

Joint venture companies



Controlled Document

## Archaeological and Heritage Resources Management Plan

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# 1. INTRODUCTION

## 1.1 Purpose

LNG Canada Development Inc. (COMPANY) committed to avoiding, reducing or controlling adverse effects to the environment occurring as a result of the LNG Canada Export Terminal (the PROJECT) in Kitimat, British Columbia (BC). To help ensure this, a series of Environmental Management Plans (EMPs) related to specific aspects of the PROJECT have been developed. to outline the requirements regarding archaeological and heritage resources at the PROJECT SITE during construction.

Elements from this plan inform the overall Construction EMP (CEMP), which summarises the environmental management requirements, including (but not limited to): Archaeology and heritage resource management, air emissions, greenhouse gases, surface water, wastewater, solid and hazardous wastes, noise and vibration, traffic, invasive plants and wildlife.

A list of acronyms used in this plan is provided in Appendix A-1.

## 1.2 Objective

The objective of this AHRMP is (in relation to archaeological and heritage resources applicable to construction phases of the PROJECT):

- Identify the regulatory requirements, stakeholder commitments as well as PROJECT requirements.
- Identify the PROJECT activities and associated with heritage and archaeological resources.
- Provide guidance for appropriate protection of archaeological and heritage resources.
- Serve as a high level reference source for Chance Find protocols.
- Identify features that should be incorporated into the detailed design to support the future avoidance, management, mitigation/monitoring requirements.
- Act as a reference document for PROJECT personnel when planning or conducting specific PROJECT activities.
- Act as a guideline for CONTRACTOR to develop own Environmental Work Plans (EWPs) that include heritage and archaeological resource management.
- Minimise risk to construction scheduling.
- Promote the preservation and proper management of archaeological and heritage resources.

## 1.3 Exclusions

This document does not:

- Absolve CONTRACTOR from undertaking their own due diligence in relation to regulatory requirements for archaeological and heritage resources associated with the activity being undertaken.
- Replace design standards or best management practices specific to an engineering discipline. Rather, the intent of this AHRMP is to compliment design standards and best practices. Should a conflict arise, the most stringent requirement out of the design standard, best management practice, or this plan should prevail.
- Include areas outside of the PROJECT Battery Limits (refer Section 1.4) such as the feed gas pipeline and LNG export shipping/route.
- Marine activities are also excluded from the scope of work as they are addressed in L001-09800-HX-5880-1903 "MARINE ACTIVITIES PLAN" as included in Part III, Chapter 4.14.

## 1.4 PROJECT Description

### 1.4.1 Battery Limits

The purpose of the PROJECT is to convert natural gas into liquefied natural gas (LNG) and contribute to the development of an LNG export industry in BC Canada. The PROJECT SITE covers an area of approximately 430 ha in the District of Kitimat in northwest BC (Reference is made to Figure 1). The PROJECT will consist of the following major components, all located in BC:

- LNG facility including:
  - Natural gas receiving facility with a gas inlet station
  - LNG production facility with natural gas liquefaction processing units, or trains, comprising of gas treatment and liquefaction facilities, which, at full build-out, will produce approximately 26 mtpa of LNG
  - LNG storage site includes the storage tanks
  - LNG loading and circulation system connecting the LNG processing and storage site with the marine terminal
  - Utilities, including the following:
    - Cooling water supply, treatment and return
    - Power supply
  - Services (e.g. nitrogen, instrument air, fire water, potable water, sewers)
  - Refrigerant production and storage (ethane, propane, precool mixed refrigerant)
  - Condensate processing, storage and rail loading facilities
  - Buildings (office, workshop, warehouse), roads and other site infrastructure
  - Central Control Room
  - Temporary infrastructure and facilities, including construction utilities and offices, temporary laydown and assembly areas, staging areas, workforce accommodation village, and access roads

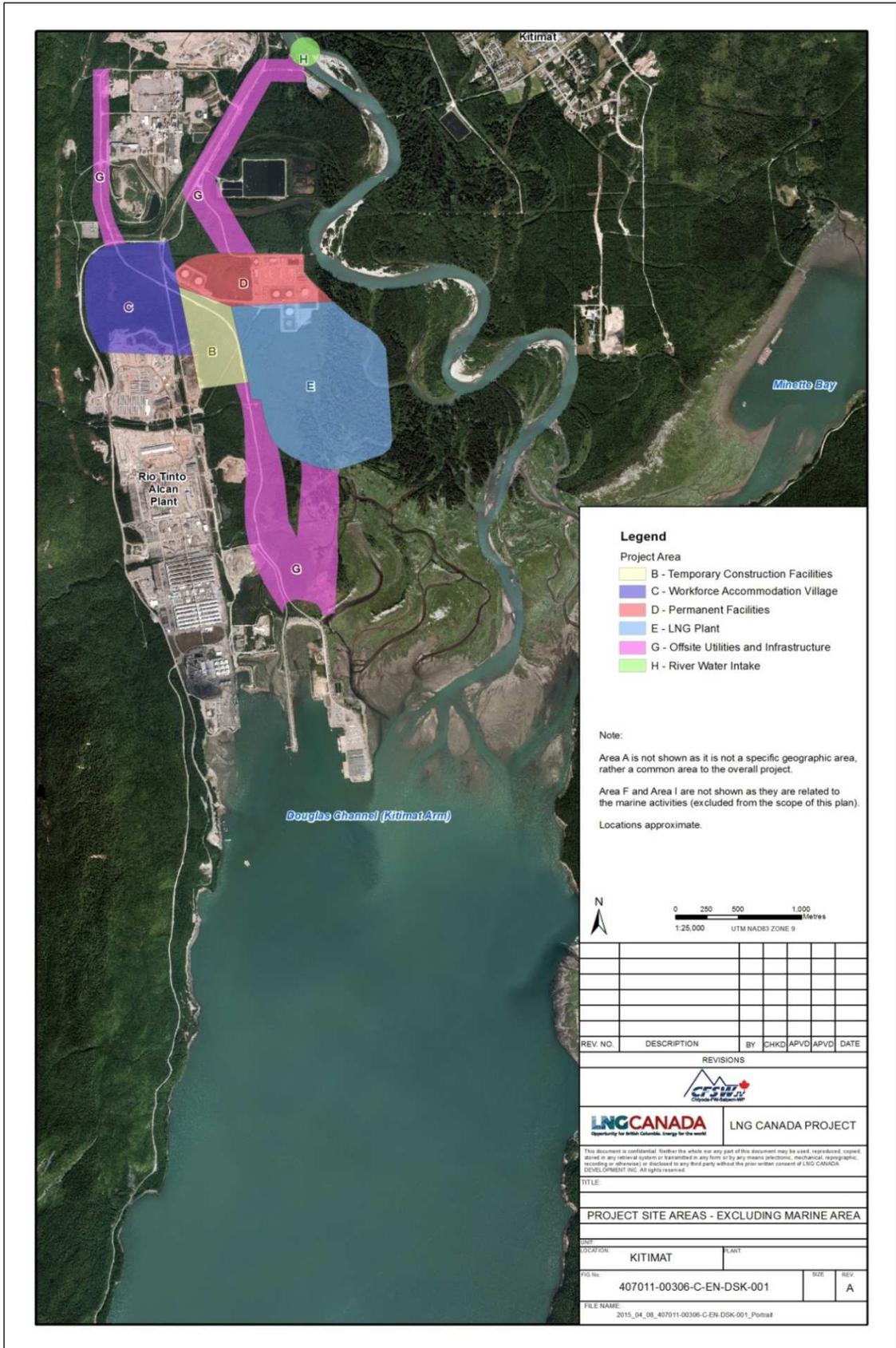


Figure 1: Geographic Areas

## 1.4.2 Scope of Work

This document relates to the early works, construction and pre-commissioning which are collectively referred to as the construction phase as shown in Table 1. Applicable activities undertaken within these phases are outlined in Section 6.

**Table 1: PROJECT Phase Descriptions**

Type of EMP	PROJECT Phase
<b>Construction</b>	<b>Early Works</b> , such as temporary construction facilities installation, and other activities to prepare for construction
	<b>Construction:</b> As permitted through the Leave to Construct (from the BC Oil and Gas Commission (OGC) Regulators); installation of trains, much of the marine terminal and port works, ancillary equipment, and shipping.
	<b>Pre-Commissioning:</b> Completion activities to validate construction as per design, demonstration of strength and integrity of the piping/mechanical systems and communication/function of the control systems.

Marine activities are also excluded from the scope of work as they are addressed in L001-09800-HX-5880-1903 “MARINE ACTIVITIES PLAN” as included in Part III, Chapter 4.14. The Marine Activities Plan will address disturbance to archaeological and heritage sites located along the shoreline.

## 1.4.3 Environmental Aspect Definition

Per the Heritage Conservation Act (RBSC 1996), Part 1 (Introductions – Definitions), a heritage site means “whether designated or not, land, including land covered by water, that has heritage value to BC, a community or an aboriginal people”. Heritage value is defined as “historical, cultural, aesthetic, scientific, or educational worth or usefulness of a site or object”. Reference is made to Appendix A-2 for definitions.

The PROJECT is located within the traditional territory of Haisla Nation, and approximately 3.2 km northwest of Kitamaat Village, Haisla Nation’s primary settlement (LNGC 2014). However, for thousands of years Haisla have occupied many village sites throughout their traditional territory and have fished, hunted and gathered (LNGC 2014).

Archaeological and heritage sites are non-renewable resources. Effects on heritage sites, such as trails, cabins or post-1846 AD culturally modified trees (CMTs), or on protected archaeological sites and pre-1846 CMTs, are irreversible (LNGC 2014).

