Cultural Values in Cumulative Effects Management: A Case Study with the Metlakatla First Nation

by

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Ethics Statement

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

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Abstract

Conventional approaches to environmental impact assessment and cumulative effects assessment (CEA) have largely failed to incorporate the cultural values of Aboriginal communities and have inadequately addressed the negative impacts of development on these values. The main objective of this study is to develop and demonstrate an improved methodology for identifying and assessing cultural values to inform CEA and other decision-making processes. After reviewing the major weaknesses and recommendations discussed in the literature on CEA and cultural values, I describe the new method and demonstrate its application as part of an innovative cumulative effects management program instituted by the Metlakatla First Nation for their traditional territory in northwestern British Columbia. I compare my results with the results of a recent conventional assessment conducted for the Pacific NorthWest LNG Project in Metlakatla territory. The new method provides useful information to support Metlakatla efforts to maintain their culture, language, and practices.

Keywords: Cumulative effects; Cumulative effects assessment and management; Environmental assessment; Aboriginal cultural values; Valued components

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To Mom and Dad,

for your love, inspiration, encouragement and support

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List of Acronyms

BC	Province of British Columbia
BC EAA, 2002	British Columbia Environmental Assessment Act
BC EAO	British Columbia Environmental Assessment Office
BC JTST	British Columbia Ministry of Jobs, Tourism, and Skills Training
BC MOE	British Columbia Ministry of Environment
Canadian EAA	Canadian Environmental Assessment Agency
CEA	Cumulative Effects Assessment
CEAM	Cumulative Effects Assessment and Management
CEAA, 2012	Canadian Environmental Assessment Act
CEM	Cumulative Effects Management
DMCS	DM Cultural Services Ltd.
EA	Environmental Assessment
FNEMC	First Nations Energy and Mining Council
FSC	Food, Social and Ceremonial
LNG	Liquefied Natural Gas
LUP	Land Use Plan
MDC	Metlakatla Development Office
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MFN	Metlakatla First Nation
MGC	Metlakatla Governing Council
MMC	Metlakatla Membership Census
MUP	Marine Use Plan
NEB	National Energy Board
PETRONAS	PETROLIAM NASIONAL BERHAD
PCO	Privy Council Office
PNWLNG	Pacific NorthWest LNG Project
SEA	Strategic Environmental Assessment
SFU	Simon Fraser University

Chapter 1.

Introduction

1.1. Research Context

1.1.1. Assessing Cumulative Effects of Resource Development on Aboriginal people

The North Coast region of British Columbia (BC) has experienced a rapid increase in development pressure in the last decade. In 2016, the estimated total capital cost of proposed major projects in this region was more than 200 billion dollars, substantially higher than for any other region in the province (BC JTST, 2016). Proposed developments include manufacturing, mining and utilities projects, natural gas pipelines, and facilities for liquefied natural gas (LNG) production and shipping (Van Hinte et al., 2007; Dana et al., 2009; BC JTST, 2016). Due to the scale and significance of proposed development and the potential impacts to surrounding communities, these projects need to be properly assessed to ensure impacts are avoided or mitigated and that they are justified (Van Hinte et al., 2007). This should include identifying all the potential projects and activities in a region that may result in interacting or additive effects, and the pathways and sources of their potential effects (Smit and Spaling, 1995; Baxter et al., 2001; Lucchetta et al., 2016).

The North Coast region is home to several First Nations and traditional territories. Industrial development can have substantial impacts on Aboriginal rights and the ability of Aboriginal communities to maintain their cultures and traditional ways of life (Ross, 1990; Booth and Skelton, 2011; Corntassel and Bryce, 2012). Major development projects that cause changes to the land can affect the ability for Aboriginal people to use the land, which over time can impact the evolution of their culture (Ehrlich, 2010; Christensen and Krogman, 2012). It is critical that proponents and government decision-makers engage with Aboriginal people in the design and assessment of development proposals, and to consider social and cultural impacts in addition to environmental and economic considerations (McIntyre-Tamwoy, 2004; King, 2013; Satterfield et al., 2013; Adams et al., 2014; Housty et al., 2014). Impacts from proposed projects and their

interacting, cumulative effects should be proactively assessed, avoided, managed, and mitigated to help ensure that targets and objectives of both the government and Aboriginal communities are being achieved, and that the rights of Aboriginal people are honoured (Dubé, 2003; Heemskerk, 2012; Clogg and Carlson, 2013; Lucchetta, 2016).

Many First Nation communities, especially in BC, have been vocal about their distrust of current processes for assessing project effects, including cumulative effects, and the ability of these processes to represent and account for First Nations' interests and values (Satterfield et al., 2013; Rutherford, 2016). Critics argue that impacts to First Nations and other Aboriginal communities as a result of development projects and activities tend to be underrepresented or not properly compensated for in the assessment process (Turner et al., 2008; Pollon, 2012).

The typical approaches to the assessment of cumulative effects by government agencies and project proponents in Canada and elsewhere in the world have largely failed to incorporate cultural values of Aboriginal and other Indigenous communities into decision making processes and have inadequately addressed the negative impacts of development on cultural values (Usher, 2000; Raymond et al., 2010; Adams et al., 2014). In addition, Aboriginal people have often been excluded from the processes of assessing project and cumulative effects to cultural aspects of their community (King, 2013). A new participatory approach is needed for identifying Aboriginal cultural values and assessing the cumulative effects of industrial projects and other development activities on those values.

1.1.2. Cumulative Effects and Cultural Values of the Metlakatla First Nation

The Metlakatla First Nation is a community of approximately 874 members, located on the northwest coast of BC (MFN, 2016). As of June 2016, 65 major development projects were proposed in or near the traditional territory of the Metlakatla (BC JTST, 2016). The majority of these projects were related to liquefied natural gas (LNG) development (i.e., LNG facilities and pipelines), marine transportation and port development (BC JTST, 2016; Compass Resource Management, 2014). These projects would result in varying degrees of economic, environmental, cultural, and social costs and benefits to the Metlakatla people. In order to properly understand the costs and

benefits and make wise decisions about permitting and managing development, it will be essential to have good assessments of both the project specific effects and the cumulative effects of development (Smit and Spaling, 1995; Hegmann et al., 1999). Ensuring that there are long term benefits from development projects proposed in these remote communities that at least offset the potential impacts is paramount (Spyce et al., 2012).

Metlakatla First Nation is currently developing a cumulative effects management (CEM) program to identify and manage the impacts of development on their traditional territory (Compass Resource Management, 2015; and see chapter 4). One of the five "value pillars" to be monitored and managed in the CEM program is the "Cultural Identity" value. As with many other Aboriginal communities, the Metlakatla are concerned about the potential negative impacts of development on their culture and traditional livelihoods (Dana et al., 2009; Ehrlich, 2010; DMCS, 2013b).

1.2. Overview of Research Objectives and Methodology

The goal of this research is to investigate and develop methods to address the problem of incorporating cultural values of Aboriginal communities into cumulative effects assessment and management. The research focuses on cultural values in cumulative effects assessment within Canada, and particularly within BC.

The main objective of the research is to develop and demonstrate an improved methodology for identifying and measuring cultural values in cumulative effects assessment and management. In order to achieve this objective, this paper will:

1. Describe current approaches to cumulative effects assessment and management, and review critiques in the literature in order to identify deficiencies and recommendations to address these deficiencies;

2. Describe how cultural values of Aboriginal communities are currently incorporated and assessed within cumulative effects assessment and management, and review critiques in the literature to identify deficiencies and recommendations to address these deficiencies;

3. Examine current “state of the art” provincial and federal practices for identifying and assessing cultural values in project-based cumulative effects assessment and evaluate whether the deficiencies discussed in the literature have been addressed. This will be done by using a case study of the environmental assessment of the Pacific NorthWest LNG project, a recent coordinated assessment by the Canadian Environmental Assessment Agency and the BC Environmental Assessment Office of a major liquefied natural gas project in Metlakatla territory;

4. Design a new method for identifying Aboriginal cultural values and incorporating those values in the Metlakatla CEM program that addresses the major weaknesses of conventional CEA of cultural values and responds to the recommendations in the literature;

5. Apply the new method in a case study with the Metlakatla CEM program; and

6. Compare the processes and results of the new approach with the Pacific NorthWest LNG assessment, with reference to the deficiencies and recommendations in the literature, and propose further recommendations for improvement.

1.3. Report Structure

This report is split into five additional chapters. The second chapter provides background on the current processes and practice of cumulative effects assessment in Canada and BC, and the treatment of cultural values of Aboriginal communities in these assessments. The third chapter provides an illustration of how cultural values are currently incorporated into cumulative effects assessment in Canada and BC by using a project in Metlakatla traditional territory that recently completed an assessment. Chapter four then describes the innovative CEM program developed by the Metlakatla First Nation. Chapter five describes the design and application of the method I developed for identifying and incorporating cultural values in the Metlakatla CEM program. This chapter outlines the objectives, methods, and findings from the case study application of the new methodology. The report concludes with chapter six which compares the results from the case study of the new approach with the results from the case study of the

assessment of the Pacific NorthWest LNG project and discusses the differences in terms of the deficiencies and recommendations in the literature. This chapter concludes with a discussion of research limitations, future research areas and potential implications of this work for future cumulative effects assessment.

Chapter 2.

Cultural Values in Current Cumulative Effects Assessments

This chapter begins by providing a brief introduction to the theory and practice of cumulative effects assessment. I then review how cumulative effects assessment is currently conducted within Canada. This is followed by a discussion of Aboriginal peoples' involvement in cumulative effects assessment in Canada, including their recognized rights and title and the Crown's duty to consult and, where required, accommodate their interests. Next, I discuss Aboriginal culture and the incorporation of Aboriginal cultural values into cumulative effects assessment. I conclude the chapter with a discussion of the main critiques of current approaches to the assessment of cultural values in cumulative effects assessment, and recommendations to address these critiques.

I completed a review of literature on cultural values, cumulative effects assessment and Aboriginal involvement in assessment processes, including successes, challenges and recommendations. The reviewed literature includes both Canadian and international academic literature, Metlakatla documents and records, consultant reports, government documents and environmental assessment submissions. The academic literature focuses on environmental assessments, cumulative effects, cultural values, and cultural impacts of resource development.

2.1. Cumulative Effects Assessment

2.1.1. Cumulative Effects

Cumulative effects are the accumulated changes, both spatially and temporally, in environmental, economic, and social values in a region resulting from multiple past, present, and future developments (Smit and Spaling, 1995; Hegmann *et al*., 1999; MaPP, 2014). Cumulative effects can occur as a result of adding or extracting materials from the environment as well as from interactions among man-made and natural stressors (Tollefson and Wipond, 1998; Dubé, 2003). Cumulative effects can also occur

in a region through the accumulation of individually minor yet collectively significant actions over space and time (Theobald *et al.,* 1997; Tollefson and Wipond, 1998; Dubé, 2003; Harriman and Noble, 2008; Seitz *et al.,* 2011; Noble, 2013; MaPP, 2014). Managing cumulative effects involves weighing the economic, environmental, and social impacts of multiple developments and land uses on a given landscape in order to maximize positive outcomes and minimize negative outcomes over time (BC MOE, 2011; Christensen *et al*., 2010; Spyce *et al*., 2012).

As with many decisions in resource management, predicting and managing cumulative effects involves a high degree of uncertainty (Baxter *et al*., 2001; BC MOE, 2011; Parkins, 2011; Parlee *et al*., 2012; Lucchetta *et al*., 2016). However, tools and techniques such as simulation modelling, scenario development and geographic information systems can be used to develop a range of possible future scenarios and outcomes that can be analyzed (Smit and Spaling, 1995; Noble, 2013; Lucchetta, 2016). Analyzing the effects under different possible future scenarios and outcomes based on a range of current development decisions can help to inform authorities responsible for making resource management decisions (Lucchetta, 2016).

2.1.2. Cumulative Effects Assessment

Cumulative effects assessment (CEA) is a process that includes identifying, monitoring, evaluating and mitigating the potential cumulative impacts from collective actions in a region to prevent or minimize negative outcomes to environmental, economic, social and cultural values (Smit and Spaling, 1995; Dubé, 2003; Parkins, 2011; Seitz *et al.,* 2011). A good CEA should identify all the potential projects and activities in a region that may result in interacting or additive effects and the pathways and sources of these potential effects (Smit and Spaling, 1995; Baxter et al., 2001; Lucchetta *et al*., 2016). Once the potential effects are identified, mitigation measures are proposed to reduce or avoid these cumulative effects (Lucchetta *et al*., 2016).

The main steps to conduct a CEA of a proposed project or activity, as outlined by Therivel and Ross (2007), include (1) identify the valued components through scoping, (2) determine what past, present and future projects and activities have, or will, impact these valued components, (3) predict the effects of the proposed project on the valued components in combination with the effects from other identified projects and activities

and determine significance, and then (4) propose ways to mitigate and manage the cumulative effects identified as significant. A CEA may find the effects of a project to be significant and unacceptable even when the effects of the project assessed in isolation would not be significant, especially in regions with a high rate of development (Noble, 2013). This is a result of developments in a region interacting with each other over space and time (Seitz *et al.,* 2011).

Cumulative effects assessment should be conducted on a broad temporal scale and should include the assessment of potential effects from past, present and foreseeable future projects and activities within a region. Assessments can be conducted as either a project-level CEA or as part of a regional CEM program. Project-level CEA predicts the cumulative effects associated with a specific project, whereas regional CEM measures the existing condition of values and the accumulated state from multiple projects relative to a baseline condition (Hegmann *et al*., 1999; Dubé, 2003; Noble, 2010; Lucchetta, 2016). Regional CEM is the method of assessment preferred by many scholars because regional CEM has broad temporal and spatial scales, including effects from past, present, and future projects and activities at a regional scale (Dubé, 2003; Duinker and Greig, 2006; Harriman and Noble, 2008; Noble, 2010).

In his review of different cumulative effects assessment and monitoring programs and frameworks within Canada, Noble (2013) concludes that to be effective these programs need to:

- establish baselines and indicators to assess change (Kilgour *et al*. 2006);
- identify appropriate thresholds (Seitz *et al.* 2011);
- have human, technical and financial capacity (Noble *et al.* 2011);
- monitor at both regional and project level scales (Dubé 2003);
- share data and coordinate with all stakeholders in the region (Margerum 2007); and
- have multi-stakeholder collaboration (Therivel and Ross 2007).

2.1.3. Benefits of CEA

Conducting a proper CEA can provide many benefits. First, CEA can act as an effective regional planning tool to improve resource management and decision-making (Francis and Hamm, 2011; Lucchetta, 2016). A good CEA will use indicators and parameters that are monitored over time to allow for proactive, adaptive management practices (Mitchell and Parkins 2011; Compass Resource Management, 2015; Lucchetta *et al*., 2016). By establishing strategic-level direction and proactively assessing and managing effects, CEA can help to ensure that regional targets and objectives are being achieved (Dubé, 2003; Heemskerk, 2012; Clogg and Carlson, 2013; Lucchetta, 2016). When performed correctly, CEA will also improve the transparency of development decisions and effectively incorporate the values and needs of stakeholders and Aboriginal peoples (Weber *et al*., 2012; Lucchetta, 2016).

The above description outlined what CEA ideally should be; however, in practice in Canada and elsewhere in the world CEA typically falls far short of these ideals (Duinker and Greig, 2006; Hanna, 2009). As stated by Duinker and Greig (2006: 153), “cumulative effects assessment (CEA) in Canada… has not lived up to its glowing promise of helping to achieve sustainability of diverse valued ecosystem components.”

The following section outlines the current legislation that enables and governs CEA at the federal level in Canada and the provincial level in BC.

2.2. Conducting CEA within Canada and BC

Currently CEA is typically embedded as a requirement within project-based environmental assessment (EA) processes in Canada and as a result is normally conducted on a project-by-project basis. The federal Cabinet does require strategic environmental assessment of policies, plans and programs submitted to the federal Cabinet for approval, and the BC *Environmental Assessment Act* includes a provision enabling environmental assessment of policies of the provincial government, but these provisions have not generally been used for broad CEAs (PCO and CEAA, 2010). Therefore, the project-based EA process is the main mechanism through which CEA is conducted in Canada. Due to deficiencies in current CEA legislation and policies, the quality of CEA varies by project and proponent and there is no consistent methodology

for assessing cumulative effects and factoring them into decision making (Smit and Spaling, 1995; Harriman and Noble, 2008; Noble, 2010; Parkins, 2011; Clogg and Carlson, 2013).

2.2.1. Environmental Assessment of Development Projects

An EA is a process that aims to identify, evaluate and mitigate the potential significant adverse environmental effects of a proposed project or activity (Booth and Skelton, 2011; MFLNRO, 2014). The first formal EA process in Canada was instituted by policy of the federal Cabinet in the early 1970s (Seitz *et al.,* 2011). Canadian EAs are used to predict the environmental effects resulting from a proposed project, activity, or initiative prior to being implemented (CEAA, 2011). An EA is supposed to determine whether the project or activity will have significant adverse environmental effects and, if so, how those effects can be mitigated. After mitigation, if there will be any remaining significant adverse effects, a decision is made about whether those effects are justified and whether the project should be allowed to proceed. The goal is to minimize or avoid adverse effects from a proposed project or activity by incorporating environmental, economic and social factors into the decision making process (CEAA, 2015a). In this manner, EA within Canada has been used as a planning and decision making tool, becoming an instrument that can guide environmental management practices (Glasson *et al.,* 2005).

In Canadian EAs, the project proponent is typically the party responsible for conducting the EA studies and submitting an EA report to the government agency or organization responsible for reviewing and approving the EA (Dubé, 2003). The proponent conducts the EA by gathering information, both scientific and historical, to predict and measure effects resulting from the project (McGarvey *et al*., 2014; Vanderjagt *et al*., 2014). Ideally, the process of conducting an EA should ensure that the public, Aboriginal groups, government agencies and other interested parties are able to raise their concerns and issues with a potential project and have them addressed by the project proponent prior to the project being built (King, 2013; MFLNRO, 2014). Such input often takes place through a public comment and consultation period.

In *Friends of the Oldman River Society v. Canada (Minister of Transport)* ([1992] 1 S.C.R. 3) the Supreme Court of Canada ruled that the federal and provincial

governments both have authority under the Canadian constitution to conduct EAs to inform decisions within their respective areas of jurisdiction. For example, a provincial EA may be required for decisions involving provincial Crown lands, non-renewable natural resources (such as oil and gas production), forestry, electricity production, or local works and undertakings (White *et al*., 2007). Federally, an EA may be required if a potential project will affect fish and fish habitat or other aquatic species, migratory birds, federal lands, Aboriginal peoples, or if it crosses provincial or international borders (CEAA, 2012).

2.2.2. Canadian Environmental Assessment Act

For projects that fall under federal jurisdiction, the current project-based EA process is governed by the *Canadian Environmental Assessment Act*, *2012* ("CEAA, 2012", S.C. 2012, c. 19, s. 52) and its three associated regulations. The CEAA, 2012 designates the Canadian Environmental Assessment Agency (Canadian EAA) as the responsible agency for overseeing the federal EA process except for projects regulated by the Canadian Nuclear Safety Commission or the National Energy Board. The *Regulations Designating Physical Activities* prescribe whether or not a federal EA is required depending on the type of project being proposed and specified thresholds often represented as production capacities. The CEAA, 2012 states that an EA must consider environmental effects, including cumulative effects that could be caused by a proposed project, the significance of those effects, mitigation measures to address significant adverse environmental effects and comments received from the public.

Section 5 of CEAA, 2012 outlines the environmental effects that must be considered when completing a federal EA, including:

> **(a)** a change that may be caused to the following components of the environment that are within the legislative authority of Parliament:
>
> i. fish and fish habitat,
>
> ii. aquatic species,
>
> iii. migratory birds;
>
> **(b)** a change that may be caused to the environment that would occur

i. on federal lands,

ii. in a province other than the one in which the act or thing is done or where the physical activity, the designated project or the project is being carried out, or

iii. outside Canada; and

(c) with respect to aboriginal peoples, an effect occurring in Canada of any change that may be caused to the environment on

i. health and socio-economic conditions,

ii. physical and cultural heritage,

iii. the current use of lands and resources for traditional purposes, or

iv. any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

CEA within the CEAA, 2012

As outlined in section 4(1)(i), the assessment of cumulative effects is one of the nine purposes outlined for CEAA, 2012:

4(1) The purposes of this Act are

(i) to encourage the study of the cumulative effects of physical activities in a region and the consideration of those study results in environmental assessments.

Section 19(1)(a) of CEAA, 2012 states that cumulative environmental effects resulting from a proposed project in combination with other projects and activities that have been or will be carried out must be taken into account.

19(1) The environmental assessment of a designated project must take into account the following factors:

(a) the environmental effects of the designated project, including the environmental effects of malfunctions or accidents that may occur in connection with the designated project and any cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out;

In addition, the Canadian EAA provides guidance documents to aid proponents in the completion of CEA including the *Operational Policy Statement on Assessing Cumulative Effects under CEAA 2012 (OPS)* (2015a) and *Technical Guidance for Assessing Cumulative Environmental Effects under CEAA 2012* (2015b). These guidance documents outline the general requirements and methods for assessing cumulative environmental effects under CEAA, 2012 (Lucchetta, 2016).

2.2.3. British Columbia Environmental Assessment Act

For projects that fall within the jurisdiction of the province of BC, the current EA process is governed by the British Columbia *Environmental Assessment Act* ("BC EAA, 2002", SCB 2002 c. 43), its associated policies and guidelines and six regulations. The BC EAA, 2002 designates the British Columbia Environmental Assessment Office (BC EAO) as the responsible agency for overseeing the provincial EA process (MFLNRO, 2014). The *Reviewable Projects Regulation* prescribes whether or not a provincial EA is required for a given project or activity based on specified capacity thresholds and the type of project. The *Reviewable Projects Regulation* has specific thresholds for various types of projects and activities including: industrial, energy, mining, water management, waste disposal, food processing, transportation, and tourist destinations and resorts. In addition, the Minister of Environment may designate other projects for assessment, and a proponent can request that the director of the BC EAO designate a project for assessment that would not otherwise be included.

When a proposed project is assessed under the BC EAA, 2002 the BC EAO issues a section 11 Order during the pre-application phase of the EA which outlines the scope, procedures, and methods to be used for assessing potential impacts (BC EAO, 2013a). The BC EAO outlines five categories, or "pillars", within which significant adverse effects are considered: environmental, social, health, heritage and economic (MFLNRO, 2014; BC EAO, 2015a). The proponent is instructed to identify one or more

valued components under each of these five pillars in order to assess the significance of the effects of the project. If the BC EAO is satisfied with the EA conducted by the project proponent the BC EAO issues a report and recommendation to the responsible provincial ministers, and the ministers then choose whether or not to approve the project by issuing an Environmental Assessment Certificate, which may or may not have conditions associated with it.

CEA within the BC EAA, 2002

Although the BC EAA, 2002 does not require that a CEA be conducted for all proposed projects completing a provincial EA, under section 11(2)(b) the executive director of the BC EAO may order that an assessment include cumulative environmental effects:

> **11(2)** The executive director's discretion under subsection (1) includes but is not limited to the discretion to specify by order one or more of the following:
>
> **(b)** the potential effects to be considered in the assessment, including potential cumulative environmental effects;

Although the wording of this section leaves the need for CEA to the discretion of the executive director, the BC EAO website states that the BC EAO "considers cumulative impacts as part of the provincial environmental assessment process" (BC EAO, 2017). The BC EAO's *Guideline for the Selection of Valued Components and Assessment of Potential Effects (2013)* says that CEA is required when it is likely that there will be a cumulative interaction between any residual effects of the project (after mitigation) and the effects of other projects and activities on valued components.

2.2.4. Use of Valued Components in EA and CEA

To assess the potential positive and negative effects of a proposed project within an EA under either the BC EAA, 2002 or CEAA, 2012, "valued components" are typically used. Valued components are aspects of the natural and human environment that are identified as particularly important to society (BC EAO, 2013b; Day *et al.,* 2013; Vanderjagt *et al.,* 2014). Valued components are identified in the scoping phase of an EA and are the foundation for EAs and CEAs in both the BC and federal EA processes

(Stevenson, 1996; BC EAO, 2013b; BC EAO, 2014). In the BC EA process, the valued components that are selected should have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance to society and are used to assess significant adverse effects from a proposed project (BC EAO, 2013b; BC EAO, 2014). The goal is for the proponent to identify a set of valued components that are complete, concise, sensitive and understandable to decision making authorities when analyzing the effects of a proposed project (BC MOE, 2011).

Both EA agencies for the Province of BC and Canada limit their assessments to valued components that are within their own jurisdiction. The Canadian EAA limits its assessment to valued components relating to section 5 of *CEAA, 2012* while the BC EAO limits its assessment to valued components relating to section 10(c) of the BC EAA, 2002. As a result, when a project is assessed under both processes (provincial and federal) the valued components may not be exactly the same for the two EAs.

Significance of Effects on Valued Components

Both the BC EAO and Canadian EAA use the following criteria to characterize the significance of effects on valued components after mitigation measures are considered: context, magnitude, extent, duration, frequency, reversibility (BC EAO, 2014; CEAA, 2016). Each of the criteria has different levels of effect associated with it that are used to characterize the significance of effects (CEAA, 2016). For example, under the duration criterion, the rating can be either short-term, medium-term, long-term or permanent (CEAA, 2016). The reversibility criterion can be rated either as reversible or irreversible (CEAA, 2016).

2.2.5. Province of BC and Federal Agencies Working Together

Often with major development projects there is a requirement for both a federal and a provincial EA (Van Hinte *et al*., 2007; Booth and Skelton, 2011; MFLNRO, 2014; BC EAO, 2015b). When an EA is required under both processes, the Canadian EAA and the BC EAO often work together on assessments by entering into a substitution agreement or through a coordinated approach.

Under section 32 of CEAA, 2012 the federal minister can designate a provincial EA process as a substitute for a Canadian EAA EA. The BC EAO and Canadian EAA

signed a Memorandum of Understanding in 2013 about substitution agreements. With a substitution agreement, the BC EAO conducts a single EA, but the BC EAO and Canadian EAA each makes its own separate decision regarding the project's effects, degree of consultation, and approval (MFLNRO, 2014; BC EAO, 2015b).

As an alternative, these two agencies may cooperate in conducting components of their respective EA processes for a project. Cooperative EAs are authorized by section 27 of the BC EAA, 2002 (MFLNRO, 2014; BC EAO, 2013b). The BC EAO and Canadian EAA signed the *Canada-British Columbia Agreement for Environmental Assessment Cooperation* (2004) to help guide the coordinated approach to completing an EA. The two agencies renewed and extended that agreement in 2008. Under a coordinated effort, both the BC EAO and Canadian EAA conduct their own individual EAs and issue their own decisions but the agencies coordinate certain aspects of the EA process with each other such as consultation with First Nations (BC EAO, 2013b).

Additionally, under the BC EAA, 2002 the Province of BC can accept another jurisdiction's EA process as "equivalent" to the BC EA process, so that a BC EA is not required. The Province of BC has done this previously for EAs conducted by the National Energy Board.

2.3. Strategic Environmental Assessments and Regional Planning

Since CEA is currently embedded as a requirement under federal EA legislation and potentially required for EAs within BC, CEA is often undertaken for large projects that trigger EAs at the federal and provincial levels. However, for smaller projects that do not trigger an EA at federal or provincial levels a CEA is rarely undertaken. Not conducting a CEA for small projects is a flaw arising from having the project-based EA process as the main mechanism for conducting CEA, since the cumulative effects of these small projects within a region may be quite large in combination (e.g., run-of-the-river hydro-power projects) (Clogg and Carlson, 2013).

Strategic environmental assessments (SEA) and regional planning are two alternative mechanisms that could be used as a way to conduct CEA (Harriman and Noble, 2008; Francis and Hamm, 2011; Gunn and Noble, 2011; Seitz *et al.,* 2011;

Weber *et al*., 2012). Both SEA and regional planning have been advocated as offering a more proactive mechanism for effective and systematic assessment of cumulative effects (Duinker and Greig, 2006; Harriman and Noble, 2008; Francis and Hamm, 2011; Weber *et al*., 2012). These mechanisms can inform decision makers by evaluating various land use options and potential future outcomes based on regional values, goals, and objectives (Weber *et al*., 2012). The main objective of SEA and regional planning should be to present and examine alternatives systematically and select the most desirable outcome and course of action for a region based on pre-identified desired future outcomes (Harriman and Noble, 2008; Francis and Hamm, 2011). A SEA approach to CEA should be an objective approach that puts the focus of the assessment on initiatives, plans and opportunities, with the aim of informing decision-making (Harriman and Noble, 2008; Seitz et al., 2011).

When conducting a project-based CEA, the proponent needs to consider cumulative effects of the project in combination with past, present and reasonably foreseeable future projects and activities (Duinker and Greig, 2006; Seitz *et al.,* 2011). "Reasonably foreseeable" is often narrowly construed as "likely to occur", and the consideration of only those future projects and activities that are predicted under this approach discourages broad forecasting and strategic sustainability planning for potential changes in energy demand, technology, and/or resources (Duinker and Greig, 2006; BC EAA, 2002; CEAA, 2012). Embedding CEA within SEA or regional planning would better address these concerns.

Many academics advocate that the ideal approach to conducting CEA would be to integrate CEA conducted at the project-level EA scale with CEA conducted at larger regional scales (Baxter *et al*., 2001; Therivel and Ross, 2007; Noble, 2008; Harriman and Noble, 2008). Currently within Canada, CEA is not legislatively required to be conducted within SEA or regional planning.

