

# **Wildlife Management and Monitoring Plan – Operation Phase**

**Woodfibre LNG Project:  
WLNG-W0001-CM-PLN-0017 Rev 2**

**November 5, 2024**

Prepared By:  
Woodfibre LNG General Partner Inc.

123221624EN-RPT0002



## Preamble

The Woodfibre Liquefied Natural Gas Project (the Project) is a liquefied natural gas export facility being constructed on the former Woodfibre Pulp and Paper Mill site in Átl'ka7tsem (Howe Sound), approximately seven kilometres south of Sk̓wxwú7mesh (Squamish). The Project is on the historical location of a Sk̓wxwú7mesh Úxwumixw (Squamish Nation) village known as Swiyát. Swiyát and Átl'ka7tsem (Howe Sound) are tied to the cultural well-being of Sk̓wxwú7mesh Úxwumixw (Squamish Nation) members, their ancestors, and their descendants and to other Indigenous groups as defined in the Project's Environmental Assessment Certificates. The Project is also operating within the traditional, ancestral, and unceded territory of the səliwətał (Tseil-Waututh) Nation. Woodfibre LNG General Partner Inc. recognizes the importance of these areas to the Sk̓wxwú7mesh stélmexw (Squamish People), and other Indigenous groups. Woodfibre LNG General Partner Inc. seeks to construct and operate the Project in a manner that is respectful of Indigenous values. This Estéteýwilhs iy Ínexwantas ta Sekw'ekw'inexw (Wildlife Management and Monitoring Plan) is primarily written in English with important place names, species, phrases, and passages provided in Sk̓wxwú7mesh sníchim (the Squamish language).

Temíxwiýikw chet wa naantem chet ti temíxw Swiyát  
Chet wa sménhemswit kwis ns7éyxnitas chet ti temíxw  
We7ú chet kwis t'íchimwit iy íwas chet ek' l tti.

Our ancient ancestors named this place Swiyát  
We, as their descendants safeguard these lands  
We will continue to swim and fish in these clear waters.

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Qualified Professional sign-off: \_\_\_\_\_

Signature

Joanna Preston B.Sc., R.P.Bio.

Printed Name

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# WOODFIBRE LNG PROJECT: WILDLIFE MANAGEMENT AND MONITORING PLAN – OPERATION PHASE

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## Squamish-English Translation

| Squamish                                     | English  |
|--|--|
| Átl'ka7tsem                                  | Howe Sound   |
| ch'áatl'am                                   | hunting  |
| Estéteýwilhs iy Ínexwantas ta Sekw'ekw'inexw | Wildlife Management and Monitoring Plan                    |
| élhkaý                                       | snake  |
| ínexwantas                                   | monitoring   |
| kw'áxwa7s tl'a shá7yu                        | western screech-owl nest boxes                             |
| kw'ekw'ík'w'ehatl'                           | barn swallow   |
| lams tl'a kw'ekw'ík'w'ehatl'                 | barn swallow nest cups                                     |
| nsexá7xem                                    | band-tailed pigeon   |
| piyís  | marbled murrelet   |
| smekw'á7                                     | great blue heron   |
| sekw'ekw'inexw                               | wildlife   |
| sekw'ekw'inexw tl'a shkwerh                  | marine bird  |
| səlilwətał                                   | Tsleil-Waututh   |
| shá7yu                                       | western screech-owl  |
| skáp'kap'tsaylh                              | bat  |
| skeláw                                       | beaver   |
| Skwxwú7mesh                                  | Squamish   |
| Skwxwú7mesh sníchim                          | Squamish language  |
| Skwxwú7mesh stélmexw                         | Squamish people  |
| Skwxwú7mesh Úxwumixw                         | Squamish Nation  |
| Smánit                                       | Mountain   |
| sp'ákw'us                                    | bald eagle   |
| stákw  | water  |
| Swiyát                                       | historic Squamish Nation village located at Woodfibre Site |
| temíxw                                       | land   |
| tsíptspí7lhtn                                | bird nest  |
| wexés  | frog   |

## Abbreviations

|                 |   |
|-----------------|---|
| the Application | Application for an Environmental Assessment Certificate |
| BC              | British Columbia  |
| BC EAO          | BC Environmental Assessment Office                      |
| BMP             | best management practice                                |
| CDC             | BC Conservation Data Centre                             |
| CPA             | Certified Project Area                                  |
| EAC             | Environmental Assessment Certificate                    |
| EC              | Environment Canada                                      |
| ECCC            | Environment and Climate Change Canada                   |
| EM              | Environmental Monitor                                   |
| EMP             | Environmental Management Plan                           |
| FDS             | Federal Decision Statement                              |
| FLNR            | Ministry of Forests, Lands, Natural Resource Operations |
| km              | kilometre   |
| km/h            | kilometres per hour                                     |
| LNG             | Liquefied Natural Gas                                   |
| m               | metre   |
| MBMP            | Marine Bird Management Plan                             |
| OEMP            | Operation Environmental Management Plan                 |
| OGC             | Oil and Gas Commission                                  |
| the Project     | Woodfibre Liquefied Natural Gas Project                 |
| QP              | Qualified Professional                                  |
| SARA            | <i>Species at Risk Act</i>                              |
| SNEAA           | Squamish Nation Environmental Assessment Agreement      |
| SOMC            | species of management concern                           |
| uARU            | ultrasonic acoustic recording unit                      |
| WMMP            | Wildlife Management and Monitoring Plan                 |
| Woodfibre LNG   | Woodfibre LNG General Partner Inc.                      |

## 1.0 INTRODUCTION

Woodfibre LNG General Partner Inc. (Woodfibre LNG) will construct and operate the Woodfibre Liquefied Natural Gas Project (the Project), which is located on the former Woodfibre Pulp Mill site approximately seven kilometres (km) southwest of Sk̓wx̓wú7mesh (Squamish), British Columbia (BC) (Figure 1). The Project will have capacity to liquefy up to 2.1 million tonnes per year of natural gas, a storage capacity of 250,000 cubic metres, and will export the liquefied natural gas (LNG) via tankers.

The Project underwent a comprehensive environmental assessment process from 2013 to 2015 and Woodfibre LNG received:

- an environmental assessment approval from Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) through the Squamish Nation Environmental Assessment Agreement (SNEAA) in 2015
- an environmental assessment certificate (EAC) for the Certified Project Area (CPA) under the British Columbia *Environmental Assessment Act* (EAC #E15-02) in 2015
- a positive Federal Decision Statement (FDS) under the *Canadian Environmental Assessment Act, 2012* in 2016

Three EAC amendments were granted by the BC Environmental Assessment Office (BC EAO) in 2017, 2019, and 2023, the FDS was most recently reissued in 2024. Woodfibre LNG also received an extension on EAC#15-02 from the BC EAO in October 2020. The provincial, Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation), and federal environmental assessment processes have each yielded conditions of approval that Woodfibre LNG must address.

Most of the Project is on fee simple, industrially zoned, brownfield temíxw (lands) with more than 100 years of industrial use. There is no road access to the CPA, and all personnel, equipment, and supplies for the Project will be brought in by vessel via Átl'ka7tsem (Howe Sound). The Project will use electrical power sourced from BC Hydro and gas will be supplied to the facility by FortisBC.

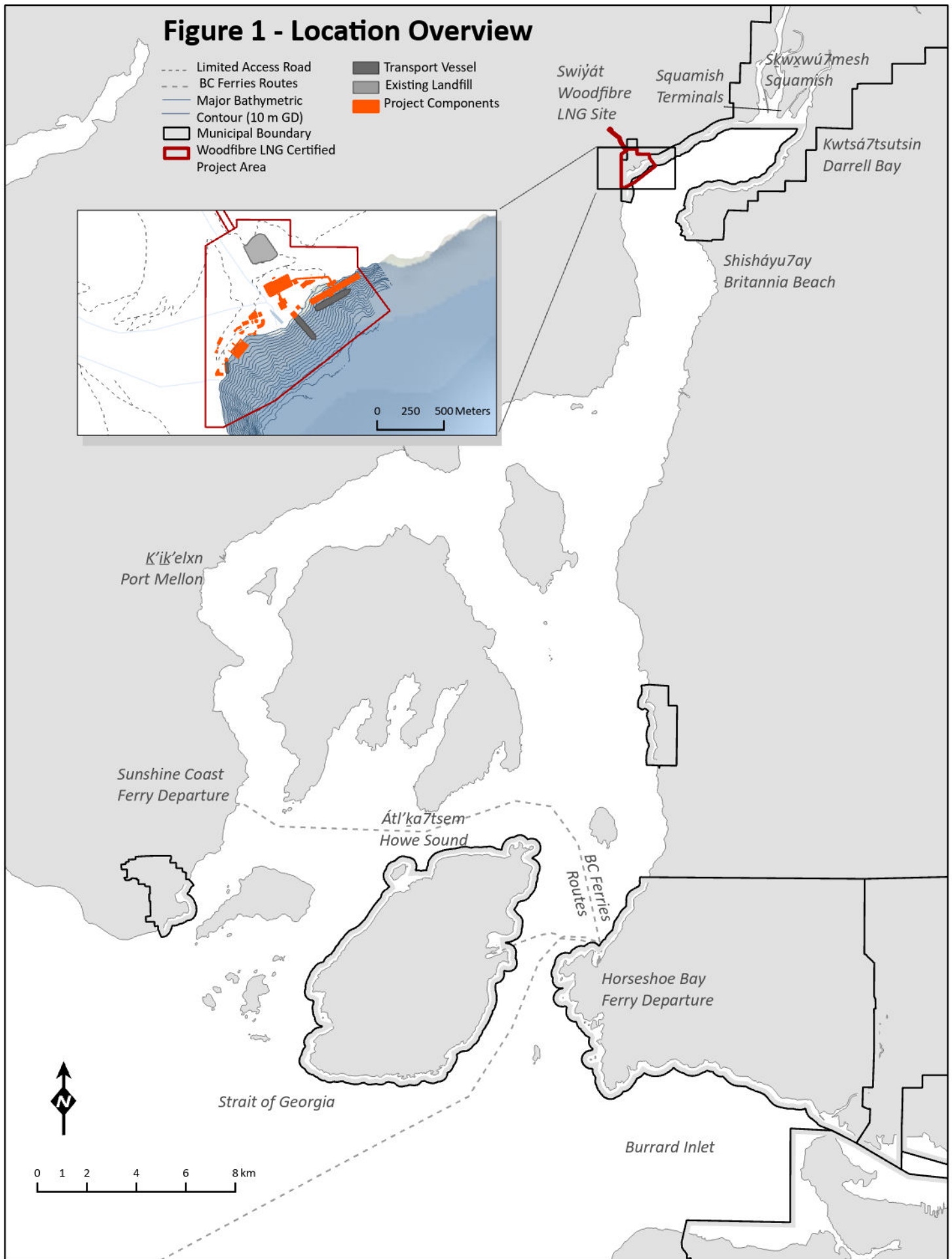
The CPA and key Project components are illustrated in Figure 2. Key Project components for the Project are:

- land-based natural gas processing and liquefaction facilities
- a floating storage and offloading unit
- construction worker accommodation
- supporting infrastructure

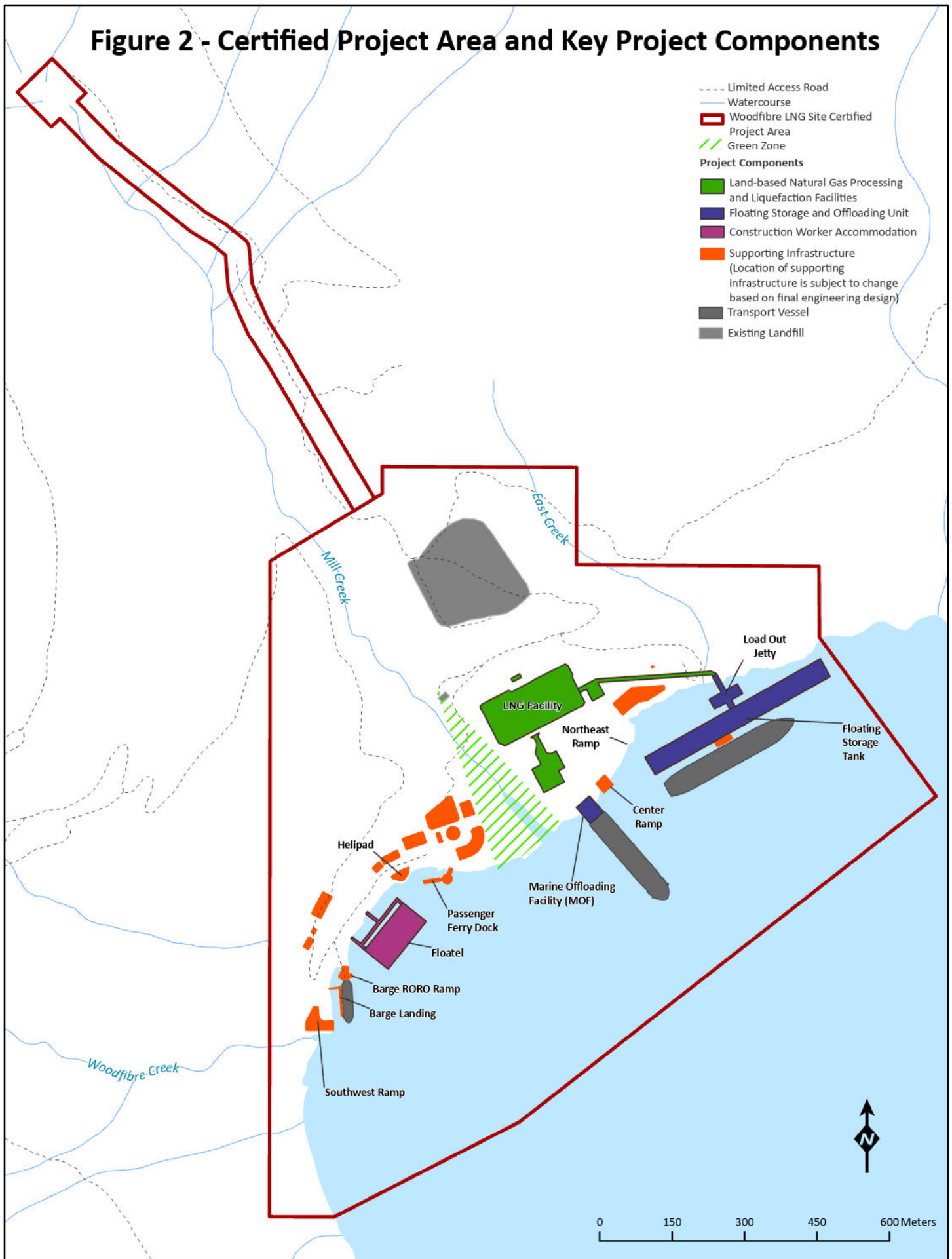
The supporting infrastructure includes buildings (e.g., administration, control rooms, maintenance, dry storage and chemical, fire house, first aid, safety and guardhouse), fencing, material storage and laydown areas, utility and loading lines, and boil off gas vapour lines.



