

Joint venture companies



LNG Canada Export Terminal Project

**Impact Assessment Agency of Canada
2019 – 2020 Annual Report**

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Executive Summary

LNG Canada Development Inc. (LNG Canada) is building an liquefied natural gas (LNG) export facility (the LNG Canada Project) located in northwest British Columbia, in the District of Kitimat and the traditional territory of the Haisla Nation. The LNG Canada Project is comprised of a LNG facility and supporting infrastructure, including LNG storage and marine loading facilities, and temporary construction-related infrastructure and facilities.

On June 17, 2015, LNG Canada received the Decision Statement from the Canadian Environmental Assessment Agency (now known as the Impact Assessment Agency of Canada (IAAC)) that established conditions that the LNG Canada Project must comply with. This Annual Report provides information and updates related to those conditions, for the period April 1, 2019 to March 31, 2020 (known as the reporting year).

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

The LNG Canada Project is being executed by LNG Canada, JGC Fluor BC LNG Joint Venture (JFJV) and various subcontractors. LNG Canada's Engineering, Procurement and Construction (EPC) Contractor, JFJV, is responsible for implementation of environmental programs and controls identified in permits, approvals, authorizations and associated management plans during construction. LNG Canada is also overseeing select portions of work, outside of JFJV scope.

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

The LNG Canada Project 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.

The LNG Canada Project 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.

1. Construction Activities within the Reporting Year

There was increased activity on site during this reporting year; activities included an extensive site preparation program, development of Workforce Accommodation Centre (WAC), known as Cedar

Valley Lodge (CVL), the Material Offloading Facility (MOF), habitat offset construction, commencement of LNG facility piling and LNG Storage Tank ground improvement (rigid inclusions), and the second dredge season.

2. Community and Indigenous Groups Communications and Consultation

The LNG Canada Project has committed to transparent, frequent communications and consultation with Indigenous Groups and the Kitimat community, and the input we have in turn received, has been a vital component of the LNG Canada Project. The LNG Canada Project's communications and engagement program is premised on an adaptive management approach, where comments, concerns and questions can be received and responded to. Information is shared and input sought through a range of initiatives – website, InFocus newsletter, social media (Facebook, Twitter, and LinkedIn), telephone line and email, and open houses. The above information sharing initiatives have been designed with input from Indigenous Groups, stakeholders, and residents.

The LNG Canada Project continues 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.

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

3. Conditions Performance

The landscape surrounding the LNG Canada 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 Indigenous Groups who rely on the environment for recreation and traditional use.

A) Fish and Amphibian Habitat and Salvage

Within the reporting period, serious harm associated with FAA 16-HPAC-00220 ("FAA2") occurred in Kitimat River Side Channel (KRSC) south, Beaver Creek and Anderson Creek. The KRSC North offset channel and the berm inlet structures were substantially completed (Berm 1 inlet structures allow Kitimat river water to flow into the KRSC North offsetting habitat). WAC Pond 3 was constructed. Excavation of the Beaver Creek Phase 2 channel was initiated and is forecast to be completed in the next reporting period. The Anderson Creek re-alignment channel and adjacent offset ponds were also substantially completed by March 2020.

Within the reporting period, activities associated with FAA 16-HPAC-01079 (“FAA3”) occurred, with the construction of the South Heavy Haul Road (SHHR), which included infilling aquatic habitat tributary to Moore Creek.

Mitigation measures outlined in the marine FAA 15-HPAC-00585 (“FAA Marine”) and related application were adhered to during the dredge season, including the application of the September 1 – February 28 extended dredge window. A qualified environmental monitor was present during all in-water construction activities and dredging.

During the reporting year, fish salvage and relocation occurred during the isolation of various waterways to support diversions (including Anderson Creek, Beaver Creek, and KRSC) and site preparation activities. During the reporting period, an approximate total of 290,314 fish were salvaged from the salvage areas. Fish species varied depending on the habitat types salvaged, and included salmonids, Stickleback and Lamprey. During the reporting year, amphibian salvage and relocation also occurred; approximately 166,857 amphibians were salvaged, which included Western Toad and Northwestern Salamander. All salvaged fish and amphibians were released into habitat of a similar type and quality, with consideration of future construction and salvage efforts to minimize double handling of species.

B) Wetlands

Within the reporting period, LNG Canada completed the annual adjacent wetland assessment, and no adverse effects to adjacent wetlands resulting from construction were identified.

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. In October 2019, the revised Wetland Compensation Plan was shared with Indigenous Groups with a request for feedback which will be reviewed and incorporated as appropriate. LNG Canada is now determining next steps and is expecting the final plan will be circulated to Indigenous Groups in Q2 2020.

C) Migratory Birds

During the reporting year, LNG Canada made efforts to clear as much land as possible outside of the breeding bird window in an effort to alleviate disturbance to migratory birds. When clearing took place during bird breeding windows, LNG Canada completed pre-disturbance bird surveys to ensure that no potentially active nests were present within the active construction area, and any identified nests were subsequently protected by implementing buffer zones. 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 Qualified Environmental Professional (QEP) has determined that the nest is no longer active, and no other nests exist.

During the reporting year, 222 pre-disturbance bird nest surveys were completed for the LNG Canada Project, and 202 active nests were identified. No incidental take of migratory birds or their active nests took place during the reporting year. In June 2019, the Project self-disclosed to Canadian Wildlife Service (CWS) the failure to follow best practices associated with bird surveys during a roadside brushing removal activity; the survey of material post brushing did not identify any incidental take.

D) Human Health

The LNG Canada Project is committed to managing noise and air emissions during activities, and has taken steps to implement mitigations as appropriate through the development and implementation of Environmental Management Plans. There was one noise complaint within the reporting period related to the bird deterrents being unintentionally deployed during night hours, and was resolved quickly with the District of Kitimat and the community resident.

E) Archaeological and Heritage Resources

The LNG Canada Project has identified one area of archaeological or cultural significance. Tree clearing and limited site stripping occurred in this area, overseen by the qualified archaeologist per the site alteration permit requirements (issued by the British Columbia Oil and Gas Commission). There was one chance find related to stoneware, which was donated to the Kitimat Historical Society.

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

ACI	Air Curtain Incinerator
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 Act, 2012
CAP	Cultural Awareness Program
CAG	Community Advisory Group
CEMP	Construction Environmental Management Plan
CLISMP	Community Level Infrastructure and Services Management Plan
CMS	Compliance Management System
CVL	Cedar Valley Lodge
CWS	Canada Wildlife Service
DAS	Disposal at Sea
DDS	Dredgeate Disposal Site
DEMP	Dredge Environmental Management Plan
DFO	Fisheries and Oceans Canada
DMR	Dual Mixed Refrigerant
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
EPC	Engineering, Procurement and Construction
ERP	Emergency Response Plan
ESC	Erosion and Sediment Control
EWP	Environmental Work Plan
FAA	Fisheries Act Authorization

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)
FID	Final Investment Decision
FLNR	Forests, Lands, Natural Resource Operations and Rural Development (BC)
Ha	Hectare
HCA	Heritage Conservation Act (BC)
HIP	Heritage Inspection Permit
HSSE	Health, Safety, Security and Environment
HSSE MS	HSSE Management System
HSSE & SP	HSSE and Social Performance
IAAC	Impact Assessment Agency of Canada (formerly Canada Environmental Assessment Agency)
ICS	Incident Command System
IEE	Integrated Engineering Environment
IFC	Issued for Construction
IL-	Below Industrial Land Use Criteria (in context of dredgeate handling)
IL+	Above Industrial Land Use Criteria (in context of dredgeate handling)
JFJV	JGC Fluor BC LNG Joint Venture (LNG Canada EPC Contractor)
KRSC	Kitimat River Side Channel
LNG	Liquefied Natural Gas
LNG Canada	LNG Canada Development Inc.
LWD	Light Woody Debris
MAP	Marine Activities Plan
MATMP	Marine Access Traffic Management Plan
MMEZ	Marine Mammal Exclusion Zone
MMO	Marine Mammal Observer / Marine Mammal Observation
MMP	Marine Monitoring Plan
MOF	Material Offloading Facility
OGAA	Oil and Gas Activities Act (BC)
OGC	Oil and Gas Commission (BC)