2.4. Aboriginal Involvement in Canadian Environmental Assessments

2.4.1. Aboriginal Rights and Title

Existing Aboriginal and treaty rights in Canada were explicitly recognized and affirmed in 1982 under section 35(1) of the *Constitution Act, 1982* (Schedule B to the *Canada Act 1982* (U.K.), c. 11). The Supreme Court of Canada case *R. v. Sparrow* ([1990] 1 S.C.R. 1075) demonstrated that Canadian courts will uphold Aboriginal rights under the Canadian Constitution. A series of subsequent judicial decisions has clarified the nature and scope of these rights and the legal relationship between the provincial and federal governments and Aboriginal people (Tollefson and Wipond, 1998; Browne and Mildon, 2010; BC, 2010). As a result of these court cases, the consideration of impacts on Aboriginal rights associated with development projects is becoming increasingly important in EA processes, and governments are attempting to use EAs as a means to consult Aboriginal groups and determine appropriate accommodation (Van Hinte *et al.,* 2007; Harris and Millerd, 2010; Booth and Skelton, 2011; BC EAO, 2013a). The obligation to consider the inherent rights of Aboriginal people was reinforced when Canada formally endorsed the 2007 United Nations Declaration on the Rights of Indigenous Peoples in 2010 (Corntassel and Bryce, 2012). The Canadian federal government went a step further in 2016 by making a commitment to adopt the Declaration.

Canadian courts have ruled that when an activity or decision may potentially infringe on either Aboriginal rights or treaty rights, the provincial and federal governments have a duty to consult and, where required, accommodate Aboriginal people (BC EAO, 2013a). Aboriginal rights for First Nations can be defined as “practices, customs or traditions integral to the distinctive culture of the First Nation claiming the right” (BC, 2010: 5). Aboriginal rights may include hunting, fishing, harvesting of traditional medicines and conducting spiritual ceremonies (BC, 2010). Aboriginal title is a subcategory of Aboriginal rights which can be defined as “a unique interest in land that encompasses a right to exclusive use and occupation of the land for a variety of purposes” (BC, 2010: 5). A First Nation claiming Aboriginal title must be able to prove “exclusive use and occupation” of the land prior to sovereignty (BC, 2010; Browne and Mildon, 2010). According to the BC EAO, consultation with First Nations during an EA is

supposed to determine Aboriginal interests that may be adversely affected by a proposed project and is a method for gathering information to assess such effects (BC EAO, 2013a). The duty to consult must be met prior to infringing on claimed or proven Aboriginal and treaty rights (BC, 2010). Consultation with First Nations after the government has already issued a decision on a project is not meaningful or reasonable, as determined in the Supreme Court of Canada's decision in *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)* ([2004] S.C.C. 74) (BC, 2010).

First Nations should play a major role in the EA process for projects and activities that occur within their traditional territory and/or have the potential to infringe on their Aboriginal rights (White *et al*., 2007; Pollon, 2012). In BC and federal EA processes proponents are directed to engage early on with Aboriginal groups, and both processes provide for notice to Aboriginal groups and the opportunity for them to review and provide feedback on procedural orders and draft EA proposals submitted by the project proponent prior to a final decision on the project (MFLNRO, 2014). Concerns raised by First Nations in BC are often associated with the potential impacts of a proposed project on Aboriginal rights (MFLNRO, 2014). Such impacts could include impacts to traditional practices and cultural resources as well as impacts to the land, air, water, forests, fish, and wildlife (MFLNRO, 2014). Often the BC EAO or Canadian EAA will ask Aboriginal groups to participate on advisory working groups, which are established in the EA process to assess potential impacts and mitigation strategies (MFLNRO, 2014).

2.4.2. Duty to Consult

The duty to consult and where required accommodate Aboriginal peoples was articulated by court decisions interpreting section 35 of the Canadian *Constitution Act, 1982*. Within BC, more than 95% of the land is Crown owned (Tollefson and Wipond, 1998). Due to the large amount of unceded territory in the province (see *Delgamuukw v. British Columbia* ([1997] 3 S.C.R. 1010), there are many claims of Aboriginal rights and/or title. As a result, many of the court cases outlining the roles and responsibilities of the government with respect to the duty to consult originate from BC (Tollefson and Wipond, 1998; Olynyk, 2005; BC, 2010). Cases such as *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)* (2004) and *Tsilhqot'in Nation v. British Columbia* ([2014] S.C.C. 44) clarified that if the province has real or constructive knowledge of potential Aboriginal rights or title being adversely infringed upon by

government decisions or actions then there is a duty to consult. The duty to consult exists even if the Aboriginal right is claimed but not yet proven in court (*Haida Nation v. British Columbia (Minister of Forests)* ([2004] S.C.C. 73) (MFLNRO, 2014; BC, 2010; Olynyk, 2005). The duty to accommodate arises when there is a strong chance that a government decision could "require taking steps to avoid irreparable harm or to minimize the effects of infringement" (*Haida Nation v. British Columbia (Minister of Forests) 2004: 47*). The *Haida Nation v. British Columbia (Minister of Forests)* (2004) case established that the extent or level of consultation required occurs along a spectrum and is proportionate to the following two factors:

- Strength of the case for the claimed Aboriginal rights (including title) that may be adversely affected; and
- Seriousness of the potential impact of contemplated Crown action or activity on Aboriginal Interests (BC EAO, 2014).

Thus, the nature and degree of consultation required varies from project to project (Leadem, 2013). According to the consultation practices adopted by the Province of BC, in response to the *Haida Nation v. British Columbia (Minister of Forests)* (2004) case, the level of consultation can occur along a spectrum from 'notification' to 'normal' to 'deep' (BC, 2010). As the strength of potential claim and the potential for adverse effects increase, deeper consultation is required (BC, 2010). *Notification* consultation provides an opportunity for First Nations to comment, *normal* consultation involves the intention to address concerns of First Nations, while *deep* consultation aims to find an interim solution to concerns (BC, 2010). Accommodation requires the project proponent to "avoid, mitigate, or otherwise address an impact of a proposed project on Aboriginal Interests" (BC EAO, 2013a). Accommodation should avoid irreversible harm or impact to an Aboriginal right by seeking a compromise and understanding between the conflicting interests and views of the project proponent, First Nations and government (BC, 2010).

The BC EAO and Canadian EAA attempt to ensure that the government and project proponents respect Aboriginal rights and the honor of the Crown with respect to the duty to consult and where required, the duty to accommodate (BC EAO, 2013a). In addition, consultation with Aboriginal groups is initiated by both levels of government "as

an important part of good governance, sound policy development and decision making" (CEAA, 2016: 22).

Concerns about the level of consultation and Aboriginal involvement in EA processes

There is an increasing trend of court cases initiated by First Nations challenging the legitimacy of EA processes and consultation (Leadem, 2013). It is evident by the number of court cases challenging the government's efforts to consult and accommodate that many Aboriginal people feel they are being inadequately consulted and accommodated and are unsatisfied with their participation in the EA process. This may be due in part to the current system failing to adequately incorporate Aboriginal traditional knowledge and cultural values into EAs (FNEMC, 2009). Additionally, many First Nations have been vocal about their distrust of the current EA process and its ability to represent their interests and values (Satterfield *et al.,* 2013; Rutherford, 2016). Critics argue that impacts to Aboriginal communities as a result of development projects and activities tend to be underrepresented or not properly compensated for in the EA (Turner *et al*., 2008; Pollon, 2012). These are known as "invisible losses" which can ultimately lead to the decline in resilience of individuals and communities (Turner *et al*., 2008). Some critics, including those from Aboriginal groups, claim that the distrust of current EA processes has developed though years of mismanagement of land and resources by government decision makers whose perspectives have been dominated by western science (MFN, 2011; Adams *et al.*, 2014).

2.5. Aboriginal Culture

The term culture can mean different things to different people and communities and has been defined in a variety of ways by scholars (McIntyre-Tamwoy, 2004; Alfred and Corntassel, 2005; Colquhoun and Dockery, 2012; King, 2013; Satterfield *et al*., 2013). For my research, I adopted the definition of culture given by Day *et al.* (2014: 15): "a set of shared attitudes, values, goals and practices that characterizes a society – it is the sum of all learned human behaviours in a particular society." Culture has both tangible and intangible elements and "guides human actions and interactions, defines social groups, and connects past, present, and future" (Day *et al.,* 2014: 15). Tangible aspects of culture include things such as monuments, archaeological sites, landmarks

and landscapes, traditional art forms (i.e. masks, dances), traditional ways of using the land and its resources, and culturally important plants and animals, while intangible aspects include worldviews, attitudes, practices, principles, stories and language (King, 2013; Satterfield *et al.*, 2013). In this report, I use the term culture to refer to traditional Aboriginal cultures and their existence over time. Traditional Aboriginal culture is rooted in historical customs, practices and experiences of a specific Aboriginal group with various aspects that may or may not evolve over time (Colquhoun and Dockery, 2012). Aboriginal culture is often placed-based as the cultural identity of many Aboriginal communities remains connected to the land in a specific region (Alfred and Corntassel, 2005; Colquhoun and Dockery, 2012; Corntassel and Bryce, 2012).

Each Aboriginal community has its own unique economic, practical, spiritual, political and historical relationships with the land (Turner *et al*., 2000). These relationships shape the cultural, spiritual, emotional, physical and social lives of the community and its people (Wilson, 2003). Some aspects of culture can evolve over time as communities adapt and respond to environmental, economic, and social changes (Day *et al*., 2014). However, other aspects of culture stand the test of time and remain unchanged (Corntassel and Bryce, 2012; Day *et al*., 2014). Cultural continuity demonstrates the degree to which cultural values, traditions and ideas are sustained and adapt over time (Day *et al*., 2014).

To preserve and maintain cultural customs and traditions within a community over time, Aboriginal youth must be educated and knowledgeable about their culture (Colquhoun and Dockery, 2012; Corntassel and Bryce, 2012; Markey *et al*., 2012). Many First Nations want to maintain their ability to teach younger generations about community and their longstanding, cultural ties to the natural marine and terrestrial environment (MFN, 2011; Corntassel and Bryce, 2012). Intergenerational knowledge and oral history is recorded, preserved and passed down in many different ways, and language is essential to the process (Turner *et al*., 2008; Turner *et al*., 2000; MFN, 2011; DMCS, 2013a). Passing knowledge and stories from elders down to younger generations of a community sustains the group's culture and maintains the cultural ties to the natural environment (MGC, 2010; MFN, 2011; Vanderjagt *et al*., 2014). Environmental change and increasing shifts of First Nations to western lifestyles have resulted in a decline of traditional cultural knowledge being held and sustained by youth

(Turner *et al*., 2000). Despite this, many Aboriginal communities are aiming to restore and reconnect with their place-based cultural practices (Corntassel and Bryce, 2012).

Aboriginal peoples' well-being can be strengthened when they have the ability to maintain their traditional culture and language (Alfred and Corntassel, 2005; Colquhoun and Dockery, 2012). Having a close connection with a traditional culture can develop "a stronger sense of self identity, promote resilience and positive sense of community" (Colquhoun and Dockery, 2012: 2). Having a strong cultural identity alongside high self-esteem in Aboriginal youth was found to reduce suicide rates along with alcohol and substance abuse in an Aboriginal community in the Midwest of the United States (Zimmerman *et al*., 1998) and can protect against alcohol and substance abuse among adults as was found in an Aboriginal community in Australia (Colquhoun and Dockery, 2012).

2.6. Aboriginal Culture and Environmental Assessment

For First Nations choosing to maintain their traditional way of life, industrial development can have a significant impact on their ability to do so (Ross, 1990; Booth and Skelton, 2011; Corntassel and Bryce, 2012). In 1992, Agenda 21 of the United Nations Conference on Environment and Development recognized "the rights of Aboriginal people to fully participate in decisions concerning developments that affect their lands, cultures, and lifestyles" (Stevenson, 1996: 279).

Major development projects can have cultural and social impacts on surrounding communities (King, 2013; Adams *et al*., 2014). It has become increasingly important for decision-makers in resource management to consider social and cultural impacts of a proposed project in addition to environmental and economic considerations (McIntyre-Tamwoy, 2004; King, 2013; Satterfield *et al*., 2013; Adams *et al*., 2014; Housty *et al*., 2014). Major development projects that cause major changes to the land can impact the ability for Aboriginal people to use the land which over time can result in an impact to the evolution of their culture (Ehrlich, 2010; Christensen and Krogman, 2012).

First Nations communities have a deep and long standing knowledge and understanding of the land and natural resources (White *et al*., 2007). This knowledge gives First Nations a critically important perspective when providing input to the EA of a

particular project, and when monitoring environmental change over time (Stevenson, 1996). Due to their oral histories and long standing relationship with the land, First Nations people are often knowledgeable about ecological events or system changes that occurred in a region prior to the 20th century (Parlee *et al*., 2012). The holistic knowledge provided by First Nations can be useful and applicable to decision-makers with regard to sustainability and proper management of natural resources (Stevenson, 1996; Turner *et al*., 2000; Usher, 2000).

The BC EAO encourages proponents to have Aboriginal rights and interests represented as valued components in the EA of a project to ensure potential impacts on Aboriginal groups are considered and understood (Housty *et al*., 2014; BC EAO, 2013a; McGarvey *et al*., 2014; Vanderjagt *et al*., 2014). One major challenge, however, is that government decision makers often mainly use the results from the proponent's EA when analyzing the potential project's impacts to Aboriginal rights (McGarvey *et al*., 2014; Vanderjagt *et al.,* 2014). As McGarvey *et al*. (2014: 14) point out "it is critical that the information collected and presented to the Crown by the proponent in their application accurately and credibly identifies the size, scope and nature of the effect to Aboriginal rights to ensure meaningful Aboriginal consultation and accommodation." Therefore, there needs to be relevant and useful valued components in the EA and CEA that can accurately represent the effects on Aboriginal peoples and their culture so that this can be factored into decision making about avoidance, mitigation, accommodation, and ultimately, whether to approve a project or not.

2.6.1. Requirement for Cultural Valued Components in EA and CEA under CEAA, 2012

The need to consider potential impacts on Aboriginal peoples and their culture when conducting an EA is explicitly recognized in section 5(1)(c) of CEAA, 2012:

> **(c)** with respect to aboriginal peoples, an effect occurring in Canada of any change that may be caused to the environment on
>
> **(i)** health and socio-economic conditions,
>
> **(ii)** physical and cultural heritage,

(iii) the current use of lands and resources for traditional purposes, or

(iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

2.6.2. Requirement for Cultural Valued Components in EA and CEA under BC EAA, 2002

Within the BC EAA, 2002 only impacts to treaty First Nations are discussed, with no mention of impacts to non-treaty First Nations. The BC EAA, 2002 does not clearly state that impacts to First Nation culture must be considered, but 'heritage' is one of the five categories of impacts that must be assessed under section 10(c). That section indicates that the EA process should focus on environment, economic, social, health and heritage effects to understand the potential for significant adverse effects of the proposed project (BC EAO, 2014).

2.6.3. Concerns from Aboriginal Groups about the Incorporation of Cultural Valued Components in EA and CEA

As previously discussed, Aboriginal peoples' involvement in EAs of major development projects is governed by laws, treaty obligations and court rulings due to the recognition of their Aboriginal rights and the potential for development to infringe on these rights (Booth and Skelton, 2011). In theory, an EA is supposed to balance the interests of proponents, stakeholders, government and Aboriginal groups with respect to industrial development by assessing and managing potential adverse impacts, but in practice, this objective is often not achieved. Often, Aboriginal communities affected by a proposed project are poorly engaged in the EA process (King, 2013). In particular, often cultural values of Aboriginal communities have not been effectively incorporated into the EA process and they tend not to be accounted for or to influence the decision of whether or not to issue an Environmental Assessment Certificate for a project (Usher, 2000; Raymond *et al*., 2010; Adams *et al*., 2014).

Often when an EA is conducted, little attention is paid to assessing effects on culture, other than effects on the physical aspects of cultural heritage (King, 2013). Project proponents may have a difficult time identifying, mitigating and justifying cultural impacts of a project because cultural impacts are not always tangible and some non-

tangible elements can be of great concern to a potentially affected Aboriginal community (Ehrlich, 2010). For this reason, cultural values are difficult to represent through valued components and can be a sensitive topic for government officials and proponents to discuss with Aboriginal communities, which has led to such values often being underrepresented or avoided when conducting an EA (Chan *et al*., 2012; Koenig and Adlam, 2012; Satterfield *et al*., 2013). As a result, impacts to cultural areas such as cultural identity, spiritual and heritage values, and social cohesion tend to be misunderstood or ignored as the impacts tend to be intangible, nonmaterial and difficult to measure and value, particularly when compared to economic and environmental impacts (McIntyre-Tamwoy, 2004; Christensen *et al*., 2010; Chan *et al*., 2012). Many of these cultural impacts cannot be measured in monetary value (Chan *et al*., 2012). When the cultural values of potentially impacted Aboriginal communities are not adequately considered in the EA scoping and planning process the resulting mitigation and management strategies to reduce these impacts are insufficient (King, 2013). Despite this difficulty, cultural impacts tend to be of very high concern to Aboriginal communities potentially impacted by a proposed development project as these values are uniquely tied to their history, identity and way of life (Chan *et al*., 2012).

2.6.4. Recommendations from the Literature on Incorporating Cultural Valued Components into EA and CEA

Since culture can mean different things to different people and communities and has been defined in a variety of ways, the evaluation of impacts to culture and cultural values can be difficult (King, 2013). As a result, consideration of cultural impacts within an EA must start with an understanding of what culture means to the potentially impacted communities. Engaging and learning from the community itself to determine what their cultural and social values are will help to enable the integration of these values into management strategies and objectives, including EA and CEA (McIntyre-Tamwoy, 2004). Engaging the community is essential because local values cannot be determined by an outside specialist but are rather determined by the local community itself and the specialist must interpret and translate them into management (McIntyre-Tamwoy, 2004).

There is a lack of community engagement when an EA focuses attention on only those cultural and heritage values that scientists, archaeologists, or other experts

externally identify and deem important (King, 2013). Doing so shows a lack of respect and appreciation for what the community may identify as culturally important and significant to them and this can contribute to a lack of faith by the community in any eventual conclusions (King, 2013). It is wrong for an external expert to judge what values are correct or incorrect when representing heritage and culture since a community cannot be told they are wrong in their feelings of attachment to a given location or practice (McIntyre-Tamwoy, 2004; Parlee *et al*., 2012). As recommended by King (2013), “we should back away from reliance on “official” lists and “professional” evaluations, in favor of consulting local communities about how to manage cultural heritage as THEY define it.” This engagement could go even further by providing sufficient resources to the potentially affected Indigenous communities to support them in carrying out the assessment of impacts to cultural values themselves.

2.7. Cultural Indicators

Indicators are quantifiable metrics that can be used to inform decision-makers of trends and changes to specific values (BC MOE, 2011), as well as to monitor progress towards local and regional goals over space and time (Tollefson and Wipond, 1998; Christensen *et al.,* 2010; Day *et al*., 2013; Wilson, 2014; Lucchetta *et al*., 2016). Based on the definition of culture above, there are many different components of culture within a community that can be measured and monitored, some quantitatively while others can only be looked at qualitatively.

There are two types of indicators that can be used in CEA depending on what is to be measured: effect-based or stressor-based. Effect-based indicators measure the change in the overall state of a valued component (Noble, 2013). A good effects-based indicator will provide information about the condition of a particular valued component by being particularly sensitive to its responses to various stressors (Noble, 2013). A stressor-based indicator focuses on measuring the underlying factors that exert pressure (or stress) on the condition of a valued component (Noble, 2013). The selected stressor-based indicators must represent a range of disturbances and be characteristic of effects on, or response in, a particular valued component (Noble, 2013). Which type of indicator should be used will depend on the purpose and approach taken towards the EA and CEA management, and rarely both types of indicators will be used simultaneously (Noble, 2013). Both types of indicators must be able to highlight the existence of change

but also make it easy to identify the cause of the change to support management decisions (Noble, 2013). Indicators that are selected must represent multiple scales, including both at the project level and regional level (Dale and Beyeler, 2001).

The focus of resource management has often been on environmental and economic indicators with insufficient research on social and cultural indicators, resulting in limited knowledge about social and cultural changes to communities over time (Mitchell and Parkins 2011; Weber *et al*., 2012). Often, indicators representing cultural changes will be qualitative in nature compared to the quantitative indicators preferred by decision-makers and western science in the EA process (Weber *et al*., 2012).

2.7.1. Recommendations from the Literature on social and cultural indicators

The major improvement in the identification of social and cultural indicators has come from increasing civic engagement and recognizing traditional knowledge to develop relevant local indicators (Christensen *et al*., 2010). Due to the intangible and personal nature of many cultural impacts, indicators of culture selected by an outside specialist to assess change may be poorly and inaccurately developed and designed if the community itself is not involved or engaged (Satterfield *et al*., 2013). Not involving the community when selecting cultural indicators may result in misleading conclusions and measures of cultural change (Satterfield *et al*., 2013). Satterfield *et al*. (2013) recommends methods that allow for the development of locally defined, subjective measures to assess cultural changes. Allowing the local community the ability to design the approach and provide input results in them having more control of the indicators selected to represent their culture (Satterfield *et al*., 2013). Finally, a lack of community consultation and engagement will result in inaccuracies or difficulties when identifying indicator thresholds, since establishing appropriate thresholds for indicators can vary from community to community (Duinker and Greig, 2006; Foote, 2012; Parlee *et al*., 2012; Compass Resource Management, 2015; Lucchetta *et al*., 2016).

2.8. Main Critiques of the Current Approach to Incorporating Aboriginal and Cultural Values into Project Based Cumulative Effects Assessment

Critics argue that the current project-based approach to EA is unable to properly understand and address cumulative environmental and socioeconomic effects from multiple projects and activities (Tollefson and Wipond, 1998; Duinker and Greig, 2006; Gunn and Noble, 2011; Mitchell and Parkins 2011; Noble, 2013). By conducting CEA on a project by project basis, EAs often underestimate or inaccurately predict cumulative effects leading to inadequate management and mitigation strategies (Hegmann *et al*., 1999; Harriman and Noble, 2008). Both proponents and decision making agencies often have weak interpretations of cumulative effects within an EA due to the lack of scientific and baseline information and predicative capability for understanding the multiple interacting effects from various sources over space and time (Baxter *et al*., 2001; Seitz *et al.,* 2011; Noble, 2013). Many scholars argue that the way a comprehensive CEA should properly be conducted is not well suited to project-level EAs (Baxter *et al*., 2001; Duinker and Greig, 2006). Some of the following critiques are broad and apply to all CEA, including CEA of cultural values, while some are more narrowly applicable just to CEA of cultural values.

2.8.1. Scale

One major challenge with CEA compared to project-specific EA is scale (Seitz *et al.,* 2011). Since EAs are generally limited to the assessment of impacts at the spatial and temporal scales of the individual project, often the EA does not fully consider and include cumulative, interacting effects from multiple projects over larger spaces and time frames (Baxter *et al*., 2001; Therivel and Ross, 2007; Seitz *et al.,* 2011). Since CEA is nested within this project-based EA framework, CEA is often conducted at the spatial scale of a single project (Dubé, 2003; Seitz *et al.,* 2011). As a result, predictions of effects within CEA and EA are conducted using the same studies and information, despite the need in CEA to consider multiple other projects and activities (Therivel and Ross, 2007). The project level scale is not an accurate scale to represent cumulative effects since the amount of impact or stress caused to a valued component from an individual project may be small when considered alongside many other projects occurring in a region (Duinker and Greig, 2006; Seitz *et al.,* 2011). Rather, effective CEA

requires larger spatial and temporal scales compared to a project based EA (Dubé, 2003; Harriman and Noble, 2008; Francis and Hamm, 2011). However, too large of a spatial scale for CEA could result in local project-specific effects not being considered significant because they have less impact in the larger context and too many other sources of stress are being considered (Therivel and Ross, 2007). Additionally, the temporal scale of CEA often only considers the current environmental and socio-economic conditions as the starting point for CEA (Dubé, 2003; Seitz *et al.,* 2011). However, the temporal scale of CEA should consider how past projects and activities have created long and short term cumulative effects leading to the present conditions and how these may influence future effects (Therivel and Ross, 2007; Seitz *et al.,* 2011).

2.8.2. Scoping

Cumulative effects often result from multiple interacting effects from multiple projects and activities over space and time and as a result it is complex to identify and assess such effects within a project-based EA (Dubé, 2003; Seitz *et al.,* 2011). Baxter *et al*. (2001) found that cumulative effects in many of the CEA case studies evaluated were not examined or analyzed within the EA because the project specific effects were determined to be insignificant, which the authors outlined as “a fundamental flaw in CEA.” This flaw results from cumulative effects being considered alongside the analysis of project specific effects, which does not allow for linkages or cause and effect relationships of cumulative effects to be considered (Baxter *et al*., 2001). Not having scoping that is comprehensive enough at the beginning of the process and not including all the potential cumulative effects will impact the identification and analysis of cumulative effects and the quality of the mitigation and management plans moving forward (Baxter *et al*., 2001). This is often seen when assessments use the same valued components and indicators to assess both project-specific and cumulative effects, rather than having specific valued components and indicators to assess cumulative effects (Baxter *et al*., 2001; Dale and Beyeler, 2001). Since the potential cumulative effects of a project will depend on the local situation and the types of projects and activities in the region, accurate valued components must be scoped for a project rather than relying on a standard set of valued components to be used in all CEA conducted (Therivel and Ross, 2007). As Baxter *et al*. (2001: 258) point out in their evaluation of 12 Canadian CEAs:

> It became evident through the course of the evaluation that cumulative effects scoping either was missed entirely, that is, VECs [valued components] were identified with no reference to cumulative effects, or identification of cumulative effects VECs was an indistinct, random effort.

2.8.3. Lack of Guidance

Additionally, a major challenge to CEA is that there is no single conceptual approach or framework to conduct CEA that is agreed upon among scientists and decision makers (Seitz *et al.,* 2011). There are a number of different CEA concepts and frameworks discussed within the literature including effects-based and stressor-based approaches (Seitz *et al.,* 2011). A stressor-based approach to CEA focuses on a proposed project and predicts its potential effects through various future development scenarios using the current environmental state as a baseline for comparison (Seitz *et al.,* 2011; Noble, 2013). A stressor-based approach is a predictive approach that focuses specifically on a single project and its effects, often ignoring interacting effects with other projects at a larger scale (Baxter *et al*., 2001; Seitz *et al.,* 2011). An effects-based approach to CEA focuses on identifying sources of stress within a region and how those sources may interact over a spatial scale impacting the current state of the environment, relative to a reference condition (Seitz *et al.,* 2011; Nobel, 2013). An effects-based approach has a more regional focus but lacks predictive ability as sources of stress are often identified only after they have caused an effect (Dubé, 2003; Seitz *et al.,* 2011). An effects-based approach is seen as retrospective (*what has happened)* while a stressor-based approach is seen as prospective (*what might or could happen)* (Noble, 2013). Due to the different frameworks and approaches to CEA mentioned in the literature, proponents and decision makers often lack an understanding of how to effectively conduct CEA for projects (Seitz *et al.,* 2011).

Finally, individual proponents often have little control over, or information about, other present and future development activities occurring in an area that they must consider (Dubé, 2003; Harriman and Noble, 2008; Francis and Hamm, 2011). As Therivel and Ross (2007) point out, a proponent can be made responsible for managing and mitigating the cumulative effects from its own project, but should not be responsible for managing the effects from projects of other proponents.

2.8.4. Decision-making

Many scholars have discussed that there are issues with how cumulative effects are currently addressed within Canada (Baxter *et al.,* 2001; Duinker and Greig, 2006; Noble, 2010). A concern scholars often raise is that currently within Canada CEA is usually completed only for projects that trigger a federal or provincial EA, which often are large scale developments. While CEA is conducted for these larger scale projects it is often not completed for smaller projects that do not trigger an EA. These small projects, if continually approved in a region without consideration of a CEA are likely to result in cumulative effects. In order to be effective a CEA needs to consider all projects, activities and impacts in a region.

It is often unclear how much of an influence cumulative effects and the results of a CEA have when decisions are being made regarding whether or not to approve a proposed project (Lawe *et al.,* 2005). Since CEA is currently conducted on a project-by–project basis within the EA process it does not proactively consider the desired future of a region (Noble, 2010; Lucchetta, 2016). There are many proposed methodologies for conducting CEA and how to consider decisions for future developments based on a desired future outcome (MacDonald, 2000; Lucchetta, 2016).

2.9. Recommendations for the Incorporation of Aboriginal and Cultural Values into Cumulative Effects Assessment

The shortcomings in the current EA process of not adequately understanding and representing cumulative environmental effects may be addressed by transitioning the focus of CEA to regional level assessments encapsulating multiple projects (Tollefson and Wipond, 1998; Duinker and Greig, 2006; Gunn and Noble, 2011; Francis and Hamm, 2011; Parkins, 2011; Noble, 2013). A regional level CEA would allow for multiple environmental assessments from multiple projects to be used together by decision makers to provide better information about the potential cumulative effects for a given region over longer time scales (Dubé, 2003; Ehrlich, 2010; Parkins, 2011). Strong context scoping, that separates project specific effects from cumulative effects, will help to create an effective CEA with adequate mitigation and management plans in place (Baxter *et al*., 2001). Regional level CEA would result in decision makers having the

ability to track and manage multiple interacting thresholds of valued components from various projects within a predetermined region (Christensen and Krogman, 2012).

CEA could be distinguished from EA by having separate terms of reference for each process, outlining the steps the proponent is required to follow when conducting CEA versus the project specific EA (Hegmann *et al*., 1999; Baxter *et al*., 2001). Separate terms of reference may be necessary since cumulative effects can be unique from project specific effects and require the identification of linkages and cause and effect relationships with other activities and effects in a region, which the analysis of project specific effects does not require (Baxter *et al*., 2001).

In the next Chapter, I will look at a recent “state-of-the-art” project-based assessment of a major development project located within the Metlakatla traditional territory in northwestern BC. This recent assessment will be used to illustrate the current state of CEA in project-based EA in BC and Canada, and to assess whether the weaknesses identified within the literature have been addressed.

Chapter 3.

The Pacific NorthWest LNG Assessment – A Current Project-Based Environmental Assessment in Metlakatla Traditional Territory

This chapter outlines the EA process completed for the Pacific NorthWest LNG project (PNWLNG), a recent major project proposed near Prince Rupert, BC. The Pacific NorthWest LNG project completed an EA under both the Province of BC and federal EA agencies and in accordance with current EA regulations and legislation. Within this chapter, I will provide a brief description of the project, the requirement for an EA under both federal and provincial jurisdictions and the valued components selected to assess effects. I will then describe the CEA that was completed for the project, focusing on the assessment of cultural values, and conclude the chapter with a discussion on the findings and conclusions from each of the environmental assessment agencies.

