

Appendix F.5
Terrestrial Wildlife and Marine Birds
Information Request #10

December 12, 2014

Catherine Ponsford
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Canadian Environmental Assessment Agency
Pacific and Yukon Regional Office
410-701 Georgia Street West
Vancouver, BC V7Y 1C6

Dear Ms. Ponsford:

Reference: Terrestrial Wildlife and Marine Birds IR #10

This letter responds to the request for Outstanding Information received from the Canadian Environmental Assessment (CEA) Agency on August 14, 2014.

Information Request #10

Government of Canada –Outstanding Information:

To inform the assessment for listed species of bats potentially occurring in the LAA, conduct surveys using a combination of acoustic detectors and mist-netting in order to assess presence and distribution, and to support the development of avoidance, mitigation and/or compensation measures

PNW LNG – Response:

The Pacific NorthWest LNG Project (the Project) has the potential to affect bats through removal of habitat and supporting roosting locations during construction, operations, and decommissioning. In September 2014, the Canadian Wildlife Service (CWS) requested that Pacific NorthWest LNG Limited Partnership (PNW LNG) provide additional information on potential effects of the Project on bats and bat habitat.

Baseline surveys conducted by PNW LNG to characterize baseline conditions for bats included a) describing the availability and quality of supporting habitat through ecological community modelling and b) identifying important habitat features (e.g., roost sites) using wildlife transects. Section 4 and 5.1 of Appendix H of the Environmental Impact Statement (EIS) describes the primary ecological communities and identified wildlife features likely to support bat roosting, breeding, and foraging activities. As described in Appendix H of the EIS, habitats on Lelu Island have a high likelihood to support bats. Accordingly, potential project effects were assessed in Section 11 of the EIS assuming the presence of bats on or near Lelu Island and were supported by the baseline surveys described above.

This technical memo provides potential project effects to change in habitat availability, change in mortality risk, and alteration of movement specifically for bats potentially occurring on or near Lelu Island. To support this information request, additional passive acoustic surveys were conducted beginning September 18, 2014. A combination of zero-crossing and full spectrum acoustic recording units were installed at five locations on Lelu Island, to target potential roosting and foraging bat habitat. Surveys passively record high-frequency vocalizations of bat species present in the vicinity of each unit.

Potential Project Effects on Bats

Existing data sources and literature were reviewed to rank potential effects of concern that could result from interactions between bats and project activities. Activities ranked as a “0” have no interaction with bats. The assessment examines interactions between activities and specific effects for those activities identified as having project interactions but considered manageable with the application of standard operating procedures or codified practices (i.e., activities ranked as a “1”), and project activities whose



interactions with bats may exceed acceptable levels without the implementation of project-specific mitigation (ranked “2”).

Activities ranked as “0” or “1” for potential effects to change in habitat, change in mortality risk, or alteration of movement for bats are expected to be negligible and/or considered manageable through the application of standard practices. These activities include:

- Vehicle traffic, dredging, marine construction, waste management and disposal, and disposal at sea during construction
- Marine terminal use, shipping, waste management and disposal, and fish habitat offsetting during operations
- Dismantling of the marine terminal, waste disposal, and site clean-up and reclamation during decommissioning.

Activities ranked as “2” for potential effects to change in habitat, change in mortality risk, or alteration of movement for bats has potential to exceed acceptable levels without project specific mitigation. These activities include:

- Site preparation, onshore construction, operational testing and commissioning, and site clean-up and reclamation during construction
- LNG facility operation and wetland habitat compensation during operations
- Dismantling the LNG facility during decommissioning.

Baseline Conditions

Sixteen species of bats occur in British Columbia (BC), including nine that potentially reside or migrate through the project local assessment area (LAA) and regional assessment area (RAA) (Table 1) (Nagorsen and Brigham 1993). Habitat on and around Lelu Island potentially support maternal roosting and foraging sites within old forests, along freshwater streams, over estuarine meadows and sphagnum bogs, within the marine intertidal area, and over outlying rocks and islands. Roosting locations can include large-diameter western red cedar (*Thuja plicata*) trees in old forest and rock cliffs and crevices (Nagorsen and Brigham 1993).

