Environmental Management Plan

Connected Coast Project – Submarine Fibre Optic Cable Installation

Phase 1 Block 3 Package 1 – Tlell to Oona River

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1.0 INTRODUCTION

Blue Otter Consulting Incorporated (Blue Otter) was retained by Baylink Networks Inc. (Baylink) to prepare an Environmental Management Plan (EMP) for the Phase 1 Block 3 Package 1 execution of the Connected Coast Project (Project). The Project entails the installation of a submarine fibre optic cable extending from Tlell, British Columbia (BC), east to Bonilla Island, Kitkatla and Oona River. There will be four landing sites where the fibre optic cable comes ashore. This EMP was developed based on a combination of desktop data collection and onsite field characterization including biophysical surveys conducted at Project landing sites.

This EMP describes the Project location, construction methodology, pre-construction baseline conditions, and mitigation measures to be implemented to ensure that the Project does not result in serious harm to the environment or wildlife. This EMP will be reviewed with construction staff prior to initiation of work and will be on site at all times for reference and consultation.

2.0 PROJECT DESCRIPTION

The Project entails the installation of a submarine fibre optic cable network between Tlell and Oona River. This fibre optic network will improve the access, capacity, affordability, and reliability of internet and other telecom services for residents in rural and remote communities.

2.1 PROJECT LOCATION

The exact locations of all four Project landing sites where the submarine cable is proposed to come ashore are listed in Table 1 below.

Table 1: UTM Coordinates For 4 Project Landing Sites.

Landing Site	UTM
Tlell (Wiggins Road)	9U.306018.5938264
Bonilla Island (Canadian Coast Guard (CCG))	9U.391427.5928417
Kitkatla	9U.405571.5961825
Oona River	9U.418074.5977704

2.2 CONSTRUCTION DESCRIPTION

2.2.1 Cable and Conduit Type

The fiber optic cable itself is armoured with galvanized steel rods packaged in High Density Polyethylene (HDPE) 1.35 centimetre (cm) wide as presented in Engineered Specifications in Appendix A. With the exception of the portion of cable installed offshore, the cable will be encased within a 3.2 cm diameter HDPE conduit. The portion of cable installed in the intertidal zone will be additionally armoured with 10 cm diameter cast iron split pipe casing (Appendix A), to provide long term protection from anthropogenic and ecological influences in the intertidal zone. All components of this cable are inert and harmless to the environment.

2.2.2 Terrestrial Vault, Cabinet and Pole Installation

Fiber optic cables will tie into below grade terrestrial vaults. The excavation required to accommodate the installation of the below grade vaults is expected to be approximately 1.5 m x 1.5 m x 1.5 m in dimension. Select landing sites will also require the installation of a cabinet and power pole, requiring excavations approximately 1.5 m wide x 1.5 m long x 0.75 m deep and 0.4 m wide x 1.5 m long x 1.7 m deep in dimension, respectively.

2.2.3 Cable Installation

From the terrestrial vault to the low intertidal zone, the conduit with or without split pipe armouring will be buried within a trench approximately 60 cm deep and between 30 and 50 cm wide. Trenching will be completed with a mini excavator unless site access is limited in which case the trench will be dug with hand tools such as a georipper.

Where it is necessary to transect asphalt or concrete, a strip will be cut away using a circular saw with a diamond blade. This strip will be manually dug out to expose ground suitable for trenching. A jackhammer may also be used in the case of sidewalks for removal of a single panel of concrete. Restoration efforts will be conducted post-construction.

Trench excavation, cable installation, and trench backfilling within the intertidal zone will always be completed above the water mark, in the dry. The trench will be backfilled, compacted, and contoured prior to tidal inundation.

In the subtidal zone, the cable with split pipe armouring will be placed on the seabed surface (no trenching, jetting, or burial). If environmental sensitivities (ie. eelgrass) have been identified in the subtidal zone, the split pipe will be floated out during high tide, facilitated by a skiff, and gently lowered onto the seabed floor. The split pipe will not be dragged across the seabed. If no environmental sensitivities (ie. eelgrass) have been identified in the subtidal zone, the split pipe

will be pulled across the seabed surface from the intertidal zone into the subtidal zone during low tide, facilitated by a vessel. It is anticipated that the split pipe armouring will extend out approximately 4 m below 0 m Chart Datum (CD) elevation. Live feed from an ROV will assist in guiding the installation of split pipe within the subtidal zone.

Cable below approximately -4 m CD elevation in the subtidal zone, extending between landing sites, will be installed via a cable lay vessel. The fibre optic cable (1.35 cm diameter) will be installed directly onto the seabed (cable burial via jetting or ploughing is not proposed) using a standard cable laying vessel. Spatial management of the installation is tracked by GPS vessel position as well as a cable touch down monitoring system with underwater telemetry. This system will provide an accurate record of where the cable is installed.

A brief description of the three types of vessels to be involved in submarine cable installation are provided in Figure 1 below. The cable laying vessels do not utilize spuds and therefore do not risk damaging sensitive marine biota and habitat on the seabed. The cable laying vessels utilize a dynamic positioning system to automatically maintain the vessels position and heading by manipulating its own propellers and thrusters.

Specs:

- *22 foot*
- *Lowrance GPS Elite 7 with card and transducer*
- *Pre rigged for single engine up to 150hp Mercury*

Purpose:

- *Cable laying in subtidal zone as well as general marine support and logistics.*

	Specs: • 65 foot • Propulsion: Hamilton Jet HM521 x2 • Navigation: Raymarine Premium G Series Purpose: • cable laying in sheltered waters as well as remote landing site construction.
	Specs: • 150 foot offshore supply vessel • Bow thruster: Schottel tunnel type via Cummins 6 cylinder • Anchor: 1,750 lbs • GPS's: 3 - 1 JRC J Nav 500, 2 Furuno GP32 • VHF's: 3 - 1 Midland, 2 Uniden Purpose: • cable laying, accommodation for crew and marine logistics

Figure 1 Project Vessels

2.3 CONSTRUCTION SCHEDULE

The following table details the anticipated construction schedule for each Project landing site.

Table 2: Project Construction Schedule

Landing Site	Scheduled Construction Dates
Tlell (Wiggins Road)	2021 To Be Determined (TBD)
Bonilla Island (CCG)	2021 TBD
Kitkatla	2021 TBD
Oona River	2021 TBD

3.0 REGULATORY FRAMEWORK

Federal and provincial environmental legislation, regulations and acts applicable to the Project are listed in the sections below. Baylink Networks Inc. recognizes the need to comply with the following regulatory framework and recommended standards and guidelines for best environmental management practices. The purpose of this EMP is to ensure that Baylink has the necessary information to allow the Project to be carried out in compliance with all applicable federal and provincial regulations. A brief description of the applicable components of each environmental regulation are provided in the following sections.

3.1 APPLICABLE FEDERAL LEGISLATION

- *Fisheries Act* (1985, last amended 2019).
    - Section 34 regarding the prohibition of any release of "deleterious substances" into fish bearing waterbodies
    - Section 35 regarding the prohibition of activities causing harmful alteration, disruption or destruction of fish habitat
    - Section 38 regarding the duty to notify the DFO in the event of serious harm to fish or fish habitat or release of deleterious substance to fish bearing water

- *Species at Risk Act* (SARA) (2002).
    - Section 32 and 36 regarding the prohibition of harassing, causing harm, capturing, or killing any species listed by SARA or a provincial minister as endangered, extirpated, or threatened
    - Section 33 and 36 regarding the prohibition of damaging or permanently harming habitats of species listed by SARA or a provincial minister as endangered, extirpated, or threatened
    - Section 58 regarding the prohibition of destruction of critical habitat of endangered, extirpated, or threatened SARA species, both aquatic and terrestrial including protected migratory birds.

- *Canadian Environmental Protection Act (1999).*

- Part 5, Section 95 regarding taking reasonable measures to protect the environment and public from a release of a toxic substance, and in the event of a release, notifying the appropriate enforcement officer and any members of the public adversely affected.
- Part 7, Division 2 regarding protection of the marine environment from land-based sources of pollution
- Part 7, Division 5 regarding vehicle, engine and equipment emissions

- *Migratory Birds Convention Act (1994)*
  - Section 5.1(1) regarding the prohibition of any person or vessel depositing a substance harmful to migratory birds in areas, including waters, frequented by migratory birds

- *Transportation of Dangerous Goods Act (1992)*
  - Section 7 regarding transport or handling of dangerous goods without an emergency response plan
  - Section 18 regarding duty to report or take reasonable emergency measures for a release if it endangers public safety

- *Canadian Navigable Waters Act (1985)*
  - Section 4 regarding minor works constructed in navigable waters (Pacific Ocean)
  - Section 21 and 22 regarding discarding stone, gravel, earth, cinders, ashes, sawdust, edgings, slabs, bark or any rubbish into navigable waters

3.2 APPLICABLE PROVINCIAL LEGISLATION AND GUIDELINES

- *Environmental Management Act (2003)*
  - Part 2, 6(4) regarding the prohibition to introduce waste to the environment that causes pollution
  - Part 2, Sections 7, 9, 10 regarding the proper confinement, storage and transport of hazardous waste
  - Part 7, Section 79 regarding proper spill prevention reporting procedures
  - *Hazardous Waste Regulation (BC Reg. 63/88)*
  - *Spill Reporting Regulation (BC Reg. 263/90)*

- *Water Sustainability Act* (2016)
    - *Section 46 regarding the introduction of foreign matter that may cause adverse impacts to a stream channel or aquatic ecosystem*
- *Wildlife Act (1996)*
- Weed Control Act (1996)
    - Section 2 regarding controlling the spread of provincial and/or regional noxious weeds and provisions for transportation, movement, and cleaning of machinery

4.0 PRE-CONSTRUCTION ENVIRONMENTS

This section describes the pre-construction environmental conditions along the proposed cable alignment at each of the four landing sites within the upland, intertidal, and subtidal zones. The purpose of the descriptions is to characterize the pre-construction biophysical environment and identify any environmentally sensitive wildlife or wildlife habitat.

4.1 METHODOLOGY

Pre-construction environment descriptions were based on a combination of desktop studies and field observations.

The desktop study entailed a review of relevant environmental data from the below resources:

- iMapBC
- BC Coastal Resource Information Management System (CRIMS)
- DFO Herring Spawn and Catch Records – BC Map (DFO, 2015)
- Canadian Hydrographic Service (CHS)
- Invasive Species Council of BC (ISC)
- BC Marine Conservation Analysis (BCMCA)
- BC Community Mapping Network (CMN)
- BC Conservation Data Centre (CDC) Species and Ecosystem Explorer (CDC)
- Ministry of Environment and Climate Change Strategy (ENV)
- Photographs and observations from field assessments of landing sites conducted by Blue Otter in January 2021

Biophysical assessments of the upland and intertidal zone at each Project landing site were conducted on March 14 and April 28, 2021 along the proposed cable alignment. Assessments

included photo documentation, an inventory of flora and fauna identified, identification of any surface water features, identification of any wildlife habitat and general site observations.

Upland assessments were conducted along a transect line commencing at the High High Water Mark (HHWM) and terminating at the site-specific, proposed power pole connection location.

Intertidal zone assessments consisted of transects established across the length of the intertidal zone and sampling quadrats (1 m^2 in area) placed at 10 m intervals commencing at the HHWM and terminating at the low tide line. Within each quadrat, substrate composition, coverage of attached marine vegetation, presence of marine fauna, and any other relevant observations were recorded. Additionally, an approximately 20 cm deep hole was excavated by hand in select quadrats to determine subsurface substrate type, as well as to assess for the presence of various bivalve and invertebrate species.

4.2 RESULTS OF BIOPHYSICAL ASSESSMENTS INCLUDING PHOTOS

Biophysical assessments including photographs of each Project landing site are presented in Appendix B. These assessments characterize pre-construction environmental conditions and identify environmentally sensitive wildlife and habitats to be considered and protected during construction.

While these observations are expected to be continuously accurate, it should be recognized that the coastline of BC is comprised of mainly loose substrates, which can shift during intense wave and tidal action, causing natural changes to the environment. Seasonal differences may also influence site conditions. Therefore, true environmental conditions may differ from these observations at time of construction.

4.3 SOIL

No provincial contaminated sites were identified within 100 m of the Project footprint (ENV, 2021). Three federal contaminated site were identified in close proximity to the Project footprint (GOC, 2020d).

- Bonilla Island Sector Light (Site Number 19482001): Active status with an estimated 167 m^3 of soil contaminated with petroleum hydrocarbons and metals. Remediated and risk management are complete and confirmatory sampling is underway (GOC, 2020d).

  https://www.tbs-sct.gc.ca/fcsi-rscf/fsi-isf/19482001-eng.aspx

- Gitxaala Nation Dolphin Island (Site Number 05023002): Suspected soil contamination. Historical review completed, initial testing underway.

  https://www.tbs-sct.gc.ca/fcsi-rscf/fsi-isf/05023002-eng.aspx

- Oona River (Site Number 00021382): Suspected contamination of unidentified media. Historical review completed, initial testing underway.

  https://www.tbs-sct.gc.ca/fcsi-rscf/fsi-isf/00021382-eng.aspx

Contaminated sites have the potential to contain contaminated media that should not be disturbed. The exact delineation of contamination will be acquired in order to confidently avoid the area during construction.

4.3.1 TERRESTRIAL FLORA

The terrestrial impact of construction activities is expected to be relatively minor due to the small Project footprint. Trench excavation in the upland area will target previously developed terrestrial areas (ie. existing pathways or gravel/paved right of ways).

Some vegetation clearing, consisting of long grasses, salal (*Gaultheria shallon*) and other shrubbery will be required at the Bonilla Island (approximately 20 m^2) and Oona River (approximately 10 m^2) landing sites.

Tree removal is not anticipated at any sites, however, due to the proximity of trees to the cable alignment at the Bonilla Island landing site, root systems may be impacted. While many trees have a wide tolerance for root removal, mitigation measures (Section 7.1) will be implemented to minimize impact to root systems.