3.1. Pacific NorthWest LNG Project

The PNWLNG project and its CEA process will be used as an example throughout the rest of the chapter as it is a relevant and current project that recently completed an approved EA that adhered to the current EA policies, regulations and legislation within both the Province of BC and federal jurisdictions. The PNWLNG project will be used in this work to represent the current state of EA completed for major projects in the Province of BC and federally and to compare what the academic literature recommends for EA and CEA with how current EA and CEA are completed.

When comparing the EA and CEA process for this project to the recommendations from the academic literature, the chapter will focus on the cultural valued components of the EA process with less of a focus on other biophysical valued components and aspects of the EA process. This scope will allow for comparisons to be made with the case study discussed in the following chapters on a new approach for incorporating Aboriginal cultural values in CEA and other EA processes.

3.1.1. Overview of the Project

The PNWLNG involves the construction, operation, and decommissioning of a facility near Prince Rupert on the west coast of BC for the liquefaction, storage, and export of liquefied natural gas (LNG) (BC EAO, 2014; CEAA, 2016). LNG is produced when natural gas is cooled to -162°C, which is the temperature at which this gas condenses to a liquid at atmospheric pressure (BC EAO, 2014). When the natural gas is converted to a liquid, its volume reduces to 1/600th of its gaseous state, allowing it to be more easily transported greater distances (BC EAO, 2014).

The proponent proposing the PNWLNG is the Pacific NorthWest LNG Limited Partnership, which is owned by PETROLIAM NASIONAL BERHAD (PETRONAS) (BC EAO, 2014; Stantec Consulting Ltd., 2014; CEAA, 2016). PETRONAS is owned by the Government of Malaysia (BC EAO, 2014).

The proponent is proposing the PNWLNG to be located on Lelu Island, in northwestern BC approximately 15 kilometres south of Prince Rupert, BC within the District of Port Edward (Figure 1 and 2) (BC EAO, 2014; CEAA, 2016). Lelu Island is a small island, accessible only by water, approximately 219 ha in size (CEAA, 2016). As outlined in CEAA (2016: 16) “the purpose of the Project is to convert natural gas originating from Progress Energy Canada Ltd.’s reserves in the Montney Basin (straddling northern B.C. and Alberta) into LNG for export to Pacific Rim markets in Asia. Once delivered to markets, the LNG would be returned to its gaseous state and sent through pipelines for residential, commercial, and industrial uses.”

Figure 1. Location of the proposed PNWLNG project in northwestern BC (Map provided by: Stantec Consulting Ltd., 2014).

Figure 2. **Zoomed in map of the proposed location of the PNWLNG project in northwestern BC on Lelu Island including surrounding Aboriginal communities (Map provided by: Stantec Consulting Ltd., 2014).**

At full production, the PNWLNG would receive approximately 3.2 billion standard cubic feet per day (or 9.1×10^7 cubic meters per day) of pipeline grade natural gas and would convert this to produce 20.5 million tonnes of LNG per year (BC EAO, 2014; CEAA, 2016). Construction of the project is anticipated to take five years followed by an operational life span of over 30 years (BC EAO, 2014; CEAA, 2016).

In addition to the LNG facility, the PNWLNG would also include the construction, operation and decommissioning of a marine terminal which would allow for the loading of LNG to vessels which would export the product to markets in the Pacific Rim (CEAA, 2016). The major project components for the project include:

- LNG Trains to process the incoming natural gas;
- LNG Storage Tanks;
- Marine Terminal including a suspension bridge to load the LNG carriers for export;
- Utilities and Offsite Facilities to support the operation;
- Non-Manufacturing Facilities; and
- Temporary Construction Components (CEAA, 2016).

The project is expected to cover a total area of 177 ha both on land and offshore (CEAA, 2016). Approximately 160 acres of the total area will occur on Lelu Island with the remaining footprint occurring from the bridge crossing, marine terminal, and the Materials Offloading Facility (BC EAO, 2014; CEAA, 2016). The project does not include the pipeline transportation of natural gas from northeastern BC to the PNWLNG site as this is a separate project, proposed by TransCanada Pipelines Ltd., undergoing its own, separate EA process (CEAA, 2016).

The project is located in an area with overlapping assertions of Aboriginal rights and title from five Tsimshian Aboriginal groups including: Lax Kw'alaams Band, Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Kitselas First Nation (BC EAO, 2014; CEAA, 2016). Furthermore, Gitga'at First Nation also asserts Aboriginal rights, but not title, to the same area (CEAA, 2016). These Aboriginal groups

“report that the Prince Rupert area is used by their members for traditional use activities that include hunting, fishing, harvesting marine resources, and plant gathering” and that “the Project area provides marine and terrestrial habitat for many culturally important and traditionally harvested species” (CEAA, 2016: 30).

While Lelu Island is currently undeveloped and uninhabited, the proposed location of the PNWLNG project is adjacent to commercial and recreational fishing areas and major infrastructure developments and activities (Stantec Consulting Ltd., 2014).The proponent and EA agencies recognize that Lelu Island is an important site for these Aboriginal groups for food, social and ceremonial purposes including hunting, fishing, and gathering of plants and animals (Stantec Consulting Ltd., 2014; BC EAO, 2014; CEAA, 2016). The lands and waters of the proposed project area are also spiritually and culturally significant containing archaeological sites such as culturally modified trees and the location of meeting, feasting and spiritual practices (Stantec Consulting Ltd., 2014; BC EAO, 2014; CEAA, 2016).

3.1.2. Requirement for an Environmental Assessment

As previously mentioned, an EA was required for this project under both the BC and federal EA regulations. The federal and provincial EA authorities coordinated their assessment processes, and both EAs focused on valued components to assess the effects of the proposed PNWLNG on various environmental components (BC EAO, 2014; CEAA, 2016).

Requirement for an EA under the CEAA, 2012

The PNWLNG is to be located primarily on federal lands and waters managed by the Prince Rupert Port Authority (CEAA, 2016). On April 5, 2013 the Canadian EAA determined that a federal EA was required for this project to proceed. The PNWLNG required a federal EA under CEAA, 2012 as it involves activities that are designated by the *Regulations Designating Physical Activities* (CEAA, 2016). The project meets the descriptions and exceeds the thresholds set out in 3 items of the Schedule under this regulation including:

- **Item 2(a):** the construction, operation and decommissioning of a new fossil-fuel fired electrical generating facility,

- **Item 14(d):** a new facility for the liquefaction, storage or regasification of liquefied natural gas processing, and

- **Item 24(c):** a new marine terminal (CEAA, 2016).

The federal EA began on April 8, 2013. The Canadian EAA conducted the federal EA of the proposed PNWLNG under CEAA, 2012 and considered effects that the proposed PNWLNG may have on components of the environment that fall within federal jurisdiction (CEAA, 2016).

Requirement for an EA under the BC EAA, 2002

On July 16, 2013, the BC EAO issued an Order under section 10 of the BC EAA, 2002 indicating that the project required the completion of a provincial EA (Stantec Consulting Ltd., 2014; CEAA, 2016). The project triggered a review under Part 4 of the *Reviewable Projects Regulation* as the project would include a new energy storage facility with the capacity to store a quantity of energy resource above the threshold of 3 petajoules of energy (BC EAO, 2014).

On September 17, 2013, the BC EAO issued an Order under section 11 of BC EAA, 2002 which described the scope of the project and the scope of the EA to be completed under BC EAA, 2002 (BC EAO, 2014). The section 11 Order states that "*the scope of the assessment will take into account the scope of the environmental assessment to be conducted by the Canadian Environmental Assessment Agency and focus primarily on consideration of its potential effects beyond Prince Rupert Port Authority lands"* (BC EAO, 2014: 16).

The BC EAO conducted its EA of the project in accordance with the methodology outlined in its *Guideline for the Assessment of Valued Components and Assessment of Potential Effects (2013)* (BC EAO, 2014). The BC EAO's review of the proponent's EA application lasted 225 days from March 25, 2014 to November 5, 2014 (BC EAO, 2014).

Cooperation between EA Agencies

Since both provincial and federal EA's were required for the project, the responsible agencies undertook a coordinated EA and worked together when completing certain aspects of the EA process (BC EAO, 2014; CEAA, 2016). The BC EAO and

Canadian EAA collaborated during the technical review of the proponents EA documents and also coordinated public and Aboriginal consultation efforts (BC EAO, 2014; CEAA, 2016).

The Canadian EAA took a lead role in conducting the EA for the project, consistent with the *Canada-British Columbia Agreement for Environmental Assessment Cooperation* (2004), since all the project components occur on federal lands and waters (Stantec Consulting Ltd., 2014; BC EAO, 2014; CEAA, 2016). Throughout the coordinated EA, the BC EAO and the Canadian EAA maintained their separate roles and decision-making responsibilities of their respective authorities (BC EAO, 2014). The proponent submitted one EA document for the project that met the requirements of an EA application under both CEAA, 2012 and BC EAA, 2002.

3.1.3. Consultation with Aboriginal Groups conducted in PNWLNG Project

During the EA process, the Canadian EAA acted as the federal Crown Consultation Coordinator while the BC EAO acted as the lead for the provincial Crown consultation activities (CEAA, 2016). The Canadian EAA and the BC EAO coordinated consultation activities where possible, such as holding joint meetings with Aboriginal groups and sharing correspondence (CEAA, 2016).

There were six Aboriginal groups identified whose potential or established Aboriginal rights could be impacted by the PNWLNG project:

- Lax Kw’alaams Band;
- Metlakatla First Nation;
- Gitxaala Nation;
- Kitsumkalum First Nation;
- Kitselas First Nation; and
- Gitga’at First Nation

These six Aboriginal groups were consulted with by both the provincial and federal governments in relation to the proposed project. None of the identified Aboriginal groups had established treaties with the federal or provincial governments at the time when the EA was being completed (CEAA, 2016). In addition, the Canadian EAA consulted with additional Aboriginal groups upriver from the project about potential effects on migratory salmon of value to their communities as well as with the Council of Haida Nation to understand potential effects from marine shipping relating to the project (CEAA, 2016).

Consultation conducted by the Proponent

As outlined by Pacific NorthWest LNG Limited Partnership (2014), the proponent initiated discussions with Aboriginal groups in 2012 in regards to the project, prior to formally entering the EA process. Upon entering the EA process, the proponent continued to engage and consulted with all Aboriginal groups identified by the Canadian EAA and the BC EAO (CEAA, 2016).

The two Aboriginal groups identified as the most impacted by the project, Lax Kw'alaams Band and Metlakatla First Nation, were offered the opportunity to participate in archaeological inventory surveys, investigate geotechnical programs on Lelu Island, and tour the project area (CEAA, 2016). All of the Aboriginal groups also participated in various studies conducted by the proponent in the area around Lelu Island and were invited to review the findings of those studies (CEAA, 2016).

The proponent developed capacity agreements with each of the identified Aboriginal groups, with the exception of Lax Kw'alaams, to support their participation in the EA (BC EAO, 2014; CEAA, 2016). The capacity agreements provided resources that enabled the Aboriginal groups to complete traditional knowledge and traditional use studies, community-specific socio-economic impact assessments and other project-related work (BC EAO, 2014; CEAA, 2016). The proponent committed to ongoing engagement with Aboriginal groups and to continue to consult with them regarding project impacts (CEAA, 2016). Additionally, the proponent is engaged in negotiating Impact Benefit Agreements with potentially impacted Aboriginal groups that are supposed to address impacts and issues not addressed through the EA process (BC EAO, 2014; CEAA, 2016).

3.1.4. Selected Valued Components for Environmental Assessment of PNWLNG

Valued Components selected for federal EA of PNWLNG

As outlined by CEAA (2016: iv) the main potential environmental effects that may result from this project under section 5 of CEAA, 2012 are:

- effects on human health and freshwater bodies from emissions of air contaminants;
- effects as a result of greenhouse gas emissions;
- removal of terrestrial vegetation, wetlands, and watercourses on Lelu Island;
- removal of habitat for migratory birds and terrestrial species at risk;
- disturbance of migratory birds, their eggs and their nests;
- effects on marine fish and fish habitat from changes to water and sediment quality, loss of habitat, and physical injury or mortality;
- disturbance of marine mammals from blasting and underwater noise;
- effects on human health as a result of changes to noise, light, and marine harvested foods;
- reduced access to recreational activities and commercial fishing activities;
- effects on Aboriginal use of lands and resources for hunting, fishing, gathering and cultural practices as a result of changes to access, quantity and quality of resources, and the sensory environment; and
- effects on physical and cultural heritage, and archaeological and historical resources, including Culturally Modified Trees, on Lelu Island as a result of land clearing.

Taking into consideration these potential environmental effects, the Canadian EAA assessed the potential for the PNWLNG project to cause significant adverse effects to the identified valued components set out in Table 1 (CEAA, 2016).

Table 1. Valued components selected within the federal EA process of the PNWLNG project (CEAA, 2016).

1	Air Quality
2	Greenhouse Gas Emissions
3	Vegetation
4	Migratory Birds
5	Freshwater Fish and Fish Habitat
6	Marine Fish and Fish Habitat, including species at risk and marine plants
7	Marine Mammals, including species at risk
8	Terrestrial Species at Risk
9	Human Health
10	Current use of lands and resources for traditional purposes by Aboriginal peoples
11	Socio-economic conditions
12	Physical and cultural heritage and historical and archaeological sites and structures

Out of the total of 12 valued components selected for the federal EA of the PNWLNG project, components 9 to 12 involve specific cultural effects on Aboriginal people that must be taken into account in a federal EA as specified in section 5(1)(c) of CEAA, 2012.

Valued Components selected for the Province of BC EA of PNWLNG

The BC EAO assessed the potential for the PNWLNG project to cause significant adverse effects to the identified valued components listed in Table 2 (BC EAO, 2014; CEAA, 2016). The valued components are listed under the five pillars in which the BC EAO assesses significant adverse effects.

Table 2. Valued components selected within the provincial EA process of the PNWLNG project (BC EAO, 2014).

Environmental Pillar	
1	Air Quality
2	Greenhouse Gases
3	Freshwater Aquatic Resources
4	Vegetation and Wetland Resources
5	Wildlife Resources
6	Marine Resources
7	Acoustic Environment
8	Ambient Light
Economic Pillar	
9	Economic Environment
Social Pillar	
10	Navigation and Marine Resource Use
11	Infrastructure and Services
12	Visual Quality
13	Community Health and Well-Being
Heritage Pillar	
14	Archaeological and Heritage Resources
Health Pillar	
15	Human and Ecological Health

3.1.5. CEA conducted for the PNWLNG

The assessment of cumulative effects by the proponent took into consideration the Operational Policy Statement, *Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012* provided by the Canadian EAA (CEAA, 2016). The proponent considered past, present and future projects and activities in their evaluation of cumulative effects on valued components (BC EAO, 2014; CEAA, 2016). A total of 24 existing or reasonably foreseeable projects and activities were included in the proponent's CEA, including industrial operations, marine terminals, marine vessel traffic, forestry, and fishing (BC EAO, 2014; CEAA, 2016) (Figure 3).

As previously mentioned, the cultural valued components selected in the proponent's CEA are the main focus of my review. In the federal EA, I focused on the four valued components selected under the Aboriginal section 5(1) of CEAA, 2012. In the provincial EA, I focused on the one valued component selected under the heritage pillar. However, I acknowledge that other valued components selected outside of these sections may also have important cultural dimensions for Aboriginal communities.

Despite this, the focus of my work is on specific cultural values and indicators that were primarily selected to represent and assess impacts to Aboriginal communities.

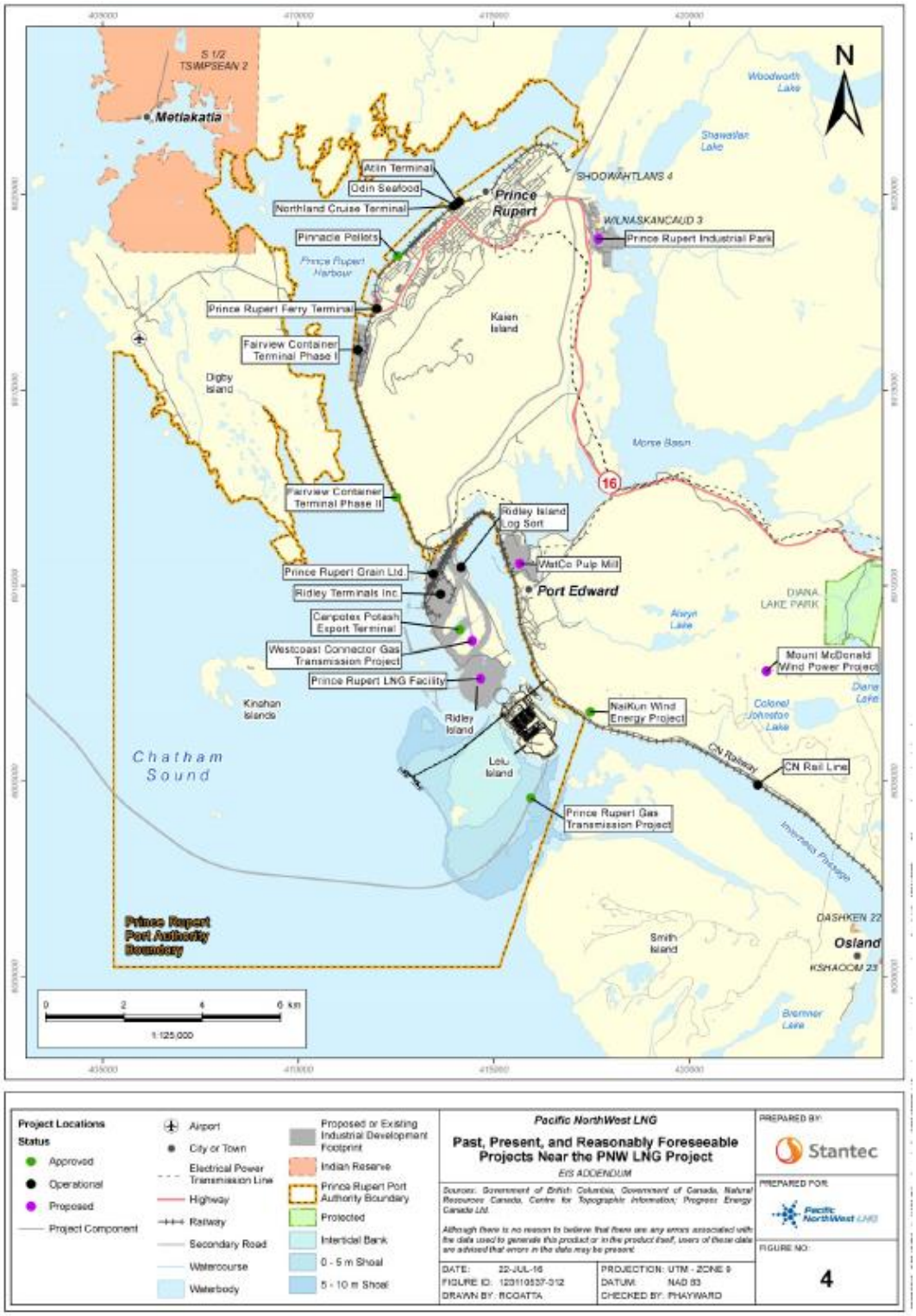

Figure 3. Summary of the existing and reasonably foreseeable projects identified by the proponent to be included in their CEA or the PNWLNG project (Map provided by: Stantec Consulting Ltd., 2014; CEAA, 2016).

Valued Components selected for the federal CEA of PNWLNG

The federal CEA for the project focused on only four of the 12 valued components selected for the full EA (Table 3) (CEAA, 2016). No valued components were added that focused specifically on assessing cumulative effects at a regional level.

Table 3. Valued components selected for the federal CEA of the PNWLNG project (CEAA, 2016)

1	Freshwater fish and fish habitat
2	Marine fish and fish habitat (including species at risk and marine plants)
3	Marine mammals (including species at risk)
4	Current use of lands and resources for traditional purposes

The rationale by the Canadian EAA for focusing its CEA on these four valued components was based on the following criteria:

- level of concern expressed by the public, Aboriginal groups, and government agencies;
- health, status or condition of the valued component;
- whether the cumulative effects are likely to occur;
- potential significance of cumulative environmental effects; and
- potential mitigation or follow-up (CEAA, 2016).

"Current use of lands and resources for traditional purposes" was the only valued component selected in the federal CEA for the PNWLNG that is specifically related to culture, but the other three valued components all may be important for Aboriginal culture. The CEA for the "current use of lands and resources for traditional purposes" valued component will be discussed below.

It is clear that there are sub-sections in the other three valued components selected that relate to cultural aspects of Aboriginal communities. For example, Aboriginal fisheries and food, social, and ceremonial activities are cultural aspects that are important considerations in the other three valued components. However, the main

focus of these three valued components remains on the assessment of biophysical concerns and that is apparent in the approach that was taken by the proponent to assessing potential impacts. The cultural concerns relating to these three valued components are a small sub-section in relation to the other biophysical sections. In contrast, the “current use of lands and resources for traditional purposes” valued component was selected with the sole focus of assessing cultural impacts and concerns to Aboriginal communities in the region. As a result, this valued component is the focus of my work within the federal CEA.

Valued Components selected for the provincial CEA of PNWLNG

Provincially, a CEA is considered only for those valued components on which there will be residual adverse effects of the project after mitigation (Figure 4) (BC EAO, 2014). If there are no residual effects predicted for a valued component, then a CEA is not performed.

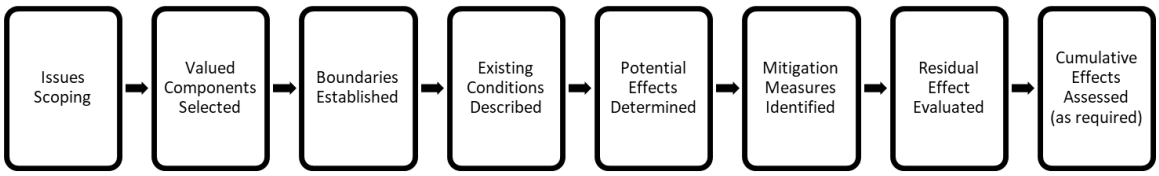

Figure 4. Methodology used by BC EAO to conduct EA (Adapted from: BC EAO, 2014). Note that the CEA is contained within the framework of the project specific effects and is dependent on the findings of project specific residual effects.

The process for conducting CEA for this project under the BC EAO is outlined in Figure 5. Unlike the CEA conducted within the federal EA, the provincial CEA included all of the valued components that were used to assess project specific effects (Table 2), except for Greenhouse Gas Emissions. The BC EAO’s explanation for not including Greenhouse Gas Emissions in the CEA is as follows: “GHG emissions are a global issue, and the IPCC [Intergovernmental Panel on Climate Change] has produced several scenarios forecasting global GHG emissions and the potential impacts associated with these emissions levels" (BC EAO, 2014: 53).

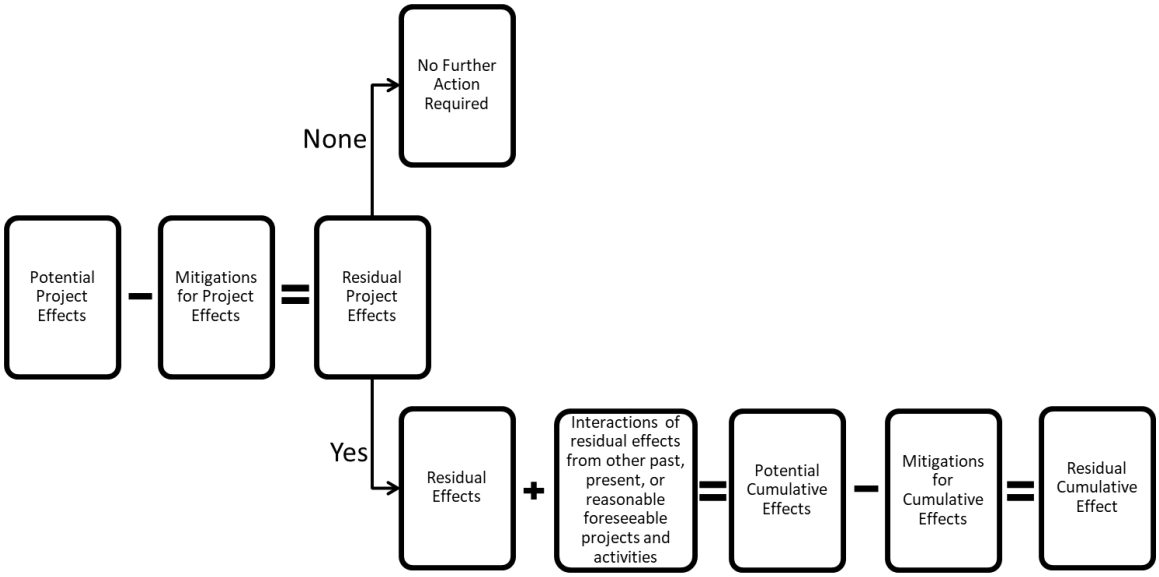

Figure 5. Methodology used by BC EAO to conduct the CEA for the PNWLNG project (Adapted from: BC EAO, 2014).

A CEA was completed for the one Heritage Pillar valued component in the provincial EA for the PNWLNG. The CEA for the Archaeological and Heritage Resources valued component will be discussed below.

Similar to the federal CEA, within the provincial CEA there are sub-sections in the other valued components selected that relate to cultural aspects of Aboriginal communities. The BC EAO acknowledges that there is often overlap between the concerns and interests of Aboriginal communities and the assessment of environmental, economic, social, heritage and health effects (BC EAO, 2014). However, the main focus of these valued components, in pillars other than heritage, remained on the assessment of biophysical concerns and the cultural concerns relating to these valued components were a small sub-section in relation to the amount of focus put on the biophysical sections. The “Archaeological and Heritage Resources” valued component was selected with the sole focus of assessing cultural impacts and concerns to Aboriginal communities in the region. As a result, this valued component is the focus of my work within the provincial CEA.

3.1.6. Cultural Values used in CEA of PNWLNG Project

Aboriginal communities in the surrounding area of the project identified Lelu Island as a location of active, historic and desired future use (CEAA, 2016). Lelu Island was also said to hold “important cultural values as a part of the cultural landscape of the Coast Tsimshian” (CEAA, 2016: 19).

CEAA (2016: v) outlined that the Agency “examined the Project’s potential effects on potential or established Aboriginal rights, including: fishing, hunting, trapping, plant harvesting, use of culturally important sites for ceremonial purposes, and other related interests.”

Federal CEA: Current Use of Lands and Resources for Traditional Purposes

Of the four valued components used in the federal CEA for the PNWLNG project (see Table 3) only the “current use of lands and resources for traditional purposes” specifically addressed culture. All six Aboriginal groups that had been identified as potentially impacted by the project expressed concerns about cumulative effects to the “current use of lands and resources for traditional purposes” (CEAA, 2016). The concerns related to the cumulative effects to Aboriginal groups’ preferred locations, timing, effort, success and satisfaction (CEAA, 2016). The CEA of “current use of lands and resources for traditional purposes” included aspects that support the practice of traditional activities in the preferred locations and ways of Aboriginal peoples including: access, resource quantity and quality, and the sensory environment (e.g. noise, ambient light and visual quality) (CEAA, 2016). Traditional activities that were considered within this valued component included fishing and marine harvesting, hunting and trapping, and plant gathering (CEAA, 2016).

The proponent determined that the residual effects of the project on the availability of waters and resources on which the practice of traditional activities depends could interact cumulatively with residual effects from past, present, and reasonably foreseeable projects and activities (CEAA, 2016). The proponent predicted that cumulative effects from the project would impact “the quantity of marine mammals available for harvest by Aboriginal peoples in their preferred harvesting locations, but these effects are not predicted to have an effect on population viability or general

availability of marine mammals for traditional harvesting within the region" (CEAA, 2016: 155). Displacement of marine mammals from the preferred harvesting locations of Aboriginal peoples may result in cumulative effects to their harvesting success and the effort required for harvesting activities (CEAA, 2016). Additionally, the Canadian EAA stated that "potential short to medium-term alteration or displacement of traditional harvesting of marine resources may result in a loss of traditional knowledge of harvesting sites and marine fishing practices for Aboriginal groups located in the immediate Project area" (CEAA, 2016: 165). The proponent stated that cumulative effects to terrestrial wildlife and marine birds "would affect only a small portion of the regional population that is available for traditional harvesting" (CEAA, 2016: 155). The proponent also discussed traditional use plants, stating "while the Project would result in the loss of traditional use plants on Lelu Island, these losses would represent very small proportions of the total amount of these vegetation communities within the regional assessment area. Removal of Lelu Island as a gathering site for traditional use plants would be partially mitigated through the incorporation of traditional use plants in wetland compensation projects and trail or parks improvement initiatives to facilitate access to restored or created wetlands in the Prince Rupert area" (CEAA, 2016: 155).

The proponent concluded that "the Project would incrementally add to interference with Aboriginal peoples' marine-based access to preferred locations where traditional activities are practiced" (CEAA, 2016: 154). The proponent stated "taken together, the cumulative reductions in access and availability of marine-based sites and resources (marine mammals) and increase in sensory disturbances may affect Aboriginal users' degree of satisfaction related to the practice of traditional activities and the ability of Aboriginal users to gather and share traditional knowledge associated with the sites and activities being impacted" (CEAA, 2016: 155). The proponent went on to mention that "Aboriginal social cohesion is expected to experience cumulative adverse effects due to cumulative reductions in opportunities for families and others to practice traditional activities together and for Aboriginal peoples to trade and share harvested foods" (CEAA, 2016: 155).

The proponent defined a significant adverse cumulative effect on the "current use of lands and resources for traditional purposes" as one that would affect the viability or sustainability of the traditional use of lands and resources by Aboriginal peoples within the regional assessment area. The proponent concluded that cumulative effects on the

"current use of lands and resources for traditional purposes" would not be significant (CEAA, 2016). However, "the proponent noted a high degree of uncertainty with regard to how other projects considered in the cumulative effects assessment may cumulatively affect current Aboriginal traditional use of lands and resources. The proponent also acknowledged that confidence in its predictions can be affected by the fact that human behaviours are difficult to predict" (CEAA, 2016: 156).