Table 1: Bat Species Potentially Occurring within the Project LAA and RAA

Common Name	Scientific Name	Provincial Status	COSEWIC	SARA	Presence in LAA
Big Brown Bat	<i>Eptesicus fuscus</i>	Yellow (secure)	-	-	Likely
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Yellow (secure)	-	-	Likely
Hoary Bat	<i>Lasiurus cinereus</i>	Yellow (secure)	-	-	Possible
California Myotis	<i>Myotis californicus</i>	Yellow (secure)	-	-	Likely
Little Brown Myotis	<i>Myotis lucifugus</i>	Yellow (secure)	EN	UC	Likely
Yuma Myotis	<i>Myotis yumanensis</i>	Yellow (secure)	-	-	Likely
Long-Legged Myotis	<i>Myotis volans</i>	Yellow (secure)	-	-	Possible
Western Long-Eared Myotis	<i>Myotis evotis</i>	Yellow (secure)	-	-	Likely
Keen’s Long-Eared Myotis	<i>Myotis keenii</i>	Blue (special concern)	DD	SC*	Possible

Key

EN = Endangered
 DD = Data Deficient
 SC = Special Concern; * Keen’s myotis is listed Schedule 3 Special Concern
 UC = Under Consideration

Bat Species of Management Concern with the Potential to Occur in the LAA and RAA

One provincial and two federal bat species of conservation concern have the potential to occur in the LAA and RAA: Keen's long-eared myotis (*Myotis keenii*) and little brown myotis (*Myotis lucifugus*) (CDC 2014).

Keen's long-eared myotis is a long-eared vesper bat designated as Special Concern on Schedule 3 of SARA and is blue-listed in BC. Keen's myotis is phenotypically similar to the western long-eared myotis (*Myotis evotis*). Keen's myotis occupies a restricted geographic range along the western coast of Canada and the United States and occurs in coastal mature to old forests, as far north as the Stikine River (Klinkenberg 2012). *Myotis* species generally hibernate from October to May in large caves above 400 m in elevation (Zevitt 2010). Keen's myotis is not expected to occur in the LAA during hibernation due to the low elevation of the project location combined with absence of suitable habitat to support winter hibernacula. Following hibernation, Keen's myotis may utilize maternity roosts and summer feeding areas at elevations below 240 m (Garcia and Rasheed 2004), which may include areas within the LAA. Summer roosts occur in stumps, caves above or below the high tide line, anthropogenic structures, and, most commonly, large-diameter trees with cavities (Boland et al. 2009; Firmen et al. 1993). The limited geographic range of Keen's myotis suggests that the species has specialized habitat requirements that are not currently understood (Firman et al. 1993). Reproductive rates for Keen's myotis are not known, but some evidence exists that the species has lower reproductive rates than other myotis species due to weather fluctuations and cold summers in parts of their range (Chatwin 2004).

Little brown myotis is a common and widespread vesper bat which was designated Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in an emergency assessment on February 3, 2012. The listing was precipitated by substantial population declines in eastern populations following the introduction of an introduced fungal pathogen known as *Pseudogymnoascus destructans*, the fungus that causes white-nose syndrome (WNS). Populations in BC remain unaffected by WNS, though strong evidence suggests declines will occur throughout the species' range within 11 to 22 years (Forbes 2012). Little brown myotis usually hibernates in caves (or mines) in the winter months and is not anticipated to use habitat in the LAA during hibernation. Summer roosts are typically located within 200 km of hibernacula and occur in buildings, tree cavities, and under the bark of trees (Nagorsen and Brigham 1993). This species regularly forages over opens areas, such as wetlands and meadows (Kunz and Reichard 2012), but is an opportunistic forager that frequently changes foraging techniques and locations to exploit local insect abundance (Nagorsen and Brigham 1993).

Bat Habitat within the LAA

Baseline habitat within the LAA can be characterized for listed bat species by using the ecological community modelling found in Appendix H of the EIS.

Eleven ecological community types were identified within the LAA that provide unique habitat attributes expected to support different assemblages of bat species (see Figure 1). Table 2 summarizes the results of the ecological community modelling and potential use of each community by listed bat species for feeding (F), breeding and rearing young (B), or roosting (R) activities.