# Figure 1 - Location Overview



# Figure 2 - Certified Project Area and Key Project Components



Operation activities that are subject to the environmental assessment decisions and have the potential to interact with sekw'ekw'inexw (wildlife) are divided into four sections:

1. Commissioning
  - Flaring will occur during commissioning to test that the flaring system is operating properly
2. LNG Production and Transport
  - Transit of LNG shipping carriers within the CPA (3-4 carriers per month leaving the facility)
  - Transit of support vessels such as BC Coast Pilots and tugs within the CPA
3. Supporting Activities
  - LNG production (e.g., pre-treatment and liquefaction of natural gas, storage, and offloading of LNG at the floating storage and offloading unit)
  - Daily use of stákw (water) taxis to transport workers and materials to the facility
  - Transit of fuel delivery barges and flat barges to the Project site
  - Diversion of stákw (water) from Mill Creek for normal operation and for firefighting in the event of an emergency
  - Stormwater management using ditches and culverts
4. Maintenance
  - Flaring may occur during regular maintenance to test that the flaring system is operating properly

## 1.1 OBJECTIVE

The objective of this Operation Estéeywilhs iy Ínexwantas ta Sekw'ekw'inexw (Wildlife Management and Monitoring Plan; Operation WMMP) is to describe measures that will be implemented to mitigate potential effects on sekw'ekw'inexw (wildlife) during the operation phase of the Project. This plan is prepared prior to construction and will be updated prior to start of operation as required by Project conditions (See Section 1.2). Mitigation measures are described in Section 5.0. The Operation WMMP includes:

- Best management practices (BMPs) and mitigation measures identified in the environmental assessment that were selected to reduce or avoid potential effects on sekw'ekw'inexw (wildlife)
- Activities that support mitigation, such as sekw'ekw'inexw (wildlife) surveys
- Ínexwantas (monitoring) activities, including procedures for reporting interactions with sekw'ekw'inexw (wildlife) including incidents of sekw'ekw'inexw (wildlife) conflicts and mortalities.

The Operation WMMP is a living document and revisions may be made from time-to-time as relevant new information becomes available, if there are changes in legislation, if performance objectives are not met (see Section 6.0), or as required by Skwxwú7mesh Úxwumixw (Squamish Nation), Tsleil-Waututh Nation, or regulatory agencies. If the Operation WMMP requires updating, Woodfibre LNG will prepare a red-line version of the document identifying the changes that were made. The red-line version will be issued to Skwxwú7mesh Úxwumixw (Squamish Nation), səliwətał (Tsleil-Waututh Nation), and regulatory agencies for a 30-day review and comment period. After comments are received, the document will be updated and issued as a clean final revision for approval by Skwxwú7mesh Úxwumixw (Squamish Nation) and submittal to the BC EAO. The Operation WMMP will continue to be implemented unless Woodfibre LNG is advised otherwise by the BC EAO.

Reporting is a component of the Operation WMMP and is included in Section 7.0. Annual ínexwantas (monitoring) reports will include updates on the status of species at risk and species of management concern (SOMC), and any newly published relevant BMPs and recovery strategies. If needed, additional mitigation measures may be necessary to reduce or avoid effects of the Project on the affected species, in accordance with changes in species status and BMPs during operation.

## 1.2 PROJECT APPROVALS AND CONDITIONS

The following are the səkw'ekw'ínexw (wildlife) related conditions relevant to operation of the Project:

- EAC #15-02 Condition 12 (Wildlife – Operation)
- *Canadian Environmental Assessment Act, 2012* Decision Statement Conditions 2.4 and 2.6 (General Conditions), 4.1, 4.2 and 4.3 (Migratory Birds), and 9.2 and 9.3 (Listed Species at Risk)
- Mitigation measures enabled by Condition 12 of the SNEAA

The Operation Environmental Management Plan (OEMP) required by EAC Condition 21 (Environmental Management Plans) will be drafted prior to the start of operation. Once the OEMP is drafted, the Operation WMMP will be updated to include appropriate cross references and will comply with the OEMP.

Concordance tables that cross-reference the sections of the Operation WMMP to the specific conditions are provided for each of the provincial and federal environmental assessment decisions (Table 1, Table 2). The Skwxwú7mesh Úxwumixw (Squamish Nation) environmental assessment decision and conditions are described in Section 1.3. Comments received during consultation on the development of this Operation WMMP, and Woodfibre's responses, are provided separately in a Consultation Record, as required by EAC Condition 2.

Some of the EAC, FDS and Skwxwú7mesh Úxwumixw (Squamish Nation) conditions refer to construction but have been included in this plan if part of the condition also applies to operation. Conditions relating to construction are discussed in the Construction WMMP.

**WOODFIBRE LNG PROJECT:  
WILDLIFE MANAGEMENT AND MONITORING PLAN – OPERATION PHASE**

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**Table 1: EAC Conditions Relevant to the Operation Estéteýwilhs iy Ínexwantas ta Sekw'ekw'inexw (Wildlife Management and Monitoring Plan)**

| Condition Number | Condition  | Operation WMMP Reference                                |
|------------------|--|---|
| EAC Condition 12 | The Holder must develop a wildlife management and monitoring plan for Operations in consultation with EC, FLNR, OGC and Aboriginal Groups, that must at a minimum:   | Entire Plan   |
|                  | Set out the means by which the wildlife mitigation measures related to Operations in the Application Table 22-1 (sections 5.12–5.14 and 5.17) will be implemented;   | Section 5.0   |
|                  | Identify mitigation measures and migratory bird timing windows, to reduce the risk of mortality and injury to birds during planned flaring events during Operations, as feasible from a technical and safety perspective to the satisfaction of a Qualified Professional;  | Section 5.3   |
|                  | Include mitigation measures to avoid or reduce human-wildlife conflicts and to avoid or reduce direct and indirect wildlife mortality; and   | Section 5.2<br>Section 5.3<br>Section 5.5<br>Appendix A |
|                  | Include a monitoring and follow-up program with respect to impacts to wildlife within the terrestrial portions of Certified Project Area during Operations.  | Section 6.0<br>Appendix A                               |
|                  | Include a monitoring and follow-up program with respect to impacts to wildlife associated with the air cooling system.   | Section 6.1.4   |
|                  | A Qualified Professional must develop the plan and supervise the implementation of the plan. The Holder must provide the plan to EAO, EC, FLNR, OGC and Aboriginal Groups no less than 30 days prior to the Holder's planned date to commence Construction. The Holder must implement the plan to the satisfaction of EAO. | Section 3.0   |

Note:

The regulator names (i.e., FLNR, OGC, EC) in the conditions reflect the names that were in place when the conditions were written. FLNR is now split into Ministry of Forests and Ministry of Water, Land and Resource Stewardship, OGC is now BC Energy Regulator, and EC is now Environment and Climate Change Canada.

**WOODFIBRE LNG PROJECT:  
WILDLIFE MANAGEMENT AND MONITORING PLAN – OPERATION PHASE**

November 5, 2024

**Table 2: FDS Conditions Relevant to the Operation Estéteywilhs iy Inexwantas ta Sekw'ekw'inexw (Wildlife Management and Monitoring Plan)**

| Condition Number  | Condition   | Operation WMMP Reference                                |
|-------------------|---|---|
| FDS Condition 2.4 | The Proponent shall, where a follow-up program is a requirement of a condition:<br>2.4.1 – undertake monitoring and analysis to verify the accuracy of the environmental assessment as it pertains to the particular condition and/or to determine the effectiveness of any mitigation measure(s)<br>2.4.2 – determine whether additional mitigation measures are required based on the monitoring and analysis undertaken pursuant to Condition 2.4.1; and<br>2.4.3 – if additional mitigation measures are required pursuant to Condition 2.4.2, implement the additional mitigation measures and monitor them pursuant to Condition 2.4.1. | Section 6.0   |
| FDS Condition 2.6 | The Proponent shall, commencing in the reporting year that implementation of the conditions set out in this Decision Statement begins, prepare an annual report.  | Section 7.0   |
| FDS Condition 4.1 | The Proponent shall carry out all phases of the Designated Project in a manner that protects migratory birds and avoids harming, killing or disturbing migratory birds or destroying, disturbing or taking their nests or eggs. In this regard, the Proponent shall take into account Environment and Climate Change Canada's <i>Avoidance Guidelines</i> . The Proponent's actions in applying the Avoidance Guidelines shall be in compliance with the <i>Migratory Birds Convention Act, 1994</i> and with the <i>Species at Risk Act</i> .  | Section 2.0<br>Section 5.0<br>Section 6.0<br>Appendix A |
| FDS Condition 4.2 | The Proponent shall:<br>4.2.1 – restrict flaring to the minimum required during operation, maintenance activities or emergencies to prevent the accumulation of natural gas and protect from overpressure<br>4.2.2 – minimize flaring required for operation and maintenance activities during night-time and during periods of migratory bird vulnerability; and<br>4.2.3 – control operational lighting to avoid attracting migratory birds.  | Section 5.2.2<br>Section 5.3                            |
| FDS Condition 4.3 | The Proponent shall develop, prior to construction and in consultation with Aboriginal groups, and implement, during all phases of the Designated Project, a follow-up program to verify the accuracy of the environmental assessment as it pertains to the environmental effects of the air cooling system on migratory birds and to determine the effectiveness of the mitigation measures used to avoid harm to migratory birds, their eggs and nests, including the measures used to comply with conditions 4.1 and 4.2.  | Section 6.0   |
| FDS Condition 9.2 | The Proponent shall, prior to construction and throughout all phases of the Designated Project, install and maintain roosting structures to offset any loss of little brown myotis ( <i>Myotis lucifugus</i> ) roosting habitat.  | Section 5.4 (Table 9)<br>Section 6.1.1                  |
| FDS Condition 9.3 | The Proponent shall develop and implement a follow-up program to monitor the little brown myotis ( <i>Myotis lucifugus</i> ) usage of buffer zones and roosting structures to determine the effectiveness of the mitigation measures throughout all phases of the Designated Project and to verify the accuracy of the environmental assessment as it pertains to the environmental effects of the air cooling system on little brown myotis ( <i>Myotis lucifugus</i> ).   | Section 6.0   |



### 1.3 SQUAMISH NATION ENVIRONMENTAL ASSESSMENT AGREEMENT (SNEAA)

The Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) environmental assessment process for the Project was designed to parallel the federal and provincial environmental assessment processes, whereby Project effects on the Sk̓wx̓wú7mesh stélmexw (Squamish people's) rights and title interests are identified, understood, and properly avoided or mitigated. The process for the Project ultimately resulted in the Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) issuing an environmental assessment certificate (#2015-001), which includes conditions described in the SNEAA that was issued on October 14, 2015. Per SNEAA, "*Squamish Nation has agreed that Woodfibre may proceed with carrying out the Project, subject to Woodfibre LNG meeting, and (as applicable) continuing to meet, the Squamish Nation Conditions as provided for in this Agreement.*"

The SNEAA Condition 12, which has applicability to the Operation WMMP, states

#### **4.12 Binding Mitigation Measures - Squamish Condition #12**

- (a) *Woodfibre LNG identifies approximately 119 distinct mitigation measures in Table 22-1 of Woodfibre LNG's EA application. If Squamish Nation determines that it wishes to monitor any of the mitigation measures, then Squamish Nation will issue a notice to Woodfibre LNG identifying which mitigation measures it intends to monitor ("Monitored Mitigation Measures") and the manner it proposes to undertake such monitoring.*
- (b) *Where Squamish Nation is of the opinion that any Monitored Mitigation Measure is not being followed, it will notify Woodfibre LNG. Woodfibre LNG will respond to the notification with one of the following (the "Response"):*
  - (i) *Woodfibre LNG's explanation of how the mitigation measure is being followed;*
  - (ii) *a written explanation why the mitigation measure is not being followed, and the measure that replaces it (with an explanation of how the new measure provides equal or greater levels of environmental protection);*
  - (iii) *A written explanation of why the mitigation measure is not being followed, with justification for:*
    - a. *why it has not been replaced with another measure, or*
    - b. *why it has been replaced with a measure that provides less levels of environmental protection*
- (c) *Woodfibre LNG will develop a Monitored Mitigation Measures plan with the Squamish Nation that will include the frequency of guided tours for the Squamish Nation during construction and operations and a budget to implement the plan, which plan will be fully funded by Woodfibre LNG.*

*(d) Should Squamish Nation not be satisfied with the Response, then the Squamish Nation may submit the matter to the dispute resolution process set out in section 8.1 and if the reasonableness of the Response is at issue the expert or expert panel shall consider the following when making its decision: whether the mitigation measure has a material impact on constructability, cost, operability, safety, environment, or schedule; whether the mitigation measure creates unacceptable risk or legal liability for the Project; whether the mitigation measure conflicts with any legal, regulatory, or pre-existing contractual obligations of Woodfibre LNG; whether the Woodfibre LNG response to the proposed mitigation measure(s) conforms to Good Industry Practice; and any other information the expert or expert panel considers relevant.*

Per Condition 6 (Section 4.6) of the SNEAA, the Operation WMMP is considered a Regulated Environmental Management Plan (EMP), meaning that it is an EMP requiring approval from Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) in accordance with Section 4.6(e) of the SNEAA.

## 1.4 APPLICATION TABLE 22-1 COMMITMENTS

A concordance table that cross-references the sections of this Operation WMMP to the operation-related sek̓w'ek̓w'inexw (wildlife) commitments in Table 22-1 of the Application<sup>1</sup> is provided in Table 3. The mitigation measures in Table 3 are provided as proposed in Table 22-1 of the Application; some parts of these mitigation measures refer to construction but have not been edited. Further detail on how these mitigation measures will be implemented is described in the respective Operation WMMP sections referred to in the table. Mitigation measures in Table 3 that relate to construction are addressed in the Construction WMMP.

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<sup>1</sup> At the time the Application, including Table 22-1, was submitted the company name was Woodfibre LNG Limited but it is now Woodfibre LNG General Partner Inc. The commitments as written in Table 22-1 and presented in Table 3 of this Operation WMMP remain unchanged from the Application.