## 1.5 Report Layout

This document covers the following, focused on the archeological and heritage resources:

- Related Documents (Section 2)
- Environmental Philosophy and HSE (Health Safety Environment) Vision and Objectives (Section 3)
- Roles and Responsibilities involved in the development and implementation of the EMP (Section 4)
- Regulatory Framework, Stakeholder Commitments and FEED PACKAGE, which are the basis for design alignment and regulatory compliance (Section 5)
- PROJECT Activities being undertaken and their proposed Environmental Avoidance, Management, and Mitigation Measures (Section 6)
- Environmental Work Plans (Section 7)
- Required Inspections, Monitoring, Compliance and Reporting activities (Section 8)
- Training and Communication needs (Section 9)
- Community Liaison and Engagement (Section 10)
- Emergency Response requirements (Section 11)
- EMP Review and Update (Section 12)
- References (Section 13)
- Appendices

## 2. RELATED DOCUMENTS

Table 2 contains a list of related documents referenced within this document. Any changes to the documents listed below will need to be reflected within this EMP as applicable. Additional documents referenced within this plan are listed in Section 13.

**Table 2: Related PROJECT Documents**

Document Name	Document Number
LNG Canada External Communications and Engagement Protocol	C000-000-AA-6048-0003
Construction Environmental Management Plan	L001-09800-HE-7180-1901

### **3. ENVIRONMENTAL PHILOSOPHY AND HSE VISION, OBJECTIVES**

LNG Canada is committed to all aspects of the environment. It is the intention of LNG Canada to execute a high standard of environmental management through all phases of the PROJECT for the planned activities to ensure all regulatory and corporate requirements are fulfilled.

#### **3.1 Environmental Philosophy**

- Protect the environment.
- Minimise potential impacts on the local environment.
- Minimise greenhouse gas emissions from the proposed facility.
- Comply with existing regulations and requirements.
- Align environmental, community commitments and social performance commitments and engineering design and construction decisions.
- Implement PROJECT specific environmental management program that includes a series of environmental management plans to protect the environment, personnel and the public.
- Aim to continuously improve operations to prevent incidents and identify, avoid where possible and minimise adverse environmental and social impacts across our PROJECTs and facilities.
- Focus on key areas including: consuming less fresh water; conserving biodiversity; using less energy; minimising waste; preventing spills and leaks; flaring less gas produced with oil; and managing GHG emissions.
- Use material and energy efficiently to provide our products and services.
- Publicly report on our performance.

#### **3.2 HSE Vision and Objectives**

LNG Canada Vision – “Health, Safety and Environment is integral to everything we do in LNG Canada.”

##### **3.2.1 Our HSE Objectives**

- Goal Zero: No harm to people, no uncontrolled releases to environment.
- We comply with the Life Saving Rules.
- We respect and care for people and the environment.
- We are engaged committed and lead by example.
- We set clear expectations for staff and contractors.
- We communicate openly and honestly, encouraging everyone to speak up.
- We are a continuous learning with focus on continuous improvement.
- We hold each other accountable, share information and celebrate successes.

## **4. ENVIRONMENTAL ROLES AND RESPONSIBILITIES**

While all PROJECT personnel share responsibility for implementing environmental controls, this section outlines the key roles involved in the development and implementation of a field environmental program (including archaeology and heritage resource management) during construction and pre-commissioning/commissioning.

### **4.1 CONTRACTOR Interface**

CONTRACTOR shall maintain contact and exchange information between LNG Canada's Environment Lead and CONTRACTOR's Environment Manager. CONTRACTOR's Environment team shall disseminate appropriate environmental knowledge as well as an awareness of PROJECT work plans, environmental expectations, commitments, obligations and requirements to the PROJECT team. CONTRACTOR shall interface with COMPANY by undertaking the following:

- Meet regularly with the COMPANY Environment Lead.
- Ensure appropriate sign-offs and permits are received prior to commencement of various work activities.
- Update the regulatory compliance and environmental performance management system to track the PROJECT's performance.
- Complete regular on-site visits to assess and verify performance relevant to on-site daily field monitoring of environmental activities.
- Complete and update PROJECT EMPs, including this AHRMP, and circulate to SUBCONTRACTORS as required.
- Update CONTRACTOR Team regarding progress, issues and plans as they relate to the COMPANY PROJECT's environmental commitments and requirements.

### **4.2 CONTRACTOR Accountabilities and Expectations Regarding Environmental Compliance**

CONTRACTOR and SUBCONTRACTORS are accountable for ensuring that their workers are aware of applicable environmental (including archaeology and heritage resource aspects), socioeconomic and regulatory requirements as well as the environmental expectations, commitments, obligations and requirements for the PROJECT. Effective environmental management and compliance can be achieved only by understanding and following the regulatory requirements and COMPANY's Environment Philosophy.

CONTRACTOR shall understand and adhere to COMPANY environment related requirements where appropriate. Likewise, CONTRACTOR shall impose the same requirements on their SUBCONTRACTORS. CONTRACTOR shall report on SUBCONTRACTORS' environmental compliance status.

#### **4.2.1 Organisation and Responsibilities**

Resources from COMPANY and CONTRACTOR will be drawn upon to further develop and implement the CEMP. Every worker is responsible for the protection of the environment. CONTRACTOR Environment team is responsible for the timely delivery of documentation necessary to satisfy all environmental regulatory requirements consistent with the PROJECT's regulatory compliance and environmental performance and protection expectations and requirements as outlined in the CEMP and forthcoming RCP.

The hierarchy for environmental auditing/inspection is as follows:

- COMPANY audits CONTRACTOR
- CONTRACTOR audits SUBCONTRACTORS
- SUBCONTRACTORS audit their lower-tier SUBCONTRACTORS

See Appendix B for list of primary roles and responsibilities for the environmental management expectations of COMPANY.

### **4.3 CONTRACTOR Environment Manager**

CONTRACTOR Environment Manager shall serve as the focal point for all construction environmental issues, and shall participate in and be consulted on all key environmental decisions. CONTRACTOR Environment Manager shall report directly to CONTRACTOR Site Manager or designate. CONTRACTOR Environment Manager shall be accountable for directing and monitoring the PROJECT field activities for compliance with the PROJECT environmental and controlled product procedures. These responsibilities are detailed further in Appendix B.

### **4.4 CONTRACTOR Site Environment Specialists**

CONTRACTOR Site Environment Specialist shall report directly to CONTRACTOR Environment Manager and shall be responsible for ensuring field activities are in compliance with the PROJECT environmental procedures. These responsibilities are detailed further in Appendix B.

## **5. REGULATORY, PROJECT AND STAKEHOLDER REQUIREMENTS**

### **5.1 Introduction**

The LNG Canada PROJECT is to be designed, constructed and operated in alignment with the following key considerations:

- Compliance with the Approval conditions that are documented in the Permits
- Compliance with the Regulatory requirements
- Compliance with the FEED PACKAGE
- Alignment to the PROJECT Stakeholder Commitments (including agreements made with First Nations)

Information on each of these considerations is provided in the following section.

### **5.2 PROJECT Approvals and Conditions**

The following are the PROJECT approvals, associated approvals and permits that will be sought throughout the PROJECT:

- Export Licence: COMPANY was granted an export licence under section 117 of the *National Energy Board Act*, on February 4, 2013. This license did not include any specific environmental approval conditions.
- Environmental Assessment (EA) Certificate: COMPANY also submitted the EA Certificate Application to the B.C. EA Office in November 2014 to commence the Application Review Stage. The Certificate was approved June 17, 2015 containing specific PROJECT approval conditions.
- Canadian Environmental Assessment Act (CEAA) Application: COMPANY submitted the CEAA Application to the Canadian Environmental Assessment Agency and was approved June 17, 2015 also containing specific PROJECT approval conditions.
- BC OGC Facility Application # 020531401-001. BC OGC File # is 9709124: COMPANY submitted the BC OGC Facility Permit application on February 6, 2015.

The EA Certification Application included an Archaeological Impact Assessment (AIA), with identification on archaeological sites on the PROJECT (reference is made to Section 6.3).

Additional approvals and permits will be added as applicable. Appendix D identifies the current approval conditions that are applicable to the PROJECT and relevant to archaeological and heritage resources. The full

set of current approval conditions is contained in L001-09800-HE-7180-1901 "CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN" as included in Part III, Chapter 4.14 and should be referred to.

Reference is made to L001-09800-AA-5753-1901 "PERMITS AND CONSENTS PLAN" as included in Part V, Chapter 13 containing a list of all the permits anticipated for the PROJECT (environmental and non-environmental). The permits will also contain conditions that will need to be met by CONTRACTOR (reference is made to Section 5.3.3).

### **5.3 Regulatory Framework**

Environmental regulations for LNG development in Canada, falls under international, federal, provincial and municipal jurisdictions. The following section outlines the roles of the four jurisdictions plus reference to supporting industry best practice and guidelines.

#### **5.3.1 International Acts and Regulations**

Global issues are recognised through International Law; therefore many legally binding International Agreements (through treaties, conventions, declarations, protocols, etc.) have been developed. These agreements cover a range of environmental issues, including marine, atmospheric pollution and biodiversity protection. This plan does not consider shipping or marine related activities.

Appendix C identifies International Agreements, however there are none relevant to archeological and heritage resources, therefore none are provided.

#### **5.3.2 Federal Acts and Regulations**

The Federal government has authority over public crown land, which includes national parks, federal wildlife reserves, navigable waters, and First Nations Reserves. Federal legislation and regulations regulate the activities of all Canadians on federal lands. Through Environment Canada, the Federal government's mandate is to preserve and enhance the quality of the natural environment; conserve Canada's natural resources; conserve and protect Canada's water resources; coordinate policies and programs, aboriginal interests, and address environmental issues on a national and international scale.