Table 2: Bat Habitat Associations under Baseline Conditions in LAA

Ecological Community	Ecosystem Code	Ecological Community Characteristics	Area (ha)	Listed Bat Species Likely to Use Community	Bat Habitat Use
Anthropogenic	CWHvh2/GP CWHvh2/RR CWHvh2/RZ CWHvh2/UR	Non-vegetated human features (structural stage not-applicable), including urban and rural areas, roads, railways, and transmission line right-of-ways	51	Keen's myotis Little brown myotis	F/R F/B/R
Forest—Old Coniferous	CWHvh2/HM CWHvh2/HS CWHvh2/RF CWHvh2/SC CWHvh2/SD CWHvh2/SF MHwh1/01	Old coniferous forest (structural stage 7a and 7b) with live and dead trees of various ages Dominated by western hemlock, western red cedar, yellow cedar, and sitka spruce	201	Keen's myotis Little brown myotis	F/B/R F/B/R
Forest—Seral Coniferous	CWHvh2/HM CWHvh2/HS CWHvh2/RF CWHvh2/SC CWHvh2/SD CWHvh2/SF	Young coniferous forest (structural stage 3 to 6) dominated by western hemlock, western red cedar, yellow cedar, and sitka spruce	199	Keen's myotis Little brown myotis	F/R F/R
Forest—Seral Deciduous	CWHvh2/HM CWHvh2/HS CWHvh2/RF CWHvh2/SD CWHvh2/SF	Young deciduous forest (structural stage 4 to 5) dominated by red alder and coniferous saplings High (75%) canopy closure with dense understory vegetation and minimal woody debris	40	Keen's myotis Little brown myotis	F F
Marine—Ocean	CWHvh2/OC	Shallow to deep, permanent sections of open marine water (structural stage not-applicable)	1,290	Little brown myotis	F
Wetland—Aquatic	CWHvh2/PD CWHvh2/BP CWHvh2/OW CWHvh2/OW CWHvh2/FS	Shallow to deep open water characterized by permanent standing water (structural stage 0 to 2c) May contain decomposed sedge or moss peat with fluctuating surface and groundwater inputs	16	Keen's myotis Little brown myotis	F F
Wetland—Estuarine Marsh	CWHvh2/CE CWHvh2/Em	Shallow open water dominated by graminoid vegetation including reeds, grasses, and sedges (structural stage 2 to 2b)	5	Keen's myotis Little brown myotis	F F
Wetland—Estuarine Meadow	CWHvh2/Ed	Tidal stream with marine sediment inputs Dominated by tufted hairgrass and meadow barley (structural stage 2b)	<1	Keen's myotis Little brown myotis	F F
Wetland—Estuarine Tidal Flat	CWHvh2/Et	Mudflat with regular fluctuations in marine water levels (structural stage 1a)	540	Little brown myotis	F

Ecological Community	Ecosystem Code	Ecological Community Characteristics	Area (ha)	Listed Bat Species Likely to Use Community	Bat Habitat Use
Wetland—Shrub Dominated Bog	CWHvh2/JR CWHvh2/LS CWHvh2/TS	Organic wetlands formed by peat and influenced by precipitation (structural stage 2b to 3b)	211	Keen’s myotis Little brown myotis	F F
Wetland—Treed Swamp or Bog	CWHvh2/RC CWHvh2/YG	Treed wetlands where water levels are influenced by groundwater inputs (structural stage 3b to 7b).	151	Keen’s myotis Little brown myotis	F/B/R F/B/R
Total Area	–	–	2,704	–	–

NOTE

Please refer to Stantec 2013: Vegetation Resources Technical Data Report (Appendix E) for a detailed account of each ecosystem.

F – Feeding activities

B – Breeding and rearing young

R – Roosting

Effects Assessment for Bats

Change in Habitat

The Project will change both the quality and quantity of habitat available to bats for roosting, breeding, and foraging activities.

Ecological community modelling was conducted as part of the EIS (See Section 11 Terrestrial Wildlife and Marine Birds) to characterize the change in availability of different ecological communities from baseline. Of the 11 ecological community types present in the LAA, listed bat species likely utilize all habitats during the breeding and migration seasons to some extent. Old coniferous forest and anthropogenic communities are likely used for roosting and foraging. Seral coniferous forest, seral deciduous forest, estuarine marsh, estuarine meadow, estuarine tidal flat, marine areas, shrub dominated wetlands, treed wetlands, and aquatic wetlands are likely used for foraging. Table 3 presents the areal extent of each of these individual habitat types within the LAA at baseline and the area that will be removed by construction within the project development area (PDA). Figure 2 shows the results of the ecological community modelling at project build-out.