OPP	Oceans Protection Plan
PRC	Project Resources Centre
Project	LNG Canada Export Terminal Project
QEP	Qualified Environmental Professional
RWI	River Water Intake
SHHR	South Heavy Haul Road
SMP	Social Management Plan
SMR	Social Management Roundtable
STL	Shovel Test Location
TSS	Total Suspended Solids
WAC	Workforce Accommodation Centre

Concordance Table

Section Topic	Description	Clause	Sub clause	Report Section
IAAC 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	6.1 6.2 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 8.0
Wetlands	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: <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	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: <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
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	8.0
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	8.0
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	8.0
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	10.0

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 building a liquefied natural gas (LNG) export facility (the LNG Canada Project) located in northwest British Columbia (BC), in the District of Kitimat and the traditional territory of the Haisla Nation. The LNG Canada Project is comprised of a LNG facility and supporting infrastructure, including LNG storage and marine loading facilities, and temporary construction-related infrastructure and facilities. The LNG Canada Project 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 received the Decision Statement under Section 52(1)(b) of the Canadian Environmental Assessment Act, 2012 (“IAAC Decision Statement”) from the Canadian Environmental Assessment Agency (now known as the Impact Assessment Agency of Canada (IAAC)). The IAAC Decision Statement established conditions to which the LNG Canada Project must comply. This annual report serves to provide information and updates related to those conditions.

1.1. Project Overview

The LNG Canada 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.

The LNG Canada 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 LNG Canada Project will consist of two LNG processing units referred to as “trains”, with an option to expand the project in the future to four trains. The LNG Canada 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 (CVL), the LNG Canada Project temporary workforce accommodation centre (WAC), 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.

On July 11, 2016, LNG Canada announced a delay in Final Investment Decision (FID) with the hope of achieving FID in late 2018. Throughout 2018, LNG Canada was focused on completing necessary works in the event of a positive FID, which occurred in October 2018.

In early 2019, LNG Canada's Engineering, Procurement and Construction (EPC) Contractor, JGC Fluor BC LNG Joint Venture (JFJV), took over primary responsibility for implementation of environmental programs and controls identified in permits, approvals, authorizations and associated management plans during construction. LNG Canada is also overseeing select portions of work, outside of the JFJV scope.

Therefore, the LNG Canada Project is being executed by LNG Canada, JFJV and various subcontractors. This Annual Report provides further information on the processes and mitigations put in place by the LNG Canada Project to ensure that Project activities are carried out in accordance with regulatory conditions.

1.2. HSSE, Social Performance and Compliance Principles

The LNG Canada Project is committed to a high standard of environmental management and compliance through all phases of the Project. The Environmental Philosophy is to protect the environment by minimizing potential impacts, including minimizing greenhouse gas emissions from the proposed facility. The LNG Canada Project commits to compliance with existing regulations, permits, approvals, authorizations and related management plan requirements, and to align environmental, community and social performance commitments into engineering design and construction decisions.

The LNG Canada Project 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.

The LNG Canada Project is committed to ensuring that processes in place to meet conditions of the IAAC 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 LNG Canada Project. Examples include:

- Use of existing infrastructure, such as BC Hydro supplied grid with hydroelectric power output for auxiliary power requirements 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) and recovery of waste heat;
- Use of existing industrial development area for the LNG Plant site and refurbishing existing harbour 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;
- Implementation of a Flawless Project Delivery program, focused on a pro-active approach to mitigate flaws, and help ensure a flawless startup of the plant; 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 Project 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 Health, Safety, Security and Environmental and Social Performance (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 Project 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 Project 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 IAAC Decision Statement, as well as requirements in LNG Canada Project permits and approvals, are documented, tracked and actioned.

1.4. Report Requirements

This IAAC Annual Report demonstrates the commitment that the LNG Canada Project 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 the IAAC Decision Statement.

As per the IAAC Decision Statement, for the purposes of this report, the reporting year is defined as April 1, 2019 to March 31, 2020.

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

2. Construction Update

2.1. Activities within the Reporting Year

Activities in the reporting year April 1, 2019 – March 31, 2020 include various activities as outlined below.

The Project facilitated 33 formal regulatory inspections and tours by various agencies, often in conjunction with Haisla Nation, including the BC Environmental Assessment Office (EAO), BC Oil and Gas Commission (OGC), Fisheries and Oceans Canada (DFO) and IAAC.

2.1.1. Site preparation

- Tree clearing within the facility and supporting infrastructure is over 90% complete with approximately 160 hectares (ha) cleared to date. Undertook open burning activities; with minimal operation of the air curtain incinerators (ACIs). Undertook mulching, and re-use of logs and wood waste for riparian habitat creation and road stabilization.
- Widespread fish and amphibian salvage and dewatering.
- Demolition of non-process buildings and fire water system associated with the former Methanex Facility.
- Material brought onto site for rough grading activities.
- Widening sections of the Haul Road and commenced construction of bridges at the Anderson Creek and Moore Creek crossings. The foundation piling activities for these two key bridges is currently underway and expected to be completed by Q3 2020.
- Watercourse and fish habitat development / realignments for Beaver Creek, Anderson Creek, Kitimat River Side Channel (KRSC) and WAC Pond 3.
- Development of the soil stockpile area.
- Management of clean and construction effected water.



PHOTO 1: SITE PREPARATION ACTIVITIES (MARCH 2020)



PHOTO 2: MOORE CREEK BRIDGE NOTH ABUTMENT FORMWORK INSTALLATIONS (MARCH 2020)

2.1.2. Marine

- Commenced second dredge season in September 2019 and was completed by February 11, 2020. The total dredging volume for the second season was 651,486 m³.
- Commenced construction of the Material Offloading Facility (MOF) which included installing temporary berms and driving piles.



PHOTO 3: SECOND DREDGING SEASON; ON THE TRAILING SUCTION HOPPER DREDGERS (TSHD) WITH FULL HOPPER, READY TO SAIL TO DAS (DISPOSAL AT SEA) SITE (JANUARY 2020)



PHOTO 4: BACKFILLING THE WEST MOF; PILES AT NORTH MOF (MARCH 2020)

2.1.3.LNG Facility

- Commenced driving piles associated with the LNG Train 1.
- Commenced ground improvement works for the LNG Storage Tank site, with installation of rigid inclusions.
- Water supply associated with the river water intake (RWI) is within the early stages, with asbestos remediation currently taking place on the intake infrastructure.



PHOTO 5: LNG FACILITY PILING (FEBRUARY 2020)



PHOTO 6: RIGID INCLUSIONS FOR GROUND IMPROVEMENT AT LNG STORAGE TANK SITE (MARCH 2020)

2.1.4. Temporary Facilities

- Construction of CVL. Construction activities include installation of utilities, foundations, stick build common buildings and placement of module living quarters.
- Commenced construction in the Temporary Construction Facilities (TCF) area.



PHOTO 7: CEDAR VALLEY LODGE (MARCH, 2020)

2.1.5. General environment activities

- Water management throughout the Project site, including installation and management of erosion and sediment controls (ESCs).
- 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.
- Baseline monitoring of adjacent wetland habitats, spawning surveys and fish habitat.
- Fish habitat effectiveness monitoring.

- Wetland effectiveness monitoring.
- Progressing Marbled Murrelet and Wetland Compensation Plan implementation.



PHOTO 8: MOOSE CAPTURED ON THE WILDLIFE CAMERA (MAY, 2019)

2.2. Implementation Schedule

The LNG Canada Project has developed a Project Implementation Schedule that outlines commencement and completion dates for each condition in the IAAC Decision Statement. The Implementation Schedule is publicly available on the LNG Canada Project website (www.lngcanada.ca). All updates to the IAAC Implementation Schedule are provided to IAAC and Indigenous Groups as required by the Decision Statement.