**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| Mitigation Number            | Mitigation Name and Proposed Mitigation  | Concordance with the Operation WMMP   |
|------------------------------|--|---|
| <b>5.12 Avifauna (Birds)</b> |  |   |
| M5.12-1                      | <p><b>Wildlife Management Plan</b></p> <p>Woodfibre LNG will develop and implement a Wildlife Management Plan prior to initiation of the construction phase of the project. The Wildlife Management Plan will provide the following information:</p> <ul style="list-style-type: none"> <li>• details regarding any required pre-construction surveys and wildlife monitoring: <ul style="list-style-type: none"> <li>– call-playback surveys prior to clearing that specifically focus on western screech-owl at night to ensure the cleared areas are not being used as post-fledgling areas.</li> <li>– pre-construction surveys to assess potential western screech-owl nesting habitat in the potential corridors for the gas and water pipeline ROWs, and avoidance of such habitat in the final design for the Project</li> <li>– surveys will also be conducted in areas to be cleared to confirm that natural mineral sites (i.e., mineral water springs) that may be used by band-tailed pigeon are not impacted by the Project</li> </ul> </li> <li>• information on how to report and record wildlife conflicts, including wildlife mortality due to vehicles and equipment. A database of wildlife mortality associated with construction and operation of the project should be maintained through the construction and operation phases. Observations of Red and Blue-listed species will be conveyed to the CDC.</li> <li>• limit speed on roadways within the Project area to 30 km/h.</li> <li>• measures to identify amphibian crossings (if any).</li> <li>• details regarding posting signage and educating workers to ensure vigilance for amphibians during peak movement periods (i.e., rainy nights in April and September).</li> </ul> | <p>Section 4.0<br/>Section 5.3<br/>Section 5.5<br/>Section 7.0<br/>Appendix A<br/>Construction WMMP</p> |
| M5.12-3                      | <p><b>Establish and Retain Vegetative Buffers Around Raptor Nests</b></p> <p>Woodfibre LNG will establish and retain vegetative buffers around raptor nests to mitigate sensory disturbance in accordance with <i>Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia</i> (MOE 2013b). These guidelines suggest that a 100-m vegetated buffer be retained around osprey and bald eagle nests and a 200-m vegetated buffer be retained around western screech-owl nests. An additional 100-m no-disturbance buffer for each species nests is recommended during the nesting season.</p>  | <p>Section 5.3</p>  |

**WOODFIBRE LNG PROJECT:  
WILDLIFE MANAGEMENT AND MONITORING PLAN – OPERATION PHASE**

November 5, 2024

**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| <b>Mitigation Number</b>        | <b>Mitigation Name and Proposed Mitigation</b>   | <b>Concordance with the Operation WMMP</b>              |
|---------------------------------|--|---|
| M5.12-5                         | <b>Light Management</b><br>Subject to safety and operational requirements, Woodfibre LNG will use blue or green lighting rather than red or white lighting in order to reduce attractiveness to birds.   | Section 5.2.2   |
| M5.12-7                         | <b>Reduce Electrocutation Potential</b><br>Woodfibre LNG will design powerlines and conductor layout to reduce potential bird strikes. The new powerlines will be small extension to the Project area with short spans of lines between poles and are expected to be visible to birds. If larger spans of line are installed, conductors will be placed far apart to avoid electrocution, and powerlines will be marked to enhance visibility for avian VCs. | Section 5.2.4   |
| M5.12-8                         | <b>Install Nesting Structures</b><br>Woodfibre LNG will install western screech-owl and barn swallow nesting structures at suitable locations in the LAA once construction is complete to compensate for the removal of (possible) nesting habitat during construction. Artificial nest structures for barn swallows include nesting shelves or nesting cups attached to an appropriate surface.   | Section 5.4   |
| M5.12-10                        | <b>Work with BC Hydro and FortisBC to Minimize Effects to Wildlife</b><br>Woodfibre LNG will meet with BC Hydro (i.e., Woodfibre Substation project) and FortisBC (i.e., Eagle Mountain – Woodfibre Gas Pipeline Project) to identify further measures to minimize potential adverse cumulative effects on wildlife.   | Section 5.6   |
| <b>5.13 At-risk Bat Species</b> |  |   |
| M5.12-1                         | <b>Wildlife Management Plan</b><br>See description for M5.12-1 above.  | Section 5.3<br>Section 5.5<br>Section 7.0<br>Appendix A |
| M5.13-2                         | <b>Minimize the Amount of Ultraviolet Light</b><br>Woodfibre LNG will, where possible, use lighting technology that minimizes the amount of ultraviolet light generated, thereby minimizing its attractiveness to insects.   | Section 5.2.2   |

**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| <b>Mitigation Number</b> | <b>Mitigation Name and Proposed Mitigation</b>  | <b>Concordance with the Operation WMMP</b>              |
|--------------------------|---|---|
| M5.13-3                  | <b>Installation of Bat Boxes</b><br>Woodfibre LNG will construct and install bat boxes away from potential sources of mortality (e.g., roads) to provide additional roosting habitat for bats.  | Section 5.4   |
| M5.12-10                 | <b>Work with BC Hydro and FortisBC to Minimize Effects to Wildlife</b><br>See description for M5.12-10 above.   | Section 5.6   |
| <b>5.14 Amphibians</b>   |   |   |
| M5.8-5                   | <b>Develop and Implement a Water Quality Monitoring Program</b><br>Woodfibre LNG will develop and implement a water quality monitoring program for Mill Creek and Woodfibre Creek. Information to be included within this program will include sample sites, frequency of sampling, and parameters to be monitored  | OEMP, when developed                                    |
| M5.12-1                  | <b>Wildlife Management Plan</b><br>See description for M5.12-1 above.   | Section 5.3<br>Section 5.5<br>Section 7.0<br>Appendix A |
| M5.15-2                  | <b>Water Management Plan</b><br>Woodfibre LNG will develop a Water Management Plan for Mill Creek, which will afford protection of fish and fish habitat thereby prescribing the minimum instream flow releases (IFRs). During low flows, water withdrawals from Mill Creek will be reduced to meet IFRs. If streamflows are less than the IFR, water will not be withdrawn from Mill Creek.<br><br>Instream flow releases specific to the existing flow regime and geomorphology of Mill Creek will be developed in general accordance with <i>Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert, or Extract Water from Streams in British Columbia</i> (Lewis et al. 2004) <sup>2</sup> and consultation with MFLNRO. The information requirements for determining IFRs include the fish-bearing status of the stream, historic flow records, and any recently | OEMP, when developed<br>Water Management Plan           |

<sup>2</sup> Lewis, A., T. Hatfield, B. Chilibeck, and C. Roberts. 2004. *Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert, or Extract Water from Streams in British Columbia*. For BC Ministry of Sustainable Resource Management and BC Ministry of Water, Land, and Air Protection. [https://www.env.gov.bc.ca/wld/documents/bmp/assessment\\_methods\\_instreamflow\\_in\\_bc.pdf](https://www.env.gov.bc.ca/wld/documents/bmp/assessment_methods_instreamflow_in_bc.pdf).

**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| Mitigation Number        | Mitigation Name and Proposed Mitigation  | Concordance with the Operation WMMP  |
|--------------------------|--|--|
|                          | collected data. This current and historical information will allow for the establishment of seasonally adjusted instream flow thresholds calculated as percentiles of natural mean daily flows each month.   |  |
| M5.15-2 (cont'd.)        | <p>Until such time as the Mill Creek-specific IFRs can be developed, the Project will adhere to IFRs calculated in accordance with the methods outlined in <i>Development of Instream Flow Thresholds as Guidelines for Reviewing Proposed Water Uses</i> (Hatfield et al. 2003).<sup>3</sup></p> <p>Monitoring will be a requirement of the Water Management Plan to confirm that the plan is effective in protecting fish and fish habitat. Effective monitoring will include a combination of compliance monitoring and biotic response monitoring and the definition of program objectives. Design of a monitoring program will consider program objectives, scope of effort, timing, and duration. Typical designs include, though are not limited to, the following:</p> <ul style="list-style-type: none"> <li>• continuous streamflow monitoring downstream of point of withdrawal</li> <li>• intermittent monitoring of biotic variables (e.g., fish abundance or density)</li> <li>• random IFR compliance audits</li> </ul> | OEMP, when developed<br>Water Management Plan                              |
| <b>5.17 Marine Birds</b> |  |  |
| M5.12-1                  | <p><b>Wildlife Management Plan</b></p> <p>See description for M5.12-1 above.</p>   | <p>Section 5.3</p> <p>Section 5.5</p> <p>Section 7.0</p> <p>Appendix A</p> |

<sup>3</sup> Hatfield, T., A. Lewis, D. Ohlson, and M. Bradford. 2003. *Development of Instream Flow Thresholds as Guidelines for Reviewing Proposed Water Uses*. For BC Ministry of Sustainable Resource Management and BC Ministry of Water, Land, and Air Protection. [https://www.env.gov.bc.ca/wld/documents/bmp/phase2\\_instreamflow\\_thresholds\\_guidelines.pdf](https://www.env.gov.bc.ca/wld/documents/bmp/phase2_instreamflow_thresholds_guidelines.pdf)

**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| <b>Mitigation Number</b> | <b>Mitigation Name and Proposed Mitigation</b>   | <b>Concordance with the Operation WMMP</b>           |
|--------------------------|--|--|
| M5.11-1                  | <b>Invasive Plant Management Plan</b><br>Woodfibre LNG will develop an Invasive Plant Management Plan to mitigate the introduction, transport, and extent expansion of invasive plant species (including noxious weeds) to and from the Project area during construction and operation. The objectives of this plan will be to detect, control (i.e., remove), and monitor invasive plant species in the Project footprint area. Part of this plan will include mapping invasive plant extent and tracking this extent over the life of the Project to record invasive species proliferation. Monitoring will be conducted to make sure that mitigation measures are properly implemented and effective. | Invasive Plant Management Plan                       |
| M5.17-2                  | <b>Establish and Maintain Bird Nest Setbacks</b><br>Project activities will maintain a minimum 30 m setback distance from active bird nests identified in the Project area. Larger setbacks may be established for listed species and will be considered on a species-by-species case.   | Section 5.3  |
| M5.17-3                  | <b>Establish and Maintain Marine Bird Breeding Colony Setbacks</b><br>Woodfibre LNG will comply or require its contractors to comply with the recommended 300 m minimum setback from waterbird colonies (see M5.17-2) for Project – related marine vessel traffic, and subject to safety concerns, refrain from blowing horns or whistles and maintain constant engine noise while passing near the colonies (EC 2013a). <sup>4</sup>  | Section 5.3  |
| M5.17-4                  | <b>Implement Marine Vessel Speed Restrictions</b><br>During inbound travel, LNG carriers will be moving at a maximum speed of 8 to 10 knots at the south end of Passage Island (entrance to Howe Sound and the RAA) until they reach the immediate vicinity surrounding the Project area (LAA) where speeds will be reduced to 6 knots. To the extent practical, all other Project vessels will limit their speed while travelling within the RAA.   | Operation Marine Transport Management Plan           |
| M5.17-7                  | <b>Reduce Moored Vessel Underwater Noise</b><br>To the extent possible, vessel engines and propellers will be shut down while moored at the FSO to reduce unnecessary underwater noise during LNG transfer operations during construction and operation.   | Marine Transportation Management and Monitoring Plan |

<sup>4</sup> Guidelines is updated to ECCC 2023: Guidelines to avoid disturbance to seabird and waterbird colonies in Canada. <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/avoid-disturbance-seabird-waterbird-colonies-canada.html>.

**Table 3: Sekw'ekw'inexw (Wildlife) Mitigation Measures Related to Operation in Table 22-1 of the Application**

| Mitigation Number | Mitigation Name and Proposed Mitigation  | Concordance with the Operation WMMP   |
|-------------------|--|---|
| M5.17-8           | <p><b>Development of a Marine Bird Management Plan</b></p> <p>Woodfibre LNG will develop and implement a Marine Bird Management Plan (MBMP) prior to the initiation of the construction phase of the Project. This MBMP will be part of an overall Wildlife Management Plan document. This plan will include:</p> <ul style="list-style-type: none"> <li>• Pre-construction surveys within mapped (but not field-verified) marbled murrelet critical nesting habitat to be cleared as part of the Project will be undertaken following appropriate standards developed by the Resource Information Standards Committee for marbled murrelet inventory (MELP 2001). These surveys will determine if marbled murrelets are currently nesting in these areas (if timing of Project construction allows for these surveys to be conducted during nesting season), or if these areas provide suitable nesting habitat (if timing of Project construction prevents surveys of during active nesting activity).</li> <li>• Provision of information and training to all workers (contractors, staff, and employees) on how to report and record marine bird conflicts in the Project area, specifically vessel strikes (bird species, location of carcass on vessel, weather conditions) in a database during construction, operation and decommissioning.</li> <li>• Should regular review of the database identify areas of persistent conflict or mortality rates that would affect populations, the Project operations will be reviewed to identify potential mitigation measures.</li> <li>• Pre- and post-construction (operation-phase) monitoring of marine birds in the Project area. If the monitoring identifies high levels of marine bird attraction and collision-related mortality associated with the Project onshore infrastructure, lighting, weather or migration periods, additional mitigation measures will be explored, including: turning off unnecessary lights (exterior and interior), especially during periods of high marine bird migratory flight activity in the area, wider light shut-down periods during migratory periods and inclement weather events (overcast, cloudy and/or hazy and foggy conditions), avoidance of continuous red or flashing red incandescent lights, use of blue jelly-jar LED lights on suspension cables and rectangular blue LED lights on bridge decks (Golder et al. 2010). Survey methods may include stand watches during migratory periods (spring and fall) in an adaptive management approach.</li> </ul> | <p>Section 4.0</p> <p>Section 5.3</p> <p>Section 5.5</p> <p>Section 6.0</p> <p>Appendix A</p> |
| M5.17-9           | <p><b>Coordinate with BURNCO to share information from marine bird monitoring studies</b></p> <p>Woodfibre LNG will coordinate with BURNCO to mutually share results of marine bird monitoring studies to contribute to the knowledge base for marine bird interactions.</p>   | <p>Section 5.6</p>  |

## 2.0 REGULATORY FRAMEWORK

### 2.1 REGULATORY REQUIREMENTS

Legislation and regulations that apply to the management of *sekw'ekw'inexw* (wildlife) include the federal *Species at Risk Act* (SARA), *Migratory Birds Convention Act* and Migratory Birds Regulations (Section 2.2), and the provincial *Wildlife Act* and *Oil and Gas Activities Act* (Section 2.3). Woodfibre LNG is responsible for abiding by applicable legislation, regulations, permits, and authorizations while undertaking work for the Project.

### 2.2 FEDERAL REGULATIONS

#### 2.2.1 *Species at Risk Act*

The SARA is a federal Act that applies to certain *sekw'ekw'inexw* (wildlife) species in Canada. Species listed on Schedule 1 as extirpated, endangered, or threatened are afforded protection under SARA. Species listed as special concern on Schedule 1 are managed to prevent them from becoming extirpated, endangered, or threatened. It is prohibited to kill, harm, harass, capture, or take an individual of those Schedule 1 species. It is also prohibited to damage or cause destruction to the residence (e.g., nest or den) of species listed as extirpated, endangered, or threatened on Schedule 1. The federal government is required to develop a recovery strategy for those Schedule 1 species and identify critical habitat. Recovery strategies that apply to this Project are listed in Section 5.1.

#### 2.2.2 *Migratory Birds Convention Act*

The federal *Migratory Birds Convention Act* and the Migratory Birds Regulations, 2022 provide protection for migratory birds identified in the *Act* on federal, provincial, and private *tem'ixw* (lands). These protections include a prohibition on depositing harmful substances in areas frequented by migratory birds, and a prohibition on disturbing, destroying, taking, or possessing migratory birds, their nests, and eggs.

Under the Migratory Birds Regulations, 2022, the nests of certain species, identified in Schedule 1 of the Migratory Birds Regulations, 2022, will be protected year-round for a period since they were last used (e.g., 12, 24, or 36 months), whether those nests are active or not. Pileated woodpecker (*Dryocopus pileatus*) nests are likely within the CPA; these nests have a 36-month waiting period. The nests of most species can, however, be removed without a permit provided those nests do not contain a live bird or viable egg or are protected as a residence under SARA.

## 2.3 PROVINCIAL REGULATIONS

### 2.3.1 *Wildlife Act*

The provincial *Wildlife Act* prohibits intentional feeding or attempting to feed dangerous səkw'ekw'inexw (wildlife). Further, it is prohibited to leave an attractant out that may attract dangerous səkw'ekw'inexw (wildlife). Birds, occupied nests, or eggs may not be possessed, taken, injured, molested, or destroyed.

The nest of an eagle, peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), osprey (*Pandion haliaetus*), and heron are protected year-round regardless of the status of the nest (i.e., occupied or unoccupied).

Disturbing, molesting, or destroying skeláw (beaver) lodges and dams and muskrat houses or dens is prohibited under the *Wildlife Act* without permits. The attempted capture and handling of səkw'ekw'inexw (wildlife) (e.g., amphibians) requires a permit under the *Wildlife Act*.

