Coffee Gold Mine

YESAB Project Proposal

Appendix 21-A Social Economy Valued Component Assessment Report

VOLUME IV

Prepared for:
Kaminak Gold Corp. a subsidiary of
Goldcorp Inc.
Suite 3400-666 Burrard Street
Vancouver, BC Canada V6C 2X8

Prepared by:
Hemmera Envirochem Inc.
2237 2nd Avenue, Suite 230
Whitehorse, YT Canada Y1A 0K7

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ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

Acronym / Abbreviation	Definition
BMP	best management practice
CEA	cumulative effects assessment
Dawson	City of Dawson
DPRA	Development, Planning, Research & Analysis Ltd.
FNNND	First Nation of Na-cho Nyäk Dun
Goldcorp	Kaminak Gold Corporation, a wholly owned subsidiary of Goldcorp Inc.
IC	Intermediate Component
LAA	Local Assessment Area
NAR	Northern Access Route
Project	Proposed Coffee Gold Mine
Proponent	Kaminak Gold Corporation, a wholly owned subsidiary of Goldcorp Inc.
RAA	Regional Assessment Area
ROW	right-of-way
RTC	registered trapping concession
SFN	Selkirk First Nation
TH	Tr'ondëk Hwëch'in
TK	Traditional Knowledge
UFA	Umbrella Final Agreement
VC	Valued Component
WRFN	White River First Nation
YESAA	*Yukon Environmental and Socio-Economic Assessment Act*
YESAB	Yukon Environmental and Socio-economic Assessment Board

Symbol, Unit of Measure	Definition
%	percent
km	kilometre

1.0 INTRODUCTION

This report provides an assessment of the potential effects and cumulative effects on the Social Economy Valued Component (VC) from the proposed Coffee Gold Mine (Project). Valued components, subcomponents, and indicators are used to focus the assessment on information known to be important or of key interest to First Nations, government, and other technical reviewers. The report identifies and characterizes potential interactions between the Project and the Social Economy, and describes the mitigation measures and protection plans that Kaminak Gold Corporation, a wholly owned subsidiary of Goldcorp Inc. (Goldcorp or Proponent), will implement to eliminate, reduce, or otherwise control adverse Project-related effects on the Social Economy VC. Yukon's social economy is an important socio-economic value to communities as it supports the quality of life, as well as the economic, spiritual, and cultural well-being of individuals, which enhance community life.

The information provided in this assessment report supports the Project Proposal to be submitted to the Yukon Environmental and Socio-economic Assessment Board (YESAB) Executive Committee for screening under the *Yukon Environmental and Socio-Economic Assessment Act*, SC 2003, c. 7 (YESAA), and applications to be submitted for a Quartz Mining Licence and a Type A Water Licence from the Yukon Water Board, among other permits and licences.

This report is structured so that reviewers can find the information required to review the assessment of the Project's potential effects on the Social Economy. The Introduction section provides the rationale for the selection of Social Economy as a VC, explains the selection of Social Economy subcomponents, and describes the scope of the assessment. It also identifies the indicators used to quantitatively and qualitatively assess the potential effects of the Project on Social Economy. The spatial, temporal, and technical boundaries of the Social Economy assessment are also identified.

The Assessment Methods section describes the quantitative and qualitative approaches used to assess potential Project-related and cumulative effects on the Social Economy. The methods used to predict effects on the Social Economy rely on use of the best available information, environmental assessment best practices, and Project-specific technical analyses. While general methods of the overall assessment are described in **Volume 1**, **Section 5.0 Assessment Methodology**, the methods described in this section are specific to those used for the Social Economy.

The Existing Conditions section describes baseline conditions for the Social Economy to set the context for the effects assessment. The section includes a summary discussion of the regulatory context in which the Proponent assessed effects; there is a summary section describing how Traditional Knowledge (TK), scientific, and other information, including the results of baseline studies conducted for the Project, have informed the description of existing conditions.

The Assessment of Project-Related Effects (**Section 4.0**) describes the potential effects of the Project on the Social Economy, identifies mitigation measures incorporated into Project design and outlines other Social Economy specific mitigation measures to be implemented during Project design and management. The section describes the Proponent's commitments related to the elimination or reduction of adverse effects to the Social Economy. Potential residual effects (i.e., adverse effects remaining following the application of mitigation measures) are identified and a determination of the significance of those effects is presented. The technical details of the effects assessment on subcomponents are provided in subsections.

The Assessment of Cumulative Effects (**Section 5.0**) provides an overview of the potential combined effects of other past, present, and reasonably foreseeable future projects and activities on the Social Economy. The section characterizes the combined residual Project-related effects with the residual effects of other projects and activities that have occurred, are currently occurring, or are likely to occur to the Social Economy VC. Where necessary, and if separate from Project-related effects, mitigation actions to address potential cumulative effects are described.

The Summary of Effects Assessment on Social Economy (**Section 7.0**) provides an overview of the technical assessments described in the Project-related Effects and Cumulative Effects sections.

The Effects Monitoring and Adaptive Management section (**Section 8.0**) describes the approach that the Goldcorp will take to verify effects assessment findings and the effectiveness of mitigation measures, and actively respond to and manage unexpected effects as the Project proceeds. It identifies how mitigation techniques may be modified in the event of unexpected Project-related or cumulative effects, and provides for continued collaboration with First Nations and regulators during Project monitoring and effects management decision-making. It also demonstrates the Goldcorp's commitment to regular monitoring and re-assessment, and the Goldcorp's willingness to implement changes necessary to effectively mitigate Project-related effects or cumulative effects on the Social Economy VC.

The Social Economy assessment relies on information developed during the assessment of Air Quality and Greenhouse Gas Emissions (**Section 9.0**), Noise (**Section 10.0**), Surface Water Quality (**Section 12.0**), Fish and Fish Habitat (**Section 14.0**), Vegetation (**Section 15.0**), Wildlife and Wildlife Habitat (**Section 16.0**), Birds and Bird Habitat (**Section 17.0**), Human Health Risk Assessment (**Appendix 18-C**), Demographics Analysis (**Section 19.0**), Economic Conditions (**Section 20.0**) and Land and Resource Use (**Section 24.0**). The assessment findings, in turn, support the assessment of Community Infrastructure and Services (**Section 22.0**) and Community Health and Well-Being (**Section 25.0**).

1.1 ISSUES SCOPING

The scope of this assessment is based on various guidelines provided by YESAB (YESAB 2016) and regulatory agencies. While conducting baseline studies, the Project team reviewed the mine plan and detailed technical information related to socio-economic, health and traditional values in the vicinity of the Project. Available information regarding other existing and proposed quartz mining projects in Yukon, including environmental and socio-economic assessments, was also reviewed.