The following LNG Canada Project Implementation Schedule submissions have been completed to date:

- September 15, 2015: first IAAC Implementation Schedule submission more than 30 days prior to construction activities commencing.
- December 2, 2016: updates to the marine activities schedule.

- June 30, 2017: first biennial IAAC Implementation Schedule update as per the Decision Statement.
- July 4, 2018: updated IAAC Implementation Schedule in preparation for marine construction commencement (September 2018).
- June 28, 2019: second biennial IAAC Implementation Schedule update as per the Decision Statement.

2.3. Environmental Management Plans

The LNG Canada Project *Construction Environmental Management Plan* (CEMP) is the overarching framework that encompasses the LNG Canada Project'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. The LNG Canada Project's CEMP has been developed in consideration of community commitments and environmental best practices, and with input from regulators, Indigenous Groups and stakeholders.

The CEMP also includes EMPs to manage environmental aspects and impacts related to terrestrial and freshwater 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, and fish habitat resources, management of archeological and heritage resources, waste management and ESC.

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

An internal Project review of the CEMP and EMPs occurred in this reporting period; however no consultation activities occurred on the full Plans (scheduled for next reporting period). LNG Canada submitted a supplemental memo for the CEMP to BC EAO in October 2019 (dated August 16, 2019); the memo was shared with Haisla Nation for review in September 2019.

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

The MAP also includes supporting marine EMPs to manage environmental aspects and impacts related to marine 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.

Further information on EMPs is provided in Section 4.9.

2.3.1. Monitoring

The LNG Canada Project is frequently re-evaluating mitigation and monitoring measures during the construction phase to ensure that activities are in compliance with regulatory requirements and consistent with Project commitments. This adaptive management strategy is outlined in the CMS, including EMPs.

The LNG Canada Project has retained the services of Haisla-Triton, a joint-venture between Haisla Nation and Triton Environmental, to provide Environmental Monitoring services for the Project, including the services of a Qualified Environmental Professional (QEP) to monitor construction activities. Environmental Monitors (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 Project environmental professionals and contractors. The LNG Canada Project contractors are required to complete weekly regular worksite inspections and

assess effectiveness of housekeeping, ESCs, discharge water quality parameters and presence/absence of invasive plants, among other things, while work is being undertaken.

LNG Canada and JFJV receive reports from the EMs and QEPs on site on a regular basis, as defined by management plans. 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 and JFJV 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.

JFJV oversees the implementation of its EM Program and regularly shares information with LNG Canada.

2.3.2. Erosion and Sedimentation Control

ESCs are installed to isolate 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, geosynthetics, seeding, ditching and contouring. Effectiveness of the implementation of ESC measures are regularly monitored and adjusted in the field as needed.

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 the best practise and standard methods for ESC.

The LNG Canada Project minimizes tree clearing wherever feasible to control erosion. The Project has implemented a number of ESC controls during early works and construction, including sediment fencing, straw wattles, sediment booms, berms armoured with rip rap, sediment bags on discharge hoses, and geosynthetic blankets. The LNG Canada Project has also utilized settling ponds, where

appropriate. Seeding of slopes and disturbed areas is undertaken as soon as practicable after construction, and contouring the ground to minimize surface water flow is undertaken as required.

To ensure effectiveness of the ESC mitigations, water quality is sampled frequently downstream of the construction activities to ensure that sediment is not impacting surface water bodies, fish or wildlife. If issues are detected downstream of the construction site, construction activities upstream are suspended or minimized until the situation is assessed and additional ESC mitigations measures are installed, as required. To ensure the ESC mitigations are effective and in working order, joint assurance walks are conducted with LNG Canada, JFJV and contractors on site weekly at a minimum. In addition, EMs conduct and oversee the daily monitoring of the project site.

The LNG Canada Project is committed to ensuring ESC best practise and standard methods will be implemented during all phases of the project.

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.

Vegetation removal through site clearing activities, such as tree felling, grubbing and stripping, occurred in areas associated with FAA 16-HPAC-00220 for the LNG Facility (FAA2) and FAA 16-HPAC-01079 for the Supporting Infrastructure (FAA3). Clearing was limited to areas within the project footprint and no non-compliance events occurred in association with vegetation removal. Approximately 149 hectares was cleared and grubbed within the reporting year.

Vegetation waste was disposed of through a combination of mulching, ACI and open burning. BC OGC Waste Discharge Authorization (AA-109643) was received on December 21, 2018, allowing burning of up to 30,000 cubic meters of wood waste from the certified project area for the life of the Project using ACI. The ACIs were used from January to April 2019 (only operated for two days in April, therefore majority of ACI operations occurred in the previous reporting year). Approximately 300m³ of ash from the ACI was disposed within the onsite permanent soil stockpile, 100 meters from the watercourse.

Riparian re-vegetation associated with Fisheries Authorizations offsetting measures are monitored and reported within the respective authorizations effectiveness monitoring reports. Within the reporting year effectiveness monitoring was completed associated with both Fisheries Act Authorization 15-HPAC-00918 (FAA1 for the WAC) and 16-HPAC-00220 (FAA2).

2.4. Decommissioning

No decommissioning activities for the LNG Facility took place during the reporting year. LNG Canada will develop a Decommissioning Plan in consultation with Indigenous Groups that will be submitted to IAAC 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 Indigenous 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 IAAC no later than 60 days after a transfer of ownership, care, control or management of the Designated Project as per *IAAC Decision Statement Condition 2.7* and *IAAC Decision Statement Condition 2.8*.

2.6. Records Management

Records related to the implementation of the Conditions outlined in the LNG Canada *IAAC 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, Indigenous 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 a number of topics, as opportunities become available. During the reporting year, initiatives have included:

- LNG Canada participated in the “Gitga’at-Gitxaala-Transport Canada Waterway Management Forum” under the umbrella of the Oceans Protection Plan (OPP) and sat on the Navigation Sub-Committee where they assisted in the development of the Draft Waterway Management Guidelines for the North Coast. The purpose of the forum is to create a space in which representatives from Gitga’at, Gitxaala, and potentially other First Nations in the area of interest, federal agencies and other levels of government, industry and marine stakeholders can share information, explore issues and develop recommendations for:
 - Minimizing vessel traffic impacts and conflicts with local Indigenous and public marine use and small vessel traffic activities (via enhanced marine traffic communications, etc.).
 - Minimizing vessel traffic impacts and conflicts with marine mammals (via enhancing environmental monitoring and operational measures such as noise reduction, vessel speeds and routes).
- LNG Canada has committed to participating in the Kitimat Airshed Group, and is currently in discussions with identified working group members to develop the Terms of Reference related to the airshed.
- LNG Canada met with Vancouver Aquarium representatives in early 2020 to discuss potential partnerships related to marine environmental research programs on the BC coast.

4. Communication and Consultation

The LNG Canada Project undertakes a range of initiatives to ensure the community and Indigenous 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, social media (Facebook, Twitter, and LinkedIn), open houses, the Community Feedback Process and in-person meetings.

The LNG Canada Project Community Level Infrastructure and Services Management Plan (CLISMP) was resubmitted and approved by BC EAO on April 10, 2019. A copy of the CLISMP was also shared with all Indigenous Groups. The CLISMP outlines key social performance related mitigations related to the potential direct impacts on the LNG Canada Project and includes the process to establish the LNG Canada Social Management Roundtable (SMRs) with key provincial ministries and agencies as well as other local key stakeholder groups.

The Project has a Code of Conduct that every individual on the Project signs through the site orientation process. It states that everyone who works on site is personally committed to safety, quality, acceptable behaviours and attitudes, and respecting the community. Everyone is a project ambassador and violations of the Code of Conduct carry consequences, including and up to being barred from site.