Provincial CEA: Archaeological and Heritage Resources (Heritage Pillar)

In the provincial CEA, only one valued component was selected that related directly to Aboriginal culture and cultural values. The BC EAO determined that for all other valued components the effects on Aboriginal interests of potential changes would be negligible. Archaeological and heritage resources, identified under the heritage pillar of the provincial EA, may potentially be disturbed by surface and subsurface alteration resulting from the project (BC EAO, 2014). Archaeological and heritage resources for Aboriginal groups can "demonstrate the long-term use of their traditional territories and provide a physical link to their cultural history" (BC EAO, 2014: 151). The assessment of this valued component focused on:

- Destruction or disturbance of Culturally-Modified Trees (CMTs); and
- Destruction or disturbance of other archaeological or heritage sites (BC EAO, 2014).

In the brief CEA for this valued component, the BC EAO concluded that, due to the localized nature of the potential impacts to archaeological resources and the proposed mitigation measures, there would be no significant cumulative effects (BC EAO, 2014).

Aboriginal Groups Comments relating to CEA in the Federal EA

As stated by CEAA (2016: 24) "Aboriginal groups submitted many detailed comments about the Project and the EA in areas ranging from air quality, to the marine environment, to socio-economic effects." CEAA (2016: iv) outlined that "the majority of Aboriginal concerns related to impacts to marine fish and fish habitat, harvested foods, Aboriginal use of lands and resources, cumulative effect, physical and cultural heritage, and Aboriginal rights."

There were concerns raised by many Aboriginal groups regarding the CEA done for “current use of lands and resources for traditional purposes.” As stated by CEAA (2016: 156):

> All Aboriginal groups noted that their ability to practice their culture and the resources on which the practice of their traditional activities depends have been considerably diminished by existing development within their traditional territories, particularly in the Prince Rupert area. They stated that the effects from the Project, in conjunction with other existing and foreseeable industrial developments, would result in cumulative environmental effects on waters, lands, and resources that are of importance to Aboriginal peoples and in additional serious effects on their members’ ability to harvest resources within the Project area, as they have done for generations.
>
> Metlakatla First Nation stated that the proponent’s assessment of cumulative effects was deficient because it did not take into consideration the incremental potential for cumulative effects to become significant if several projects, all with minimal residual impacts, move forward at the same time.
>
> Kitsumkalum First Nation also noted that cumulative effects on the habitat of non-harvested species that may hold an important spiritual connection for Aboriginal peoples, such as killer whales, could be detrimental to Aboriginal peoples’ sense of place and relationships with the lands and waters.

More generally, all but one Aboriginal group brought up concerns regarding the methodology and thresholds for determining significance of effects, including cumulative effects, and unsubstantiated statements about effects and significance within the agency’s draft EA report (CEAA, 2016).

Aboriginal Groups Comments relating to CEA in Provincial EA

Many of the Aboriginal groups also raised concerns regarding the provincial CEA. As stated in the BC EAO report:

> Aboriginal Groups expressed concerns about the inadequacy of cumulative effects assessment of past, present and reasonably foreseeable industrial activity in their traditional territory. Specifically, many Aboriginal Groups sought a cumulative effects assessment of their territory, relative to their respective Aboriginal Interests (BC EAO, 2014: 203).

As noted in the proponent's Aboriginal Consultation Report to the BC EAO, the majority of concerns raised by individual Aboriginal groups were shared by multiple Aboriginal groups (Pacific NorthWest LNG Limited Partnership, 2014). "Aboriginal Groups have generally raised concerns about the impact of cumulative effects on air quality, marine navigation, visual quality, Aboriginal health and Aboriginal rights and title, with marine harvesting being a specific right Aboriginal Groups are concerned about" (Pacific NorthWest LNG Limited Partnership, 2014: 23).

In an email written to the BC EAO, the Metlakatla stated that "Insufficient information is provided in the cumulative effects subsections either by downplaying the project's potential contribution to effects, downplaying the potential for overlap of impacts, or referencing "lack of information" on other projects to avoid thorough analysis. Although the proponent is restricted in obtaining specific information about competing projects, practices such as using proxies, assuming similar impacts from the project being assessed, and conservative modeling can all help perform a much more comprehensive assessment of cumulative impacts" (Usborne, 2014).

The proponent committed to conducting follow-up programs to verify the predictions it made in the EA and CEA on the potential effects of the project, including a follow up program for marine harvested foods (CEAA, 2016). Aboriginal groups picked up on this and were concerned about this strategy as there were many uncertainties in the predictions made by the proponent in their EA and CEA resulting in multiple follow up programs being proposed. The Metlakatla First Nation in an email to the BC EAO stated that "Highly conceptual (i.e. management plans yet to be determined) and inadequate (i.e. abiding by laws) mitigation measures are frequently used in order to negate residual effects and avoid the determination of significant residual effects" (Usborne, 2014).

Selection of Cultural Valued Components

As noted in the literature, current EA and CEA often focus on tangible aspects of culture and emphasize biophysical components in the determination of adverse effects of a project, while ignoring intangible, non-biophysical aspects (McIntyre-Tamwoy, 2004; Christensen *et al*., 2010; Chan *et al*., 2012). This deficiency in the assessment of cultural valued components in EA and CEA was seen with the PNWLNG EA. As noted by the BC EAO (2014: 201):

> EAO heard from several Aboriginal Groups who expressed concern about the adequacy of the effects assessment, including VC selection and baseline study methodology. For example, Gitxaala Nation proposed including additional VCs that included Aboriginal spirituality and governance.

Additionally, noted by the Pacific NorthWest LNG Limited Partnership (2014: 33) in their Aboriginal Consultation Report:

> Metlakatla has noted the absence of VCs specific to Aboriginal Groups' use and occupancy of traditional territories as a methodological error.

As noted in a previous quote from the Kitsumkalum First Nation, the reliance on tangible and biophysical aspects was evident in the one cultural valued component selected in the federal CEA. The CEA for the "current use of lands and resources for traditional purposes" only focused the assessment on the traditional activities of fishing and marine harvesting, hunting and trapping, and plant gathering (CEAA, 2016). However, there are many other traditional activities that could have been included as subcomponents within this valued component including intangible activities such as traditional governance, spiritual and ceremonial activities, and potential impacts to Aboriginal sense of identity. The land used for traditional purposes should not be seen by proponents as just a physical space, as these activities also represent the interconnected physical, symbolic, spiritual and social aspects of Aboriginal cultures (Chan *et al.,* 2012).

The one valued component under the Heritage Pillar within the provincial EA focused on archaeological and heritage resources. The assessment of this valued

component focused on determining the number of Culturally Modified Trees that would be lost in the project area and the number of archaeological sites and resources that would be impacted. There were no intangible or non-measurable heritage effects considered within this valued component.

Four Aboriginal groups expressed concerns regarding the extent to which information from traditional use and traditional knowledge studies was considered and incorporated into the proponent's analysis of environmental effects and the extent to which valued components of interest to Aboriginal groups were considered (CEAA, 2016). The proponent did provide resources to five Aboriginal groups to complete traditional use and traditional knowledge studies; however, there was no clear indication in the EA of how this information was used other than a statement that it informed the decision making process. In terms of the latter concern, the proponent responded by claiming that additional valued components suggested for inclusion by Aboriginal groups were considered to be sufficiently addressed by existing valued components (CEAA, 2016).

3.2. Outcomes of the Environmental Assessments for the PNWLNG Project

On November 5, 2014 the Executive Director of the BC EAO referred the EA application to the two responsible provincial ministers with his recommendation that the project be approved with conditions. The Government of BC issued an Environmental Assessment Certificate for the PNWLNG 10 days later, on November 25, 2014 (CEAA, 2016). On September 27, 2016, the project received approval from the federal government, upon consideration of the EA report submitted by the Canadian EAA (McKenna, 2016).

3.2.1. Federal Determination of Significant Adverse Effects

In response to feedback from multiple parties during the public comment periods, the proponent did make changes to the project design, construction schedule and methods (CEAA, 2012). The Canadian EAA determined that the proponent's revised plan for the project incorporated mitigation measures to prevent or reduce the potential

adverse effects from the project, but that there would still be some significant adverse effects (CEAA, 2016).

> The Agency concludes that the Pacific NorthWest LNG Project is likely to cause significant adverse environmental effects, taking into account the implementation of the recommended mitigation measures, on harbour porpoise and as a result of greenhouse gas emissions. The Agency also concludes that the Project is likely to result in significant adverse cumulative environmental effects to harbour porpoise. With respect to all other valued components, the Agency concludes that the Project is not likely to cause significant adverse environmental effects taking into account the implementation of the key mitigation measures (CEAA, 2016).

In terms of the “current use of lands and resources for traditional purposes”, the cultural valued component used in the CEA, the Canadian EAA determined that there would be residual cumulative effects of the project within the regional assessment area (CEAA, 2016). However, the Canadian EAA concluded “that the Project, in combination with past, present and future foreseeable projects, is not likely to result in significant adverse cumulative effects on the current use of lands and resources for traditional purposes, taking into account the implementation of mitigation measures” (CEAA, 2016: 158).

As outlined in the decision statement for the project issued by the federal Minister of the Environment and Climate Change (McKenna, 2016: 1), “in accordance with paragraph 52(1)(a) of the Canadian Environmental Assessment Act, 2012, after considering the report of the Agency [Canadian EAA] on the Designated Project and the implementation of mitigation measures that I consider appropriate, I have determined that the Designated Project is likely to cause significant adverse environmental effects referred to in subsection 5(1) of the Canadian Environmental Assessment Act, 2012.” However, McKenna (2016: 2) went on to conclude that “in accordance with paragraph 52(4)(a) of the Canadian Environmental Assessment Act, 2012, the Governor in Council decided that the significant adverse environmental effects that the Designated Project is likely to cause are justified in the circumstances.”

3.2.2. Provincial Determination of Significant Adverse Effects

The BC EAO (2014: 286) stated that “the Proponent has made efforts to demonstrably avoid or reduce adverse effects to VCs of high value to Aboriginal Groups.” The BC EAO (2014: 286) went on to say that “the proposed Project would have the potential to provide important economic opportunities, including capacity-building initiatives to support employment, contracting and business development” for Aboriginal groups.

In terms of the assessment of significant effects for Aboriginal groups the BC EAO (2014: 289) concluded that:

- Issues identified by Aboriginal Groups, government agencies and the public, which were within the scope of the EA, were adequately and reasonably addressed by the Proponent during the review of the Application

- Practical means have been identified to prevent or reduce any potential negative environmental, social, economic, heritage or health impacts of the proposed Project such that no direct or indirect significant adverse effect is predicted or expected, with the exception of adverse effects to GHG emissions, and

- The potential for adverse effects on the Aboriginal Interests of Aboriginal Groups has been avoided, minimized or otherwise accommodated to an acceptable level

3.3. Addressing the Critiques of Incorporating Aboriginal and Cultural Values into Cumulative Effects Assessment

I will now return to the weaknesses and recommendations on incorporating cultural values into CEA that were discussed at the end of chapter two. I will assess the degree to which the CEA of the PNWLNG project included any of the recommendations to address the weaknesses identified within the literature.

3.3.1. Scale

As stated within the literature, project-based EAs are generally limited in the spatial and temporal scales in which impacts are considered and often do not fully consider and include cumulative, interacting effects from multiple projects over larger spaces and time frames (Baxter *et al*., 2001; Therivel and Ross, 2007; Seitz *et al.,* 2011). The CEA completed for the PNWLNG project took place within the project-based EA framework and although the CEA did use regional assessment areas to assess cumulative effects, the PNWLNG project remained the central focus of the assessment (Dubé, 2003; Seitz *et al.,* 2011). The project level scale is not an accurate scale to represent cumulative environment effects. Comments received from Aboriginal communities identified this concern of conducting the CEA of PNWLNG on a limited spatial scale and called for a more regional approach as recommended within the literature:

> Metlakatla has requested a non-project specific, strategic level cumulative effects assessment that analyzes impacts to Metlakatla rights and title.
>
> Lax Kw'alaams also believes that the Crown should develop a regional environmental assessment that considers a larger area over a longer time span (Pacific NorthWest LNG Limited Partnership, 2014: 33 and 41).

Additionally, the literature noted that the temporal scale of CEA often only considers the current environmental and socio-economic conditions as the starting point for CEA (Dubé, 2003; Seitz *et al.,* 2011). This appeared to be illustrated within the CEA of the PNWLNG project. The table within the draft EA report that outlines which projects were considered for the CEA of PNWLNG only identified existing and reasonably foreseeable projects and activities. Although it was stated in the CEA of PNWLNG that past projects and activities were considered when conducting the assessment, there was no mention of which past projects and activities were considered. The title for Table 11 within the CEA of PNWLNG is labelled "Summary of Existing and Reasonably Foreseeable Projects Identified by the Proponent" (CEAA, 2016). Which projects to consider in the CEA will depend on what baseline and thresholds are used to assess impacts to valued components: either current conditions or past environmental

conditions. Since the CEA of the PNWLNG project used current conditions as its baseline, considering past projects was not considered necessary or directly relevant.

3.3.2. Scope

Since cumulative effects of the PNWLNG project were considered alongside the analysis of project specific effects, this did not allow for linkages or cause and effect relationships of cumulative effects to be adequately considered (Baxter *et al*., 2001). Within the CEA for the PNWLNG project, a CEA was only completed if residual effects from the project specific assessment were identified. If there were no residual effects predicted for a valued component under the project level assessment, then a CEA was not performed. A detailed CEA was completed if a predicted residual effect was considered likely to act cumulatively with effects of other past, existing and reasonably foreseeable projects and activities in the area (CEAA, 2016). Under both the provincial and federal CEA of the PNWLNG project, no valued components were added that focused specifically on assessing cumulative effects at a regional level, as is recommended in the CEA literature. Conducting CEA based on the results of the project-specific assessment results in cumulative effects being considered too late in the process for strategic analysis to fully understand the total impact to a valued component or a region from multiple sources (Baxter *et al*., 2001). This approach results in a lack of early scoping to identify potential cumulative effects and makes identifying linkages and cause-and-effect relationships for the cumulative effects more difficult (Baxter *et al.,* 2001).

3.3.3. Lack of Guidance

As stated within the literature, a major challenge to CEA is that there is no single, agreed upon conceptual approach or framework to assess cumulative effects (Seitz *et al.,* 2011). The CEA of the PNWLNG took a stressor-based approach. The literature identifies a stressor-based approach as a predictive approach that focuses specifically on a single project and its effects, often ignoring interacting effects with other projects at a larger scale (Baxter *et al*., 2001; Seitz *et al.,* 2011).

As Therivel and Ross (2007) point out, a proponent can be made responsible for managing and mitigating the cumulative effects from its own project, but should not be

responsible for managing the effects from projects of other proponents over which it has no control. To address this and have information that is collected within a project-specific approach be useful at scales beyond the individual project, CEA could be distinguished from EA by having separate terms of reference for each process. The separate terms of reference would outline the steps the proponent is required to follow when conducting CEA versus the project specific EA (Hegmann *et al*., 1999; Baxter *et al*., 2001). This would likely have been helpful for the CEA conducted for the PNWLNG project as well as other projects occurring in the region. This would allow for information from the CEA of all projects in a region to be integrated and inform regional planning and management. As stated in the final EA report by CEAA (2016: 141-142):

> The Agency acknowledges that since the proponent's assessment of cumulative effects described in its EIS, other reasonably foreseeable projects in the Prince Rupert region have been identified as reasonably foreseeable and others will no longer be proceeding. The Agency is satisfied that for the purposes of this EA, the proponent has conducted a sufficient cumulative effects assessment. Cumulative effects assessments for projects that follow will take into account the information on existing and reasonably foreseeable projects available at that time.

This illustrates a weakness of the CEA of the PNWLNG project and its approach. Not having consistent CEA will make regional planning and management difficult as each CEA that is conducted in the region will be considering different values and projects and activities. This approach also limits the legitimacy of the conclusions made in the CEA because now that the types of projects and activities have changed the results of the CEA completed for the PNWLNG project may no longer be relevant and accurate.

3.3.4. Decision Making

It is often unclear how much of an influence cumulative effects and the results of a CEA have when decisions are being made regarding whether or not to approve a proposed project (Lawe *et al.,* 2005). Within EA and CEA in Canada, six criteria are typically used to make decisions on the significance of effects (including cumulative effects), namely: magnitude, extent, duration, frequency, reversibility, and resiliency

(Lucchetta, 2016; CEAA, 2016). The determination of whether or not an effect is considered significant appears to be largely based on the assumptions and judgments of proponents and government decision makers resulting in a high degree of uncertainty and subjectivity (Lucchetta, 2016).

Within federal EA and CEA, there are also decisions made regarding the likelihood of adverse effects from a project, including cumulative effects, occurring after mitigation. If there are predicted adverse effects after mitigation, then a decision is made on whether or not these effects are justified in the circumstances. Lucchetta (2016) found that the criteria used to make these decisions are often vague and appear to be highly subjective. Under provincial EA and CEA, the BC EAO does not provide any clear criteria that are used by the responsible ministers on whether or not to issue an environmental assessment certificate for a proposed project (Lucchetta, 2016). These decisions on significance of effects and justified effects are not transparent, and are being made with vague criteria by subjective decision-makers, whose vision for the desired future condition of a region may not adequately take into account the perspectives of First Nations, environmentalists, and some other stakeholders (Noble, 2010; Lucchetta, 2016).

Chapter 4.

Metlakatla First Nation Cumulative Effects Management Program

This chapter outlines the design of a new cumulative effects management (CEM) program developed by the Metlakatla First Nation in collaboration with Compass Resource Management and Simon Fraser University for use in Metlakatla traditional territory. The designers took into account the criticisms and recommendations in the literature on project-based CEA reviewed in the previous chapters. In this chapter, I begin by providing background on the Metlakatla First Nation. I then describe the design of the CEM program, outlining the steps involved and explaining how priority values and indicators were identified. The last section of the chapter discusses food, social and ceremonial (FSC) activities and other cultural values in the Metlakatla CEM program, which are the focus of my own research.

4.1. Background on the Metlakatla First Nation

The Metlakatla First Nation is one of seven communities belonging to the Tsimshian First Nation, Aboriginal people of the Pacific Northwest (MDC, 2011; BC, 2016). The Tsimshian, meaning 'inside the Skeena River' are a unique group consisting of linguistically and culturally related people (Halpin and Seguin, 1990). The Metlakatla and the Lax Kw'alaams are the two modern First Nations that make up the Coast Tsimshian First Nations (Halpin and Seguin, 1990; DMCS, 2013a). The Metlakatla, meaning "a passage connecting two bodies of water" were derived from the Coast Tsimshian Alliance of Nine Tribes, from which much of their history and culture has evolved (MFN, 2013; DMCS, 2013a).

4.1.1. Traditional Territory

The traditional territory of the Metlakatla First Nation is located on the northwest coast of BC in the area now known as the Great Bear Rainforest (MFN, 2013). The Metlakatla territory encompasses approximately 20,000 square kilometers of land and

sea (Figure 6). The major city in the territory is Prince Rupert. The community of Metlakatla Village is located 7 km away on one of the Metlakatla reserves and is accessible only by boat. According to the Metlakatla Governing Council, the Metlakatla First Nation has approximately 874 members (MFN, 2016). Based on the information provided by Metlakatla department managers for the Metlakatla Membership Census (described below), it is estimated that 58 members over the age of 15 live on reserve in Metlakatla Village and 275 members over the age of 15 live off reserve in Prince Rupert and the surrounding region.

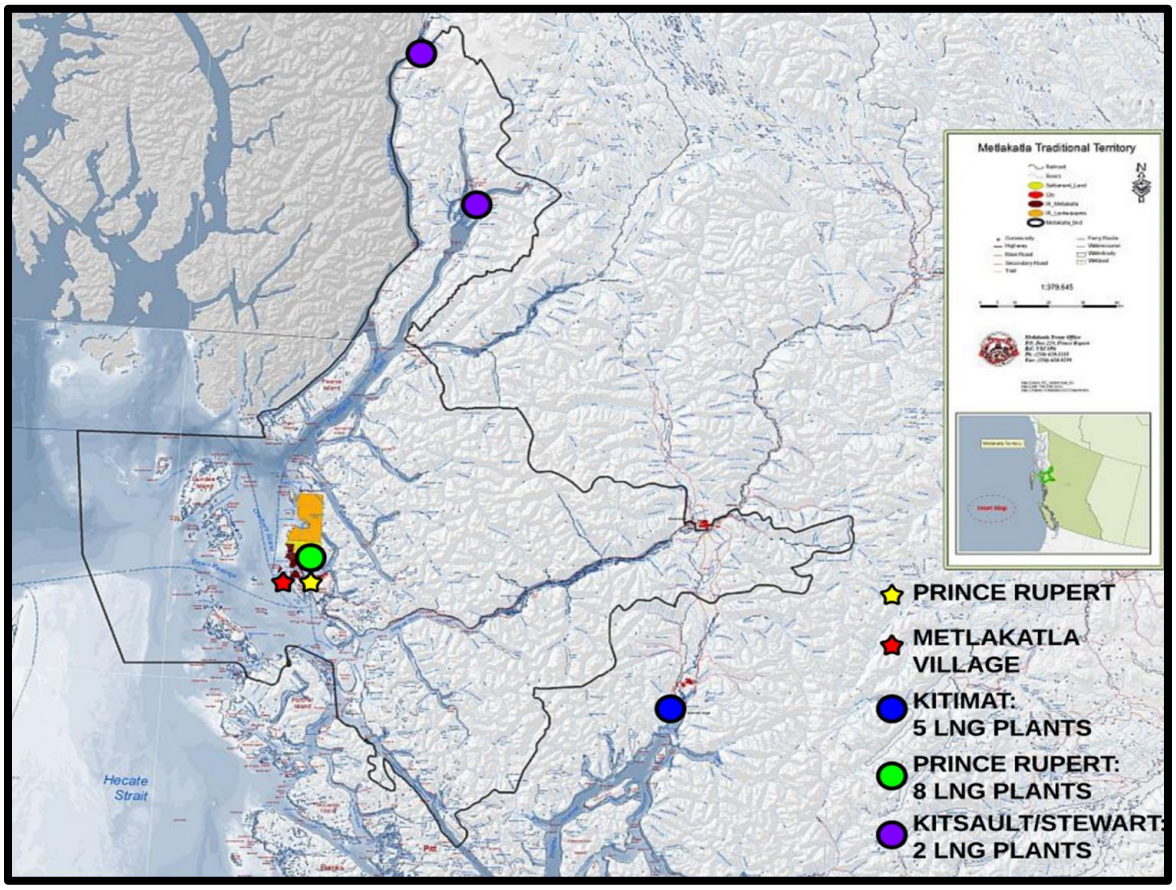

Figure 6. Location of Metlakatla First Nation Traditional Territory and Proposed LNG Development on the North Coast of BC (MFN, 2013; Kwon, 2016).

Note: This map of projects is from a specific point in time and is no longer current.

The culture and economy of the Metlakatla has always been linked to the lands and waters and the resources they contain (MFN, 2013; Pinkerton *et al*., 2014; MGC, unpublished). “The harvesting, processing, consumption, use, sharing, trade and sale of

natural resources in accordance with our own laws and customs remains a cornerstone of our peoples' distinct culture and daily livelihood" (MFN, 2013: 11). The ocean and its associated resources have remained at the core of cultural identity for First Nations living along the western coast of Canada, including the Metlakatla, both before and after European contact (Haggarty and Lutz, 2006; Harris and Millerd, 2010; Day *et al.,* 2013; DMCS, 2013a; Lucchetta *et al.,* 2016). The marine environment in Metlakatla traditional territory has a high degree of species richness and diversity, as it is the location of a transition zone between two major ocean currents, the Alaska coastal downwelling in the north and the Californian upwelling in the south (Day *et al*., 2013; MFN, 2013). Today, however, Metlakatla community members are less reliant on the marine sector as a source of income compared to their parents and grandparents (Wilson, 2003; Ference Weicker & Company Ltd., 2009b; Chan *et al*., 2012).

4.1.2. History of Past Disturbances

Archaeological evidence suggests that the Coast Tsimshian people have occupied and harvested the natural resources in the traditional territory of the Metlakatla First Nation for more than 8,000 years (DMCS, 2013a; Compass Resource Management, 2014). The Alliance of Nine Tribes that made up the Coast Tsimshian managed and maintained these lands until European contact in the 1780s (Compass Resource Management, 2014). Prior to European contact, the Metlakatla economy was based upon sustenance fishing, hunting, and the harvesting of plant products, processing and preserving resources, and trading surplus resources for other resources (DMCS, 2013a). After European contact, the Coast Tsimshian began trading with the Hudson's Bay trading post, without abandoning their traditional practices (Compass Resource Management, 2014). Today, traditional harvesting, including fishing, still remains an integral component of the Metlakatla economy, culture and way of life (Compass Resource Management, 2014).

The reserve system has challenged traditional ways of life of Aboriginal peoples in Canada, in part because the amount of territory under Aboriginal management significantly decreased, limiting their ability to control planning and development (Ross, 1990; Haggarty and Lutz, 2006; Turner *et al*., 2008; MFN, 2011). The Metlakatla have been exposed to many different development projects since contact with Europeans and they have had little power in decision making about most of these projects. Starting in

1876 and occurring over the next 80 years, approximately 40 canneries were established within Metlakatla traditional territory (Haggarty and Lutz, 2006; DMCS, 2013b; Compass Resource Management, 2014). Logging and fishing became large commercial industries in Metlakatla territory during the 1950s (Haggarty and Lutz, 2006; Compass Resource Management, 2014). After the 1950s, many development projects focused on mining, hydropower, and port operations (BC JTST, 2016). Tourism and commercial fishing have also become large industries for the north coast of BC and the Metlakatla First Nation (MFN, 2011; MFN, 2013; MFN, unpublished). The Metlakatla have objected that they were not meaningfully consulted during the decision making process for many of these past developments in their traditional territory (MFN, 2013).

4.1.3. Current Status

The Metlakatla First Nation has four major agencies: the Metlakatla Governing Council, the Metlakatla Development Corporation, the Metlakatla Stewardship Office and the Metlakatla Treaty Office (MFN, 2016). Under each of these four agencies are multiple departments. The Metlakatla Governing Council acts as the primary governing unit responsible for delivering social services to its members (MFN, 2016). The Metlakatla Development Corporation oversees economic development initiatives for the Metlakatla First Nation. The Metlakatla Stewardship Office works to protect the lands, waters and resources of the Metlakatla traditional territory (MFN, 2016). The Metlakatla Treaty Office's primary role is to negotiate a treaty for the Metlakatla First Nation with provincial and federal governments. The Metlakatla are currently in Stage 4 of a 6 stage treaty negotiation process with the Province of BC (BC, 2016). According to Metlakatla stewardship plans and their community economic strategy, protection and stewardship of the environment in their territory remains the highest priority for the Metlakatla in the negotiation process (MFN, 2013; MFN, unpublished).

4.2. Background on CEM Program

The Metlakatla CEM program was initiated in response to the large number of recent proposals for LNG projects, pipelines and other developments in the traditional territory of the Metlakatla. Given the magnitude and uncertainty of development in the region, the Metlakatla Development Corporation entered into a collaborative research

partnership with Simon Fraser University (SFU) to study the potential cumulative effects of developments and to investigate mitigation and management strategies to minimize impacts and maximize benefits to the community (Compass Resource Management, 2015). A key goal of the research collaboration is to design and implement a culturally relevant CEM program to track, manage and mitigate cumulative impacts from development in the traditional territory of the Metlakatla First Nation (Compass Resource Management, 2015).

The Metlakatla CEM program focuses on “priority values” – components or aspects of the biophysical and social environment that are of high importance to the Metlakatla people and that are considered most likely to be affected by current and future developments (Compass Resource Management, 2015). The CEM program consists of four main steps (see Figure 7). During step 1, Compass Resource Management Ltd. (consultants to the Metlakatla) and SFU researchers along with members of the Metlakatla Nation, worked together to develop a report that explained the methods of the CEM program, the priority values and indicators identified by Metlakatla members and the selection process outlined by Compass Resource Management Ltd. (Compass Resource Management, 2015). The report was then submitted to the Metlakatla Stewardship Society. Additionally, SFU researchers reviewed the literature on cumulative effects assessment and management to provide guidance for establishing management triggers and actions. Upon completion of step 1 the Metlakatla participants had identified 10 priority values, including environmental, socio-economic, cultural and governance values (see table 4). Metlakatla managers selected four of these priority values to be included in a pilot project to demonstrate and test this new approach to CEM: butter clams; housing; food, social and ceremonial activity (FSC/cultural activities); and employment (Kwon, 2016). The CEM collaborators are currently working on steps 2 and 3 of the program, which involve gathering baseline data on the identified indicators, assessing their condition, and defining management triggers and actions for each of the priority values.