4.3.2 TERRESTRIAL FAUNA

Terrestrial fauna is expected to be minimal based on the limited terrestrial footprint of the Project, however, there is the potential to encounter mammals, migratory birds and bird species protected by the BC Wildlife Act, along with their nesting and denning sites.

4.4 MARINE FLORA AND FAUNA

4.4.1 INTERTIDAL ZONE

The following marine flora and fauna were most commonly observed at landing sites during biophysical assessments conducted in March and April 2021:

Table 3 Commonly Observed Marine Flora and Fauna

Common Name	Scientific Name	Habitat	Exotic	Native
Macroalgae				
Pacific Rockweed	*Fucus distichus*	-rocks -mid to low intertidal		✖
Bull Kelp	*Nereocystis luetkeana*	-rocky substrate -moderate to high current or wave action -intertidal and subtidal up to 20 m deep		✖
Bladder Kelp	*Macrocystis integrifolia*	-hard substrate -less than 40 m depth		✖
N/A	*Mazzaella splendens*	-low intertidal to subtidal of exposed coasts -rocks		✖
Bivalves				
Butter Clams	*Saxidomus gigantea*	-buried up to 30 cm in gravel/sand mud -mid-low intertidal		✖
Nuttall's cockle	*Clinocardium nuttallii*	-just beneath surface of fine sand and gravel sediment -intertidal and shallow subtidal of protected shores		✖
Annelids				
Sand Worms	*n/a*	-sand substrate -mid to low intertidal		✖
Crustaceans				
Acorn Barnacles	*Balanus glandula*	-mid to low intertidal		✖

A detailed description of marine flora and fauna observed during biophysical assessments is provided in Appendix B.

4.4.2 SUBTIDAL ZONE AND OPEN OCEAN

Marine flora and fauna inhabiting the subtidal and open ocean Project areas were determined based on a desktop study of existing mapping and research. No field assessments were completed.

Eelgrass beds are documented offshore of the Bonilla Island and Kitkatla landing sites (BCMCA and CRIMS, 2011). Common eelgrass (*Zostera marina*) beds host a diverse ecosystem and are critical habitat for marine wildlife including fish, waterfowl, shellfish, and invertebrates. Eelgrass supports at least 80% of commercially important fish at some part of their life cycle (Wright, 2005). Eelgrass serves as a nursery habitat for juvenile salmon and herring and a refuge habitat for adult salmon (Kennedy, 2011).

Bull kelp, giant kelp, soft brown kelp and unidentified species of kelp have been documented offshore of the Tlell, Bonilla Island or Kitkatla landing sites (BC, 2018) and are likely to overlap with Project areas. Surfgrass was documented offshore of the Tlell landing site (BC, 2018).

The Project area overlaps with DFO Pacific Fishery Management Areas 4, 5, 102 and 105 and significant commercial fishing grounds for groundfish, halibut, salmon, Pacific herring and herring roe (PNCIMA, 2017). Although herring spawn was not documented offshore of any landing sites (CRIMS and BCMCA, 2011), Chatham Sound including the area offshore of the Oona River and Kitkatla landing sites, is considered an important area for Pacific herring (Clupea pallasii) migration (PNCIMAI, 2017). The Project area also serves as significant commercial fishing grounds for crab, shrimp, prawns, red sea urchins and geoducks (PNCIMAI, 2017).

Important areas for marine mammals including killer whales (*Orcinus orca*), grey whales (*Eschrichtius robustus*), Steller sea lions (*Eumetopias jubatus*) and northern fur seals (*Callorhinus ursinus*) have been documented within the Project area (PNCIMAI, 2017).

SARA listed marine species (GOC, 2002) with the potential to exist in the subtidal or open ocean Project areas are summarized in Table 4 below, along with their provincial and federal conservation status.

Table 4: SARA Listed Marine Species

Species Name	BC Status[1]	SARA Status[2]	Range and Habitat Description
Marine Mammals			
Gray Whale (*Eschrichtius robustus*)	Blue	SC	- southward migration from feeding grounds in the Arctic to breeding grounds in Mexico usually passes by Vancouver Island in late December (DFO, 2018) - between January and May northward migration begins in Mexico and usually follows the west coast of Vancouver Island staying within a few kilometres of shore to feed in shallow waters (DFO, 2018). - migration route north of Vancouver Island remains poorly understood (DFO, 2018). - unknown whether the migration follows the east or the west coasts of the Haida Gwaii (DFO, 2018) - small part of the population spends the summer feeding in temperate near-shore waters off British Columbia (DFO, 2018) - Known to stray into Vancouver Harbour in summer (Klinkenberg, 2019)
Humpback Whale (*Megaptera novaeangliae*)	Blue	SC	- range of North Pacific population extends along the full length of the west coast of BC - Canadian waters are used primarily for feeding and migrating to higher latitude feeding areas - BC's highly productive waters serve as important summer feeding habitat

			(GOC, 2020a)
Killer Whale (*Orcinus orea*)	Red	E	-coastal waters of BC including Georgia Strait are inhabited by four different population units of Killer Whales (COSEWIC, 2008) - inhabit a wide range of nearshore and pelagic habitats (COSEWIC, 2008) - Project area does not overlap with critical habitat - habitat is thought to be selected based on sufficient quantity and quality of prey, acoustic environment and safe passage (COSEWIC, 2008) -possibility to stray into Vancouver harbour (Klinkenberg, 2019)
Steller Sea Lion (*Eumetopias jubatus*)	Blue	SC	-3 breeding sites (Scott Islands, Cape St. James and Banks Islands) and many haulout sites are known in BC (COSEWIC, 2011) - In summer generally seen within 60 km of the coast in water less than 400 m deep, but occasionally venture up to 200 km offshore (COSEWIC, 2011)
Harbour Porpoise (*Phocoena phocoena*)	Blue	SC	- reside year round inshore in close proximity to populated areas in BC (COSEWIC, 2016) - usually inhabit shallow coastal shelf waters 150 m deep, but have been identified in deep water habitats in the Strait of Georgia, off the southwest coast of Haida Gwaii, and southeast of Cape St. James (COSEWIC, 2016)
Reptiles			
Leatherback Sea Turtle (*Dermochelys coriacea*)	Red	E	- long migration patterns, spend most time in tropical regions - seen mostly on west coast of Vancouver Island (Klinkenberg, 2019)
Fish			
Longspine Thornyhead (*Sebastolobus altivelis*)	None	SC	-ranges from Mexico to Alaska (GOC, 2020b) - in BC occurs along the continental slope at depths from 500 to 1600 m - soft bottom offshore waters (GOC, 2020b) - eggs spawned in pelagic masses (Klinkenberg, 2019)
Rougheye Rockfish Type I & II (*Sebastes* sp.)	None	SC	- present at depths of 170-660m - occur at sea floor in soft substrate (DFO, 2011)
Tope (*Galeorhinus galeus*)	None	SC	- rarely seen but are known to occur in continental shelf waters along Vancouver Island, Queen Charlotte Sound, and into Hecate Strait (GOC, 2020c) - found from close inshore to offshore waters up to 471 m deep (GOC, 2020c) -occur in small schools (Klinkenberg, 2019)
Yelloweye Rockfish (*Sebastes ruberrimus*)	None	SC	-frequent rocky reefs in shallow regions at depths from 15-550m (Klinkenberg, 2019)
Basking Shark (Pacific) (*Cetorhinus maximus*)	None	E	- rarely seen in BC waters as of past 15 years (DFO, 2019) - unlikely to be observed in Project area
Bluntnose Sixgill Shark (*Hexanchus griseus*)	None	SC	- inhabits a wide depth range (20-1000m) (DFO, 2012) - uses coastal areas (>200m depth) to give birth (DFO, 2012) - juveniles may be present near project site (DFO, 2012)
Green Sturgeon (*Acipenser medirostris*)	Blue	SC	- anadromous species - inhabit shallow areas of continental shelf - migrate to coastal rivers for spawning, not known to occur in Canadian waters (DFO, 2016)

Mollusks			
Northern Abalone (*Haliotis Kamlschatkana*)	Red	E	- inhabits hard substrate in subtidal zones at less than 10 m depth in BC (COSEWIC, 2011) - patchily distributed on exposed or semi-exposed coasts (COSEWIC, 2011) - Spawning season in BC is April to July (DFO, 2012)
Olympia Oyster (*Ostrea lurida*)	Blue	SC	- occurs in the Georgia Strait, the west coast of Vancouver Island, and a few locations in the Queen Charlotte Strait and Queen Charlotte Sound - typically inhabits lower intertidal and shallow subtidal zones of saltwater lagoons and estuaries (COSEWIC, 2011) - have also been found on tidal flats, tidal channels, bays and sounds (COSEWIC, 2011) - need hard substrate for settlement (COSEWIC, 2011)
Notes: [1] BC Status: Red = Species that are extirpated, endangered, or threatened; Blue = Species of special concern; Yellow = Not threatened [2] SARA: N/S = no status or unlisted; E=endangered; SC=special concern; T=threatened			

5.0 CONSERVATION AREAS

5.1 ROCKFISH CONSERVATION AREAS

Rockfish Conservation Areas were established by the DFO in 2002 in attempt to alleviate already declining rockfish populations. Within RCAs, inshore rockfish are protected from all mortality associated with recreational and commercial fisheries (DFO, 2019c). Most forms of commercial and recreational fishing are prohibited within RCAs. Select forms of recreational and commercial fishing are permitted within RCAs including, but not limited to, hand picking or diving for invertebrates, crab and prawn by trap and smelt by gillnet. Commercial harvesting of scallops by trawl is permitted within RCAs. The cable route was designed to avoid all RCAs and does so in the following three DFO Pacific fishery management subareas (Subareas): 5-11, 5-20, 105-1.

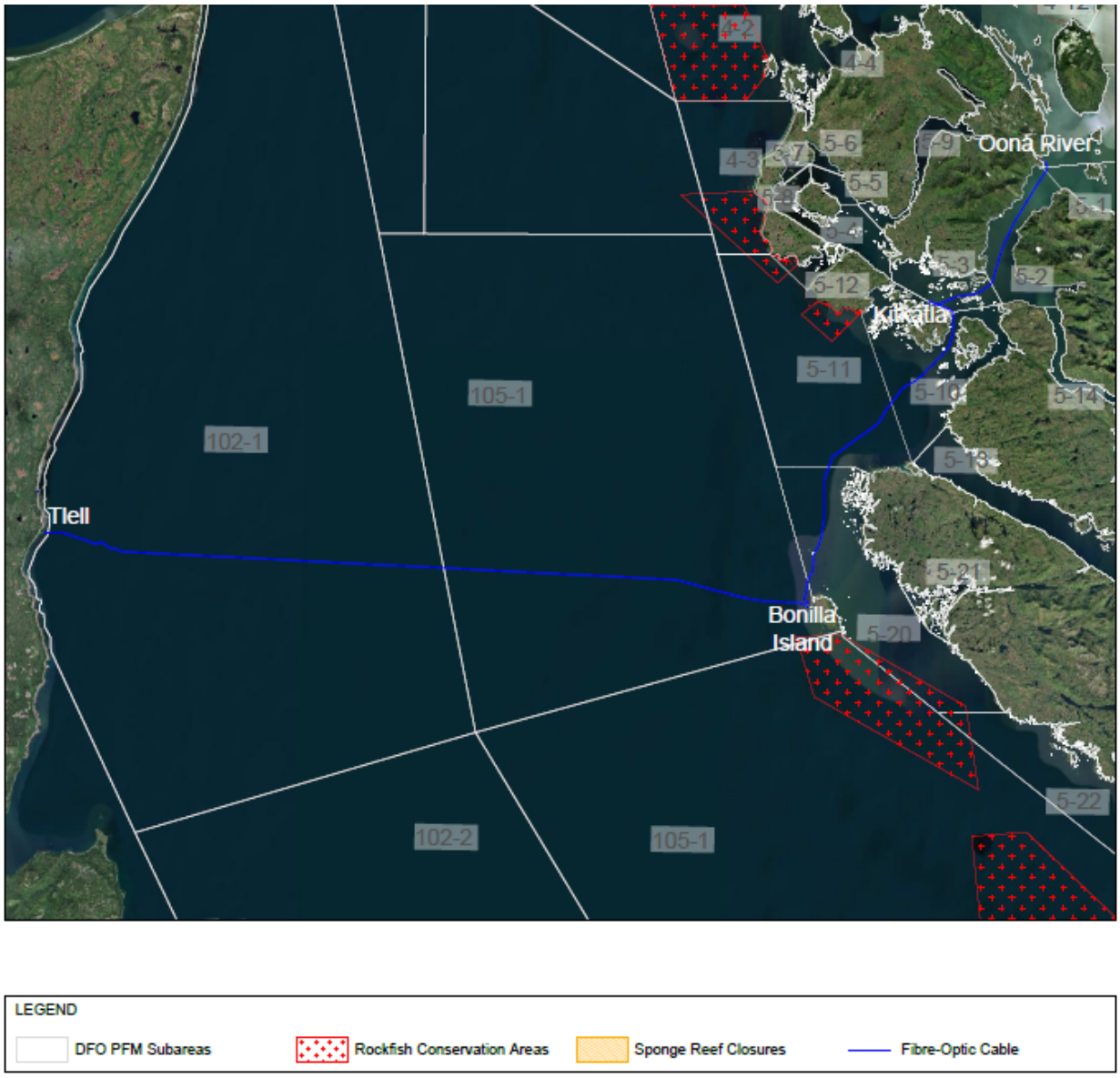

Figure 2 RCAs in proximity to Project area in Subareas 5-11, 5-20 and 105-1.

5.2 HECATE STRAIT/QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREA

In order to conserve the biological diversity, structural habitat and ecosystem function of glass sponge reefs, three Marine Protected Areas (MPAs) were established in 2017 within the Queen Charlotte Sound and Hecate Strait (DFO, 2017). Any activities that disturb, damage or destroy marine organisms or their habitat is prohibited within the MPAs. The Project will not impact

MPAs. The cable route runs east-west approximately 15 kilometres (km) north of the furthest north MPA shown in Figure 3 below at its closest approach.