Through a comprehensive primary data collection program, issues and concerns were also identified through key informant interviews, focus groups, and surveys with regulators, First Nations, and communities. The scope of assessing the Social Economy VC considered the Project's potential direct and indirect effects, residual effects, and cumulative effects associated with the Construction, Operation, Reclamation and Closure, and Post-closure Phases.

To support the scoping of issues for the Project, Goldcorp has undertaken an engagement and consultation process, as defined under Section 50(3) of YESAA (refer to **Section 3.0 Consultation and Engagement**). Issues, concerns, and information were also identified from the Project's engagement and consultation process, and included affected First Nations and communities, government agencies, and interested persons or other stakeholders who may be interested in the Project and its related activities. This consultation and engagement process has included Technical Working Groups established with First Nations, government departments, community meetings, one-on-one and small group meetings, and ongoing communications such as print communication, newsletter, and website updates, including specific presentations and discussions regarding key themes of interest and exploration of candidate VCs to represent the themes. Information and issues identified through secondary research identified the non-wage economy (e.g., volunteer sector) and traditional economy (i.e., subsistence-based) as components of the mixed economy, which characterize the economy of Yukon communities.

Several concerns relevant to the assessment of the Social Economy are related to direct and indirect effects to the local non-wage and traditional economies, and their contributions to the larger socio-economic landscape. Registered trapping concession (RTC) holders expressed that their biggest Project-related concern was increased access to the public. During meetings with Tr'ondëk Hwëch'in (TH), concerns were raised over the potential effects associated with increased access to areas on their Traditional Territory where they currently conduct various traditional activities. Goldcorp continues to consult and engage with affected First Nations and communities, government agencies, and other stakeholders.

This information supported scoping of the effects assessment, including the identification of candidate VCs, selection of the Social Economy as a VC, and the establishment of assessment boundaries for Social Economy.

1.2 SOCIAL ECONOMY AS A VALUED COMPONENT

Social Economy was selected as a VC in accordance with the selection process presented in **Section 5.0 Assessment Methodology**. Social Economy was selected as a VC due to the potential for the Project to change environmental conditions through the development of the Project, as well as increase the demand for goods and services, which has the potential to influence the Social Economy subcomponents (i.e., non-wage economy and traditional economy).

1.2.1 CANDIDATE VALUED COMPONENT

In addition to professional knowledge and judgement, the selection process involved the consideration of available TK, scientific and other information, input provided during the Project's consultation and engagement program, and discussions with other members of the Project team.

Social Economy was identified as a VC because there are distinct interactions between the Project and the Social Economy, distinct ways that the Project's potential effects on Social Economy can be measured, and distinct pathways of effects (**Table 1-1**). Social Economy was selected as a VC to assess the Project's anticipated interactions with the non-wage and traditional economy, reflecting local values, consultation, and TK. The Project has the potential to result in direct environmental changes as a result of Project-related activities, as well as cause an increase in the demand for goods and services and potentially influence various aspects of the Social Economy.

Table 1-1 Social Economy – Evaluation Summary

Candidate VC	Project Interaction			Third Party Input		Supports the Assessment of Which Other VC?	Selected as a VC?	Decision Rationale
	Interaction?	Project Phase / Project Component / Activity	Nature of Interaction	Source	Input			
Social Economy	Yes	Construction, Operation, Reclamation and Closure	The Project will increase the need for goods and services; the participation of residents to supply these services through employment or business opportunities may affect their current contribution of and participation in the existing social economy. The Project will also change current environmental conditions through Project Construction and Operation. This has the potential to directly affect the social economy by changing access environmental conditions, and/or the desirability of lands and resources on which individuals depend for traditional and/or non-wage economic activities. Further, Project-related environmental changes have the potential to affect such intangible aspects of land and resource use as sense of place and cultural and spiritual well-being.	First Nations Regulatory body Public Stakeholder	Concerns related to direct and indirect effects to the local traditional and non-wage economies, and their contributions to the larger socio-economic landscape.	Economic Conditions Education Services Community Infrastructure and Services Community Health and Well-being	Yes, includes the subcomponents: • Traditional economy • Non-wage economy	Project development will change environmental conditions, as well as increase the demand for goods and services, which has the potential to influence the non-wage economy and the traditional economy. Potential effects to the Social Economy are assessed through consideration of Project-related increased demand for goods and services, and Project development.

1.2.2 SOCIAL ECONOMY VALUED COMPONENT SUBCOMPONENTS

The Social Economy VC comprises two subcomponents: the non-wage economy and the traditional economy **Table 1-2**. These two subcomponents collectively describe and facilitate the assessment of the role and value of the 'cash-in-kind' component of the mixed economy that characterizes the Yukon economy.

The non-wage economy "recognizes the value of non-monetary productive activit[ies]" (Staples 1988), and includes non-monetary activities conducted by all individuals residing within a certain area or region that interacts with the Project. This subcomponent is inclusive of all individuals including First Nation and non-First Nation people.

Support of the traditional economy is recognized in YESAA as one of the purposes of the Act. More specifically, Section 2 states: "the purposes of this Act are…to recognize and, to the extent practicable, enhance the traditional economy of Yukon Indian persons and their special relationship with the wilderness environment" (YESAA, section 2, p.9).

While individual First Nations may have adopted their own unique definition and understanding of the term traditional economy, this term generally refers to the subsistence-based economy, which is intrinsically linked to the culture, traditions, language, values, and land and resource use of each First Nation. As noted by Usher et al. (2003), "…people do not choose between living in a "traditional" economy or "modern" economy, nor are they in transition between the two. The modern economy in northern communities is in fact a mixed, subsistence-based economy". The traditional economy is explicitly recognized by YESAA and includes those First Nations and respective citizens who have established or asserted traditional territories that interact with the Project.

Table 1-2 Subcomponents for the Social Economy

Subcomponent	Representative of/Focus on	Rationale for Selection
Non-wage Economy	• Non-profit and non-governmental organizations[1] • Volunteer sector • Informal social economy activities[2] • Subsistence activities	The non-wage economy is a recognized component of Yukon communities' mixed economies. It supports and contributes to the socio-economic well-being of individuals and communities.
Traditional Economy	• Traditional economic activities • Engagement in the traditional economy • Value of the traditional economy	The traditional economy is a distinct component of the mixed economy, which is unique to First Nation peoples. Like the non-wage economy, the traditional economy supports and contributes to the socio-economic well-being of individuals and communities, and contributes to the cultural and spiritual well-being of First Nations. While individual First Nations may have adopted their own unique definition and understanding of the term traditional economy, this term generally refers to the subsistence-based economy, which is intrinsically linked to the culture, traditions, language, values, and land and resource use of each First Nation.

Notes:

1. Non-profit and non-governmental organizations are included in the assessment because of the contributions they make to the social economy.
2. Informal social economy activities include bartering and cooperative buying.