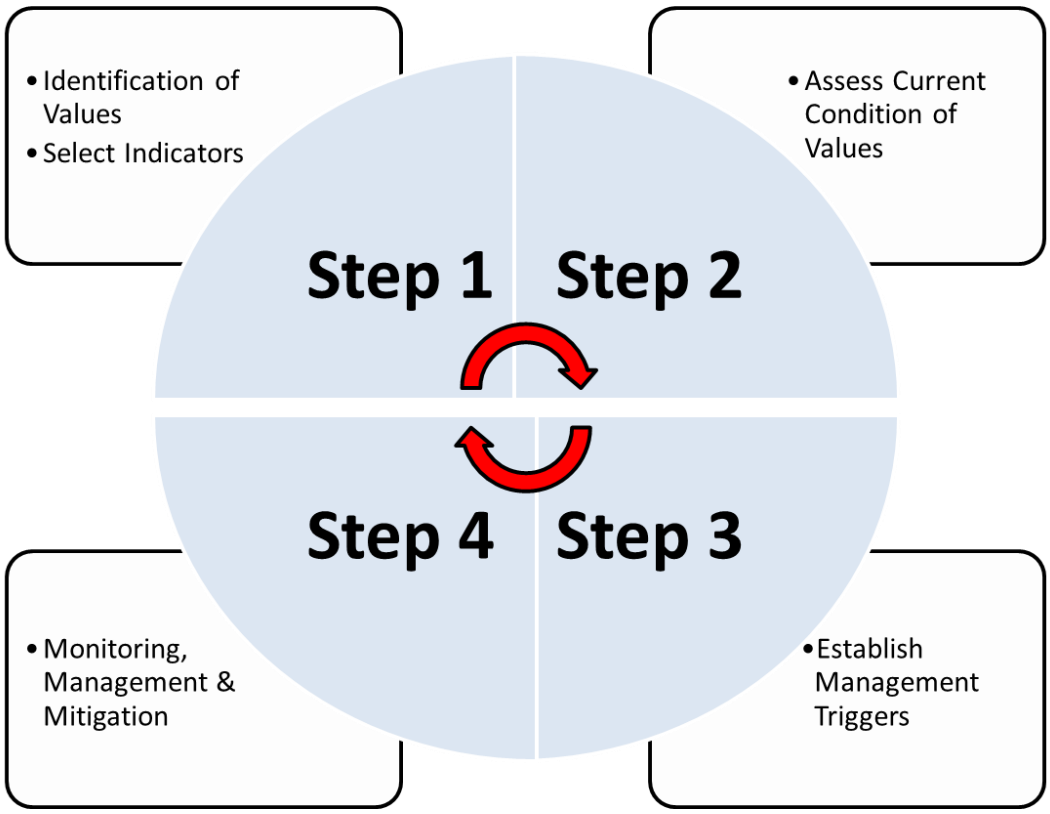

Figure 7. **Steps in the Metlakatla Cumulative Effects Management Initiative (Adapted from: Compass Resource Management, 2015).**

Table 4. **Metlakatla Values and Indicators identified in CEM Program (Adapted from: Compass Resource Management, 2015).**

Value	Indicator(s)
Wealth Distribution	Income equality
Economic Self Sufficiency	High school completion
Individual Health	Diabetes prevalence Hypertension prevalence
Access to Health Services	Access to health care
Adequate Housing	Percent of tenants in core housing need
Personal Safety	Crime severity index
Chinook Salmon	Spawner abundance Critical juvenile habitat
Butter clams	Population density
FSC / Cultural activities	FSC participation rate
Ability to Steward	Stewardship of priority lands

The Metlakatla CEM program takes an effects-based approach to managing cumulative effects rather than the stressor-based approach that is typically used in project-based CEA. The Metlakatla program manages cumulative effects through avoidance, mitigation and adaptation, by conducting follow-up and monitoring studies and triggering certain management actions at predetermined thresholds of change (see Therivel and Ross, 2007). Indicators are used to monitor the status of priority values and to inform decision makers about when thresholds are being approached or crossed, which will trigger management actions in response. In contrast, traditional CEA focuses on stressors on specified values, and assesses a project's impacts on those valued components in combination with the estimated impacts of other existing and likely projects (Noble, 2013).

4.3. Addressing the Critiques of Incorporating Aboriginal and Cultural Values into Cumulative Effects Assessment

I will now return to the weaknesses and recommendations on incorporating cultural values into cumulative effects assessment that were discussed at the end of chapter two. I will outline how the Metlakatla CEM program addressed the identified problem and how it incorporated recommendations to address the weaknesses identified within the literature. The Metlakatla CEM program is informed by both traditional knowledge and western science, and is designed to monitor, manage, and mitigate changing conditions at a regional level to minimize adverse effects from multiple projects and development (Noble, 2010; Compass Resource Management, 2015).

4.3.1. Scale

The CEM program is applied at the regional scale and encapsulates multiple projects and activities within the region rather than focusing at the project level. The spatial scale of the program is the traditional territory of the Metlakatla First Nation, which is the spatial extent that matters most to the Metlakatla people. This spatial scale is appropriate for the values and indicators identified, especially those related to culture, since the key Metlakatla cultural traditions, customs, and practices occur within and across their traditional territory.

4.3.2. Scope

In terms of scope, the CEM program focuses on cumulative effects of multiple projects and activities to identified values rather than project-specific effects. When identifying and selecting valued components and indicators to be used in the Metlakatla CEM program, Metlakatla members were made aware that when prioritizing cultural values the context was specific to resource development and cumulative effects within their traditional territory. This allowed for accurate, relevant and useful cultural values and indicators to be properly incorporated and factored into the assessment of cumulative effects within Metlakatla traditional territory.

The CEM program had a strong focus on engagement with Metlakatla members to ensure locally relevant indicators were selected and that they were defined by the community members themselves (Compass Resource Management, 2015; Kwon, 2016). Once the priority values were identified, the Metlakatla members provided input through interviews and focus group discussions to design how these values would be measured. Focus group discussion with Metlakatla members has been very important and will continue to be relied on heavily moving forward when defining management triggers and actions for each of the identified indicators (Step 3, Figure 7).

4.3.3. Guidance

In terms of guidance on assessing cumulative effects, the CEM program is an independent study of cumulative effects and therefore was not directly guided by any regulations or legislation but rather by Metlakatla managers and members. In contrast, project proponents currently completing CEA for their respective projects are working within current federal and provincial EA frameworks and are guided and limited by the existing processes, policies, and legislation in Canada and BC. The Metlakatla were free to develop a Metlakatla-oriented CEM program with its own clear framework setting out the processes to follow and focusing specifically on cumulative effects (Figure 7). The framework may be used and adapted in the future for other communities and settings.

4.3.4. Decision Making

By instituting their own community-engaged CEM program, the Metlakatla can exercise more control over decisions about which project activities, values and indicators are to be monitored, and they can ensure that the program maximizes the benefits for the Metlakatla community (Mitchell and Parkins 2011; Adams *et al.,* 2014; DMCS, 2013a). Both traditional knowledge and western science are incorporated into all steps of the CEM program. Metlakatla members and their values, goals and priorities have driven and guided the CEM program process and the priority values that were identified. Metlakatla members are involved in every step of the CEM program to ensure it continually aligns with their values, goals and priorities. Starting early in the process, Metlakatla community members were engaged and involved to articulate what culture means to them and identify what their community specific values are. Based on this engagement the values and indicators were selected to represent Metlakatla culture as Metlakatla members defined it and to emphasize what they determined to be important. Thus, the values and indicators selected were identified by the Metlakatla members and not by an outside specialist. Although values used in recent project-based EAs were researched to provide background information for the Metlakatla, these values were not forced on Metlakatla members during the engagement process.

4.4. Identification of Values and Indicators in CEM program

Input from Metlakatla members was combined with knowledge of subject-matter experts to select values and indicators that met selection criteria identified through best practice research by Compass Resource Management and SFU researchers (Compass Resource Management, 2015; Lucchetta *et al*., 2016). The CEM program focuses on Metlakatla values under the 5 pillars of Cultural Identity, Governance, Social/Health, Economic Prosperity, and Environment. For each of the 5 pillars, a broad list of possible candidate values was initially compiled.

There were 3 candidate values identified under the Cultural Identity pillar, including: FSC/Cultural activities, social fabric and Tsimshian cultural knowledge (Compass Resource Management, 2015). The FSC/Cultural activities value is discussed further below. Social fabric is described as the strength and resilience of inter-personal relationships among Metlakatla people, potentially determined through social gatherings,

volunteerism, etc. (Compass Resource Management, 2015). Tsimshian cultural knowledge is described as self-assessed knowledge of the Tsimshian culture and traditions including such things as extent and use of the Territory, hereditary system, traditional and contemporary customs, Sm'algyax̱ language speakers, and knowledge transfer (Compass Resource Management, 2015).

Using the list of candidate values compiled for each of the 5 pillars, 10 priority values and 12 associated indicators (some values have more than one indicator) were identified (see Table 4 above) (Compass Resource Management, 2015; Kwon, 2016). Metlakatla managers decided to test the CEM design with an initial pilot program focusing on 4 of these priority values (Table 5). The pilot values were selected based on the following criteria: importance to the Metlakatla; mandate of the Metlakatla to manage the value; ability of the Metlakatla to influence management of the value; and capacity of the Metlakatla to address the value (Kwon, 2016). For the pilot value of "FSC/Cultural Activities", the indicator "FSC participation rate" was refined by identifying three measurable components: level of effort, youth participation rate, and household participation rate (see Table 5).

After instituting the pilot project, the Metlakatla plan to evaluate and learn from its performance, and eventually expand the CEM program to include the broader suite of priority values and indicators.

Table 5. Metlakatla Pilot Values and Indicators in CEM Program (Compass Resource Management, 2015).

Value	Indicator(s)
Butter clams	Population density
Adequate housing	Individuals in core housing need
FSC / Cultural activities	Level of effort Youth participation rate Household participation rate
Employment	High school completion rate (regarded as a key requirement for gainful employment)

4.4.1. FSC Participation

Step 1 of the development of the CEM program included extensive one-on-one and group consultation with Metlakatla managers and community members. Through that process, the Metlakatla identified food, social, and ceremonial (FSC) activity as a

priority cultural value for the Metlakatla people. For the purposes of the CEM program, FSC activity is defined as harvesting, processing, preparing, or consuming any traditional foods from hunting, fishing, gardening, gathering, and trapping (Compass Resource Management, 2015). Harvesting, processing and preparing traditional foods can be grouped together under the subcategory of FSC participation. Participation is distinguished from consumption by the active practice and potential transfer of traditional knowledge (Compass Resource Management, 2015). Due to the active transfer of traditional knowledge that occurs during harvesting, processing, and preparing, the indicators selected for the CEM pilot program measure FSC participation but not FSC consumption.

The Supreme Court of Canada's decision in the *Sparrow* case established that Aboriginal food, social and ceremonial fishing rights have priority, after conservation objectives, over any other fishery (Harris and Millerd, 2010; MFN, 2011). FSC participation is a key component of cultural identity for many coastal First Nation communities, including the Metlakatla. The Metlakatla CEM program uses FSC activity as a proxy for understanding trends and changes to Metlakatla culture over time. FSC activity has tangible benefits to the Metlakatla people through improved diet and health (Compass Resource Management, 2015). Intangible benefits of FSC activity include sustained lifestyle, traditions, language, knowledge sharing and sense of community (Wilson, 2003; Chan *et al*., 2012; Compass Resource Management, 2015). FSC activity also facilitates the potential transfer of traditional knowledge to future generations (Turner *et al*., 2008). Participation in FSC activities has been identified as an important social indicator of development impacts for Aboriginal communities across Canada; however, as mentioned previously the social, cultural and economic value of FSC activity is not fully understood or properly addressed in typical EAs (Koenig and Adlam, 2012). The long standing connection to the land and marine environment that many Aboriginal communities maintain through participation in both land-based and marine-based FSC activities is threatened by major development projects that may cause environmental impacts (Corntassel and Bryce, 2012).

Monitoring and managing the overall condition of FSC participation over time will allow for the identification of opportunities to foster and support cultural identity for the Metlakatla. Three indicators were identified within the CEM program to assess the changing conditions of FSC participation (Compass Resource Management, 2014). The

first condition indicator is Youth Participation Rate. Youth Participation Rate is defined as the percent of youth participating in FSC activities (Compass Resource Management, 2014). The second condition indicator is the Household Participation Rate. Household Participation Rate is defined as the percent of households participating in FSC activities (Compass Resource Management, 2014). The third condition indicator is the Level of Effort. Level of Effort is defined as the number of person-days per year participating in FSC activities (Compass Resource Management, 2014).

4.4.2. Current Information and Data on Metlakatla FSC Participation

In terms of FSC consumption, preliminary studies from within the Metlakatla community, conducted in step 1 of the CEM program and previous research, indicate that current FSC consumption is not meeting the preferences of Metlakatla people. Common foods desired by Metlakatla members for FSC purposes include salmon, bivalves, eulachon, and abalone (MFN, 2011; Lucchetta *et al*., 2016). In the winter of 2009, a study by Fediuk and Thom (2009) of 26 Metlakatla households found that 88.5% of participants served traditional fish or seafood at least once a week, and 53.9% more than four times a week. The survey found that traditional foods are consumed 0-1 times per day, but preference would be to consume traditional foods 4 times a day, demonstrating that households were dissatisfied with the current frequency in the consumption of traditional foods (Fediuk and Thom, 2009). There has also been a decrease in the quantity of traditional foods being served at gatherings, which are substituted by processed or store-bought foods (Ference Weicker & Company Ltd., 2009b). The 10 most common traditional foods consumed by the Metlakatla were identified as: salmon, halibut, seaweed, herring roe, crabs, clams, eulachon grease, blueberries, prawns and cockles (Fediuk and Thom, 2009). Due to the Metlakatla being a coastal nation, there is a heavy reliance on the marine environment resulting in only one of the 10 most common traditional foods (blueberries) coming from the terrestrial environment. It should be noted that the Fediuk and Thom (2009) study focused on consumable (e.g. food) resources whereas FSC resources could include non-consumable resources such as cedar.

Relating to FSC participation, Ference Weicker & Company Ltd. (2009a: 10) found that 58% of Metlakatla residents “play a role in the harvesting and processing of the seafood they consume by catching it, cleaning it, smoking it, freezing it, and/or

canning it." On average Metlakatla residents are spending 150 hours on non-commercial harvesting each year (Ference Weicker & Company Ltd., 2009a). The Metlakatla Fisheries program estimates that less than 1% of Metlakatla youth are participating in FSC fisheries (Fediuk and Thom, 2009).

4.4.3. Gaps in Information and Data on Metlakatla FSC Participation

While the above studies provided some initial data on FSC participation, the work completed during Step 1 of the CEM program uncovered substantial gaps in the data available to the Metlakatla on the current condition of socio-economic indicators. To address these gaps, the CEM research team and Metlakatla managers established the Metlakatla Membership Census (MMC). The MMC is a census of members of the Metlakatla First Nation that collects consistent data to measure and track CEM socio-economic indicators over time. The first MMC was conducted by SFU researchers in August and September 2015, and a second MMC was conducted in September 2016. Two key recommendations from the research team after the first iteration of the MMC were specific to the cultural activities section: (1) revise the cultural activities questions to obtain relevant data and a higher response rate for the survey, and (2) consider including additional indicators to assess aspects of Metlakatla culture that may not be captured by FSC participation (Gupta and Willis, 2015). My empirical research (discussed in the next chapter) responds to these recommendations and builds on the work of the MMC by conducting further intensive interviews with Metlakatla members about the current state of FSC participation and also exploring other aspects and components of Metlakatla culture that might be considered and potentially incorporated into the CEM program.

Chapter 5.

Case Study – Identifying Metlakatla Cultural Values for a Regional Cumulative Effects Management Program

This chapter describes and demonstrates the methods that I developed in collaboration with the Metlakatla to investigate: i) what culture means to the Metlakatla people; ii) how expected development may affect Metlakatla cultural identity, and iii) how best to measure and track changes in the condition of cultural values over time. This case study focuses on FSC activity, the pilot indicator of culture identified under the Cultural Identity pillar for the Metlakatla CEM program, but I also explore other aspects of Metlakatla culture and identity. The chapter begins by outlining the objectives of the case study followed by the methods I used, including a review of literature and Metlakatla documents, followed by semi-structured community interviews. The chapter ends with a discussion of the research findings and recommendations for monitoring and managing values under the Cultural Identity pillar of the CEM program moving forward.

5.1. Case Study Objectives

The primary objectives of this study were to examine how development has and will affect FSC participation for the Metlakatla, and to identify responsive and measurable indicators for FSC participation for the CEM program. Key questions for these objectives include:

- Which indicators should be used to monitor and measure FSC participation as a cultural value in Metlakatla's CEM program?
- How will future proposed development projects in Metlakatla's traditional territory impact FSC participation?

An additional objective was to explore other potential cultural values and indicators to measure Metlakatla culture and identity within the CEM program. Key questions for this objective include:

- What does culture mean to Metlakatla people?
- How will aspects of their culture be cumulatively affected by development?

- Does FSC participation represent Metlakatla culture and capture these potential cumulative impacts from development?
- What aspects of Metlakatla culture does FSC participation not capture?
- What indicators could be added to the CEM program to create a more complete picture of Metlakatla culture?

5.2. Case Study Methods

I began by conducting a review of literature and other documentation on Indigenous culture generally and on Metlakatla culture specifically, and on cumulative effects assessment and management of cultural values. The review included academic literature, Metlakatla documents and records, consultants' reports, government documents and EA submissions. Different fields of study were explored including land-use planning, community and regional planning, cumulative effects assessment, and northern and rural development occurring in multiple areas such as Australia, New Zealand, Canada, the United States and the Arctic. From this review of literature and documents I identified common types of cultural value in Indigenous and Aboriginal communities and specific cultural values found in the Metlakatla Community. I then explored these values in my interviews with Metlakatla members.

5.2.1. Interview Components and Design

The literature review informed questions that I subsequently asked in semi-structured interviews I conducted with individual members of the Metlakatla community. One-on-one semi-structured interviews investigated the meaning of culture to the Metlakatla people, FSC participation, the connections between FSC and well-being and Metlakatla culture, potential indicators for FSC participation, and broader cultural values and potential metrics. Input from Metlakatla department managers was sought to identify potential interview participants, interview questions, and indicators (the questionnaire is attached as Appendix A). I designed and formatted the interview questions based on findings from the literature review (Christensen and Krogman, 2012; Colquhoun and Dockery, 2012), examples from other First Nation community surveys (Vanderjagt *et al*., 2014), and discussions with Metlakatla First Nation staff and managers.

The interview questionnaire had three distinct sections. The first section had 10 questions with multiple probing questions which focused on FSC activities, including the

participant's participation in these activities and its importance. The second section had six questions with multiple probing questions that explored other cultural values and indicators beyond FSC activities in order to look at potential gaps arising from using FSC activity as the primary indicator for cultural values, and potential impacts to culture from resource development not captured by the FSC indicators. The third and final section had three questions with additional probing questions and focused on Metlakatla culture as a whole, what culture meant to participants, and how it can be preserved into the future. The majority of the interview questions, in each of the three sections, were open-ended and had a series of probing questions that could be asked at the interviewer's discretion. There were a few ranking questions (in sections two and three) in which participants were asked to prioritize various cultural values and impacts, and one multiple choice question (in section one). Interviews were conducted one-on-one by me with each Metlakatla interview participant and ranged from 30 to 60 minutes to complete.

5.2.2. Participant Selection

Interview participants were identified through peer selection which involved asking department managers for the Metlakatla First Nation to help select knowledgeable people in this field (Huntington, 2000). Once the initial interviewees were identified by department managers, chain referrals were used to identify further third party interview participants (Huntington, 2000). I asked representatives of the Metlakatla First Nation and community leaders to seek permission from potential third-party research participants to have their names and contact information provided to me, and/or to pass on information about my research to the third party and ask them to contact me if they were interested in being an interview participant.

In total, 17 Metlakatla community members agreed to be interviewed over a two week period in June/July of 2016. Interview participants ranged in age (20 years old to over 65 years of age), gender (male or female) and location of residence (Prince Rupert or Metlakatla Village).

The key demographic characteristics of interview participants were:

- Age: One youth between the ages of 15-24, 11 adults between the ages of 25-64 and five elders being 65+.
- Gender: Nine participants were male and eight participants were female.
- Location of Residence ("location"): Six participants were located in Metlakatla Village and 11 were located in Prince Rupert, BC. Only members living within Metlakatla traditional territory were interviewed. This scope was selected because Metlakatla's traditional territory is the geographic scope of the CEM program.

5.2.3. Interview Administration and Data Collection

In June/July of 2016, I travelled to Prince Rupert, BC for 10 days to conduct the semi-structured interviews with Metlakatla members. Prior to conducting each interview, the potential participant was notified that their identity would be kept confidential except from staff and Council of the Metlakatla First Nation and its agencies. However, an interview participant could also indicate that they would like their identity to be disclosed and linked to their interview responses. Care was taken to clearly explain the interview ethical standards to ensure that potential interview participants did not feel under any obligation or coercion to participate in the research and that they were fully aware of their rights to choose whether or not to participate.

Verbal consent was requested from interview participants because it is a culturally appropriate method of consent when working with First Nations communities. Verbal consent was audio recorded prior to the start of each interview after the potential participant was given a copy of the consent form and given an opportunity to ask any questions. If a participant did not want their consent to be audio recorded, notes of the verbal consent were taken in a field book. All interview participants had the opportunity to indicate whether they were willing to have the interview digitally audio recorded. If a participant did not consent to have the interview recorded, I took detailed notes of the interview. Unless an interview participant consented otherwise, all direct and indirect identifiers were removed from the collected information and replaced with a code.

I personally transcribed all audio recordings of interviews. Interview participants were given the opportunity to review and provide feedback on their interview transcripts. I then conducted quantitative and qualitative analysis of the transcripts and identified quotes to demonstrate common perspectives on Metlakatla culture and FSC

participation. Upon completion of the work, the transcripts were transferred to Metlakatla First Nation staff.

Based on feedback from Metlakatla First Nation department managers on an appropriate incentive or gift, I decided to provide each interview participant with a $5 dollar Tim Hortons Gift Card as a sign of appreciation for taking the time to sit down and complete an interview.

5.2.4. Revising the Cultural Activities Section of the 2016 MMC

After completing the Metlakatla interviews and my review of the literature and documents, I recommended a suite of indicators to pursue in the CEM program to monitor and manage FSC participation and Metlakatla cultural identity. The recommendations I made are outlined in section 5.5 of this research. I used the recommendations discussed in section 5.5, to inform the development of questions for the cultural activities section of the 2016 MMC to collect data on these indicators and other cultural activities. Based on the results from my interviews, the cultural activities section of the 2016 MMC had a large focus on participating in FSC activities. Questions from the 2015 MMC were revised to allow for data to be collected on the two recommended indictors, Level of Effort and Youth Participation Rate, for various harvesting, processing and preparing activities by season. In accordance with recommendations 4 and 5 in section 5.5, questions were revised and developed to track data and information on speaking and learning the Sm'algyax language and participation in social activities. Questions were also developed that explored other common cultural themes concerning the transfer of knowledge for various FSC activities and barriers to participation.

5.2.5. Data Analysis

I conducted quantitative and qualitative analysis of the interview responses. I also analyzed indicator data collected in the 2016 MMC and data from the 2015 MMC. For multiple choice and ranking questions in the interviews, I calculated the percentage of interviewees who selected each option or ranking. For qualitative questions in the interviews, I carefully read the transcripts and identified common responses and themes, noting how many participants brought up the same theme. Using descriptive statistics, I

compared the responses of different demographic groups that completed an interview, including gender (male or female), and location (on- or off-reserve). Multiple choice and ranking questions, within the interviews, were analyzed and presented by total responses and also by gender and location. Age was not analyzed for interview responses due to the low representation of youth. For the multiple choice and ranking questions in the census, I also calculated the percentage of interviewees who selected each option or ranking. Similarly, using descriptive statistics, I compared the responses of different demographic groups that completed the census, including gender (male or female), and location (on- or off-reserve) and age (youth, adult, elder).

Achieving a representative sample of the Metlakatla community through the interview participants (age, gender, and location) was strived for but proved to be very difficult. Within the interviews, youth participants were not well represented and Metlakatla residents of Prince Rupert were slightly underrepresented. Based on the information provided by Metlakatla department managers for the MMC, 83% of Metlakatla members lived in Prince Rupert compared to 17% living in Metlakatla Village (see section 4.1.1); whereas in my interviews, only 65% of participants were from Prince Rupert and 35% of participants were from Metlakatla Village. Therefore, it is important to be careful about extrapolating data from interview responses and stating inferences about the larger Metlakatla population.

One of the ranking questions in my in-person interviews was also included in the annual Metlakatla Membership Census (MMC) conducted shortly after my interviews, in August and September of 2016 (Appendix A, Section 2- Question 3, ranking of cultural values in terms of importance, to measure, monitor and protect). This allowed me to assess the extent to which the responses to this question by the 17 Metlakatla members that I interviewed were representative of the broader Metlakatla membership. The analysis of the 142 responses to this question in the MMC was done using the same methods as with the 17 interview responses to allow for comparisons between the results. Additionally, based on findings from my literature review and analysis of the interview responses and consultation with Metlakatla managers, some of the questions in the Cultural Activities module of the MMC were revised for the 2016 edition and some questions were added (see section 5.2.4). I completed similar analysis (percentage of respondents and descriptive statistics) for the questions included in the revised cultural activities section of the 2016 MMC.

The completed data, analysis and recommendations from this research were provided to Metlakatla staff to support their management and decision-making (including the CEM program) and to be retained for their archives. The results and recommendations should help Metlakatla managers to establish responsive and measurable indicators for priority cultural values in Metlakatla's CEM program, including FSC activity. Furthermore, information gathered from the interviews and the MMC should improve understanding of the types and timing of FSC activities undertaken by Metlakatla community members, and the barriers or limitations for participating in such activities. The results and recommendations will also inform the establishment of management triggers and actions for FSC activity and other potential cultural values (Step 3 of the CEM program).

5.3. Cultural Values Identified in the Literature and Metlakatla Sources

Prior to conducting interviews, I completed a review of academic literature on cultural values of Aboriginal and other Indigenous communities along with the review of Metlakatla documents and discussion with Metlakatla department managers. From this review I developed a list of common types of cultural value in Indigenous and Aboriginal communities. These common values included culturally significant locations, traditional harvesting, stewardship of resources and traditional language. Studies from within Metlakatla and surrounding First Nation communities have analyzed some of these values in terms of potential impacts resulting from resource development. All of these values have the potential to be affected by resource development and as a result were explored further in my interviews.

5.3.1. Culturally Significant Sites/Locations

The relationship between First Nations and their marine and terrestrial territory and its associated resources is very strong and crucial to their culture (McIntyre-Tamwoy, 2004; MaPP, 2014). Not only does culture itself need to be protected from impact but the locations that are required for cultural practices and activities to take place also need protection (Satterfield *et al*., 2013). Cultural identity is often associated with land, as a place, and the things people do in that place, resulting in the desire for protection (Wilson, 2003; Turner *et al*., 2008; Satterfield *et al*., 2013; Pinkerton *et al*.,

2014; Vanderjagt *et al*., 2014). The land is not only a physical space but also represents physical, symbolic, spiritual and social aspects of Aboriginal culture (Wilson, 2003; Vanderjagt *et al*., 2014). Many First Nations along the north coast of Canada, including the Metlakatla, are seeking ways to ensure the protection of certain marine and terrestrial locations that are associated with their history and culture (MFN, 2013; MaPP, 2014). These locations hold high social and cultural importance to the local community that people outside of the community may not understand or appreciate (McIntyre-Tamwoy, 2004; MaPP, 2014).

Many of the development projects proposed in Metlakatla's traditional territory could result in negative impacts on Metlakatla's culturally significant sites and locations. For example, the development of LNG export facilities in Prince Rupert involves significant dredging and disposal at sea (Beckman, 2014). The selection of these disposal sites could impact Metlakatla's continued access to important natural resources and traditional food locations within their territory (MFN, 2013; MGC, unpublished). Additionally, the shipping routes associated with these LNG facilities could impact water transportation routes and historical, spiritual and cultural sites (DMCS, 2013a; DMCS, 2013b; Vanderjagt *et al.,* 2014). DMCS (2013b: 60) found that there were many areas within the proposed locations of LNG development and associated shipping routes "that serve as important meeting places, feasting sites, hold Tsimshian placenames, and have spiritual or cultural significance for the Metlakatla." All of these impacts could hinder the ability for Metlakatla people to access their traditional fishing and marine resource harvesting grounds, and their participation in hunting, trapping and plant gathering activities (DMCS, 2013a).

5.3.2. Traditional Harvest

First Nation communities along the coast of BC and Indigenous people in many other settings in North America want to ensure the integrity and protection of marine resources required for sustenance, informal trade and feasting purposes (Alfred and Corntassel, 2005; Haggarty and Lutz, 2006; Fediuk and Thom, 2009; Harris and Millerd, 2010). "More than an economic system, food gathering and other resource use patterns were loaded with cultural meaning and deeply embedded in their world views" explained Haggarty and Lutz (2006: 51) when summarizing the history of Aboriginals on the north coast of BC. Traditional harvests are fundamental to Metlakatla culture, including the

ability to access, harvest, and consume marine- and land-based resources for FSC purposes (Compass Resource Management, 2014). “Traditional harvest binds Metlakatla culture and community to the land and sea contributing to individual identity, transmitting cultural knowledge through generations, and providing important sources of sustenance to the Nation” (Compass Resource Management, 2014: 56). As stated by Metlakatla First Nation (2011: 2), “access to resources for food, social and ceremonial purposes is vital to the Metlakatla people for the continued practice and vitality of our culture.”

LNG and other developments are expected to negatively impact traditional harvest and other FSC activities within Metlakatla territory in a variety of ways (Theobald *et al*., 1997; MFN, 2011; Compass Resource Management, 2014). Compass Resource Management (2014) concluded that LNG and other related developments would have moderate to severe impacts on Metlakatla traditional harvest experience and access due to an increase in recreational fishing along with visual, auditory, biophysical and air quality effects. Current traditional harvest may soon be unable to sufficiently meet the dietary and cultural needs of the Metlakatla and as a result, any further negative impacts to traditional harvests could be considered significant and potentially detrimental (Compass Resource Management, 2014). The completion of a traditional land use study by DMCS for both the Pacific NorthWest LNG Project and the Prince Rupert LNG Project, concluded that major LNG development would “impact Metlakatla fishing, marine resource harvesting, hunting, trapping, berry picking, and food and medicinal plant gathering activities at present, and in undermined ways in the future” (DMCS, 2013a: 2; DMCS, 2013b).

Interviews conducted in Indigenous communities in Canada including the Dene First Nations of the Sahtu (Great Bear Lake) Region of the Northwest Territories (Dana *et al*., 2009), Łutsël K’e, a primarily Aboriginal Dene community in the Northwest Territories (Ehrlich, 2010) and Gitxaała Nation in Northwestern BC (Vanderjagt *et al.,* 2014) confirm the importance of traditional harvesting activities to Aboriginal culture and the importance of protecting this practice from industrial development. Negative impacts on the environment have the potential to impact the food supply of the Metlakatla, who still rely on the natural environment and its resources for sustenance purposes (Dana *et al.*, 2009). There is the potential for the proposed LNG facilities and other development to impact the “seasonal round” of the Metlakatla as many of the proposed shipping

routes for LNG development overlap with important traditional harvest fishing grounds (Figure 8) (DMCS, 2013a; Compass Resource Management, 2014). The seasonal round is the predictable traditional annual pattern of the Metlakatla with regards to harvesting and resource use of various species in various locations (Halpin and Seguin, 1990; Beckmann, 2014; Compass Resource Management, 2014; MGC, unpublished). Due to the importance of these species, such as salmon, in the diet and traditions of the Metlakatla people, consideration of potential impacts to traditional harvests should focus on these specific culturally important species (Garibaldi and Turner, 2004; MFN, 2011; Compass Resource Management, 2014; Vanderjagt *et al.,* 2014). The existence of the seasonal round requires that the assessment of potential project impacts should not only consider the locations where harvesting occurs, but also the timing and season (DMCS, 2013a).

