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Joint venture companies



LNG Canada Canadian Environmental Assessment Agency 2017 – 2018 Annual Report

June 2018



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Executive Summary

LNG Canada is proposing to build and operate an LNG export facility (the Project) located in northwest British Columbia, in the District of Kitimat and the traditional territory of the Haisla Nation. The Project is comprised of a liquefied natural gas facility and supporting infrastructure, temporary construction-related infrastructure and facilities, and shipping facilities.

On June 17, 2015, LNG Canada received the Canadian Environmental Assessment Act (CEAA) Decision Statement that established the conditions LNG Canada must comply with. This Annual Report provides information and updates related to those conditions, for the period April 1, 2017 to March 31, 2018 (known as the reporting year).

The Project represents a unique opportunity for British Columbia and Canada. On an annual basis, at full build out, the Project will convert approximately 26 million tonnes of Canada's abundant supply of natural gas to LNG for export to global markets.

LNG Canada is committed to executing a high standard of environmental management and compliance in all its activities. LNG Canada's Compliance Management System, a component of LNG Canada's Health, Safety, Security and Environmental Management System, details processes that are in place to ensure the conditions of the CEAA Decision Statement are documented, tracked and actioned. LNG Canada has retained the services of Haisla-Triton to provide environmental monitoring services for the Project.

LNG Canada continually re-evaluates mitigation and monitoring measures throughout construction to verify that construction activities remain in compliance with regulatory requirements and conform to Project commitments.

LNG Canada has adopted best-in-class technologies, is using state-of-the art design and engineering practices that exceed legislative requirements, and is working with the most credible and advanced suppliers of LNG industry technical solutions to deliver the Project.

1. Construction Activities within the Reporting Year

During the reporting year, activities focused on environmental monitoring activities, maintaining compliance, and continued implementation of fisheries offsetting requirements for the temporary work force accommodation centre (Cedar Valley Lodge) area. Physical work on site was limited to construction of Pond 4, which provides additional offset habitat associated with FAA1.

2. Community and Aboriginal Groups Communications and Consultation

The commitment LNG Canada has made to transparent, frequent communications and consultation with Aboriginal Groups and the Kitimat community, and the input we have in turn received, has been a vital component of the Project. LNG Canada's communications and

engagement program is premised on an adaptive management approach, where comments, concerns and questions can be received and responded to. LNG Canada shares information and seeks input through a range of initiatives – website, InFocus newsletter, Facebook page, telephone line and email, a Community Advisory Group, and open houses. The above information sharing initiatives have been designed with input from stakeholders, residents and Aboriginal Groups

LNG Canada continued to adhere to the Community Feedback Process to provide an ongoing and transparent means for the community to raise questions, concerns and grievances, and have them addressed in a timely and consistent manner.

LNG Canada is committed to ensuring Aboriginal Groups that may be impacted by the Project are engaged and consulted on applicable processes, activities, permits and conditions. LNG Canada's Senior Relationship Lead for each Aboriginal Group provides a single point-of-contact. During the reporting year, Aboriginal Groups were consulted during the development of several LNG Canada plans and processes.

3. Conditions Performance

The landscape surrounding the Project contains a range of terrestrial, aquatic and wetland habitats that support populations of wildlife and fish. These ecosystems are important not only to the health of the natural landscape, but also to residents and Aboriginal Groups who rely on the environment for recreation and traditional use.

A) Fish and Amphibian Habitat and Salvage

During this reporting year, LNG Canada implemented fish and amphibian salvage activities under Fisheries Act Authorization 15-HPAC-00918 (FAA1) for Pond 4 construction.

B) Wetlands

LNG Canada's Wetland Compensation Plan has been designed for the implementation of wetland compensation measures as close to Kitimat as possible that reflect similar wetland type and functions to those lost. This Plan is currently being refined in consultation with appropriate regulatory agencies and Haisla Nation.

C) Migratory Birds

LNG Canada did not undertake any tree clearing activities during the reporting year. All activities on site took place in accordance with LNG Canada's Wildlife Management Plan and Raptor Management Plan. These Plans identify mitigations to protect migratory birds, including reducing light and noise pollution; including adhering to timing and restricted activity windows; and adhering to provincial and federal setback distances.

D) Human Health

LNG Canada is committed to managing noise and air emissions during Project activities, and has taken steps to implement mitigations as appropriate through the development and implementation of Environmental Management Plans. LNG Canada is in the process of developing post-dredge follow-up programs to verify predictions made during baseline human health risk assessment development in 2015.

E) Archaeological and Heritage Resources

LNG Canada's fieldwork conducted in 2013 and 2014, according to its BC Heritage Conservation Act Heritage Inspection Permit, identified potential areas of archaeological or cultural significance. The fieldwork identified two sites: one near the haul road has since been downgraded and the other at the north end of the LNG Loading Line has been permitted. No construction work took place in this reporting year near either of these sites.

F) Decommissioning

No decommissioning activities took place at the LNG Canada Project site during the reporting year.

G) Accidents or Malfunctions

There were no Accidents or Malfunctions at the LNG Canada Project during the reporting year.

Acronyms/Abbreviations

AIA	Archaeological Impact Assessment
BAT	Best Available Technology
BC	British Columbia
BMP	Best Management Practice
CCME	Canadian Council of Ministers of the Environment
CEAA	Canadian Environmental Assessment Agency
CAG	Community Advisory Group
CEMP	Construction Environmental Management Plan
CLISMP	Community Level Infrastructure and Services Management Plan
CMS	Compliance Management System
CRA	Commercial, Recreational or Aboriginal Fishery
CWS	Canada Wildlife Service
DFO	Fisheries and Oceans Canada
DOK	District of Kitimat
EAC	Environmental Assessment Certificate (BC)
EAO	Environmental Assessment Office (BC)
ECCC	Environment and Climate Change Canada
EM	Environmental Monitor
EMA	Emergency Management Act (BC)
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESC	Erosion and Sediment Control
EWP	Environmental Work Plan
FAA1	Fisheries Act Authorization – LNG Canada Workforce Accommodation Centre (15-HPAC-00918)
FAA2	Fisheries Act Authorization – LNG Processing Facility (16-HPAC-00220)
FAA3	Fisheries Act Authorization – Supporting Infrastructure (16-HPAC-01079)
FAA Marine	Fisheries Act Authorization – LNG Canada (15-HPAC-00585)
FLNRO	Forests, Lands and Natural Resource Operations (BC)
HCA	Heritage Conservation Act (BC)
HIP	Heritage Inspection Permit

HSSE	Health, Safety, Security and Environment
HSSE MS	HSSE Management System
ICS	Incident Command System
IEE	Integrated Engineering Environment
IFC	Issued for Construction
LNG	Liquefied Natural Gas
MAP	Marine Activities Plan
MOE	Ministry of Environment (BC)
MOH	Ministry of Health (BC)
NGO	Non-Governmental Organization
OGAA	Oil and Gas Activities Act (BC)
OGC	Oil and Gas Commission (BC)
RAP	Response Action Plan
STL	Shovel Test Location
QEP	Qualified Environmental Professional

Concordance Table

Section Topic	Description	Clause	Sub clause	Report Section
CEAA Decision Statement				
Decision on environmental effects referred to in subsection 5(1) of CEAA 2012	In accordance with paragraph 52(1)(b) of CEAA 2012, after considering the report of the EAO on the Designated Project and the implementation of mitigation measures that I consider appropriate, I determined that the Designated Project is not likely to cause significant adverse environmental effects referred to in subsection 5(2) of CEAA 2012. In accordance with subsection 53(2) of CEAA 2012, I have established the conditions below in relation to the environmental effects referred to in subsection 5(2) of CEAA 2012, with which LNG Canada Development Inc. must comply.	NA	NA	1.0
Decision on environmental effects referred to in subsection 5(1) of CEAA 2012	These conditions are established for the sole purpose of the Decision Statement issued under the Canadian Environmental Assessment Act, 2012. They do not relieve the Proponent from any obligation to comply with other legislative or other legal requirements by the federal, provincial or local governments. Nothing in this Decision Statement shall be construed as reducing, increasing, or otherwise affecting what may be required to comply with all applicable legislative or other legal requirements.	NA	NA	1.0 1.3
General Conditions	The Proponent shall, throughout all phases of the Designated Project, ensure that its actions in meeting the conditions set out in this Decision Statement are informed by the best available information and knowledge, are based on validated methods and models, are undertaken by qualified individuals, and have applied the best available economically and technologically feasible strategies.	2.1	2.1	1.1 1.2 2.0 2.1
General Conditions	The Proponent shall, where consultation is a requirement of a condition set out in this Statement: provide written notice of the opportunity for the party or parties to present their views on the subject of the consultation; <ul style="list-style-type: none"> provide sufficient information and a reasonable period of time to permit the party or parties to prepare their views; provide a full and impartial consideration of any views presented; and advise the party or parties that have provided comments on how the views and information received have been considered. 	2.2	2.2.1	4.0
General Conditions	The Proponent shall, where consultation with Aboriginal groups is a requirement of a condition set out in this Decision Statement, and prior to the initiation of consultation, communicate with each Aboriginal group on the most appropriate manner in which to satisfy the consultation requirements referred to in condition 2.2.	2.3	2.3	4.8

Section Topic	Description	Clause	Sub clause	Report Section
General Conditions	<p>The Proponent shall, where a follow-up program is a requirement of a condition set out in this Decision Statement undertake monitoring and analysis to verify the accuracy of the environmental assessment as it pertains to the condition and/or to determine the effectiveness of any mitigation measure(s);</p> <ul style="list-style-type: none"> where the results of the monitoring and analysis indicate issues with respect to the accuracy of the environmental assessment or the effectiveness of any mitigation measures that may lead to adverse environmental effects, identify the means by which it will determine whether additional mitigation measures are required, including the need for consultation with other parties in reaching that determination; and implement additional mitigation measures, as appropriate 	2.4	2.4.1 2.4.2 2.4.3 2.4.4	2.3
General Conditions	<p>The Proponent shall, from the reporting year where construction starts, submit to the Agency an annual report, including an executive summary of the annual report in both official languages. The annual report is to be submitted by the Proponent no later than June 30 following the reporting year. The Proponent shall document in the report:</p> <ul style="list-style-type: none"> implementation activities undertaken in the reporting year for each of the conditions; how it has considered and incorporated the factors set out in condition 2.1 in the implementation of the conditions set out in this Decision Statement; for conditions set out in this Decision Statement for which consultation is a requirement, how it has considered any views and information received during or as a result of the consultation; the results of the follow-up program requirements identified in conditions 3.14 , 4.2.4, 2.5.4,4.5, 5.3, 6.3.6 and 7.2; and any additional mitigation measures implemented or proposed to be implemented, as determined under condition 2.4 	2.5	2.5.1 2.5.2 2.5.3 2.5.4 2.5.5	1.4
General Conditions	<p>The Proponent shall publish on the Internet, or any similar medium, the annual report, the executive summary referred to in condition 2.5, the Wetland Compensation Plan referred to in condition 4.3, the plan to offset the loss of fish and fish habitat referred to in condition 3.11, the Archaeological and Heritage Resources Management Plan referred to in condition 8.1, the Decommissioning Plan referred to in condition 9.1, and the implementation schedule referred to in condition 11, following submission of these documents to the parties referenced in the respective conditions. The Proponent shall keep these documents publicly available for twenty-five years following the end of operation or until the end of decommissioning of the Designated Project, whichever comes first.</p>	2.6	2.6	1.4 4.3
General Conditions	<p>The Proponent shall notify the Agency in writing no later than 60 days after the day on which there is a transfer of ownership, care, control or management of the Designated Project in whole or in part.</p>	2.7	2.7	2.5