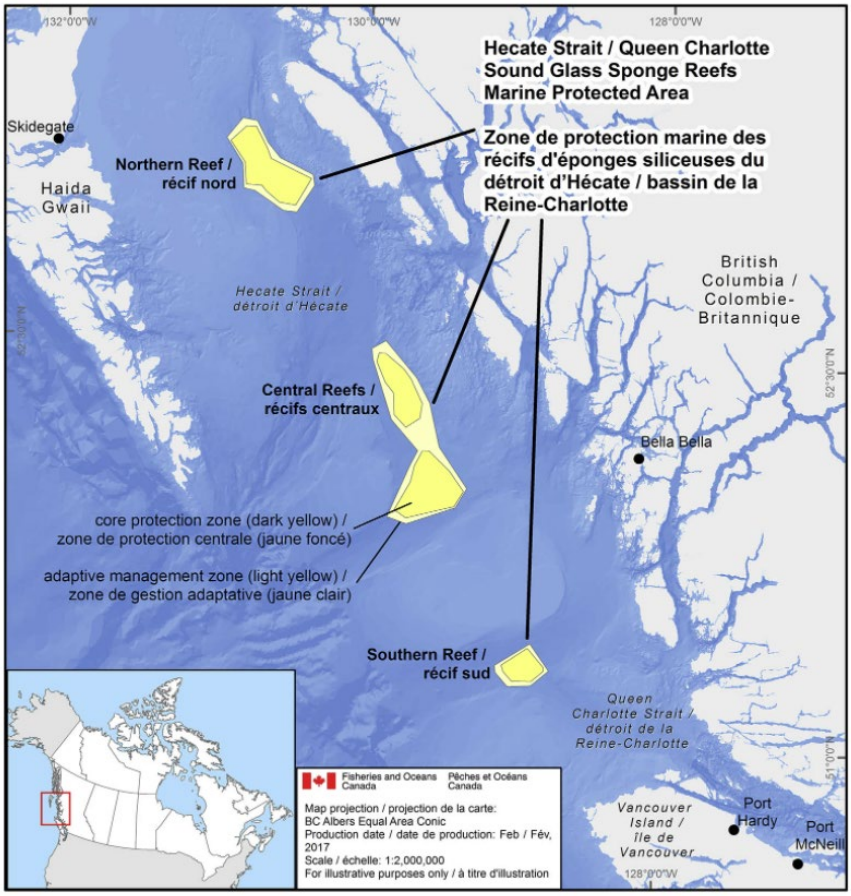

Figure 3 Glass Sponge Reef MPAs. Cable route avoids all MPAs (DFO, 2017).

5.3 PACIFIC NORTH COAST INTEGRATED MANAGEMENT AREA (PNCIMA)

The Pacific North Coast Integrated Management Area (PNCIMA) is one of five priority areas identified for integrated ocean management planning by the Government of Canada and encompasses approximately 102,000 square kilometres (DFO, 2020g), extending from the BC – Alaska border to Campbell River, BC as outlined in Figure 4 below. All Project landing sites are located within the PNCIMA.

The PNCIMA is managed jointly by provincial and federal governments and First Nations and in accordance with the PNCIMA plan which was developed to define objectives and strategies for the area, specifically in regards to management of marine resources and activities (PNCIMAI, 2017).

Figure 4 PNCIMA (DFO, 2020g)

5.3.1 ECOLOGICALLY AND BIOLOGICALLY SIGNIFIGANT AREAS

Ecologically and biologically significant areas were defined as part of the PNCIMA plan and are defined as areas worthy of enhanced management or risk aversion (PNCIMA, 2017). The Project overlaps with three of these areas marked as 1, 3 and 14 in Figure 5 below. Dogfish Banks along the east coast of Haida Gwaii has been identified as a large shallow bank that acts as a larval rearing ground for macroinvertebrates. Hecate Strait Front has been identified as a tidal front that accumulates productivity. Chatham Sound has been identified as an area of coastal tidal mixing and upwelling that drives high productivity seasonally.

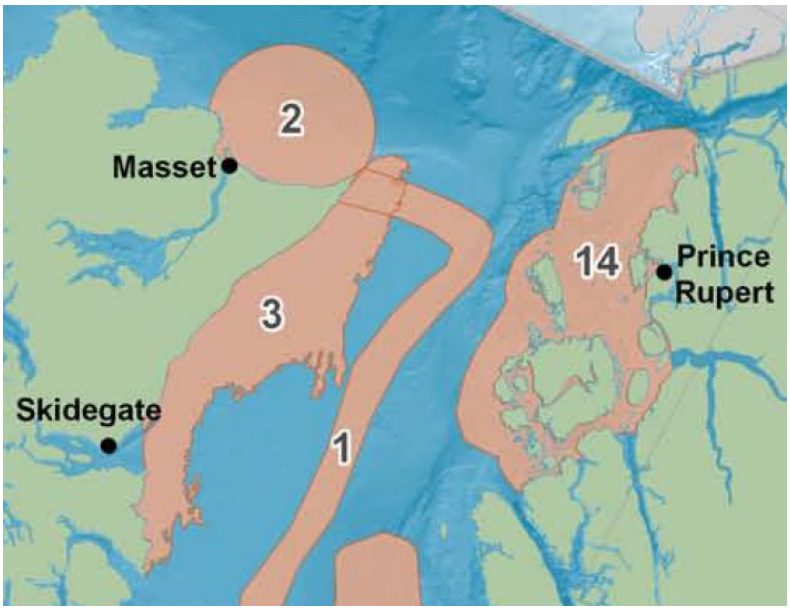

Figure 5 Ecologically and biologically significant areas 1, 3 and 14 overlapping with Project area (PNCIMAI, 2017).

5.4 SARA CRITICAL HABITAT

While the proposed cable route is located within the range of marine species at risk listed in Table 4, the alignment only transects critical habitat of one SARA listed marine species: Northern abalone (*Haliotis kamtschatkana*).

Northern abalone are SARA listed as endangered. Their distribution is patchy and therefore difficult to delineate. Habitat loss is not a major concern, however, threats to the organisms themselves such as illegal harvest, predation by sea otters, and on a lesser scale marine construction, are all notable sources of impact (COSEWIC, 2011b). Figure 6 below presents the broadly defined critical habitat of Northern abalone which overlaps with the Project area, specifically the Bonilla Island, Kitkatla and Oona River landing sites. Bonilla Island exhibits most of the physical characteristics of suitable Northern abalone habitat outlined in Appendix IV of the *Action Plan for the Northern Abalone (Haliotis kamtschatkana) in Canada* (DFO, 2012) and discarded shells were observed in the upland area during site assessments conducted in March 2021. Based on substrate and water conditions observed at the Kitkatla and Oona River landing sites, it is unlikely Northern abalone would inhabit these areas.

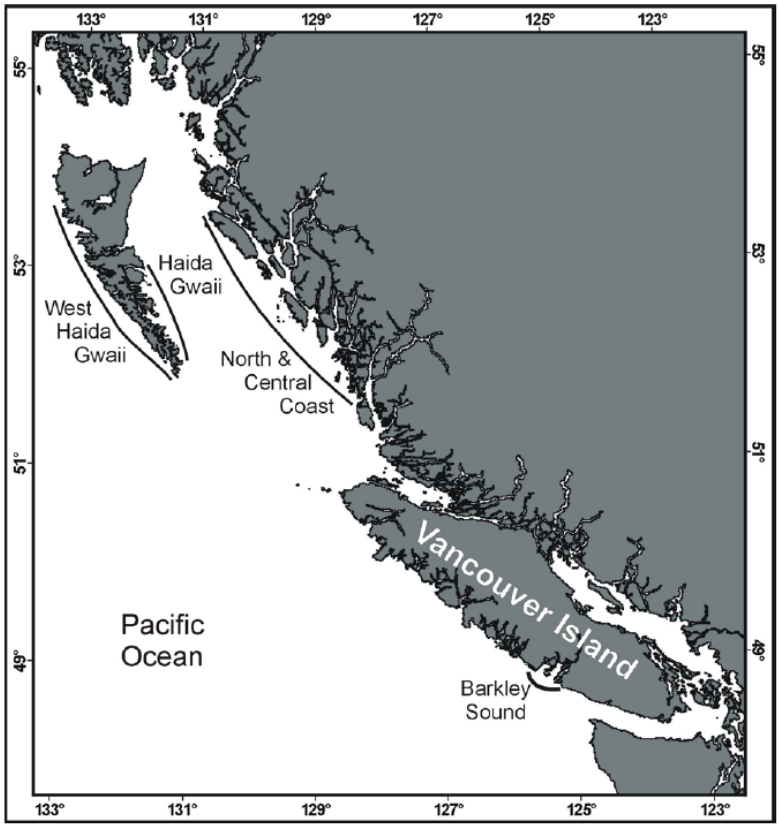

Figure 6 Critical habitat of Northern abalone (DFO, 2012).

Critical marine habitat for Marbled Murrelets has not been defined due to a lack of available data (Environment Canada, 2014). Critical terrestrial and nesting habitat have been defined by the recovery strategy for Marbled Murrelets (Environment Canada, 2014). Typically, Marbled Murrelets nest on large, mossy limbs in the canopy of large (30 m and taller) conifers in old-growth forest within 50 km of the ocean. Occasionally, they will nest on the ground or in older deciduous trees (Environment Canada, 2014). The Project area overlaps with both the Haida Gwaii Conservation Region and Northern Mainland Coast Conservation Region. Within these conservation regions, critical habitat is delineated in finite areas. Although no Project landing sites overlap with Marbled Murrelet critical habitat, the following sites are located within 500 m of Marbled Murrelet critical habitat (buffer in brackets): Bonilla Island (275 m east of landing site), Oona River (450 m).

5.5 PROVINCIAL PARKS AND CONSERVATORIES

The designed cable route considered provincial parks and conservancies and avoidance was attempted. The landing site on Haida Gwaii was adjusted from Old Masset to Tlell in order to

avoid the Naikoon Provincial Park. As the Projects purpose is to provide fibre optic service to existing infrastructure and populations, the location of landing sites is not completely flexible. For this reason, two provincial conservancies were unavoidable and are described below.

The cable route leading into and out of Bonilla Island transects the provincial Lax Kul Nii Luutiksm/Bonilla Conservancy established to protect pre-contact First Nations village, seabird colonies, sea lion rookeries, a tombolo, and rich intertidal resources (BC, 2021). The particular islet northwest of Bonilla Island where the landing site it located is excluded from the Conservancy, however the surrounding marine environment within 200 m of shore is included (BC, 2021).

Banks Island, located east of Bonilla Island, is part of a separate conservancy, Banks Nii Łuutiksm Conservancy which will not be impacted by the Project.

Figure 7 Lax Kul Nii Luutiksm/Bonilla Conservancy shown covering Bonilla Island and surrounding islets, excluding the Project landing site. Banks Nii Łuutiksm Conservancy is also shown along the west coast of Banks Island (BC, 2020c).

The cable route extending between the Kitkatla and Oona River landing sites transects the provincial Gitxaala Nii Luutiksm/Kitkatla Conservancy which was established to protect marine resources that have a long history of use by Indigenous peoples including seaweed, cockle, salmon, and, herring roe-on-kelp harvesting, high value waterfowl habitat, and a grey whale rubbing beach (BC, 2021).

Figure 8 Gitxaala Nii Luutiksm/Kitkatla Conservancy

6.0 POTENTIAL ENVIRONMENTAL IMPACTS

The Project footprint will include both terrestrial and marine works. Baylink recognizes that all work will be taking place in environmentally sensitive areas. Potential environmental impacts associated with construction activities are summarized below.

- Disturbance to terrestrial wildlife and wildlife habitat from interaction with equipment or personnel
- Disturbance to benthic flora and fauna from substrate disturbance, crushing, burial or changes in water quality
- Disturbance to marine mammals from physical contact with vessels or noise pollution from vessels
- Disturbance to fish (particularly spawning herring and salmonids) and fish habitat (particularly eelgrass) from physical contact and removal of eelgrass and water quality alterations
- Marine water quality alterations (increased turbidity) resulting from the release of sediment laden runoff from terrestrial work areas or disturbance of intertidal, subtidal and seabed substrate.
- Marine water quality alterations resulting from an accidental release of deleterious substance on land or water
- Introduction or transport of invasive species
- Residual construction waste
- Noise pollution from equipment and vessels
- Air quality alterations from equipment emissions and fugitive dust from excavation activities

Mitigation measures have been developed to prevent any detrimental environmental effects and will be adhered to during construction activities. Environmental mitigation measures and best management practices to be implemented during construction are described in Section 7.

7.0 ENVIRONMENTAL MITIGATION MEASURES

The following section outlines environmental mitigation measures and best management practices that will be implemented during construction to avoid or minimize adverse environmental impact.

7.1 SITE ACCESS AND VEGETATION CLEARING

Vegetation clearing more extensive than grubbing natural grasses is only required at the Bonilla Island landing site. Due to the steep rocky shoreline at Bonilla Island, trenching will be conducted manually with handheld tools and no additional vegetation clearing for excavator access will be necessary. No trees will be removed, however, due to the proximity of trees to the cable alignment, root systems may be impacted. The following mitigation measures will be implemented during construction to minimize adverse impacts to the environment during vegetation clearing.

- Prior to vegetation clearing, the area for clearing will be delineated and appropriate buffers in place around any sensitive environmental features.
- Prior to vegetation clearing, all areas will be inspected by the Environmental Monitor (EM) for the presence of any wildlife, denning or nests.
- All vegetation clearing will be overseen by the EM to ensure vegetation clearing is minimized and limited to the construction required dimensions.
- Cleared vegetation, expected to consist of primarily shrubbery, foliage and woody debris, will be retained and dispersed onsite to serve as wildlife habitat and minimize soil erosion and siltation.
- Cable route will be adjusted to maximize distance from tree bases. There is greater growth of roots near the base of trees than on roots further out (Hamilton, 1988). If possible, trenching will be conducted outside of tree drip lines.
- Where trenching is required in close proximity to trees (Bonilla Island only), tree roots may be impacted. To minimize impact to tree root systems:
    - Trenching will be conducted by hand in vegetated areas. An air spade will be used to expose the root system and allow strategic pruning of roots.
    - The trench will be limited to 30 cm deep and 30 cm wide in the vicinity of tree roots systems.
    - If possible trenching will be conducted outside of the drip line. At a minimum, a 1 m excavation exclusion zone will be maintained around the base of all trees.