1.2.3 SOCIAL ECONOMY INDICATORS

Indicators are quantitative or qualitative measures that can be compared to baseline values or conditions to evaluate potential Project-related effects and cumulative effects on VCs. The indicators identified for each Social Economy subcomponent are summarized in **Table 1-3**.

Table 1-3 Social Economy Subcomponent Indicators

Indicator	Rationale for Selection
Non-wage Economy	
Type and diversity of non-profit and non-governmental organizations	The existing condition, quantity, and diversity of non-profit and non-governmental organizations can indicate the extent of an aspect of the non-wage economy that has the potential to be directly and indirectly influenced by Project-related employment.
Type and level of engagement in volunteer sector	The volunteer sector qualitatively describes the role and value that volunteers contribute to the non-wage economy. Project-related changes to employment and workforce have the potential to influence the volunteer sector through changes to population, income, and availability of local residents. The existing volunteer sector can help to indicate the extent to which the Project is directly and indirectly influencing the non-wage economy through Project-related employment and population change.
Type and level of engagement in Informal social economic activities	Informal social economic activities qualitatively describe the type and level of engagement in these activities, as they are a component of the existing non-wage economy. Informal social economic activities can indicate to the extent to which the Project is directly and indirectly influencing the non-wage economy through Project-related employment and population change.
Subsistence activities	Subsistence activities qualitatively and quantitatively describe the tangible (i.e., monetary equivalent) and intangible value (i.e., quality of life, food security, health, etc.) that subsistence activities contribute to the non-wage economy. These metrics of subsistence activities can help to indicate the extent to which the Project is directly and indirectly influencing the non-wage economy through an increased demand for goods and services, as well as through Mine Site development and road activities. Subsistence activities that form part of the traditional economy of the potentially affected First Nations are discussed and assessed under the traditional economy subcomponent.
Traditional Economy	
Quality and diversity	Quality and diversity of the traditional economy qualitatively describes how each First Nation currently describes the traditional economy and the activities involved. These descriptions may differ from First Nation to First Nation in relation to how each defines traditional economy. Existing conditions of traditional economic activities can help to indicate the extent to which the Project is directly and indirectly influencing the traditional economy through increased demand for goods and services from First Nations members, as well as through effects related to development of the Project.
Level of engagement in the traditional economy	Level of engagement qualitatively describes the current level of engagement in the traditional economy for each First Nation, and more specifically the current level of engagement for some of the different activities identified as being a part of the traditional economy by each respective First Nation. The level of engagement can indicate the extent to which the Project is directly and indirectly influencing the traditional economy through Project-related increased demand for goods and services, as well as through effects related to development of the Project.
Value of the traditional economy	Value of the traditional economy qualitatively describes the tangible (i.e., monetary equivalent) and intangible value (i.e., quality of life, cultural and spiritual well-being, health) that subsistence activities contribute to the traditional economy. Having a description of the current value of the traditional economy can help to indicate the extent to which the Project is directly and indirectly influencing the traditional economy through an increased demand for goods and services, as well as through effects related to development of the Project.

1.3 ASSESSMENT BOUNDARIES

The spatial and temporal boundaries for the Social Economy effects assessment encompass the areas and times that the Project is expected to interact with the Social Economy. The administrative and technical boundaries represent any constraints that may be placed on the effects assessment due to political, social, and economic realities (i.e., administrative boundaries), or limitations in predicting or measuring changes (i.e., technical boundaries).

1.3.1 SPATIAL BOUNDARIES

1.3.1.1 Local Assessment Area

The Local Assessment Area (LAA) encompasses the maximum geographical extent within which the Project is expected to interact with and potentially have direct and indirect effects on the social economy. The LAA spatial boundaries were defined in consideration of the nature and characteristics of each of Social Economy's subcomponents and their Project-related influences.

Non-wage Economy

The non-wage economy LAA was delineated to encompass the communities and people in the area where direct and indirect Project-related effects to the non-wage economy are expected to occur during one or more Project phases, including the Construction, Operation, Reclamation and Closure, and Post-closure Phases. The non-wage economy LAA includes the City of Dawson (Dawson) and a 1-kilometre (km) area extent on either side of the Project. This LAA includes an area generally bounded by the city limits of Dawson, but does not necessarily exclude from the assessment entities immediately adjacent to but outside of those boundaries. Due to Dawson's geographic location in relation to the Project, the community will likely provide a source of labour, goods, and services associated with the Project. The community is also likely to experience a population influx from Project workers, labour to fill indirect and induced opportunities, as well as speculative workers, which could also result in interactions with Dawson's social economy. A discussion of increased direct Project employment, as well as indirect and induced employment resulting from Project expenditures and purchases of goods and services, is provided in the **Economic Conditions Valued Component Assessment** (**Appendix 20-A**).

Traditional Economy

The traditional economy LAA was delineated to encompass the First Nations who have established or asserted Traditional Territory where direct and indirect Project-related effects to the traditional economy are likely to occur during one or more Project phases, including Construction, Operation, Reclamation and Closure, and Post-closure Phases. The LAA for traditional economy is defined as the established or asserted Traditional Territory of First Nations located within a 1km area extent of the Project. These First Nations include the TH, Selkirk First Nation (SFN), First Nation of Na-cho Nyäk Dun (FNNND), and the White River First Nation (WRFN).

1.3.1.2 Regional Assessment Area

The Regional Assessment Area (RAA) encompasses the LAA, and provides a larger regional context for quantifying the potential effects of the Project on the Social Economy. Project-related residual effects on the Social Economy are assessed at the level of the RAA. In addition, the RAA encompasses the area within which the residual effects of the Project are likely to interact with the residual effects of other past, present, or reasonably foreseeable future projects; therefore, it also defines the boundaries of the cumulative effects assessment (CEA) on the Social Economy VC.

Non-wage Economy

The non-wage economy RAA is defined as Yukon Territory, as Yukon is the area where any remaining indirect effects outside the LAA, as well as potential cumulative Project-related effects to the social economy may occur during one or more Project phases.

Traditional Economy

The RAA for the traditional economy is defined as the entire Traditional Territory of the TH, SFN, FNNND, and the entire asserted territory of the WRFN, as this is the area where indirect or cumulative Project-related effects to the traditional economy may occur during one or more Project phases.

The spatial boundaries for the Social Economy assessment are summarized in **Table 1-4** and shown in **Figure 1-1** and **Figure 1-2**.