Table 3: Total Area of each Ecological Community, Capable of Supporting Keen’s long-eared myotis (*Myotis keenii*) and little brown myotis (*Myotis lucifugus*) Removed by Vegetation Clearing within the Project Development Area

Ecological Community	Area (ha) of each Ecological Community at Baseline a	Ecological Community Removed	
		Ecological Community Removed in PDA (ha)	% Change in Baseline
Anthropogenic	51	0	0
Forest – Old Coniferous	201	44	22
Forest – Seral Coniferous	199	0	0
Forest – Seral Deciduous	40	0	0
Marine – Ocean	1,290	5	<1
Wetland – Aquatic	16	1	6
Wetland – Estuarine Marsh	5	0	0
Wetland – Estuarine Meadow	< 1	0	0

Ecological Community	Area (ha) of each Ecological Community at Baseline ^a	Ecological Community Removed	
		Ecological Community Removed in PDA (ha)	% Change in Baseline
Wetland – Estuarine Tidal Flat	540	3	<1
Wetland – Shrub Dominated Bog	211	76	36
Wetland – Treed Swamp or Bog	151	43	29
Total	2,704	172	–

NOTE

^a Area (ha) of each ecological community is the total available at baseline within the habitat modelling limits.

Within the habitat modelling limit boundaries, vegetation clearing for the PDA will have the greatest effect on shrub-dominated bogs (76 ha or 36% of baseline habitat removed), followed by treed swamp or bog (43 ha or 29% baseline habitat removed) and old coniferous forests (44 ha or 22% of baseline habitat removed) (see Figure 2). The removal of bogs and aquatic areas will have the greatest potential effect on bat foraging habitat. Removal of old coniferous forests and dead or decaying trees may impact bat maternity roosts. Tree cavities, decay, and loose bark are potential natural roost sites for Keen’s myotis and may be limiting in some parts of the species’ range (Chatwin 2004). Low elevation, mature coastal forest and riparian areas are also important foraging areas (Chatwin 2004).

To reduce the change in habitat availability for bats, the following mitigation measures identified in the EIS will be implemented:

- **PDA clearing limits**—clearing, grading or dredging, construction, and temporary storage of materials of terrestrial and marine habitat will be limited to the PDA. Boundaries of the PDA will be clearly marked prior to site preparation to indicate the limit of clearing
- **Temporary workspace**—if temporary workspace or storage areas are required beyond the extent of the PDA, they will be located in existing cleared areas to the extent possible. Clearing of forested habitats outside of PDA boundary will be avoided
- **Riparian buffer**—PNW LNG will maintain a vegetated riparian buffer that extends 30 m inland from the high-water mark around Lelu Island. The riparian buffer will include old coniferous forest habitat with potential to support bat maternity roosts
- **Restricted activity periods**—Guidelines for restricted activity periods to protect wildlife and marine birds will be followed. Clearing activities will occur outside of the primary breeding season for terrestrial birds, amphibians, and bats (April 9 through August 7). Restricted activity periods in habitats likely to support summer roosting (e.g., old coniferous forest) will be extended to September 30 (Chatwin 2004)
- **Wetland Habitat Compensation**—the Wetland Habitat Compensation Plan (Appendix F of the EIS) will outline restoration and compensatory activities to recover the loss of wetland habitat and consider foraging habitat for bats.

PNW LNG is proposing the following additional mitigations to further reduce potential effects of the Project on bat habitat:

- **Bat roosting habitat**—PNW LNG will install bat houses, BrandenBark™, or other roosting structures to compensate for roosting habitat lost during construction. Roosting structures will be installed in suitable habitats in the Prince Rupert region to compensate for roosting habitat removed by the PDA. Final locations will be determined in consultation with appropriate federal, provincial, and/or municipal agencies and research organizations.

The residual effects of the Project on bat roosting and foraging habitat (predicted based on results of ecological community modelling and habitat suitability models) indicate there is a low probability that the change in habitat will affect the sustainability of regional bat populations, including listed bat species.

Change in the availability of terrestrial ecological communities in a regional context is moderate and restricted to the terrestrial portion of the PDA (164 ha) (Table 4). Vegetation clearing for the PDA will have the greatest effect on shrub-dominated bogs, treed swamp or bog, and old coniferous forest, which will potentially impact bat foraging, roosting, and breeding activities. Direct habitat removal will occur once during vegetation clearing and will persist unless the PDA is reclaimed following decommissioning of the Project. The Wetland Habitat Compensation Plan will be implemented to offset the net loss of wetland habitat removed during clearing. The type of wetland communities targeted for compensation will depend on the type of wetland functions (e.g., wildlife habitat functions) removed by construction of the PDA. Preference is given to compensation opportunities that create or restore wetlands to replace lost functions (including habitat functions for bats). Wetland compensation activities that replace treed swamp or bog, or shrub-dominated bog communities will mitigate for bat roosting and foraging habitat removed during construction of the PDA.