Examples of these issues include air and water quality; greenhouse gas emissions; climate change; biodiversity; migratory birds and species at risk, as well as the import and export of hazardous wastes and materials.

The CEAA (*Canadian Environmental Protection Act*) will also apply to the PROJECT.

Appendix C identifies Federal Acts and Regulations applicable to the PROJECT and relevant to archeological and heritage resources.

#### **5.3.3 Provincial Acts and Regulations**

Although the Federal government provides an overview on how to enhance and preserve the environment, it delegates the responsibility to each province to protect the local environment and address specific issues that may negatively affect it.

Archaeological and heritage resources on private and provincial lands in BC are protected in accordance with the legal requirements and conditions set forth in the *Heritage Conservation Act* (HCA) 1996. Heritage site and objects that predate 1846 are automatically protected under the HCA. The HCA is administered by the Archaeology Branch of the Ministry of Forests, Lands, and Natural Resource Operations (FLNRO). Archaeological resources in BC are generally considered to be places containing physical evidence of past human activity in the form of material objects or features (reference is made to Appendix A-2 for definitions).

The BC Archaeology Branch has established standards, policies, and guidelines for the archaeological assessment process in BC under the HCA. These include:

- Heritage Inspection Permits issued pursuant to Section 14 of the HCA to authorise AIAs

- Heritage Investigation Permits issued pursuant to Section 14 of the HCA to conduct systematic data recovery (SDR)
- Alteration Permits issued pursuant to Section 12 of the HCA to allow site disturbance following acceptable completion of mitigation requirements

The BC OGC shares responsibility with the Archaeology Branch for the implementation of these standards for developments.

Appendix C identifies Provincial Acts and Regulations applicable to the PROJECT and relevant to archeological and heritage resources.

### **5.3.4 Municipal Acts and Regulations**

The purpose of the municipal governments is to provide governance, services and facilities that are necessary or desirable, to develop and maintain safe and viable communities. These powers are delegated through the provincial government (BC).

The PROJECT is located in the District of Kitimat, which is a member municipality of the Regional District of Kitimat-Stikine government.

Appendix C identifies Municipal Acts and Regulations, however there are none relevant to archeological and heritage resources, therefore none are provided.

### **5.3.5 Best Practices and Guidelines**

Industry bodies publish best practices, guidelines and codes of practice applicable to environmental management that could be adopted by the PROJECT. These documents contain environmental conditions that are often acceptable to regulators (aid in approvals process) and also contribute to the corporate due diligence in environmental protection.

Appendix C and Section 0 identify Best Practices and Guidelines that may be applicable to the PROJECT and relevant to archeological and heritage resources.

## **5.4 FEED PACKAGE**

CONTRACTOR shall comply with the specifications relevant to the archeological and heritage resources as included in the FEED PACKAGE.

## **5.5 Commitments, Statements and Considerations**

Commitments, statements and considerations have been made as part of the regulatory approval process for the PROJECT as well as community engagements. Commitments are often sourced from EA approvals, permit conditions, contractual agreements with Aboriginal Groups, responses to statements of concern from stakeholders and minutes from public meetings. Commitments have also been made in the community commitment document that was developed with residents of Kitimat.

CONTRACTOR shall comply, maintain and update the PROJECT Stakeholder Commitments Register.

Appendix F identifies the commitments, statements and considerations relevant to archeological and heritage resources as part of the EA application. Reference is made to the actual PROJECT Stakeholder Commitments Database for the complete list of commitments.

## 6. ACTIVITIES

The work activities being undertaken drives the assignment of potential environmental effects, which in turn facilitates the identification of environmental avoidance, management, and mitigation measures that can be applied to minimise the environmental effect, including any hazard or harm to archaeological and heritage resources.

An activity aspect includes all construction activities interacting with the environment. These interactions may be continuous or periodic in nature. As a result, there will be an environmental effect, which may have an adverse or beneficial result on the environment, as a consequence from construction activities. Figure 2 outlines examples of links between activity aspects and environmental effects. Note that the effects are not limited to what is listed. More effects actually occur per activity.

Activity Aspect		Potential Environmental Effect(s)
Vegetation and tree clearing		Disturbance/destruction of an archaeological/historical artefact or site
Earthworks		Disturbance/destruction of an archaeological/historical artefact or site
Building construction		Disturbance/destruction of an archaeological/historical artefact or site
Utilities construction		Disturbance/destruction of an archaeological/historical artefact or site
Road and rail construction		Disturbance/destruction of an archaeological/historical artefact or site
Creek diversions / works		Disturbance/destruction of an archaeological/historical artefact or site

**Figure 2: Examples of Activity Aspects and Environmental Effects**

### 6.1 PROJECT Activities

The PROJECT construction activities have been categorised into the Key PROJECT Activities which are the PROJECT's Milestones (Table 3) and Supporting PROJECT Activities (Table 4) which are general activities required for completion of the PROJECT.

**Table 3: Key PROJECT Activities**

<b>PROJECT Milestone Activities</b>	<b>Description (Activity Aspect)</b>
<b>Construction Phase</b>	
Site Preparation	Site and vegetation clearing, grubbing, rock or material removal or fill, earthworks (grading and levelling, compaction), fencing and bunding.
Removal of Existing Facilities (By Others as part of COMPANY PROVIDED ITEMS)	Decommissioning/Demolition of existing facilities.
Creek Diversions/Works	Re-alignment/works to existing waterways.
Ground Improvement and Piling	Densification of soil and pile driving.
Concrete Batching Plant Operation	Construction and operations to provide concrete to the PROJECT.
Building Construction	Activities include paving, foundations, mechanical, electrical, structural, fire protection, painting and sand blasting.  Locations include Temporary Construction Facility (TCF); Workforce Accommodation Village (By Others as part of COMPANY PROVIDED ITEMS); Permanent Facilities and within the LNG facility.
Utilities Construction	Activities include power, industrial and potable water systems, wastewater collection and treatment, storm water collection, drainage/piping systems, vehicle fuelling station, oil-water separator.  Locations include TCF; Workforce Accommodation Village; Permanent Facilities within the LNG facility.
Operation of the Workforce Accommodation Village	Accommodation, recreation and supporting activities
Process Construction	LNG facility (including LNG and Condensate storage tanks).
Offsite Utilities and Infrastructure: LNG Loading Line	LNG loading lines and circulation system.
Offsite Utilities and Infrastructure: Road and Rail Construction	Installation/Upgrade of access roads (including Haul Road), bridges and railway spur, pedestrian crossing (associated with Workforce Accommodation Village).
Offsite Utilities and Infrastructure: Pipelines/Utilities	Water supply pipelines; effluent discharge pipelines; third party utilities.
River Water Intake Construction	Cofferdam, intake systems and supporting utilities.
Pre-Commissioning	Hydrostatic testing of equipment (including water supply and disposal).

**Table 4: Supporting PROJECT Activities**

<b>General Supporting Activities</b>	<b>Description</b>
--------------------------------------	--------------------

Vehicle, Rail and Equipment Use/Traffic	Transportation and equipment mobilisation, then use on site
Fuel and Chemicals	Handling, storage, refueling, loading and transportation
Erosion and Sediment Control	From exposed/disturbed surfaces
Waste Management	Collection, handling, storage, disposal and transportation
Bulk Material Handling	Importing materials

## 6.2 Activity Aspect

As stated earlier, an aspect is a feature or characteristic of an activity, product, or service that affects or can affect the environment. An activity aspect is a feature or characteristic of an activity that affects or can affect the environment. Activity aspects break PROJECT activities into more detailed activities (reference is made to

Appendix A-2). Activities which may have an aspect that affects or can affect the environment (i.e. atmospheric environment) are demonstrated in Appendix G which includes:

- Vegetation and tree clearing (By Others as part of COMPANY PROVIDED ITEMS)
- Grading
- Cut and Fill
- Trenching
- Re-contouring
- Compacting

In the context of this AHRMP, it is any PROJECT based activity that can present a hazard to a protected site identified through the EA or in the event of a discovery of additional archaeological/heritage materials.

## 6.3 Known Archaeological Sites

The EA Certification Application provides a detailed report on the existing archaeological conditions. The following information is directly copied (or paraphrased where applicable) from the EA Certification Application (LNGC 2014). COMPANY is undertaking further AIA in 2015 which may result in identification of additional sites.

Three previously recorded archaeological sites are located within 2 km of the LNG Canada PROJECT footprint (sites GaTd-3, GaTe-3, and FITd-5), and one heritage and one archaeological site were identified in the course of the AIA fieldwork for the PROJECT (GaTe-4 and GaTe5). The latter two are in vicinity of the haul road and north end of the LNG Loading Line respectively.

Heritage site GaTe-4 is located on the north bank of Moore Creek, approximately 50 m east of the current Eurocan haul road (in Geographical Area G per Appendix I, Drawing 1). Many subsurface tests were excavated in an area of which two of these tests yielded artefacts, three yielded charcoal and fire-modified rock, and one contained an unmodified bird bone. In addition, five short wooden objects with apparent cultural modifications were recovered. Remains at this location are provisionally interpreted as representing a small fish processing site, based on the tentative identification of cooking fire remains as well as possible fish weir stakes. This interpretation is also consistent with the site's location on a salmon spawning stream.