Table 1-4 Spatial Boundaries used for the Social Economy

Spatial Boundary	Description of Assessment Area
Non-wage Economy	
Local Assessment Area	Includes City of Dawson and 1 km extent on either side of the Project, inclusive of any land-use designations (for example, trap line concessions, game management areas, or placer claims) that overlap with this area.
Regional Assessment Area	Includes the LAA and Yukon Territory.
Cumulative Effects Assessment Area	Same as RAA.
Traditional Economy	
Local Assessment Area	The established or asserted Traditional Territory of First Nations located within a 1-km extent of the Project. These First Nations include the TH, SFN, FNNND, and the WRFN.
Regional Assessment Area	The area that encompasses the entire established Traditional Territory of the TH, SFN, FNNND, and the entire asserted Traditional Territory of the WRFN.
Cumulative Effects Assessment Area	Same as RAA.

COFFEE GOLD MINE

Figure 1-1: Non-Wage Economy Spatial Boundaries

Legend

- Highway
- Project Footprint
- Local Assessment Area
- Regional Assessment Area
- National/International Border

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Kilometres

NAD 1983 UTM Zone 8N

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Figure 1-1	Date: Mar 22, 2017	Drawn by: NK	Reviewed: DP

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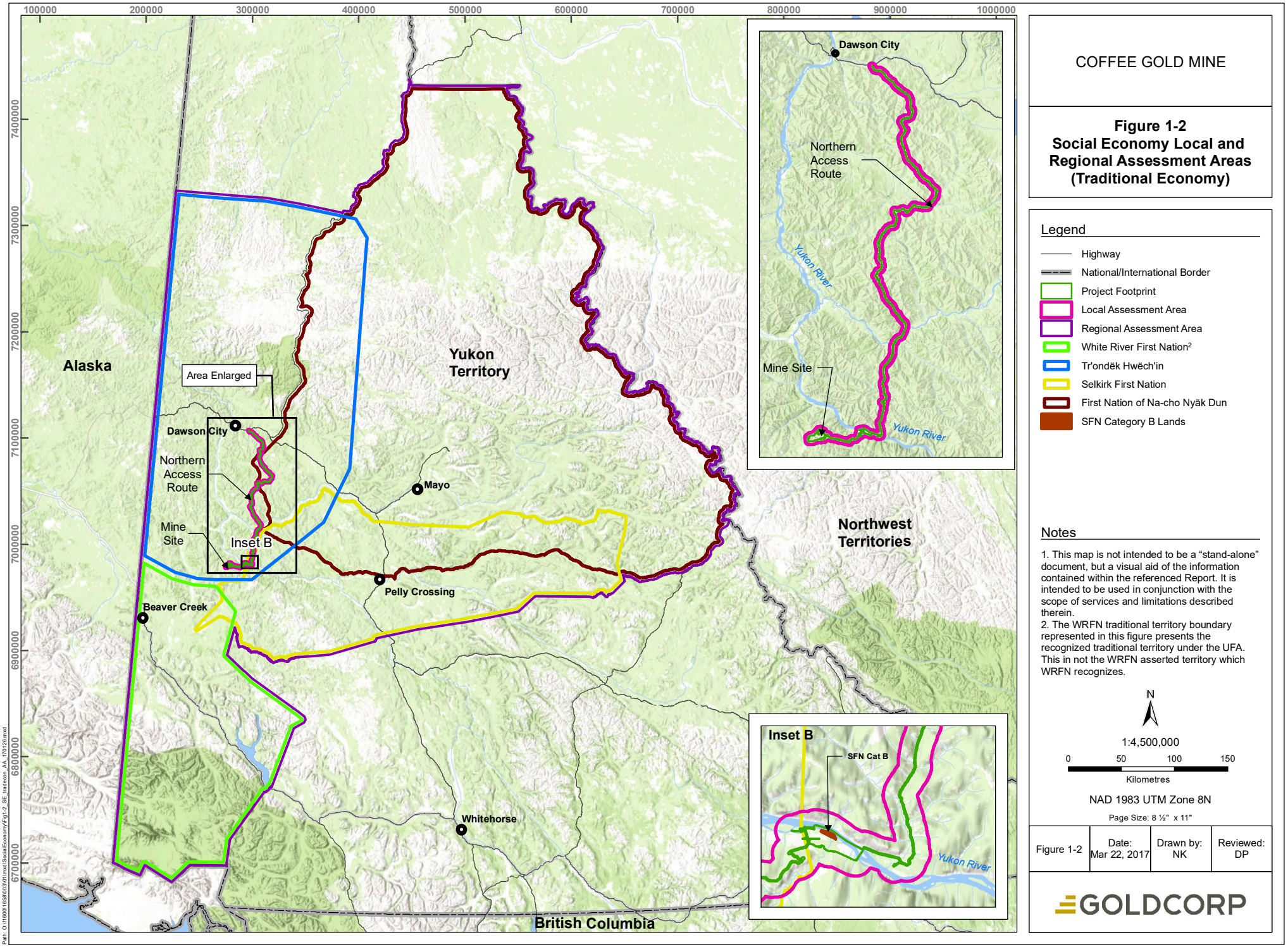

COFFEE GOLD MINE

Figure 1-2
Social Economy Local and Regional Assessment Areas (Traditional Economy)

Legend

- Highway
- National/International Border
- Project Footprint
- Local Assessment Area
- Regional Assessment Area
- White River First Nation[2]
- Tr'ondëk Hwëch'in
- Selkirk First Nation
- First Nation of Na-cho Nyäk Dun
- SFN Category B Lands

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. The WRFN traditional territory boundary represented in this figure presents the recognized traditional territory under the UFA. This in not the WRFN asserted territory which WRFN recognizes.

N

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Kilometres

NAD 1983 UTM Zone 8N

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Figure 1-2	Date: Mar 22, 2017	Drawn by: NK	Reviewed: DP

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1.3.2 TEMPORAL BOUNDARIES

The temporal characteristics of the Project's Construction, Operation, Reclamation and Closure, and Post-Closure Phases are described in **Section 2.0 Project Description** of the Project Proposal. The temporal boundaries established for the assessment of Project-related effects on the Social Economy encompass these Project phases.

1.3.3 ADMINISTRATIVE BOUNDARIES

The spatial boundaries of the non-wage economy subcomponent have been defined in consideration of the boundary defined by the Yukon Bureau of Statistics for population statistics. More specifically, the boundary for Dawson was delineated according to all those who use the mailing address with the postal code Y0B 1G0.

The spatial boundaries for the traditional economy subcomponent were delineated in relation to the established traditional territories of TH, SFN, and FNNND and the asserted territory of the WRFN. This Project has adapted the definition of Traditional Territory presented in the Umbrella Final Agreement (YG 2008) (UFA). The WRFN has not concluded a Land Claim, and the area that the WRFN asserts differs from the Traditional Territory boundary currently recognized by the Yukon Government. This assessment has adapted the spatial boundaries of the WRFN's asserted territory to enable consideration of potential Project-related effects to the WRFN traditional economy. The spatial boundaries of the WRFN's asserted territory are not represented on any figures included in this report, though they encompass the Project Mine Site and the southern extent of the NAR, including a portion of the route located immediately north of the Stewart River.