Throughout the reporting year, LNG Canada continued to develop and refine the Cultural Awareness Program (CAP) for the LNG Canada Project. In February 2019, LNG Canada shared the redesigned CAP presentation and participant manual, which was revised based on feedback received from Indigenous Groups in 2018. LNG Canada welcomed feedback from Indigenous Groups and further refinements to the program were made during this reporting year. LNG Canada is currently working through final revisions with Haisla Nation and it is anticipated that the revised CAP will be released in Q2, 2020. LNG Canada also created a supplementary CAP video to enhance the 1-hour training program delivered at site. Filming for the video took place with participating Nations throughout 2018 and was shared in 2019. Edits were made throughout 2019 based on feedback received from Indigenous Groups. The CAP video will be incorporated into the revised CAP training program in Q2, 2020.

4.1. Public Consultation

During the reporting year, LNG Canada and JFJV 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, and other stakeholders was undertaken, as was the kick off of the LNG Canada SMR.

The SMR kick off occurred on April 30, 2019 with 50 community and provincial stakeholders and Indigenous Group participants. The working groups share information on the seven social management plans (SMPs) in the CLISMP:

- Community Health
- Housing
- Emergency Response
- Traffic
- Education, Amenities and Utilities (every second quarter)

Three SMR meetings occurred in 2019 (April, July and November) and one in 2020 (February). A summary report was published quarterly online and shared with SMR participants after each roundtable which captured the monitoring trends and feedback:

- Quarter 2 SMR was held in Kitimat on July 30, 2019. Four working groups sessions were attended by 54 community and provincial stakeholders and Indigenous Group participants.
- Quarter 3 SMR was held in Terrace on November 5, 2019. Three working group sessions were attended by 35 community and provincial stakeholders and Indigenous Group participants.
- Quarter 4 SMR was held in Terrace on February 4-5, 2020 to convene all four working groups.
- Quarter 1 SMR will be held virtually by teleconference due to the COVID-19 health pandemic, with over 80 participants expected to participate on May 5, 2020

In addition, LNG Canada and JFJV provide project updates through a variety of engagements with the public and relevant stakeholders through the following platforms:

- Community open houses / job fair events hosted in April and October 2019.
- Environmental forum meetings in June, October and December 2019.
- Meetings, updates and site tours with the District of Kitimat staff and council:
 - Project update was given to the Mayor and Council of Kitimat in February 2020.
 - Project update was given to the Mayor and Council of the City of Terrace in March 2020.
- JFJV Project Resource Centre (PRC) (opened in July 2019).

- Online platforms such as Facebook and the project websites are used to communicate project information in a timely manner related to construction and news updates to stakeholders and the local community. During the reporting period, information was shared through 127 Facebook and 52 website posts. Information on career, procurement and contracting opportunities are also available through the Project website.
- Newspaper ads on a number of different items including, but not limited to:
 - JFJV PRC Grand Opening ad – Northern Lights - July 26, 2019
 - Canadian Navigable Waters Act - CVL Marine Outfall – Kitimat Connector October 17, 2019
 - Canadian Navigable Waters Act - LNG Berth - Kitimat Connector and Terrace Standard November 7, 2019
 - JFJV Code of Conduct and Community Feedback Information - Kitimat Connector and Terrace Standard, November 28, 2019
 - JFJV Holiday Greeting ad – Northern Lights – December 20 and 24, 2019
 - JFJV Code of Conduct and Community Feedback Information - Kitimat Connector and Terrace Standard, January 30, 2020
 - JFJV Supply Chain Event Public Portion – Northern Lights Flyer January 10; 17; and 24, 2020
 - Installation of temporary telecom tower- Kitimat Connector February 27, 2020
 - Ongoing ad on Community Feedback and Project Contact information – Northern Lights Flyer - August 2; 9; 16; 23; 30; September 6; 13; 20; 27; October 4; 11; 18; 25; November 1; 8; 15; 22; 29; December 6; 13; January 3; February 7; 14; 21; 28; March 6; 13; 20; 27; April 3; 10; 17; 24; May 1; 8; 14; 22; 29

Public consultation, engagement, and construction communication topics in the reporting year include, but are not limited to:

- EPC introductions, presenting the updated project execution strategy.
- Updated Project layout and design changes.
- Employment, contracting and training processes and opportunities:
 - JFJV held a local business event on January 30, 2020 in Kitimat and had over 100 local and Indigenous businesses and companies participate in the event.

- Community Impacts:
 - Direct impacts were tracked through the CLIMSP's seven SMPs and discussed at the LNG Canada SMR meetings. The majority of the community impacts due to construction activities were traffic related. These included driving behaviours (such as driving too fast or too slow), and parking related issues and were resolved through discussions with contractors and the District of Kitimat.
 - Overall direct impacts to the community have been minimal by following the mitigation strategies in the CLISMP.
- Construction notifications:
 - Open burning (May 13 and 15, August 16 and 28, September 9 2019)
 - General construction (September 10, September 13, 2019; February 28, March 25, 2020)
 - Marine/waterways (November 20, 2019; and March 11, 2020)
 - Piling (May 25, September 10, November 19, 2019; January 21, 2020)
 - Traffic (November 9 and 14, December 15, 2019 and January 3, 8, 13, 2020)

JFJV conducted ongoing formal and informal engagements with Indigenous Groups and key stakeholders over the reporting period. These included, but are not limited to:

- Ongoing meetings with the Haisla and other Indigenous Groups related to permitting and employment topics
 - JFJV met with Indigenous Groups to provide quarterly updates on contracting and procurement opportunities in March 2019, June 2019, September 2019, December 2019 and April 2020.
 - JFJV met with Indigenous Groups to provide updates on employment in February 2019 and July 2019.
- Bi-weekly informal calls with the Mayor and Chief Administrative Officer of the District of Kitimat
- Regular engagements through monthly emails and discussions with local employment and education agencies

4.2. Notification of Consultation

The LNG Canada Project 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 and JFJV websites and Facebook pages, required Gazette advertisements, emails and face-to-face communications with key stakeholders, and through other forms of notification.

4.3. LNG Canada and JFJV Websites

LNG Canada and JFJV have websites (www.lngcanada.ca; www.jfjvkitimat.com).

Both websites provide information on the Project and the LNG industry. The websites allow LNG Canada and JFJV to communicate significant project events and milestones to the public and to keep them informed on project progress and issues of relevance to the local community. Launched in October 2018, information on the JFJV website includes construction notifications, current employment opportunities on the Project with JFJV, subcontractors and sub-subcontractors, as well as information on contract awards and upcoming contracting and procurement opportunities.

LNG Canada and JFJV have links to their Facebook pages on the websites, which makes it easy for the public to follow LNG Canada and JFJV on social media. The LNG Canada website includes information on LNG Canada's environmental programs, including but not limited to, the IAAC Implementation Plan, Wetland Compensation Plan, Fish Habitat Management Plan, and the Archeological and Heritage Resources Management Plan. The IAAC Annual Report and any supporting documentation is also accessible via the LNG Canada website.

4.4. InFocus Magazine

LNG Canada distributes the InFocus newsletter, via Canada Post once per year to all residents in the Kitimat, Thornhill and Terrace communities. InFocus provides information about LNG Canada's activities, upcoming events and opportunities to provide feedback. In addition to LNG Canada's InFocus newsletter, LNG Canada regularly places advertisements in local newspapers to provide project updates, including site activities and permitting processes, and to advertise opportunities for feedback. Currently, LNG Canada also advertises on local First Nations radio, CFRN, to ensure there is an understanding of the Project and local communities are aware of Project commitments.

4.5. Social Media

In early 2016, LNG Canada launched its official Facebook community page and more recently Twitter and LinkedIn social media accounts. The purpose of the LNG Canada Facebook page is to engage with communities and share information on LNG Canada operations, events, and to provide the public with project updates and notifications. Currently there are 31,727 Facebook followers, about 14,500 Twitter followers and 33,700 LinkedIn followers. The page is monitored during regular business hours Monday to Friday in the Pacific Standard Time Zone.

In March 2019, the official JFJV Facebook community page was launched. The objective of the JFJV Facebook page is to keep local stakeholders and surrounding communities aware of project and community related activities. Currently there are over 2,100 followers. The page is monitored Monday to Friday during regular business hours 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 was comprised of a diverse group of 12 community members, who shared their local knowledge to assist LNG Canada in making informed decisions about the Project, and who in turn shared information about the Project with others in the community. CAG members acted as Project ambassadors in the community, and provided a conduit between LNG Canada and the community about the Project, including advising what LNG Canada could do to improve performance and community relations.