Section Topic	Description	Clause	Sub clause	Report Section
General Conditions	In the event that there is a transfer of ownership, care, control or management of the Designated Project from LNG Canada Development Inc. to another party, that party becomes the Proponent of the Designated Project and is bound by the conditions found in this Decision Statement.	2.8	2.8	2.5
Fish and Fish Habitat	The Proponent shall implement erosion control measures and sediment control measures during all phases of the Designated Project.	3.1	3.1	2.3
Fish and Fish Habitat	The Proponent shall revegetate disturbed riparian areas, using native vegetation, as soon as practicable after construction.	3.2	3.2	2.3
Fish and Fish Habitat	The Proponent shall isolate construction activities from adjacent freshwater fish habitat.	3.3	3.3	6.0 6.2
Fish and Fish Habitat	The Proponent shall salvage and relocate fish during in-water work requiring isolation of freshwater fish habitat.	3.4	3.4	6.0 6.2
Fish and Fish Habitat	The Proponent shall design the water intake for the Designated Project to avoid or reduce injury to and mortality of fish, including the risk of entrainment of eulachon larvae. The Proponent shall install the water intake that is so designed and shall monitor the operation of that intake to determine whether or not injury to and mortality of fish is avoided or reduced. Based on the monitoring results, the Proponent shall, as appropriate, modify the water intake or implement other measures to avoid or reduce injury to and mortality of fish.	3.5	3.5	6.0
Fish and Fish Habitat	The Proponent shall apply low-noise methods or sound dampening technologies to reduce adverse effects to fish from exposure to underwater noise during pile installation.	3.6	3.6	6.1
Fish and Fish Habitat	The Proponent shall, prior to the start of in-water construction activities; establish the location and timing of sensitive life stages and habitat occupancy for fish (including marine mammals) in consultation with Fisheries and Oceans Canada and Aboriginal groups; advise the Agency of that information; and shall conduct in-water construction activities during the timing windows of least risk to those life stages and habitat occupancy, unless otherwise authorized by Fisheries and Oceans Canada.	3.7	3.7	6.1
Fish and Fish Habitat	When conducting in-water construction activities outside the timing windows of least risk referred to in condition 3.7, the Proponent shall implement additional mitigation measures following consultation with Fisheries and Oceans Canada, including sediment containment when dredging and using sediment disposal methods and equipment that will limit re-suspension of sediments.	3.8	3.8	6.1
Fish and Fish Habitat	To avoid detrimental behavioral change in or injury to marine mammals, the Proponent shall establish and maintain a marine mammal exclusion zone for all construction activities where underwater noise levels are anticipated to exceed 160 decibels at a reference pressure of one micropascal. In doing so, the Proponent shall:	3.9	3.9.1 3.9.2 3.9.3	6.1

Section Topic	Description	Clause	Sub clause	Report Section
	<p>identify the construction activities that generate underwater noise levels greater than 160 decibels and the periods of time when those activities will occur;</p> <ul style="list-style-type: none"> establish the boundary of the exclusion zone for each construction activity at the distance from the activity that the underwater noise level reaches 160 decibels; employ a marine mammal observer and specify the role of that person in observing and reporting marine mammals in the exclusion zone during construction activities identified in condition 3.9.1; specify the circumstances in which construction activities identified in condition 3.9.1 must stop or not start if a marine mammal is sighted in the exclusion zone by the observer referred to in condition 3.9.3 and not re-start until the marine mammal has moved out of the exclusion zone; and specify mitigation measures, such as sound dampening technology and soft-start procedures to reduce construction noise levels in the exclusion zone. 		3.9.4 3.9.5	
Fish and Fish Habitat	LNG carriers associated with the Designated Project shall respect speed profiles applicable to the operation of the Designated Project, subject to navigational safety, to prevent or reduce the risks of collisions between LNG carriers and marine mammals and shall report any collision with marine mammals to Fisheries and Oceans Canada, and notify Aboriginal groups.	3.10	3.10	6.1
Fish and Fish Habitat	The Proponent shall mitigate impacts to fish and fish habitat and, in consultation with Fisheries and Oceans Canada, develop and implement a plan to offset the loss of fish and fish habitat associated with the carrying out of the Designated Project.	3.11	3.11	6.3
Fish and Fish Habitat	<p>For any fish habitat offsets area proposed in any offsetting plan under condition 3.11, and prior to submitting the offsetting plan to Fisheries and Oceans Canada, the Proponent shall determine whether there are adverse effects:</p> <ul style="list-style-type: none"> on migratory birds and their habitats; on terrestrial species, including amphibians and reptiles, and their habitats; on species at risk and their habitat; on the current use of lands and resources for traditional purposes by Aboriginal peoples; on navigation; from potential sources of contamination including polycyclic aromatic hydrocarbons, dioxins, furans, copper and zinc on the receiving environment. 	3.12	3.12.1 3.12.2 3.12.3 3.12.4 3.12.5 3.12.6	6.3
Fish and Fish Habitat	The Proponent shall, if there are adverse effects on any of the elements of condition 3.12, avoid or lessen those adverse effects.	3.13	3.13	6.3

Section Topic	Description	Clause	Sub clause	Report Section
Fish and Fish Habitat	In consultation with Fisheries and Oceans Canada and Aboriginal groups, the Proponent shall develop and implement a follow-up program to verify the accuracy of the environmental assessment and to determine the effectiveness of mitigation measures identified under conditions 3.1 to 3.11 and 3.13.	3.14	3.14	6.3
Fish and Fish Habitat	The Proponent shall participate in regional initiatives relating to cumulative effects monitoring and the management of marine shipping, should there be any such initiatives during the construction and operation phases of the Designated Project.	3.15	3.15	3.0
Wetlands	The Proponent shall mitigate the adverse environmental effects of the Designated Project on wetland functions that support migratory birds, species at risk or the current use of lands and resources for traditional purposes by Aboriginal people. The Proponent shall give preference to avoiding the loss of wetlands over minimizing the adverse effects on wetlands and for managing the effects on wetlands over compensating for lost or adversely affected wetlands.	4.1	4.1	7.0
Wetlands	<p>To avoid loss of wetlands or to manage adverse effects on wetlands impacted by the Designated Project footprint and adverse effects on wetland function on and for those wetlands adjacent to the Designated Project footprint, the Proponent shall:</p> <ul style="list-style-type: none"> • delineate clearing boundaries prior to the commencement of construction and respect those boundaries during construction; • maintain, where practicable, tidal flow and wildlife passage in the LNG loading line corridor between the LNG processing and storage site and the marine terminal; • manage surface water and avoid erosion or sedimentation to maintain hydrology of adjacent wetlands and protect water quality; and • conduct follow-up monitoring prior to and during construction to detect potential unanticipated loss of wetland functions and implement adjustments to mitigate loss of those wetland functions. 	4.2	4.2.1 4.2.2 4.2.3 4.2.4	7.1
Wetlands	<p>For effects on ecologically important wetlands that cannot be avoided or minimized, mitigation measures shall be set out in a Wetland Compensation Plan that shall be prepared by the Proponent in consultation with Aboriginal groups. The mitigation measures to be set out in the Wetland Compensation Plan shall include:</p> <ul style="list-style-type: none"> • implementing a 2:1 ratio of compensation area to the loss of ecologically important wetland area; • identifying sites to compensate for the lost wetlands referred to in 4.3.1, that are as close to Kitimat as possible and that reflect similar wetland types and functions to those that are lost; • a preference for wetland restoration over enhancement, and wetland enhancement over creation; and 	4.3	4.3.1 4.3.2 4.3.3 4.3.4	7.2

Section Topic	Description	Clause	Sub clause	Report Section
	<ul style="list-style-type: none"> whenever possible, using traditional plants in the enhancement or creation of the compensation sites referred to in 4.3.2 and providing access to those sites to Aboriginal people for the purposes of gathering traditional use plants. 			
Wetlands	The Proponent shall implement the wetland compensation plan within five years of the date of the start of construction	4.4	4.4	7.2
Wetlands	The Proponent shall implement a follow-up program to verify that the compensation wetland sites are fulfilling the functions of the wetlands they are replacing and shall implement corrective actions in respect of the compensation wetlands if the latter do not fulfill those functions. The follow-up program shall include monitoring of the compensatory wetland sites to verify that lost habitat is being restored at or on those sites, in year one, and in years three, five, and ten following the enhancement or creation of the compensating wetlands.	4.5	4.5	7.2
Migratory Birds	The Proponent shall carry out all phases of the Designated Project in a manner that protects and avoids harming, killing or disturbing migratory birds or destroying or taking their nests or eggs. In this regard, the Proponent shall take into account Environment Canada's Avoidance Guidelines. The Proponent's actions in applying the Avoidance Guidelines shall be in compliance with the Migratory Birds Convention Act, 1994 and with the Species at Risk Act.	5.1	5.1	8.0 8.2 8.4
Migratory Birds	<p>The Proponent shall:</p> <ul style="list-style-type: none"> restrict flaring of vented emissions to the minimum required for maintenance activities or to manage emergencies; minimize flaring during night time and during periods of bird vulnerability; and adjust operational lighting to avoid attracting migratory birds. 	5.2	5.2.1 5.2.2 5.2.3	8.1
Migratory Birds	The Proponent shall develop and implement a follow-up program to determine the effectiveness of the mitigation measures used to avoid harm to migratory birds, their eggs and nests during all phases of the Designated Project.	5.3	5.3	8.3
Migratory Birds	The Proponent shall avoid or lessen, and monitor effects on the habitat of the Marbled Murrelet (<i>Brachyramphus marmoratus</i>), a species that appears on Schedule 1 of the Species at Risk Act. The Proponent shall compensate for the loss of habitat of the Marbled Murrelet as a result of the Designated Project, taking into account Environment Canada's Operational Framework for Use of Conservation Allowances.	5.4	5.4	8.5
Human Health	The Proponent shall incorporate noise and air emission reduction measures in the design of the Designated Project, and implement noise and air emission reduction measures during all phases of the Designated Project to avoid or reduce potential effects on human health, including:	6.1	6.1.1 6.1.2 6.1.3	9.0

Section Topic	Description	Clause	Sub clause	Report Section
	<ul style="list-style-type: none"> complying with the Waste Discharge Regulation under British Columbia's Environmental Management Act for operational air emissions; applying best management practices and guidance for construction noise from the British Columbia Oil and Gas Commission's Noise Control Best Practices Guidelines; and complying with the operational noise requirement of the British Columbia Oil and Gas Commission's Liquefied Natural Gas Facility Regulation. 			
Human Health	The Proponent shall develop and implement a mechanism for receiving noise complaints, in consultation with Aboriginal groups and other parties who may be adversely affected by the noise caused by the Designated Project and during all phases of the Designated Project, and respond in a timely manner to any noise complaint received.	6.2	6.2	9.1
Human Health	<p>The Proponent shall implement measures related to marine water quality and sediment quality, including:</p> <ul style="list-style-type: none"> prior to the commencement of dredging, establishing a shellfish and groundfish tissue baseline and using it to complete a human health risk assessment for the consumption of fish; conducting an assessment of the risks and potential duration of any exceedances of Canadian Council of Ministers of the Environment's Water Quality and Interim Sediment Quality Guidelines, and British Columbia's Water Quality Guidelines and Working Sediment Quality Guidelines that could occur during dredging and other in-water construction activities, and identify mitigation measures to avoid such exceedances; implementing mitigation measures to minimize sediment dispersion during in-water construction activities, including isolation methods; conducting onsite sediment and water quality monitoring in relation to the re-suspension and bioavailability of polycyclic aromatic hydrocarbons, dioxins and furans during in-water construction activities; communicating any exceedances of the Canadian Council of Ministers of the Environment's Water Quality and Interim Sediment Quality Guidelines, and British Columbia's Water Quality Guidelines and Working Sediment Quality Guidelines to regulatory authorities in accordance with legislative requirements and to Aboriginal groups, and implementing mitigation measures identified in condition 6.3.2 to remedy those exceedances or to reduce associated risks to human health; developing and implementing a post-dredging follow-up program, in consultation with Aboriginal groups, to confirm the human health risk assessment predictions, including additional sampling of the shellfish and groundfish tissue to confirm the assessment predictions regarding the bioavailability and bioaccumulation of contaminants in fish consumed by humans. The Proponent shall communicate the results of the follow-up program to Aboriginal groups. 	6.3	6.3.1 6.3.2 6.3.3 6.3.4 6.3.5 6.3.6	9.2