### 2.3.2 *Oil and Gas Activities Act*

The Environmental Protection and Management Regulation of the *Oil and Gas Activities Act* provides the statutory authority to the OGC (i.e., BC Energy Regulator) for the management and protection of environmental values. Oil and gas activities are required to be planned and undertaken in a manner where the activities do not damage or make a wildlife habitat feature ineffective.

Wildlife habitat features include high priority wildlife dens and nests of birds exhibiting nest fidelity, and significant mineral licks and wallows (see Environmental Protection and Management Guidelines [OGC, 2021a]).



## 3.0 ROLES AND RESPONSIBILITIES

Table 4 outlines the roles and responsibilities of the General Manager, the Woodfibre LNG Environmental Representative, the Environmental Monitor (EM), and the supporting EM(s). The titles of the roles are subject to change prior to operation; this Operation WMMP will be updated prior to the start of operation.

**Table 4: Overview of Roles and Responsibilities for the Operations Estéteýwilhs iy Ínexwantas ta Sekw'ekw'inexw (Wildlife Management and Monitoring Plan)**

| Entity                                     | Role and Responsibility  |
|--|--|
| General Manager                            | <ul style="list-style-type: none"> <li>Has ultimate responsibility for the LNG facility.</li> <li>Provides personnel, equipment, or other assistance to protect the environment.</li> <li>Has the authority to require corrective actions and/or issue a stop order if deemed necessary.</li> </ul>  |
| Woodfibre LNG Environmental Representative | <ul style="list-style-type: none"> <li>Responsible for overall compliance with regulatory permits, and approvals, including EAC conditions, FDS conditions, and SNEAA conditions.</li> <li>The Woodfibre LNG Environmental Representative will appoint an environmental team which will be accountable for the following activities during operation of the Project: <ul style="list-style-type: none"> <li>Implement the Operations WMMP (this plan).</li> <li>Develop and implement environmental orientation for the Operation phase with support from a QP.</li> <li>Provide Woodfibre LNG's environmental orientation.</li> <li>Coordinate and manage Woodfibre LNG's permit applications.</li> <li>Prepare the Woodfibre LNG's environmental reports including monthly environmental reports.</li> <li>Retain the Environmental Monitor and QPs as necessary.</li> <li>Undertake internal audits for environmental compliance on an annual basis or more frequently as determined by Woodfibre LNG.</li> <li>Submit scheduled environmental ínexwantas (monitoring) reports to Skwxwú7mesh Úxwumixw (Squamish Nation).</li> <li>Provide external reporting and communication related to the environment.</li> <li>Coordinate with other project proponents (i.e., Fortis, BC Hydro and BURNCO) as outlined in this plan.</li> <li>Record and report any sekw'ekw'inexw (wildlife) incidents or potential sekw'ekw'inexw (wildlife) conflicts or mortalities to the appropriate authorities.</li> <li>Notify Skwxwú7mesh Úxwumixw (Squamish Nation) and səilwətał (Tsleil-Waututh) Nation of wildlife mortality events and mortality risk concerns, and if wildlife mortalities are reported to the authorities.</li> </ul> </li> </ul> |

**WOODFIBRE LNG PROJECT:  
WILDLIFE MANAGEMENT AND MONITORING PLAN – OPERATION PHASE**

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**Table 4: Overview of Roles and Responsibilities for the Operations Estéteýwilhs iy Ínexwantas ta Sekw'ekw'ínexw (Wildlife Management and Monitoring Plan)**

| Entity                 | Role and Responsibility   |
|------------------------|---|
| Qualified Professional | <ul style="list-style-type: none"> <li>Supervise the implementation of the Operation WMMP.</li> <li>Provide resource-specific expertise (e.g., amphibians, sha7yu [western screech-owl' <i>Megascops kennicottii kennicottii</i>], bird nests, wildlife permitting).</li> <li>Undertake the surveys requiring a QP and prepare reports as required by the Operation WMMP.</li> <li>Annual review of BC CDC/SARA registry to confirm any changes to conservation status of sekw'ekw'ínexw (wildlife) species that may occur on the site and provide recommendation to Woodfibre LNG Environmental Representative based on the findings of the review.</li> <li>Annual review of Wildlife Observation and Incident Reporting forms to determine if a SOMC (see Section 4.0 for definition) not previously detected within the CPA was detected during operation. Report detections of Red- or Blue-listed species to the BC CDC.</li> </ul> |
| Environmental Monitor  | <ul style="list-style-type: none"> <li>Monitor and review compliance of operation activities with follow up ínexwantas (monitoring) programs (see Section 6.0)</li> <li>During the bird nesting period if operation activities could pose a risk of disturbance or damage to an active nest, check equipment and other infrastructure for nesting activities. Consult with a QP to determine an appropriate action or mitigation measure on a case-by-case basis.</li> <li>Manage wildlife observation and incident reports (Appendix A).</li> <li>Provide ínexwantas (monitoring) records to the Woodfibre LNG Environmental Representative regarding implementation of management plans, permits, and approvals. This will include any measurements taken, sampling conducted, field notes, photographs, and environmental incident reports.</li> </ul>   |

## 4.0 SEKW'EKW'INEXW (WILDLIFE) SETTING

The sekw'ekw'inexw (wildlife) setting for the Operation WMMP reflects a condition in which the Project footprint is completed, routine operation is established, and mitigation and compensation measures have been implemented. The sekw'ekw'inexw (wildlife) setting is presented in two tables, one for terrestrial sekw'ekw'inexw (wildlife) (Table 5) and one for sekw'ekw'inexw tl'a shkweh (marine birds) (Table 6). Table 5 includes species known or likely to occur within the CPA that have the potential to interact with the Project during operation. Table 6 includes species known to occur within the CPA that could interact with Project infrastructure in the marine environment during operation.

Prior to the start of operation, the sekw'ekw'inexw (wildlife) setting will be updated to reflect changes in conservation status of species known or likely to interact with the Project, new information on species presence within the CPA, and new information on species interaction with the Project. Updates will be made in subsequent versions of the Operation WMMP.

Table 5: Terrestrial Species of Management Concern Known or Likely to Occur within the Certified Project Area and their Potential to Interact with the Project Footprint: Operation Phase

| Common Name                         | Scientific Name                          | Provincial Conservation Status <sup>1</sup> | SARA Schedule 1 Status <sup>2</sup> | Potential to Interact with Project Footprint? | Comments  | Other Considerations   |
|-------------------------------------|--|---|-------------------------------------|---|---|--|
| <b>Mammals</b>                      |  |   |                                     |   |   |  |
| Black-tailed deer                   | <i>Odocoileus hemionus</i>               | Yellow                                      | --                                  | Yes   | Confirmed within CPA; frequent on site  | Vehicle collision hazard   |
| Black bear                          | <i>Ursus americanus</i>                  | Yellow                                      | --                                  | Yes   | Confirmed within CPA; presence due to attractants   | Seḵw'ekw'inexw (wildlife) awareness  |
| Cougar                              | <i>Puma concolor</i>                     | Yellow                                      | --                                  | Yes   | Confirmed within CPA  | Seḵw'ekw'inexw (wildlife) awareness  |
| Grey wolf                           | <i>Canis lupus</i>                       | Yellow                                      | --                                  | --  | Incidental occurrence within CPA; uncommon in area  | Seḵw'ekw'inexw (wildlife) awareness  |
| Coyote                              | <i>Canis latrans</i>                     | Yellow                                      | --                                  | Yes   | Not confirmed within CPA; presence due to attractants   | Seḵw'ekw'inexw (wildlife) awareness  |
| Bobcat                              | <i>Lynx rufus</i>                        | Yellow                                      | --                                  | --  | Not confirmed within CPA  | Seḵw'ekw'inexw (wildlife) awareness  |
| Northern American river otter       | <i>Lontra canadensis</i>                 | Yellow                                      | --                                  | Yes   | Confirmed within CPA; use of infrastructure, particularly around shoreline (e.g., docks, storage buildings); maternity den discovered underneath a tank during demolition in April 2023 | Potential denning  |
| American mink                       | <i>Neovison vison</i>                    | Yellow                                      | --                                  | Yes   | Not confirmed within CPA; use of infrastructure, particularly around shoreline (e.g., docks)  | --   |
| California myotis                   | <i>Myotis californicus</i>               | Yellow                                      | --                                  | Yes   | Confirmed within CPA; known to roost in buildings   | Skáp'kap'tsaylh (bat) box inexwantas (monitoring) and maintenance; seḵw'ekw'inexw (wildlife) awareness (dead skáp'kap'tsaylh [bats]) |
| Little brown myotis                 | <i>Myotis lucifugus</i>                  | Blue  | E                                   | Yes   | Confirmed within CPA; known to roost in buildings   | Skáp'kap'tsaylh (bat) box inexwantas (monitoring) and maintenance; seḵw'ekw'inexw (wildlife) awareness (dead skáp'kap'tsaylh [bats]) |
| Silver-haired Skáp'kap'tsaylh (bat) | <i>Lasionycteris noctivagans</i>         | Yellow                                      | --                                  | Yes   | Confirmed within CPA through acoustic detectors; potential collision with infrastructure  | Species could receive SARA status, as endangered, before or during operation <sup>3</sup>  |
| Hoary Skáp'kap'tsaylh (bat)         | <i>Lasiurus cinereus</i>                 | Yellow                                      | --                                  | Yes   | Confirmed within CPA through acoustic detectors; potential collision with infrastructure  | Species could receive SARA status, as endangered, before or during operation <sup>3</sup>  |
| Other skáp'kap'tsaylh (bats)        | --                                       | --  | --                                  | Yes   | Up to seven other skáp'kap'tsaylh (bat) species may occur within CPA; potential to roost in buildings   | Bat box inexwantas (monitoring) and maintenance; seḵw'ekw'inexw (wildlife) awareness (dead skáp'kap'tsaylh [bats])                   |
| <b>Birds</b>                        |  |   |                                     |   |   |  |
| Sp'áḵw'us (Bald eagle)              | <i>Haliaeetus leucocephalus</i>          | Yellow                                      | --                                  | Yes   | Confirmed within CPA; use of infrastructure for perching, particularly around shoreline (e.g., docks)   | Active nest (as of 2023) near Woodfibre Creek, 150 m from shoreline  |
| Osprey                              | <i>Pandion haliaetus</i>                 | Yellow                                      | --                                  | Yes   | Confirmed within CPA but not nesting; could potentially use operation infrastructure for perching or nesting (e.g., power poles, stationary equipment)                                  | --   |
| Shá7yu (Western screech-owl)        | <i>Megascops kennicottii kennicottii</i> | Blue  | T                                   | --  | Not confirmed within CPA  | Nest box inexwantas (monitoring) and maintenance   |
| Sooty grouse                        | <i>Dendragapus fuliginosus</i>           | Yellow                                      | --                                  | Yes   | Confirmed within CPA  | Potential collision with vehicles on Mill Creek Road   |
| Smeḵw'á7(Great blue heron)          | <i>Ardea Herodias fannini</i>            | Blue  | SC                                  | Yes   | Confirmed within CPA; use of infrastructure for perching, particularly around shoreline (e.g., docks)   | --   |
| Nsexá7xem (Band-tailed pigeon)      | <i>Patagioenas fasciata</i>              | Blue  | SC                                  | Yes   | Confirmed within CPA  | Artificial mineral site could be provided that will require protecting   |

Table 5: Terrestrial Species of Management Concern Known or Likely to Occur within the Certified Project Area and their Potential to Interact with the Project Footprint: Operation Phase

| Common Name                      | Scientific Name                | Provincial Conservation Status <sup>1</sup> | SARA Schedule 1 Status <sup>2</sup> | Potential to Interact with Project Footprint? | Comments   | Other Considerations   |
|----------------------------------|--------------------------------|---|-------------------------------------|---|--|--|
| Kw'ekw'ikw'ehatl' (Barn swallow) | <i>Hirundo rustica</i>         | Yellow                                      | T                                   | Yes   | Confirmed within CPA; known to nest on buildings   | Nest cup inexwantas (monitoring) and maintenance; may nest on infrastructure; species under consideration for SARA status change to special concern  |
| Olive-sided flycatcher           | <i>Contopus cooperi</i>        | Yellow                                      | SC                                  | --  | Confirmed within CPA   | --   |
| Common nighthawk                 | <i>Chordeiles minor</i>        | Blue  | SC                                  | Yes   | Not confirmed within CPA; may use infrastructure for nesting (e.g., building roofs, graveled areas)                                  | --   |
| Killdeer                         | <i>Charadrius vociferus</i>    | Blue  | --                                  | Yes   | Confirmed within CPA; may use infrastructure for nesting (e.g., building roofs, graveled areas)                                      | Confirmed nesting in CPA as of April 2023  |
| Birds in general                 | --                             | --  | --                                  | Yes   | Collisions with infrastructure, vehicles, and marine vessels   | --   |
| <b>Amphibians</b>                |                                |   |                                     |   |  |  |
| Coastal tailed wexés (frog)      | <i>Ascaphus truei</i>          | Yellow                                      | SC                                  | --  | Confirmed in Woodfibre, Mill, and East creeks  | --   |
| Pacific treefrog                 | <i>Pseudacris regilla</i>      | Yellow                                      | --                                  | Yes   | Confirmed within CPA; use of ponded stákw (water)  | Breeding in pooled stákw (water); eggs discovered during demolition in April 2023; potential collisions with vehicles and equipment; potential for harm from spills or poor stákw (water) quality in breeding wetlands |
| Northern red-legged wexés (frog) | <i>Rana aurora</i>             | Blue  | SC                                  | Yes   | Not confirmed within CPA; may use ponded stákw (water)   | --   |
| Western toad                     | <i>Anaxyrus boreas</i>         | Yellow                                      | SC                                  | Yes   | Confirmed within CPA; use of ponded stákw (water) and terrestrial habitats   | Potential collisions with vehicles and equipment; potential for harm from spills or poor stákw (water) quality in breeding wetlands  |
| Long-toed salamander             | <i>Ambystoma macrodactylum</i> | Yellow                                      | --                                  | Yes   | Confirmed within CPA; use of ponded stákw (water) to breed, use of infrastructure (e.g., sheltering under materials stored outdoors) | --   |
| <b>Reptiles</b>                  |                                |   |                                     |   |  |  |
| Common gartersnake               | <i>Thamnophis sirtalis</i>     | Yellow                                      | --                                  | Yes   | Confirmed within CPA; potential hibernating and basking areas  | Potential collisions with vehicles and equipment   |
| Terrestrial gartersnake          | <i>Thamnophis elegans</i>      | Yellow                                      | --                                  | Yes   | Confirmed within CPA; potential hibernating and basking areas  | Potential collisions with vehicles and equipment   |
| Northern alligator lizard        | <i>Elgaria coerulea</i>        | Yellow                                      | --                                  | Yes   | Confirmed within CPA; potential hibernating and basking areas  | Potential collisions with vehicles and equipment   |

Notes:  
<sup>1</sup> Provincial conservation status: Red = endangered or threatened; Blue = special concern; Yellow= not at risk (CDC, 2023)  
<sup>2</sup> SARA Schedule 1 status: E = endangered; T = threatened; SC = special concern (SRPR, 2023)  
<sup>3</sup> Species has recently been assessed by COSEWIC as endangered (COSEWIC, 2023); however, the species is not yet listed on Schedule 1 of SARA