  - Pruning roots will not occur in spring, when the availability of carbohydrates to support new root growth is limited due to active shoot growth.

- Backfilled or disturbed areas in the upland zone will be seeded with a suitable reclamation seed mix approved by the property owner and covered with straw (or equivalent erosion control matting). Seeding should be scheduled to allow establishment before the end of the growing season.
- Parking and laydown areas will be established on pre-existing pavement or compact gravel if possible, to prevent vegetation damage.
- If regulated invasive species are encountered during clearing, the EM will advise procedures outlined in Section 7.8 to properly remove and dispose of the species and prevent seed dispersal.
- Drift logs within the Project footprint will be carefully relocated out of the way of machinery and replaced post construction.

7.2 MARINE SPECIES AND HABITAT PROTECTION

7.2.1 LEAST RISK WORK WINDOWS

The DFO has issued timing windows for work in and around water that pose the least risk to fish and fish habitat. Ensuring construction at each landing site is conducted within the applicable DFO least risk window is the primary and most effective mitigation measure for preventing harm to fish and fish habitat. The construction schedule will target the least risk windows.

Pacific herring (*Clupea pallasii*) spawning season runs January 1 to April 30 (Hay & McCarter, 2013). If logistics prevent in-water works from being conducted within the DFO least risk windows, at a minimum, the portion of the Pacific herring spawning season that does not overlap with winter timing windows (February 16 to April 30), will be avoided at the two landing sites located within Chatham Sound (Kitkatla and Oona River), considered an important area for herring migration and spawning (PCNIMAI, 2017).

Table 5 DFO Least Risk Work Windows

DFO Area ID	Project Landing Sites Within Area	Least Risk Timing Window (Summer)	Least Risk Timing Window (Winter)

2E	• Tlell	July 1 to 30	January 1 to March 1
5	• Bonilla Island • Kitkatla • Oona River	N/A	November 30 to February 15

Completing construction within the respective DFO least risk windows is expected to alleviate the risk of disturbing sensitive juvenile fish, spawning adults, fish eggs and spawning grounds, however, as a precaution, a qualified environmental monitor (EM) and marine mammal observer (MMO) will be onsite during all construction activities to monitor for the presence of any herring spawning and marine species in the Project footprint. The EM/MMO holds the authority to suspend work activities if it is deemed that any marine species or habitat are at risk of harm.

7.2.2 MARINE HABITAT PROTECTION

There is potential for intercepting native eelgrass (*Zostera marina*) along the proposed cable alignment in the intertidal and subtidal zones. The following mitigation measures will be implemented to minimize impact to eelgrass beds within the intertidal zone:

- Prior to construction commencing, the EM will conduct a sweep of the intertidal zone to identify any native eelgrass present.
- If patches of eelgrass are observed, the trench route will be adjusted to avoid. The cable route is flexible by several meters.
- If continuous beds of eelgrass are present and unavoidable, the cable route will be adjusted to follow the least dense or shortest path through, depending on which is expected to impact the fewest eelgrass shoots. Plywood will be laid down on either side of the trench alignment to protect the eelgrass from equipment tracks and excavated spoil piles. Immediately after the trench has been backfilled and prior to tidal inundation, the plywood sheets will be removed. Additionally, the following transplant methods will be implemented:
    - One to two days post construction, eelgrass transplant efforts will be conducted along the cable alignment within the footprint of disturbed sediment. One to two days post construction is allotted to allow the sediment to settle, increase it's ability to retain roots of the transplanted shoots and decrease the likelihood of washout.

- The EM will harvest shoots from healthy eelgrass beds up to 20 m on either side of the trench and transplant within the footprint of disturbed sediment. Physical attributes such as sediment type, tidal height, light conditions and wave action will remain consistent between the harvest location and transplant location.
- Harvested shoots will be immediately transplanted. If for any reason transplant cannot occur immediately, shoots will be stored submerged in fresh seawater and in shade for no more than 24 hours.
- Shoots selected for harvest will have a minimum rhizome length of three inches and contain at least three nodes. Shoots will be planted in patches (ten shoots per patch) spaced by one meter. Shoots will be anchored with a metal 5/8 inch washer.
- It should be noted, invasive eelgrass (Zostera japonica) encountered will not be salvaged as it negatively affects fish species including Pacific herring and chum salmon by reducing the habitat of essential food sources like copepods (Hay, 2011).

The following mitigation measures will be implemented to minimize impact to eelgrass beds within the subtidal zone:

- Prior to construction commencing, an ROV will be used to survey the proposed cable alignment in the subtidal zone, from 0 m CD to the limit of the split pipe (approximately 4 m below CD). Cable installation methods in the subtidal zone will be determined based on the presence or absence of native eelgrass identified during the survey.
- If patches of eelgrass are identified during the pre-construction survey, the cable route will be adjusted to avoid if possible. The cable route is flexible by several meters.
- If a continuous, unavoidable band of eelgrass is identified during the pre-construction survey, a route targeting the least dense portions and/or shortest distance of eelgrass will be selected.
- If any eelgrass is identified in the vicinity of the cable route during the pre-construction survey, the float and lower installation method will be used for split pipe. The split pipe will be attached to floats, floated to its intended location during high tide facilitated by a skiff and gently lowered onto the seabed. This method is intended to minimize seabed disturbance.

An ROV will be deployed and monitored during installation to assist in directing the exact installation location.

- If no eelgrass is identified in the vicinity of the cable route during the pre-construction survey, alternative installation methods will be used to install split pipe in the subtidal zone. The split pipe will be pulled from the intertidal zone into the subtidal zone along the surface of the seabed, facilitated by a vessel. This will occur at low tide.

The following mitigation measures will be implemented to minimize impacts to sensitive marine habitats in general.

- Water depth will be monitored closely to ensure skiffs do not ground and propellers do not scour sensitive marine habitats.
- Personnel accessing the intertidal zone by foot will be limited. Care will be taken by these individuals to avoid trampling any marine flora and fauna. No personnel will be accessing the subtidal zones by foot.

7.2.3 MARINE SPECIES PROTECTION

There is the potential to disturb benthic flora and fauna during excavation activities in the intertidal zone and installation of split pipe in the subtidal zone. Below approximately -4.0 m CD elevation, extending between landing sites, cable will be laid on the seabed surface via a cable lay vessel. Based on the slight diameter of the cable (1.35 cm), slow speed of installation (less than 4 km/hour), non-intrusive method of installation (laying on seabed surface) and short duration of disturbance, the impact to motile species (crab, fish, marine mammals) is expected to be negligible, and the impact to sensitive benthic ecosystems is expected to be minor. Any disturbance to benthic ecosystems is expected to readily naturally recover.

The following mitigation measures will be implemented during construction to minimize adverse impacts to sensitive marine species.

- There is the potential to intercept sensitive marine macrofauna (eg. bi-valves, other sessile benthic organisms) along the work corridor in the intertidal zones. The EM will conduct a sweep of the work area prior to any substrate disturbance to identify any sensitive marine macrofauna. If encountered, the trench route will be adjusted to avoid. If unavoidable, the bivalves will be relocated by the EM. Harvested bivalves will be relocated to disturbed

substrate at a similar depth and tidal height within 20 m of the harvested location. Appropriate permits will be obtained from the DFO to conduct such work.

- Excavated spoil piles will be assessed by the EM for the presence of bivalves. If located, the EM will rebury the bivalves taking care to ensure that all bivalves are positioned in an orientation such as to minimize time for resumption of their natural state (ie. bivalves will be oriented such that their posterior side is closer to the surface). Appropriate permits will be obtained from the DFO to conduct such work.
- A SARA permit outlining actions required to protect Northern Abalone potentially present at the Bonilla Island landing site will be obtained from the DFO and implemented.
- Personnel accessing the intertidal zones by foot will be limited. Care will be taken by these individuals to avoid trampling any macrofauna. No personnel will be accessing the subtidal zones by foot.
- The EM will monitor the work area for any indication of spawning herring such as eggs, or intense feeding from sea birds and pinnipeds. Based on DFO least risk windows and avoidance of herring spawning season (Section 7.2.1), no indications of spawning herring are anticipated. However, in the scenario spawning herring are suspected to be present in the work area, construction activities will be halted and reassessed.
- During all in water works, exclusion zones will be established for marine mammals around the active work area consisting of a 400 m exclusion zone for killer whales and a 200 m exclusion zone for all other cetaceans (whales, dolphins, porpoises) and SARA listed Steller sea lions. An MMO will be present to monitor for any marine mammals entering exclusion zones during in water works. If a marine mammal is observed entering its respective exclusion zone and the MMO deems the individual(s) may be at risk of physical harm or is observed to be disturbed by construction activities, a stop work will be implemented. Construction activities will only resume once the individual(s) has been confirmed to have left the exclusion zone or has not been sighted for a duration of 30 minutes. The aforementioned marine mammal exclusion zones comply with the approach distance requirements identified in the Marine Mammal Regulations (GOC, 2018) and the 2021 Management Measures to Protect Southern Resident Killer Whales (DFO, 2021).

- DFO's recommended mitigation measure for minimizing adverse hydroacoustic impact to marine mammals from vessels is to reduce the vessel speed (DFO, 2017). Project vessels will travel at less than 4 km/hr (2.2 knots) during cable installation which will minimize engine noise and vessel wake. At this speed, personnel will have ample opportunity to observe and react to potential hazards on route.
- Water depth will be monitored closely to ensure skiffs do not ground and propellers do not scour the seabed.

7.3 EROSION AND SEDIMENT CONTROL (ESC)

7.3.1 ESC DURING TRENCHING IN UPLAND AND INTERTIDAL ZONE

- Cable in the upland and intertidal zones will be trenched in manually or with a mini excavator. All trenching will be completed above the water mark. Prior to tidal inundation, trenches in the intertidal zone will be backfilled, recontoured to the surrounding area and compacted with the bucket to reduce erosion.
- Vegetated areas (Bonilla Island and Oona River) will be trenched manually using handheld tools to minimize the trench footprint, vegetation damage and soil destabilization.
- Cleared vegetation in the terrestrial zone, expected to consist of primarily shrubbery, foliage, and woody debris, will be retained and dispersed onsite to minimize soil erosion.
- Measures to control erosion and sediment laden water will include diversion of overland surface waters coming into the work area and collection of surface waters leaving the work area using methods such as berms, ditches, sandbags and silt fencing. These systems will be continuously inspected and maintained during the duration of construction activities. No sediment laden water from the upland work areas should enter the marine environment or any watercourse.
- Sediment and erosion control materials including polyethylene plastic, silt fencing, tarps, sandbags, and straw mulch will be available onsite for use as prescribed by the EM to reduce erosion and sediment transport and for use during emergency unexpected weather changes.
- All equipment will be operated in the dry, above the water mark and will be clear of the intertidal zone prior to tidal inundation.

- The work corridor will not exceed 3 m. This includes disturbance required for the trench, adjacent area storing spoil piles and the access pathway for mini excavator. The width of the trench is not anticipated to exceed 50 cm.
- To the extent possible, backfilling of the trench will occur in the reverse sequence that substrates were removed (ie. surface substrates will be returned to the surface). Excavated substrates will be returned to their original tidal height horizon (ie. substrate removed from 10 m below HHWM will be backfilled at 10 m below HHWM).
- Coarse substrate removed from the surface (ie. gravel, cobbles, boulders, driftwood) will be returned to the surface to retain underlying fines.
- Backfilled or disturbed areas in the upland will be seeded with a suitable reclamation seed mix approved by the property owner and covered with straw (or equivalent erosion control matting).
- Construction will be deferred during heavy precipitation events to reduce the risk of erosion, sediment transfer and turbidity issues in waterbodies.

7.3.2 ESC DURING CABLE PLACEMENT IN SUBTIDAL ZONES

- Split pipe in the subtidal zone will be placed on the seabed surface (no trenching, jetting, or burial).
- If eelgrass is identified in the subtidal zone during the ROV survey, the split pipe will be floated out during high tide facilitated by a skiff and gently lowered onto the seabed. This method minimizes seabed disturbance, resuspension of sediment and potential water quality alterations.
- If no eelgrass is identified in the subtidal zone during the ROV survey, the split pipe will be pulled along the seabed surface from the intertidal zone into the subtidal zone facilitated by a vessel. This will be conducted at low tide. This method will temporarily disturb the seabed along the cable alignment and will likely resuspend sediment.
- Visual monitoring for turbidity plumes in the marine environment will be conducted by the EM during construction activities. If observed, water quality monitoring will be conducted to ensure turbidity levels do not exceed applicable provincial criteria and construction activities may be temporarily halted. Water quality monitoring program is detailed in Section 7.4.

- No personnel shall be accessing the subtidal zones by foot, preventing sediment disturbance.
- Water depth will be monitored closely to ensure skiffs and cable laying vessels do not ground and propellers do not scour substrate and cause turbidity plumes.

7.4 WATER QUALITY MONITORING

Marine water quality monitoring will be conducted by the EM to ensure construction activities do not adversely impact marine aquatic life or ecosystems sensitive to water quality alterations. Water quality monitoring will be completed on an as needed basis triggered by the visual observation of a turbidity plume in the marine environment. Water quality monitoring of the turbidity plume will entail an insitu turbidity measurement from within 10 m of the plume and a written description of the dimension of the plume.

For comparison purposes, a background in situ water quality measurement of turbidity will be collected from the marine environment 100 m away from the limit of the turbidity plume (moving parallel to the coastline to maintain a similar water depth). The purpose of background water quality measurements is to establish guidelines for acceptable maximum induced turbidity during construction activities.