1.3.4 TECHNICAL BOUNDARIES

The technical boundaries for the social economy assessment include those limitations and constraints identified for supporting assessments, as listed in **Section 1.0**.

2.0 ASSESSMENT METHODS

The methods used to identify and assess potential Project-related and cumulative effects were developed pursuant to assessment requirements identified in YESAA and YESAB guidance documents (e.g., YESAB 2005). The Social Economy assessment was conducted per the methods set out in **Section 5.0 Assessment Methodology** of the Project Proposal. The assessment has been informed by TK, statistics, public sources, and consultation and engagement with government agencies, potentially affected First Nations, and the public. A complete list of references is found at the end of this report.

Specific methodologies applied for the assessments in the supporting Intermediate Component (IC) and VC reports are presented in those reports.

3.0 EXISTING CONDITIONS

A summary of existing regulatory and baseline conditions is presented to provide local context and enable reviewers to identify and understand the potential interactions between the Project and the Social Economy VC. Existing conditions are described based on available information including legislation and policy applicable to the Social Economy VC, available TK relevant to Social Economy (subject to confidentiality constraints), baseline reports describing desktop and studies, as well as scientific and other information.

3.1 REGULATORY CONTEXT

The following legislation and regulations are relevant to the Project's effects assessment and mitigation and monitoring for the Social Economy VC.

3.1.1 YUKON ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENT ACT

The YESAA gives authority and rules to YESAB to administer the assessment process that applies to all lands within Yukon. The Board's mission is to protect the environment and social integrity of Yukon, while fostering responsible development. The following purposes of YESAA are specifically applicable to the Social Economy:

- Consider environmental and socio-economic effects before projects are undertaken.
- Protect and promote the well-being of Yukon First Nations persons, their societies, and Yukon residents generally, as well as the interests of other Canadians.
- Ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities, their residents, and societies in general, depend.
- Recognize and, to the extent practicable, enhance the traditional economy of Yukon First Nations people and their special relationship with the wilderness environment.

3.1.2 NON-WAGE ECONOMY

The following legislation, regulations, and government-led programs are specifically relevant to the non-wage economy subcomponent.

3.1.2.1 Yukon Economic Development Act

The Yukon *Economic Development Act*, RSY 2002, c. 60, explicitly identifies that Yukon comprises a mixed economy. Further, Section 6.2 (h) of the Act states that A Minister shall "…promote the role of the subsistence economic activities in the Yukon economy…" and in Section 6.2(i), shall "…promote the role of non-wage economic activities in the Yukon economy." This study acknowledges that both Aboriginal and non-Aboriginal Yukoners may participate in the mixed economy, though the unique influences that characterize each community differ.

3.1.2.2 After the Gold Rush: The Integrated Community Sustainability Plan. Volume I: The City of Dawson and Tr'ondëk Hwëch'in Community Vision

The Integrated Community Sustainability Plan presents a long-term comprehensive plan that reflects the collective sustainability objectives of the Dawson and TH communities. The volunteer economy is identified in the plan as playing an important role in the community's local and regional economic development (City of Dawson and TH n.d.). Further, voluntarism is acknowledged as being a celebrated part of these communities' culture, which continues to play an important role in supporting community development and benefits.

3.1.2.3 City of Dawson Official Community Plan, Bylaw No. 12-23, 2012

The City of Dawson Official Community Plan bylaw is the main policy document for the City of Dawson, which outlines the City's goals and policies used to direct decisions and management (City of Dawson 2012). With regards to the non-wage economy, implementation approaches identified for the long-term goal of "celebrate, support and promote Dawson as the cultural capital of the Yukon" include:

- Recognize the importance of the non-profit organizations that work to provide programming in the community and collaboratively work with them to access funding from Territorial and Federal programs.
- Recognize the importance of the non-profit organizations that work to provide cultural events in the community, such as Dawson City Music Festival, Discovery Days, Mud Bog, Percy DeWolfe Memorial Mail Race, Trek Over the Top, among others (City of Dawson 2012).

3.1.3 TRADITIONAL ECONOMY

The UFA is specifically relevant to the traditional economy subcomponent.

3.1.3.1 Umbrella Final Agreement

The UFA is a policy document that was established between the Government of Canada, Government of Yukon, and Yukon First Nations as represented by the Council of Yukon First Nations in 1993. This policy document was used by Yukon First Nations to support the negotiation of Final and Self-government Agreements. It is important to note that the UFA is not a legally enforceable document itself; however, since all its provisions are included in each First Nation Final Agreement, provisions in the UFA have lawful effect (YG 2008). The potentially affected First Nations, including TH, SFN, and FNNND, have each signed a Final and Self-Government Agreement. Each Final Agreement is recognized as a treaty according to Section 35 of the *Constitution Act*, *1982* being Schedule B to the *Canada Act 1982* (UK), 1982, c 11.

The UFA explicitly recognizes the traditional economy as one of the objectives of the development assessment process in Section 12.1.1:

> The objective of this chapter is to provide for a development assessment process that: recognizes and enhances, to the extent practicable, the traditional economy of Yukon Indian People and their special relationship with the wilderness Environment.

Further, Chapter 16 of the UFA generally addresses fish and wildlife with respect to traditional economy activities:

> Yukon Indian People shall have the right to give, trade, barter or sell among themselves and with beneficiaries of adjacent Transboundary Agreements in Canada all Edible Fish or Wildlife Products harvested by them pursuant to 16.4.2, or limited pursuant to a Basic Needs Level allocation or pursuant to a basic needs allocation of Salmon, in order to maintain traditional sharing among Yukon Indian People and with beneficiaries of adjacent Transboundary Agreements for domestic purposes but not for commercial purposes. (p.158)

3.2 BACKGROUND INFORMATION AND STUDIES

3.2.1 TRADITIONAL KNOWLEDGE

Traditional Knowledge was used to inform the traditional economy subcomponent to gain an understanding of how each First Nation defines the term traditional economy, the types of activities conducted, the level of engagement, and the value that the traditional economy currently contributes to each respective First Nation and its citizens (CEA Agency 2015). As a part of Project data collection, available TK from the TH, SFN, FNNND, and WRFN was compiled (i.e., the Project TK database) and reviewed for this assessment. Traditional Knowledge was identified from such sources as secondary reports, Project-specific reports primarily related to TK collected in the Coffee Creek area (TH 2012b, Dobrowolsky 2014), and primary data collection, as described in **Section 3.2.3**.