Archaeological site GaTe-5 is located around extinct and extant stream channels of Moore and Anderson creeks just south of Dyke Road and above an active tidal floodplain (near the proposed LNG Loading Line corridor, in Geographical Area E per Appendix I, Drawing 1). Many subsurface tests were found positive for cultural

materials, including recovery of lithic artefacts, flake tools, cores and modified cobbles/pebbles. This assemblage reflects one or more short-term occupations of the site, where resources such as fish, terrestrial game, or plant materials, were processed. This location was used post 1846 as well, as part of the Anderson Ranch. Remains of an old wagon are apparent at this location. Additional historical materials were located along the proposed LNG loading line corridor.

## **6.4 Archaeological and Heritage Resources Chance Find Procedures**

An AIA has been performed within the PROJECT footprint as part of the EA Certificate Application. It is important to note that the assessment used approved sampling techniques which can still fail to identify all archaeological materials that could be present. During construction, it is possible that archaeological materials or landforms that indicate heritage sites may be revealed. The Chance Find Procedure (CFP), which provides the guidelines for chance find management of found archaeological materials, is described in Appendix G.

## **6.5 Found Human Remains**

If human remains are found the Royal Canadian Mounted Police (RCMP) and the Coroner's Office must be notified to determine whether the matter is of contemporary forensic concern. The Archaeology Branch may provide information to assist in this determination. Upon notification of the discovery of human remains that are not of a forensic concern and are of aboriginal ancestry, the Archaeology Branch will inform the Haisla First Nation and may advise of any required action and conditions for SUBCONTRACTORS and PROJECT personnel to follow onsite pending an investigation. In this instance the same procedures as indicated in Section 6.4 will apply.

## **6.6 Archaeology and Heritage Resource Management Options**

All archaeological sites, whether recorded or unidentified, are protected by the HCA and may not be altered, damaged, excavated in, or disturbed in any way without a Section 12 or 14 HCA permit. Appendix C outlines the Regulatory Framework that relates to archaeological and heritage resources.

In the event that an archaeological/heritage site is present and requires protection, preservation or recovery, a number of management options are available depending on the results of a site investigation, agreements in place, engagement with the Haisla First Nation and practices followed by the BC Archaeology Branch including:

1. Avoidance through partial redesign or redirection of construction activities, including setbacks, utility corridors, and other measures that serve to eliminate/minimise any impact to the site and limit delays to construction. Avoidance, if reasonably achievable under PROJECT constraints, is the recommended management option.
2. In conjunction with avoidance measures, protection and preservation of the site on a temporary or ongoing basis is further recommended. Measures could include concealment and blocking access, fencing, changes in road design, demarcation and capping with fill for later investigation or other measures as agreed with the BC Archaeology Branch and the Haisla First Nation.
3. Salvage or emergency excavation as a mitigating measure to recover and repatriate any materials or human remains. This process may result in a delay to the construction schedule to accommodate a complete site investigation. This mitigation would require an Alteration Permit and will require archaeological monitoring during construction. Further, a SDR program may be required for sites that are likely to be disturbed by construction.

Additional management procedures are contained in Appendix F, which reflect the stakeholder commitments submitted during the EA process.

Appropriate permits may need to be sought with the BC Archaeology Branch, or the OGC depending on the significance and nature of the archaeological/heritage site present and in compliance with regulatory requirements and all obligations as specified in formal agreements with the Haisla First Nation.

The municipality of Kitimat may also have an interest in the identification of an archaeological/heritage site within their legal jurisdiction to ensure that these sites are preserved.

## **7. ENVIRONMENTAL WORK PLANS**

The purpose of this section is to guide the preparation and submission of Environmental Work Plans (EWPs).

EWPs shall be prepared for defined scopes of work (SOW) including those relating to specific environmentally sensitive locations and/ or areas that are defined or referenced in Permits. The EWPs shall describe the environmental aspects of defined work activities within those locations and outline the measures which the SUBCONTRACTORS shall implement to protect the environment while completing the work activities.

The information set out in the EWPs shall be consistent with the information set out in the CEMP and other EMPs. Information shall be sufficiently clear and concise as to enable any tier of SUBCONTRACTORS or any other person engaged or involved in the performance of the work, to effectively utilize and understand the EWPs in connection with the performance of the work. Moreover, the EWPs shall also serve to inform the Environmental Monitors and their compliance monitoring efforts.

### **7.1 Responsibilities**

#### **7.1.1 CONTRACTOR Environmental Manager And Leads**

CONTRACTOR's Environmental Manager (or designate) shall oversee the acceptance and implementation of EWPs on the PROJECT. The Environmental Manager, complimented by the applicable Lead (Terrestrial/Freshwater, Marine or Soil and Groundwater Leads), shall review EWPs prior to work beginning to check their compliance with the PROJECT CEMP, relevant Permits, and applicable regulations and/or legislation pertaining to the SOW.

#### **7.1.2 CONTRACTOR Site Environmental Specialist And Environmental Monitor**

CONTRACTOR Environmental Site Advisor shall ensure that CONTRACTOR and SUBCONTRACTOR EWPs are implemented in the field and are monitored adequately by the Environmental Monitor to document compliance or to identify any potential non-conformance or non-compliance. Associated corrective measures and/or stop work orders would also fall under the responsibility of the CONTRACTOR Environmental Site Advisor and/or the Environmental Monitor.

#### **7.1.3 CONTRACTOR Environmental Coordinator/Representative**

CONTRACTOR Environmental Coordinators/Representative (ECs), in coordination with their respective CONTRACTOR construction personnel, shall develop EWPs that are compliant with this guideline. The ECs shall:

4. Determine the need for an EWP(s) for particular locations in consultation with CONTRACTOR's Environmental Manager and/or Site Advisor
5. Prepare (or oversee) the preparation of the EWP(s)
6. Review and obtain the required CONTRACTOR signatures for the EWP(s) (i.e. Superintendent or Field Engineer)
7. Submit a finalized EWP(s) in sufficient time for the plan to be reviewed prior to the start of construction activities as defined in the Plan
8. Communicate the EWP to applicable construction personnel (e.g. through training, pre- activity meeting);
9. Check and confirm CONTRACTORS' and SUBCONTRACTOR's effectiveness in implementing and following the EWP
10. Liaise directly with the Environmental Monitor should any deficiencies, non-conformance and/or non-compliance be identified
11. Initiate the Non-Compliance / Non- Conformance Report process, as required to correct possible CONTRACTOR and SUBCONTRACTOR non-conformity(ies)/non-compliance with respect to EWP preparation and/or implementation

## 7.2 Process And Format

As triggered by the above described requirements, EWPs shall be prepared for specific, defined PROJECT locations and/or SOWs involving sensitive environmental constraints or considerations. After a PROJECT location or activity requiring an EWP has been determined, an EWP shall be prepared for that SOW/location to manage a specific, defined set of construction activities (e.g., clearing and grubbing, excavation, creek diversion, ground improvements etc.) within the defined PROJECT location.

Where appropriate, multiple areas and activities that have similar characteristics such as homogenous environmental sensitivity as well as straightforward, repeating construction elements or activities (e.g., pile driving related to ground improvements) can be addressed in a single EWP. Also where appropriate, construction activities that are to occur in close temporal sequence to one another and/ or are occurring in an area with no or low environmental sensitivity can be combined into a single EWP.

Each EWP shall at a minimum include the following information:

1. The PROJECT location(s) defined for the EWP, including applicable site boundaries or external property consideration.
2. Summary of scope of work that is addressed in the EWP and provide a detailed description of the proposed work intended to be addressed in the EWP. In addition, include a schedule and duration of construction activities for the work scope. Describe key construction equipment that shall be used for the work.
3. The baseline environmental sensitivities at and adjacent to the defined PROJECT Area. CONTRACTORS' Environmental Coordinator/Representative shall review the work areas and list all environmental constraints to determine potential impacts of the proposed work with respect to at least the following:
  - fish habitat (including riparian and/ or aquatic habitat)
  - wildlife values (e.g., mammal, amphibians, raptor nests)
  - rare plants or plant communities
  - known or potential archaeological/heritage values
  - Sensitive receptors (e.g., with respect to noise, vibration, dust and emissions)
  - Historic groundwater monitoring wells and other water quality sensitivities
  - Areas of confirmed or suspect contamination and areas where there is a high/moderate potential for encountering previously unconfirmed soil and/or groundwater contamination
4. List the Permit(s) that are relevant to the proposed work, including the start date and expiry date for each Permit. Note, for the purpose of EWPs, permits, licenses, approvals, authorizations, notifications and other regulatory instruments (ie EA commitments/mitigation measures) are referred to collectively as Permits.
5. Where applicable for a PROJECT Area and/or activity, key Permit terms and conditions shall be noted in the EWP. Further, as required or appropriate, the relevant Permits shall be included as an Attachment to the EWP.
6. In addition, note environmental timing constraints that apply to the scope of work. Detail the mitigation measures that will be implemented to protect the environment for the duration of the work. This will include reference to the requirements of the EA Certificate, relevant EMP/CEMP mitigation measures as applicable to the scope of work. In addition, list the applicable CEMP and other EMPs and then, for each, summarize:
  - Applicable Mitigation Measures
  - Applicable Best Management Practices (BMPs)

7. Include relevant spill prevention and emergency response procedures applicable to the work being conducted as an attachment the EWP. The procedures shall include applicable personnel and their contact information (i.e., office number, cell phone number and email).

## **8. MONITORING, REPORTING AND RECORD KEEPING**

CONTRACTOR Environment Team Representatives shall monitor construction activities for the purpose of documenting conformance and continuous improvement.

As noted in the EA Certification Application, PROJECT construction impacting identified archaeological and heritage sites shall proceed under the authority of Heritage Alteration Permits, which often have conditions regarding surveillance and monitoring (LNGC 2014).