Turbidity measurements will be collected from the plume and “background” locations on a minimum of an hourly basis until the plume dissipates and measurements meet BC Approved Water Quality Guidelines described in Table 6 below. Turbidity measurements will be taken from the middle of the water column.

If initial water quality measurements of the turbidity plume exceed BC Approved Water Quality Guidelines for marine aquatic life outlined in the table below, the activity directly causing the increased turbidity will be halted immediately. Water quality measurements will be completed on a minimum of an hourly basis until turbidity decreases to within acceptable BC Approved Water Quality Guidelines, at which point activities are permitted to resume.

Table 6 Turbidity Water Quality Criteria

Water Quality Parameter	BC Approved Water Quality Guideline

Turbidity	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters.

Additionally, in the event of a hazardous substance release to a waterbody, or the observation of a hydrocarbon sheen on a waterbody, water quality samples should be collected for laboratory analysis.

All water quality measurements and sample collection will be completed by the qualified EM.

7.5 WASTE MANAGEMENT

Waste generated from the Project is expected to be minimal and predominantly consist of excess soil, food waste generated from the crew and any contaminated material resulting from an accidental release. Construction debris is expected to be negligible as excess supplies (ie. conduit) will be utilized at subsequent landing sites.

All excess soil, domestic waste and recycling generated from the Project will be transported off site and recycled or disposed of at an appropriate facility. Recyclable materials will be separated from waste when possible. Waste should be segregated prior to transport as much as possible. However, given the low volume of waste expected to be generated, final sorting can be completed at the disposal location.

Any hazardous waste generated from the Project, anticipated to be limited to any accidental releases, will be disposed of at an approved facility. The EM will document the type, weight and quantity of hazardous material, disposal location and waste manifest number.

7.6 HAZARDOUS MATERIALS HANDLING AND STORAGE

Storage of all hazardous materials including fuel, paints, cleaners, and chemicals will be a minimum of 30 m from watercourses and the marine environment. On cable laying vessels, where a 30 m buffer is not achievable, hazardous materials will be stored near the centre of the

deck. All hazardous materials will be stored within at least 110% secondary containment, in a covered and well-ventilated area.

7.7 EQUIPMENT AND MACHINARY

The following best practices and mitigation measures will be implemented to prevent adverse environmental impact from equipment and machinery.

- All equipment will be inspected by the EM prior to entering site and must be in good working order and free of leaks, excess grease, oil, soil and invasive plant species.
- Equipment inspections will be completed and documented daily by operators prior to use.
- Each piece of equipment, including skiffs, will be equipped with a small spill response kit.
- Equipment will have secondary containment in place (ie. drip trays) when not being in operated.
- Any fuelling or maintenance of equipment will be conducted greater than 30 m from water courses and the marine environment.
- All fuelling should be performed by two qualified personnel on a sealed surface with the use of drip trays. All fueling hoses must have an automatic shut-off valve.
- Equipment operations below the HHWM will be limited as much as possible to reduce the potential introduction of deleterious substances into the marine environment
- Effort will be made to use biodegradable hydraulic fluid in equipment dedicated to working on, near or above water when logistics allow.

7.8 INVASIVE SPECIES

Invasive species differ from exotic species in that they are non-native and have the potential to alter the ecosystem by outcompeting native species. The introduction of an invasive species (plants, animals, and fish) can be detrimental to the surrounding environment. This is especially relevant to small, localized, marine ecosystems. Regulated invasive species in BC are identified by the BC Weed Control Act (Government of British Columbia, 1996), the BC Inter-Ministry Invasive Species Working Group (ENV, 2004) and the Invasive Species Council of BC (ISCBC,

2018). In order to minimize the risk of introducing or spreading regulated invasive species within the Project area, the following recommendations will be implemented.

Terrestrial Invasive Species Management

- All equipment (mini excavator, skid steer and light duty trucks) will be visually inspected by the EM prior to entering site and must be free of excess soil and any invasive plant species or seeds.
- Prior to clearing any vegetation, all areas will be inspected by the EM for the presence of any regulated invasive plant species designated as provincially or regionally noxious. Identified species will be flagged.
- The EM will direct handling, removal, and disposal of regulated invasive species in accordance with best management practices provided by the Invasive Species Council of BC (ISCBC, 2018).
- Telephone: 250-305-1003
- Website: https://bcinvasives.ca/
- Vegetation will be cleared towards patches of invasive species to prevent spread into uninfested areas.

Aquatic Invasive Species Management

- All marine equipment (cable laying vessels) must be inspected and cleaned prior to entering a new waterbody.
- Prior to any excavation or cable laying activities, the intertidal zone at each landing site will be assessed by the EM for the presence of any aquatic invasive species.
- The EM will direct handling, removal, and disposal of designated aquatic invasive species in accordance with best management practices provided by the DFO Control and Management Strategies (DFO, 2019d) and the Invasive Species Council of BC (ISCBC, 2018).

7.9 WILDLIFE MANAGEMENT

Human encounters and impact to wildlife must be kept to a minimum. To achieve this, the following guidelines will be implemented.

- Crews will not approach, harass, feed, harm, capture, or kill any wildlife. A stop work will be implemented if wildlife is observed onsite. Work will not resume until wildlife has vacated the vicinity of the site on their own accord.
- Any wildlife observations will be reported to the EM.
- In the event that wildlife appears to be injured, abandoned, or in distress, a BC conservation officer will be immediately notified at the BC Report All Poachers and Polluters Hotline (RAPP) (1-877-952-7277). The BC RAPP will advise on the appropriate management strategy.
- Wildlife habitat will not be destroyed unless stipulated in the construction design (ie. planned vegetation clearing).
- If a wildlife habitat feature (ie. nest, den, burrow, hibernaculum) is encountered, a stop work will be implemented. Work will not proceed until the EM has assessed the situation and developed a management plan to proceed.
- All food and domestic waste will be stored securely in wildlife proof containers or within vehicles and removed from site at the end of each day.
- Cleared vegetation, expected to consist of primarily shrubbery, foliage, and woody debris, will be retained and dispersed onsite to serve as wildlife habitat.
- Drift logs within the Project footprint will be carefully relocated out of the way of machinery. Post construction drift logs will be replaced to mimic preconstruction conditions.
- Post-construction, ensure each landing site has been restored to pre-construction conditions to the extent possible. Ensure no hazardous obstacles are present which could harm wildlife (ie. open excavations, standing pools of water).

7.9.1 BIRD PROTECTION PLAN

- Construction should be conducted outside the nesting period for migratory birds, mid March to late August (GOC, 2018b), to limit the risk of harm to birds and their nests.
- Regardless of the timeline of construction, a nest survey will be conducted prior to construction commencement to ensure protection of migratory birds, and bird species protected by the BC Wildlife Act (Government of BC, 1996) (eagles, peregrine falcons,

gyrfalcons, osprey, herons, burrowing owls). The nest survey will be conducted by the qualified EM within seven days prior to the commencement of construction. If a nest is identified during the survey, a stop work will be implemented. Work will not proceed until a nest management plan in accordance with the following documentation is developed.

  - Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia, (Government of British Columbia 2013)
  - Guide for developing Beneficial Management Practices for Migratory Bird Conservation (Government of Canada 2017).

- If a bird nest is encountered at any point during Project activities a stop work will be implemented. The onsite EM will immediately be notified of any nest discoveries. Nest of migratory birds are protected all year, whether occupied or not. It is prohibited to damage, destroy or remove a non-active migratory bird nest without a permit or an authorization.
- Proactively prevent bird nesting in equipment during nesting season (late March to mid August) by covering pipe ends and keeping equipment mobile on a daily basis,

7.10 NOISE MANAGEMENT

To reduce terrestrial and hydroacoustic noise related impacts, the following recommendations will be adhered to:

- Barring any unforeseeable delays, construction at each landing site will be limited to one day in duration to limit the potential disruption to local residents
- Equipment will be turned off when not in use to avoid unnecessary idling
- Equipment will be maintained and in sound working order to minimize noise pollution. All equipment will have functioning exhaust and muffler systems. All bolts and fasteners will be tight to avoid rattling.
- Any construction activities that cause elevated noise will be conducted within timelines stipulated by applicable municipal noise bylaws.
- During all in water works, exclusion zones will be established for marine mammals around the active work area consisting of a 400 m exclusion zone for killer whales and a 200 m exclusion zone for all other cetaceans (whales, dolphins, porpoises) and SARA listed Steller

sea lions. An MMO will be present to monitor for any marine mammals entering exclusion zones during in water works. If a marine mammal is observed entering its respective exclusion zone and the MMO deems the individual(s) may be at risk of physical harm or is observed to be disturbed by construction activities, a stop work will be implemented. Construction activities will only resume once the individual(s) has been confirmed to have left the exclusion zone or has not been sighted for a duration of 30 minutes. The aforementioned marine mammal exclusion zones comply with the approach distance requirements identified in the Marine Mammal Regulations (GOC, 2018) and the 2021 Management Measures to Protect Southern Resident Killer Whales (DFO, 2021).

- Vessels will travel at less than 4 km/hr (2.2 knots) during construction operations to minimize engine noise and vessel wake
- Vessel echosounders will be turned off when not in use

7.11 AIR QUALITY

The following best management practices will be followed to minimize air quality issues:

- Barring any unforeseeable delays, construction at each landing site will be limited to one day in duration to limit the time that spoil piles are exposed to wind
- Construction will be deferred during high wind events to reduce the risk of airborne particles.
- Backfilled or disturbed areas in the upland will be seeded with a suitable reclamation seed mix approved by the property owner and covered with straw (or equivalent erosion control matting) to reduce airborne particles.
- All equipment will be inspected by the EM prior to entering site and must be in good working order
- Equipment inspections will be completed and documented daily by operators prior to use.
- Equipment will be turned off when not in use to avoid unnecessary idling

7.12 EMERGENCY SPILL RESPONSE

In the event of a release of a hazardous substance, the spill response plan provided in Appendix C will be followed.

Each piece of equipment will be equipped with a small spill response kit and each active work front (ie. landing site, cable laying vessel) will have a large spill response kit housed in a sealed container readily available. An itemized list of contents of the large spill response kits is provided in Appendix C. All crew members will be trained in spill response procedures outlined in Appendix C and will be familiar with the location and contents of spill kits. In addition to spill kits, five-gallon buckets, shovels, tarps and poly sheeting will be available on site for any potential emergency cleanup of contaminated soil required in the intertidal zone.

8.0 MONITORING AND REPORTING REQUIREMENTS

8.1 ENVIRONMENTAL MONITOR

A qualified environmental monitor (EM) will be onsite during all construction activities to complete the following duties:

- Assess compliance of construction activities with this EMP, specifically environmental mitigation measures detailed in Section 7.
- Authorize a work stoppage if any environmental harm is suspected
- Complete duties listed throughout Section 7 including pre-construction sweeps of intertidal zone for sensitive marine flora/fauna, salvage and transplant of marine flora/fauna in intertidal zone as necessary, monitor for any indication of fish spawning, conduct water quality monitoring as necessary, prescribe ESC measures.
- Reporting as described below

The EM will generate a construction environmental monitoring report for each landing site to report on compliance with this EMP and effectiveness of environmental mitigation measures implemented. The environmental monitoring report will include the following information:

- Summary of construction activities undertaken;
- Location and weather/environmental conditions;
- Effectiveness of mitigation measures;
- Non-conformances with EMP;

- Highlight any environmental issues that were identified and any corrective actions that were taken;
- Water quality data assessed for conformance with applicable guidelines;
- Wildlife observations;
- Photographs

8.2 MARINE MAMMAL OBERVER

A qualified marine mammal observer (MMO) will be present during all water works. The MMO will be stationed at the most advantageous vantage point, either the shore or the cable laying vessel. The MMO will be responsible for completing the following duties.

- Documenting all observations of cetaceans and SARA listed species within their respective exclusion zones (Section 7.2)
- Authorizing a work stoppage if a marine mammal within the exclusions zone is suspected to be at risk of physical harm or is observed to be disturbed by construction activities

It is anticipated that the EM and MMO responsibilities can be accomplished by a single qualified individual.

9.0 EMERGENCY CONTACT INFORMATION

In the event of an emergency, please contact individuals listed below.

Table 7 Emergency Contact Information

Contact	Name	Phone Number
Baylink Networks Inc.	Darren Dofher	604-786-5074
Emergency Management BC	n/a	1-800-663-3456
DFO Emergency	n/a	1-800-465-4336
Environment Canada	n/a	604-666-6100
Invasive Species Council of BC	n/a	250-305-1003
BC Report All Poachers and Polluters Hotline	n/a	1-877-952-7277
DFO Marine Mammal Desk	n/a	1-800-465-4336

10.0 CLOSURE

If there are any questions or concerns, please do not hesitate to contact the undersigned.

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Project Manager

11.0 REFERENCES

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APPENDIX A

ENGINEERED SPECIFICATIONS

INSTALLATION INSTRUCTION

CHANNELL

Channell SGLB Vault Installation Procedure	Date: 6/10/14

Installation Considerations

This Installation Instruction provides general information useful for installing the Channell SGLB line of below-grade handhole vaults. This guide cannot anticipate all situations that could be encountered in the field and thus represents information applicable to common installation conditions. Please consult local company practice for proper product configuration for each application.

Site Preparation

1. Ensure that all local, state, federal and company-specific regulations are met prior to beginning and throughout the installation process.

2. Plan the excavation approximately 12 to 16 inches in length and width larger than the actual dimensions of the handhole to be installed. **(See Figure 1)**

3. Excavate the hole 6 to 8 inches in depth more than the overall height dimension of the handhole with the cover in place. Tamp the floor of excavated pit using either a hand tamp tool and/or a mechanical tamper. (Remember: if the handhole is to be set in concrete, the composite ring must be included in this dimension.)