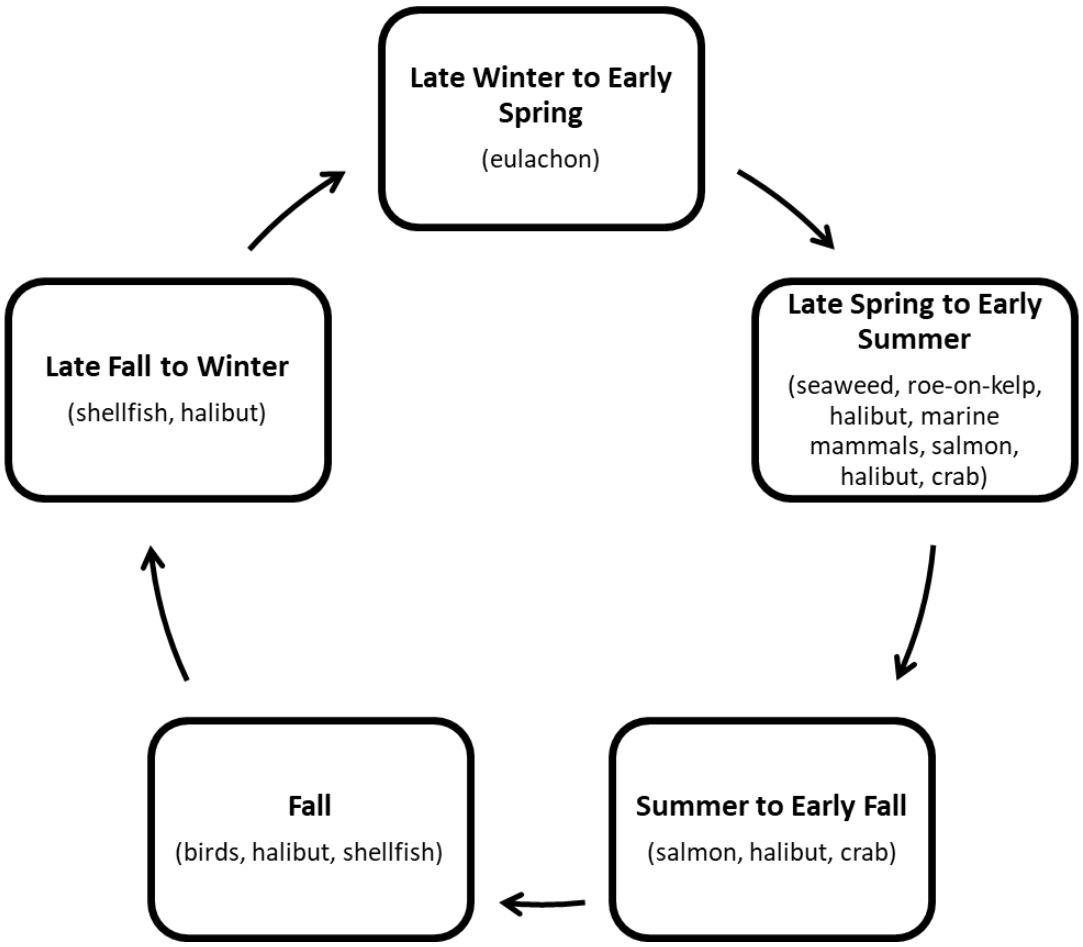

Figure 8. Generalized "seasonal round" of the Metlakatla (Adapted from: Beckmann, 2014)

Currently Metlakatla consumption rates of traditional foods, diversity of species, harvest access, harvest experience and participation levels in harvesting are all below historical averages (Compass Resource Management, 2014). This could be due to multiple factors including the influence of the western lifestyle, less access to transportation, and the depletion of resources by other parties (e.g., overharvesting, pollution) (Compass Resource Management, 2014). Ference Weicker & Company Ltd. (2009b) identified common reasons that make it difficult for Metlakatla to more fully participate in traditional harvest including that most residents live off reserve in urban centers, problems with transportation and access to a boat and/or smokehouse, health concerns, family and work responsibilities and the lack of fish. Despite this trend, traditional harvest remains important to the strength of Metlakatla cultural identity and the Metlakatla are working to revitalize and sustain the practices (MGC, 2010; MFN, 2011; Compass Resource Management, 2014). Having youth participating in traditional harvesting is crucial to ensure the knowledge and practices continue (Turner et al., 2000).

5.3.3. Stewardship of Resources

The Metlakatla Stewardship Society is mandated to protect the lands, waters and resources within the traditional territory to ensure Metlakatla members continue to have access to these resources in perpetuity (Compass Resource Management, 2015). Stewardship is considered an approach to caring for lands and waters in the traditional territory through responsible planning and resource management (Compass Resource Management, 2015). Currently, Metlakatla can enact their stewardship ability through monitoring, establishing protocols and agreements with other orders of government, developing land and marine use plans, and imposing enforcement measures that are directly delegated to Metlakatla by another authority (e.g. Department of Fisheries and Oceans) (Compass Resource Management, 2015). Metlakatla's stewardship ability can be impacted by changes to their authority and institutional capacity (Compass Resource Management, 2015).

Land and marine use plans act as the primary Metlakatla stewardship documents. Metlakatla land use plans (LUPs) are adaptive documents that highlight "the Metlakatla vision and core principles for land and resource stewardship through the identification of land designations in Metlakatla Territory, including objectives, allowable

activities and management regimes for each zone" (Compass Resource Management, 2014: 26). Metlakatla Integrated Marine Use Plans (MUPs) are also adaptive and guide marine resource management in Metlakatla traditional territory by establishing a zoning plan for key fishery and non-fishery marine resources (Compass Resource Management, 2014). Of the nine relevant LUP and MUP zones that are in the Metlakatla territory and overlap with LNG development, only one is zoned for potential LNG development (Compass Resource Management, 2014). The cumulative effects of LNG development are inconsistent with many of the planning objectives of the LUP and MUP zones which would reduce the ability of the Metlakatla to steward resources in their own territory (Compass Resource Management, 2014). The Metlakatla First Nation (2011) and Metlakatla Governing Council (unpublished) have found that the decline in the availability of resources, training and lack of authority limit the Metlakatla's ability to protect their territory and maintain their culture.

5.3.4. Traditional Language

The traditional language spoken by the Metlakatla people and by many other Tsimshian nations is Sm'algyax. Based on the results of the 2016 Metlakatla Membership Census, 15% of Metlakatla members have at least a basic understanding of Sm'algyax (Hutchison and Kwon, 2017). Studies have found that a proficiency in native language and high participation in cultural activities can decrease the rate of occurrence of mental health problems in Aboriginal communities (Colquhoun and Dockery, 2012). Increasing fluency in an Aboriginal native language is a strong indicator of cultural persistence and has been shown in some Aboriginal communities to be inversely correlated with youth suicide rates (Colquhoun and Dockery, 2012; Day *et al*., 2014). Language is an important part of cultural integrity as it allows members of a specific culture to communicate their shared understanding of the world (Alfred and Corntassel, 2005; Day *et al*., 2014; Vanderjagt *et al*., 2014).

5.4. Metlakatla Interview Responses

I now turn to the results of my own interviews of Metlakatla members about their culture. An important theme in the literature on Indigenous culture is that what culture is, and how it can be measured should only be defined by the community itself (McIntyre-

Tamwoy, 2004; King, 2013; Satterfield *et al*., 2013, and see chapter 2 of this report). Accordingly, the semi-structured interviews I conducted with Metlakatla community members were designed to allow the respondents to articulate what culture means to them and how they believe it should be measured.

5.4.1. FSC Activity and Participation (Step 1 of Interviews)

The first section of the interviews focused on FSC activities, including the respondent's participation in these activities and its importance. Within this section, there was a multiple choice question that asked interviewees on a scale of 1-5, where 1 is "very poor representation" and 5 is "very good representation", "How representative of Metlakatla culture is participation in FSC activities?" Table 6 outlines the distribution of responses to this question. Of all respondents, 76% said that FSC participation is either a good or very good representation of Metlakatla culture. The percentage varied little with gender or location.

Table 6. Distribution of responses on FSC participation as a representation of Metlakatla culture

Rating	Response
1 - Very poor representation	0 participants
2 - Poor representation	0 participants
3 - Moderate representation	4 participants
4 - Good representation	7 participants
5 - Very good representation	6 participants

A common theme in the answers to open-ended questions in this section of the interview was that participation in various harvesting and processing/preparing activities varies by season, which reflects the Metlakatla seasonal round (Figure 8). Each season has specific species that are targeted by harvesters, with the summer season being the most active season for both harvesting and processing/preparing. Interview respondents identified that FSC participation is important to their culture as it brings the family closer together, allows the community to work together and is important for sustaining their traditional diet. FSC activities from the harvesting of traditional foods, to the processing/preparing through to the consumption were all considered to be important. One interviewee explained that harvesting, processing/preparing and consumption are all linked:

"Well if we don't have the consuming then there's no way of harvesting. So it all ties into one. It's a domino effect. Start with the harvesting and in the end it's the consuming and that's when we all come together as one."

Another common theme identified by respondents was a concern about the continuation of FSC practices into the future, because youth tend to be uninterested and/or have become used to receiving traditional foods from elders or their parents. This concern is illustrated in the following quotes from interviewees:

"So there's maybe a generation there that they're not going to know what to do because they don't feel they need to take part in this (referring to FSC activities). 'My parents will do it.' But I think it's very important that we teach them. There's just one generation there where they say 'oh I don't have to do it my mom will do it.'"

"We noticed some other kids that never helped their parents. Their parents are jarring their fish, their parents are getting their seaweed, their parents are getting whatever. The parents are doing it."

One elder also mentioned that there appears to be a difference in the participation of youth between locations:

"Like I said is that we see it here (referring to Metlakatla Village), we see all these young people with their parents smoking their fish, we see them jarring their fish but there's always somebody that's got to be there to push them to tell them 'you've got to do this, you've got to do this, this is going to be good in the wintertime.' We see that here but we don't see that with our members in (Prince) Rupert."

5.4.2. Other Cultural Values and Indicators (Step 2 of Interview)

This section of the interview questionnaire started by saying that there is more to Metlakatla culture than just participating in FSC activities, and that the questions in this section focus on other important aspects of Metlakatla culture and values. I then asked interviewees if there are any cultural aspects of the Metlakatla that are not represented by participating in FSC activities. Many important aspects of Metlakatla culture were

brought up by respondents. One aspect of Metlakatla culture that nine of the 17 interviewees (53%) brought up was the traditional language, Sm'algyax. Additionally, 10 out of 17 interviewees (59%) also talked about the importance of social activities including feasting, traditional dancing, artwork and cedar weaving. Other aspects brought up by multiple respondents included: traditional governance, the passing on of oral traditions and laws to future generations, and cultural traditions such as assuming the name ceremonies.

The literature review discussed above, in section 5.3, identified common cultural values which were also mentioned by interview respondents in this section of the interview including traditional language and stewardship of resources. Based on the results from my literature review and discussions with department managers for the Metlakatla, the following 6 Metlakatla cultural values were selected to include in the questionnaire:

- Speaking Sm'algyax
- Participating in social activities (e.g., feasts, arts such as cedar weaving, dancing, drawing, carving or regalia making)
- Protection of culturally significant locations
- Eating key traditional foods
- Harvesting of key traditional foods and other goods
- Stewardship of land and marine resources

I asked interviewees, "Given the potential of cumulative effects from future development to impact Metlakatla cultural identity, how would you rank the following cultural values, in terms of most important to keep track of and protect?" Each of the six cultural values, listed above, was presented to the respondent on a cue card, so that the respondents could rearrange the cultural values until they were satisfied with their ranking. They ranked the cards from highest priority to lowest priority. Figure 9 outlines the percentage of interview respondents that ranked each value as a top 3 priority, meaning the percent of respondents that had the specific value ranked as either a 1, 2, or 3 priority. Of all interview respondents, 88% felt that harvesting of key traditional foods and other goods was a top 3 priority to keep track of and protect, followed by culturally significant locations (82%), and stewardship of land and marine resources (64%). Figures 10 and 11 show the percentage of respondents that ranked each value as a top 3 priority by gender and location. The comparison between genders demonstrated that the overall top 3 values were the same regardless of gender, although their order varied.

The comparison between locations demonstrated that interview respondents living in Metlakatla Village placed a higher priority on eating key traditional foods compared to respondents living in Prince Rupert, while interview respondents living in Prince Rupert placed a higher priority on protection of culturally significant locations compared to respondents in Metlakatla Village.

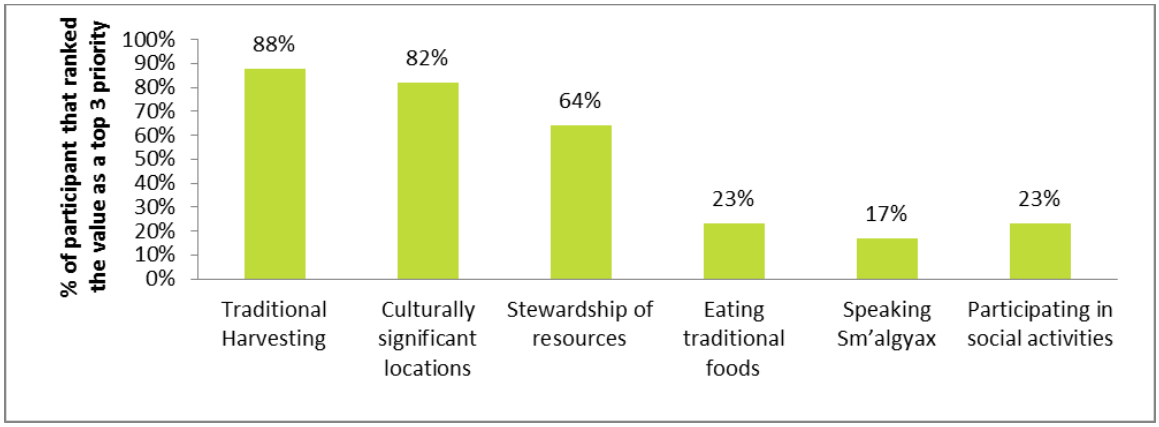

Figure 9. **Percentage of interview participants that ranked each cultural value as a top 3 priority (n= 17). A top 3 priority means that the participant ranked the value as either a 1, 2 or 3.**

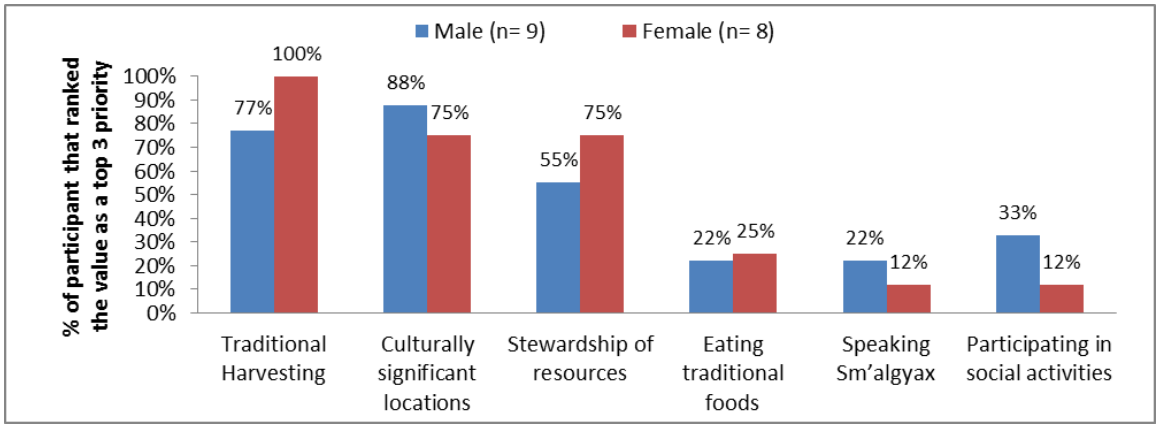

Figure 10. **Percentage of interview participants that ranked each cultural value as a top 3 priority by gender. A top 3 priority means that the participant ranked the value as either a 1, 2 or 3.**

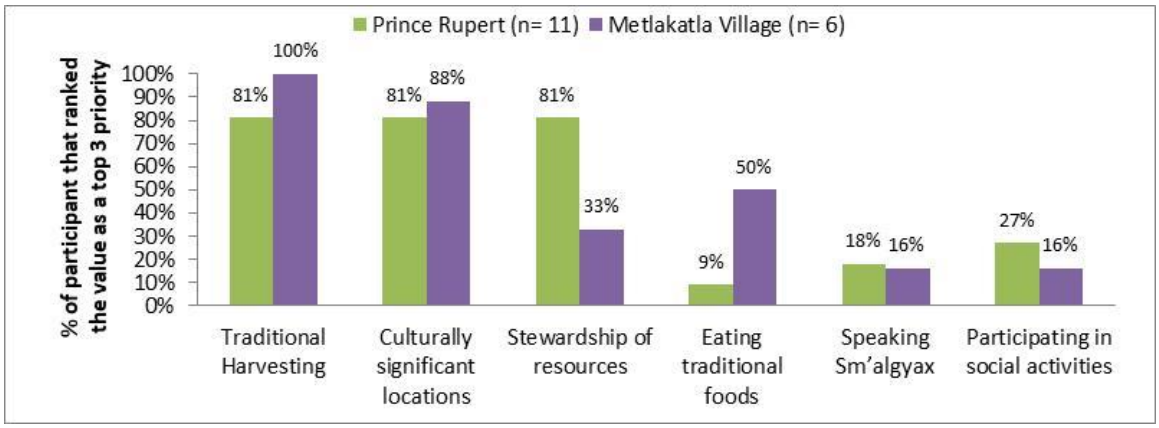

Figure 11. Percentage of interview participants that ranked each cultural value as a top 3 priority by location. A top 3 priority means that the participant ranked the value as either a 1, 2 or 3.

This same ranking question was asked in the 2016 MMC to see how the broader membership would prioritize these cultural values (the MMC census did not include cue cards). In total, there were 142 Metlakatla individuals who responded to this question in the MMC survey.

Figure 12 shows the percentage of MMC respondents that ranked each value as a top 3 priority and how this compares to the rankings from the 17 interviewees. Of all census respondents, 77% felt that harvesting of key traditional foods and other goods was a top 3 priority to keep track of and protect, followed by protection of culturally significant locations (66%), and stewardship of land and marine resources (60%). The ranking of cultural values from the 17 interview respondents was very similar to the ranking of cultural values by the 142 MMC respondents, and the top three priorities and the order of those priorities were the same for both groups of respondents.

Figures 13, 14 and 15 show the percentage of respondents from the 2016 MMC that ranked each value as a top 3 priority by age, gender and location. The comparison by age shows that youth placed a higher priority on participating in social activities compared to adults and elders (55% of youth ranked this value as a top three priority, whereas only 25% of adults and 26% of elders ranked it in the top three). Furthermore, the percentage of youth ranking each value as a top 3 priority is more evenly distributed across all 6 values compared to adults and elders, where there is a more distinct top and bottom grouping of values.

The top 3 values were the same regardless of gender or location; however, members in Metlakatla Village placed a higher priority on speaking Sm'algyax compared to members living in Prince Rupert (42% of members in Metlakatla Village ranked this value as a top three priority, whereas only 27% of members living in Prince Rupert ranked it in the top three). There is also less variation with gender and location in the percentages for each value within the MMC respondents compared to the interviews respondents.

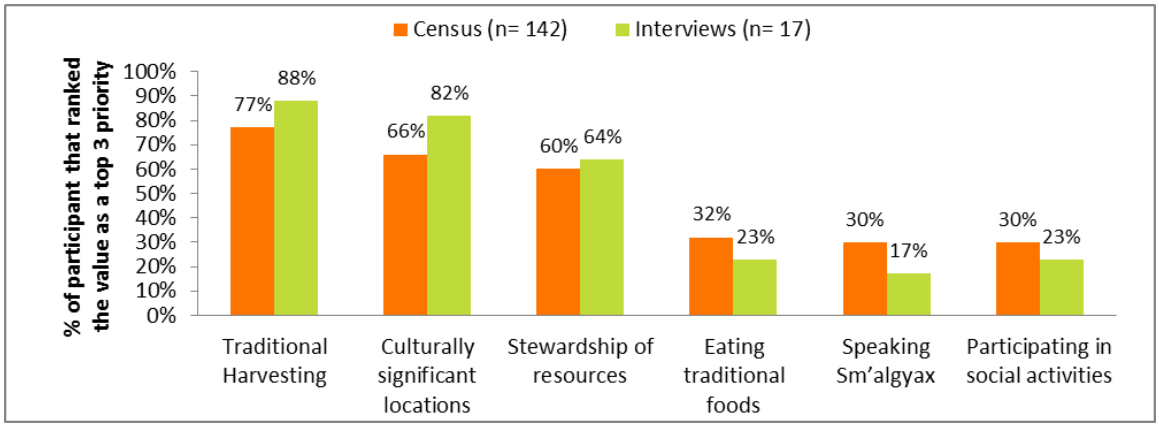

Figure 12. **Percentage of census respondents that ranked each cultural value as a top 3 priority (n= 142). A top 3 priority means that the participant ranked the value as either a 1, 2, or 3. This is compared to the percentage of interview participants that ranked each value as a top 3 priority (n=17).**

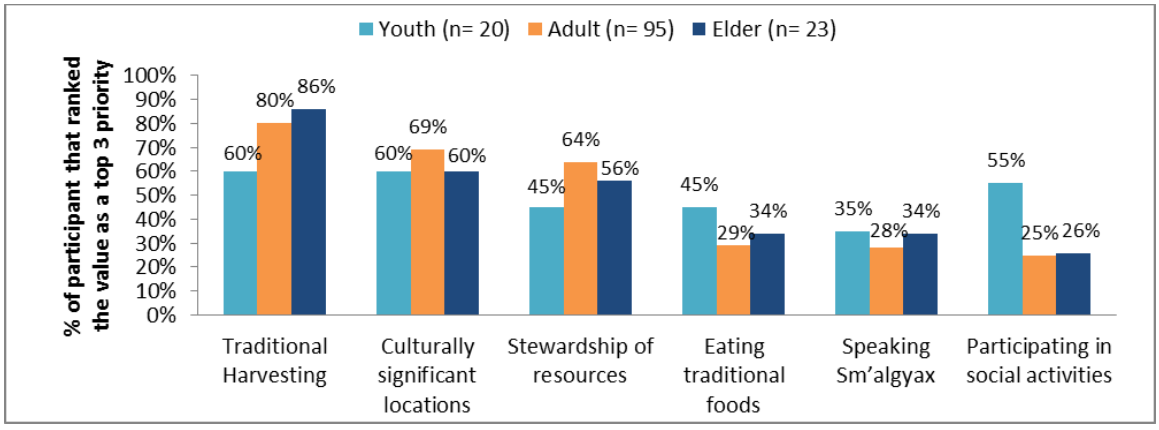

Figure 13. **Percentage of census respondents that ranked each cultural value as a top 3 priority by age. A top 3 priority means that the participant ranked the value as either a 1, 2, or 3.**

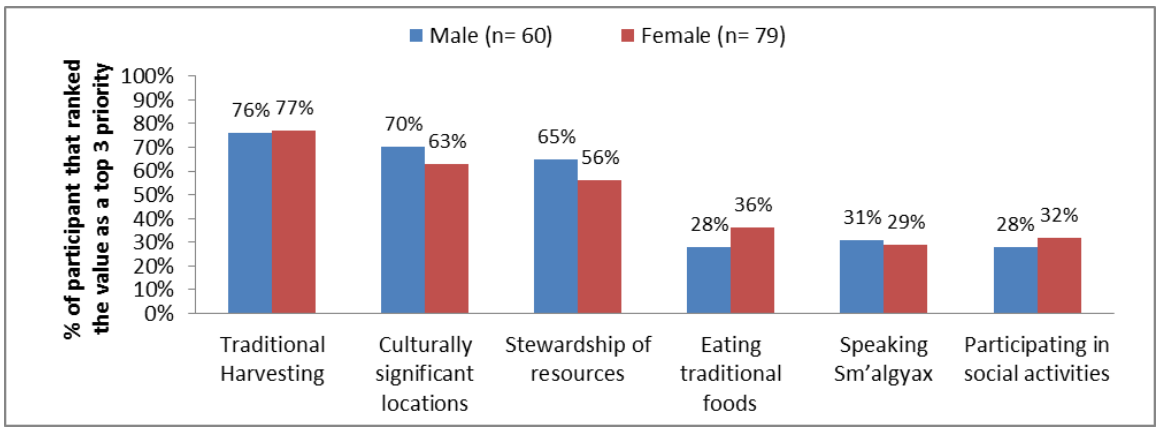

Figure 14. Percentage of census respondents that ranked each cultural value as a top 3 priority by gender. A top 3 priority means that the participant ranked the value as either a 1, 2, or 3.

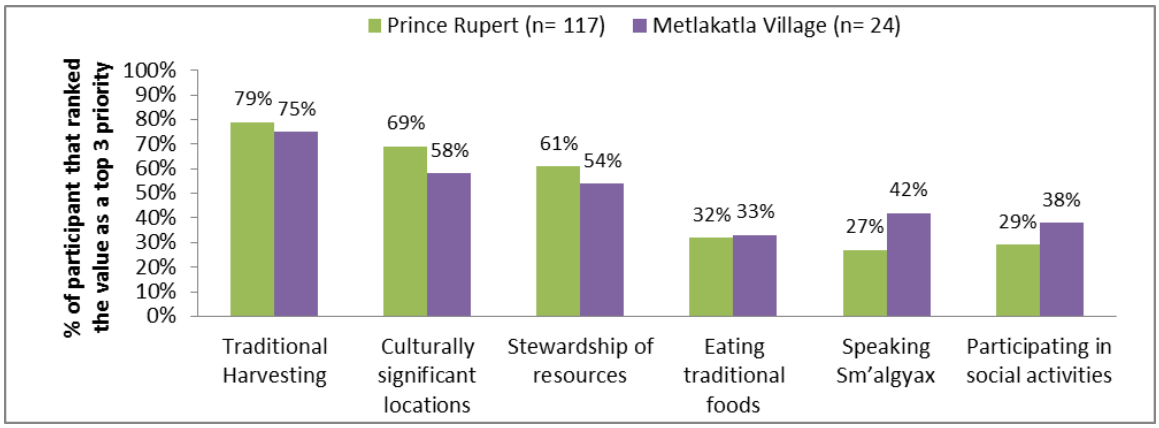

Figure 15. Percentage of census respondents that ranked each cultural value as a top 3 priority by location. A top 3 priority means that the participant ranked the value as either a 1, 2, or 3.

5.4.3. Metlakatla Cultural Values and Resource Development (Step 3 of Interviews)

The literature review also identified many cultural elements that have the potential to be impacted by future development in the Metlakatla traditional territory. These cultural elements include: Sm'algyax language, culturally significant locations, traditionally harvested species, access to harvesting locations and traditional activities such as harvesting, processing, preparing and/or consuming. I asked interviewees to rank these cultural elements (from 1 to 5) in terms of which they believe are the most likely to be impacted by cumulative effects and industrial development.

Figure 16 shows the percentage of the 17 interview respondents that ranked each cultural element as a top 3 impact, meaning that they had the cultural element ranked as either a 1, 2, or 3 in terms of being potentially adversely impacted by development. Of all interview respondents, 88% felt that traditionally harvested species was a top 3 impact, followed by access to harvesting locations (82%), and traditional activities (i.e. harvesting, processing, preparing, or consuming) (70%). Figures 17 and 18 show the percentage of respondents that ranked each cultural element as a top 3 impact by gender and location. The comparisons demonstrated that there was substantial variation in the percentages of rankings between males and females, as well as between those living in Metlakatla Village compared to Prince Rupert, but the general order of ranked impacts, from highest to lowest, remained similar for both genders and locations.

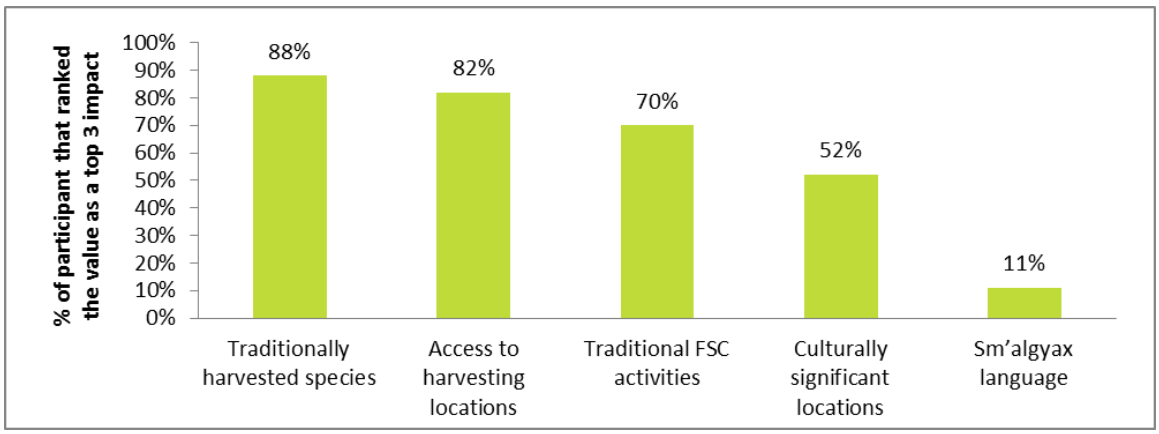

Figure 16. Percentage of interview participants that ranked each cultural element as a top 3 impact. A top 3 impact means that the participant ranked the cultural element as either 1, 2 or 3 in terms of potential impact.