### **8.1 Monitoring**

Monitoring programs designed and executed carefully can be invaluable for documenting regulatory compliance for PROJECTs. Monitoring shall help ensure that the PROJECT remains compliant with regulatory requirements. Appendix H provides a Monitoring and Reporting Summary.

In accordance with current practice, and where required, by government agencies, CONTRACTOR and/or its SUBCONTRACTORS shall employ qualified archaeological monitors to ensure a high standard of protection of archaeological and heritage resources during construction.

The monitoring requirements shall be determined through agreements with First Nations representatives, and the BC Archaeology Branch or professional archaeologist.

### **8.2 Inspection Frequency**

In accordance with current practice, and where required, by government agencies, CONTRACTOR and/or its SUBCONTRACTORS shall employ qualified archaeological monitors to ensure a high standard of protection of archaeological and heritage resources during construction.

The Inspection frequency and reporting requirements shall be determined through agreements with First Nations representatives, and the BC Archaeology Branch or professional archaeologist.

### **8.3 Requirements/Compliance**

CONTRACTOR is responsible during early works and construction to ensure compliance with COMPANY Commitments, Regulatory Requirements as well as COMPANY's Environmental Policies and meeting applicable targets. To ensure this, the CONTRACTOR'S on-site Environment Team shall undertake inspections and internal audits of CONTRACTOR and SUBCONTRACTORS to ensure compliance with the environmental program.

As noted in Appendix F, CFP training shall be provided to construction foremen in the unlikely event that CMTs and/or other unrecorded archaeological sites are encountered during construction, in the absence of an onsite archaeologist (Mitigation 8.2-3).

### **8.4 Corrective Actions**

The monitoring program shall provide information to enable the responsible CONTRACTOR representative to modify or stop operations in the case of non-compliance with approval conditions or where unforeseen circumstances cause environmental issues.

In the event of non-compliance or non-conformance, a CONTRACTOR on-site Environment Team Representative shall create a corrective action plan. All non-compliances or non-conformance and corrective actions shall be recorded, and reported to the COMPANY Environment Lead in a non-compliance or non-

conformance report. Any material incidents shall be reported to the BC Archaeology Branch and the Haisla First Nation (in alignment with agreements made).

Should monitoring results show any non-compliance or non-conformance, the cause of the non-compliance or non-conformance shall be investigated. If the cause(s) of non-compliance or non-conformance is identified to be PROJECT related, an investigation shall be further conducted to identify these activities. Mitigation measures shall then be updated accordingly to further minimise/prevent any environmental effects.

## **8.5 Reporting**

To ensure the environmental management system is working, CONTRACTOR shall be required to report any findings, non-compliances and non-conformances, and self-created corrective action plans in a non-compliance and non-conformance report as per the reporting requirements set out in Appendix H Monitoring and Reporting Summary.

## **8.6 Record Keeping**

CONTRACTOR shall retain all records, checklists, inspection reports, including any non-compliances or non-conformances and corrective action plans are to be maintained. Records shall be and remain legible, identifiable, and traceable. Records may be kept in hard copy as long as an electronic copy is also kept. Note that the intent of COMPANY's Environmental Philosophy (Section 3) is to report its environmental performance, including archaeological and heritage resource matters to stakeholders.

# **9. TRAINING, COMPETENCY, AND COMMUNICATIONS**

## **9.1 General**

CONTRACTOR shall ensure all persons performing tasks on the PROJECT are competent on the basis of appropriate education, training or experience shall retain applicable records of proof of competency or training.

CONTRACTOR shall identify training needs related to the work being conducted associated with its environmental aspects. Upon receipt of training, CONTRACTOR shall retain all proof of training records. CONTRACTOR and its SUBCONTRACTORS shall be provided with a copy of the CFP.

Reference is made to L001-09800-HE-7180-1901 "CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN" as included in Part III, Chapter 4.14 outlining training procedure CONTRACTOR shall implement and maintain to ensure persons are aware of the following:

- Importance of conformity with environmental philosophy and procedures and with the requirements of maintaining the PROJECT's environmental system
- Significant environmental aspects and related actual or potential impacts associated with CONTRACTOR and persons work, and environmental benefits of improved personal performance
- Their roles and responsibilities in achieving conformity with the requirements of the PROJECT's environmental system
- The potential consequences of deviating from specified procedures

## **9.2 Training and Awareness**

Reference is made to L001-09800-HE-7180-1901 "CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN" as included in Part III, Chapter 4.14 describing the overall measures to protect the environment during construction. It also documents the environment orientation that shall be delivered to all field personnel prior to the commencement of work. The format of these orientations shall include environmental content applicable to the work being undertaken. Specific orientation and training in archaeological and heritage resources required for the avoidance, management, and mitigation of potentially harmful effects shall be delivered to CONTRACTOR

personnel as determined by through a consultative process with stakeholders as deemed appropriate and necessary. CONTRACTOR personnel that are responsible for Area E and G (which contain known archeological sites) should receive specific training on the care and security of the two known archaeological sites within their geographic areas.

Additional environmental and/or safety training shall be provided depending on the requirements of the individual's specific assignment and the work to be performed. All records of personnel training shall be maintained by CONTRACTOR.

Archaeological and heritage resource matters shall be discussed regularly via HSE meetings, tailgate meetings, kick-off meetings and/or work plan development. All workers shall receive Cultural Awareness Training, which shall touch upon basic First Nations topics including heritage and archaeological sites/findings. It is the responsibility of the on-site HSE or Environment Manager to ensure that the appropriate information is conveyed to SUBCONTRACTORS.

### **9.3 Internal Communications**

With regard to environment management, established communication protocols are essential and CONTRACTOR shall follow the items below:

- For informal communication, CONTRACTOR shall communicate direct to CONTRACTOR's on-site HSE and/or Environment Team members.
- Internal communication can be in the form of ad hoc, e-mail, formal letter/memorandums, and verbal.
- For formal communication, CONTRACTOR shall direct all their communication through CONTRACTOR's onsite HSE and/or Environment Team members who in turn shall communicate to COMPANY.
- Formal communications should be in the form of a letter, report or memorandum. Specifically, these can include: inspection reports, checklists, non-compliance or non-conformance, corrective action plans and/or continual improvement reports.

With respect to receiving and responding to communication and documentation, CONTRACTOR shall follow the protocols noted below:

- CONTRACTOR shall maintain copies of their inspection records, including checklists.
- CONTRACTOR shall maintain copies of non-compliance and non-conformance reports, corrective action plans, and continual improvement reports upon receipt by CONTRACTOR.

## **10. COMMUNITY LIASON AND ENGAGEMENT**

### **10.1 Overview**

Community liaison shall be maintained leading up to and during construction of the proposed LNG Canada PROJECT. Information sharing and engagement will be important in ensuring local communities, stakeholders, Aboriginal Groups, and other interested parties are aware of major PROJECT activities, including the times and durations of when they may be affected by construction activities.

### **10.2 Community Liaison and Engagement**

COMPANY may undertake community liaison and engagement with Aboriginal Groups and community stakeholders in regards to the development and implementation of environmental management plans. COMPANY will work collaboratively with potentially affected parties to develop required corrective actions or further mitigation to address potential environmental effects. Any engagement with the community, stakeholders and Aboriginal Groups would be led by COMPANY and shall be undertaken in accordance with the LNG Canada External Communications and Engagement Protocol

### **10.3 Grievance Procedure**

For details related to Community Grievance, reference is made to the LNG Canada External Communications and Engagement Protocol for Construction in ATTACHMENT X –TECHNICAL INFORMATION of the CONTRACT.

### **10.4 External Communications**

For details on external communications reference is made to the LNG Canada External Communications and Engagement Protocol for Construction in ATTACHMENT X –TECHNICAL INFORMATION of the CONTRACT.

# 11. EMERGENCY RESPONSE

## 11.1 Emergency Response Plan

CONTRACTOR shall develop an Emergency Response Plan outlining the protection of the environment, personnel, and the public in the event of a hazardous material spill or emergency scenario during construction. The Plan shall include key emergency scenarios, which occur from both an accidental/malfunction incident or from a natural disaster such as floods, tsunamis, wildfire and seismic events.

## 11.2 Security Response Plan

CONTRACTOR shall develop a Security Plan outlining protocols around the handling and management of a security breach, attack or other form of incident. The Plan shall describe how situations are handled including the aftermath, means of limiting damage and reducing recovery time and costs. The Plan shall include a policy that defines what constitutes an incident while providing necessary steps following an incident.

## 11.3 Key Contacts for Emergency Response

In the event of an emergency on site or an archaeological incident contact the following:

Role	Contact	Phone Number	Email
CONTRACTOR Environment Manager			
CONTRACTOR HSE Manager			

# 12. EMP REVIEW AND UPDATE

CONTRACTOR shall update this EMP as the PROJECT progresses to ensure that it remains current with legislation and reflects environmental outcomes. Keeping the EMPs up to date shall be the responsibility of the CONTRACTOR Environment Manager. Scheduled reviews of the EMPs shall be undertaken by CONTRACTOR. These reviews shall be undertaken at least annually. Should any deficiencies be found during the scheduled reviews, updated EMPs shall be issued as required and outdated copies of the EMPs shall be collected for archive.

Material changes may need to be discussed with the relevant regulatory agency including the BC Archaeology Branch and First Nations representatives. Additional permits or amendments to existing permits at the time of construction may be required should new archaeological sites be discovered.

As shown in Section 2, this AHRMP is aligned with several other plans and documents. Should a change be made in this plan, changes may also be required in other interrelated areas depending on the nature of the change. The Environment Manager shall be responsible for cross-checking and ensuring that the required changes are made in all relevant EMPs and are re-issued as required.