It is expected that bat populations will demonstrate moderate or high resilience to changes in habitat availability caused by the Project. The likelihood of a residual effect occurring is high as vegetation clearing for construction of project components will change habitat for bats. With mitigation measures applied (including wetland compensation and protection or compensation of bat maternity roosts), residual effects from the change in habitat availability will not affect the sustainability of regional bat populations. Consequently, change in habitat availability from the Project is predicted to be not significant. The confidence in this prediction is moderate based on the current understanding of bat habitat requirements and the effectiveness of mitigation options; however, information on the population biology of listed bat species in the RAA and current use of Lelu Island is limited.

Change in Mortality

The Project may cause a change in mortality to Keen's long-eared myotis, little brown myotis, and other bat species. The primary potential source of project-related mortality is the incidental destruction of occupied day roosts during vegetation clearing and mortality.

Project lighting was raised as a concern in public comments as a potential pathway for mortality effects on bats within the LAA. PNW LNG addressed this concern in the memo *Potential Effects of Project Lighting on Songbirds, Marine Birds, and Bats* which references mitigations in Section 11.5.3 of the EIS, and is summarized below.

Although some evidence suggests that bats may adjust migratory flight paths based on artificial lighting cues, published literature on echolocating bat species indicates that bats are influenced by locally lit areas for foraging (RCEP 2009, Stone et al. 2009). An increase in lighting infrastructure at the LNG facility can promote localized concentrations of insects and provide potential foraging areas for bats around lit structures where insects congregate (RCEP 2009). However, bat species with potential to occur in the project area (e.g., little brown myotis, Keen's myotis) navigate using echo-location and are highly responsive to the patterns of sound wave transmission to avoid collisions with physical structures. Direct bat mortality is, therefore, unlikely to result from direct collisions with lit structures (RCEP 2009, Stone et al. 2009).

To reduce mortality for bats, the following mitigation measures will be employed:

- **Restricted activity periods**—Guidelines for restricted activity periods to protect wildlife and marine birds will be followed. Clearing activities will occur outside of the primary breeding season for terrestrial birds, amphibians, and bats (April 9 through August 7). Restricted activity periods in habitats likely to support summer roosting (e.g., old coniferous forest) will be extended to September 30 (Chatwin 2004)

- **Harassment**—Feeding, hunting, and harassment of wildlife will be strictly prohibited for project personnel
- **Lighting**—to mitigate potential light-induced mortality, lighting mitigation will follow objectives contained within the Canada Green Building Council LEED guidelines and the International Commission on Illumination (LEED 2004, CIE 2003, Section 9 of the EIS). The use of exterior lighting (including portable lighting structures) at the LNG facility, the materials off-loading facility (MOF), marine terminal, and on berthed vessels will be limited as practical and permissible under federal safety and navigation.

Mortality for bats may be substantially reduced through the implementation of mitigation activities. Mortality of bats resulting from the clearing of vegetation will be low in magnitude (i.e., limited to a small number of individuals) since clearing will be completed outside of breeding periods when bats are not expected to be using roosts in trees. Mortality from clearing will be a single event occurring during initial clearing within the PDA. Effects of mortality from clearing will be long-term due to the long lifespan (20 years) and low population recruitment rate (one offspring per year) in bats. Reducing mortality for species of management concern is especially important. Clearing outside of restricted activity periods or applying no-disturbance buffers to active maternity colonies within restricted activity periods will effectively reduce mortality of federally listed species, such as Keen's myotis and little brown myotis.

Mortality of bats resulting from interaction with planned or emergency flares will be infrequent and irregular, and limited to periods of planned and emergency flaring events.

With mitigation measures applied, residual effects from the change in mortality risk will not affect the sustainability of regional bat populations and is predicted to be not significant. The confidence in this prediction is moderate based on the current understanding of bat presence and distribution in the LAA and the effectiveness of mitigation options.

Alteration of Movement

Bats are highly mobile and it is anticipated that bat movement will not be impeded by project infrastructure. Bats currently move among the habitats within the PDA during feeding and breeding activities. Some bat species may use the PDA temporarily during local or long-distance migrations. In general, the Project will have a negligible effect on local and regional movement patterns of bat species.