The CAG was paused in December 2018 as LNG Canada moves to implement the SMR as defined in the CLISMP. The SMR's focus is to provide project updates and address community impacts, discuss mitigations, and share information with provincial ministries and agencies that will assist in regional planning. The CAG was a community based committee used to share project updates and information. The understanding is that the CAG will restart during commissioning and be an ongoing engagement tool through to and during operations.

4.7. Community Feedback Process

JFJV 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. All feedback is tracked and responded to via the Community Feedback Mechanism managed by JFJV. During the reporting period, there were 2,521 public inquires submitted through the Community Feedback Mechanism in the format of calls, emails and visits to JFJV's PRC.

A breakdown of topics covered amongst the 2,521 public inquires include:

- 61% employment inquires

- 19% contract and procurement inquiries
- 3% complaints and concerns
- 17% general inquiries

The Community Feedback Process channels are staffed by JFJV and monitored during regular business hours (Monday to Friday), and all incoming community engagements are acknowledged within 48 to 72 hours.

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

- Telephone: 1 250 632 5358 or 1 888 499 5358
- Email: info@jfjvkitimat.com
- In person: PRC, located at 234 City Centre Mall in Kitimat, with hours of operation from 8:30 a.m. to 4:00 p.m.

The Community Feedback Mechanism has been communicated to key stakeholders, including the District of Kitimat, the City of Terrace, Haisla Nation and other Indigenous Groups through various meetings, and is conveyed to all contractors through the pre-and-post contract award process. The Community Feedback Mechanism also tracks all noise complaints received. A postcard listing the various methods of communication for the Community Feedback Mechanism has been distributed to key stakeholders including:

- The Kitimat and Terrace Chamber of Commerce offices
- Public locations like the library and Northwest Regional Airport
- Posted on the JFJV and LNG Canada websites.
- The JFJV Facebook page
- Published in the local Kitimat and Terrace newspapers in November 2019 and January 2020
- Handed out at public events such as open houses and business events.

JFJV documents all grievances in StakeTracker, which is the database used to record engagements and communications.

4.8. Indigenous Group Consultation

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

feedback. The LNG Canada Project Senior Indigenous Relationship Leads for each Indigenous Group provides continued single point of contact for all methods of communication (e.g. letter, email, phone, face to face, etc.).

The LNG Canada Project 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 Indigenous Groups throughout the environmental assessment, including ongoing engagement post Environmental Assessment Certificate (EAC). Underpinning the various consultation tools that are described in the Aboriginal Consultation Plan are the Senior Indigenous Relationship Leads for each Indigenous 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, letters, community meetings, site-visits, quarterly project update meetings, and other methods that may be preferred or requested by individual Indigenous 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.

The LNG Canada Project will continue to implement the EAO Approved LNG Canada Aboriginal Consultation Plan (dated August 2013) for all phases of the Project. The next Aboriginal Consultation Summary Report is due one year after the commencement of Operations.

In addition to formal Indigenous Group consultation as outlined in the Plan, the LNG Canada Project also offers numerous opportunities for Indigenous Groups to participate in the implementation of field environmental monitoring programs by participating in monitoring activities at site. Throughout the reporting year, Haisla Nation participated in various monitoring activities at site, including fish and crab salvage, water quality sampling, and marine mammal observation.

The LNG Canada Project will continue to identify and provide opportunities for Indigenous Group members to participate in various monitoring activities (outlined in the environmental management plans) occurring in their respective traditional territory.

4.9. Environmental Management Plan Consultation

In May 2015, LNG Canada began engagement with Indigenous Groups on the development of the CEMP and associated topic specific EMPs for construction, 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

As noted in Section 2.3, there were limited EMP consultation activities undertaken during the reporting year.

In May 2019, LNG Canada initiated consultation with Indigenous Groups on the LNG Canada 2019 Marine EMP Proposed Updates (MMP and DEMP). LNG Canada undertook a series of engagements throughout June 2019 and received comments from Indigenous Groups, which were incorporated as appropriate. In July 2019, LNG Canada provided Indigenous Groups with a copy of the Approval Package that had been submitted to the BC EAO for review. The package included the complete consultation tracker with LNG Canada responses to comments. The LNG Canada 2019 Marine EMP Proposed Updates (MMP and DEMP) were approved by the EAO in September 2019, and LNG Canada provided copies of the approved plans to all Indigenous Groups, along with redlined versions for reference.

The LNG Canada Project continues to engage with regulatory agencies and Indigenous 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 and JFJV'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.

During consultation on the Phase I marine EMPs, the LNG Canada Project also developed the LNG Canada Strategy for Communicating Accidents or Malfunctions (Construction) (C000-000-HX-6180-0005) in support of IAAC Decision Statement Condition 10.3. This document describes the types of accidents or malfunctions scenarios that require notification and the manner by which LNG Canada Project would notify Indigenous Groups in the event of an accident or malfunction, as well as details of the points of contact for the LNG Canada Project and the respective Indigenous Groups.

The LNG Canada Project has identified scenarios for potential accidents or malfunctions in the IAAC 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. Credible scenarios analyzed in the Application are summarized in Table 5-1: Accidents and Malfunctions.

LNG Canada also demonstrated emergency preparedness through the Marine Traffic Coordination Communication Protocol, a requirement under the MATMP. During the 2019-2020 dredging season LNG Canada established and implemented roles and responsibilities for marine traffic coordination, emergency and incident response and provides an overview for vessel scheduling and traffic reporting cycles and communications during in water construction and vessel movements.

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

Of the above analyzed scenarios, a potential spilling of hazardous materials (not including LNG), as well as fire or explosion, applies during the current project construction scope. Incidents relating to

loss of containment of LNG, LNG vessel incidents, and emergency facility shutdown cannot credibly occur during construction activities and are applicable to the operations phase of the Project.

No accidents or malfunctions took place during the reporting year.

5.1. Emergency Response and Notification

The LNG Canada Project emergency procedures are in place to ensure timely and effective decision making in the critical period during and following an emergency. The LNG Canada Project 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). The LNG Canada Project 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 Project emergency response process. The Core ERP sets the standards for emergency response and includes, but is not limited to, details for communication and planning of emergency response activities; description of ICS; roles, responsibilities; requirements and frequency of training and exercises; initial response actions and notification requirements; and general hazard and response procedures.

A site-specific ERP for construction activities has been developed that contains detailed information related to emergency response resources, notification requirements and modes of emergency communication. It contains plans for the most probable emergency scenarios including detailed information to support incident response, information on emergency response resources, notification requirements and modes of emergency communication.

The LNG Canada Project 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. The LNG Canada Project ensures that spill supplies are available in proximity to work being done.

The LNG Canada Project 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 Project 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 Impact Assessment Act. If an

incident is deemed an *Accident or Malfunction* (as per Section 5.0), the LNG Canada Project will notify relevant federal and provincial authorities, and Indigenous 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, the LNG Canada Project developed the *LNG Canada Strategy for Communicating Accidents or Malfunctions (Construction)*, in consultation with Indigenous Groups, as required by IAAC Decision Statement Condition 10.3. The Strategy outlines the process for notifying Indigenous Groups, as well as contact information for reporting. Reportable scenarios and criteria are outlined in the Strategy for spills, explosion, fire and vessel collisions.

For spills of hazardous materials (not including LNG), IAAC and Indigenous Groups will be jointly notified of any spills that:

1. Are not contained within the Project footprint; or
2. Have potential to migrate off site (e.g. releases to waterbodies); or
3. Are not readily cleaned up or contained (i.e. incidents that trigger a larger response such as Incident Command System mobilization).

Any fire and explosion scenarios for the construction phase will, in all likelihood, be related to fuel storage on vessels and barges. For fires and explosions related to marine construction as outlined in the *LNG Canada Strategy for Communicating Accidents or Malfunctions*, IAAC will be notified and the affected Indigenous Group, based on location of the incident and traditional territory considerations, will be notified.