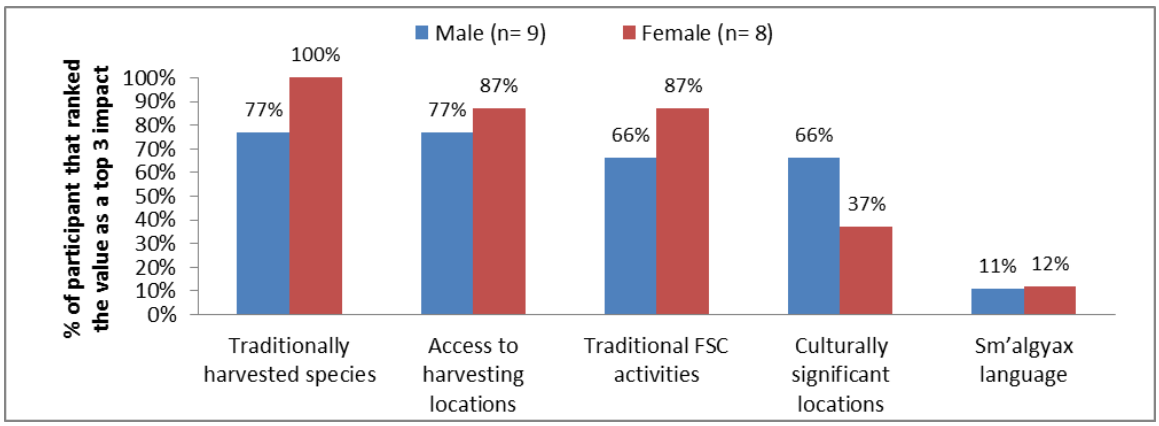

Figure 17. Percentage of interview participants that ranked each cultural element as a top 3 impact by gender. A top 3 impact means that the participant ranked the cultural element as either 1, 2 or 3 in terms of potential impact.

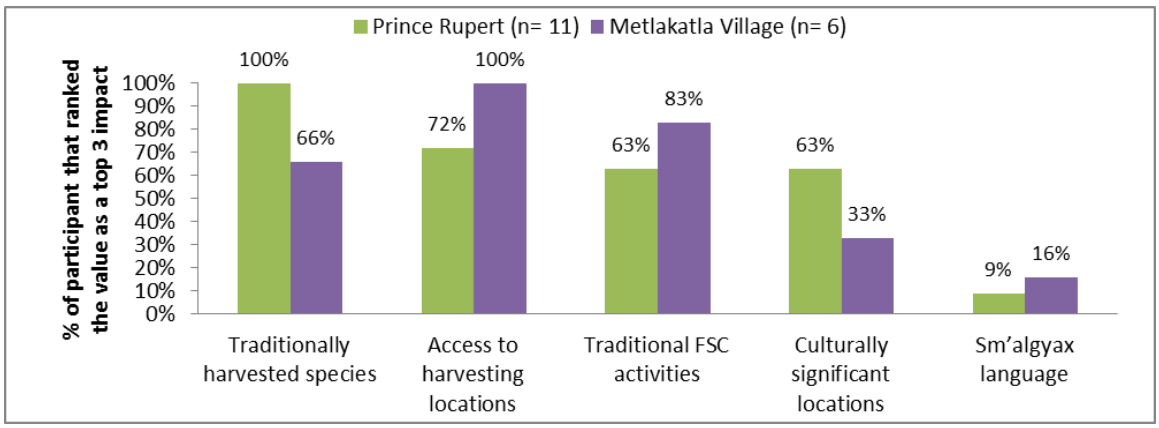

Figure 18. Percentage of interview participants that ranked each cultural element as a top 3 impact by location. A top 3 impact means that the participant ranked the cultural element as either 1, 2 or 3 in terms of potential impact.

5.4.4. Metlakatla Culture (Step 3 of Interviews)

The interviews ended on the topic of culture in a more general sense and its preservation into the future. This proved to be a challenging subject for interview respondents to translate into words on the spot, perhaps due to the complex nature and multiple aspects that can make up a culture. Despite this challenge, many perspectives were expressed by respondents. Below are some quotes that highlight some of the varying perspectives on Metlakatla culture and what it means to be Metlakatla as shared by Metlakatla interview respondents.

“As long as you have the main core upbringing here in Metlakatla, they’ve still got that same spirit from here …We’ve got that connection to the land, the resources and we are the protectors of our traditional territory.”

“I think to be Metlakatla is still harvesting and processing all of our traditional foods, it’s a sense of community, it’s a sense of respecting the land and the waters, and only taking what you need.”

“And it’s definitely tough just knowing Metlakatla’s roots, is that almost everybody there [are] descendants from people that went to a Mission … They all gave up their culture and now there is a 150 year gap that we are trying to bridge now.”

“There’s a lot of different facets to the Northwest Coast culture, but [traditional harvesting] is basically the base of the culture. We really value our land and the sea.”

“Like our culture it was taken away from us way back in the olden days and we're left with what we got. And each community is known for their culture whether it be traditional feasting, traditional dancing, anything, language. And we have what we have here and you always hear it when you're going to feasts that people love to come to Metlakatla and our culture. And I think that's just what it is, is opening your community up and allowing people to come in whether it be a death or a celebration they come, they're welcomed, they get all kinds of seafood. And to me because we really don't have what other communities have for dancing and language and everything else like that, that is our culture; is being open and caring and supplying with abundance of seafood and that's something that some people don't get. So to me I think that, until stuff changes, maybe another generation from now maybe we will get it back. I don't know. But to me that is our culture.”

5.5. Recommendations for cultural values in CEM program

Based on the analysis of the results from the semi-structured interviews, there are 6 recommendations on cultural values that should be taken into consideration for the CEM program.

5.5.1. CEM Program

Cultural Value of FSC Activity in CEM Program

Of all interview respondents, 76% said that FSC participation is a good or very good representation of Metlakatla culture. There was little variation in this percentage by gender and location. FSC participation appears to be an appropriate indicator for Metlakatla culture as part of the CEM program. Additionally, 88% of interview respondents and 77% of census respondents felt that harvesting of key traditional foods and other goods was a top 3 priority to keep track of and protect, which was the highest out of all values. Finally, in terms of cultural elements that may potentially be impacted from future development, many of the top ranked impacts (see Figure 16) can be related to FSC activities, including traditionally harvested species, access to harvesting locations and traditional activities (i.e. harvesting, processing, preparing, or consuming). This confirms the importance of having FSC participation as an indicator for the CEM program and to track this indicator over time to see how it changes as a result of changes and impacts to species, access and activities within Metlakatla traditional territory from resource development.

Recommendation 1: FSC activity should remain as a priority value for the Cultural Identity pillar in Metlakatla's CEM program.

Indicators for FSC Activity in CEM Program

The "level of effort" indicator in the CEM program measures the amount of time members are spending on various FSC activities. Tracking the amount of time people are investing in FSC activities and how that changes over time will help to explain or demonstrate impacts to culture that could potentially be associated with development. The interview results indicate that level of effort measurements should have a seasonal focus as interview respondents mentioned that their participation in various harvesting and processing/preparing activities varies by season, in accordance with the Metlakatla seasonal round.

Youth participation rate in FSC activities is important for transferring knowledge about cultural practices to ensure their continuation and preservation into the future

(Compass Resource Management, 2015). Tracking the amount of youth participating in FSC activities and how that changes over time will provide a good indication of the likeliness of certain cultural practices and activities continuing into the future (Compass Resource Management, 2015). A question I added to the cultural activities section of the 2016 MMC, asked census respondents how often they participated with youth in food harvesting, and processing and preparing activities, respectively. Of all respondents, 45% of respondents never participated with youth when harvesting, and 43% never participated with youth when processing/preparing. For both harvesting and processing/preparing activities, 15% of respondents indicated that they participated with youth more than 50% of the time.

Recommendation 2: Level of Effort and Youth Participation Rate should continue to be used as condition indicators of FSC participation.

Many interview respondents were not as supportive of the "household participation rate" indicator compared to the two indicators discussed above. Interviewees indicated that often when participating in FSC activities they do so as a community with many people and not just within their household. This view was supported by the responses to a question in the 2016 MMC in which members were asked "who do you usually participate with in these food harvesting activities" with the same question being asked for processing and preparing activities. Many respondents said that they participated in harvesting activities with other family (grandparents, aunts and uncles) (43%) and brothers or sisters (39%). For processing/preparing activities, many respondents said they participated with their spouse (41%) and parents (36%). Therefore, household participation rate is not an accurate measurement of FSC participation within the Metlakatla community.

Recommendation 3: Remove Household Participation Rate as a condition indicator for FSC participation.

5.5.2. Other Cultural Activities

Traditional Language

Although only 17% of interview respondents and 30% of census respondents indicated that speaking Sm'algyax was a top 3 priority to keep track of and protect, these responses were to a question asked in the context of cumulative effects and industrial development ("Given the potential of cumulative effects from future development to impact Metlakatla cultural identity, how would you rank the following cultural values . . . "). In response to another question, only 11% of interview respondents said that the Sm'algyax language had the potential to be impacted from future development. However, in a different context, specifically the question at the end of the interview about culture in general, language was described as an important component of culture. An interview question asked respondents what, if any, cultural aspects of the Metlakatla are not represented by participating in FSC activities. Over half of the interviewees brought up language as a response to this question, as something they care about and want to preserve into the future. Accordingly, data on speaking and learning Sm'algyax should continue to be collected through the MMC, especially in light of the current condition of Sm'algyax for Metlakatla as highlighted in both the 2015 and 2016 MMC. The results from the most recent 2016 MMC were that 39% of respondents said that they could not speak the language at all, while 45% of respondents said they could speak only a few words of Sm'algyax. Additionally, 11% of respondents said they had a basic understanding of the language in the 2016 MMC, which is an increase compared to the 6% of respondents in 2015. The 2016 MMC found that only 2% of respondents said that they were fluent in the language. Finally, 72% of respondents said they were either somewhat or very interested in learning the language in the 2016 MMC, which is similar to the 70% of respondents who said this in 2015. Refer to the Cultural Activities Results Summary from the 2016 MMC Report for further information on language data (Hutchison and Kwon, 2017). Metlakatla leadership recently initiated a culture program within the community which could help to facilitate the preservation and revitalization of language within the community.

Recommendation 4: Continue to track data and information about speaking and learning the Sm'algyax language.

Social Activities

Similar to language, only 23% of interview respondents and 30% of census respondents felt that participating in social activities was a top 3 priority value to keep track of and protect, but again this question was specific to resource development and cumulative effects. Traditional dancing, artwork, singing, cedar weaving, and feasting are social activities that were frequently brought up by interview respondents in response to the question asking what cultural aspects of the Metlakatla are not represented by participation in FSC activities. The MMC should continue to monitor levels of participation in social activities, and should ask which social activities community members would like to see take place within the community. This value in particular was ranked as a high priority among youth: 55% of youth census respondents indicated that participating in social activities was a top 3 priority value to keep track of and protect. This finding suggests that social activities may become increasingly important in the future and that it is worth investing in programs now to revitalize certain social activities for the Metlakatla youth. The newly initiated culture program within Metlakatla could use the social activities information collected in the MMC to facilitate the preservation and revitalization of such activities within the community.

Recommendation 5: Continue to track data and information on social activities and work at revitalizing them within the community.

Coordination of Cultural Information

A CEM working group has recently been established involving Metlakatla community members. The Metlakatla also recently initiated a culture and heritage program within their community. If a cultural coordinator is hired, that person could also have a role in the CEM working group to effectively communicate information, data and ideas between the two programs (i.e., CEM program and Metlakatla culture and heritage program). Linking these programs together through a cultural coordinator would allow for a coordinated effort with regard to the preservation and revitalization of cultural activities, traditions and programs within Metlakatla. Improved coordination would also allow for mutual learning to occur and be shared between both programs, and could reduce duplication of information, data and resources. Coordination between the two groups

could better facilitate cultural programs within the community and aide in the continued work on the cultural activities component of the CEM program.

Recommendation 6: Promote coordination and sharing of information between the established CEM working group and the newly initiated Metlakatla cultural program.

Chapter 6.

Analysis of CEA of Aboriginal Cultural Values

I began this paper by providing an overview of CEA focusing specifically on Canada and BC. I discussed Aboriginal involvement in CEA and in EA more broadly. I outlined the main weaknesses identified within the literature on incorporating and assessing cultural values of Aboriginal communities in CEA, which became the main focus of the rest of the paper. I used the PNWLNG Project as a current example of the treatment of Aboriginal cultural values in a completed CEA of a major project in Metlakatla territory under the existing processes, policies, and legislation in Canada and BC. I then used my work with the Metlakatla CEM program as a case study example of an alternative approach to CEA, which was developed by incorporating the recommendations for effective and efficient CEA of cultural values identified from the literature.

In this chapter I compare the methodology and outcomes of the assessment of cultural values described in the case study of the Metlakatla CEM program with those of the project-based CEA for the PNWLNG Project. The purpose of this comparison is to contrast the performance of the Metlakatla assessment in addressing the main weaknesses identified in the literature about CEA and cultural values with the performance of the PNWLNG project-based assessment of the same Aboriginal community and context. The comparison is organized into two main sections: i) incorporation of cultural values into CEA; and ii) community led versus proponent led value identification. I then discuss the broader implications of these differences in assessment methodology and outcomes for the assessment and management of cumulative impacts on Aboriginal cultural values. The chapter ends by discussing the limitations of this work followed by recommendations for CEA practice and further research.

6.1. Incorporation of Cultural Values into CEA

The CEA for both the PNWLNG project and the Metlakatla CEM program involved selecting cultural values or valued components as the basis for assessing cumulative cultural change to Aboriginal communities over time. The CEA for both the PNWLNG project and the Metlakatla CEM program operated in the same region of northwestern BC. The proposed PNWLNG project was in the traditional territory of the Metlakatla, and the Metlakatla reserve was the closest Aboriginal reserve to the proposed location of the project. According to the BC EAO and the CEAA, the Metlakatla were consulted with on the deep end of the consultation spectrum throughout the EA and CEA (BC EAO, 2014; CEAA, 2016). The Metlakatla First Nation is also the community that controls and guides the development of the Metlakatla CEM program within their traditional territory. Therefore, in theory, the cultural valued components selected in the CEA for the Canadian EAA and BC EAO assessments should be identical, or at least very similar to those identified in the Metlakatla CEM program, as input from the Metlakatla First Nation should be influential and carry a large weight in the selection process for each assessment.

6.1.1. Cultural Values selected in PNWLNG vs Metlakatla Case Study

Both the PNWLNG project and the Metlakatla CEM program selected cultural valued components to be included in their CEA (Table 7). Within the Cultural Identity pillar of the Metlakatla CEM program, FSC/Cultural Activities was selected as the priority value. The FSC/Cultural Activities value focused on harvesting, processing, and preparing multiple species and plants of cultural importance by season. Within the federal CEA, the “current use of lands and resources for traditional purposes” valued component focused on traditional activities including fishing and marine harvesting, hunting and trapping, and plant gathering (CEAA, 2016). Although these two valued components included many similar activities and values, the federal CEA only focused on harvesting activities while not considering processing and preparing activities that also hold cultural importance. The provincial CEA did not focus on cultural activities directly, but rather assessed archaeological and heritage resources of cultural importance. The archaeological and heritage resources of cultural importance assessed by the provincial CEA included culturally-modified trees and other archaeological or

heritage sites including cabins, trails, and historic artifact scatters or middens (BC EAO, 2014). It can be seen in the selection of these cultural valued components that the proponent-led EAs of the PNWLNG project and my work with the Metlakatla Fist Nation came to different conclusions about which valued components should be selected and measured to assess cumulative cultural change over time.

6.1.2. Cultural Value Indicators in PNWLNG vs Metlakatla Case Study

As mentioned in the previous section there were differences in the selection of the cultural valued components between the provincial and federal CEA and the Metlakatla CEM program. Upon a closer examination of the indictors selected to measure change to these valued components in each assessment, the differences are even more substantial (Table 7).

Table 7. Selected cultural valued components and indicators to be included in the CEA of the Metlakatla CEM program and the federal and provincial CEAs of the PNWLNG project.

	Metlakatla CEM Program	PNWLNG CEA (EA for BC EAO)	PNWLNG CEA (EA for Canadian EAA)
Pillar	Cultural Identity	Heritage	Section 5(1)(c) of CEAA, 2012
Valued Component	FSC/Cultural Activities	Archaeological and Heritage Resources	Current use of lands and resources for traditional purposes
Indicator(s)	• Level of Effort • Youth Participation Rate	• Destruction or disturbance of Culturally-Modified Trees • Destruction or disturbance of other archaeological or heritage sites	• Access (to lands, waters and resources for traditional purposes) • Resource quantity and quality (e.g. fish health, disruption, sedimentation,) • Sensory environment (e.g. noise, ambient light and visual quality)

The main difference between the indicators selected for the federal CEA assessment and the Metlakatla CEM assessment was that the federal CEA used stressor-based indicators while the Metlakatla CEM program used effects-based indicators. The selection of different indicators for these two assessments would likely result in the assessments coming to different conclusions on the potential significance of

impacts, since the indicators would be influenced by different pathways. The indicators selected in the provincial CEA involved a quantitative assessment of the number of culturally-modified trees or archaeological or historical sites either destroyed or disturbed.

A challenge in understanding cumulative effects is that indicators are needed for both regional and localized changes (Ball *et al.,* 2012; Noble 2013). Having indicators that just focus at a regional scale will result in significant localized effects being ignored (Therivel and Ross 2007). Therefore, effective CEA requires assessment at both regional and localized, project scales (Dubé and Munkittrick 2001; Kilgour *et al*. 2007; Noble 2008; Noble, 2013). As a result, the suite of valued components and indicators selected for a good CEA must be useful in assessing regional change, but also be useful for, or responsive to, project level effects (Dale and Beyeler, 2001; Harriman and Noble, 2008; Seitz *et al*., 2011).

6.1.3. Incorporating Intangible Aspects of Culture

There is a tendency within EA and CEA to look for indicators that are quantitatively measurable, and to use these indictors to quantify potential effects and assess significance. This tendency can be seen in the cultural valued components and indicators selected in the provincial and federal assessments of the PNWLNG project. As discussed in Chapter 2, cultural impacts of a proposed project are not always tangible and some non-tangible elements can be of great concern to a potentially affected Aboriginal community (Ehrlich, 2010). Impacts to cultural areas such as cultural identity, spiritual and heritage values, and social cohesion tend to be misunderstood or ignored in EA and CEA as the impacts tend to be intangible, nonmaterial and difficult to measure and value (McIntyre-Tamwoy, 2004; Christensen *et al*., 2010; Chan *et al*., 2012).

Interestingly, within the federal EA report for the PNWLNG project, the Canadian EAA did not include cultural integrity or governance as valued components yet they stated:

> The Agency [Canadian EAA] is of the view that the potential impacts relating to cultural integrity and governance (including title) resulting from the Project are

likely to be moderate to serious for Aboriginal groups asserting rights and title in the Project area (CEAA, 2016: 167).

The Canadian EAA indicated that the conclusion on the severity of impact to cultural integrity and governance was made due to the permanent loss of Lelu Island which may be part of the settlement of outstanding Aboriginal title claims and that the project would result in the removal of Lelu Island for traditional uses (CEAA, 2016).

King (2013) stated that proponents completing an EA often view archaeological sites and landmarks as one of the only culturally significant aspects of a potentially effected region. Cultural aspects that are not rooted in a place such as animals, plants, belief systems, and traditional food are less likely to be included within the cultural valued components of an EA (King, 2013). Proponents often fail to engage and understand the culture of the communities and the people, and instead focus their assessment of culture and heritage on archaeological sites and landmarks that archaeologists and other "experts" understand and appreciate (King, 2013). This lack of engagement is further demonstrated by the fact that assessments often are conducted based on expert judgment or ad hoc lessons from other projects in another place (Noble, 2008; Seitz *et al*., 2011). This expert-based and distant approach to assessing cultural and heritage impacts may ignore things that the affected communities think are significant (King, 2013). According to King (2013), when assessing cultural and heritage values, "we should back away from reliance on "official" lists and "professional" evaluations, in favor of consulting local communities about how to manage cultural heritage as THEY define it."

The values and indicators selected within the CEA of the PNWLNG project appear to rely on the type of "professional" evaluation and "official" lists criticized by King (2013). Within the heritage pillar of the provincial CEA, the proponent only focused its assessment on archaeological and heritage resources; more specially, on impacts to culturally modified trees. Although the proponent acknowledged Lelu Island as a culturally important area for ceremonial and spiritual purposes for the surrounding Aboriginal groups, this did not appear to be included or factored into the heritage pillar of the assessment. The assessment and determination of significance focused solely on the quantification of the number of culturally-modified trees and other resources that were disturbed or destroyed. The cultural valued component selected within the federal

CEA, “current use of lands and resources for traditional purposes”, is a common valued component used for projects undergoing a federal EA.

The problem of focusing on “professional” evaluations and “official” lists while failing to understand the affected community can be seen in the comments submitted by Aboriginal groups to the Canadian EAA on the conclusions of the agency’s draft EA report for the PNWLNG project. Comments submitted by various Aboriginal groups include:

> The Draft EA Report does not acknowledge that Lelu Island may be a preferred location for reasons other than the practice of traditional activities (such as governance). While other locations where similar traditional activities may be practiced would remain available and unaffected by the Project, the availability of these locations does not mitigate the impacts that the loss of Lelu Island may have on issues such as governance. Aboriginal groups have already lost access to Ridley Island and the loss of Lelu Island would be incremental to existing impacts (CEAA, 2016: 299).

> The assessment of the effects of the Project on the current use of lands and resources for traditional purposes in the Draft EA Report focusses on biophysical effects only (CEAA, 2016: 301)

> The Draft EA Report defines cultural integrity only in relation to the loss of Culturally Modified Trees; no other aspects of cultural integrity are considered (CEAA, 2016: 304).

These comments suggest that non-tangible aspects of culture were missed in the EA report. This was also a challenge within the cultural identity section of the Metlakatla CEM program. My cultural identity interviews with Metlakatla members show that social activities and the traditional language are important components of Metlakatla culture. Many members discussed social activities and traditional language as important parts of Metlakatla culture. However, in the context of potential resource development and cumulative effects other cultural values were prioritized in the CEM pilot project based on the potential for impact. Despite this, I recommended that participation in social activities and the understanding and desire to learn the traditional language continue to be tracked and monitored as an important aspect of Metlakatla culture within the MMC.

One of the reasons that the “FSC activities” value was recommended as a pilot value in the CEM program was because my interview results suggested that it is also a good representation of some intangible aspects of culture such as social cohesion and knowledge transmission. It is important that the data obtained on FSC participation be translated back to assess what the results mean for intangible aspects of culture. This information could help to inform the preservation and revitalization of cultural activities, traditions and programs within the Metlakatla community through a culture and heritage program. A cultural heritage program could also be utilized by project proponents to address other important aspects of culture. This could involve proponents providing resources to a community to develop a cultural program that could work to revitalize and sustain cultural aspects of that community. This type of agreement could be completed outside of the EA framework, potentially through an impact-benefit agreement and could address non-tangible aspects of culture.

6.2. Community Led vs Proponent Led Value Identification

A major difference between the CEA of the PNWLNG project and the Metlakatla CEM program is the process through which the valued components and indicators were identified. The selection of valued components for the CEA of the PNWLNG project was a proponent led process while the Metlakatla CEM program was a community led process. This difference in process helps to explain how the two CEAs came to select different cultural and heritage values and indicators.

The community led process used within the Metlakatla CEM program matches a common recommendation in the literature to ensure appropriate and effective values and indicators are selected. The Metlakatla CEM program ensured that the community members themselves defined what values and indicators would be used to measure and monitor changes from resource development over time. My interviews with Metlakatla members gave them the opportunity to discuss their culture and cultural values as they defined them. The MMC also allowed community members to have an input on which cultural values to pursue within the program and gave Metlakatla managers a means to collect consistent information on these values. This method of community engagement to identify cultural values and indicators for resource development is similar to the approach of Christensen *et al*. (2010) who identified social and cultural values and indicators with an Aboriginal community in the Yukon Territory. Like Christensen’s work

in the Yukon, my interviews, along with the MMC and the Metlakatla CEM, sought to meaningfully engage with Metlakatla people in ways that will be beneficial and useful to the community moving forward, as the values and indicators were selected by the community members themselves (Baxter *et al*., 2001; Christensen *et al*., 2010).

Within the CEA for the PNWLNG project, it is less clear how involved or influential the community was in the selection of valued components and indicators. The BC EAO report stated that the agency "drew on relevant information provided by the Proponent regarding cumulative effects assessment of VCs [Valued Components], as well [as] the potential impacts of a proposed Project on Aboriginal Interests" (BC EAO, 2014: 203). The proponent stated that potentially affected Aboriginal communities were consulted through meetings, workshops, letters and email correspondence (CEAA, 2016). However, there is no clear indication or transparency about how the information provided by Aboriginal communities factored into the decision making process of selecting valued components. The proponent did begin engaging with potentially affected Aboriginal communities prior to formally entering the EA process; however, it is not clear if the information provided by these communities was actually used to select certain valued components and indicators. By the time the first formal comment period of the EA process had begun, a set of valued components and indicators had already been proposed by the proponent. Also, many of the valued components and indicators selected for the PNWLNG project were standard components used in EA and CEA of many other projects in BC and Canada. This may reflect on this proponent led process relying on expert opinion and "official" lists to select valued components and indicators rather than identifying locally relevant components and indicators.

6.2.1. Use and Understanding of Traditional Knowledge

The differences between a proponent led process and a community led process may also underlie differences in the use and understanding of traditional knowledge in the EA and CEA compared to the Metlakatla CEM program. In early EAs, traditional knowledge from Aboriginal groups was typically not considered or incorporated when assessing impacts of industrial development, despite Aboriginal communities impacted from such development having traditional knowledge regarding the land and environment (Stevenson, 1996). Berkes (2008: 7) states that traditional knowledge is "a cumulative body of knowledge, practise, and belief, evolving by adaptive processes and

handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment." Traditional knowledge can refer to "all types of *knowledge about the environment* derived from the experience and traditions of a particular group of people" (Usher, 2000: 188). Traditional knowledge includes the knowledge, experiences, wisdom, and philosophies of Aboriginal groups and comes from years of observations giving a historical and cultural context to the knowledge (Stevenson, 1996; Raymond *et al*., 2010; Adams *et al*., 2014). Traditional knowledge within a community has been passed down for generations through cultural traditions, ceremonies and practices and is unique to a community's culture and place, contributing to their identity (Usher, 2000; Adams *et al*., 2014).

Decision-makers in conventional EAs still tend to favour western science over traditional knowledge when analyzing project impacts (Stevenson, 1996; Usher, 2000). Project proponents and decision-makers within government responsible for analyzing a project's impacts are often non-Aboriginal and may not fully understand traditional knowledge or appreciate the value it can serve (Stevenson, 1996). As a result, the traditional knowledge that Aboriginal groups can provide to western scientists completing an EA may be ignored, taken out of context or misinterpreted in the EA report (Stevenson, 1996; Usher, 2000). In addition, many of the western scientists involved in conventional EA processes lack an understanding of, and ability to incorporate, Aboriginal traditional knowledge and cultural values into CEA and impact mitigation (Huntington, 2000; Van Hinte *et al.,* 2007; Weber *et al*., 2012). A community led process allows the community members of an Aboriginal group to share their knowledge and have that knowledge be a major factor in the identification of cultural values and indicators. A community led process reduces the amount of interpreting of traditional knowledge that must be done by outside 'experts' and reduces the likelihood of this knowledge being misrepresented by a project proponent.

Effectively gathering and incorporating traditional knowledge into CEA can improve understanding and potentially fill knowledge gaps with regards to potential cumulative effects (Parlee *et a*l., 2012). Christensen *et al.* (2010) demonstrated that CEA is strengthened when local and traditional knowledge is properly incorporated as it improves the understanding of the connection between community members, the various resources, development and social changes. Effectively incorporating both

traditional knowledge and western science into EA and CEA processes should lead to improved decision-making and a better understanding of project impacts (Stevenson, 1996; Huntington, 2000; Turner *et al*., 2000; Vanderjagt *et al.,* 2014). Both the Canadian EAA and the BC EAO have come a long way in requiring and soliciting traditional knowledge about potentially impacted Indigenous communities. However, continued challenges include how to access and obtain traditional knowledge from communities and knowledge holders in a time-restricted process and how to incorporate traditional knowledge in ways that can inform an EA or CEA. The CEM program demonstrated the type and depth of information that can be accessed and obtained through more in-depth, meaningful engagement and how that information can be used to inform and measure effects within an assessment framework.

Adequate and Meaningful Participation

Lucchetta *et al*. (2016) identify "adequate and meaningful participation" as one of 17 best practice criteria for conducting CEA. They recommend that a comprehensive participation process be used by the proponent when preparing the CEA (Lucchetta, 2016). Failing to provide adequate tools, resources and time for potentially affected stakeholders and Aboriginal groups will result in these groups not being able to fully participate in the CEA and the CEA will not accurately represent the input and views of the affected groups (Lucchetta *et al.,* 2016). Adequate and meaningful participation of affected groups will help ensure the CEA reflects the concerns and values of affected groups, improves the quality of information and analysis, and increases the credibility of CEA conclusions (Lucchetta *et al.,* 2016).

One indicator that Lucchetta *et al*. (2016) recommend to assess the effectiveness of participation is whether the choice of valued components reflects community priorities. My findings in the present study show that the cultural values and indicators identified by the Metlakatla community members within the Metlakatla CEM program were not fully incorporated or included in the CEA of the PNWLNG project.

In a separate study within the Metlakatla CEM program, Kwon (2016) compares the key marine biophysical valued components and indicators identified by the Metlakatla community with those used in the PNWLNG assessment. Again, it was found that none of the indicators that were selected by the Metlakatla community to be included in the Metlakatla CEM program were fully incorporated or included in the CEA

for the PNWLNG project (Kwon, 2016; Lucchetta, 2016). The differences between the valued components and indicators selected for the Metlakatla CEM program and the CEA of the PNWLNG, in both Kwon (2016) and my current study, indicate that the engagement and participation of stakeholders and Aboriginal groups in the CEA of the PNWLNG project was not sufficient.