Table 6: Sekw'ekw'inexw tl'a shkwēn̓ (Marine Birds) Known to Occur within the Certified Project Area and their Potential Collision Risk: Operation Phase

| Common Name                  | Scientific Name                  | Provincial Conservation Status <sup>1</sup> | SARA Schedule 1 Status <sup>2</sup> | Collision Risk?         | Other Considerations                             | Seasonal Presence    |
|------------------------------|----------------------------------|---|-------------------------------------|-------------------------|--|----------------------|
| Gulls                        |                                  |   |                                     |                         |  |                      |
| California gull <sup>3</sup> | <i>Larus californicus</i>        | Red   | --                                  | Yes, vessels            | Use of infrastructure for perching               | Spring, Fall         |
| Glaucous-winged gull         | <i>Larus glaucescens</i>         | Yellow                                      | --                                  | Yes, vessels            | Use of infrastructure for perching               | Year-round           |
| Iceland gull                 | <i>Larus glaucoides</i>          | Yellow                                      | --                                  | Yes, vessels            | Use of infrastructure for perching               | Spring, Fall         |
| Ring-billed gull             | <i>Larus delawarensis</i>        | Yellow                                      | --                                  | Yes, vessels            | Use of infrastructure for perching               | Summer               |
| Short-billed gull            | <i>Larus brachyrhynchus</i>      | Yellow                                      | --                                  | Yes, vessels            | Use of infrastructure for perching               | Spring, Fall, Winter |
| Loons and Grebes             |                                  |   |                                     |                         |  |                      |
| Common loon                  | <i>Gavia immer</i>               | Yellow                                      | --                                  | Yes, vessels            | --   | Spring, Winter       |
| Red-necked grebe             | <i>Podiceps grisegena</i>        | Yellow                                      | --                                  | Yes, vessels            | --   | Spring               |
| Horned grebe                 | <i>Podiceps auratus</i>          | Yellow                                      | Special concern                     | Yes, vessels            | --   | Spring               |
| Seabirds                     |                                  |   |                                     |                         |  |                      |
| Double-crested cormorant     | <i>Nannopterum auritum</i>       | Blue  | --                                  | Yes, vessels            | Use of infrastructure for perching               | Spring, Fall, Winter |
| Pelagic cormorant            | <i>Urile pelagicus</i>           | Yellow                                      | --                                  | Yes, vessels            | Use of infrastructure for perching               | Spring, Fall         |
| Geese and Swans              |                                  |   |                                     |                         |  |                      |
| Canada goose                 | <i>Branta canadensis</i>         | Yellow                                      | --                                  | Vessel; Infrastructure  | May nest on infrastructure                       | Year-round           |
| Trumpeter swan               | <i>Cygnus buccinator</i>         | Yellow                                      | --                                  | Yes, vessels            | --   | Spring, Fall         |
| Sea Ducks                    |                                  |   |                                     |                         |  |                      |
| Barrow's goldeneye           | <i>Bucephala islandica</i>       | Yellow                                      | --                                  | Yes, vessels            | --   | Spring, Winter       |
| Common goldeneye             | <i>Bucephala clagula</i>         | Yellow                                      | --                                  | Yes, vessels            | --   | Spring               |
| Bufflehead                   | <i>Bucephala albeola</i>         | Yellow                                      | --                                  | Yes, vessels            | --   | Spring, Winter       |
| Common merganser             | <i>Mergus merganser</i>          | Yellow                                      | --                                  | Yes, vessels            | --   | Year-round           |
| Red-breasted merganser       | <i>Mergus serrator</i>           | Yellow                                      | --                                  | Yes, vessels            | --   | Spring               |
| Harlequin duck               | <i>Histrionicus histrionicus</i> | Yellow                                      | --                                  | Yes, vessels            | --   | Spring, Fall         |
| Surf scoter                  | <i>Melanitta perspicillata</i>   | Blue  | --                                  | Yes, vessels            | --   | Spring, Fall         |
| Dabbling Ducks and Coot      |                                  |   |                                     |                         |  |                      |
| American coot                | <i>Fulica americana</i>          | Yellow                                      | --                                  | Yes, vessels            | --   | Fall, Winter         |
| Mallard                      | <i>Anas platyrhynchos</i>        | Yellow                                      | --                                  | Yes, vessels            | --   | Year-round           |
| Shorebirds                   |                                  |   |                                     |                         |  |                      |
| Spotted sandpiper            | <i>Actitis macularius</i>        | Yellow                                      | --                                  | Not with marine vessels | Possible vehicle mortality during nesting season | Summer               |
| Killdeer                     | <i>Charadrius vociferus</i>      | Blue  | --                                  | Not with marine vessels | Possible vehicle mortality during nesting season | Spring, Summer       |
| Black oystercatcher          | <i>Haematopus bachmani</i>       | Yellow                                      | --                                  | Not with marine vessels | --   | Year-round           |

Notes:  
<sup>1</sup> Provincial conservation status: Red = endangered or threatened; Blue = special concern; Yellow= not at risk (CDC, 2023)  
<sup>2</sup> SARA Schedule 1 status: E = endangered; T = threatened; SC = special concern (SRPR, 2023)

## 5.0 SEKW'EKW'INEXW (WILDLIFE) AND WILDLIFE HABITAT MITIGATION

This section describes the sekw'ekw'inexw (wildlife) mitigation measures that are applicable to the operation phase of the Project. The mitigation measures are based on Project conditions of approval, Project commitments, findings of pre-construction surveys, industry and government BMPs and guidelines, findings of pre-construction surveys, and commitments in the Construction WMMP. As indicated in the concordance tables in Section 1.0, the details of some mitigation measures will be provided in the OEMP, when developed and, where relevant, a linkage to measures in the OEMP will be provided below. In addition to the OEMP, other management plans relevant to sekw'ekw'inexw (wildlife) include the Invasive Plant Management Plan, the Staḵw (Water) Management Plan, the Marine Transport Management Plan, and the Marine Mammal Management and Inexwantas (Monitoring) Plan.

The mitigation of adverse effects on sekw'ekw'inexw (wildlife) outlined in the Operation WMMP will be achieved through a combination of LNG facility design measures, species-specific mitigation measures for habitat loss, species-specific mitigation measures for displacement and mortality, and training/education. Details are provided in the following sections. During operation, the Woodfibre LNG Environmental Representative and supporting environmental staff will observe and report on compliance of operation activities with applicable regulations and the mitigation measures in this Operation WMMP.

### 5.1 BEST MANAGEMENT PRACTICES AND GUIDELINES

Key sekw'ekw'inexw (wildlife) guidance documents that were consulted in development of this Operation WMMP are:

- LNG Facility Permit Application and Operations Manual (OGC, 2022)
- Environmental Protection and Management Guideline (OGC, 2021a)
- Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (MOE, 2014)
- Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (MOE, 2013b)
- Best Management Practices for Bats in British Columbia (MOE, 2016)
- Best Management Practices for Bat Boxes in British Columbia (BC Community Bat Program, 2019)
- Guidelines to avoid harm to migratory birds (ECCC, 2023a)
- Identified Wildlife Management Strategy (MWLAP, 2004)
- Beneficial management practices for Barn Swallow (*Hirundo rustica*) (TBCSCP, 2014)
- Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (*Myotis septentrionalis*), and the Tri-colored Bat (*Perimyotis subflavus*) in Canada (ECCC, 2018a)

- Recovery Plan for the Western Screech-Owl, *kennicottii* subspecies (*Megascops kennicottii kennicottii*) in British Columbia (MOE, 2013a)
- Management Plan for the Great Blue Heron *fannini* subspecies (*Ardea herodias fannini*) in Canada (ECCC, 2020a)
- Management Plan for the Band-tailed Pigeon (*Patagioenas fasciata*) in Canada (ECCC, 2019a)
- Management Plan for the Western Toad (*Anaxyrus boreas*), Calling and Non-calling Populations, in Canada (ECCC, 2020b)
- Management Plan for the Northern Red-legged Frog (*Rana aurora*) in Canada (ECCC, 2017)
- Management Plan for the Coastal Tailed Frog (*Ascaphus truei*) in Canada (ECCC, 2018b)
- Guidelines for Amphibians and Reptile Conservation during Urban and Rural Land Development in British Columbia (FLNRO, 2014)
- Guidelines for Amphibian and Reptile Conservation during Road Building and Management Activities in British Columbia (MECCS, 2020)
- Best Management Practices for Amphibian and Reptile Salvages in British Columbia (FLNRO, 2016)
- Owl Monitoring Group – Nest Box Protocol for the Coastal Western Screech-Owl (*Megascops kennicottii kennicottii*) (Tripp and Welstead, 2019)

Prior to the start of operation, the list of guidance documents will be reviewed for updates and changes, and this list and mitigation measures will be updated, if needed. The Operation WMMP is a living document and will be updated to reflect new best practices and guidelines as they become available.

## 5.2 PROJECT DESIGN MEASURES

Project design measures that are applicable to overall design of the LNG facility are described in the following sections.

### 5.2.1 Green Zone Area

Woodfibre LNG has established the Green Zone, which is an area adjacent to Mill Creek where riparian habitat will be protected (Figure 2) and enhanced following construction. In compliance with the Certified Project Description, the Green Zone was planted with suitable native vegetation and will not contain permanent LNG facility buildings. However, utilities, including power, process piping, communications cables, and roads and bridges, are within the Green Zone. The Green Zone will be maintained throughout the operation phase. The Green Zone is expected to provide habitat for migratory bird species that forage and nest in native trees and shrubs and on the ground.

The Green Zone Restoration Plan will describe the approach to planting and maintaining vegetation in the Green Zone during the operation phase. This plan will be co-developed between Woodfibre LNG and the Skwxwú7mesh Úxwumixw (Squamish Nation), in accordance with the SNEAA.



## 5.2.2 Lighting

Design measures intended to reduce light trespass (i.e., light extending beyond a target) and skyglow (i.e., illumination of the night sky) are described in the Visual Quality Management Plan. During LNG facility operation, Woodfibre LNG is committed to limiting lighting while maintaining levels needed to meet safety requirements. Blue and green lighting will be used at night to avoid attracting birds and insects. In addition, measures such as directional lighting with shades will be put in place to reduce attractiveness of white lighting to birds and insects. This is consistent with the bird-friendly lighting standards in North America (e.g., Sustainable Development Code in the U.S. [Jarchow et al., 2021] and American Bird Conservancy's Bird-friendly Building Design [American Bird Conservancy, 2019]). Woodfibre LNG has reduced the use of lighting that produces ultraviolet light to reduce the attractiveness of the site to insects, which could in turn attract skáp'káp'tsaylh (bats) (M5.13-2).

## 5.2.3 Bird Strikes on Buildings

Woodfibre LNG will implement measures to avoid bird strikes on buildings, such as turning off lights in buildings at night when lights are not required. During LNG facility operation, environmental staff will monitor bird mortality events associated with buildings and recommend additional mitigation measures, as needed. Measures will be consistent with the lighting and building standards in North America (e.g., Sustainable Development Code in the U.S. [Jarchow et al., 2021] and American Bird Conservancy's Bird-friendly Building Design [American Bird Conservancy, 2019]). Facility lighting details are provided in the Visual Quality Management Plan and the Visual Light Management Plan.

## 5.2.4 Bird Electrocution Potential from Powerlines

The main BC Hydro transmission line extends into the CPA. New electrical powerlines routed throughout the Project that are owned and operated by Woodfibre LNG will be insulated or placed underground to reduce the potential hazards for birds. This design-level mitigation measure has been implemented during the design phase of the Project to reduce the potential for bird electrocution (per mitigation M5.12-7) during the construction and operation phases (see Construction WMMP).

## 5.3 GENERAL MITIGATION MEASURES

Mitigations outlined in Table 7 are designed to reduce displacement and direct mortality and prevent sekw'ekw'inexw (wildlife) conflicts during the operation phase. Sekw'ekw'inexw (wildlife) sensitive periods and recommended buffers are provided below. If recommended setbacks cannot be followed during operation phase, a QP will be engaged, in consultation with appropriate regulatory authorities, when applicable, to determine alternative or additional mitigation measures, as needed.

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**Table 7: Seḵw'eḵw'inexw (Wildlife) Disturbance, Mortality, and Seḵw'eḵw'inexw (Wildlife)–Human Interaction Mitigation Measures during Operation**

| Category                                     | Mitigation Measures  | Mitigation Number  |
|--|--|--------------------|
| <b>General Seḵw'eḵw'inexw (wildlife)</b>     |  |                    |
| Human-Seḵw'eḵw'inexw (wildlife) Interactions | <ul style="list-style-type: none"> <li>Workers will avoid direct interactions with seḵw'eḵw'inexw (wildlife) unless crew safety is at risk.</li> <li>Human-seḵw'eḵw'inexw (wildlife) interactions, conflicts, and incidents, including the use of deterrents, will be reported to the EM and documented using the form in Appendix A. Incident reports will be reviewed quarterly by the EM during operation to determine if additional mitigation or inxwantas (monitoring) should be implemented. If additional mitigation or inxwantas (monitoring) is required, this Operation WMMP will be updated to reflect those requirements.</li> <li>In the case of imminent risk of seḵw'eḵw'inexw (wildlife) mortality or risk to seḵw'eḵw'inexw (wildlife) health, the EM will verbally report incidents or potential incidents to the Woodfibre LNG Environmental Representative as soon as possible. If required, input from a QP will be requested.</li> <li>No ch'áat'am (hunting), fishing, or gathering by Project personnel and contractors will be allowed within 100 m of the Project fenceline.</li> <li>To reduce the likelihood or severity of potential vehicle-seḵw'eḵw'inexw (wildlife) interactions, the Contractor will implement maximum speed limits of 30 km per hour (km/h) on roadways within the CPA and give seḵw'eḵw'inexw (wildlife) the right of way on roads.</li> </ul> | M5.12-1<br>M5.10-4 |
| Waste Management                             | <ul style="list-style-type: none"> <li>Food and stored garbage will be kept in bear-proof areas or bear-proof containers to limit attractants to seḵw'eḵw'inexw (wildlife); food waste will be transported to appropriate facilities.</li> <li>Grease, oils, and fuels stored on-site will be stored in secured areas except where in use.</li> </ul>  | M5.12-1            |
| Spills                                       | <ul style="list-style-type: none"> <li>Vehicles will be equipped with spill kits and fueled 30 m away from waterbodies (including creeks).</li> </ul>  | M5.12-1            |
| Reporting Mortalities                        | <ul style="list-style-type: none"> <li>If seḵw'eḵw'inexw (wildlife) mortality occurs within the CPA, the incident, and the suspected cause, will be documented using the form in Appendix A. The EM will track mortality incidents in a database and include in the monthly environmental inxwantas (monitoring) report (see Section 7.0).</li> <li>If seḵw'eḵw'inexw (wildlife) mortality requires reporting to applicable agencies (i.e., a species listed on the BC Red list or Blue list, species at risk listed on Schedule 1 of SARA, migratory birds, dead bats), this will be done by Woodfibre LNG's Environmental Representative. Species listed on the BC Red list of blue list and species at risk on Schedule 1 of SARA will be reported to the BC CDC. BC Government <a href="#">website</a> provides information for what to do if a sick, injured, or dead wildlife is found, including which agency to report to. Skwxwú7mesh Úxwumixw (Squamish Nation) and səilwətał (Tseil-Waututh) Nation will be notified of wildlife mortality events and mortality risk concerns, and if wildlife mortalities are reported to the appropriate agency or authority.</li> </ul>  | M5.12-1            |