Collisions between vessels, or collisions between a vessel and a stationary object, within the Port of Kitimat that result in environmental damage will be jointly reported to IAAC and Haisla Nation.

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 Indigenous 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.

During the reporting period, there were five reportable incidents associated with the Fisheries Act and the Project Fisheries Act Authorisations between August 2019 and March 2020. All incidents were reported in line with the regulatory reporting requirements.

6.1. Marine Works

As per FAA 15-HPAC-00585 for the marine construction scope, the timing window for dredging during the reporting year was from September 1 – February 28 (pursuant to the Disposal at Sea permit 4543-2-03724, the season was extended from February 15 to February 28, 2020). On September 1, 2019, LNG Canada's second marine construction season opened and dredging related activities in the LNG Canada dredge pocket commenced, including.

- Crab salvage
- In water works to remove obstacles and debris from the LNG Canada dredge pocket, including removal of existing dolphins and creosote piles
- Dredging of IL- material (which is material below the Contaminated Sites Regulation Industrial Land Use criteria) and disposal in the Dredge Disposal Site (DDS)
- Dredging of Disposal at Sea (DAS) material and disposal at the permitted DAS site
- Associated activities related to personnel transport, barge transport, and management of vessel movements

An extensive field environmental monitoring program for protection of fish and fish habitat was implemented for the marine activities related to dredging as per the LNG Canada MMP, including monitoring of marine mammals, which is outlined in Section 6.1.3.

6.1.1. In-Water Construction

Marine EMPs have been developed in consultation with Indigenous 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.

Prior to the start of in-water construction activities, LNG Canada established the location and timing of sensitive life stages and habitat occupancy for fish, including marine mammals, in consultation with DFO and Indigenous Groups through the Fisheries Act Authorization permitting processes. As per FAA 15-HPAC-00585 for the marine construction scope, the timing window of least risk for dredging activities during the reporting year was from September 1 – February 28 extended dredge window.

In water construction works for the MOF commenced with the construction of the North MOF temporary berm and commencement of the West MOF temporary berm and North MOF piling. Prior to and during marine in-water construction, a robust field environmental monitoring program was

implemented to ensure compliance with water quality guidelines and to prevent incidents related to marine mammals. The monitoring programs implemented during the reporting year are outlined in the approved MMP, and are summarized below.

In water works for the second dredge season began in September 2019 following the approval of the EMP changes. Key milestones related to the LNG Canada dredging program include:

- Dredging of IL- material, and associated management of this material via the DDS as permitted by the waste discharge authorization (issued by BC OGC), was completed December 7, 2019;
- Dredging of IL+ material, and associated stabilization and off-site disposal, was completed December 19, 2019;
- Dredging of DAS material commenced January 4, 2020 and completed February 11, 2020; and
- Dredge Season 3 will commence in Q4 2020.



PHOTO 9 - MARINE MAMMAL MONITORING DURING IN-WATER CONSTRUCTION WORKS

6.1.2. Water Quality

Water quality is monitored during dredge and marine construction related activities to ensure compliance with BC Approved Water Quality Guidelines as outlined in the MMP.

6.1.2.1. Dredge Season

Numerical modelling indicates that at a distance of 300 m from the edge of the dredging pocket, Total Suspended Solids (TSS) will meet marine water quality guidelines (i.e. a change from background of 25 mg/L TSS at any one time for a duration of 24 hours in all waters during clear flows or in clear waters). Therefore, 300 m is the initial compliance point for TSS during dredging activity. Similarly, numerical modelling indicates that at a distance of 500 m from the edge of the DAS site, TSS will meet marine water quality guidelines. The compliance line for DAS activities is therefore 500 m.

A tiered monitoring approach was implemented during dredging to evaluate potential impacts to water quality, and subsequent disposal of the dredged material at sea. Tier 1 monitoring characterized plume behavior in both space and time at both the dredging and disposal at sea locations using acoustic (i.e. sound-based) tracking technology. Plume tracking measures the movement of the suspended sediment plumes, in terms of both where they go and how long it takes for them to dissipate to background levels. Water samples taken from within the plume as it moves away from its source are used to measure concentrations of any contaminants associated with the suspended sediment and to characterize how these concentrations change with time or distance. Once plume movement has been adequately characterized, the results are used to determine the location of Tier 2 monitoring buoys. These buoys are equipped with a suite of sensors to provide continuous (e.g., hourly or less) automated measurements of turbidity and other parameters at a distance of 300 m from the edge of the dredging pocket.

There were four exceedances of water quality guidelines at the compliance lines during dredging or disposal at sea activities within the reporting year. Two were total copper exceedances at DP1 on November 18, 2019 and DAS4 on February 19, 2020. Elevated copper levels at REF1 (mouth of the Kitimat River) on November 18, 2019 and the completion of disposal activities on February 11, 2020 indicate that the copper exceedances were naturally occurring. The other two exceedances were total cadmium exceedances at DP2 on November 29, 2019 and DP1 on December 3, 2019. These are not expected to be due to dredging, as multiple sites closer to or within the dredge pocket did not have elevated cadmium levels on these days. Due to the short nature and limited extent of these events, it was determined that there was no adverse environmental impact.

6.1.2.2. Marine Construction Activities

There is a waste discharge authorization associated with discharges from MOF construction (as referenced in the MMP), issued by the BC OGC. There were five self-disclosures of exceedances of

either the water quality guidelines or the permit conditions within the reporting year; all related to elevated discharges of turbidity of suspended solids.

6.1.3. Marine Mammals

The LNG Canada MMP defines the monitoring and mitigation measures related to marine mammal protection and establishes a monitoring program, overseen by a QEP, that includes the deployment of qualified Marine Mammal Observers (MMO) at strategic locations at the Project site.

Experienced QEPs, with support of local personnel as required, are employed as full-time MMOs to monitor during in water activities, both during the day and at night. Qualified MMOs have the ability to identify marine mammal species possibly encountered in the Project area, accurately describe relevant behaviour of marine mammals and accurately estimate the location of the individual in relation to any marine mammal exclusion zone (MMEZ) boundaries.

The MMP defines the required MMEZ for activities where underwater noise levels are anticipated to exceed 160 dB at a reference pressure of one micropascal. These activities are specific to piling and ground improvement for the LNG Canada Project.

The number and location of MMOs, as well as the applied mitigative measures to be taken, is dependent on the activity being undertaken (i.e. pile driving, MOF construction, dredging, etc.).

If a marine mammal is observed within the MMEZ, the MMO assessed the behaviour, location, and direction of travel of the animal if it was moving towards Project activity. The MMO also notified operators to limit non-essential movement of auxiliary vessels, reduce speed to no-wake speed, and avoid the path of the sighted animal (s). If a marine mammal is observed immediately adjacent to the activity, such that there is risk of physical harm from direct contact, work was stopped. Work only resumed once the animal was observed leaving the immediate area or was not re-sighted for 30 minutes.

MMOs were monitoring the project boundaries as defined in the MMP, as well as in water works adjacent to the Project site. Marine mammal observations were conducted with the naked eye, with the assistance of binoculars during daytime observations, and with Forward-Looking Infrared (Radar) technology for night time observations.

6.1.3.1. Dredge Season

During dredging, vessel-based MMOs were present on dredge and disposal related vessels (transporting material to the permitted DAS location) to ensure that dredging activities were visible and identified exclusion zones were visible.

MMEZ boundaries for dredging during the reporting year were defined as 300m for all mammals except harbor seals and immediate vicinity for harbor seals during the dredging season.

During the second dredge season, observations of marine mammals in and around the LNG Canada Project included:

- 1,729 observations of one or more marine mammals in the MMEZs.
- Mitigation measures included one shutdown and twenty six notifications to barge master or vessel captain, which may be for awareness, to reduce speed, or to practice avoidance.
- Observations consisted of one humpback whales, thirty three stellar sea lions, four killer whales, 1,685 harbor seals, one unidentified pinniped and five unidentified cetaceans (observations included one or more individuals).

