ECCC 2019
Bat roost	300 m (blasting and road construction)	May 15 to September 30	FLNRO 2014b
	100 m (tree clearing)		MOE 2016
Bat hibernaculum	300 m (blasting and road construction)	October 1 to May 31	FLNRO 2014b
	100 m (tree clearing) or as directed by a QP	At all times	MOE 2016
Active black bear den	200 m	October 21 to May 15	Davis 2021
Ungulate mineral lick	500 m	April to October	FLNRO 2014b
Pond-dwelling amphibian breeding site and dispersal routes	30 m	March to September (breeding) July to September (dispersal)	MOE 2014 FLNR 2016
Watercourses with coastal tailed frog	30 m	Year-round	ECCC 2018

**NOTES:**

<sup>1</sup> Other wildlife habitat features may be identified through chance find. Where this occurs, a QP will be engaged to identify the appropriate setback distance and sensitive timing period. A QP will be engaged to identify the appropriate mitigation measures.



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## **Appendix B      Wildlife Observation Form**

## Cedar LNG – Wildlife Observation Form

<b>Name of Observer(s):</b>	<b>Date and Time:</b>
<b>Weather:</b> <i>temperature, wind, precipitation</i>	
<b>Location:</b> <i>e.g., building name, road name; use GPS coordinates, if possible</i>	<b>Species:</b> <i>include number of individuals; if species is unknown describe size, colour, features, etc.</i>
<b>General Activity:</b> <i>Describe the activity at the facility at the time of the observation (e.g., maintenance)</i>	
<b>Type of Observation:</b> <i>check at least one and provide number of animals</i> <input type="checkbox"/> Dead _____ <input type="checkbox"/> Injured _____ <input type="checkbox"/> Aggressive _____ <input type="checkbox"/> Attracted to site / habituated _____ <input type="checkbox"/> Other (e.g., species at risk) _____	<b>Description of Observation or Incident:</b> <i>include behaviour of animal and any interactions with people</i>
<b>Action(s) Taken by Observer:</b> <i>e.g., was animal captured? were other workers notified of aggressive animal in area? was a dead animal disposed of and how?</i>	<b>Photo ID:</b> <i>include photos of the animal(s) for species ID and site / circumstance of the incident, if relevant. Take photos of full body, legs, head close-up, and wings, if possible. Please photograph each animal that appears to be a different species</i>  # of Photos Submitted with Report: _____

For assistance with:

- *injured deer, bears, wolves, cougar, coyote contact BC Conservation Officer Service: 1-877-952-7277*
- *other injured wildlife call Terrace Raven and Crow Rehab Sanctuary: 250-975-0340*
- *injured or dead migratory birds: 1-866-431-BIRD (2473)*

Email this form and photos within 24 hours to: Jason.Lyth@pembina.com

**Sign-off: Environmental Inspector to complete:**

<b>Name:</b>	<b>Signature:</b>
<b>Follow-up:</b> <i>any actions required, modified mitigations, further monitoring, follow-up to determine cause</i>	<b>Was a QP or regulatory agency consulted?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> Name: _____ Agency: _____ Date Consulted: dd/mmm/yyyy _____
<b>Date added to Wildlife Reporting Database:</b> _____/_____/_____ dd/mmm/yyyy	<b>Report ID:</b>





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## **Appendix C**

## **Wildlife Survey Form**

## Cedar LNG – Wildlife Survey Form

<b>Environmental Inspector:</b>	<b>Date:</b>	<b>Day</b>	<b>Month (text)</b>			<b>Year</b>		
						2	0	
<b>Other Observers:</b>	<b>Survey Start Time:</b> _____							
	<b>End Time:</b> _____							
<b>Weather:</b>								
Wind direction: _____				Temperature: _____ °C Cloud cover: _____ %				
Wind speed: use Beaufort scale or km/h _____				Precipitation:				
<b>Beaufort scale:</b>				<input type="checkbox"/> N = None		<input type="checkbox"/> LR = Light Rain		
0 = calm (< 2 km/h)		4 = moderate breeze, small branches move, dust rises (20-29 km/h)		<input type="checkbox"/> F = Fog		<input type="checkbox"/> HR = Hard Rain		
1 = light air (2-5 km/h)		5 = fresh breeze, small trees sway (30-39 km/h)		<input type="checkbox"/> M = Misty drizzle		<input type="checkbox"/> S = Snow		
2 = light breeze, leaves rustle (6-12 km/h)		6 = strong breeze, large branches move, wind whistles (40-50 km/h)		<input type="checkbox"/> D = Drizzle		<input type="checkbox"/> H = Hail		
3 = gentle breeze, leaves and twigs move 13-19 km/h)								
<b>Survey Location:</b> circle one below and add specifics, as needed (e.g., building name)								
Transmission Line			Facility Area			Other include name:		
<b>Survey Coordinates (UTM):</b>				<b>Reason for Survey:</b> e.g., inclement weather during bird migration period; routine monthly inspection				
Start: may be same as survey location								
E			N					
End: if different from start								
E			N					

<b>Wildlife Observations:</b> Include photos for a QP to verify species and photos of site/circumstance of the incident, if applicable; For more than five wildlife observations, use next page to record additional data							
Obs. #	Species	Age / Sex*	Photo ID	No. of Individuals	Location (UTM preferred; or describe)	Mortality / Injured / Other	Possible Cause

\*A=Adult J=Juvenile U=Unknown / M=Male F=Female U=Unknown

**Recommendations:** e.g., follow-up or adaptive management measures; consultation with a QP or regulatory agency. If more than one wildlife observation, please specify for each Obs. # in table above.

**Sign-off:**

<p><b>Was a QP or regulatory agency consulted? No</b> <input type="checkbox"/></p> <p>Name: _____</p> <p>Agency: _____</p> <p>Date Consulted: dd/mmm/yyyy _____</p>	<p><b>Environmental Inspector Signature:</b></p>
<p><b>Date added to Wildlife Reporting Database:</b></p> <p>_____/_____/_____</p> <p>dd/mmm/yyyy</p>	<p><b>Report ID:</b></p>

**Additional Records:**

<p><b>Environmental Inspector:</b></p>	<p><b>Date:</b> dd/mmm/yyyy</p>
--	---------------------------------

<b>Wildlife Observations:</b>							
Obs. #	Species	Age / Sex	Photo ID	No. of Individuals	Location (UTM preferred, or describe)	Mortality / Injured / Other	Possible Cause

**For assistance with:**

- injured deer, bears, wolves, cougar, coyote contact BC Conservation Officer Service: 1-877-952-7277
- other injured wildlife call Terrace Raven and Crow Rehab Sanctuary: 250-975-0340
- injured or dead migratory birds: 1-866-431-BIRD (2473)