Section Topic	Description	Clause	Sub clause	Report Section
Human Health	The Proponent shall, during operation, treat any effluent discharge from the facility marine outfall pipe to meet subsection 36(3) of the Fisheries Act and British Columbia's Water Quality Guidelines for the protection of marine life measured at the edge of the initial dilution zone.	6.4	6.4	9.2
Current use of lands and resources for traditional purposes	<p>The Proponent shall develop and implement, in consultation with Aboriginal groups, a communication protocol for all phases of the Designated Project. The communication protocol shall include procedures and practices for sharing information and facilitating communication between the Proponent and the Aboriginal groups and other local marine users on the following:</p> <ul style="list-style-type: none"> location and timing of Designated Project-related construction activities; location and timing of traditional activities by Aboriginal groups; safety procedures, such as navigation aids and updated navigational charts; location of areas where navigation is restricted for safety reasons; operational speed requirements under the Canada Shipping Act, 2001 or its regulations, and general schedules of the operation of LNG carriers associated with the Designated Project; ways in which to provide feedback to the Proponent on adverse effects related to navigation experienced by Aboriginal groups and other local marine users. 	7.1	7.1.1 7.1.2 7.1.3 7.1.4 7.1.5 7.1.6	10.0 10.1 10.2
Current use of lands and resources for traditional purposes	<p>The Proponent shall develop and implement, in consultation with Aboriginal groups, a follow-up program to verify the accuracy of the predictions made during the environmental assessment in relation to the effects of the wake generated by the Designated Project on the current use of lands and resources for traditional purposes by Aboriginal groups.</p> <p>The follow-up program shall include:</p> <ul style="list-style-type: none"> monitoring during the first two years of operation of the degree of wake generation by Designated Project-related vessels and of any adverse effects on harvesters caused by vessel wake attributable to Designated Project-related vessels at key harvest sites and during key harvest periods identified in consultation with Aboriginal groups; and providing the results of the follow-up program and any corrective actions taken to Aboriginal groups. 	7.2	7.2.1 7.2.2	10.0
Current use of lands and resources for traditional purposes	The Proponent shall provide Aboriginal groups with the implementation schedule, updates or revisions to the implementation schedule pursuant to condition 11 at the same time these documents are provided to the Agency.	7.3	7.3	2.2
Physical and cultural heritage and structure, site or thing of historical,	The Proponent shall, in consultation with Aboriginal groups and local historical societies, develop and implement an Archaeological and Heritage Resources Management Plan for the Designated Project prior to construction. The Archaeological and Heritage Resources Management Plan shall take into	8.1	8.1.1 8.1.2 8.1.3	10.2

Section Topic	Description	Clause	Sub clause	Report Section
archaeological, paleontological or architectural significance	<p>account British Columbia's Handbook for the Identification and Recording of Culturally Modified Trees. The Archaeological and Heritage Resources Management Plan shall include:</p> <ul style="list-style-type: none"> • a description of structures, sites or things of historical, archaeological, paleontological or architectural significance (including Culturally Modified Trees) that may be encountered by the Proponent during construction; • a description of structures, sites or things of historical, archaeological, paleontological or procedures and practices for on-site monitoring of construction activities that may affect a structure, site or thing of historical, archaeological, paleontological or architectural significance (including Culturally Modified Trees) and for the identification and removal of these resources; and • a Chance Find Protocol if a previously unidentified structure, site or thing of historical, archaeological, paleontological or architectural significance (including Culturally Modified Trees) is discovered by the Proponent or brought to the attention of the Proponent by an Aboriginal group or another party during construction. 			
Decommissioning	<p>The Proponent shall develop and submit to the Agency a Decommissioning Plan at least one year prior to the end of operation, consistent with any statutory or regulatory requirements in effect at that time. The Decommissioning Plan shall include a description of:</p> <ul style="list-style-type: none"> • any consultation undertaken during the development of the Decommissioning Plan, including any issues raised by Aboriginal groups and other parties and how they were resolved by the Proponent; • the components of the Designated Project that will be decommissioned by the Proponent; • the desired end-state objectives of the areas that will be decommissioned by the Proponent and those that will not be decommissioned; • the components of the environment that may be adversely affected by decommissioning activities or by components of the Designated Project that continue in their state at the end of operation; • how the Proponent will monitor and mitigate adverse environmental effects from decommissioning activities; • how the Proponent will conduct in-water and land-based decommissioning activities (including the location, the scheduling and sequencing of activities); • a strategy for progressive reclamation, if appropriate; and • an approach to consulting Aboriginal groups and federal and provincial authorities throughout the decommissioning phase. 	9.1	9.1.1 9.1.2 9.1.3 9.1.4 9.1.5 9.1.6 9.1.7 9.1.8	2.4

Section Topic	Description	Clause	Sub clause	Report Section
Decommissioning	<p>The Proponent shall from the reporting year in which decommissioning begins until the end of decommissioning, submit to the Agency a written report no later than June 30 of the following reporting year. The written report shall include a description of:</p> <ul style="list-style-type: none"> the decommissioning activities that took place during the reporting year; any adverse environmental effects identified by the proponent with respect to those decommissioning activities; a description of the mitigation measures that were implemented by the Proponent to mitigate or reduce those adverse effects, and consultation activities. 	9.2	9.2.1 9.2.2 9.2.3 9.2.4	2.4
Accidents or Malfunctions	<p>The Proponent shall take all reasonable measures to prevent accidents and malfunctions that may result in adverse environmental effects and shall implement the emergency response procedures and contingencies developed in relation to the Designated Project.</p>	10.1	10.1	5.0
Accidents or Malfunctions	<p>In the event of an accident or malfunction with the potential to cause adverse environmental effects, the Proponent shall:</p> <ul style="list-style-type: none"> notify relevant federal and provincial authorities, including the Agency of the occurrence as soon as possible; implement measures to minimize any adverse environmental effects associated with the occurrence as soon as possible; submit a written report to the Agency as soon as possible in the circumstances, but at the latest 30 days after the day on which the accident or malfunction took place. <p>The written report must include:</p> <ul style="list-style-type: none"> 10.2.3.1 the measures that were taken to mitigate the effects of the occurrence; 10.2.3.2 a description of any residual environmental effects, and any additional measures required to address residual environmental effects; and 10.2.3.3 if an emergency response plan was implemented, details concerning its implementation. as soon as possible, but no later than 90 days after the day on which the accident or malfunction took place, submit a written report to the Agency on the changes made to avoid a subsequent occurrence of the accident or malfunction. 	10.2	10.2.1 10.2.2 10.2.3 10.2.4	5.1
Accidents or Malfunctions	<p>The Proponent shall prepare and implement a communication strategy in consultation with Aboriginal groups that shall include:</p> <ul style="list-style-type: none"> the types of accident or malfunction requiring a notification to the respective Aboriginal groups; the manner by which Aboriginal groups shall be notified of an accident or malfunction and of any opportunities to assist in the response; and points of contact for the Proponent and for the respective Aboriginal groups. 	10.3	10.3.1 10.3.2 10.3.3	5.2

Section Topic	Description	Clause	Sub clause	Report Section
Implementation Schedule	The Proponent shall submit an implementation schedule for conditions contained in this Decision Statement to the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, at least 30 days prior to construction. The implementation schedule shall indicate the commencement and completion dates for each activity relating to conditions set out in this Decision Statement.	11.1	11.1	2.2
Implementation Schedule	The Proponent shall submit an update to this implementation schedule in writing to the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, every two years on or before June 30, until completion of the activities.	11.2	11.2	2.2
Implementation Schedule	The Proponent shall provide the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, with a revised implementation schedule if any change occurs from the initial schedule or any subsequent updates. The Proponent shall provide the revised implementation schedule at least 30 days prior to the implementation of the change.	11.3	11.3	2.2
Record Keeping	<p>The Proponent shall maintain a written record, or a record in an electronic format compatible with that used by the Agency, and retain and make available that record to the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, at a facility close to the Designated Project (local facility). The record shall include information related to the implementation of the conditions set out in this Decision Statement, and the results of all monitoring, including:</p> <ul style="list-style-type: none"> the place, date and time of any sampling, as well as techniques, methods or procedures used; the dates and the analyses that were performed; the analytical techniques, methods or procedures used in the analyses; the names of the persons who collected and analyzed each sample and documentation of any professional certifications relevant to the work performed that they might possess; and the results of the analyses. 	12.1	12.1.1 12.1.2 12.1.3 12.1.4 12.1.5	2.6
Record Keeping	The Proponent shall retain and make available upon demand to the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, the information contained in condition 12.1 at a facility close to the Designated Project (or at a location within Canada and agreed upon by the Agency, should the local facility no longer be maintained). The information shall be retained and made available throughout construction and operation, and for twenty-five years following the end of operation or until the end of decommissioning of the Designated Project, whichever comes first.	12.2	12.2	2.6

1. Introduction

LNG Canada Development Inc. (LNG Canada) is proposing to develop a liquefied natural gas (LNG) production and export terminal, in the District of Kitimat (DOK), British Columbia (BC). The LNG Canada Project (Project) is comprised of a liquefied natural gas (LNG) facility and supporting infrastructure, temporary construction-related infrastructure and facilities, and shipping facilities.

LNG Canada is committed to planning, constructing and operating the Project in a manner that respects surrounding communities and the environment.

On June 17, 2015, LNG Canada was issued a Decision Statement under Section 52(1)(b) of the Canadian Environmental Assessment Act, 2012 (“CEAA Decision Statement”), establishing conditions to which LNG Canada must comply. This annual report serves to provide information and updates related to those conditions.

1.1. Project Overview

The Project will be located on approximately 400 hectares of land within Kitimat, on land zoned for industrial use. At full build out, the LNG Canada facility will be comprised of a variety of buildings and equipment used to process and store LNG. Supporting infrastructure will also be in place, including power supply, water supply, and waste collection and treatment facilities (refer to Appendix I: LNG Canada Site Map).

The Project is located in the traditional territory of the Haisla Nation and the associated Operational shipping route passes through the traditional territories of Haisla Nation, Gitga’at First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, Lax Kw’alaams First Nation and Metlakatla First Nation.

Initially, the project will consist of two LNG processing units referred to as “trains,” each with the capacity to produce at least and approximately 6.5 million tonnes per annum of LNG annually, with an option to expand the project in the future to four trains. The Project is expected to have a life of at least 40 years.

To facilitate construction, existing and temporary facilities will be utilized. Cedar Valley Lodge, LNG Canada’s temporary workforce accommodation, is anticipated to house construction staff on approximately 64 hectares of land immediately adjacent to the future site of the LNG processing and storage site.

1.2. HSSE, Social Performance and Compliance Principles

LNG Canada is committed to a high standard of environmental management and compliance through all phases of the Project.

LNG Canada's Environmental Philosophy is to protect the environment by minimizing potential impacts, including minimizing greenhouse gas emissions from the proposed facility. LNG Canada commits to compliance with existing regulations and requirements, and to align environmental, community and social performance commitments into engineering design and construction decisions.

LNG Canada has implemented a Project-specific environmental management program that includes a series of environmental management plans to protect the environment, personnel and the public. LNG Canada commits to publicly reporting on environmental and safety performance.