6.3. Addressing the weaknesses of CEA in the Metlakatla Case Study vs PNWLNG

I will now revisit and compare how the Metlakatla CEM program and the CEA for the PNWLG project addressed the broader weaknesses of CEA identified in the literature.

6.3.1. Scale

A major difference between the CEA completed for the Metlakatla CEM program and the PNWLNG project was the scale at which they were completed. The Metlakatla CEM program was conducted as a regional approach to CEA whereas the PNWLNG was a CEA conducted within the project-level approach of an EA. The regional assessment area used for the CEA of the PNWLNG project was a 50km by 50 km area centered on the project area, which is a spatial area of 2,500 square kilometers. This spatial scale is much smaller than the spatial scale used for the Metlakatla CEM program, which is approximately 20,000 square kilometers of the Metlakatla traditional territory. The difference in scale may have contributed to the differences in valued components and indicators selected. As mentioned by many scholars, the types of questions that are asked when completing a regional approach to CEA should be different than the types of questions asked by proponents within a project-level approach (Dubé 2003; Harriman and Noble 2008; Seitz *et al.* 2011; Noble, 2013).

As previously mentioned, project-based EAs are generally limited in the spatial and temporal scales at which impacts are considered and as a result they often do not fully consider and include cumulative, interacting effects from multiple projects over larger spaces and time frames (Baxter *et al*., 2001; Therivel and Ross, 2007; Seitz *et al.,* 2011). A good CEA often requires larger spatial and temporal scales compared those used within a project based EA (Dubé, 2003; Harriman and Noble, 2008; Francis and

Hamm, 2011). The Metlakatla CEM program undertook a regional and long-term approach to CEA by looking at the entire Metlakatla traditional territory and establishing a framework to assess and manage cumulative effects long into the future. This broad spatial and temporal scale corresponds with recommendations in the literature on CEA and critiques of project-level EA. Although the CEA of the PNWLNG project considered a regional assessment area which was larger than the assessment area used for project-specific effects, the focus remained on the specific project proposed. For example, the "current use of lands and resources for traditional purposes" valued component had a regional assessment area that was a 50km by 50 km area centered on the project area (CEAA, 2016).

6.3.2. Scoping

Another major weakness identified within the literature is that cumulative effects are typically considered alongside the analysis of project specific effects, which does not allow for linkages or cause and effect relationships of cumulative effects to be properly considered (Baxter *et al*., 2001). Not having scoping that is comprehensive enough at the beginning of the process and not including all the potential cumulative effects impairs the identification and analysis of cumulative effects and the quality of the mitigation and management plans moving forward (Baxter *et al*., 2001). Lucchetta *et al*. (2016) identify conducting comprehensive reviews as one of the 17 best practice criteria for CEA. They recommend that CEA be done comprehensively, where all environmental, social, economic, cultural and health aspects of valued components are incorporated and factored into the assessment (Lucchetta *et al.,* 2016). This will help ensure all potential impacts of a project or actively are accurately identified and understood (Lucchetta *et al*., 2016).

Within the provincial CEA for the PNWLNG project, a CEA was only completed if residual effects from the project specific assessment were predicted to occur after mitigation measures were applied. This is in accordance with the BC EAO's *Guideline for the Selection of Valued Components and Assessment of Potential Effects* (BC EAO, 2013b). If there are no residual effects predicted for a valued component under the project level assessment after mitigation measures are applied, then a CEA is not to be performed. Under both the provincial and federal CEAs of the PNWLNG project, no valued components were added that focused specifically on assessing cumulative

effects at a regional level, as is recommended in the CEA literature. The same valued components used to assess project specific effects were used to assess cumulative effects (see section 3.1.5, Table 2 for provincial CEA and Tables 1 and 3 for federal CEA). To ensure that accurate, relevant and useful valued components and indicators for CEA were selected in the Metlakatla CEM program, interview participants were made aware that when prioritizing values the context was specific to resource development and cumulative effects within their traditional territory.

6.3.3. Guidance

A major challenge to CEA is that there is no single, conceptual approach or framework to conduct CEA that is agreed upon among scientists and decision makers (Seitz *et al.,* 2011). There are a number of different CEA approaches and frameworks discussed within the literature including effects-based and stressor-based approaches (Seitz *et al.,* 2011). This problem was illustrated in this paper as the Metlakatla CEM program undertook an effects-based approach to CEA while the CEA of PNWLNG undertook a stressor-based approach, and the two different approaches came to different conclusions on the identification of valued components and indicators.

Additionally, individual proponents often have little control over, or information about, other present and future development activities occurring in an area that they are required to consider when conducting a CEA (Dubé, 2003; Harriman and Noble, 2008; Francis and Hamm, 2011). As Therivel and Ross (2007) point out, a proponent can be made responsible for managing and mitigating the cumulative effects from its own project, but should not be responsible for managing the effects from projects of other proponents over which it has no control. The CEA of the PNWLNG project highlights this weakness as many new projects have been proposed since the completion of the CEA, while other projects have been cancelled (CEAA, 2016). When conducting a CEA for the Canadian EAA and BC EAO, the assessment must consider past, present and reasonably foreseeable projects and activities (BC EAO, 2013b). Within the *Operational Policy Statement on Assessing Cumulative Effects under CEAA 2012* (OPS) (2015a: 4), reasonably foreseeable is defined as “the physical activity is expected to proceed, e.g. the proponent has publicly disclosed its intention to seek the necessary EA or other authorizations to proceed.” The new projects that have been proposed in the region may not have been considered reasonably foreseeable at the time of conducting the CEA of

the PNWLNG project and as a result, were not factored into the assessment. However, any present or future projects proposed in the region will have to take into account these new projects in their CEA.

Since the future projects in the region have changed compared to what was predicted when the CEA of the PNWLNG was completed, the resulting CEA of the PNWLNG project loses some of its accuracy and credibility. To address this uncertainty, the proponent agreed to undertake follow up studies on many of the valued components; however, how these follow up programs will be designed, what they will measure and how they will influence and inform decisions moving forward is unclear.

In addition, added complications arise as current CEAs are being completed at static points in time. The current approach to CEA makes regional planning difficult and weakens the confidence in the assessment findings as all the CEAs done in a region are considering different projects based on the point in time that the assessment was conducted. The Metlakatla CEM program is not centered on one individual project and is an ongoing, iterative process that can focus on all developments within the traditional territory of the Metlakatla. As part of the Metlakatla CEM program, the MMC census collects consistent data on indicators on an ongoing basis and uses this information to inform management triggers and actions over time. The information collected through the MMC over time will inform management triggers and actions moving forward regardless of what specific project or types of projects are being proposed.

6.3.4. Decision Making

In order to be effective a CEA needs to consider all projects, activities and impacts in a region. The benefit of an effects-based approach to CEA, as in the Metlakatla CEM program, is that it measures the accumulated state of the system and can identify whether performance indicators are at or below an acceptable level based on a comparison with a reference condition (Dubé and Munkittrick, 2001; Noble, 2013). The information provided by this approach can inform assessment processes and support decision making regarding the impacts of development (Noble, 2013). By monitoring how the system has changed as a result of both large- and small-scale developments and other factors, the information can be useful to potential future assessments and guide future development decisions (Noble, 2013). One challenge is

that often the relationship between the accumulated state of the system and specific actions is not clear and direct making it difficult to predict how the accumulated state will change in response to future development projects (Nobel, 2013).

It is often not evident how much of an influence the cumulative effects of a proposed project and the results of a CEA have when decisions are being made regarding whether or not to approve the project (Lawe *et al.,* 2005). Lucchetta et al. (2016) identify transparency in decision making as one of the 17 best practice criteria for conducting CEA. They argue that transparency is essential in both EA and CEA as it provides a clear rationale and criteria to show that decision making is appropriate (Lucchetta *et al*., 2016).

Within EA and CEA, six criteria are used to make decisions on the significance of effects (and cumulative effects) including: magnitude, extent, duration, frequency, reversibility, and resiliency (Lucchetta, 2016; CEAA, 2016). However, as stated in the findings of Lucchetta (2016: 84) “there is no clear combination of these criteria that triggers the determination that an effect is significant.” The determination of whether or not an effect is considered significant appears to be largely based on the subjective assumptions and judgments of proponents and government decision makers resulting in a high degree of uncertainty and potential bias (Lucchetta, 2016).

In addition to determinations of *significance*, there are also decisions made in EA regarding the *likelihood* of adverse effects from a project (including cumulative effects) occurring after mitigation. Under federal EA and CEA, if there are predicted significant adverse effects after mitigation, then a decision is made on whether or not these effects are justified in the circumstances. Lucchetta (2016) determined that the criteria used to make these decisions for the PNWLNG project often appeared to be vague and highly subjective. Under provincial EA and CEA, the BC EAO does not provide clear criteria that are used by the responsible ministers on whether or not to issue an environmental assessment certificate for a proposed project (Lucchetta, 2016).

This comparison of the PNWLNG assessment and the Metlakatla CEM program reveals that the current federal and provincial approaches to incorporating cultural values in CEA, as demonstrated by the CEA of the PNWLNG project, still suffer from the major weaknesses identified within the literature. Similar conclusions were reached in

both Kwon (2016) and Lucchetta (2016), who focused on biophysical valued components rather than cultural valued components. In contrast, the Metlakatla CEM program in tandem with my work involving community interviews and the MMC, followed the recommendations in the literature and addressed the weaknesses of incorporating cultural values into CEA.

6.4. Limitations

In this section, I discuss the limitations of this research. One important message from the literature is that culture is unique and can mean different things to different individuals. Many of the interviews conducted as part of the Metlakatla CEM program were personal and individuals spoke of their own experiences and knowledge of cultural activities, hopes for the future and what culture means to them. The interview participants spoke for themselves and described how important culture is to them, and this does not necessarily reflect the views of other members or the community as a whole. A bias may arise due to only a select few individuals speaking on behalf of the entire community in regards to Metlakatla cultural values (Satterfield *et al*., 2013). I did attempt to achieve a representative sample of the community by interviewing an array of respondents in age, gender and location. Even so, there may be some opinions of community members that were not captured, and everyone in the community may not agree with the opinions that were captured. In fact, there were a variety and sometimes even contrasting views and opinions shared about Metlakatla culture within the 17 community members interviewed. Steps were taken to ensure that the views shared by interview respondents were representative of views shared by the community members more broadly. This included asking similar cultural questions in the interviews to the entire membership through the MMC, meetings with Metlakatla department managers on interview findings and establishing an ongoing working group on the CEM program that includes Metlakatla members. Also, Aboriginal communities and their associated cultures are very diverse and should not be treated as all being similar entities (Turner *et al*., 2000). Therefore, the conclusions and results of the Metlakatla CEM program may not be directly applicable in other communities, but the process to achieve the results can be followed.

This work as part of the Metlakatla CEM program was completed as an initial look into what community members are concerned about regarding the effects of

development in their traditional territory on FSC and other cultural values. The cultural value rankings by members were based on preliminary discussions with reference to industrial development in their traditional territory. As a result, the value rankings indicated by interview participants could be based on their initial sense of what should be measured and kept track of in that context. If more information was provided to participants and more discussion took place about how development projects may potentially affect the values, it might influence the ranking of values by participants and the order of values could potentially change. The fact that certain cultural values were ranked lower than others does not necessarily mean that they are not important to the Metlakatla people; rather, these cultural values did not rank highly when compared to the other values in terms of the interview context. The context that the interview questions were asked was specific to resource development and cumulative effects; therefore, the findings may not apply in other contexts. The intention of the interviews was to gather information and data to start a discussion within the community about priorities and cultural values. Readers should be cautious about taking the information and data collected through the interviews beyond this context and setting.

Cultural norms, skills and practice will change and evolve over time, but a community can maintain cultural continuity by ensuring that practices continue to reflect the community's cultural principles and values. The ranking of cultural values in the Metlakatla CEM program only provides a snapshot in time of community values associated with resource development and cumulative effects. It is expected that community values and priorities will change over time as demographics and experiences change.

Interview participant feedback about many questions concerning culture and potential indicators involves a high degree of trust by the participant in the researcher to willingly provide such sensitive information (Huntington, 2000; MDC, 2011; Day *et al*., 2014). If there is an unwillingness to present information to the interviewer this will limit the accuracy and precision of indicator selection and understanding of potential cumulative effects (Christensen *et al.,* 2010). Such a limitation may be particularly problematic when there is a short time frame to conduct semi-structured interviews and research.

It was identified within the literature that there is also a tendency or bias for interviewees to focus on what is wrong or "not right" with the current state of affairs (Parlee *et al*., 2012). Within my research this could result in interview participants putting more emphasis on cultural values that have already been negatively impacted in their community. However, it appears in this instance that this was not the case as both language and social activities were brought up by multiple participants in section 1 of the interviews, which asked about aspects of culture not captured by FSC activity, but these values ranked low compared to other cultural values in section 2 of the interview which asked what values should be kept track of and protected in terms of cumulative effects and resource development. Many interview respondents indicated that language and social activities were important parts of Metlakatla culture and that they hoped that these values can be revitalized within the Metlakatla community; however, other values were prioritized to keep track of and protect within the context of cumulative effects and resource development.

As previously mentioned, due to the limited resources of the Metlakatla First Nation, a set of pilot values and indicators were selected for the CEM pilot program (see section 4.4, Table 5). Within the Cultural Identity pillar of the CEM program, FSC activity is the only value and it has just two selected indicators ("household participation rate" was removed as an indicator; see recommendations 2 and 3 in section 5.5.1), although I did recommend that information and data on language and social activities continue to be collected even if it is done outside of the CEM program (see recommendations 4 and 5 in section 5.5.1). When a monitoring and management system, such as the Metlakatla CEM program, relies on only a few indicators to monitor change in a region, there is a risk that those indicators will not pick up all the important changes and impacts that occur (Day *et al*., 2013).

Additionally, traditional knowledge tends to be very personal and different people may interpret a similar event or information in differing ways, making it challenging for the interviewer to represent all concerns in a simplified indicator (Raymond *et al*., 2010). The literature has documented the challenge of taking lived experience and traditional knowledge provided by communities and then translating this information into separate quantifiable indicators for planning and management (Agrawal 2002; Christensen *et al* 2010). Within my research, caution should be taken when breaking up Metlakatla culture into separate indicators and assuming these indicators represents the complete picture

and all of Metlakatla culture. Although these indicators selected represent important aspects of Metlakatla culture, there is much more to that culture than what is being summed up in a few indicators in their CEM program.

6.5. Further Research

In this section I discuss future research relating to the Metlakatla CEM program and the incorporation of cultural values into CEA.

6.5.1. Change in Value Rankings

Further research should observe whether or not the value rankings by Metlakatla members change over time. Of particular interest will be whether the values and priorities indicated by the Metlakatla youth will stay the same as they become adults and decision-makers of the community in the future, or will evolve to be more similar to the values and priorities currently indicated by Metlakatla adults. If the youth values indicated in this report remain the same into adulthood then the results suggest that there will be a shift in the values and priorities for the Metlakatla community.

Additionally, it would be worthwhile to investigate whether the value rankings would change if more information was provided to members and more discussion of culture took place prior to having them rank the cultural values. As previously mentioned, the cultural value rankings by members were based on preliminary discussions without providing further information to interview participants. If more information was provided to participants on how development projects may potentially affect the values, this may influence the ranking of values by participants and the order of values may potentially change.

6.5.2. Establish Management Triggers and Actions for Cultural Values in the Metlakatla CEM Program

The next step in the Metlakatla CEM program for FSC and other cultural values and indicators is to establish management triggers and actions. Establishing management triggers and actions for FSC indicators and other cultural values will help the Metlakatla to measure, monitor, and respond to changes within their traditional

territory (Quinn *et al*. 2002; Seitz *et al*. 2011; Noble, 2013). Now that the current state of indicators within the cultural activities section is known based on the results from the 2016 MMC, workshops with the community must be pursued to set meaningful and relevant management triggers and actions for each of the identified indicators. Once established, these management triggers and actions will inform decision makers on when to take action and what action needs to be taken when certain triggers are crossed (Noble, 2013). Having consistent data collected on these indicators within the MMC will allow for the decision makers to track the indicators and respond to changes over time according to the management triggers and actions.

When setting the management triggers and actions, Noble (2013) recommends a precautionary approach with a set of tiered thresholds. This may be developed by engaging the community members to set low, moderate and severe triggers and associated management actions for each indicator. It will be paramount for the Metlakatla to continue to collect consistent data through the MMC on cultural values and indicators to continue to track changes and allow for appropriate management actions to be taken to minimize and avoid further impact or irreversible change.

6.5.3. Apply this methodology for identifying cultural values and indicators in another community

The case study methodology used to identify cultural values and indicators in the Metlakatla CEM program should be applied in another Aboriginal community. Conducting a similar process in a nearby community or in a community in another region of the country would further test this methodology and allow for a comparison of results between communities. The process used to identify values and indicators in the Metlakatla CEM program could be applied by proponents or researchers within other Aboriginal communities to inform CEA and EA value selection.

6.5.4. Integrated Approach between CEA and Regional CEM

An integrated approach between regional CEM and the current project-specific CEA would allow for an understanding and monitoring of both localized effects and regional cumulative effects. Taking the current project-specific CEA process and integrating it into the larger regional CEM framework would result in a cumulative effects

assessment and management (CEAM) system. The main focus of project proponents is on their own project and getting it approved (Seitz *et al.,* 2011; Noble, 2013). An integrated approach should provide a proponent operating in a specific region of the country or province with standardized terms of reference for assessing cumulative effects (Noble, 2013). This would allow for information and data collected by proponents at the project level to be useful and relevant for larger, regional scales of CEM beyond the proponent's individual project (Noble, 2013). Standardized terms of reference of CEA to be followed by proponents operating within a specific region of the country or province would also provide guidance and ensure consistency in the assessment of cumulative effects and the values and indicators that are assessed and monitored (Noble, 2013).

The major difference between project-based CEA and regional CEM is that CEA, as seen in the PNWLNG project, is typically a stressor based approach whereas regional CEM, as seen with the Metlakatla CEM case study, is often an effects based approach. Once the valued components have been identified, the effects based approach must work backwards to identify policies to achieve desired thresholds for these valued components, which can then inform decisions on specific developments and their cumulative contribution to valued components in a region.

A CEAM approach is a regional planning approach that starts with understanding what a region wants to achieve and then outlines options and scenarios for how to get there. An integrated CEAM approach is fundamentally different from typical EA and CEA as it moves the focus from impact assessment to community based planning.

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Appendix A.

Metlakatla Cultural Values and Indicator Interview

Background

[Opening script] "The Metlakatla First Nation is working with researchers from Simon Fraser University to conduct a regional cumulative effects management (CEM) program. The goal of the CEM program is to improve the understanding of the potential impacts and benefits of proposed developments in the traditional territory of the Metlakatla First Nation to specific values. Phase 1 of the CEM program included extensive one-on-one and group consultation with Metlakatla managers and community members. Through that process, the Metlakatla identified food, social, and ceremonial (FSC) activity as a priority cultural value for the Metlakatla people. FSC activity may be commonly referred to as traditional harvest, traditional practices, and/or traditional foods and gathering.

I recognize that more interaction with Metlakatla members is needed to ensure that cultural values are represented in the CEM program with appropriate indicators. Indicators are measurements that will be used to track and monitor changes to specific values over time to inform management actions. For this reason, I would like to talk to you more about your involvement in harvesting, processing, preparing, or consuming any traditional foods from hunting, fishing, gardening, gathering, and trapping. I will refer to these as traditional harvesting and use activities.

I have finished a review of articles, reports and documents on cultural identity and indicators. One of the things I found was that what culture is, and how it can be measured should be defined by the community itself. Therefore, your insights and feedback throughout this interview will help to come up with useful indicators to be implemented in the Metlakatla CEM program.

I feel it is important to say that I come from a small town in Ontario and have not lived or experienced your culture and do not know what it means to be Metlakatla. For these reasons, I feel it is important to talk with those who have lived and experienced Metlakatla culture such as yourself. The feedback you can provide will be very valuable, meaningful and relevant to the cultural identity section of the Metlakatla CEM program. This work I am doing is also part of my master's degree research.

Do you have any questions?"

Section 1 – FSC

Q 1.) Do you participate in any of the traditional harvesting and use activities defined above? If so, which ones?

Probe: How often do you participate in traditional harvesting and use *activities each week?*
How does this vary throughout the year by season (fall, winter, summer, spring)?
Would you prefer to participate more? In what specific activities? How much more and in what ways?
Who do you often participate in traditional harvesting and use *activities with?*
When you think about participation in traditional harvesting and use*, do you tend to think about the species you harvest or the activities you participate in?*

Q 2.) Is participating in traditional harvesting and use activities important to you?

Probe: Do you feel it is important for you to participate in traditional harvesting and *use activities? How come?*
What sort of factors help or hinder your ability to participate in traditional harvesting and use *activities*

Q 3.) What cultural aspects/elements/components does participation in traditional harvesting and use activities represent for the Metlakatla?

Probe: How reflective is participation in traditional harvesting *and use activities to cultural identity?*
Transfer of traditional knowledge? Practicing traditional harvesting skills? Participating in traditional activities? Harvesting traditional species?

Q 4.) Do you believe eating traditional foods is important in relation to participation in traditional harvesting and use?

Probe: What sort of traditional foods are important to consume?
How reflective is eating traditional foods to cultural identity?
Is eating traditional foods and harvesting traditional foods both important to culture? Equally?
Are the traditional foods that you consume, harvested by you or come from other sources? What are these sources?
Has your participation in traditional harvesting and use *activities changed since the introduction of the Food Fish Distribution Program?*

Q 5.) Have there been any changes in your own personal participation in traditional harvesting and use activities over time? How about changes in other Metlakatla members?

Probe: If so, what kind of changes have you see?

Have there been changes to the species being harvested? What about changes to the activities being participated in (ie. harvesting, processing, preparing, or consuming)?

Q 6.) On a scale of 1-5 where 1 is "very bad representation" and 5 is "very good representation", how representative of Metlakatla culture is participation in traditional harvesting and use activities? Why?

Very poor representation	Poor representation	Moderate representation	Good representation	Very good representation
1	2	3	4	5

Q 7.) Are there any particular activities that are more representative of Metlakatla culture than others? If so, why?

[Ask only if they answer 1-3 on scale in question above]

Q 8.) Often the word traditional knowledge or TEK gets talked about a lot. What does transfer of traditional knowledge mean to you when participating in traditional harvesting and use?

Probe: How does this transfer of knowledge happen? Between who? Is it always verbal? How often must it happen?
What parts of knowledge are important to transfer (species, locations)?
Does knowledge transfer happen when eating traditional foods?
How about during participation in traditional harvesting and use *activities?*

Q 9.) Through feedback with Metlakatla members, FSC participation rate was identified as a potential indicator to represent changes to these traditional harvesting and use activities. There were three proposed ways this indicator could be used to represent FSC activities. These were identified as youth participation rate, household participation rate and/or level of effort.

Youth participation rate is defined as the percent of youth (between 15 to 24 years old) participating in traditional harvesting and use activities. This was identified as important for cultural continuity and for the knowledge transfer of cultural practices.

Do you have any comments about this indicator?
Should youth participation in FSC activities be measured by the percent of the youth population that is participating in a given activity or by the percent of total participants that are youth?
What percent of youth participation do you think is appropriate to maintain these activities for future generations?
Are there certain limits or levels of acceptable change you would want to see in place for this indicator?
What percent of youth participation would result in negative consequences to Metlakatla cultural identity?

Household participation rate is defined as the percent of Metlakatla households participating in traditional harvesting and use activities.

Do you have any comments about this indicator?
How could household participation in FSC activities be measured?
What percent of household participation do you think is appropriate to maintain these activities for future generations?
Are there certain limits or levels of acceptable change you would want to see in place for this indicator?
What percent of household participation would result in negative consequences to Metlakatla cultural identity?

Level of effort is the amount of time people spend participating in traditional harvesting activities.

How could level of effort be measured? Does the level of effort matter when participating in traditional activities? If so, how?
What level of effort do you think is appropriate to maintain these activities for future generations?
Are there certain limits or levels of acceptable change you would want to see in place for this indicator?
What level of effort would result in negative consequences to Metlakatla cultural identity?

Q 10.) Are there other indicators or ways to measure participation in FSC activities or traditional harvesting and use?

Section 2 – Other Cultural Values and Indicators

[Script] "There is more to culture than just participating in traditional harvesting and use *activities. The following questions focus on other important aspects of Metlakatla culture and values."*

Q 1.) Are there any cultural aspects of the Metlakatla that are not represented by participating in traditional harvesting and use activities?

Probe: Traditions? Cultural knowledge? Cultural practices and customs?
Values?
How could these aspects be measured or represented as an indicator?

[Script] "Currently, there are more than 60 major development projects proposed in the traditional territory of the Metlakatla First Nation. These projects offer benefits but may also have unintended impacts on the things we care about including Metlakatla culture. To ensure the protection of cultural values for the Metlakatla people, cultural indicators will be implemented in the CEM program to monitor and manage changes from development. In order to do this I want to know your thoughts on how future development may affect aspects of your culture and what you may be concerned about. "

Q 2.) If more natural resource development were to happen in the Metlakatla traditional territory, do you think it would impact Metlakatla culture? If so, how?

Are there certain limits you would want to see in place to prevent cultural change?
Are there certain levels of change that you are unwilling to accept?
How about certain benefits to culture you would hope to see?
What about negative outcomes to cultural identity you would like to avoid?

Q 3.) Given the potential of cumulative effects from future development to impact Metlakatla cultural identity, how would you rank the following cultural values, in terms of most important to keep track of and protect? These are common cultural values that I identified during my review of literature.

Value	Highest Priority → Lowest Priority					
	1	**2**	**3**	**4**	**5**	**6**
Speaking Sm'algyax						
Participating in social activities (feasts, arts such as cedar weaving, dancing, drawing, carving or regalia making).						
Protection of culturally significant locations						
Eating key traditional foods						
Harvesting of key traditional foods and other goods						
Stewardship of land and marine resources						

[Focus questions on the top 2 highest priority values identified by interviewee]
Probes:

Speaking Sm'algyax:

Q.) What was it that made you select this value as a priority for you?
Q.) Has the use of Sm'algyax language changed over time? If so, how? What is it like currently?
Q.) The most recent MMC found a low number of people interested in speaking the language, do you know why this may be?
Q.) How could we measure or what could be used to indicate changes to the Sm'algyax language?

# of fluent/semi-fluent speakers in Sm'algyax? # of residents actively participating
in Sm'algyax language education?

Participating in social activities:

Q.) What was it that made you select this value as a top priority for you?

Q.) Has participation in social activities changed over time? If so, how? What is it like currently? **Q.)** What activities are most important to continue? **Q.)** How could we measure or what could be used to indicate changes to participation in social activities? *Number of events held each year? Language classes? Number of participants?*
Protection of culturally significant locations: **Q.)** What was it that made you select this value as a top priority for you? **Q.)** What is it about culturally significant sites that relate to culture? **Q.)** How could we measure or what could be used to indicate changes to culturally significant locations? *Number of archaeological sites recorded? Number of hectares protected/managed?* *Number of heritage features/ sites protected? Areas/region vs specific site?*
Eating key traditional foods: **Q.)** What was it that made you select this value as a top priority for you? **Q.)** Has eating traditional foods changed over time? If so, how? What is it like currently? **Q.)** Are there certain traditional foods that are more important to consume than others? Why? **Q.)** How could we measure or what could be used to indicate changes to eating key traditional foods? *# of days key traditional foods are consumed? Per week? Per month?*
Harvesting of key traditional foods and other goods: **Q.)** What was it that made you select this value as a top priority for you? **Q.)** What traditional foods and goods are important to harvest? **Q.)** What is it currently like to harvest in the Metlakatla traditional territory? **Q.)** Has harvesting in the Metlakatla traditional territory changed over time? If so, how? **Q.)** How could we measure or what could be used to indicate changes to harvesting key traditional foods? *Harvesting rates? Catch statistics? Hunting statistics? Trapping statistics? Harvest levels? Participation in FSC activities? Number of salmon caught? Pounds of halibut caught?*
Stewardship (taking care) of land and marine resources: **Q.)** What was it that made you select was this value as a top priority for you? **Q.)** Define what stewardship of land and marine resources means to you? Does this include knowledge about the traditional territory? **Q.)** Based on your definition, has stewardship of land and marine resources changed over time? If so, how? What is it like currently? **Q.)** How could we measure your definition of stewardship or what could be used to

indicate changes to stewardship of resources?
Consistency of development with the LUP and MUP? Vessel traffic volume? Power in decision making?

Q 4.) Are there any activities or indicators other than the ones listed above that would provide a good representation of Metlakatla culture?
[Make note of responses to Q 1 in this section to probe]
Probe: How could that be measured over time?

Q 5.) The following cultural elements have the potential to be impacted from future development in the Metlakatla traditional territory. Please rank these elements (from 1 to 5) in terms of which you believe are the most likely to be impacted by cumulative effects and industrial development. The number "1" will represent the cultural element that is the "most likely" to be impacted and the number "5" will represent the element that is the "least likely" to be impacted. Each cultural element must have a value of 1-5 written beside it and each value can only be used once.

_____ Sm'algyax Language
_____ Culturally significant locations
_____ Traditionally Harvested species
_____ Traditional Activities (ie. harvesting, processing, preparing, or consuming)
_____ Access to harvesting locations

Q 6.) Are there any aspects of culture missing in the above question that you think may be impacted from future development?

<u>Section 3 – Culture</u>

[script] "I would like to end the discussion on the topic of culture in a more general sense to get an understanding and appreciation of what is means to be Metlakatla."

Q 1.) Suppose someone unaware of the Metlakatla First Nation came to the community, what would you tell them about the Metlakatla people and how would they know that someone is from the Metlakatla First Nation. In other words what does it mean to be Metlakatla?
How is Metlakatla different from Coast Tsimshian and Lax Kw'alaams?
How is Metlakatla different from other nations?

Q 2.) What aspects of Metlakatla culture are important to pass down to Metlakatla youth?
What are the most treasured cultural traditions, values and principles that you want to preserve and practice into the future?

Q 3.) Is there anything else you would like to tell me about Metlakatla culture and the preservation of Metlakatla culture into the future?