A review, update and change management log shall be provided on the Revision Control Page. Any revisions to the EMPs as a result of the review, update and change management process shall be recorded here.

## 13. REFERENCES

The supporting documentation referenced within this document is as follows:

- BC Archaeology Branch website; <http://www.for.gov.bc.ca/archaeology/index.htm>
- LNG Canada External Communications and Engagement Protocol
- *Community Grievance Procedure* - L001-09800-HX-5798-1909
- *Local Engagement Protocol* - L001-09800-HX-5798-1906
- LNG Canada External Communications and Engagement Protocol
- Government of British Columbia (1996) *Heritage Conservation Act* [RSBC 1996] CHAPTER 187. Queens Printer, Victoria, British Columbia.
- ISO 14001:2015 *Plain English Dictionary*. Accessed on March 23, 2015 from <http://www.praxiom.com/iso-14001-definitions.htm>.
- LNG Canada (2014), *Environmental Assessment Certificate Application - LNG Canada Export Terminal*, October

# APPENDIX A: ACRONYMS, ABBREVIATIONS AND DEFINITIONS

## A-1: ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Meaning
AHRMP	Archaeological and Heritage Resources Management Plan
AIA	Archaeological Impact Assessment
BC	British Columbia
BC OGC	British Columbia Oil and Gas Commission
BDP	Basic Design Package
CEAA	<i>Canadian Environmental Assessment Act</i>
CEMP	<i>Construction Environment Management Plan</i>
CFP	Chance Find Procedure
CONTRACTOR	EPC CONTRACTOR
CMT	Culturally Modified Trees
DEP	Design and Engineering Practices
EMP	Environmental Management Plan
EMS	Environmental Management System
EWP	Environmental Work Plan
FEED	Front End Engineering Design
FLNRO	Ministry of Forests, Lands and Natural Resource Operations
HCA	Heritage Conservation Act
HSE	Health Safety Environment
HSSE and SP	Health, Safety, Security, Environment and Social Performance
LNG	Liquefied Natural Gas
LNG Canada	LNG Canada Development Inc.
LSA	Local Study Area
Mtpa	million tonnes per annum
PA	Preventative Action
QA/QC	Quality Assurance/Quality Control

<b>Acronym/Abbreviation</b>	<b>Meaning</b>
RCMP	Royal Canadian Mounted Police
RCP	Regulatory Compliance Plan
SDR	Systematic Data Recovery
SP	Social Performance
TCF	Temporary Construction Facility

## A-2: DEFINITIONS

Word/Phrase	Definition/Meaning
Activity Aspect	<p>If an activity, product, or service interacts with the environment, it has an activity aspect.</p> <p>An activity aspect is a feature or characteristic of an activity, product or service that affects or can affect the environment.</p> <p>Activity aspects break PROJECT activities into more detailed activities.</p>
Adaptive Management	<p>The process of decision making in the face of uncertainty or changing PROJECT or site conditions, or when new knowledge is gained.</p>
Continual Improvement	<p>In the context of this environmental management system (EMS) standard, continual improvement is a set of recurring activities that organisations use to enhance their environmental performance. Environmental performance is enhanced whenever the environmental aspects of activities, processes, products, services, and systems are controlled and whenever adverse environmental effects are reduced and beneficial environmental impacts are produced.</p> <p>Typically, continual improvement can be achieved by carrying out internal audits, performing management reviews, analysing data and implementing corrective and preventive actions.</p>
Corrective Actions	<p>Corrective actions are steps that are taken to prevent recurrence by eliminating the cause or causes of an existing nonconformity.</p> <p>The corrective action process tries to make sure that existing nonconformities don't happen again.</p>
Environment	<p>The term environment refers to an organisation's natural and human surroundings. For the LNG Canada PROJECT, this extends from within the organisation itself to the global system, and includes air, water, land, flora, fauna (including people), and natural resources of all kinds.</p>

Word/Phrase	Definition/Meaning
Environmental Aspect	<p>An environmental aspect is an element or characteristic of an activity, product, or service that interacts or can interact with the environment. Environmental aspects can cause environmental impacts. They can have either beneficial impacts or adverse impacts and can have a direct and decisive impact on the environment or contribute only partially or indirectly to a larger environmental change. For example, an unsecure waste bin may cause interactions with wildlife. Therefore, wildlife is the environmental aspect. Similarly, a vehicle may emit carbon dioxide to the air and therefore, air quality is the environmental aspect.</p> <p>These are similar to the Valued Components identified during the Environmental Assessment.</p> <p>In the case of this plan, the environmental aspect is archaeology and heritage resources.</p>
Environmental Effect	<p>An environmental effect is a change to the environment that is caused either partly or entirely by one or more environmental aspects. An environmental aspect can have either a direct and decisive effect on the environment or contribute only partially or indirectly to a larger environmental change. In addition, it can have either a beneficial environmental effect or an adverse environmental effect. Environmental effects are sometimes also referred to as environmental impacts.</p>
Environmental Objective	<p>An environmental objective is an environmental result COMPANY intends to achieve. COMPANY's environmental objectives should be based on or derived from its environmental philosophy and must be consistent with this philosophy.</p>
Environmental Performance	<p>The term environmental performance refers to the environmental results that are achieved whenever the environmental aspects of activities, processes, products, services, systems, and organisations are managed and controlled. Environmental performance is improved whenever the environmental aspects of activities, processes, products, services, systems, and organisations are managed and controlled and whenever adverse environmental impacts are reduced and beneficial environmental impacts are produced. You can measure environmental performance by using indicators to compare environmental results against environmental objectives and environmental policies (or other suitable criterion).</p>
Environmental Philosophy	<p>A philosophy is a commitment, direction, or intention and is formally stated by the top management of an organisation. An environmental philosophy should make a commitment to protect the environment, to meet all relevant compliance obligations, and to enhance environmental performance.</p>

Word/Phrase	Definition/Meaning
Environmental Target	An environmental target is a detailed performance requirement. Environmental targets are derived from environmental objectives and are used to achieve these objectives. Targets can apply to specific areas or to the organisation as a whole.
Heritage Value	The historical, cultural, aesthetic, scientific or educational worth or usefulness of a site or object.
Heritage Site	Whether designated or not, land, including land covered by water, that has heritage value to BC, a community or an aboriginal people.
Internal Audit	<p>An internal audit is a systematic evidence gathering process that is carried out in order to evaluate how well an environmental management system meets a set of audit criteria established by an organisation.</p> <p>An audit is an evidence gathering process. Evidence is used to evaluate how well audit criteria are being met. Audits must be objective, impartial, and independent, and the audit process must be both systematic and documented.</p> <p>Internal audits are referred to as first-party audits.</p> <p>Audit evidence includes records, factual statements, and other verifiable information that is related to the audit criteria being used. Audit criteria may be thought of as a reference point and include policies, requirements, and other forms of documented information. They are compared against audit evidence to determine how well they are being met. Audit evidence is used to determine how well policies are being implemented and how well requirements are being followed.</p>
Management System	<p>A management system is a set of interrelated or interacting elements that organisations use to formulate policies and objectives and to establish the processes that are needed to ensure that policies are followed and objectives are achieved. These elements include structures, programs, procedures, practices, plans, rules, roles, responsibilities, relationships, contracts, agreements, documents, records, methods, tools, techniques, technologies, and resources.</p> <p>There are many types of management systems. Some of these include environmental management systems, financial management systems, risk management systems, quality management systems, business continuity management systems, food safety management systems, information security management systems, occupational health and safety management systems, compliance management systems, and emergency management systems.</p>
Preventative Action	Preventive actions (PA) are steps that are taken to remove the causes of potential nonconformities—ones that haven't yet occurred. In general, the preventive action process can be thought of as a risk analysis process.

Word/Phrase	Definition/Meaning
Prevention of Pollution	<p>To prevent pollution means to avoid, reduce, or control the creation, emission, or discharge of contaminants or waste materials. Pollution must be prevented in order to reduce adverse environmental effects.</p> <p>Organisations use a wide variety of methods, techniques, practices, processes, products, and services to prevent pollution. These include the reduction or elimination of pollution at the source; the efficient use of resources, materials, and energy; the reuse, recovery, reclamation, and recycling of resources; the redesign of processes, products, and services; and the substitution of one type of energy source or substance for another cleaner energy source or substance.</p>
Procedure	<p>A procedure is a way of carrying out a process or an activity. Procedures may or may not be documented.</p>
Record	<p>A record is a document that contains objective evidence which shows how well activities are being performed or what kind of results are being achieved. It always documents what has happened in the past.</p>
Salvage	<p>Removal of archaeological features.</p>
Systematic Data Recovery	<p>Part of a heritage investigation to reveal its history, and may include the recording, removal and analysis of artifacts, features and other material necessary for the purpose of the heritage investigation.</p>
<p>Sources:  Government of British Columbia (1996) Heritage Conservation Act  ISO 14001:2015 Plain English Dictionary. Accessed on March 23, 2015 from <a href="http://www.praxiom.com/iso-14001-definitions.htm">http://www.praxiom.com/iso-14001-definitions.htm</a>.</p>	