LNG Canada is committed to ensuring that processes in place to meet conditions of the CEAA Decision Statement are informed by the best available technology (BAT) and based on validated methods and models. Commitments to BAT are demonstrated in several ways through design and execution of the Project. Examples include:

- Use of existing infrastructure, such as BC Hydro supplied grid with hydroelectric power output to ensure the lowest feasible greenhouse gas footprint;
- Shell's Dual-Mixed Refrigerant (DMR) technology process in combination with high efficiency General Electric aero derivative gas turbines (LMS 100)
- Use of existing industrial development area for the LNG Plant site and refurbishing existing harbor infrastructure where feasible during marine construction;
- Adoption of best-in-class LNG Plant simplicity, utilizing the lowest equipment count per LNG capacity;
- Implementation of mitigations and associated sampling programs that prescribe to the most up-to-date standards and methods recognized by government and industry;
- Implementation of an Integrated Engineering Environment (IEE) for plant design to minimize process safety risks throughout the life of the Project; and
- Adoption of state-of-the-art design and engineering practices that exceed requirements laid out in legislation.

1.3. HSSE Management System

The LNG Canada Health, Safety, Security and Environmental Management System (HSSE MS) provides a systematic HSSE structure composed of a framework, policies, standards, guidelines, premises, specific plans, procedures and processes. The HSSE MS:

- describes the Organization, Activities, Processes, Controls and Procedures for identifying and managing HSSE & SP risks for the Project;
- demonstrates how HSSE & SP will be managed, reviewed and continuously improved;
- demonstrates how the Federal, Provincial and Local regulatory, contractual and LNG Canada HSSE & SP requirements are being met and incorporated into systems, plans and procedures; and
- identifies the necessary actions to set up and implement the HSSE MS.

The LNG Canada Compliance Management System (CMS), a component of the HSSE MS, details processes in place at LNG Canada to ensure that conditions of the LNG Canada CEAA Decision Statement, as well as requirements in LNG Canada permits and approvals, are documented, tracked and actioned.

1.4. Report Requirements

This CEAA Annual Report demonstrates the commitment that LNG Canada has made to responsible health, safety, environment and social performance throughout the life of the Project. It provides an overview of the progress on meeting conditions outlined in CEAA Decision Statement.

As per the CEAA Decision Statement, for the purposes of this report, the reporting year is defined as April 1, 2017 to March 31, 2018.

The LNG Canada CEAA Annual Report can be accessed at the LNG Canada website (www.lngcanada.ca).

2. Construction Update

2.1. Activities within the Reporting Year

During the reporting year, activities were focused on ongoing environmental monitoring, with minimal construction taking place. Activities in the reporting year April 1, 2017 – March 31, 2018 include:

- Water management throughout the Project site, including installation and management of erosion and sediment controls
- Wildlife management activities, including wildlife monitoring; den surveys prior to tree clearing activities; and wildlife observation tracking
- Implementation of best management practices for migratory birds including; avoidance, work scheduling, bird nest surveys prior to tree clearing activities, and established buffers
- Management of fish and fish habitat, including installation of fish exclusion fencing and associated fish and amphibian salvage
- Facilitation of 7 formal regulatory inspections and tours by various agencies, often in conjunction with Haisla Nation, including the OGC and CEEA
- Site access improvements, including construction of temporary access roads, and associated survey work
- Construction of additional fisheries offsetting habitat associated with FAA1
- Completion of riparian planting within riparian zones associated with FAA1 offsets
- FAA1 fish habitat effectiveness Monitoring

On July 11, 2016, LNG Canada announced a delay in Final Investment Decision (FID), which was originally scheduled for late 2016. Site activities within the reporting year have focused on environmental monitoring activities, maintaining compliance, and continued development of fisheries offsetting requirements.

This Annual Report provides further information on the processes and mitigations put in place by LNG Canada to ensure that Project activities are carried out in accordance with regulatory conditions.

2.2. Implementation Schedule

LNG Canada has developed a Project Implementation Schedule that outlines commencement and completion dates for each condition in the Decision Statement. The Implementation Schedule is

publicly available on the LNG Canada website (www.lngcanada.ca) and is available for reference as Appendix III.

The LNG Canada Project Implementation Schedule was first submitted to CEAA and Aboriginal Groups on September 15, 2015, more than 30 days prior to construction activities commencing. Subsequent updates to the Implementation Schedule were submitted to CEAA and Aboriginal Groups throughout 2016.

The first biennial Implementation Schedule update was submitted to CEAA in June 2017 as per CEAA Decision Statement Condition 11.2 “The Proponent shall submit an update to this implementation schedule in writing to the Agency, or anyone designated pursuant to section 89 of the Canadian Environmental Assessment Act, 2012, every two years on or before June 30, until completion of the activities.”

2.3. Environmental Management Plans

The LNG Canada *Construction Environmental Management Plan* (CEMP) is the overarching framework that encompasses LNG Canada’s terrestrial environmental management program, and includes all mitigation measures, best management practices, monitoring and reporting requirements associated with each Environmental Management Plan (EMP) developed for the project. LNG Canada’s CEMP has been developed in consideration of community commitments and environmental best practices, and with input from regulators, Aboriginal Groups and stakeholders.

The CEMP also includes EMPs to manage environmental aspects and impacts related to this phase of Project construction, including but not limited to topics such as air quality, light and noise management, vegetation and invasive plant management, surface water and wastewater management, wildlife, marine and fish habitat resources, management of archeological and heritage resources, waste management and erosion and sediment control.

The CEMP and EMPs are implemented using an adaptive management approach based on continual improvement principles.

The Marine Activities Plan (MAP) is the overarching framework that encompasses LNG Canada’s marine environmental management program, and includes general marine mitigation measures, best management practices, monitoring and reporting requirements. LNG Canada’s MAP has been developed in consideration of community commitments and environmental best practices, and with input from regulators, Aboriginal Groups and stakeholders.

The MAP also includes supporting marine EMPs to manage environmental aspects and impacts related to this phase of Project construction, including the Marine Access Traffic Management Plan (MATMP), Marine Monitoring Plan (MMP), and Dredge Environmental Management Plan (DEMP).

The MAP and supporting marine EMPs are implemented using an adaptive management approach based on continual improvement principles.

To support implementation of EMP requirements in the field, contractors are required to prepare Environmental Work Plans (EWPs) for defined scopes of work, including scopes of work related to environmentally sensitive areas. EWPs describe specific work activities and the associated mitigations that need to be implemented to ensure the environment is protected, while completing the work activities. Each EWP includes, but is not limited to:

- Activity location, including site boundaries or external property considerations;
- Detailed description of scope of work addressed by the EWP, including schedule and duration of construction activities, as well as equipment utilization;
- Baseline environmental sensitivities adjacent to the defined activity location (e.g. fish habitat, riparian habitat, rare plants or plant communities, wildlife values, known or potential archaeological values, sensitive receptors, water quality sensitivities, areas of suspected contamination, etc.); and
- Permits, approvals and consents relevant to proposed work, and key terms and conditions and timing constraints.

EWPs are used to support continual improvement by defining monitoring and inspection requirements, outlined in detail in Section 2.3.1.

2.3.1. Monitoring

LNG Canada is continually re-evaluating mitigation and monitoring measures throughout the construction phase to ensure that activities are in compliance with regulatory requirements and consistent with Project commitments.

LNG Canada has retained the services of Haisla-Triton, a joint-venture between Haisla Nation and Triton Environmental, to provide Environmental Monitoring (EM) services for the Project, including the services of a qualified environmental professional (QEP) to monitor construction activities. EMs have been given the authority to stop work in cases where mitigations are not sufficient and in cases of non-compliance. Environmental Monitoring activities are also undertaken by qualified LNG Canada environmental professionals and contractors. LNG Canada contractors are required to complete weekly regular worksite inspections and assess effectiveness of housekeeping, erosion and sediment controls, discharge water quality parameters and presence/absence of invasive plants while work is being undertaken.

LNG Canada receives reports from the EMs and QEP on site on a regular basis. Evaluation of mitigation and monitoring measures takes place a variety of ways, including but not limited to, self-

audit and self-inspection by LNG Canada personnel and contractors, inspections led by regulatory agencies, and opportunities for improvement arising from near miss and other incidents.

Corrective or preventative actions may be identified through any of the above processes, resulting in amendments to individual EMPs or EWPs and implementation of additional mitigations as required.

2.3.2. Erosion and Sedimentation Control

Erosion and sediment controls (ESC) are installed to isolate all construction activities from adjacent freshwater fish habitat and protect surrounding vegetation. A variety of erosion control techniques are implemented as needed, including but not limited to silt fencing, straw wattles, riprap and contouring.

The LNG Canada Sediment and Erosion Control EMP outlines the environmental management requirements related to ESC during early works, construction and pre-commissioning. Among other things, the Sediment and Erosion Control EMP:

- Identifies regulatory requirements, stakeholder and project commitments related to erosion and sediment control and protection of surface water;
- Identifies project activities and potential environmental effects associated with ESC; and
- Identifies mitigations required to prevent erosion and control sediment during construction activities.

The *Sediment and Erosion Control EMP* provides information on best practices and standard methods for ESC. The most significant mitigation measures for ESC include minimizing cleared/disturbed areas, installation of silt and sediment fences, construction of settling ponds, tree and vegetation preservation, and installation of lined channels.

To ensure effectiveness of ESC mitigations, water quality downstream of construction activities is monitored to ensure that sediment is prevented from entering surface water. Weekly inspections of sediment and erosion control measures, fish and wildlife protection measures and dust mitigations take place. If downstream water quality is impacted by sediment, all construction activities upstream are stopped until the situation is assessed and additional ESC mitigations are installed, if required.

During the reporting year, LNG Canada continued to make improvements to ESC mitigations at the Project site, including but not limited to maintaining, replacing and removing silt fence as required; and directing water flow away from areas of instability, including slopes and waterbodies

2.3.3. Vegetation Management

The LNG Canada Vegetation Management Plan outlines mitigation measures pertaining to red and blue-listed plants and communities. Construction activities undertaken in the reporting year did not impact red and blue-listed plants and communities.

LNG Canada has completed all aquatic re-vegetation planting as part of the habitat offsetting requirements defined by *Fisheries Act Authorization – LNG Canada Workforce Accommodation Centre (15-HPAC-00918)* (FAA1). LNG Canada will be assessing aquatic vegetation survival and will infill plant as required. Remaining riparian re-vegetation planting was completed in fall 2017.

Tree clearing activities under FAA1 began in early March 2016. No re-vegetation will take place in the area of Cedar Valley Lodge, as the area is designated for surface development. The exception to this is for riparian planting required to support construction of the FAA1 offsetting measures.

The extent of re-vegetation related to the Wetland Compensation Plan is currently being determined (Refer to Section 7.2).

2.4. Decommissioning

No decommissioning activities took place during the reporting year. LNG Canada will develop a Decommissioning Plan in consultation with Aboriginal Groups that will be submitted to CEAA at least one year prior to the end of operation and at designated intervals during the decommissioning process. Contents of the Decommissioning Plan will include, but are not limited to the following:

- Project components that will be decommissioned, desired end-state objectives of the areas that will be decommissioned and description of activities to be undertaken;
- Potential adverse environmental impact from decommissioning activities or by components that continue in their state at the end of operation and how adverse environmental effects will be monitored and mitigated
- An approach to consulting Aboriginal groups and federal and provincial authorities throughout the decommissioning phase.

2.5. Transfer of Ownership

No transfer of ownership took place during the reporting year. LNG Canada will notify CEAA no later than 60 days after a transfer of ownership, care, control or management of the Designated Project as per *CEAA Decision Statement Condition 2.7* and *CEAA Decision Statement Condition 2.8*.

2.6. Records Management

Records related to the implementation of the Conditions outlined in the LNG Canada *CEAA Decision Statement* are maintained electronically as part of the LNG Canada CMS. Records are readily available, and include, but are not limited to the following:

- Records of mitigation and environmental program monitoring (e.g. surface water sampling results, site inspection results, waste disposal, etc.)

- Records of fish and amphibian salvage activities, processes and results;
- Records of all consultation and notification to regulatory agencies, Aboriginal Groups and external stakeholders
- Incident reporting and investigation documentation.