3.2.2 SCIENTIFIC AND OTHER INFORMATION

Secondary sources used included peer-reviewed papers, related research, and technical reports (e.g., the Social Economy Research Network of Northern Canada; the City of Dawson and TH's Integrated Community Sustainability Plan (City of Dawson and TH n.d.)), and locally relevant research initiatives (e.g., the Conservation Klondike Society's 2011 Dawson Community Food Survey and Market Expansion Survey). Secondary sources related to the Yukon social economy were identified from the late 1980s (i.e., Staples 1988) as well as more recent community-specific secondary literature (CKS 2011); however, publicly available data related to this topic area are generally limited.

3.2.3 BASELINE STUDIES CONDUCTED DURING THE PROJECT'S FEASIBILITY PROGRAM

Primary research (i.e., a survey, focus group, and interviews with key informants) comprises the central research approach used to describe the current condition of the social economy. This research is summarized in **Appendix 18-A Socio-economic Baseline Report**, which describes the existing socio-economic and health conditions for the Project (described in **Table 3-1**). The baseline report was developed to support the assessment of potential Project-related socio-economic and health effects, including Social Economy. It was informed by local secondary and primary data, as well as by consultation with regulators, First Nations, and communities. Primary research was conducted, where possible, to address data gaps

and enhance desktop research results. Specific primary data collection methods included semi-structured information interviews, focus groups following a semi-structured group interview format, and paper and digital surveys. The Project proponent hired three TH employees to support research, consultation, and engagement activities. Primary efforts included:

- Traditional Land Use Studies (TH 2016, Dobrowolsky 2014)
- Local business focus group (Local Business Focus Group, Personal Communication, 2016)
- Tr'ondëk Hwëch'in Traditional Foods and Traditional Economy Survey (TH 2016)
- Tr'ondëk Hwëch'in Traditional Foods and Traditional Economy Focus Group (TH Traditional Foods and Traditional Economy Focus Group, March 1, 2016).

Table 3-1 Summary of Desktop and Field Studies Related to the Social Economy

Study Name	Study Purpose, Duration and Spatial Boundaries
Socio-economic Baseline (**Appendix 18-A**)	The socio-economic baseline report describes the existing socio-economic and health conditions for the Project. In this report, the existing socio-economic and health landscape is introduced, and the Project's socio-economic and health IC and VCs are described. The study began in December 2015 and was completed in April 2016.

3.3 DESCRIPTION OF EXISTING CONDITIONS

Existing conditions for each subcomponent are described specifically within the LAA and conceptually in the RAA. Existing conditions are defined as conditions prior to interaction with the Project, and are summarized for each subcomponent based on regulatory context, TK, scientific and other information, and baseline studies undertaken for the Project.

3.3.1 NON-WAGE ECONOMY

The non-wage or subsistence economy plays an important role in the Yukon economy. The Yukon Government's 1987 report, *The Things That Matter: A Report of Yukoners' Views on the Future of Their Economy and Their Society* (YG 1987); similarly, this existing conditions section does not limit its focus of the non-wage economy to subsistence-related activities, but also considers other contributing aspects of the non-wage economy, including non-profit and non-governmental organizations, the volunteer sector, and informal social and economic activities.

3.3.1.1 Non-profit and Non-governmental Organizations

Non-profit organizations are a component of Canada's northern social economy (Southcott 2009). A 2003 National Survey of Non-profit and Voluntary Organizations conducted by Statistics Canada found that Canada's territories had the highest percentage of non-profit or voluntary organizations focused on serving Aboriginal communities, in comparison to Canadian provinces (Southcott and Walker 2009).

The latest database of Northern Social Economy Organizations identified 591 non-profit organizations operating in Yukon Territory as of March 2012 (SERNNoCa 2012). These organizations are located throughout Yukon in numerous communities, and provide a diverse array of services and activities to Yukoners, from advocacy to sports and recreation.

According to the Government of Yukon (2014), there are 11 active non-governmental organizations in Dawson (**Table 3-2**). The services that non-governmental organizations provide to Dawson are diverse, ranging from resource conservation to tourism. Interviews were conducted with five non-governmental organizations in Dawson (see Notes in **Table 3-2**), which found that in addition to enhancing the quality of life for Klondike Region residents, these organizations provide key services that otherwise would not be locally available.

Table 3-2 Summary of Non-governmental Organizations in Dawson

#	Name	Focal Service Area(s)
1	Conservation Klondike Society[1]	Environmental
2	Dawson Arts Society/ Klondike Institute of Art & Culture[2]	Arts and Culture; Tourism
3	Dawson Museum	Arts and Culture; Tourism
4	Dawson Shelter Society	Community Health and Wellness
5	Humane Society Dawson	Animal Welfare
6	Klondike Development Organization[3]	Sustainable Economic Development
7	Klondike Outreach Employment Services[4]	Employment
8	Klondike Placer Miners Association	Natural Resource Development (Placer Mining)
9	Klondike Visitors Association[5]	Arts and Culture; Tourism
10	Literary Society of the Klondike / Klondike Sun	Communications
11	Many Rivers Counselling and Support Services	Community Health and Wellness

Source: Government of Yukon 2014

Notes: [1] Interview 11, Personal Communication, 2016
[2] Interview 12, Personal Communication, 2016
[3] Interview 28, Personal Communication, 2016
[4] Interview 23, Personal Communication, 2016
[5] Interview 25, Personal Communication, 2016.

Project-driven increases to population may increase the demand for services provided by non-profit or non-governmental organizations, although such changes are expected to be minimal. Potential changes to non-profit or non-governmental organizations are therefore not carried forward for detailed assessment.

3.3.1.2 Volunteer Sector

Volunteering benefits the individuals who volunteer their time, as well as the community where they contribute their volunteering efforts. According to volunteering and participating statistics, Yukon had a 49-percent (%) volunteer rate in 2010 (Statistics Canada 2015). Organizations such as Volunteer Bénévoles Yukon promote volunteerism by "providing resources, training, consultation, and support for individuals and organizations" (VBY n.d.).

Volunteers support community and regional economic development while enhancing overall quality of life (City of Dawson and TH n.d.). From the Dawson City Volunteer Fire Department to non-profit organizations and community events, volunteers support the entire socio-economic landscape (City of Dawson and TH n.d.; Interview 4, Personal Communication 2016; Interview 11, Personal Communication 2016; Interview 12, Personal Communication 2016; Interview 23, Personal Communication 2016; Interview 25, Personal Communication 2016; Interview 30, Personal Communication 2016). Volunteering is prevalent in the Dawson region (Local Business Focus Group, Personal Communication 2016), and is a strategy the Dawson community uses to address service or funding gaps (KDO 2011). Without volunteers, some services and/or activities may otherwise not be affordable (Staples 1988, Local Business Focus Group, Personal Communication 2016).