## APPENDIX B: ENVIRONMENTAL ROLES AND RESPONSIBILITIES SUMMARY

Role	Responsibility
<p>CONTRACTOR Environment and PROJECT Team</p>	<ul style="list-style-type: none"> <li>• The PROJECT team is accountable for strategy development and planning functions related to environmental matters.</li> <li>• The PROJECT team is aware of the system for environmental management and shall contact the environmental team when questions arise regarding regulatory and PROJECT compliance in design or construction.</li> <li>• Resources (time, personnel) required to provide information to support permit/approval applications and other environmental communications shall be incorporated into the engineering schedule and provided in a timely manner to meet the regulatory schedule.</li> <li>• The PROJECT team shall request assistance from the Environment and Regulatory Permitting Teams to facilitate the overall environmental management objectives and requirements.</li> <li>• The Environment and Regulatory Permitting Teams shall provide advice to CONTRACTOR and its SUBCONTRACTORS regarding the requirements of various permits and plans and helps CONTRACTOR to understand expectations and how they can be achieved.</li> </ul>
<p>CONTRACTOR Interface (with SUBCONTRACTORS and COMPANY)</p>	<ul style="list-style-type: none"> <li>• Advise COMPANY on existing environmental protection processes</li> <li>• Advise SUBCONTRACTORS on COMPANY's corporate HSSE and SP performance targets and initiatives including available benchmarking data</li> <li>• Advise SUBCONTRACTORS on related operations experience and existing processes that may be of use for construction purposes</li> <li>• Provide SUBCONTRACTORS with information to complete activities required for regulatory compliance such as monitoring and reporting</li> <li>• Inform COMPANY Environment Lead of plans, key issues and progress associated with the regulatory aspects of the PROJECTS</li> <li>• Provide COMPANY Environment Lead regular updates and reports for communications on regulatory status, budgets, staffing and other relevant issues which may be used for external communications</li> <li>• Complete necessary reviews and inputs as required regarding deliverables and other documents for COMPANY Environment Lead</li> <li>• Provide SUBCONTRACTORS with technical support and advice on management matters needed regarding regulatory and PROJECT compliance</li> </ul>
<p>CONTRACTOR PROJECT Manager</p>	<ul style="list-style-type: none"> <li>• The PROJECT Manager shall be accountable for engineering execution of the PROJECT in order to produce all work safely, with quality and within budget and schedule in compliance with contractual terms and conditions, as well as company policies.</li> <li>• The PROJECT Manager shall be the primary contact with COMPANY on</li> </ul>

Role	Responsibility
	<p>engineering matters relating to the PROJECT.</p>
<p>CONTRACTOR Site Manager</p>	<ul style="list-style-type: none"> <li>• Ensures that the PROJECT Quality Plan is followed over the duration of the PROJECT and directions are completed and tracked</li> <li>• Delegates responsibilities, as required, to the Superintendents</li> <li>• Accountable for all PROJECT quality assurance activities, and shall support the QA/QC personnel to effectively implement the QA/QC program</li> <li>• Accountable for the work programs performed</li> <li>• Accountable for the implementation and activation of the Grievance Procedure</li> </ul>
<p>CONTRACTOR Environment, Regulatory and Permitting Teams</p>	<ul style="list-style-type: none"> <li>• Interface management related to environmental and regulatory compliance with construction and engineering disciplines</li> <li>• Meeting regularly with the PROJECT team to discuss PROJECT progress, highlighting and discussing potential environmental issues</li> <li>• Implementation of a regulatory compliance and environmental performance management system to track the PROJECTS' requirements and assign them to the appropriate Team personnel</li> <li>• Completing site visits as appropriate to assess environmental activities and verify performance</li> <li>• Working with SUBCONTRACTORS and their lower-tier SUBCONTRACTORS to support the construction activities by preparation of required EWPs</li> <li>• Review and endorse Environmental and Regulatory sections of EWPs</li> <li>• Preparation of Regulatory and Environmental Management Plan for work activities related to the LNG Canada PROJECT</li> <li>• Development of a monitoring plan for environmental compliance</li> <li>• Development of a reporting process and deliver reports to COMPANY Environment Lead</li> </ul>
<p>CONTRACTOR (Workers)</p>	<ul style="list-style-type: none"> <li>• Ensure that all SUBCONTRACTORS performing work on site have in place, prior to the commencement of work, written agreement from an authorised person to adopt the requirements of this document and abide by all applicable legislation, regulations and industry guidelines</li> <li>• Develop EWPs relevant to their work activities that, at a minimum, comply with this document and implementing all necessary internal programs and procedures, including inspections and monitoring that will aid in documenting construction environmental compliance</li> <li>• Ensure that all contractors and SUBCONTRACTORS are aware of the PROJECT controlled products procedures as per the Fuel and Chemical Management Plan and the materials that are prohibited on site, as outlined in this EMP</li> <li>• Include additional items in the forthcoming environmental compliance plan if activities result in a greater potential to cause contamination or environmental effect, and submit these additional items to the PROJECT management for</li> </ul>

Role	Responsibility
	<p>approval</p> <ul style="list-style-type: none"> <li>• Ensure all have on hand the CONTRACTOR Chance Find Procedures and be aware of its contents</li> <li>• Ensure compliance with all applicable environmental requirements in performance of work</li> <li>• Attend all meetings held on environmental issues</li> <li>• Under the direction and daily guidance of the CONTRACTOR Environment Manager, the Site Environmental Monitoring Team shall: <ul style="list-style-type: none"> <li>- Require SUBCONTRACTORS conduct to field monitoring and environmental sampling at regular intervals with appropriate documentation and controls as required</li> <li>- Conduct general inspections of the site and SUBCONTRACTORS on a regular basis (using inspection checklists) and appropriate audit criteria</li> <li>- Prepare draft field reports documenting environmental and regulatory performance</li> </ul> </li> </ul>
<p>CONTRACTOR Environment Manager</p>	<ul style="list-style-type: none"> <li>• Accountable for environmental management and shall ensure that the PROJECT team is committed to this objective</li> <li>• Survey field construction activities for compliance with the overall PROJECT environmental requirements (per the EMPs)</li> <li>• Assist SUBCONTRACTORS with the development of environmentally compliant work plans for specific work activities not covered by this EMP or the overall CEMP</li> <li>• Coordinate with engineers on design and execution issues regarding construction environmental compliance</li> <li>• Train the HSE specialists on environmental compliance and performance activities</li> <li>• Clarify regulatory issues that may arise at the PROJECT SITE</li> <li>• Ensure that all necessary international, federal, provincial, and municipal environmental approvals, permits, and licenses are in place</li> <li>• Oversee the site controlled products approval process</li> <li>• Continue development of the site environmental and controlled products procedures, and identifying and implementing improvements</li> <li>• Liaise with Construction Management Team, and other PROJECT stakeholders to review environmental compliance on the job-site, evaluate the success of the environmental program and seek opportunities for continuous improvement</li> <li>• Interface with COMPANY Environment Lead providing up to date reports based on the environmental program during construction, pre-commissioning and commissioning phases of the LNG PROJECT</li> </ul>
<p>CONTRACTOR Site Environment Specialist</p>	<ul style="list-style-type: none"> <li>• Implement environmental training, including basic spill response and clean-up training, and ensuring this training is consistent with the PROJECT goals, requirements and the documented procedures</li> <li>• Conduct field inspections of construction activities for compliance with</li> </ul>

Role	Responsibility
	<p>environmental requirements and mitigation measures, and initiating corrective actions</p> <ul style="list-style-type: none"> <li>• Conduct applicable field monitoring and environmental sampling at regular intervals with appropriate documentation and controls as required</li> <li>• Document the construction environmental compliance and administering all environmental compliance records, for inspection, monitoring, and environmental training</li> <li>• Coordinate with the environment manager and environmental staff to arrange any laboratory or third party testing and monitoring that may be required</li> </ul>
Onsite Archaeologist (Registered Consultant)	<ul style="list-style-type: none"> <li>• Ensure set backs are provided and maintained around all known archaeological and heritage sites</li> <li>• Monitor all applicable construction activities with the aim of identifying any found/unearthed archaeological and heritage resources</li> <li>• Implement the Chance Find Procedure if archaeological and heritage resources are discovered</li> </ul>
<p>Note: Environment includes Archaeological and Heritage Resources.</p>	

## APPENDIX C: REGULATORY FRAMEWORK

### Key Environmental Acts, Regulations, Guidelines and Directives Applicable to PROJECT Design<sup>1</sup>

International and Federal Acts and Regulations	Provincial/Municipal Acts and Regulations	Directives, Guidelines and Procedures
<p><b><u>Federal</u></b></p> <p><b><i>Environment Canada</i></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Canadian Environmental Assessment Act 2012</a> <ul style="list-style-type: none"> <li>• <a href="#">Environmental Assessment Act (SBC 2002, Chapter 43)</a></li> </ul> </li> <li>• <a href="#">Canadian Environmental Protection Act 1999</a></li> </ul>	<p><b><u>Ministry of Forests, Lands and Natural Resource Operations (FLNRO)</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Heritage Conservation Act (RSBC 1996, Chapter 187)</a></li> </ul>	<p><b><u>Canadian Environmental Assessment Agency</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Reference Guide on Physical and Cultural Heritage Resources</a></li> </ul> <p><b><u>British Columbia Oil &amp; Gas (BCOG) Commission</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Archaeology Process Guidelines, BCOG Commission, August 2013.</a></li> <li>• <a href="#">Environmental Protection and Management Guide, OGC 2013</a></li> </ul> <p><b><u>Ministry of Environment (MOE)</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Develop with Care 2014, Environmental Best Management Practices for Urban and Rural Land Development in British Columbia, Ministry of Environment, 2014</a></li> </ul> <p><b><u>Ministry of Forests, Lands and Natural Resource Operations (FLNRO)</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Found Human Remains Directive, Ministry of Forests, Lands and Natural Resource Operations, 1999</a></li> <li>• <a href="#">Archaeology, permit application and guidelines, 2014</a></li> </ul> <p><b><u>Miscellaneous</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">The Kalum Land and Resource Management Plan, 2002</a></li> </ul>

<sup>1</sup> This framework does not include Canadian Standards Association (CSA) documents, and specific discipline codes (e.g. Building Code, Electrical Code).