3. Regional Participation and Cooperation

LNG Canada is committed to participating in regional initiatives related to number of topics, including cumulative effects monitoring and management of marine activities, as opportunities become available.

During the reporting year, LNG Canada continued participation in the BC Ministry of Environment (MOE) Water Quality Objectives Development for the Kitimat River and Arm Stakeholder Group (Stakeholder Group).

The Stakeholder Group is comprised of government and industry partners, including representation from the MOE, FLNRO, Haisla Nation, industry players, local government, non-governmental organizations (NGOs) and residents of the Kitimat community. The purpose of the Stakeholder Group is to characterize current water quality conditions for the Kitimat River and tributaries, identify legacy issues and assess potential for cumulative impacts related to water quality resulting from development in the Kitimat area. LNG Canada continued to provide water quality data in support of the Stakeholder Group focus areas, until May of 2017.

In addition to partnerships related to cumulative effects monitoring, LNG Canada will continue to seek opportunities to consult with regional groups on development of policies and mitigations as appropriate.

4. Communication and Consultation

LNG Canada undertakes a range of initiatives to ensure the community and Aboriginal Groups receive up-to-date information about the Project, and have an opportunity to ask questions and provide feedback. These initiatives include advertising, web postings, Facebook, open houses, the Community Feedback Process and in-person meetings.

4.1. Public Consultation

During the reporting year, LNG Canada consulted with public audiences on a range of topics about the Project, including project plans and permits. Consultation with local municipalities and departments, agencies, interested residents, stakeholders and the Community Advisory Group was undertaken.

Topics included in public consultation in the reporting year include, but are not limited to:

- Engineering Procurement and Construction (EPC) Request for Proposal (RFP) & Contractor Selection
- OGC Amendment
- OGC Facility Permit Extension
- Removal of the Methanol Terminal
- Social Investment Programs
- Disposal at Sea Variance Permit

In addition to in-person meetings and workshops, LNG Canada held the following community sessions with the objective to share information and collect feedback:

- May 29, 2017 – Open house focused on ensuring the community understood that LNG Canada is still a viable project and to speak to the Social Investments LNG Canada is contributing towards within the local community.
- October 14, 2017 – Open house focused on ensuring the community understood LNG Canada is still a viable project and explain the project plan for removing the Methanol Terminal at site.
- November 14 & 15, 2017 – Terrace and Kitimat Chamber of Commerce sessions with local businesses. Sessions collected feedback from local businesses regarding local opportunities and provided an educational component on sales strategies to build your business.

- February 26, 2018 – Open house focused on ensuring the community understood LNG Canada is still a viable project, with a focus on project timelines as well as the status of the EPC RFP process
- February 27 and 28, 2018 – Terrace and Kitimat Chamber of Commerce sessions with local businesses. Sessions collected feedback from local businesses regarding local opportunities and provided an educational component on sales strategies to build your business.

4.2. Notification of Consultation

LNG Canada ensures that opportunities to learn about project updates and provide feedback, including about comment periods associated with permit and approval applications, are adequately communicated to the public, to maximize public participation and input.

During the reporting year, notification of consultation and public comment periods was generally provided through local newspaper advertisements, on the LNG Canada website and Facebook page, billboards, required Gazette advertisements, and through other forms of notification.

4.3. LNG Canada Website

The LNG Canada Website provides information on the Project and allows LNG Canada to communicate significant project events and milestones to the public via the Facebook feed which is seen on the website. The website includes information on LNG Canada's environmental programs, including but not limited to, the CEAA Implementation Plan, Wetland Compensation Plan, Fish Habitat Management Plan, and the Archeological and Heritage Resources Management Plan. The CEAA Annual Report and any supporting documentation will also be made available via the website.

4.4. InFocus Magazine

InFocus magazine, LNG Canada's newsletter, is distributed via Canada Post to the Kitimat, Thornhill and Terrace communities. InFocus provides information about LNG Canada's activities, upcoming events and opportunities to provide feedback. In addition to the LNG Canada InFocus magazine, advertisements are regularly placed in local newspapers to provide project updates, including site activities and permitting processes, and to advertise opportunities for feedback.

4.5. Social Media

In early 2016, LNG Canada launched its official Facebook community page. The purpose of the LNG Canada page is to engage with communities and share information on LNG Canada operations, events, and to provide the public with project updates and notifications. The page is monitored during regular business hours Monday to Friday in the Pacific Standard Time Zone.

4.6. Community Advisory Group

In 2014, the LNG Canada Community Advisory Group (CAG) was established to ensure that community interests are represented and considered as the project progresses. The CAG is comprised of a diverse group of 12 community members, who share their local knowledge to assist LNG Canada to make informed decisions about the Project, and who in turn share information about the Project with others in the community. CAG members act as Project subject matter experts in the community, and provide a conduit between LNG Canada and the community about the Project, including advising what LNG Canada can do to improve performance and community relations.

4.7. Community Feedback Process

LNG Canada formally developed its Community Feedback Process to provide an open and transparent means for the community to raise questions and have them addressed in a timely and consistent manner.

LNG Canada has a designated Community Feedback Focal, who actively monitors, tracks and responds to all feedback and concerns from the community. The Community Feedback Process is staffed and monitored during regular business hours, and all incoming community engagements are acknowledged within 48 hours.

Community feedback and grievances can be provided a variety of ways, including:

- Local (+1 250 639 3229) and toll free (+1 855 248 3631) telephone numbers
- Email address (feedback@lngcanada.ca)
- In person via any face-to-face setting with LNG Canada employees or contractors.

Implementation of the Community Feedback Process is ongoing and is communicated with stakeholders and Aboriginal Groups via several forums, including advertisements in local newspapers, the LNG Canada website, in-person meetings and Facebook. Additionally, magnets continue to be distributed throughout the community educating community members on how to contact LNG Canada.

All complaints and concerns, and associated responses from LNG Canada, are documented within the CMS processes.

4.8. Aboriginal Group Consultation

LNG Canada continues to engage in consultation with Aboriginal Groups regarding Project activities that may potentially impact Aboriginal Rights and interests. In addition, LNG Canada continues to undertake a range of initiatives to ensure that Aboriginal Groups receive up-to-date information about the Project, and have an opportunity to ask questions and provide feedback. The Senior Relationship

Lead for each Aboriginal Group provides continued single point of contact for all methods of communication (e.g. letter, email, phone, face to face, etc.).

LNG Canada continues to implement the BC EAO approved Aboriginal Consultation Plan (August 2013), which describes the processes and various methods used to engage and consult with Aboriginal Groups throughout the environmental assessment, including ongoing engagement post-EAC. Underpinning the various consultation tools that are described in the Aboriginal Consultation Plan are the Senior Aboriginal Consultation and Relationship Leads for each Aboriginal Group, who provide continuity of communications and a focal contact for all consultation that is related to the Project. Methods of engagement used to-date include, but are not limited to, face-to-face meetings, e-mails, phone calls, letter communications, community meetings, site-visits, quarterly project update meetings, and other methods that may be preferred or requested by individual Aboriginal Groups through the consultation process. Each of these engagement tools provides an opportunity for ongoing information sharing and feedback regarding the Project. Engagements related to specific conditions are described under those sections of the report.

4.9. Environmental Management Plan Consultation

In May 2015, LNG Canada began engagement with Aboriginal Groups on the development of the CEMP and associated topic specific environmental management plans (EMPs), including:

- CEMP
- Air Quality Management Plan
- Noise Management Plan
- Traffic Management Plan
- Fish Management and Monitoring Plan
- Vegetation Management Plan
- Invasive Plant Management Plan
- Wetland Compensation Plan
- Surface Water Management Plan (Construction)
- Wildlife Management Plan

During the current reporting year of April 1, 2017 – March 31, 2018, LNG Canada began development of marine EMPs in two phases, along with supporting information, including:

- Marine Activities Plan (MAP)

- Marine Access Traffic Management Plan (MATMP)
- Dredge Environmental Management Plan (DEMP)
- Marine Monitoring Plan (MMP)
- Strategy for Communicating Accidents and Malfunctions (Construction)

In October 2017, LNG Canada initiated consultation with Aboriginal Groups and regulatory agencies on the development of the Phase I Marine EMPs (MAP and MATMP). The consultation included a series of in-person engagements throughout October and November of 2017 to discuss the content of the Phase I and Phase II marine plans. Aboriginal Groups and regulatory agencies were asked to provide any written comments on the EMPs to LNG Canada, which were incorporated into the plans as appropriate before submission to the BC EAO for approval. The MAP and MATMP were approved by EAO on February 15, 2018.

In February 2018, LNG Canada initiated consultation with regulatory agencies and Aboriginal Groups on the Phase II marine EMPs, the MMP and the DEMP. The consultation included a series of in-person engagements through February and March of 2018 to discuss the content of the Phase II marine plans. Aboriginal Groups and regulatory agencies provided written comments on the MMP and DEMP throughout March and April of 2018. These comments were considered and incorporated into the final LNG Canada MMP and DEMP, which were submitted to the EAO for Approval on May 31, 2018.

LNG Canada continues to engage with regulatory agencies and Aboriginal Groups and provide updates on the development and implementation of management plans, through information sharing and formal reporting processes. The CEMP, MAP and supporting EMPs will be continually reviewed and revised as appropriate as part of LNG Canada's approach to adaptive management.

5. Emergency Preparedness and Response

Unplanned events could arise from accidents or malfunctions associated with Project activities, resulting in impacts to environmental, social, health, heritage or economic values.

LNG Canada has identified scenarios for potential accidents or malfunctions in the CEAA Application ("Application"). The Application considered the likelihood and consequence of the occurrence, and considered scenarios for each of the potential accidents or malfunctions, according to the likelihood of the scenario arising and the potential consequence or severity of the scenario arising.

Accidents and malfunctions as defined in the Environmental Assessment application are summarized in Table 5-1: Accidents and Malfunctions.

Table 5-1: Accidents and Malfunctions

Accident or Malfunction Scenario	Applicability to Reporting Year
Spills of hazardous materials (not including LNG)	Applicable to construction and reporting year
Loss of containment of LNG at the LNG processing and storage site	Not applicable to construction
Emergency LNG facility shutdown	Not applicable to construction
Explosion and Fire	Applicable to construction and reporting year
Marine vessel grounding and collisions, including collisions with marine mammals and loss of cargo	Not applicable to reporting year

Loss of containment of LNG emergency LNG shutdown and explosion and fire are not applicable to the construction phase of the Project as defined in the Application, as there is no LNG on site.

The most likely scenario is a spill of relatively small amounts of lubricating oils, fuels or other equipment fluids, which may occur through refueling or leaks from machinery or valves. Such spills are typically localized, limited to the required containment areas and the bermed Project footprint, and readily cleaned up by onsite crews using standard equipment and materials.

In early 2018, LNG Canada developed the LNG Canada Strategy for Communicating Accidents or Malfunctions (Construction), in consultation with Aboriginal Groups, as required by CEEA Decision Statement Condition 10.3. The Strategy outlines the process for notifying Aboriginal Groups, as well as contact information for reporting. Reportable scenarios and criteria are outlined in the Strategy for spills, explosion, fire and vessel collisions.

No accidents or malfunctions took place during the reporting year.

5.1. Emergency Response and Notification

LNG Canada emergency procedures are in place to ensure timely and effective decision making during the critical period during and following an emergency. The LNG Canada Emergency response framework contains a series of inter-related documents and manuals that outline the tools (plans, procedures and processes) and reference materials required to facilitate a prompt, safe, efficient and effectively managed response to all incidents resulting from LNG Canada construction regardless of size or complexity.

These incident management procedures are detailed in the Project's Emergency Response Plans (ERPs). LNG Canada subscribes to the principles and processes outlined in the Incident Command System (ICS) structure.