Retaining and attracting volunteers can be a challenge given the Klondike Region's small population (Interview 11, Personal Communication 2016; Interview 23, Personal Communication 2016; Interview 25, Personal Communication 2016), but a core group of volunteers supports annual events and activities (Interview 25, Personal Communication 2016). The Klondike Region's seasonal population changes do not affect the availability of volunteers: some volunteers leave the region in winter, but others meet the demand (Interview 11, Personal Communication 2016). Project-driven increases to population may increase the available pool of volunteers somewhat, although such changes are expected to be minimal and beneficial in nature. Potential changes to volunteering are therefore not carried forward for detailed assessment.

3.3.1.3 Informal Social Economy Activities

No quantitative data were available to assign a value to informal social economic activities such as bartering and cooperative buying in Yukon. Informal social economic activities are supported through social media, such as the Dawson City Town Crier and Buyer Facebook page. Bartering includes individual to individual exchanges of goods and services without money. Bartering is active in the Klondike Region, and contributes to Dawson's social cohesion by promoting individuals to work together (Interview 11, Personal Communication 2016). Examples of bartering include exchanges of livestock for services, and vegetables for equipment (Interview 11, Personal Communication 2016).

Some Dawson residents use cooperative buying to decrease the cost of living in the Klondike Region (Interview 11, Personal Communication 2016). Examples of cooperative buying include: buying goods together to reduce and share shipping costs between individuals, and buying larger quantities to maximize buying potential (Interview 11, Personal Communication 2016).

Project-driven increases to population have the potential to increase the number of people participating in bartering and cooperative buying, which would be potentially beneficial to the cost and variety of goods and services being exchanged. Since data are not available on the value of bartering and cooperative buying, a detailed assessment has not been conducted.

3.3.1.4 Subsistence Activities

Subsistence activities are land-based activities that provide goods or services to individuals and communities without the exchange of money; this can include both activities related to gathering wild or country foods, as well as such activities such as gathering firewood and using non-timber forest products. The types of activities considered to be subsistence activities are broad and are conducted by both First Nation and non-First Nation Yukoners (March TH TWG Meeting, Personal Communication 2016, Usher and Staples 1988). Subsistence activities are an important component of the social economy, and contribute significantly to the Yukon economy (Usher and Staples 1988). Further, it is recognized by both public and private institutions that subsistence should contribute to decision-making in Yukon (Usher and Staples 1988). Subsistence activities are closely related to other socio-economic values including culture, health, and wellness.

Subsistence activities constitute one of the strategies that LAA residents use to provide economic stability during periods of seasonal or market fluctuations (Abele 2009, Usher et al. 2003). One trapline holder said his trapping concession contributes to his and his family's economic well-being by reassuring them that they can trap and hunt if they find themselves without employment (Interview 22, Personal Communication 2016). According to Usher et al. (2003), subsistence activities can "act like a sponge" by absorbing and releasing individuals as employment opportunities come and go.

Wild foods are consumed by over 50% of households in the Dawson area (CKS 2011). More specifically, the proportion of locally produced meat (including hunting and gathering) consumed by those households was 25.2%, and hunting is viewed as the likely source for "many of the consumers with the strongest preference for healthy, local meat products" by First Nation (30% of participants) and non-First Nation consumers alike (CKS 2011). Results of a 2011 survey conducted by the Conservation Klondike Society identified hunting and gathering as the third most commonly used practice by Dawson residents to access local foods (CKS 2011). Based on averaging and pro-rating of Yukon harvest statistics and store replacement value, the value of the local wild meat harvest was roughly estimated to be $285,000 or 19.4% of the total value of meat consumed by Dawson residents (CKS 2011).

3.3.2 TRADITIONAL ECONOMY

The traditional economy is a distinct component of the mixed economy, which is unique to First Nation people. Like the non-wage economy, the traditional economy supports and contributes to the socio-economic well-being of individuals and communities, and contributes to the cultural and spiritual well-being of First Nations.

3.3.2.1 Tr'ondëk Hwëch'in Traditional Economy

The TH traditional economy has evolved over thousands of years, and reflects a sophisticated system that has adapted to complex environmental, social, and cultural changes over time (TH 2012b). Tr'ondëk Hwëch'in's definition of Traditional Economy is consistent with the following definition from Kuokkanen (2011):

> The key principles of indigenous economies – sustainability and reciprocity – reflect land-based worldviews founded on active recognition of kinship relations that extend beyond the human domain. Sustainability is premised on an ethos of reciprocity in which people reciprocate not only with one another but also with the land and the spirit world. Indigenous economies are thus contingent upon a stable and continuous relationship between the human and natural world.
>
> These systems include a variety of land based small-scale economic activities and practices as well as sustainable resource management. Indigenous economies are often characterized by a subsistence mode of production. At the center of the economic activity is not the exchange for profit or competition but the sustenance of individuals, families, and the community. Surplus is shared at numerous festivals and ceremonies that maintain the social cohesion of the community but also bring prestige to those who give and share their wealth. The subsistence-oriented economy – including various contemporary versions of mixed economies – also ensures the continuation of the traditional social organization (Kuokkanen 2011).

The TH traditional economy plays a central role in supporting all aspects of TH citizen and community well-being. In addition to the economic well-being of TH citizens, the traditional economy is tied to such aspects of well-being as culture and heritage, health, and mental wellness. At the TH Traditional Foods and Traditional Economy focus group session, conducted March 1, 2016 as part of the Socio-economic baseline studies (**Appendix 18-A**), participants shared that the traditional economy:

- Supports traditional practices and values such as reciprocity and sharing
- Promotes social cohesion by supporting family and community members to work together to provide goods and services to one another (e.g., taking care of children)
- Supports the economic well-being of citizens by alleviating the need to purchase food
- Supports TH citizens to get involved with traditional activities, thereby supporting the transmission of TK through such activities as preparing meat, medicines, and food together

- Supports the health of TH citizens by providing a healthy food source
- Supports the mental wellness of TH citizens by alleviating such stresses as affording the cost of food
- Supports spiritual well-being by promoting individuals to go out on the land where they can heal (TH Traditional Foods and Traditional Economy Focus Group 2016).

The economy of TH was not historically dependent on wealth accumulation. As TH were nomadic, accumulating articles or food was impractical. As such, if one person or family was successful in their harvest, they would share it with those who had not been so fortunate. The understanding was present that this sharing might be reciprocated if that originally successful group was not as successful the following year. Again, this economy was one of equilibrium, as opposed to accumulation. Survey results support these values. When asked if they demonstrate reciprocity or give-back to the land and spirit world in appreciation of the resources that they use, 78% of respondents confirmed that they did, 11% of respondents replied, that they sometimes did, and 11% of respondents indicated that they did not know. Additional comments provided by respondents indicate that some TH citizens provide offerings to the land, including prayer, tobacco, and other gifts (TH Traditional Foods and Traditional Economy Survey 2016).