To limit alteration of movement for resident and migratory bats, the following mitigation measures will be employed:

- **Riparian buffer**—PNW LNG will maintain a vegetated riparian buffer that extends 30 m inland from the high-water mark around Lelu Island. The riparian buffer will include old coniferous forest habitat with potential to support bat maternity roosts
- **Restricted activity periods**—Guidelines for restricted activity periods to protect wildlife and marine birds will be followed. Clearing activities will occur outside of the primary breeding season for terrestrial birds, amphibians, and bats (April 9 through August 7). Restricted activity periods in habitats likely to support summer roosting (e.g., old coniferous forest) will be extended to September 30 (Chatwin 2004)
- **Lighting**—to mitigate potential light-induced mortality, lighting mitigation will follow objectives contained within the Canada Green Building Council LEED guidelines and the International Commission on Illumination (LEED 2004, CIE 2003, Section 9). The use of exterior lighting (including portable lighting structures) at the LNG facility, the MOF, marine terminal, and on berthed vessels will be limited as practical and permissible under federal safety and navigation regulations.

The Project has a low probability of altering movement patterns of resident or migratory bat species. With the implementation of mitigation measures, the residual effect of the Project on bat movement is negligible and not significant. The confidence in this prediction is high.

Conclusion

Project effects on change in habitat availability, change in mortality, and alteration of movement on bats will, in general, be local in extent. Following mitigation, the Project will potentially affect only a small proportion of regional bat populations. There is potential for greater localized effects on species of management concern whose ecological requirements are supported by habitats available on or near Lelu Island (e.g., Keen's myotis). Based on this assessment, the Project will be in compliance with applicable federal and provincial regulations. Considered in combination with the Wetland Habitat Compensation Plan and other project mitigations, this Project will not have a significant effect on the sustainability of any local or regional bat species population. This conclusion is consistent with the information presented in the Technical Memo "Assessment of Terrestrial Wildlife and Marine Species-at-Risk Information Request #6, #7, and #9.

Closure

This letter and the attached figures provide the Outstanding Information requested by the Government of Canada. If you have any questions, please contact PNW LNG.

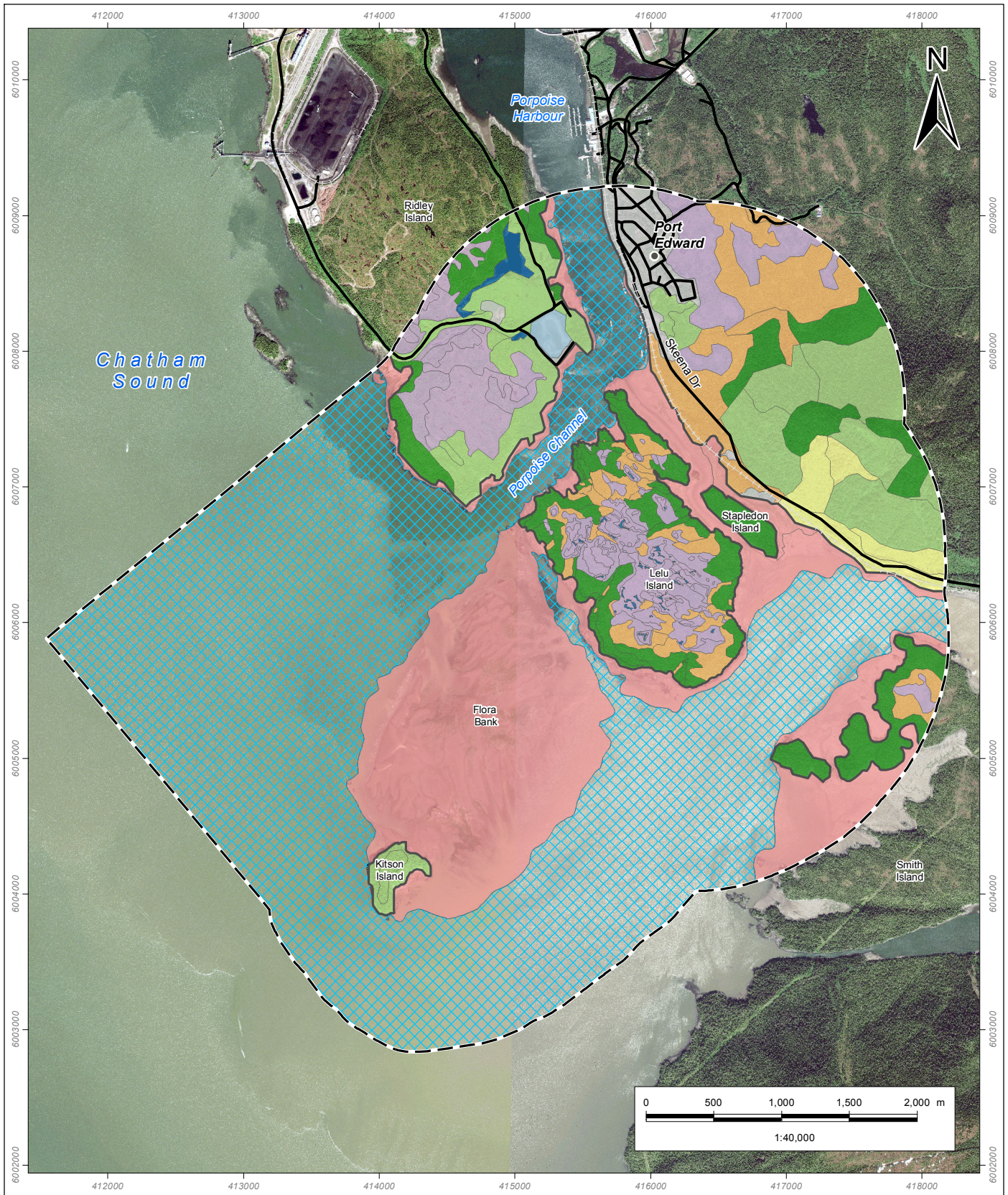
Attachments:

Figure 1: Ecological Communities at Baseline

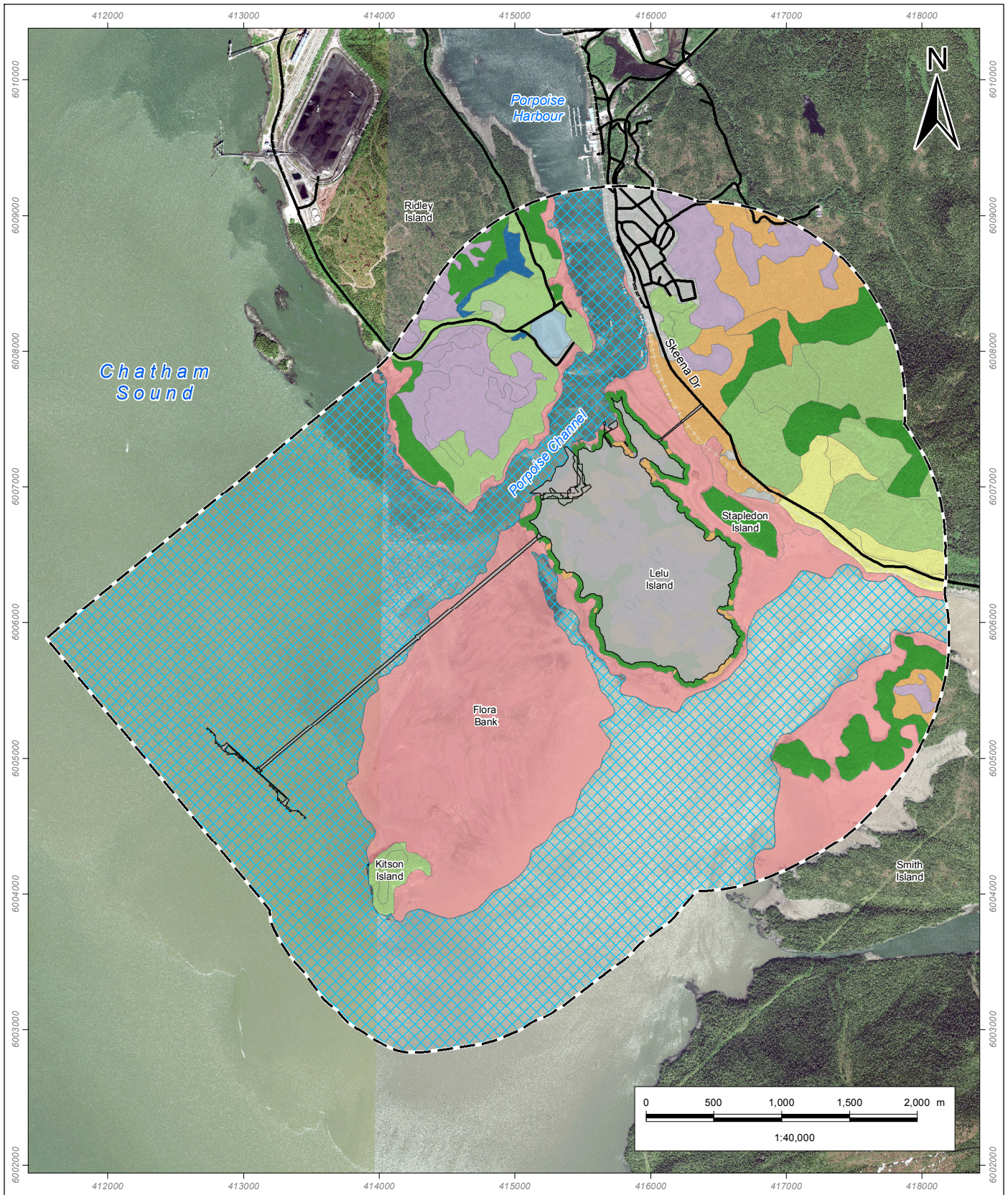
Figure 2: Ecological Communities at Project Build-out