**Table 7: Sekw'ekw'inexw (Wildlife) Disturbance, Mortality, and Sekw'ekw'inexw (Wildlife)–Human Interaction Mitigation Measures during Operation**

| Category | Mitigation Measures  | Mitigation Number |
|----------|--|-------------------|
| Flaring  | <ul style="list-style-type: none"> <li>Flaring will be required during commissioning (expected 3 months around start of operation), scheduled maintenance, LNG carrier loading, and emergency events. Flaring can adversely affect birds and skáp'káp'tsaylh (bats) through direct mortality or through indirect effects associated with artificial lighting. To limit potential adverse effects on birds and skáp'káp'tsaylh (bats) during a flare event: <ul style="list-style-type: none"> <li>Planned flaring will be done during daylight hours, to the extent possible</li> <li>Flaring will be avoided during low visibility (e.g., fog, storm event)</li> <li>When possible, flaring will be scheduled during the time of year when bird and skáp'káp'tsaylh (bat) migration is limited (i.e., between November 1 and March 14)</li> <li>Lighting around the facility and on the flare stacks should follow available communication tower guidance (e.g., OGC, 2021b; Transport Canada, 2021)</li> <li>Initial cool down and loading of LNG carriers shall be done during daylight hours, whenever possible</li> </ul> </li> <li>Should planned flaring extend into nighttime (e.g., it is possible that a turn-around could require several hours of flaring which would start during the day but may continue into the evening) when bird migrations are more pronounced (i.e., during spring or fall migration periods), a QP will review weather patterns and other available resources (e.g., BirdCast real time analysis mapping) to determine risk to migrating birds and whether mitigation measures are needed. The QP will provide recommendations, which may include avoiding planned flaring during peak migration periods and under favourable migration conditions.</li> <li>Should planned flaring extend into nighttime when skáp'káp'tsaylh (bat) activity is more pronounced (i.e., early spring during post-hibernation, during skáp'káp'tsaylh (bat) migration periods, during the maternity period, and swarming season), a QP will monitor acoustic and visual skáp'káp'tsaylh (bat) activity around the flare stack to determine skáp'káp'tsaylh (bat) usage of the area. The QP will provide recommendations, which may include avoiding planned flaring during favourable skáp'káp'tsaylh (bat) foraging timing and weather conditions during the maternity period and swarming season.</li> <li>Unplanned flaring events are associated with emergency shutdowns, which may be caused by power grid outages, equipment failure, process upsets, and unplanned facility outages or shutdowns. Timing-related mitigation measures are not feasible; however, Woodfibre LNG will monitor outcomes of unplanned flaring events. Monitoring is described in Section 6.1.6 and includes documenting information on duration of the flaring event, time of day, and weather conditions at the time of the flaring event. If possible, within 24 hours after a flaring event, a QP will search within 300 m of the flare stack for bird and skáp'káp'tsaylh (bat) mortalities or injuries; for each mortality detected the species, number, age and sex, and location relative to the flare stack will be recorded.</li> </ul> | M5.12-1           |

**Table 7: Sekw'ekw'inexw (Wildlife) Disturbance, Mortality, and Sekw'ekw'inexw (Wildlife)–Human Interaction Mitigation Measures during Operation**

| Category                   | Mitigation Measures   | Mitigation Number  |
|----------------------------|---|--------------------|
| Air Cooling System         | <ul style="list-style-type: none"> <li>Blades of fans will be covered with cages to prevent birds and skáp'kap'tsaylh (bats) from encountering the blades.</li> <li>Structures surrounding air cooling system fans are to be inspected for presence of birds and skáp'kap'tsaylh (bats) before start of commissioning.</li> </ul>   | N/A                |
| Mammal dens                | <ul style="list-style-type: none"> <li>Infrastructure and stationary equipment may provide denning areas for some mammals. Prior to removal of long-stationary equipment or infrastructure (e.g., holding tanks, disposal bins), the EM will inspect around and underneath the structure to check for signs of denning or burrowing animals that may be disturbed.</li> </ul>   | M5.12-1            |
| <b>Avifauna (Birds)</b>    |   |                    |
| Sp'ákw'us (Bald Eagle)     | <ul style="list-style-type: none"> <li>A sp'ákw'us (bald eagle) nest is on the north side of Woodfibre Creek (Figure 3). Some supporting infrastructure overlaps with the 100 m year-round setback and 100 m 'quiet zone' (Figure 3). Woodfibre LNG will maintain, where possible, the 100 m 'quiet zone' during the breeding season (January 5 through August 31) (MOE, 2013b) or when the nest is active.</li> <li>If operation activities that could disturb the nest or eagles occur within 100 m of the nest or within 200 m of the nest when it is active, Woodfibre LNG will consult a QP to determine appropriate measures to avoid disturbance to the eagles.</li> </ul>   | M5.12-3            |
| Tsíptspí7lhtn (Bird Nests) | <ul style="list-style-type: none"> <li>Vegetation maintenance activities will be undertaken outside of the bird nesting periods, where possible, as identified in Table 8.</li> <li>If operation activities that could disturb piyís (marbled murrelet) during the nesting period (late April to early September) occur within 1 km of the suitable habitat (i.e., provincially-mapped habitat; MWLRS, 2023b), Woodfibre LNG will consult a QP to determine appropriate measures to avoid disturbance to piyís (marbled murrelets).</li> <li>During the bird nesting period and if required (i.e., if operation activities could pose a risk of disturbance or damage to an active nest), the EM will inspect equipment and infrastructure for nesting activities. The EM will consult with a QP to determine an appropriate action or mitigation measure on a case-by-case basis.</li> <li>If an active tsíptspí7lhtn (bird nest) is discovered within or adjacent to an operation activity that could pose a risk of disturbance or damage to that active nest, a QP will determine and recommend a setback buffer. Woodfibre LNG will maintain a no-disturbance setback buffer for the duration that the nest is active. Woodfibre LNG will report the nest and setback in the Wildlife Observation and Incident Reporting Form (Appendix A).</li> </ul> | M5.12-1<br>M5.17-2 |

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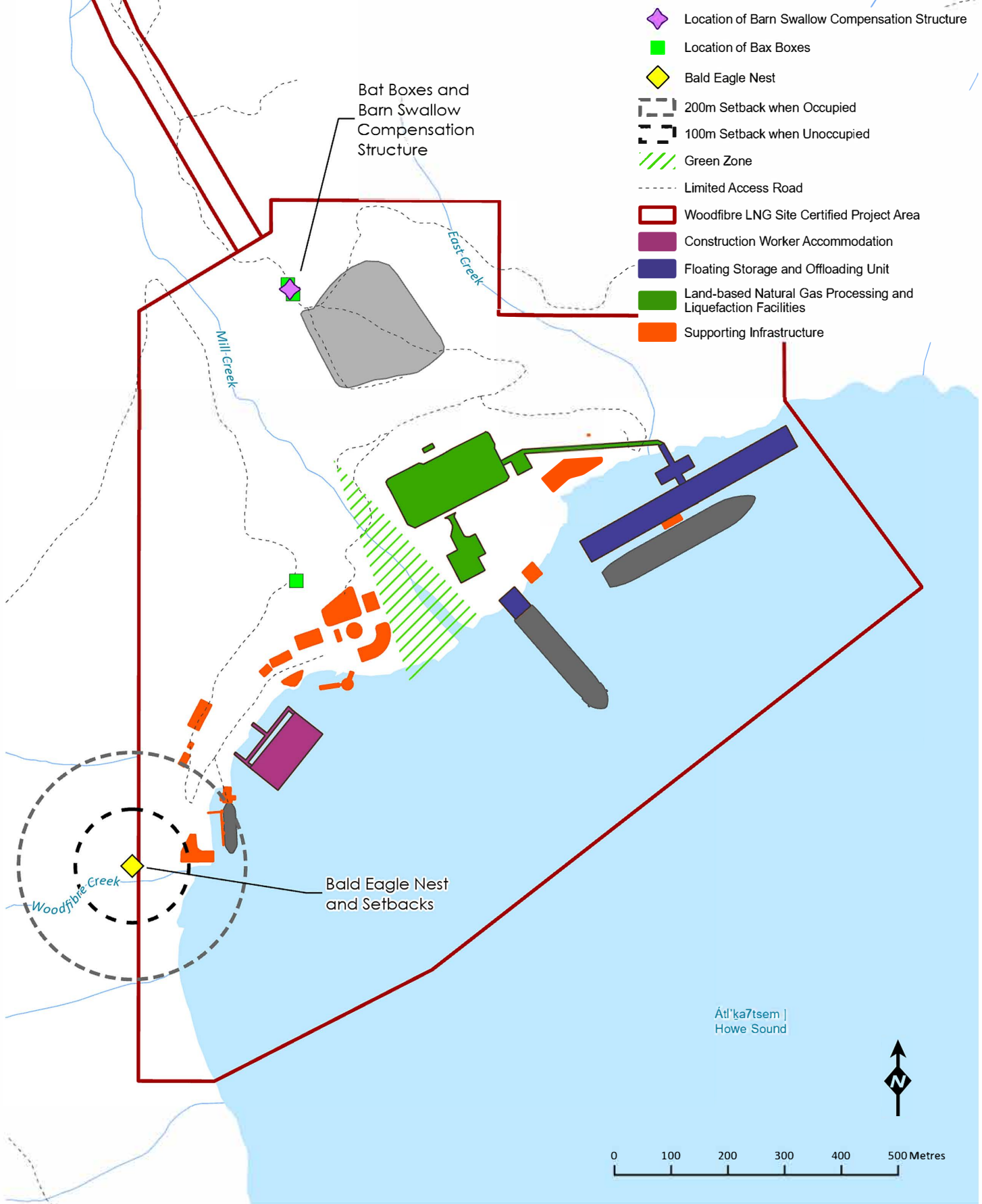
**Table 7: Sekw'ekw'inexw (Wildlife) Disturbance, Mortality, and Sekw'ekw'inexw (Wildlife)–Human Interaction Mitigation Measures during Operation**

| Category                                     | Mitigation Measures   | Mitigation Number                           |
|--|---|---|
| Tsiptspí7lhtn<br>(Bird Nests) (cont'd.)      | <ul style="list-style-type: none"> <li>If vegetation maintenance activities are necessary during the migratory bird nesting season, a QP will undertake a nest survey prior to vegetation maintenance activities. If an active tsiptspí7lhtn (bird nest) is detected, a QP will determine a setback buffer. Woodfibre LNG will maintain the no-disturbance setback buffer for the duration that the nest is active.</li> <li>If the nest or egg of a migratory bird (per the <i>Migratory Birds Convention Act</i>) is accidentally disturbed, harmed, or destroyed, Woodfibre LNG will report the incident to Environment and Climate Change Canada (ECCC; see Appendix A). The Wildlife Observation and Incident Reporting Form (Appendix A) will be used to document the incident and will include the species, nest stage (e.g., nest-building, egg-laying, incubation, nestlings), location, setting and context, and Project activity that led to the incident. Woodfibre LNG will review the details of the incident and risk of recurrence with a QP and make necessary changes to Project activities to reduce the future likelihood of a similar incident.</li> </ul>   |   |
| Sekw'ekw'inexw tl'a shkweh<br>(Marine Birds) | <ul style="list-style-type: none"> <li>Sekw'ekw'inexw tl'a shkweh (marine bird) colonies have not been observed in or near the CPA (Woodfibre LNG, 2015); however, colonies occur in lower Howe Sound and the Salish Sea; therefore, Woodfibre LNG will require its contractors to comply with the recommended 300 m minimum setback from sekw'ekw'inexw tl'a shkweh (marine bird) colonies for LNG facility-related marine vessel traffic, and, subject to safety concerns, refrain from blowing horns or whistles and maintain constant engine noise while passing near the colonies (ECCC, 2023b).</li> <li>Incidents involving sekw'ekw'inexw tl'a shkweh (marine bird) vessel strikes or strandings will be recorded and maintained in a wildlife incidents database; the species involved, location of bird, and weather conditions will be recorded.</li> <li>Woodfibre LNG will limit the duration of operation activities that must occur within the intertidal zone to the extent possible to reduce disturbance of sekw'ekw'inexw tl'a shkweh (marine birds) and sekw'ekw'inexw tl'a shkweh (marine bird) habitat.</li> <li>If post-construction (operation phase) inewxw'antax (monitoring) identifies high levels of sekw'ekw'inexw tl'a shkweh (marine bird) attraction and collision-related mortality associated with onshore Project infrastructure or lighting, additional mitigation measures will be explored under the adaptive management framework.</li> </ul> | M5.17-3<br>M5.17-5<br>M5.17-8<br>Appendix A |

**Table 7: Seḵw'eḵw'inexw (Wildlife) Disturbance, Mortality, and Seḵw'eḵw'inexw (Wildlife)–Human Interaction Mitigation Measures during Operation**

| Category                       | Mitigation Measures  | Mitigation Number |
|--------------------------------|--|-------------------|
| <b>Amphibians and Reptiles</b> |  |                   |
| General                        | <ul style="list-style-type: none"> <li>• If amphibian road crossings are detected, they will be identified with signage.</li> <li>• During the amphibian active period (March to October; see Table 8), install and maintain signage and remind workers, at daily toolbox meetings, to maintain awareness of amphibians on roads, especially on rainy nights, and on site and allow amphibians the right of way.</li> <li>• During the reptile active period (April to October; see Table 8), install and maintain signage and remind workers, at daily toolbox meetings, to maintain awareness of élhḵaḃ (snakes) on roads and on site and allow élhḵaḃ (snakes) the right of way.</li> <li>• Install exclusion fencing along roads in strategic locations to divert amphibians and élhḵaḃ (snakes) away from roads.</li> <li>• Seḵw'eḵw'inexw (wildlife) exclusion fencing installed prior to construction will be maintained, as needed, to deter reptiles and amphibians from entering the site during operation.</li> </ul> | M5.12-1           |
| <b>Sḵáp'ḵap'tsaylh (Bats)</b>  |  |                   |
| General                        | <ul style="list-style-type: none"> <li>• Maintain non-disturbance buffers around active maternity roosts</li> </ul>  | M5.13-1           |

**Figure 3 - Sensitive Habitat Features in the Certified Project Area during Operation**



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A summary of sensitive timing windows for wildlife is provided in Table 8. Woodfibre LNG recognizes that birds may nest outside the dates identified in Table 8 and that it is prohibited to destroy a migratory bird nest with a live bird or viable egg regardless of time of year. Liquefied natural gas facility operation activities will avoid disturbing active tsíptspí7lhtn (bird nests) and, if needed, seek advice from a QP on setback buffers for active nests at any time of year.