The Core ERP is the foundation document of the LNG Canada emergency response process. The Core ERP sets the standards for emergency response and includes, but is not limited to the LNG

Canada commitment to health, safety and the environment; description of ICS; roles, responsibilities; requirements and frequency of training and exercises; and initial response actions and notification requirements.

A site-specific emergency response plan has been developed for construction activities, which contains detailed information related to emergency response resources, notification requirements and modes of emergency communication.

Response Action Plans (RAPs) for the most probable emergency scenarios are an integral part of the Construction ERP. The Construction ERP contains detailed information to support incident response including information on emergency response resources, notification requirements and modes of emergency communication.

LNG Canada staff and contractors are trained to immediately respond to all spills by controlling and containing the release. Adequate spill response equipment is available on site to respond to *Most Likely* spill scenarios, and contractors are required to have adequate spill capabilities related to their scope of work and risk. LNG Canada ensures that spill supplies are available in proximity to work being done.

LNG Canada staff and contractors are required to report all incidents, including spills, to their supervisor as soon as reasonably practicable. Incident notification is escalated through the LNG Canada organization, and external stakeholder and regulatory notifications are completed.

All spill and incident reporting is conducted according to requirements under the Emergency Management Act (EMA), the Oil and Gas Activities Act (OGAA) and CEAA. If an incident is deemed an *Accident or Malfunction* (as per Section 5.0), LNG Canada will notify relevant federal and provincial authorities, and Aboriginal Groups, as soon as possible.

All regulatory reportable spills and environmental incidents are documented. High-risk incidents will be investigated to determine root and contributing causes, and identify corrective actions to prevent recurrence.

5.2. Communication Strategy

In early 2018, LNG Canada developed the LNG Canada Strategy for Communicating Accidents or Malfunctions (Construction), in consultation with Aboriginal Groups, as required by CEAA Decision Statement Condition 10.3. The Strategy outlines the process for notifying Aboriginal Groups, as well as contact information for reporting. Reportable scenarios and criteria are outlined in the Strategy for spills, explosion, fire and vessel collisions.

6. Fish and Fish Habitat

The landscape surrounding the Project contains a range of terrestrial, aquatic and wetland habitats that support populations of wildlife and fish. These ecosystems are important not only to the health of the natural landscape, but also to residents who rely on the environment for recreation and traditional use.

Several plans have been developed in consultation with regulatory agencies and potentially affected Aboriginal Groups to mitigate any impacts to fish and fish habitat.

The LNG Canada *Surface Water Quality Management Plan* outlines mitigation measures pertaining to water quality and aquatic habitat that are implemented during construction. At a minimum, LNG Canada will:

- Minimize disturbed areas and stripping of vegetation and soils, where practicable, and maintain as much of the natural vegetation cover as possible
- Install erosion controls to prevent erosion and install detention ponds and other runoff management controls to prevent sediment migration to surface water bodies
- Ensure all discharges from the construction site meet regulatory requirements, including the *Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life* and the *BC Approved Water Quality Guidelines*
- Ensure all construction equipment is mechanically sound to avoid leaks of oil, gasoline, hydraulic fluids, grease and other substances
- Ensure all diversions of water from excavations are controlled, and that they do not enter watercourses unless testing is completed and all surface water criteria are met

Associated EMPs exist to support the *Surface Water Quality Management Plan*, including but not limited to the *Sediment and Erosion Control Plan* (refer to Section 2.3.2 for more information) and the *Fish Habitat Management Plan* (refer to Section 6.2 for more information).

Mitigation of impacts to fish and fish habitat are routinely considered during the design of the LNG Canada Project. The main water intake facility will be protected to prevent fish from entering the intake. The location of the water intake will also reuse existing infrastructure to minimize construction in the river to the extent practicable.

6.1. Marine Works

No construction in the marine environment took place during the reporting year.

During the reporting year, LNG Canada started development on the required EMPs for marine construction work. The Marine Activities Plan (MAP) is the overarching framework that encompasses LNG Canada's marine environmental management program, and includes general marine mitigation measures, best management practices, monitoring and reporting requirements. LNG Canada's MAP has been developed in consideration of community commitments and environmental best practices, and with input from regulators, Aboriginal Groups and stakeholders.

The MAP also includes supporting marine EMPs to manage environmental aspects and impacts related to this phase of Project construction, including the Marine Access Traffic Management Plan (MATMP), Marine Monitoring Plan (MMP), and Dredge Environmental Management Plan (DEMP). The MAP and supporting marine EMPs are implemented using an adaptive management approach based on continual improvement principles.

The MAP and MATMP are currently approved for use by EAO. The MMP and DEMP continue to be developed and will be approved by EAO prior to construction in the marine environment.

6.1.1. In Water Construction

Marine EMPs have been developed in consultation with Aboriginal Groups and regulatory agencies as outlined in Section 4.9 and 6.1.

The Marine EMPs address environmental mitigations and monitoring requirements for marine in-water construction, including but not limited to mitigations related to water quality, sediment quality, underwater acoustics, marine mammal observation and management, and management of dredgeate for disposal onshore and at sea.

6.1.2. Marine Mammals

LNG Canada will implement a marine mammal monitoring program during all in-water marine works, as outlined in the MMP. The program includes a number of mitigations to manage impacts to marine mammals during construction, including but not limited to:

- Marine Mammal Observers (MMOs) stationed at various locations throughout the Project site to maintain line of sight in the Kitimat Harbour
- Implementation of a Marine Mammal Exclusion Zone (MMEZ) for in-water works, with the radius of the exclusion zone dependent on the risk of marine mammal injury or behavior change
- Stop work requirements when marine mammals are observed in the defined MMEZ

Details of the MMO Program and the Underwater Acoustics Monitoring Program are detailed in the LNG Canada MMP.

6.2. Fish and Amphibian Habitat

During construction activities, LNG Canada is committed to avoiding and mitigating impacts to fish and fish habitat. The LNG Canada *Fish Habitat Management Plan* outlines requirements to protect freshwater fish habitat at the Project site during construction.

The *Fish Habitat Management Plan* identifies regulatory requirements, stakeholder and Project commitments related to fish habitat management; identifies project activities and environmental effects associated with freshwater fish habitat; and outlines measures to avoid or mitigate impacts to fish and fish habitat.

FAA1 provides LNG Canada with authorization to construct Cedar Valley Lodge, which includes infilling of Beaver Creek wetland and off-channel watercourse habitats and clearing of riparian vegetation in and around said habitats. Specifically, the authorization allows for destruction of 27,082 m² of Beaver Creek wetland and off channel aquatic habitat and associated riparian vegetation from grubbing, clearing, excavation and infilling.

Although the majority of fish habitat offsetting associated with FAA1 was completed in 2016, a small pond (Pond 4) was constructed in summer 2017 to provide additional fish habitat in the Cedar Valley Lodge area.

During construction activities, LNG Canada ensures that mobilization of sediment is controlled as per Section 2.3.2 of this report. Proper instream construction techniques and supervision are adhered to, including maintenance of fish passage through proper design and installation of all culverts and bridges. Timing of water withdrawals is undertaken in accordance with approved species timing windows and those requirements outlined in FAA1.

On October 20, 2017, LNG Canada received Fisheries Act Authorization 16-HPAC-00220 (FAA2) for the LNG Canada Facility. FAA2 provides LNG Canada with authorization to construct the LNG Facility, which includes the diversion of Beaver Creek, Anderson Creek and Kitimat River Side Channel. Specifically, the authorization allows for:

- Clearing, grubbing, infilling and excavation of 216,580m² fish habitat within and adjacent to Anderson Creek, Beaver Creek, Moore Creek, Kitimat River estuary and the Kitimat River Side Channel; and
- Dewatering of 2,403m² channel (K3) connecting the Kitimat River Side Channel to the Kitimat River.

No construction work has taken place under FAA2.

On January 19, 2018, LNG Canada received Fisheries Act Authorization 16-HPAC-01079 (FAA3) for the LNG Canada Supporting Infrastructure. FAA3 provides LNG Canada with authorization to construct supporting infrastructure for the facility such as the loading line. FAA3 includes the diversion of off channel habitat of Moore Creek and destruction of off channel habitat. Specifically, the authorization allows for

- Destruction of 4357m² instream fish habitat in tributary to Moore Creek; and
- Destruction of 1324m² of wetland and off-channel habitat in a tributary to Beaver Creek.

6.2.1. Fish Salvage and Relocation

During the reporting year, fish salvage and relocation occurred during the construction of Pond 4 associated with FAA1. During salvage activities, the pre-existing Channel 3 habitat was isolated and all fish were moved from this habitat and relocated into the adjacent FAA1 offsetting habitat.

6.2.2. Amphibian Salvage and Relocation

During the reporting year, amphibian salvage and relocation occurred during the construction of Pond 4 associated with FAA1. During salvage activities, the pre-existing Channel 3 habitat was isolated and all amphibians were moved from this habitat and relocated into the adjacent FAA1 offsetting habitat.

6.2.3. Fish Inventory Sampling

In support of FAA2 and FAA3 permitting processes, fish inventory assessments took place at various locations at the LNG Canada Project site during the reporting year. The inventory assessments were conducted by qualified environmental professionals and provided additional baseline fish population and utilization information for the Project site.

6.3. Habitat Offsetting Plans

LNG Canada is committed to offsetting Project related impacts to fish and fish habitat that contribute to the sustainability and ongoing productivity of Commercial, Recreational or Aboriginal Fishery (CRA) fisheries by increasing the productive capacity of freshwater and estuarine habitats in the Kitimat River watershed and estuary.

In consultation with DFO, FLNRO, and affected Aboriginal Groups, a Habitat Offsetting Plan has been developed for the Cedar Valley Lodge area, LNG Canada Facility, Supporting Infrastructure and the marine environment.

Key considerations when developing the Habitat Offsetting Plans included the habitat restoration priorities identified by Haisla Nation and other stakeholders via the Lower Kitimat Watershed Planning initiative, as well as fisheries management objectives identified in DFO's Integrated Fisheries Management Plans.

LNG Canada has applied the following priorities in developing the Habitat Offsetting Plans:

1. In-kind habitat in the immediate vicinity of affected habitats, benefiting the affected fish species and life stages
2. Out-of-kind habitat in the immediate vicinity of affected habitats, benefiting the affected fish species and life stages
3. In-kind habitat in the same region as affected habitats (i.e. Kitimat River system, Kitimat Arm), benefiting the affected fish species and life stages

There are no identified adverse effects on potential contamination resulting from the Habitat Offsetting Plans. Mitigations will be put in place as required should an issue with historic contamination arise during the implementation of the Habitat Offsetting Plans.

During the reporting period no serious harm or offsetting associated with FAA2, FAA3 or the marine FAA occurred. Activities related to habitat offsetting during the reporting year associated with FAA1 is outlined in Section 6.3.1 and 6.3.2.

6.3.1. Off-Channel Habitat Creation – FAA1

Through adaptive management and discussions with DFO, LNG Canada constructed additional off-channel habitat associated with FAA1, adjacent to the Cedar Valley Lodge construction area.

Design criteria used in development of the offset habitats include:

- Watershed areas for habitats are maintained at pre-development levels
- Flows entering the project footprint are concentrated into larger habitat features to allow for creation of higher value habitats
- Channels are graded to drain and prevent potential fish stranding if drought conditions occur in summer months
- Pond habitat have a minimum water depth of 0.5 m, with deeper sections to provide perennial habitat
- Pond inlets are armoured to reduce potential erosion and rerouting of side channels
- Edges of the pond areas are planted with emergent wetland vegetation

- Habitat complexing have been achieved through placement of rootwads and other large woody debris
- Cut slopes, where not armoured using riprap or other techniques, are seeded and vegetated for bank stability
- Where not constrained by existing or proposed infrastructure, a riparian area consistent with Environmental Protection and Management Guidelines (OGC 2015) will be restored using native species

The pond / wetland forms part of a contiguous sequence of excavated channels and that connect fish habitats upstream of the Cedar Valley Lodge construction area with those downstream in Beaver Creek. The shallows around the perimeter will have a shallow grade to promote colonization by emergent wetland vegetation.