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<p>Ecological Communities</p> <ul style="list-style-type: none"> Anthropogenic Forest - Old Coniferous Forest Forest - Seral Coniferous Forest Forest - Seral Deciduous Forest Marine - Estuarine Tidal Flat Marine - Ocean Wetland - Aquatic Wetland - Estuarine Marsh Wetland - Estuarine Meadow Wetland - Shrub-dominated Bog Wetland - Treed Swamp or Bog 	<ul style="list-style-type: none"> City or Town Railway Road Habitat Modelling Limits Shoreline <p><i>Please refer to the Vegetation and Wetlands TDR for detailed descriptions of vegetation communities.</i></p>	<p>Pacific NorthWest LNG</p> <p>Ecological Communities at Baseline</p> <p><small>Sources: Government of British Columbia; Government of Canada, Natural Resources Canada, Centre for Topographic Information; Progress Energy Canada Ltd. WorldView-2 Imagery, Imagery date: 2011.</small></p> <p><small>Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DATE: 24-SEP-14</td> <td style="width: 50%;">PROJECTION: UTM - ZONE 9</td> </tr> <tr> <td>FIGURE ID: 123110537-241</td> <td>DATUM: NAD 83</td> </tr> <tr> <td>DRAWN BY: K. POLL</td> <td>CHECKED BY: M. WILLIE</td> </tr> </table>	DATE: 24-SEP-14	PROJECTION: UTM - ZONE 9	FIGURE ID: 123110537-241	DATUM: NAD 83	DRAWN BY: K. POLL	CHECKED BY: M. WILLIE	<p>PREPARED BY:</p> <p style="text-align: center;"> Stantec</p> <p>PREPARED FOR:</p> <p style="text-align: center;"> Pacific NorthWest LNG</p> <p>FIGURE NO:</p> <p style="text-align: center; font-size: 24px;">1</p>
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DRAWN BY: K. POLL	CHECKED BY: M. WILLIE								



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<p>Ecological Communities</p> <ul style="list-style-type: none"> Anthropogenic Forest - Old Coniferous Forest Forest - Seral Coniferous Forest Forest - Seral Deciduous Forest Marine - Estuarine Tidal Flat Marine - Ocean Project Development Area Wetland - Aquatic Wetland - Estuarine Marsh Wetland - Estuarine Meadow Wetland - Shrub-dominated Bog Wetland - Treed Swamp or Bog 	<ul style="list-style-type: none"> City or Town Railway Road Habitat Modelling Limits Shoreline 	<p>Pacific NorthWest LNG</p> <p>Ecological Communities at Project Build-out</p> <p><small>Sources: Government of British Columbia; Government of Canada, Natural Resources Canada, Centre for Topographic Information; Progress Energy Canada Ltd. WorldView-2 Imagery. Imagery date: 2011.</small></p> <p><small>Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.</small></p> <table style="width: 100%; border: none;"> <tr> <td style="border: none;">DATE: 02-OCT-14</td> <td style="border: none;">PROJECTION: UTM - ZONE 9</td> </tr> <tr> <td style="border: none;">FIGURE ID: 123110537-818</td> <td style="border: none;">DATUM: NAD 83</td> </tr> <tr> <td style="border: none;">DRAWN BY: T. CARDINAL</td> <td style="border: none;">CHECKED BY: M. WILLIE</td> </tr> </table>	DATE: 02-OCT-14	PROJECTION: UTM - ZONE 9	FIGURE ID: 123110537-818	DATUM: NAD 83	DRAWN BY: T. CARDINAL	CHECKED BY: M. WILLIE	<p>PREPARED BY:</p> <p style="text-align: center;"> Stantec</p> <p>PREPARED FOR:</p> <p style="text-align: center;"> Pacific NorthWest LNG</p> <p>FIGURE NO:</p> <p style="text-align: center; font-size: 24px; font-weight: bold;">2</p>
DATE: 02-OCT-14	PROJECTION: UTM - ZONE 9								
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Please refer to the Vegetation and Wetlands TDR for detailed descriptions of vegetation communities.