In-water activities, including dredging, disposal or vessel movement activities, were stopped a total of one time during the second dredge season due to Stellar sea lion presence in vicinity of dredge barge. No marine mammal incidents occurred within the reporting year.

6.1.3.2. Piling and Ground Improvement

Construction of the MOF involved impact pile driving; however wherever possible, the use of the vibratory hammer was used, as it was identified as a mitigation in the Environmental Assessment process for piling, given that this installation method typically generates Sound Exposure Levels (SELS) of approximately 10dB to 15 dB less, and does not produce the high impulse signatures of impact hammer piling.

The MMEZ boundaries for the reporting year were defined as 1.9km for activities that produce underwater noise that exceeds 160 dB. Delayed starts or stop works occurred six times due to marine mammal presence within the MMEZ. No marine mammal incidents occurred within the reporting year.

6.2. Fish and Amphibian Habitat

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

Fisheries Act Authorization 15-HPAC-00918 for the Workforce Accommodation Centre (“FAA1”) provides LNG Canada Project with authorization to construct CVL, 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. The majority of the habitat created for FAA1 has, and will continue to be, in the effectiveness monitoring period.

Fisheries Act Authorization 16-HPAC-00220 for the LNG Facility (“FAA2”) provides LNG Canada with authorization to construct the LNG Canada production facility, which includes the diversion of Beaver Creek, Anderson Creek and KRSC. Specifically, the authorization allows for:

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

Within the reporting period, serious harm associated with FAA2 occurred in KRSC south, Beaver Creek and Anderson Creek. The KRSC North offset channel and the berm inlet structures were substantially completed. The Berm 1 inlet structures (three large culverts) allow Kitimat river water to flow into the KRSC North offsetting habitat. River flow into the KRSC North offset habitat was established in early March. WAC Pond 3 was also constructed. This work involved the excavation of pond habitat in an existing wetland and the placement of large woody debris to create habitat cover for salmonid fish species. Tree clearing within the Beaver Creek Phase 2 offsetting area was undertaken with riparian trees retained adjacent to fish-bearing channels. Excavation of the Beaver Creek Phase 2 channel was initiated and is forecast to be completed in 2020. The Anderson Creek re-alignment channel and adjacent offset ponds were substantially completed by March 2020. These offsets will be commissioned during the summer of 2020 when Anderson Creek is diverted into the newly constructed re-alignment channel.



PHOTO 10 – CONSTRUCTION OF THE KRSC (KITIMAT RIVER IN TOP OF PHOTO) (NOVEMBER 2019)

Fisheries Act Authorization 16-HPAC-01079 for Supporting Infrastructure (“FAA3”) provides LNG Canada with authorization to construct supporting infrastructure for the LNG 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 4357 m² instream fish habitat in tributary to Moore Creek; and
- Destruction of 1324 m² of wetland and off-channel habitat in a tributary to Beaver Creek.

Construction work under FAA3 started during the reporting year with construction of the South Heavy Haul Road (SHHR). This work included infilling aquatic habitat tributary to Moore Creek. In addition to SHHR construction, tree clearing along the LNG loading line was completed.

Fisheries Act Authorization 15-HPAC-00585 for Marine (“FAA Marine”) provides LNG Canada with authorization to construct LNG carrier berths, early offloading facility and MOF which will include the infilling of intertidal and subtidal habitat, dredging of intertidal and subtidal habitats, clearing of riparian vegetation and installation of sheet and pipe piles. Specifically, the authorization allows for:

- Destruction of intertidal habitats including 67,455 m² of salt marsh, 250 m² of eelgrass and 26,615 m² of mudflat; and
- Permanent alteration of intertidal habitats including 46,279 m² of mudflat and 12,864 m² of vegetated rocky intertidal.

Mitigation measures outlined in the FAA and related application were adhered to during the dredge season, including the application of the September 1 – February 28 extended dredge window. A qualified EM was present during all in-water construction activities and dredging. Habitat offsetting activity under the marine FAA was limited to construction of access, trails and laydown areas for Minette Bay. No further construction of habitat offsets took place under the Marine FAA during reporting year.

6.2.1. Fish Salvage and Relocation

During the reporting year, fish salvage and relocation occurred during the isolation of various waterways to support diversions (Anderson Creek, Beaver Creek, KRSC and Moore Creek) and site preparation activities. During the reporting period an approximate total of 290,314 fish were salvaged from the salvage areas. Fish species varied depending on the habitat types salvaged, and included salmonids, Stickleback and Lamprey. All salvaged fish were released into habitat of a similar type and quality, with consideration of future construction and salvage efforts to minimize double handling of fish species.

To reduce impacts to crab during dredging, an effort was made to salvage crab species from the dredge pocket prior to commencing work. All salvaged crab were released to areas not impacted by marine construction. A total of 265 crabs were salvaged and relocated prior to dredging.



PHOTO 11 – FISH SALVAGE ACTIVITIES

6.2.2. Amphibian Salvage and Relocation

During the reporting year, amphibian salvage and relocation occurred during the isolation of various waterways to support diversions, and site preparation activities. Approximately 166,857 amphibians were salvaged, which included Western Toad and Northwestern Salamander. All salvaged amphibians were released into habitat of a similar type and quality, with consideration of future construction and salvage efforts to minimize double handling of species.

6.3. Habitat Offsetting Plans

The LNG Canada Project is committed to offsetting Project related impacts to fish and fish habitat; in consultation with DFO, BC Forests, Lands and Natural Resource Operations and Rural Development (FLNR), and affected Indigenous Groups, a Habitat Offsetting Plan has been developed and implemented where applicable, for the CVL area, LNG Canada Facility, Supporting Infrastructure and the marine environment, as outlined in the associated FAAs.

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.

The LNG Canada Project 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.

6.3.1. 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 Project site 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 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.

The LNG Canada Project engages in regular communication with Haisla Nation regarding all LNG Canada activities at site. Through these regular engagements, issues and concerns are raised and addressed in a transparent and collaborative matter.

6.3.2. Habitat Creation – FAA1

Construction of offset habitats for FAA1 began in summer 2016 and was completed in December of the same year. In 2017, it was determined that additional offsetting was required, resulting in the construction of Pond 4 and Channel 3 Extension. A further assessment has determined that additional offsetting habitat construction is required; LNG Canada is continuing to work with required stakeholders to determine potential offset projects.

As noted in Section 6.2, the majority of the habitat created for FAA1 has, and will continue to be, in the effectiveness monitoring period. In the summer of 2018, modifications along Channel 1 were conducted to construct various deep pools to assist fish species in holding in the channel during low flow conditions. The pools averaged in depth between 1-2m with habitat complexing installed and are anticipated to be isolated during dry conditions.

In addition, it was noted during 2017 effectiveness monitoring that the Light Woody Debris (LWD) installed was not always effective. To help increase the utilization of this LWD, many of the pieces were cut or placed within the wetted width of the channel. Habitat effectiveness monitoring will continue to determine if this increases habitat utilization.

6.3.2.1. Habitat Effectiveness Monitoring

Habitat effectiveness monitoring has found that fish utilization of habitat offsets during summer continues to be low, primarily due to low shade value and increased water temperatures. Improvements in both shade and temperature from 2017 are evident and are anticipated to carry into 2020. Increased habitat utilization is seen during winter months when water temperature is not an issue and water depth and availability is good.

The installation of various real time monitoring equipment in pond and channel habitats in 2018 has assisted in getting a better understanding of water fluctuations and variations in water parameters.

6.3.3. Habitat Creation – FAA2

In 2019 a large component of the construction activity was associated with the construction of the KRSC North, WAC Pond 3 and Anderson Creek Realignment. Within the reporting period a large portion (90%) of the North Kitimat River Side Channel and WAC Pond 3 were completed and opened to fish use.

The completion of KRSC North during the reporting period resulted in the creation of approximately 76,500 m² of fish habitat during high flow conditions and 35,200 m² of fish habitat at low flow conditions.