## APPENDIX D: APPROVAL CONDITIONS

Note: Reference is made to to L001-09800-HE-7180-1901 “CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN” as included in Part III, Chapter 4.14 for complete set approval conditions that may be relevant to works.

Source	Condition Number	Condition
BC Environmental Assessment Certificate	Schedule B, 20	<p>The Holder must develop, to the satisfaction of EAO, a construction environmental management plan and an operations environmental management plan in accordance with section 12 of the Application. The Holder must demonstrate reasonable efforts to engage with Aboriginal Groups in developing and implementation of the plans.</p> <p>The Holder must provide the construction environmental management plan to EAO and Aboriginal Groups no less than 60 days prior to the Holder's planned date to commence Construction. The Holder must implement the plan to the satisfaction of EAO.</p> <p>The Holder must provide the operations environmental management plan to EAO and Aboriginal Groups no less than 60 days prior to the Holder's planned date to commence Operations. The Holder must implement the plan to the satisfaction of EAO.</p>
Decision Statement Issued under Section 54 of the Canadian Environmental Assessment Act, 2012	2.6	<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>
Decision Statement Issued under Section 54 of the Canadian Environmental Assessment Act, 2012	8	<p>8.1 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 account British Columbia's Handbook for the Identification and Recording of Culturally Modified Trees. The Archaeological and Heritage Resources Management Plan shall include:</p> <p>8.1.1 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;</p>

		<p>8.1.2 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</p> <p>8.1.3 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.</p>
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## APPENDIX E: COMMITMENTS, STATEMENTS AND CONSIDERATIONS

The following mitigation measures are committed in the EA Application and apply to archeological and heritage resources.

Classification	Statement	Source	Section Number
Commitment	Wherever possible, if found, Culturally Modified Trees (CMTs) shall be avoided. In situations where CMTs cannot be avoided, mitigation measures will focus on recording them completely and systematically. (Mitigation 8.2-1)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	If CMT stem round samples are to be collected, monitoring of CMT removal by a crew comprised of a professional archaeologist and a Haisla Nation representation so that the stem-round samples are properly collected for CMT dating purposes. (Mitigation 8.2-2)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	A Chance Find Protocol (CFP) shall be provided to construction foremen in the unlikely event that CMTs and/or other unrecorded archaeological sites are encountered during construction, in the absence of an onsite archaeologist. (Mitigation 8.2-3)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	Archaeological sites GaTe-4 and GaTe-5, which were recorded in the LSA ( <i>Local Study Area</i> ), shall be managed in consultation with the Archaeology Branch and the Haisla Nation and in accordance with the Heritage Investigation Permit issued by the Archaeology Branch. (Mitigation 8.2-4)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	Management of historic materials identified during AIA fieldwork shall be done in consultation with the Kitimat Centennial Museum, the Kitimat Historical Society and other key stakeholders as required. (Mitigation 8.2-5)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	A PROJECT-specific Archaeological and Heritage Resources Management Plan, including a Chance Find Protocol, shall be developed and implemented prior to construction. (Mitigation 8.2-6)	Environmental Assessment Certificate Application September 2014	8.2.10

<b>Classification</b>	<b>Statement</b>	<b>Source</b>	<b>Section Number</b>
Commitment	Any necessary archaeological monitoring of PROJECT activities shall be carried out under the appropriate regulatory permit. (Mitigation 8.2-7)	Environmental Assessment Certificate Application September 2014	8.2.10
Commitment	Prepare an Archaeological and Heritage Resources Management Plan (Mitigation 12.1.1) (noted in Mitigation 8.2-6)	Environmental Assessment Certificate Application September 2014	12.1

## APPENDIX F: ARCHAEOLOGICAL AND HERITAGE RESOURCE MANAGEMENT MITIGATIONS

Environmental Effect	<b>Avoidance, Management, and Mitigation Measures</b>	
	<p>*** – Regulatory Requirement</p> <p>** – PROJECT Requirement</p> <p>* – Recommended Approach (Best Practice)</p>	
<b>Disturbance to archaeological or heritage unrecorded or unknown sites</b>		
All Activities	Do not alter, damage, excavate or disturb in any way an archaeological site unless required permits have been granted. Comply with all requirements of the Heritage Conservation Act.	***
	Implement the PROJECT Chance Find Procedure (EA Mitigation 8.2-3).	**
	In situations where CMTs cannot be avoided, mitigation measures shall focus on recording them completely and systematically (EA Mitigation 8.2-1).	**
	If CMT stem round samples are to be collected, monitoring of CMT removal by a crew comprised of a professional archaeologist and a Haisla Nation representation so that the stem-round samples are properly collected for CMT dating purposes. (EA Mitigation 8.2-2).	**
	A Chance Find Procedure (CFP) shall be provided to construction foremen in the unlikely event that CMTs and/or other unrecorded archaeological sites are encountered during construction, in the absence of an onsite archaeologist. (EA Mitigation 8.2-3).	**
	If human remains are found the Royal Canadian Mounted Police (RCMP) and the Coroner's Office must be notified to determine whether the matter is of contemporary forensic concern. The Archaeology Branch may provide information to assist in this determination. Upon notification of the discovery of human remains that are not of a forensic concern and are of aboriginal ancestry, the Archaeology Branch shall inform the Haisla First Nation and may advise of any required action and conditions for SUBCONTRACTORS and PROJECT personnel to follow onsite pending an investigation. The Chance Find Procedure must also be adhered to in this instance.	***
<b>Disturbance to known archaeology or heritage features</b>		
All Activities	Archaeological sites GaTe-5, which was recorded in the LSA (Local Study Area), shall be managed in consultation with the Archaeology Branch and the Haisla Nation and in accordance with the Heritage Investigation Permit issued by the Archaeology Branch. (EA Mitigation 8.2-4).	**
	Management of historic materials identified during AIA fieldwork shall be done in consultation with the Kitimat Centennial Museum, the Kitimat Historical Society and other key stakeholders as required. (EA Mitigation	**

<b>Environmental Effect</b>	<b>Avoidance, Management, and Mitigation Measures</b> <b>*** – Regulatory Requirement</b> <b>** – PROJECT Requirement</b> <b>* – Recommended Approach (Best Practice)</b>	
	8.2-5).	

# CHANCE FIND PROCEDURE

This procedure has been developed in the case that an archaeological or heritage resource site is encountered on the PROJECT. Items that may be visible on a construction PROJECT include:

- Rock art (e.g. pictographs)
- Culturally Modified Trees (CMTs) and Tree Art (e.g. bark stripping)
- Surface features from former habitations (e.g. burned rock, fish traps)
- Artefacts (e.g. stone and bone), often unearthed during land altering activities

Procedure to follow if a possible archaeological or heritage significance is encountered / suspected:

1. All SUBCONTRACTORS must stop construction activities or other work that could have a detrimental impact in the immediate vicinity. **DO NOT DISTURB THE SITE.**
2. SUBCONTRACTOR shall immediately contact the CONTRACTOR Site Environment Specialist. The Site Environment Specialist shall log the event including the time of encounter, description of the construction /operational activity and the archaeological/heritage material of concern.
3. CONTRACTOR Site Environmental Specialist shall confirm the order to stop work in the vicinity of the chance find and direct the SUBCONTRACTOR to place boundary markers around the found archaeological or heritage material.
4. CONTRACTOR Site Environmental Specialist shall contact the designated archaeologist for the PROJECT or the BC Archaeology Branch. The archaeologist shall advise on further action.
5. BC Archaeology Branch: (250) 953-3334
6. CONTRACTOR Site Environmental Specialist shall inform the CONTRACTOR Environment Manager whose role is to serve as the focal point for all environmental (including archaeological and heritage) related issues.
7. The archaeologist or BC Archaeology Branch may advise:
  - a. That there are no further concerns or that construction activities/operational work can continue as planned or under conditions to be specified; or
  - b. Require that further action is required and that a site visit by a professional consulting archaeologist is required
8. If further action is deemed to be required, and according to any agreements in place, the Haisla First Nation may need to be notified and granted access to the site for inspection.
9. The CONTRACTOR Site Environmental Specialist shall continue to record all pertinent discussions/correspondence with all parties relating to the event.

## APPENDIX G: MONITORING AND REPORTING SUMMARY

Parameter	Frequency	Requirements	Person Responsible
General	Daily	CONTRACTOR to prepare conduct and record daily work area inspections to ensure that archaeological control and mitigation measures are secure and in place (as needed) in work areas proximate to known archaeological sites.	SUBCONTRACTOR to include in copy of daily inspections to CONTRACTOR on-site Environmental Team Representative weekly  CONTRACTOR Environment Manager to submit consolidated report to COMPANY Environment Lead on a monthly basis
General	Chance Find Event	In the event of a Chance Find, CONTRACTOR to initiate, follow and document the Change Find Procedure and other measures undertaken.	CONTRACTOR Environment Team Manager to submit Chance Find report to COMPANY as needed.
General	Incident, non-compliance or non-conformance based	In the event where a known site is disturbed, SUBCONTRACTOR to immediately notify the CONTRACTOR on-site Environmental Team Representative. The CONTRACTOR on-site Environmental Team Representative shall then contact COMPANY. SUBCONTRACTOR to submit to CONTRACTOR Environment Team Representative an initial Environmental Incident Notification Report.	CONTRACTOR Environment Team Manager to submit incident report to COMPANY as needed.
<p>*Chance Find Procedure is issued to each SUBCONTRACTOR along with appropriate orientation and training on Archaeological and Heritage Resource mitigations.</p>			