Pond 4 has been complexed to improve habitat values for fish. Clean mixed gravel and cobbles have been placed on the bottoms of the west and north, to prevent erosion and provide substrates for invertebrate production. Log jams, root wads, boulder clusters, aquatic plants, and shrubs have been placed in pond habitat to provide fish cover and shading, and refuge for fish.

6.3.2. Implementation and Monitoring

Construction of offset habitats for FAA1 began in summer 2016. This allowed access to offset habitat by salmonids prior to fall rains and for overwintering and rearing in winter 2016/2017. Work areas were salvaged of fish, dewatered and isolated. No sensitive fish life stages were affected and no in-water work timing windows apply.

The construction monitoring program included employment of an EM onsite full time during construction, and multiple QEPs to assess adherence to construction and environmental requirements and mitigations, including all regulatory requirements, EMP requirements and BMPs.

Following offset construction, a report was prepared summarizing EM and QEP results and distributed to DFO and Haisla Nation. The report included “as built” drawings and a description of any modifications that were implemented during construction.

During discussions with DFO regarding the approval of FAA2 and FAA3, it was determined that a revised effectiveness monitoring plan and set of criteria for habitat acceptance was required. To ensure that all authorizations are consistent, the monitoring plan for FAA1 was also revised. Although, data for the FAA1 offsets had been collected during 2017, the new plan incorporates significant changes and thus it was determined that 2018 would ‘reset’ the monitoring requirements outlined in FAA1, thus 2018 is now Year 1 of Habitat Effectiveness Monitoring.

Table 6-2: Habitat Effectiveness Success Criteria

Measurable Parameter(s)	Metrics/Indicators
Density (summer)	Density (fish per m ²) with 95% confidence intervals will be compared based on habitat type (off-channel, wetland/pond) and location (offset versus reference or by watershed). As the monitoring program progresses, trend analysis will also be pursued. A successful result would indicate that densities in the offset habitats are statistically similar to (i.e., had overlapping confidence intervals with) the densities in reference habitats. Density results can also be compared to other regional data where available.
Relative abundance (summer)	CPUE (fish caught per 24 hours of minnow trapping) of fish species at sampling locations in offset and reference habitats will be correlated with density, if possible (allowing density estimates to be extrapolated to other locations in each offset habitat). CPUE results will also be compared between habitat types, offset or reference sites, and years, graphically and statistically, if possible.
Fish presence (winter)	Constructed overwintering habitats will be successful if used by salmonids during the late winter.
Length-frequency (summer)	The same age classes of juvenile coho salmon are represented at offset and reference sites in summer.

6.3.3. Consultation on Fisheries Offsetting Plans

To facilitate the design and implementation of effective and supported offsets for the broader LNG Canada Export Terminal, LNG Canada has been consulting extensively with Haisla Nation regarding the habitat offsetting plans since 2013. Consultation with Haisla Nation has been (and continues to be) conducted through in-person meetings, workshops, conference calls, official memos and letters and email. Members of Haisla Nation have also participated in the field work to collect fish and fish habitat data on the site of the LNG Canada Export Terminal and at offsetting sites within their traditional territory.

LNG Canada’s engagement with Haisla Nation has included discussions about potential effects to fish and fish habitat, avoidance and mitigation measures, as well as input on fish habitat offsetting measures. These discussions began in September 2013 on conceptual fish habitat offsetting measures and have continued through development of current designs and submission of LNG Canada’s Fisheries Act Authorization.

Feedback from Haisla Nation was incorporated into the offsetting strategy for the LNG facility, including the development and refinement of offset designs.

During the reporting period, LNG Canada engaged in extensive consultation with Haisla Nation on fisheries matters, in particular the development and finalization of applications for FAA2 and FAA3. Throughout Q1 and Q2 of 2017, LNG Canada met with Haisla Nation on several occasions to discuss the status of habitat offsets associated with FAA applications. LNG Canada continued to work with Haisla Nation through Q3 and Q4 of 2017 on completion of FAA2 and FAA3 application information.

Throughout the summer and early fall of 2017, engagements also took place regarding the effectiveness and construction of the offsets associated with FAA1. Haisla Nation were invited to participate in LNG Canada's Fall 2017 Habitat Effectiveness Monitoring Program for FAA1 on November 6-8, 2017.

Updates on the FAA permits were also provided to Gitga'at First Nation, Gitxaala Nation and Kitselas First Nation as part of their quarterly meetings with LNG Canada.

7. Wetlands

LNG Canada is committed to mitigating adverse effects on wetland functions that support migratory birds, species at risk or the current use of lands and resources for traditional purposes by Aboriginal Groups. In BC, wetlands designated as ecologically important to a region are defined by Environment Canada as the following:

- Provincially red – (threatened or endangered) and blue-listed (of special concern) wetland ecological communities
- Estuaries, as identified by the Pacific Estuary Conservation Program
- Areas of continental or regional significance to waterfowl within the Habitat Joint Venture planning boundaries of BC (e.g., estuaries in the Pacific Coast Joint Venture delivery area)
- All eelgrass (*Zostera* subspecies) beds

Wetlands occupy approximately 90 ha within the Project footprint. Five wetland classes (estuarine, fen, marsh, swamp and open shallow water) are represented, including red-listed and blue-listed wetlands. Eelgrass beds are addressed within the DFO *Fisheries Act Authorization (15-HPAC-00585)* for intertidal habitats.

Compensation is considered the third element of the mitigation hierarchy, following avoidance and minimization of adverse effects. Complete avoidance of wetlands is the preferred alternative when wetlands are designated as ecologically or socio-economically important to a region. Due to the extent of wetlands in the Project footprint, feasible alternatives to completely avoid wetlands could not be identified.

7.1. Wetland Protection Mitigations

LNG Canada commits to mitigation measures to minimize and manage adverse effects on wetlands with the Project footprint and adjacent to it. These mitigations include, but are not limited to the following:

- Maintenance of hydrology during construction activities to the extent practicable
- Maintenance of wildlife passage during construction activities by limiting fencing, phasing construction activities and maintaining riparian vegetation where practicable
- Installation of collector ditches to divert surface water from the construction area to sedimentation ponds prior to release

- Design to maintain tidal flow-through the LNG loading line using raised infrastructure and breaks, which also allow stream and surface flow to continue
- Delineation of clearing boundaries prior to site preparation to keep clearing activities within the designated Project footprint
- Reclamation of temporary workspace as soon as practicable
- Implementation of the LNG Canada *Sediment and Erosion Control Plan* to manage surface water and avoid sedimentation to adjacent vegetated areas or wetlands
- Implementation of the LNG Canada *Invasive Plant Management Plan* to ensure eradication of invasive plants
- Implementation of the LNG Canada *Surface Water Management Plan* to address stormwater collection, treatment and disposal during construction
- Development and implementation of the LNG Canada *Wetland Compensation Plan* to address loss of wetland habitat function

Construction activities undertaken in the reporting year adhered to the applicable mitigations listed above.

Prior to undertaking any clearing activities, clearing boundaries are delineated based on Issued for Construction (IFC) drawings. All boundaries are flagged, and verification of clearing boundaries is completed by walking the perimeter of the flagged area prior to commencement of work. During clearing activities, construction crews are actively monitoring to ensure that delineated boundaries are adhered to and that any vegetated buffer zones are maintained.

All areas disturbed to create temporary workspace are reclaimed as soon as practicable. Erosion and sediment controls are installed prior to construction activities that could result in migration of sediment to adjacent vegetation or surface water bodies. Detailed information on mitigations related to erosion and sediment control is available in Section 2.3.2 of this report.

The LNG Canada *Invasive Plant Management Plan* outlines requirements to reduce the potential spread of invasive plants at the Project site. Mitigations that are implemented during construction help to protect the integrity of wetlands on and adjacent to the Project site, and include, but are not limited to the following:

- Removal of invasive plants that are discovered as per the Weeds BC Profiles and ensuring all invasive plant matter being transported for disposal is covered and secured
- Use of aggregate and fill material that is clear of invasive plant matter and disposal of any plant matter that is found in aggregate or fill material

- Ensuring all vehicles and equipment being transported offsite are free of invasive plants
- Herbicides are applied in compliance with all regulatory requirements and are only applied by individuals with appropriate training and certification

The LNG Canada *Surface Water Management Plan* for Construction describes mitigation measures put in place for management of surface water to protect wetlands and vegetation on and adjacent to the Project site. Where feasible, detention ponds and other runoff management technologies are implemented. Erosion and sediment controls put in place during construction activities are outlined in Section 2.3.2 of this report.

7.2. Wetland Compensation Plan

LNG Canada has developed a Wetland Compensation Plan in consultation with EAO, Environment and Climate Change Canada (ECCC), Aboriginal Groups, and FLNRO. This Wetland Compensation Plan continues to be refined in conjunction with Haisla Nation and appropriate regulatory agencies.

The Wetland Compensation Plan defines the actions LNG Canada will take to provide compensatory wetlands at a minimum 2:1 ratio. The objective of this plan is to implement wetland compensation measures as close to Kitimat as possible within wetlands that reflect a similar wetland type and functions to those that are lost. If reasonable and practical options for restoration, enhancement and/or creation of wetlands are not available locally within the Kitimat Valley area, then localized land conservation opportunities will be planned.

The Wetland Compensation Plan includes the following components:

- Implementation of marine fish habitat offsetting outlined in DFO Fisheries Act Authorization (15-HPAC-00585) for intertidal habitats that will establish 17 ha of estuarine wetlands within the Kitimat River Estuary with similar habitat function to the estuarine marsh habitat function in the Project footprint
- Costs to deliver land securement and restoration, enhancement, and/or creation of 65 ha of wetlands
- Development of a wetland monitoring program as part of their off-site wetland compensation program in accordance with the Wetland Compensation Plan and agreements with LNG Canada
- Incorporation of traditional use plants into compensation wetlands where appropriate and technically feasible
- Access to wetland compensation sites will be made available to Aboriginal Groups for the purposes of gathering traditional use plants wherever possible

The *Wetland Compensation Plan* provides an evaluation of wetland functions associated with potentially affected wetlands. Methods of assessing wetland function followed guidance contained in a number of recognized standards, including but not limited to the Washington State Department of Ecology adapted processes. Hydrologic, biogeochemical, and habitat functions of wetlands were determined from literature review, project mapping, and field studies. Many indicators of a wetlands' potential to provide natural functions were determined from wetland mapping, based on the defining characteristics of wetland classes or site associations.

Field surveys, conducted by wildlife ecologists during baseline studies, determined the presence and abundance of wetland associated wildlife throughout 2013 and 2014. This information supports wildlife habitat suitability ratings that inform suitability models. Field studies included:

- breeding bird fixed-radius point count surveys for songbirds;
- raptor and wetland bird call playback surveys and raptor nest surveys;
- marbled murrelet surveys and habitat assessments;
- amphibian transect and intensive site surveys in wetland and riparian areas in conjunction with breeding bird surveys;
- large mammal transect surveys; and
- incidental observations of wildlife or wildlife indicators, important habitat features (e.g. wildlife trees), and wildlife movement corridors.

During the reporting year, specific locations for wetland compensation continued to be assessed. When the final locations have been confirmed, LNG Canada will define how access will be provided to Aboriginal Groups.

The Wetland Compensation Plan continues to be refined in conjunction with Haisla Nation and appropriate regulatory agencies.

7.2.1. Implementation and monitoring

The Wetland Compensation Plan will be implemented iteratively per the surveyed areas of wetlands identified for compensation within five years of the start of construction (November 15, 2020). Monitoring will be conducted prior to and during construction to detect potential unanticipated loss of wetland functions on site and adjacent to the project footprint. Where any unanticipated loss of function occurs, additional mitigation measures will be developed and applied. Where unanticipated residual losses occur in ecologically important wetlands, these areas will be compensated for in a similar manner as the compensation for the lost wetland functions outlined in the Wetland Compensation Plan.