4. Place 4 to 6 inches of crushed rock at the bottom of the excavated pit prior to placing the handhole body in the pit -- this will prevent subsidence of the handhole body over time. **(See Figure 2)**

   NOTE: "RIVER ROCK", "ROUND STONE" AND/OR PEA GRAVEL SHOULD NOT BE USED, DUE TO THE FACT THAT THE DESIRED COMPACTION AND EQUIVALENT RESISTANCE TO THE LATERAL LOADING CANNOT BE ACHIEVED WITH THESE PRODUCTS.

5. a. Place the handhole body into the pit. **(See Figure 3)**
   b. Center the handhole body in the excavated pit parallel to the sidewalk and/or curb if applicable.
   c. Level and adjust the height of the handhole body to grade, as required, by adding more crushed rock.

6. Place the cover on the handhole body to prevent the backfill dirt from entering the inside of the handhole. The cover should be level with the ground. Bolting of the cover is recommend but is not a requirement for this step; however, the cover must always be bolted down prior to departure of the site. **(See Figure 4)**

7. The excess soil removed from the excavated pit shall be used during the backfill of the pit. The backfill shall be tamped continuously during the filling process to prevent settling around the sides of the handhole. **(See Figure 5)**

   During the filling process of the soil around the handhole, stones that are 3" and larger shall be removed from the soil and not used.

8. The final backfill shall be tamped with a slope away from the handhole. All excess backfill material shall be removed from the installation site. **(See Figure 6)**

Figure 1

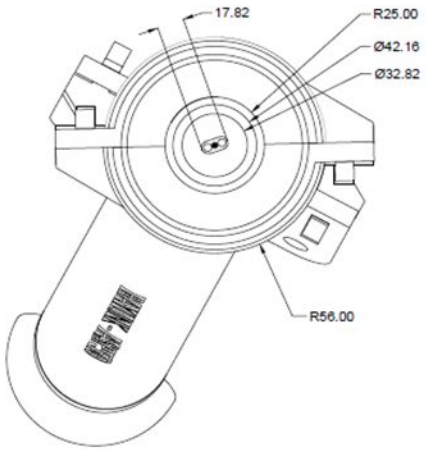
Figure 2

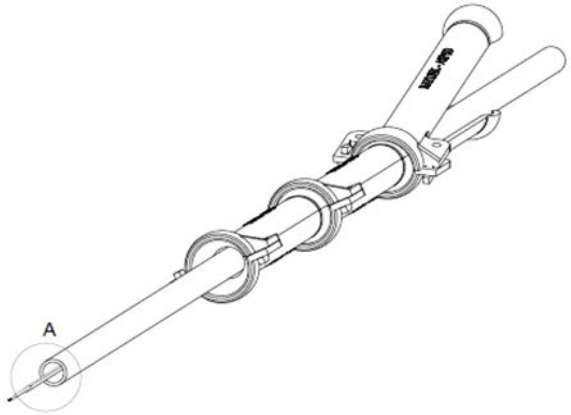
Figure 3

Figure 4

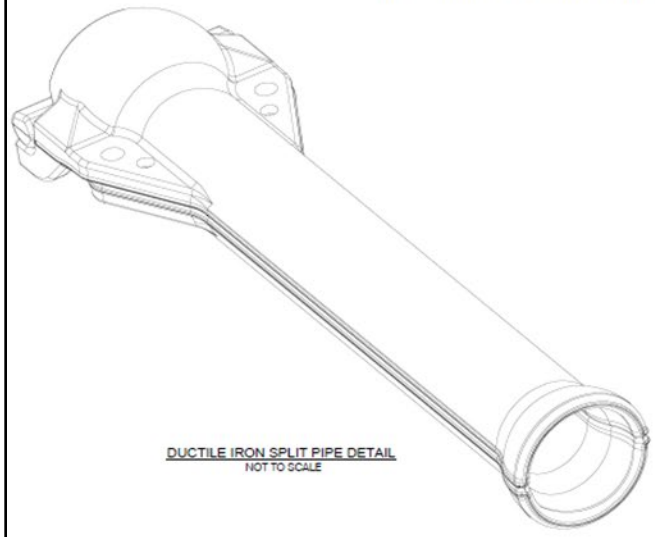
Figure 5

Figure 6

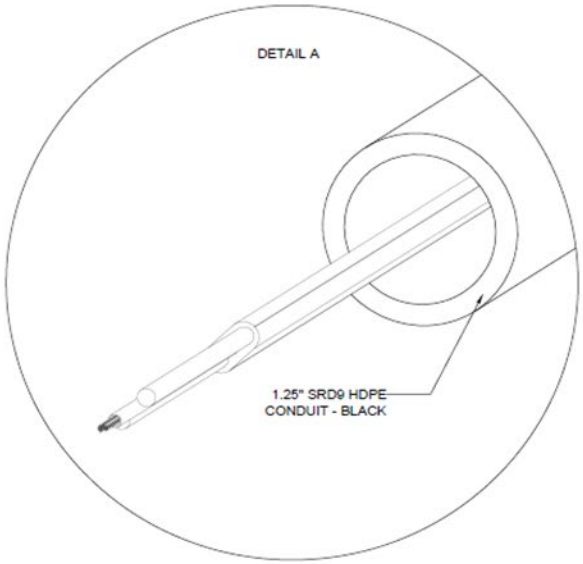




THE SPLIT PIPE IS APPLIED TO THE HDPE CONDUIT IN SECTIONS. A ONE METER TAIL OF HDPE PROTRUDES FROM THE SPLIT PIPE AT THE SUBMERGED END OF THE SYSTEM.



DUCTILE IRON SPLIT PIPE DETAIL
NOT TO SCALE



ARTICULATED DUCTILE IRON SPLIT PIPE LANDING

BAYLINK

IN-LINE SPLICE CASE - SC350

Features and Specifications:

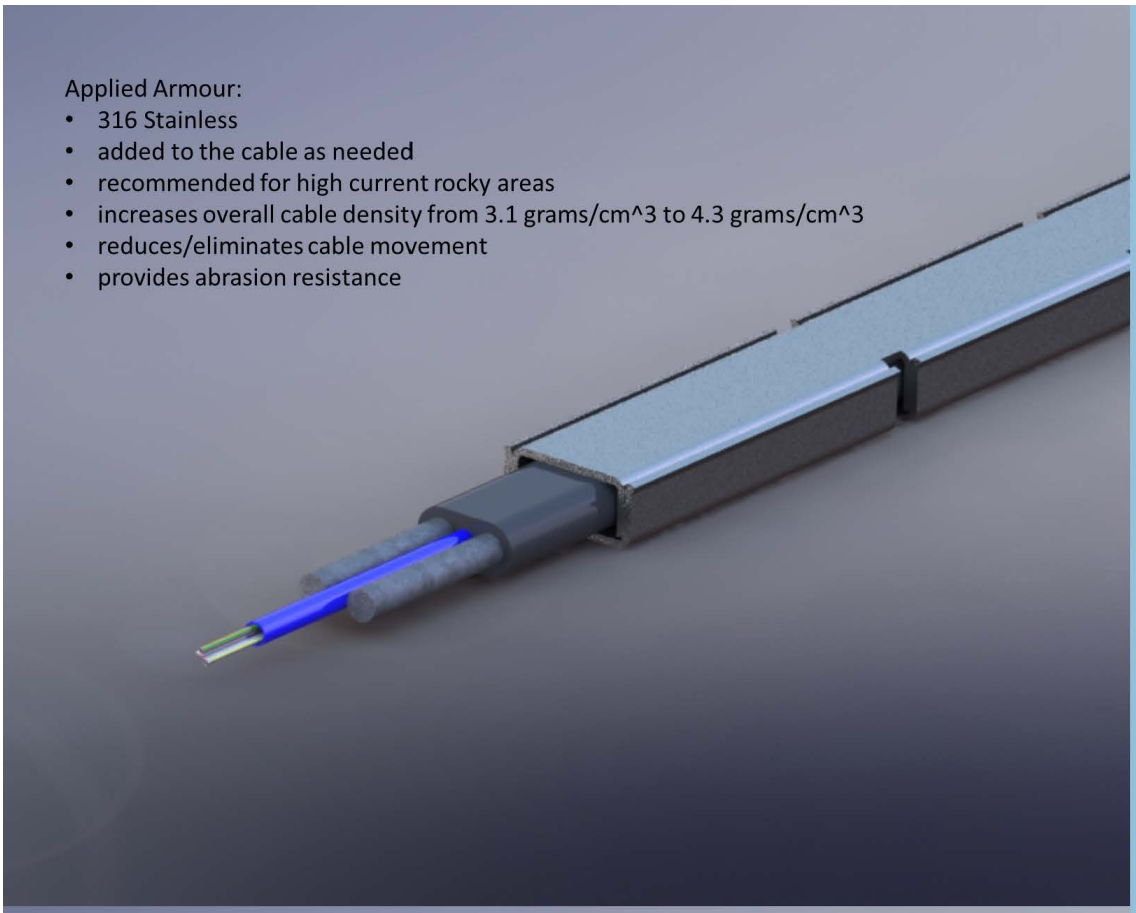
- Dimensions: 977mm overall length x 89mm diameter
- Sealing method: triple O-ring seal on cable entry and on the end caps
- Solid rubber strain reliefs protect the cable at the cable entries
- The internal powder coated stainless steel frame doubles as a splice tray
- A simple 8 bolt clamping system ties the cable strength members to the internal frame
- The splice case exceeds the tensile strength of the cable (40KN breaking strength)
- The splice case is flooded with a mineral oil based hydraulic fluid (less than 3 liters)
- There are no exposed metal parts, which eliminates corrosion risk
- Minimal training, skill level and tools required to use the splicing system
- Tested to 2000 meters of depth
- Cable splicing times are typical of land-based splice cases
- Splice case components can be applied in advance to reduce splicing time at sea

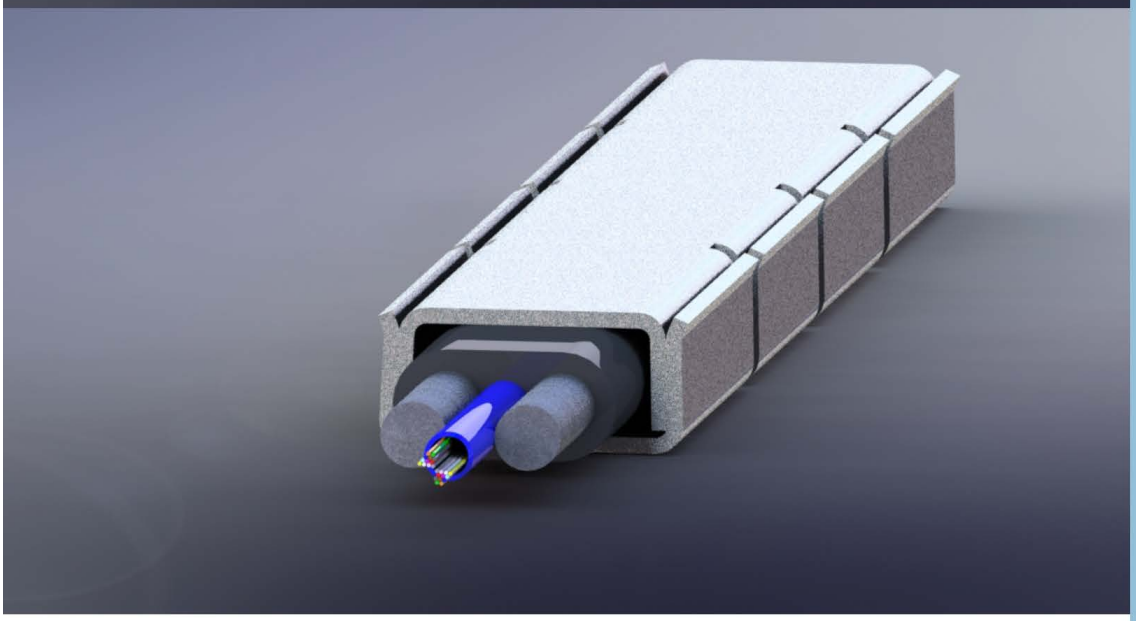
BAYLINK

APPLIED CABLE ARMOUR - STAINLESS STEEL

Applied Armour:

- 316 Stainless
- added to the cable as needed
- recommended for high current rocky areas
- increases overall cable density from 3.1 grams/cm^3 to 4.3 grams/cm^3
- reduces/eliminates cable movement
- provides abrasion resistance



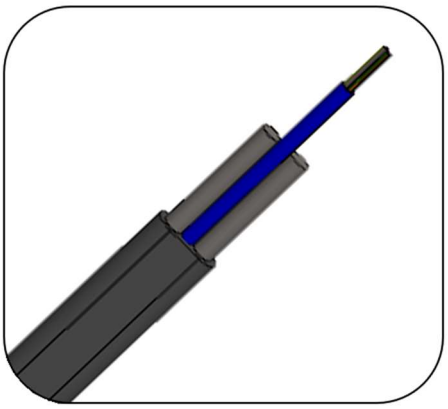


BAYLINK

Fiber Optic Cable

HS-HD FD GLV ST

Underwater Cable 09-05-2018



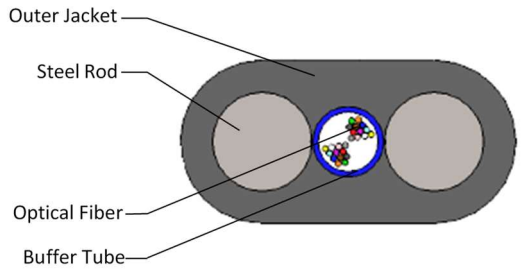
Features

- High Density Polyethylene Jacketed
- High Strength Steel Support Rods
- Corrode Resistant Galvanized Steel
- Long lengths
- In-line splice technology
- Proven technology
- Long life expectancy

Description

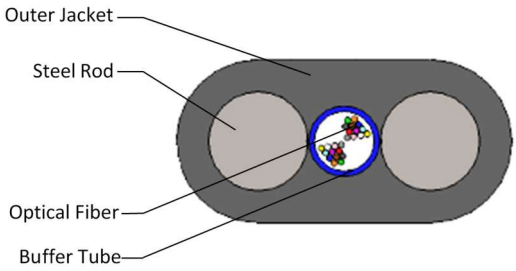
Baylink Network's HS-HD FD GLV ST Fiber Optic Cable is designed for subsea and direct buried applications. The cable provides one of the highest cable densities on the market at 3.1 g/cm^3. This feature combined with the flat profile gives the cable exceptional stability on the sea floor (no movement), resulting in increased cable life. In addition, the cable offers excellent resistance against crush, impact, and tensile forces. The cable is suitable for both fresh or saltwater use and is capable of water-depths of 3000 meters and beyond.