**Table 8: Sensitive Periods for Sekw'ekw'inexw (Wildlife) that May Interact with Project Operation**

| Species or Species Group                 | Sensitive Period <sup>a</sup>   | Dates   | Reference                |
|--|---|---|--------------------------|
| Migratory birds                          | Primary Nesting Period  | March 26 to August 16   | ECCC 2023c               |
|  | Nesting – wetland   | March 26 to August 8  |                          |
|  | Nesting – open  | March 30 to August 16   |                          |
|  | Nesting – forest  | March 26 to August 9  |                          |
| Kw'ekw'íkwe'ehat' (Barn swallow)         | Nesting (residence period)  | May 1 or the date when adults are first seen building or occupying a nest, whichever is earlier to August 31 or the date when a bird is last seen at a nest, whichever is later | ECCC 2019b               |
| Seabird and sta'kw (water) bird colonies | Breeding  | March 17 to August 17   | ECCC 2023b               |
| Piyís (Marbled murrelet)                 | Nesting (residence period)  | Late April to early September   | MWLRS, 2023a             |
| Sp'ákw'us (Bald eagle)                   | Courtship   | January 5 to February 5   | MOE 2013b                |
|  | Eggs  | February 5 to June 25   |                          |
|  | Young   | April 1 to August 31  |                          |
| Ská'p'kap'tsaylh (Bats)                  | Maternity season when females and pups may be present   | May 16 to August 31   | MOE 2016                 |
| Pond-dwelling amphibians                 | Breeding and movement periods   | Active period: March to October   | FLNRO 2016<br>MECCS 2020 |
| Coastal tailed we'xés (frog)             | Year-round  | Year-round  | ECCC 2018b               |
| Elh'ka'y (Snakes) and lizards            | Active period: spring emergence, breeding, returning to hibernacula<br>Inactive period: hibernation | April to October (active period)<br>October to March (hibernation period)   | FLNRO 2014<br>MECCS 2020 |

Notes:

- <sup>a</sup> Sensitive period for young birds includes nestling (i.e., in nest) and fledgling (i.e., young out of, but near, nest and not yet able to fly well) stages.



## 5.4 HABITAT LOSS MITIGATION MEASURES

Mitigation measures that have been implemented for the loss of sekw'ekw'inexw (wildlife) habitat (e.g., skáp'kap'tsaylh [bat] boxes, artificial lams tl'a kw'ekw'ikw'ehatl' [barn swallow nests]) may require ongoing maintenance during operation of the LNG facility, as outlined in Table 9. Mitigation measures for loss of habitat include provision of skáp'kap'tsaylh (bat) roosting structures, kw'áxwa7s tl'a shá7yu (western screech-owl nest boxes), lams tl'a kw'ekw'ikw'ehatl' (barn swallow nest cups), and, if the Project results in loss of a mineral site for nsexá7xem (band-tailed pigeon), the provision of an artificial mineral site will be considered.<sup>5</sup> Artificial roosting structures for skáp'kap'tsaylh (bats) and artificial nest cups for kw'ekw'ikw'ehatl' (barn swallows) have been installed within the CPA.

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<sup>5</sup> A survey was completed in 2021 and the QP determined that characteristics of potential mineral sites were lacking within the CPA. However, one potential mineral site was identified along a tributary of Mill Creek where at least 20 pigeons were observed; this site is at the perimeter of the CPA and outside the clearing area (as shown in Figure 3 of the Construction WMMP).

**Table 9: Habitat Loss Mitigation Measures for Sekw'ekw'inexw (Wildlife) During Operation**

| Category  | Mitigation Measures   | Mitigation Number                        |
|---|---|--|
| Birds – Lams tl'a kw'ekw'ikw'ehatl' (Barn Swallow Artificial Nest Cups)               | <ul style="list-style-type: none"> <li>Mitigation measures and monitoring will align with the terms and conditions of SARA Permit SARA-PYR-2023-0739.</li> <li>Lams tl'a kw'ekw'ikw'ehatl' (barn swallow nest cups) were installed on an artificial nesting structure prior to the construction phase to mitigate for the loss of previous nest sites associated with old buildings that are now demolished.</li> <li>A no-disturbance buffer around the kw'ekw'ikw'ehatl' (barn swallow) nesting structure and nest cups will be maintained during the kw'ekw'ikw'ehatl' (barn swallow) nesting period during the operation phase.</li> <li>Use of the lams tl'a kw'ekw'ikw'ehatl' (barn swallow nest cups) will be monitored and evaluated annually by a QP for at least two years following commencement of operation to determine nest occupancy during the operation phase.</li> </ul> | M5.12-8                                  |
| Birds – Kw'axwa7s tl'a Shá7yu (Western Screech-Owl Nest Boxes)                        | <ul style="list-style-type: none"> <li>If kw'axwa7s tl'a shá7yu (western screech-owl nest boxes) are installed to mitigate loss of nesting habitat, a no-disturbance buffer will be maintained during the shá7yu (western screech-owl) nesting period during the operation phase.</li> <li>The nest boxes will be checked at the onset of each breeding season during each year of operation to confirm they are still functional (i.e., attached to the tree) and determine use by shá7yu (western screech-owl). Any nest box deemed to be no longer functional will be repaired or replaced within 30 days of the initial inspection. The nest boxes will be maintained throughout the operation phase of the LNG facility.</li> </ul>  | M5. 9-2<br>M5.11-2<br>M5.12-2<br>M5.12-8 |
| Skáp'kap'tsaylh (Bats) – Artificial Roosting Structures (Skáp'kap'tsaylh [Bat] Boxes) | <ul style="list-style-type: none"> <li>Artificial skáp'kap'tsaylh (bat) roosting structures were installed prior to the construction phase to mitigate for loss of roosting habitat for skáp'kap'tsaylh (bats). The roosting structures will be maintained throughout the operation phase of the Project. The artificial roosts will be inspected annually to determine that they are still functional and determine use by skáp'kap'tsaylh (bats). Any artificial roost deemed to be no longer functional will be repaired or replaced prior to the onset of the next roosting season.</li> <li>Maintain non-disturbance buffers around artificial roosting structures during the active maternity season.</li> </ul>  | M5.13-3<br>M5.13-1                       |
| Birds – Nsexá7xem (Band-tailed Pigeon) Mineral Site                                   | <ul style="list-style-type: none"> <li>If an artificial mineral source for nsexá7xem (band-tailed pigeon) is provided, a no-disturbance buffer will be maintained during the operation phase and the site will be monitored annually by a QP for at least two years following commencement of operation to determine if the artificial mineral site is being used by nsexá7xem (band-tailed pigeon).</li> </ul>   | M5.14-2                                  |

## 5.5 ENVIRONMENTAL TRAINING AND ORIENTATION

Seḵw'ekw'inexw (wildlife) management will be included in the environmental orientation program that will be developed and implemented by Woodfibre LNG. The program will be reviewed and approved by the Woodfibre LNG Environmental Representative.

Woodfibre LNG personnel will be informed of seḵw'ekw'inexw (wildlife) mitigations implemented on site (e.g., site-specific setbacks, compensation structures) and of seḵw'ekw'inexw (wildlife) concerns within the CPA. Personnel will be trained on how to record and report seḵw'ekw'inexw (wildlife) conflicts, incidents, or concerns (e.g., animal-vehicle collisions, nuisance animals, seḵw'ekw'inexw (wildlife)-human interactions). Woodfibre LNG will encourage the reporting of SOMC observed on site using the form in Appendix A. Conflicts will also be reported using the Wildlife Observation and Incident Reporting Form in Appendix A; information such as species involved, time and location of incident, and a description of what was observed will be documented. Personnel will give seḵw'ekw'inexw (wildlife) the right of way on roads and work site, will not harass or feed seḵw'ekw'inexw (wildlife), will obey appropriate signage (e.g., speed limits), and will implement the bear-proof waste disposal/storage procedures specified in the Waste Management Plan.

## 5.6 COORDINATION AND INFORMATION SHARING

The Woodfibre LNG Environmental Representative will meet with FortisBC yearly to discuss opportunities to reduce potential effects on seḵw'ekw'inexw (wildlife) through operation and maintenance of the Eagle Smánit (Mountain)–Woodfibre Gas Pipeline.

The Woodfibre LNG Environmental Representative will meet with BC Hydro yearly regarding operation and maintenance of the BC Hydro Woodfibre Substation to identify measures to limit potential adverse effects on seḵw'ekw'inexw (wildlife) (mitigation number M5.12-10).

If the BURNCO Aggregate Project begins mining operation, the Woodfibre LNG Environmental Representative will meet with BURNCO to discuss sharing results of the seḵw'ekw'inexw (wildlife) inexwantas (monitoring) programs where it is determined that these results could enhance inexwantas (monitoring) programs (mitigation number M5.17-9). This information sharing will include the results of seḵw'ekw'inexw tl'a shḵweh (marine bird) inexwantas (monitoring) studies to increase the knowledge base for seḵw'ekw'inexw tl'a shḵweh (marine bird) interactions.

Per mitigation measure M5.12-1 and Sections 13.2.2.17 and 13.3.5 of the Application, observations of provincially Red- or Blue-listed seḵw'ekw'inexw (wildlife) species and seḵw'ekw'inexw (wildlife) species listed on Schedule 1 of SARA that have not previously been documented within the CPA will be reported to the BC CDC by Woodfibre LNG.

In accordance with FDS Condition 13, records will be maintained of information related to the implementation of conditions set out in the FDS and the results of associated inexwantas (monitoring). This includes dates, locations, and times of inexwantas (monitoring); the techniques, methods, or procedures used; and the names of persons involved and documentation of their professional certifications. This information will be provided to the EM to prevent information loss.

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Per mitigation measure M5.12-1, a database of sekw'ekw'inexw (wildlife) conflicts and mortality will be maintained throughout the operation phase. The sekw'ekw'inexw (wildlife) reporting process for Woodfibre LNG employees will be included in environmental training and orientation. Appendix A is the form for Woodfibre LNG Project personnel to document and report sekw'ekw'inexw (wildlife) incidents and mortalities.

Environmental inxwantas (monitoring) summary reports will be provided by the EM to the Woodfibre LNG Environmental Representative on a monthly and annual basis, as outlined in the OEMP. These reports will include inxwantas (monitoring) results and additional sekw'ekw'inexw (wildlife) observations from within the CPA.

## 6.0 SEKW'EKW'INEXW (WILDLIFE) ÍNEXWANTAS (MONITORING) AND ADAPTIVE MANAGEMENT

Environmental ínexwantas (monitoring) is required to verify compliance with this Operation WMMP and applicable regulations and conditions and to document the effectiveness of implemented mitigation measures, document incidents and mortalities, and determine if adaptive management is required.

### 6.1 ÍNEXWANTAS (MONITORING) AND FOLLOW-UP PROGRAMS

Ínexwantas (monitoring) and follow-up will be undertaken to verify the accuracy or the environmental assessment and to determine the effectiveness of mitigation measures that are implemented, per FDS Condition 2.4. Follow-up results will be used to determine whether additional mitigation measures are required. Follow-up programs to be implemented or continued during operation pertain to skáp'kap'tsaylh (bat) roosting sites, migratory birds, kw'ekw'ík'w'ehat' (barn swallow), air cooling system, sekw'ekw'inexw t'l'a shkweh (marine birds), and flaring. The following sections contain an introduction to the ínexwantas (monitoring) and follow-up programs which will be developed for the Project.

#### 6.1.1 Skáp'kap'tsaylh (Bat) Roosting Sites

This follow-up program is specific to ínexwantas (monitoring) little brown myotis usage of buffer zones and artificial roosting structures, pursuant to FDS Condition 9.3. The objective of ínexwantas (monitoring) is to determine the effectiveness of mitigation measures (e.g., buffer zones around maternity roost sites and provision of artificial roosting structures) throughout all phases of the Project. The following is an outline of the follow-up program during the operation phase.

If an active maternity roost site is detected (e.g., during pre-clearing survey prior to construction) and requires a non-disturbance buffer during operation, a QP will monitor the effectiveness of buffer zones. Ínexwantas (monitoring) methods will include visual inspections of the roost sites and, if considered necessary, passive and/or active acoustic surveys to determine usage. Surveys will be undertaken during the skáp'kap'tsaylh (bat) active season. If the QP determines that a passive acoustic survey is necessary, ultrasonic acoustic recording units (uARUs) will be deployed in May through October when roost sites are expected to be occupied. If a suspected hibernaculum is identified it will be monitored with an uARU from early March to early November to cover the fall swarming period, per provincial inventory methods for bats (RISC, 2022). Additionally, the QP will consult with the appropriate regulatory authorities in the event an active roost is identified. Data from the uARUs will be analyzed using Kaleidoscope or a similar acoustic data analysis program and summarized in the annual report (see Section 7.0).

As part of compliance ínexwantas (monitoring), the EM will inspect buffer zones to confirm they have been implemented and maintained during operation, as appropriate and specified by the QP.

The artificial roosting structures will be monitored and maintained on an annual basis for the duration of operation. The target is that artificial roosts are occupied and functioning as intended. Artificial roosting structures will be inspected by a QP once per year in late winter (e.g., February-March) prior to sk̓áp'k̓ap'tsaylh (bats) potentially occupying them. During the late winter inspection, the QP will confirm if the artificial roosts are functional and capable of supporting sk̓áp'k̓ap'tsaylh (bats). If maintenance is required to repair the artificial roosting structures, the QP will provide guidance to the EM and repairs and cleaning (e.g., removal of wasp nests) will be completed prior to the onset of the next roosting season. During the maternity season (see Table 7), a QP will visually inspect the roosting structures for sk̓áp'k̓ap'tsaylh (bat) use. The QP will inspect the structures from the ground for evidence of guano and urine to avoid disturbing sk̓áp'k̓ap'tsaylh (bats). If guano is present, the QP will collect samples per collection methods described in the BC Community Bat Program DNA Sampling Protocol (BC Community Bat Program, 2022) for analysis to determine species. If guano is not present, Woodfibre LNG may monitor the artificial roosting structures passively using uARUs and/or actively using roost emergence counts at dusk.

If after two years the artificial roosts are not used (i.e., the threshold), inewxwantas (monitoring) will continue and an evaluation of potential limiting factors will be undertaken by the QP. Woodfibre LNG recognizes that it may take several years for bats to use or occupy artificial roosts. If corrective measures are necessary to improve the likelihood of occupancy, these will be implemented if they are reasonable and feasible.

### 6.1.2 Migratory Birds

This follow-up program is specific to migratory birds and the objective is to verify the accuracy of the predictions made in the Application and determine the effectiveness of mitigation measures used to protect migratory birds, pursuant to FDS Condition 4.1. Predictions made in the Application for migratory birds state that Project-related effects can be reduced to an acceptable level during activities that may harm, kill, or disturb migratory birds. Woodfibre LNG recognizes that under the *Migratory Birds Convention Act* there is no acceptable level of harm for migratory birds. This section describes the follow-up program for mitigation measures implemented to reduce effects of lighting, buildings, powerlines, and general facility operation, including vegetation maintenance and habitat loss, on migratory birds.

- **Lighting and Bird Strikes on Buildings** – Woodfibre LNG will undertake an annual review of mitigation measures that are implemented to reduce the potential for bird strikes on buildings to assess whether mitigation measures are effective and functioning as intended. The EM will complete a monthly building perimeter survey for bird mortalities and identify specific areas of increased risk, and will review reports of bird mortalities or injuries, as documented on the Wildlife Observation and Incident Reporting Form (Appendix A). Additional mitigation (e.g., changes to lighting, external window screens or grills) may be recommended for building areas identified as having increased risk of bird strikes.