LNG Canada will develop a monitoring program to ensure that wetland compensation measures are fulfilling the functions of the wetlands they are replacing. Details of the monitoring program are being developed through consultation with EC and Canadian Wildlife Service (CWS), but will include the following:

- Compliance monitoring to ensure compensatory habitats are constructed or protected in accordance with the Wetland Compensation Plan
- Effectiveness monitoring to ensure that restored, enhanced and/or created wetlands are functioning as intended after construction and/or all protected wetland habitats and conservation buffers continue to function as predicted
- Adaptive management actions to promote long term performance of habitat

Monitoring will occur in year one, and in years three, five, and ten after compensation at the sites is completed.

8. Migratory Birds

LNG Canada is committed to implementing the Project in a manner that protects wildlife, including migratory birds and their habitat. Mitigations to support this commitment are outlined in the LNG Canada *Wildlife Management Plan* and the LNG Canada *Raptor Management Plan*. The *Environment Canada Avoidance Guidelines* to reduce the risk of incidental take of migratory birds, nests and eggs, was considered in the development of these plans and continues to be considered during construction activities.

QEPs, including an avian biologist, are on site or available during construction activities to support LNG Canada and provide guidance on avoiding harm. Mitigations to avoid impact to migratory birds include, but are not limited to the following:

- Reduction of light and noise pollution where feasible
- Adherence to timing and restricted activity window requirements, including bird breeding periods and species at risk periods
- Adherence to provincial and federal setback distances for migratory bird and raptor nests

No incidental take of migratory birds or their nests took place during the reporting year.

8.1. Noise and Light Management

No flaring or venting took place during the reporting year. All construction activities that took place followed the LNG Canada *Noise Management Plan* and the LNG Canada *Light Management Plan*, which define mitigations to minimize noise and light during implementation of the Project.

8.2. Timing Restrictions and Buffer Zones

On an annual basis, commencing March 25th through August 15th, LNG Canada will implement mitigations to reduce impact to migratory bird breeding and nesting habits. From January 1st through September 5th annually, mitigations to avoid impact to breeding and nesting raptors are implemented.

Under the guidance of a qualified QEP, the following mitigation hierarchy is implemented:

1. Where possible, tree clearing and ground disturbance activities take place outside of identified bird breeding periods
2. Where tree clearing and disturbance activities must take place within bird breeding periods, areas for clearance will be prioritized based on habitat risk evaluation
3. Bird surveys are conducted where timing restrictions cannot be met

4. If nesting is determined, required setbacks and mitigations will be implemented under the direction of a qualified avian biologist

A mitigation matrix (Figure 8-1) is followed to determine appropriate mitigation efforts that consider the disturbance level and nesting potential.

Table 8-1: Migratory Birds Mitigation Matrix

A. Determine disturbance level of project activities.

Activity	Disturbance Level
Traversing	I
Limbing, soil salvage, or site preparation that removes some vegetation	II
Brushing, hand falling, mechanical falling, mowing, mulching	III

B. Determine nesting potential.

Environment Canada Calendar Colour	Percentage of Species Nesting	Nesting Potential
Grey • White • Yellow	0-10%	Low
Light Orange	11-20%	Moderate
Dark Orange	21-40%	High
Red • Dark Red	41-100%	Very High

C. Use Mitigation Matrix to determine mitigation level.

Disturbance Level	Nesting Potential			
	Low	Moderate	High	Very High
I	1	1	1	1
II	1	2	3	3
III	1	3	4	5

During tree clearing efforts in the Cedar Valley Lodge construction area, LNG Canada has completed bird surveys to ensure that no potentially active nests are present within the active construction area. Bird surveys are conducted by a QEP based on site maps and survey information related to the active construction area. When an active nest is identified, barrier tape is installed to indicate a buffer area (“no-go” zone). The QEP determines appropriate buffer distances following accepted practice.

The QEP prepares a report on bird survey results daily for LNG Canada, which includes a map of identified buffer zones. Construction progress and related active nests and buffer zones are tracked

daily. Regular inspections are also undertaken to identify potential active nests on idle construction equipment. If active nests are found on equipment or infrastructure, buffer zones are identified as described above.

Migratory bird data will be summarized at the end of the bird window and submitted to regulatory agencies as required. Monitoring

After tree clearing activities, the QEP conducts regular checks to assess whether mitigations are working. This includes inspection to ensure no broken eggs or destroyed nests are evident.

Active nests are monitored from a distance to confirm and track the status and ensure that construction activities in the vicinity do not impact nesting or fledging. The buffer can only be removed once the QEP has determined that the nest is no longer active and no other nests exist.

8.3. Osprey

No construction in the marine environment took place during the reporting year.

In late 2015 to early 2016, LNG Canada undertook efforts to relocate an inactive Osprey nest under FLNRO Permit SM15-178791. The primary goal was to encourage the resident breeding pair of Osprey to relocate, build/refurbish a nest at an alternate constructed site, and to successfully breed at the new location, without any project-related disturbances to future breeding events.

Throughout 2017 the new nesting platform and the wharf were monitored for nesting activity which concluded that the Osprey rebuilt the nest on the wharf at the previous location. No nesting activity was reported to have occurred on the newly constructed nesting platform.

8.4. Marbled Murrelet

Marbled murrelet surveys were completed for the LNG Canada Project site in 2014. Surveys were completed in late May, early June, early July and late July to get an accurate picture of habitat use and associated marbled murrelet nesting activity.

If vegetation clearance is required during the nesting season in marbled murrelet habitat identified as being 'potential marbled murrelet critical habitat' or 'high and moderate suitability marbled murrelet habitat', a high intensity nest survey will be undertaken as described in Section 8.2 of this report.

During the reporting year, LNG Canada did not disturb potential or high and moderate suitable marbled murrelet habitat.

9. Human Health

LNG Canada is committed to reduction of noise and air emissions during Project activities, and takes steps to implement mitigations as appropriate.

LNG Canada applies BMPs for construction noise from the *British Columbia Oil and Gas Commission's Noise Control Best Practices Guidelines*. BMPs are documented in the LNG Canada *Noise Management Plan*, which was developed in consultation with DFO, DOK and Haisla Nation. For activities taking place during the reporting year, the following mitigations were implemented:

- Traffic routing to avoid residential areas where possible;
- Adherence to municipal noise requirements and restrictions, including use of engine brakes;
- Proper management of construction vehicles and equipment, including consideration of maintenance requirements, noise mufflers and use of rubber tires where practical and available;
- Undertaking construction activities, including pile installation, between the hours of 0700 and 22:00, where practical;
- Implementation of a notification protocol to provide advance notice to residents of any planned substantial noise-causing activities at the LNG Canada site (refer to Section 4.0 of this report);
- Use of dust control measures on site including road watering, sweeping, speed control mitigations, and seeding of stockpiles; and

9.1. Noise Complaints

As outlined in Section 4.7 of this report, the LNG Canada Community Feedback Process was developed in consultation with Aboriginal Groups and key stakeholders to track inquiries and complaints related to community concerns, including noise. The Community Feedback Process acknowledges all complaints within 24 hours, with a response provided within two days.

No complaints were received by LNG Canada related to noise within the reporting year.

9.2. Marine Water and Sediment Quality

No construction in the marine environment took place during the reporting year.

The LNG Canada marine EMPs define minimum requirements and mitigations for marine work, including management of marine water and sediment quality.

The MMP includes an assessment of risks and potential duration of any exceedances of the CCME Water Quality and Interim Sediment Quality Guidelines, and BC Water Quality Guidelines and Working Sediment Quality Guidelines that could occur during dredging and other in-water construction activities. The marine EMPs identify mitigation measures to avoid such exceedances and reference notification protocols for any exceedances that do take place.

The marine EMPs identify mitigation measures to minimize sediment dispersion during in-water construction activities, such as project construction sequencing, consideration of metocean conditions and use of physical barriers as appropriate. Sediment and water quality monitoring will be implemented in accordance with the MMP during in-water construction activities.

The MMP also includes a post-dredging follow-up program to confirm the human health risk assessment predictions from the baseline shellfish and groundfish tissue study that was conducted in 2015.

10. Current Use of Lands and Resources for Traditional Purposes

LNG Canada is committed to protecting archaeological and heritage resources that could be impacted by the Project.

An Archaeological Impact Assessment (AIA) was conducted as per the BC *Heritage Conservation Act (HCA) Heritage Inspection Permit (HIP) 2013-0149* to identify potential areas of archaeological or cultural significance prior to construction activities commencing.

Fieldwork was conducted from June to November 2013 and in April and May 2014 by a team of professional archaeologists and Haisla First Nation representatives. Within the Project site, 23 areas were identified with moderate to high potential for buried archaeological sites. Subsurface testing was undertaken at all of these shovel test locations (STLs). A total of 510 STLs and seven evaluative units were excavated. One archaeological site was identified in the course of the AIA fieldwork for the Project (GaTe5).

No construction took place in the vicinity of known archaeological sites in the reporting year.

10.1. Archaeological and Heritage Resources Management Plan

LNG Canada has developed an *Archaeological and Heritage Resources Management Plan* in consultation with Aboriginal Groups. The *Archaeological and Heritage Resources Management Plan* considers the BC Handbook for the Identification and Recording of Culturally Modified Trees and defines processes to follow to protect and preserve archaeological and heritage resources, and the procedure to follow in the event of a chance find of archaeological, cultural or heritage resources during construction.

The *Archaeological and Heritage Resources Management Plan* outlines the following hierarchy of mitigations for archaeological or heritage resources that require protection, preservation or recovery:

1. Avoidance through partial redesign or redirection of construction activities, including implementation of setbacks, etc.
2. Protection and preservation of the site on a temporary or ongoing basis (e.g. concealment, access limitations, etc.)
3. Salvage or emergency excavation as a mitigating measure to recover and repatriate any materials or human remains as defined in a Site Alteration Permit

The *Chance Find Procedure* provides a summary of the types of historical, archaeological, paleontological, or architectural resources potentially present in the project area that may be

encountered during construction, including rock art (e.g. pictographs), Culturally Modified Trees and Tree Art (e.g. bark stripping), surface features from former habitations (e.g. burned rock, fish traps), and artefacts (e.g. stone, bone).

If a chance find is discovered on the LNG Canada site during construction, work is stopped and the area is delineated with barriers to prevent access and protect the resource. LNG Canada will consult a professional archaeologist for guidance on further action. Further action may include confirmation that work can continue as planned, confirmation that work can continue under specific conditions, or confirmation that further assessment is required by a professional consulting archaeologist. All regulatory and Aboriginal Groups will be notified as directed by the professional archaeologist.

No chance find events took place within the reporting year.

10.2. Marine Resources

No construction activity took place within the marine environment during the reporting year.

To define procedures and practices for sharing information and facilitating communication with Aboriginal Groups and other local marine users, a communication protocol was developed by LNG Canada and incorporated into the Marine Access Traffic Management Plan (MATMP). The communication protocol was developed in consultation with regulatory agencies and Aboriginal Groups, and approved by EAO in February of 2018. The protocol includes processes for communicating the following:

- Location and timing of construction activities in the marine environment and location and timing of traditional activities by Aboriginal groups
- Safety procedures related to marine construction and operation, including navigation aids and updated navigational charts
- Locations of restricted navigation due to safety reasons
- Operational speed requirements
- Methods of providing feedback to LNG Canada on adverse effects related to navigation

LNG Canada will also ensure that predictions made related to marine wake are accurate by developing a monitoring program to be implemented throughout the first two years of operation.

APPENDIX I:

LNG Canada Site Map

APPENDIX II

LNG Canada Project CEAA Implementation Schedule