Cable Components



Configuration

PARAMETER	VALUE
Number of Fibers	24
Fiber	Single-mode G.652D
Optical Fiber Standard	ITU-T G.652.D
Number of steel cores	2
Outer size approx.	13.5mm x 6.3mm
Net. Weight	249 kg/km
Unit Density	3100 kg/m^3
Material Inner Sheath	PBT
Materials Outer Jacket	HDPE
Storage Temperature Range	-40 to +85^{o}C
Operating Temperature Range	-40 to +85^{o}C
Colour outer Jacket	Black



Main Mechanical and Environmental Characteristics

TEST	TEST STANDARD	VALUE	ACCEPTANCE CRITERIA
Max. Tension	ITU G.976-8.2.2.1	20 kN	Δα ≤ 0.05 dB
Crush	ITU G.976-8.2.3.1	20 kN / dm	Δα ≤ 0.05 dB
Impact	ITU G.976-8.2.3.2	20Nm, R=25mm	Δα ≤ 0.05 dB
Repeated Bending	ITU G.976-8.2.3.3	R= 30x D 50 cycles	Δα ≤ 0.05 dB
Cable Bend	ITU G.976-8.2.2.5	R=30X D	Δα ≤ 0.05 dB
Hydraulic Pressure Resistance	ITU G.976-8.2.1.4	3000 psi	Δα ≤ 0.05 dB
Water Penetration	ITU G.976-8.2.4.1	Sample = 5m Water column=1m	No water leakage in 24hr

Optical Characteristics – ITU-T G.652.D
(ULL fiber options are available)

ATTRIBUTE	UNITS	VALUE
Attenuation	dB/km	1310nm≤ 0.35 1550nm≤ 0.25
Chromatic Dispersion	ps/nm.km	1310nm≤ 3.6 1550nm≤ 18 1625nm≤ 22
Zero Dispersion Slope	ps/nm2.km	≤ 0.092
Zero Dispersion Wavelength	nm	1312±10
Cut-off Wavelength	nm	≤ 1260
Mode Field Diameter	µm	9.2 ± 0.4 at 1310nm 10.4±0.5 at 1550nm
Core-Clad Concentricity	µm	≤ 0.5
Cladding Diameter	µm	125±1
Cladding Non-circularity	%	≤ 0.7
Coating Diameter	µm	245±5

APPENDIX B

LANDING SITE BIOPHYSICAL ASSESSMENTS AND PHOTOGRAPHS

PHASE 1 BLOCK 3 PACKAGE 1

Tlell

The Tlell landing site is located at the intersection of Yellowhead Highway and Wiggins Road south of Tlell on the east coast of Graham Island. The purpose of the connection is to service the town of Tlell and surrounding community.

Upland Zone:

Photo 1 Overview of cable alignment at intersection of Yellowhead Highway and Wiggins Road.

Photo 2 Cable alignment connecting to existing power pole in upland area of Tlell landing site.

The High Water Mark (HWM) is delineated by a steep rip rap embankment that rises 2 to 3 m above the elevation of the road. Moving west from the HWM, there is an approximately 7 m wide highway pull out area composed of compact gravel, 10 m of the Yellowhead Highway asphalt, 2 m of level compact gravel highway shoulder and finally 3 m of level grassy area housing the existing power pole to which the cable is intended to connect. No vegetation clearing will be required at this site.

The subsurface vault will be installed in the grassy area at the southwest corner of the intersection. The equipment cabinet and private pole will be installed in a grassy patch approximately 75 m further west along Wiggins Road.

iMap BC identified critical habitat for SARA listed marbled murrelets (*Brachyramphus marmoratus*) approximately 925 m inland (west) of the landing site. Marbled murrelet typically nest in the canopy of old growth forests, within 50 km of the ocean (Environmental Canada, 2014). As no tree removal is required at this landing site, no harm to marbled murrelets or their

habitat is expected. Regardless, any sightings of this species will be documented, and mitigation measures including nest surveys will be implemented to ensure the Project does not cause any harmful disturbances to marbled murrelets or their habitat.

Intertidal Zone:

The intertidal zone at the Tlell landing site is oriented east and features a steep rip rap embankment for the initial 10 m below the HWM before levelling out into a sand flat. Substrate is composed of unsorted medium grain sand with surficial patches of cobbles and boulders ranging from a few metres to 30 m wide.

The site visit was conducted during at a 1.3 m incoming tide. A thorough assessment of the full intertidal zone will be completed prior to any construction activities to monitor for the presence of any sensitive marine life or habitat.

The exposed intertidal zone was largely bare of any attached marine vegetation. However, bands of marine detritus washed ashore included primarily detached Scouler's surfgrass (*Phyllospadix scouleri*). Minor volumes of detached rockweed (*Fucus distichus*) and *Mazzaella splendens* were also observed washed ashore. Acorn barnacles (*Balanus balanoides*) were observed on boulders with coverage ranging from 10 to 50 percent.

Photo 3 View east of intertidal zone of Tlell landing site.

Photo 4 View west of intertidal zone of Tlell landing site showing steep rip rap embankment at HWM.

Photo 5 Intertidal zone conditions showing surficial substrate sand with patches of cobbles and boulders.

Subtidal Zone:

The CHS has classified the shoreline at the low water mark of the Tlell landing site as a sand and gravel flat (CHS, 2013). Low tide reaches 560 m below the HWM (CHS, 2013).

The Tlell landing site is located within an area around Dogfish Banks designated as biologically and ecologically significant and worthy of enhanced management due to the large shallow bank acting as a larval rearing ground for macroinvertebrates (PNCIMAI, 2011).

No eelgrass has been documented in the vicinity (CRIMS and BCMCA, 2011). Bands of soft brown kelp and surfgrass are documented offshore (BC, 2018). Additionally, red algae is documented along the coast commencing approximately 500 m north of the landing site (BC, 2018).

No herring spawn has been documented in the vicinity (BCMCA and CRIMS, 2011).

The offshore marine environment is considered an important migration and foraging area for the SARA listed Eastern North Pacific grey whale (Eschrishtius robustus) (PNCIMAI, 2011). Most

grey whales migrate north between February and May and back south between December and January. Grey whales forage in shallow nearshore habitats, particularly areas of soft sediment where they feed on benthic invertebrates.

Bonilla Island

Upland Zone:

This proposed cable landing site will service a Canadian Coast Guard (CCG) lighthouse station situated on a bedrock islet off the west coast of Bonilla Island. Bonilla Island is situated within the Hecate Straight, nine kilometres (km) west of the larger Banks Island.

The cable will come ashore along the northeastern corner of Bonilla Island and will tie into a cable box powered by pre-existing utilities located onsite within a paved, concrete area.

The upland zone of the cable alignment is characterized by long grasses, salal (*Gaultheria shallon*) and Sitka spruce (*Picea sitchensis*).

The cable encased with iron split pipe will be laid overland across 19 m of vegetated area from the HWM to the power source inland. As trenching and burial of the cable is not feasible, split pipe will be placed directly on the rocky substrate. Vegetation removal along the cable corridor is not anticipated, however some plants may be impacted during cable lay activities. No trees will be removed or impacted.

iMap BC identified critical habitat for SARA listed marbled murrelets (*Brachyramphus marmoratus*) approximately 275 m east of the landing site along the coast of Bonilla Island. Marbled murrelets typically nest in the canopy of old growth forests, within 50 km of the ocean (Environmental Canada, 2014). As no tree removal is required at this landing site, no harm to marbled murrelets or their habitat is expected. Regardless, any sightings of this species will be documented, and mitigation measures including nest surveys will be implemented to ensure the Project does not cause any harmful disturbances to marbled murrelets or their habitat.

Due to scheduling constraints with accessing Bonilla Island, biophysical assessments were conducted during a high tide of 5.8 m. As a result, intertidal zone assessments could not be completed.

Photo 6 Vegetation Along Proposed Cable Alignment. View is Northeast Facing (March 14, 2021).

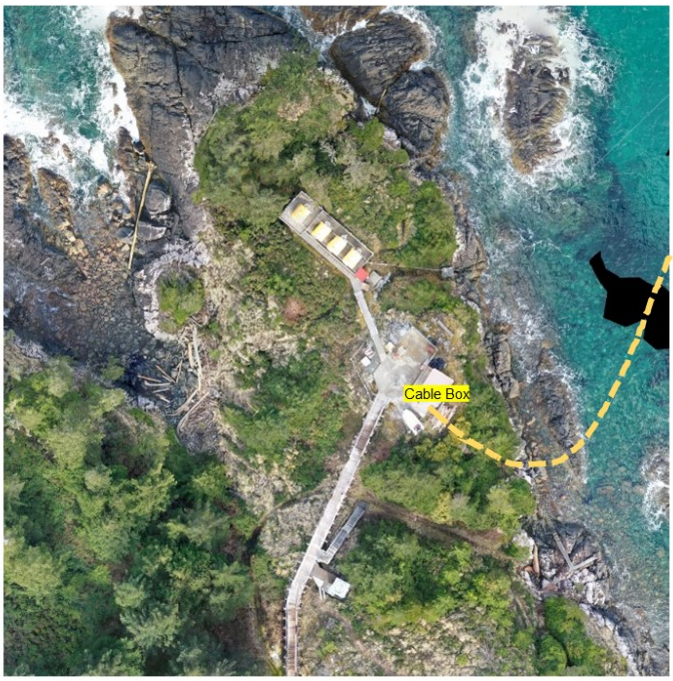


Photo 7 Approximate Cable Alignment Shown in Yellow at Bonilla Island (March 14, 2021).

Subtidal Zone:

The CHS has classified the shoreline at the low water mark of the Bonilla Island landing site as a rock platform with a sand and gravel beach (CHS, 2013). The low tide is undefined (CHS, 2013) but estimated to be approximately 105 m.

Several discarded purple sea urchins (*Strongylocentrotus purpuratus*) and Northern Abalone (*Haliotis kamtschatkana*) shells were observed scattered throughout grassy areas of the island. It is thought that they were dispersed on shore by bird species or possibly marine mammals such as the sea otter (*Enhydra lutris*). Northern Abalone is listed as endangered under the Species at Risk Act (SARA). A SARA permit for Northern Abalone relocation will be obtained from the DFO to ensure the species is properly managed and adverse impact to the species is prevented.

The cable route leading in and out of Bonilla Island transects the provincial Bonilla Conservancy established to protect pre-contact First Nations village, seabird colonies, sea lion rookeries, a tombolo, and rich intertidal resources (BC, 2021). The Bonilla Conservancy covers Bonilla Island as well as all foreshore within 200 m of shore (BC, 2021).

Patchy bands of eelgrass have been documented offshore of the landing site (BCMCA, 2011). Bull kelp (*Nereocystis luetkeana*) is documented along the coastline of the entire island (BCMCA, 2011). Unspecified species of kelp beds are scattered for 8 km north of island (CRIMS, 2011), of which the cable route avoids most.

No Pacific herring spawn has been documented in the vicinity (BCMCA and CRIMS, 2011).

Offshore area surrounding the Bonilla Island landing site is considered a moderately important area for SARA listed northern resident killer whales (*Orcinus orca*) and an important area for SARA listed Steller sea lions due to its proximity within 50 km of a haulout (PNCIMAI, 2011IMA, 2017).

Kitkatla

Upland Zone:

The proposed Kitkatla landing site is located on the northwest corner of Dolphin Island and is a part of the Gitxaala First Nations territory.

The cable will come ashore and will tie into a below ground landing vault installed on the west side of the Gitxaala Band Office within an open, grassy site. Power will be sourced from existing aerial electrical lines in the vicinity.

Vegetation at this location consisted of manicured grasses which will be partially removed during cable trenching. Minimal environmental risk is anticipated at this location due to the previously developed nature of the proposed landing site. However, as a result of restrictions when accessing this site, biophysical surveys were conducted during winter conditions. Site conditions will change during the spring and summer months exposing additional vegetation.

iMap BC identified critical habitat for SARA listed marbled murrelets (*Brachyramphus marmoratus*) approximately 650 m west and 1100 m east of the landing site, along the coast. Marbled murrelet typically nest in the canopy of old growth forests, within 50 km of the ocean (Environmental Canada, 2014). As no tree removal is required at this landing site, no harm to marbled murrelets or their habitat is expected. Regardless, any sightings of this species will be documented, and mitigation measures including nest surveys will be implemented to ensure the Project does not cause any harmful disturbances to marbled murrelets or their habitat.

Photo 8 Proposed Cable Alignment Through the Upland Zone at Kitkatla Shown in Yellow. View is South Facing.

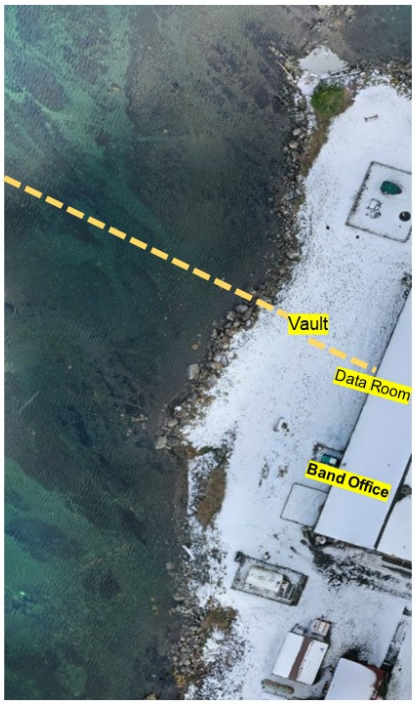


Photo 9 Proposed Cable Alignment at Kitkatla Project Site Shown in Yellow (March 14, 2021).