WAC Pond 3 created approximately 18,000 m² of fish habitat during high flow conditions and 11,900 m² of fish habitat at low flow conditions

6.3.3.1. Effectiveness Monitoring

Effectiveness monitoring in 2019 associated with the Moore Creek Dyke Breach determined some further modifications were required to ensure fish movement during low-low tide events. Effectiveness monitoring for FAA2 offsets completed in 2019 will commence in 2020.

6.3.4. Habitat Creation – Marine FAA

As noted in Section 6.2, habitat creation is in progress under the marine FAA, therefore no effectiveness monitoring has commenced.

7. Wetlands

The LNG Canada Project 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 Indigenous Groups. In BC, wetlands designated as ecologically important to a region are defined by Environment and Climate Change 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

Approximately 49 hectares of ecologically important wetlands occur 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 Marine FAA 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

The LNG Canada Project 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. ESCs 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 ESC is available in Section 2.3.2 of this report.

Within the reporting period, LNG Canada completed the annual adjacent wetland assessment, and no adverse effects to adjacent wetlands resulting from construction were identified.

7.2. Wetland Compensation Plan

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 with 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 was submitted to the EAO in July 2015, following consultation with Environment and Climate Change Canada/Canadian Wildlife Service (ECCC/CWS), FLNR, and Indigenous Groups and prior to the commencement of construction. As LNG Canada continued consultation with these groups and continued to refine the implementation approach for the Wetland Compensation Plan, it was subsequently revised in May 2018 and August 2019.

During the reporting year, consultation on final updates to the Wetland Compensation Plan were completed. In late Quarter 3 of 2020, the updated plan will be submitted to EAO, IAAC and Indigenous Groups, as well as posted on the LNG Canada external webpage.

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 has developed an effectiveness monitoring program to ensure that wetland compensation measures are fulfilling the functions of the wetlands they are replacing, which includes 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

The LNG Canada Project 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 execution of construction activities.

QEPs, including an Avian Biologist as required, are on site or available during construction activities to support the LNG Canada Project 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

Annually between March 25th through August 17th, the LNG Canada Project implements 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.

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

Figure 8-1: Migratory Birds Mitigation Matrix

The LNG Canada Project made efforts to clear as much land as possible outside of the breeding bird window in an effort to alleviate disturbance to migratory birds. Some associated vegetation removal was necessary to be conducted in the breeding bird nesting period. LNG Canada completed pre-disturbance 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 prepared a report on bird survey results daily for LNG Canada, which included 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.

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.

During the reporting year, 222 pre-disturbance bird nest surveys were completed for the LNG Canada Project, and 202 active nests were identified. No incidental take of migratory birds or their active nests took place during the reporting year. In June 2019, the Project self-disclosed to ECCC/CWS the failure to follow best practices associated with bird surveys during a roadside brushing removal activity; the survey of material post brushing did not identify any incidental take.

8.1. Osprey

During the reporting year, no osprey nesting activity was reported to have occurred on the Project footprint. An unutilized nest was located on the same light structure as the 2015/16 nest. With anticipated construction in 2019 of the wharf, LNG Canada applied for and received a permit (FLNR SM18-405147) to remove the unoccupied nest. In January 2019, a new nest platform was constructed, and nest material was placed on the most southern edge of the wharf. LNG Canada constructed a second nest platform in 2019 on the eastern side of the wharf outside future construction activities.

In the first quarter of 2020, it was observed that a bald eagle has started to utilize the nesting platform constructed in 2017 by LNG Canada.

8.2. Marbled Murrelet

Marbled murrelet surveys were completed for the LNG Canada Project site in 2014 and 2015. 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 pre-disturbance nest survey will be undertaken as described in Section 8.0 of this report.

During the reporting year, LNG Canada removed potential high and moderate marbled murrelet habitat. This tree clearing was conducted outside of the marbled murrelet breeding period. LNG Canada has completed the compensation plan associated with the marbled murrelet habitat compensation and is in discussions with the land owner to determine a path forward with habitat conservation.

9. Human Health

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

The LNG Canada Project applies Best Management Practices (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 Project *Noise Management Plan*, which was developed in consultation with DFO, District of Kitimat and Haisla Nation. For activities taking place during the reporting year, the following mitigations were implemented:

- Traffic routing to avoid residential areas where possible;
- All Project vehicles have installed in-vehicle-monitoring-systems to monitor driving behaviours;
- 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 2200, 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); and
- Use of dust control measures on site including road watering, sweeping, speed control mitigations, and seeding of stockpiles.

Notifications specific to noise included:

- Piling activities associated with the MOF;
- Piling activities associated with the LNG Facility construction; and
- Construction at the RWI water pumphouse (for April 2020).

9.1. Noise Complaints

As outlined in Section 4.7 of this report, the LNG Canada Community Feedback Process was developed in consultation with Indigenous Groups and key stakeholders to track inquiries and

complaints related to community concerns, including noise; and was transitioned to JFJV in the previous reporting year. The Community Feedback Process acknowledges all complaints within 48 to 72 hours.

There was one complaint received related to noise within the reporting year; related to the bird deterrents being unintentionally deployed during night hours, and was resolved quickly with the District of Kitimat and the community resident.

9.2. Marine Water and Sediment Quality

The LNG Canada Project marine EMPs define minimum requirements and mitigations for marine work, including management and monitoring 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 Approved 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 were implemented in accordance with the MMP during in-water construction activities.

A series of engagements around marine water quality management and DAS took place with Haisla Nation in the reporting year, including a site visit to the DAS dredge vessel and community information session. Haisla Nation received monthly water quality reports as defined in the MMP throughout the second season. The MMP also includes a program to confirm the human health risk assessment predictions from the baseline shellfish and groundfish tissue study that was conducted in 2015. During the reporting year, post-dredge season 1 sampling took place in the LNG Canada dredge pocket for shellfish and groundfish tissue. Further sampling, as well as analysis and reporting, will take place in 2020.

10. Current Use of Lands and Resources for Traditional Purposes

The LNG Canada Project 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).

Tree clearing took place within the GaTe-5 area, overseen by the qualified archaeologist per the site alteration permit requirements (issued by the BC OGC). Snow fencing was utilized to delineate the site boundaries after clearing activities occurred to ensure entry into the site did not occur. Limited soil stripping occurred at the end of the reporting period, overseen by the qualified archaeologist.

10.1. Archaeological and Heritage Resources Management Plan

The LNG Canada Project has developed an *Archaeological and Heritage Resources Management Plan* in consultation with Indigenous 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 Project site during construction, work is stopped, and the area is delineated with barriers to prevent access and protect the resource. LNG Canada or JFJV 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 Indigenous Groups will be notified as directed by the professional archaeologist.

One chance find event occurred in March 2020; the professional archaeologists classified the material as stoneware that is likely associated with the historical Anderson Ranch which was in the area the artifact was found. The BC Archeological Branch and Haisla Nation were notified on the find. Haisla Nation did not have an interest in the stoneware and it was donated to the Kitimat Historical Society.

10.2. Marine Resources

To define procedures and practices for sharing information and facilitating communication with Indigenous Groups and other local marine users, a communication protocol was developed by LNG Canada and incorporated into the MATMP. The communication protocol was developed in consultation with regulatory agencies and Indigenous 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 Indigenous 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

During the reporting year, LNG Canada communicated marine traffic information to Indigenous Groups and marine users as per the MATMP. Key marine communications shared included:

- Weekly shipping schedules shared with all Indigenous Groups. Based on engagements with and feedback from Indigenous Groups, additional column headings were added to the schedule to include information such as AIS coordinates and description of material on board. Updated schedules are shared with Indigenous Groups during shipping period if information changes. A weekly schedule is also posted on the LNG Canada website.
- Communications to Indigenous Groups in advance of milestone shipping activities, such as the arrival of heavy lift vessels to site, the commencement dredging or piling activities, and the transport of IL+/- materials.
- Dedicated bi-weekly marine activities meeting with Gitga'at for the duration of the dredging season and continued monthly meeting (to update on marine-related activities) since end of the second dredge season.