- Bird Electrocution from Powerlines – Woodfibre LNG will undertake an annual review of mitigation measures that are implemented to reduce the potential for bird electrocution on the powerline to assess whether mitigation measures are effective and functioning as intended. The EM will complete monthly inspection of the powerlines to monitor bird mortality events and risk of bird electrocution associated with powerlines. Reports of bird mortalities or injuries, as documented on the Wildlife Observation and Incident Reporting Form (Appendix A), will also be reviewed.
- Nseḡá7ḡem (Band-tailed Pigeon) Mineral Site – If a natural mineral site is identified within the CPA or Woodfibre LNG provides an artificial mineral site, then a QP will monitor for use by nseḡá7ḡem (band-tailed pigeons). Ínexwantas (monitoring) will entail assessing that a setback buffer is maintained, the mineral site is not disturbed, and determining use of the site by nseḡá7ḡem (band-tailed pigeon). Ínexwantas (monitoring) use of the site by nseḡá7ḡem (band-tailed pigeon) will be completed using a remote camera focused on the mineral site during the breeding period. Remote camera photos will be reviewed and summarized in an annual report.
- Active Nests
  - If an active tsíptspí7lhtn (bird nest) is discovered and requires a no-disturbance setback buffer Woodfibre LNG will confirm that the setback is maintained.
  - If vegetation maintenance activities are necessary during the migratory bird nesting season and a QP undertakes a nest survey prior to vegetation maintenance activities, Woodfibre LNG will document nest surveys, findings, and setback buffers in a report that will be included in the annual ínexwantas (monitoring) report (see Section 7.0).
  - If the nest or egg of a migratory bird (per the *Migratory Birds Convention Act*) is accidentally disturbed, harmed, or destroyed, Woodfibre LNG will report the incident to Environment and Climate Change Canada and document the incident using the Wildlife Observation and Incident Reporting Form (Appendix A). Woodfibre LNG will review the details of the incident and risk of recurrence with a QP and make necessary changes to Project activities to reduce the future likelihood of a similar incident.

### 6.1.3 Kw'ekw'íkwehatl' (Barn Swallow)

Woodfibre LNG will monitor the use and function of kw'ekw'íkwehatl' (barn swallow) compensation (i.e., artificial nesting structure; Appendix B) to determine if the compensation is functioning as intended and if adaptive management is required. Monitoring will align with the terms and conditions of SARA Permit SARA-PYR-2023-0739 and any amendment to the permit, if applicable, to support the operation phase. A QP experienced with kw'ekw'íkwehatl' (barn swallow) will monitor kw'ekw'íkwehatl' (barn swallow) use and nesting activities on the artificial nesting structure in each breeding season for at least two years following the commencement of operation to determine nest occupancy. The measure of effectiveness of the mitigation will be the number of active barn swallow nests within a nesting season within the CPA. The target is the same number of barn swallow pairs nesting within the CPA following commencement of operation as the number of pairs that nested prior to construction.

The QP will undertake a survey in May (onset of nesting) and July (chick-rearing and potential second nesting attempts) of each year to count the number of pairs on site, number of nests, and to inspect the nesting structures and artificial nest cups to determine occupancy. The survey in May will determine kw'eḵw'íḵw'ehatł' (barn swallow) prospecting and nest building activities, including where the swallows collect mud and number of pairs visiting the structure. The survey in July will determine nest cup occupancy and potential second or third nesting attempts.

Nest cup occupancy will be considered affirmative if an adult kw'eḵw'íḵw'ehatł' (barn swallow) or its eggs or young is detected in a natural or artificial nest cup on the interior or exterior of the nesting structure.

An end-of-season survey will be completed in late August or early September, no later than September 15, to determine the final nest count. If after two years of ínexwantas (monitoring) the structures are not used (i.e., the threshold), ínexwantas (monitoring) will continue and an evaluation of limiting factors will be undertaken by the QP. If corrective measures are necessary to improve the likelihood of nesting, these will be implemented if they are reasonable and feasible.

A sek'w'eḵw'ínexw (wildlife) camera will be installed at the nesting structure in May in each ínexwantas (monitoring) year to monitor effectiveness of predator guards and other measures installed to deter predators. Data from the cameras will be reviewed monthly throughout the kw'eḵw'íḵw'ehatł' (barn swallow) nesting season to determine potential predation events and whether adaptive management is required.

#### 6.1.4 Air Cooling System and Migratory Birds and Skáp'ḵap'tsaylh (Bats)

This section describes the framework for the proposed follow-up program. Details will be developed in consultation with Indigenous groups and ECCC and provided in a subsequent revision of the Operation WMMP prior to start of operation.

Pursuant to FDS Condition 4.3 and 9.3 and EAC Condition 12, the objective of this follow-up program is to verify predictions made in the 2017 amendment to the Application as they pertain to the environmental effects of the air cooling system on migratory birds and little brown myotis. Ínexwantas (monitoring) of the air cooling system will occur for one calendar year after the commencement of operation of the air cooling system. Ínexwantas (monitoring) will include:

- Use of autonomous temperature and noise sensors to compare measured values to those in the amendment to the Application. The target is the temperature and noise levels predicted in the 2017 amendment to the Application.



- Installation of an uARU near the air cooling system, where safe and practical, during the skáp'káp'tsaylh (bat) active season (May to October) to monitor little brown myotis activity in the air space above the air cooling system. Data will be compared to pre-operation skáp'káp'tsaylh (bat) activity;<sup>6</sup> the target is no change in skáp'káp'tsaylh (bat) activity.
- Visual scans of the ground under and adjacent to the air cooling system to look for carcasses of birds and skáp'káp'tsaylh (bats) at least monthly and more frequently (e.g., weekly) during peak migration periods. The target is no incidents of bird or skáp'káp'tsaylh (bat) mortality.

The results of the follow-up program may be used to develop additional mitigation measures if targets are not met.

### 6.1.5 Sekw'ekw'inexw tl'a shkweh (Marine Birds)

Woodfibre LNG is committed to undertaking pre- and post-construction sekw'ekw'inexw tl'a shkweh (marine bird) surveys to understand seasonal presence of sekw'ekw'inexw tl'a shkweh (marine birds) within the CPA marine environment to manage collision risk with Project infrastructure (Mitigation M5.17-8). The outcome of sekw'ekw'inexw tl'a shkweh (marine bird) inexwantas (monitoring) will be a review of whether new or revised mitigation measures are needed. Sekw'ekw'inexw tl'a shkweh (marine bird) inexwantas (monitoring) methods were developed by a QP and are based on a Before-After-Control-Impact design, which comprises data collection over different temporal periods and spatial areas (Stantec, 2023). The pre-construction inexwantas (monitoring) surveys were completed in 2022 by QPs in the Impact (i.e., CPA) and Control (i.e., reference) areas to represent the presence and abundance of sekw'ekw'inexw tl'a shkweh (marine birds) during the Before period in those areas (Stantec, 2023). Sekw'ekw'inexw tl'a shkweh (marine bird) surveys will be completed by QPs in each of four seasons (spring, summer, fall, winter) for one complete cycle (i.e., one year) in the Impact (i.e., CPA) and Control (i.e., reference) areas following completion of construction (i.e., during operation) to represent the After period.

Woodfibre LNG will also provide information and training to workers (contractors, staff, and employees) on how to report and record sekw'ekw'inexw tl'a shkweh (marine bird) conflicts during operation (see Section 5.5) (per M5.17-8). Reporting will be reviewed regularly (e.g., monthly) to identify areas of persistent conflict or mortality of sekw'ekw'inexw tl'a shkweh (marine birds). Where persistent conflict is identified and in the event of a sekw'ekw'inexw tl'a shkweh (marine bird) collision with Project infrastructure or vessels, Project operation activities will be reviewed by the EM in consultation with a QP to identify mitigation measures to reduce the risk of future conflicts or mortality events.

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<sup>6</sup> uARUs have been deployed in 2023 and will continue to monitor skáp'káp'tsaylh (bat) activity over the planned footprint of the air cooling system prior to the start of operation

### 6.1.6 Flaring

Site *ínexwantas* (monitoring) of flaring during commissioning, scheduled maintenance, LNG carrier loading, and emergency (unplanned) events will occur for one calendar year. The objective of *ínexwantas* (monitoring) is to verify predictions made in the 2017 amendment to the Application as they pertain to the environmental effects of flaring on migratory birds and to determine timing of increased risk to birds and *skáp'káp'tsaylh* (bats) to inform mitigation measures (e.g., timing of planned flaring events). *ínexwantas* (monitoring) will be completed at least once per week for each week in which a flare event is planned and once during or immediately following an unplanned event during the one-year *ínexwantas* (monitoring) period. *ínexwantas* (monitoring) will be completed by a QP for the following conditions:

- During planned daytime flaring events, if the QP determines necessary (e.g., during periods of more pronounced bird aerial activity), the QP will undertake a point count bird survey to observe and record birds flying within 300 m of the flare stack. For each observation the species, number, age and sex if known, distance from the flare, direction of flight, and height above ground will be recorded.
- Within 24 hours after a planned or unplanned (if feasible) flaring event, a QP will search within 300 m of the flare stack for bird and *skáp'káp'tsaylh* (bat) mortalities or injuries. For each mortality detected the species, number, age and sex, and location relative to the flare stack will be recorded.
- Should planned flaring extend into nighttime when bird migrations are more pronounced (i.e., during spring or fall migration periods), a QP will review weather patterns and other available resources (e.g., BirdCast real time analysis mapping) to determine risk to migrating birds and whether flaring should be rescheduled.
- Should planned flaring extend into nighttime when *skáp'káp'tsaylh* (bat) activity is more pronounced (i.e., early spring during post-hibernation, during *skáp'káp'tsaylh* (bat) migration periods, during the maternity period, and swarming season), a QP will monitor acoustic and visual *skáp'káp'tsaylh* (bat) activity around the flare stack to determine *skáp'káp'tsaylh* (bat) usage of the area, and potential risk of injury or harm by the flare stack.

During *ínexwantas* (monitoring), information on duration of the flaring event, time of day, and weather conditions at the time of the flaring event will be recorded. Following completion of the one-year *ínexwantas* (monitoring) period, the data will be reviewed for patterns of risk and mortality. Outcomes of *ínexwantas* (monitoring) will inform adjustments to mitigation measures, if required and feasible, and determine whether monitoring should be continued through the operation phase.

## 6.2 ADAPTIVE MANAGEMENT

Woodfibre LNG will use a systematic adaptive management process to confirm performance objectives are met and guide management actions. The adaptive management process consists of the following steps:

1. **Assess:** This consists of an assessment of the potential effects of the Project on sekw'ekw'inexw (wildlife) and the identification of mitigation measures. This was completed through the federal, provincial, and Skwxwú7mesh Úxwumixw (Squamish Nation) environmental assessment processes, and through pre-construction sekw'ekw'inexw (wildlife) surveys described in Section 4 of the Construction WMMP.
2. **Design:** This step consists of the development of the mitigation and inexwantas (monitoring) plans for operation. This Operation WMMP is a core element of this step. If species at risk (federal or provincial) are observed within the CPA during the operation phase, mitigation strategies may be reviewed by a QP against relevant regulations and guidance to determine whether adjustments are needed.
3. **Implement:** This consists of implementing the Operation WMMP.
4. **Monitor:** This consists of implementing the inexwantas (monitoring) programs described in Section 6.1.
5. **Evaluate and Report:** Results of inexwantas (monitoring) will be reviewed to inform whether mitigation measures are functioning as intended and if additional mitigation measures are required.
6. **Adapt:** If sekw'ekw'inexw (wildlife) conflicts and interactions occur, or if mitigations implemented are shown to be ineffective where targets, thresholds, or site objectives are not being met, a QP will work with the Woodfibre LNG Environmental Representative to improve the mitigations and reduce the number of incidents. The targets, thresholds, and/or site objectives for additional mitigations are linked to the significance determination framework used by the BC EAO in its Assessment Report for the original Application for an EAC (BC EAO, 2015); if the magnitude, extent, or frequency of effects are expected to change, then adaptive management measures will be applied.
7. **When adaptive management strategies necessitate an update to this Operation WMMP,** Woodfibre LNG will prepare a red-line version of the document identifying what triggered the need for updates (e.g., which target, threshold, or site objective was not met) and the changes that were made. The red-line version will be issued to Skwxwú7mesh Úxwumixw (Squamish Nation) and the BC EAO for a 30-day (excluding statutory holidays) review and comment period. After comments are received, the document will be updated and issued as a clean final revision to Skwxwú7mesh Úxwumixw (Squamish Nation) and the BC EAO.

## 7.0 REPORTING

Reporting is a requirement of FDS and EAC conditions. Woodfibre LNG will prepare and submit to the federal regulator an annual report, commencing implementation of conditions per FDS Condition 2.6, to describe the activities undertaken to comply with the conditions, how Woodfibre LNG considered views and information received during or as a result of consultation, results of follow-up programs, and additional mitigation measures implemented or proposed.

In accordance with FDS Condition 13, Woodfibre LNG's EM will maintain records of information related to the implementation of conditions set out in the FDS and the results of associated *ínexwantas* (monitoring) and adaptive management. This includes dates, locations, and times of *ínexwantas* (monitoring); the techniques, methods, or procedures used; *sekw'ekw'inexw* (wildlife) incidents and potential conflicts; and the names of persons involved and documentation of their professional certifications.

As part of EAC Condition 1, Woodfibre LNG will prepare monthly and annual reports on compliance with EAC conditions. These reports will present summaries of the methods and results of *ínexwantas* (monitoring) completed, adaptive management measures implemented (if any), and the conclusions of the evaluation. Observations of *sekw'ekw'inexw* (wildlife), including incidents or potential conflicts and corrective actions implemented, will be included in the reports. Updates on the status of listed species will be included in the annual *ínexwantas* (monitoring) reports. Reports will be provided to *Skw̓wú7mesh* *Úxwumixw* (Squamish Nation), *səlilwətał* (Tsleil-Waututh) Nation, and the BC EAO.

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# **APPENDIX A**

## **Wildlife Observation and Incident Reporting Form**

# **APPENDIX A WILDLIFE OBSERVATION AND INCIDENT REPORTING FORM**

## Woodfibre LNG – Wildlife Observation and Incident Reporting Form

|   |   |
|---|---|
| Name of Observer(s):  | Date:   |
| Location:   | Species (if unknown, describe size colour, etc.):     |
| Behaviour of Animal (e.g., distressed, injured):  | Description of Observation or Incident:               |
| Action Taken (if needed, use a Wildlife Incident Response Kit available on site and follow the guidance sheet): | Follow-up (e.g., monitoring, additional mitigations): |
| Photos (include with form or identify where photos are located):  |   |

### Environmental Monitor or Environmental Representative Sign-off:

|  |            |       |
|--|------------|-------|
| Name:  | Signature: | Date: |
| Reported to appropriate agency, if applicable? | Agency:    | Date: |

The Environmental Representative is responsible for reporting to the appropriate agency or authority, if applicable. The following resources are:

[BC Government information](#) for what to do if you find a sick, injured, or dead wildlife.

**For bats**, if discovered flying during winter or early spring or found dead, please report it the B.C. Community Bat Program at 1-855-922-2287 or [info@bcbats.ca](mailto:info@bcbats.ca).

**For birds**, call 1-866-431-BIRD (2473) and read [The BC Interagency Wild Bird Mortality Investigation Protocol & the 2022 Avian Influenza Surveillance Program](#).

**If a migratory bird, or its active nest or egg**, is accidentally harmed or destroyed, report the incident to the Canadian Wildlife Service ([IncidentalTake.PriseAccesoire@ec.gc.ca](mailto:IncidentalTake.PriseAccesoire@ec.gc.ca)).

# **APPENDIX B**

## **Barn Swallow Structure**

## **APPENDIX B   BARN SWALLOW STRUCTURE**





Nest cup on outside of structure



Nest cups on inside of structure