Intertidal Zone:

The intertidal zone at Kitkatla is oriented west and features a low gradient of 12% before levelling at 17 m below the HWM.

A band of rip rap shoreline protection delineates the HWM from the upland zone. The substrate type within the high intertidal zone consisted of shale fragments, gravel and sand.

Attached Pacific rockweed (*Fucus distichus*) as well as decaying bull kelp (*Nereocystis luetkeana*) and bladder kelp (*Macrocystis integrifolia*) were seen within the high intertidal zone. Disarded butter clam (*Saxidomus gigantea*) and a Nuttall's cockle (*Clinocardium nuttallii*) shell were also observed at the high tide line.

Due to scheduling constraints with accessing the Kitkatla Project site, intertidal assessments could not be conducted at this location. A thorough assessment of the intertidal zone will be completed prior to any construction activities to monitor for the presence of any sensitive marine life or habitat.

Photo 10 Conditions Observed Within the High Intertidal Zone at Kitkatla.

Subtidal Zone:

The CHS has classified the shoreline substrate at the low water mark at the Kitkatla landing site as a sand flat (CHS, 2013). Low tide reaches 107 m below the HWM (CHS, 2013).

The Kitkatla landing site is located within an area around Chatham Sound designated as biologically and ecologically significant and worthy of enhanced management due to the coastal tidal upwelling and mixing that drives high productivity seasonally (PNCIMAI, 2011).

The cable route extending between the Kitkatla and Oona River landing sites transects the provincial Gitxaala Nii Luutiksm/Kitkatla Conservancy which was established to protect marine resources that have a long history of use by Indigenous peoples including seaweed, cockle, salmon, and, herring roe-on-kelp harvesting, high value waterfowl habitat, and a grey whale rubbing beach (BC, 2021).

Eelgrass has been documented directly offshore of the landing site and extending south along the coastline (BCMCA, 2011). Giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*) have also been documented along the coastline in the vicinity of the landing site (BCMCA, 2011).

The closest Pacific herring *(Clupea pallasii)* spawn was documented 2.3 km northwest of the landing site along the Shakes Islands coastline (DFO, 2016). However, Chatham Sound including the area offshore of the Kitkatla landing site, is considered an important area for Pacific herring (*Clupea pallasii*) migration.

The landing site is located within the broadly defined critical habitat for Northern abalone (*Haliotis kamtschatkana*) (DFO, 2012). However, based on the sand and gravel substrate observed within the intertidal zone, it is unlikely Northern abalone inhabitat the area. Northern abalone typically inhabitant subtidal area where the primary substrate is rock or boulders (DFO, 2012).

Offshore area surrounding the Kitkatla landing site is considered a highly important area for SARA listed northern resident killer whales (*Orcinus orca*) and an important area for SARA listed Steller sea lions as there are known year-round and winter haulouts located within 50 km (PNCIMAI, 2011). The cable route between Kitkatla and Bonilla Island landing sites, as well as the offshore area around Bonilla Island, is considered an important area for northern fur seals (*Callorhinus ursinus*) (PNCIMAI, 2011).

The Kitkatla landing site is located within an Important Bird Area (IBA) designated by BirdLife International for the purpose of conserving populations of waterbirds, particularly Surf Scoters (*Melanitta perspicillata*) (PNCIMAI, 2011). The IBA (#BC119) encompasses Kitkatla Channel, Porcher Island and surrounding islands.

Oona River

Upland Zone:

The Oona River landing site is located on the eastern coast of Porcher Island. Porcher Island is situated within the Hecate Straight, south of the mouth of Oona River.

The cable alignment is designed to come ashore on the southeast side of a boulder riprap jetty at the terminus of Oona River Road. The upland area consists of a right of way composed of compact sand and gravel. This area is bordered by coniferous trees and deciduous shrubbery on the southeastern side including western red cedar (*Thuja plicata*) and salal (*Gaultheria shallon*). An area of sparse, 1 m high deciduous vegetation is situated on the northwestern side.

Little environmental risk is anticipated at this location due to the previously developed nature of the site. However, the biophysical assessment was conducted during winter conditions and spring/summer months could expose additional vegetation. A thorough assessment will be conducted prior to any construction activities to monitor for the presence of sensitive species or habitat.

iMap BC identified critical habitat for SARA listed marbled murrelets (*Brachyramphus marmoratus*) along the coast of Porcher Island, but not within the Oona River inlet where the landing site is located. The closest critical habitat is 450 m from the landing site. Marbled murrelet typically nest in the canopy of old growth forests, within 50 km of the ocean (Environmental Canada, 2014). As no tree removal is required at this landing site, no harm to marbled murrelets or their habitat is expected. Regardless, any sightings of this species will be documented, and mitigation measures including nest surveys will be implemented to ensure the Project does not cause any harmful disturbances to marbled murrelets or their habitat.

Intertidal Zone:

The shoreline of the Oona River landing site is composed of a medium grain sand and is oriented northeast. It exhibits a 3% gradient before levelling at 27 m below the HWM.

The cable would transect approximately 260 m of the Oona River Estuary, an area designated as moderately biologically important to waterbirds by the Pacific Estuary Conservation Program (PNCIMAI, 2011IMA, 2017).

Verrucaria and salicoria have been documented in the upper intertidal zone and salt spray zones (BC, 2018).

Due to scheduling constraints, site assessments were conducted during a high tide of 5.1 m and as a result the full intertidal zone could not be assessed. An environmental professional will monitor the intertidal zone prior to any construction activities to observe any ecologically sensitive habitats or species.

Photo 11 Approximate Cable Alignment at Oona River Shown in Yellow.

Photo 12 Approximate Cable Alignment Shown in Yellow at Oona River (March 14, 2021).

Subtidal Zone:

The CHS has classified the shoreline at the low water mark at the Oona River landing site as an estuary with fine organic substrate (CHS, 2013). The low tide level is undefined (CHS, 2013).

The Oona River landing site is located within an area around Chatham Sound designated as biologically and ecologically significant and worthy of enhanced management due to the coastal tidal upwelling and mixing that drives high productivity seasonally (PNCIMAI, 2011).

No eelgrass beds, clam beds or Pacific herring spawning areas were documented in the vicinity of the landing site by BCMCA and CRIMS. However, Chatham Sound including the area offshore of the Oona River landing site, is considered an important area for Pacific herring (*Clupea pallasii*) migration. Bull kelp (*Nereocystis luetkeana*) beds have been documented along the majority of the Porcher Island coast but do not extend within the Oona River inlet (BCMCA, 2011).

The landing site is located within the broadly defined critical habitat for Northern abalone (*Haliotis kamtschatkana*) (DFO, 2012). However, based on the sand substrate observed within the intertidal zone and proximity to an estuary providing freshwater input, it is unlikely Northern abalone inhabit the area. Northern abalone typically inhabit subtidal zones where the primary substrate is rock or boulders and salinity is normal (ie. not influenced by river runoff) (DFO, 2012).

Offshore area surrounding the Oona River landing site is considered a moderately important area for SARA listed northern resident killer whales (*Orcinus orca*) and an important area for SARA listed Steller sea lions due to its proximity within 50 km of a haulout (PNCIMAI, 2011IMA, 2017).

Observations of all BC salmonid species including Coho salmon (*Oncorhynchus kisutch*), Chum salmon (*Oncorhynchus keta*), and pink salmon (*Oncorhynchus gorbuscha*) have been identified 425 m northwest of the Project site within the Oona River system (MoE, 2011).

The Oona River landing site is located within an Important Bird Area (IBA) designated by BirdLife International for the purpose of conserving populations of waterbirds, particularly Surf Scoters (*Melanitta perspicillata*) (PNCIMAI, 2011). The IBA (#BC119) encompasses Kitkatla Channel, Porcher Island and surrounding islands.

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APPENDIX C

EMERGENCY SPILL RESPONSE PROCEDURE AND SPILL KIT CONTENTS

BAYLINK
NETWORKS Inc.

SPILL RESPONSE PROCEDURE

SPILLS Reporting Requirements			
Product:	**Threshold:**	**Incident:**	**Report to:**
(Fuel, Oil & Hydraulic)	= Any Amount > 100L =Amount<100 L	to land or water to water	Darren Dofher / Andy Scott / PEP. Darren Dofher/ PEP.
Chemicals	= Any Amount >5L = Any Amount	to land to land to water	Darren Dofher / Andy Scott Darren Dofher / Andy Scott / PEP Darren Dofher / Andy Scott / PEP
Sewage	=Any amount	to land or water	RDKB / Darren Dofher / Andy Scott

Safety First – Then Take Action

Step 1. Notify Site Supervisor / Construction Manager / Environmental Monitor

Step 2. Evaluate and Contain for Fuels, Oils, Hydraulic fluids, and Chemicals.

- Identify hazards & risks – employ safe work procedures
- Eliminate the source of the spill.
- Contain the spill – Divert away from ditches, culverts, water courses.
- Mark the perimeter of the spill.
- Pick up spill using pads, socks or granular absorbent. Universal pads are required for removal of chemical spills (e.g. antifreeze)
- For spills to water, isolate the contamination if possible
- **Dispose of contaminated spill pads etc**. at suitable locations (oil collection services, landfills, or as prescribed by the Environmental Monitor (EM).
- **Soils must not be transported off-site** without the prior approval of the Owner and/or EM & MoE.
- **If there is a potential for the spill to leach into a watercourse**, excavate the contamination and move to an adjacent area for treatment away from watercourses.

Step 3. Reporting Requirements

All spills **must** be reported to the site owner and the EM. If these individuals cannot be reached, notify the Provincial Emergency Program (PEP) at 1-800-663-3456 if the spill meets the PEP thresholds. Site Supervisor to fill out Spill Incident Report attached.

Step 4. Reporting to PEP

Call 1-800-663-3456 and provide the following:

- Name and phone number of reporting party
- Date/time/details of incident
- Who caused the spill
- Location
- Amount & what was spilled
- Clean up status
- Resources at risk: Community/Domestic Watershed or fish bearing

PEP will provide you with a report #. PEP will then contact MoE, DFO and Environment Canada who will contact you to assess the site, provide feedback, or provide direction on how to respond.

Access to a spill kit is required for all equipment.

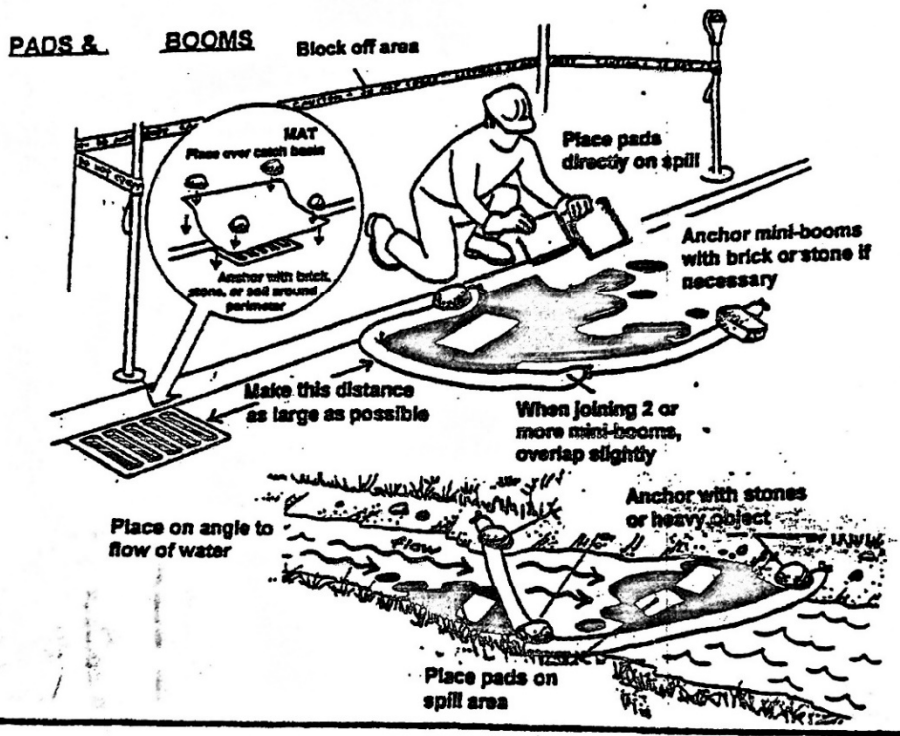
Remember:
White Pads = Fuels & Oils Only
Grey Pads = Universal (Fuels, Oils and Chemicals such as antifreeze)

Contact List:			
Owner's Representative		BCTS	
Contractor / Site Supervisor	Baylink Networks		Darren Dofher 604-786-5074
Construction Manager	Kaslo InfoNet Society		Andy Scott 250-509-1013
Environmental Monitor (EM)	Darren Dofher	MEC	
PEP		**1-800-663-3456**	

BAYLINK
NETWORKS Inc.

INSTRUCTIONS FOR CLEANING UP A SPILL

PADS & BOOMS



LOOSE ABSORBENTS

Pacific Spill Supply
#135, 12320 Vulcan Way, Richmond, BC, V6V 1J8, Canada
Phone: 604.244.7745 Fax: 604.247.2298 E-mail:
info@pacificspillsupply.com
Web: www.pacificspillsupply.com

BAYLINK

Networks Inc.

Spill Kit Contents

Item	Quantity
64L box – black box/yellow lid	1
Oil & fuels (white) absorbent pads	25
Universal (grey) absorbent pads	14
3" x 4' oil (white) absorbent socks	3
Nitrile gloves	10
Work gloves / sorbent gloves	2
Coveralls	2
1 lb pail mixed plugging compond	1
2 kg bag all purpose absorbent	1
Disposal bags	10
Eye splash protection goggles	1
List of spill kit contents	1
Spill response sheet	1