Traditional Economic Activities

The TH Traditional Territory (**Figure 1-2**) has always been and remains the basis for the TH traditional economy (Dobrowolsky and Hammer 2001). In addition to specific activities, the traditional economy involves a complex system of harvesting, processing, production, and technological adaptation (TH 2012b). The types of activities (i.e., goods and services) involved in the traditional economy are diverse and varied.

Survey[1] respondents said the three most common services that TH citizens conduct without pay are taking care of children (87.5%), taking care of Elders, seniors, family, and friends (75%), and preparing harvested food from the land for food or meals (e.g., drying fish, cutting meat, drying berries) (75%)[2]. Focus group participants further explained that families commonly work together to share goods and materials harvested from the land. This communal sharing may involve some members of a family hunting a moose, and others helping to process it in return for receiving some of the meat (TH Traditional Foods and Traditional Economy Focus Group, 2016). Others added that instead of paying with money, TH citizens may give back to those who have shared goods or provided a service by giving them some berries, bannock, or tobacco; a specific example provided was that one attendee had people come to cut wood for them and in exchange made them a meal and bannock (TH Traditional Foods and Traditional Economy Focus Group, 2016).

Subsistence harvesting activities are also a major component of TH's traditional economy. In addition to selling furs, trapping currently contributes to the traditional economy through the meat and resources that this activity provides. Though the actual animal or resource may be harvested during a particular season,

[1] The TH Traditional Foods and Traditional Economy Survey (2016).
[2] Eight TH members responded to this question in the survey.

one interviewee shared that traditional use activities are conducted year-round as it is important to maintain one's connection to the land (Interview 10, Personal Communication, 2016). Trapping was an example of a traditional use activity that contributes to family social cohesion as it promotes time spent on the land together with family members conducting traditional pursuits. Being able to teach one's children about different traditional use activities, such as trapping, is an activity that cannot be assigned a monetary value (Interview 14, Personal Communication 2016).

Tr'ondëk Hwëch'in citizens shared that they will often trade, share or exchange materials and food harvested from the land. For example, one citizen shared that they provide furs to their friend who in return provides finished goods such as mitts and hats (Interview 22, Personal Communication 2016). Another TH citizen explained that they smoke the fish that they catch and send it to family members who are far away; thus, the traditional economy is inclusive of all TH citizens, not just those who reside in the Dawson area (Interview 14, Personal Communication 2016).

Level of Engagement in the Traditional Economy

Elders at the TH Traditional Foods and Traditional Economy Focus Group stated that although the traditional economy participation level is decreasing compared to how things were when they were young, key TH principles and values are still actively practised and demonstrated by citizens. For example, focus group attendees share that when food is hunted or gathered from the land it is shared with Elders (TH Traditional Foods and Traditional Economy Focus Group,2016). These findings are consistent with literature that has also found traditional economy engagement is generally decreasing (Southcott and Walker 2009, Mishler and Simone 2004). Mishler and Simeone (2004) identify four reasons that have influenced this decrease: the requirement for children to go to school; regulatory restrictions related to the harvesting of resources (i.e., hunting, fishing, trapping, etc.); the importance of cash income in society today; and the availability of commercial foods.

Market Value of the Traditional Economy

Historically, traditional land and resource use was the basis for the TH traditional economy. Today, traditional land and resources activities continue to contribute to the mixed economy, but are also valued for intrinsic purposes that cannot be assigned a monetary value (TH 2012b). One TH Elder shared that there is value in being able to go out on the land and drink the water from any stream; in the past, they explained that they used to do this all the time but would not consider doing so now (TH Health, Social and Heritage Analyst – Coffee Gold Project, Personal Communication, 2016). Another TH citizen shared that living off the land is the lifestyle that they choose to live, and that they consider it their piece of heaven (Interview 14, Personal Communication 2016).

Primary research results indicate that TH citizens do not tend to assign a monetary value to traditional economic activities (TH Traditional Foods and Traditional Economy Survey, 2016). When asked if they made any money in the past year from selling goods or materials from the land, 50% of survey respondents indicated that they do not sell goods or services from the land, while 25% estimate that they make between $0 and $500, and 12.5% estimate that they make between $2,001 and $5,000. Focus Group attendees added to this understanding by sharing that they do not give meat or food with the expectation of getting something in return (TH Traditional Foods and Traditional Economy Survey, 2016).

One TH citizen qualitatively described that in the past, trapping on his RTC was his main source of income. Though trapping is no longer his primary occupation, he notes that trapping continues to contribute to his economic well-being in a tangible and intangible manner. Trapping provides money that supports his ability to conduct traditional use activities. Trapping also provides economic security as he knows that if he or his family members are ever in need of money, they can come out to the land and trap (Interview 22, Personal Communication 2016). Though it is understood that the activities and services conducted as part of the traditional economy support the economic well-being of TH citizens, no quantitative value was determined by this study.

3.3.2.2 White River First Nation Traditional Economy

The WRFN's traditional economy reflects the Nation's collective understanding of their sense of place. The WRFN sense of place refers to the intimate and inseparable relationship that the WRFN has with their Traditional Territory (**Figure 1-2**). It is considered an aspect of "personal and cultural identity" and is "built on knowledge, history, emotion and identity with respect to place" (McCoy 2004 in YESAB 2012). Those activities that contribute to the WRFN's sense of place can also be considered as supporting the cultural identity of the WRFN; thus, traditional economic activities are related to the WRFN's sense of place.

Traditional Economic Activities

Current activities identified as being a part of the WRFN traditional economy include such subsistence-related traditional economic activities as hunting, trapping, fishing, plant gathering, and wood cutting (Dobrowolsky 2014, Calliou Group 2012a). YESAB (2012) reaffirmed the importance of wildlife to the WRFN traditional economy by noting that caribou are important for many different reasons including economic, cultural, and aesthetic. These traditional economic activities contribute to the economic well-being of the WRFN and its members.

Historically, Coffee Creek was a cornerstone of the traditional economy, supporting the harvest of various resources, as well as trade and interaction with neighbouring First Nations. Over the last generation or two, Coffee Creek was known as a place where opportunities for wage labour were available for WRFN members, who were among those people travelling to Coffee Creek to earn money in the spring and summer from such services as providing wood and crew services (Easton et al. 2013).

Level of Engagement in the Traditional Economy

Members of the WRFN continue to actively engage in the traditional economy. With respect to subsistence harvesting activities, a recent community-based study reported high levels of engagement. Over the course of the 13-month study, participants reported that 90% hunted, 30% trapped, 95% fished, and 70% conducted gathering activities (Calliou Group 2012b).[3]

This community-based study also characterized how the WRFN members currently engage in some traditional economic activities. Over the course of 13 months, a total of 238 harvesting trips were conducted by WRFN members. Of these trips, approximately 68% were one day or less in duration. This finding suggests that most WRFN members engaging in subsistence harvesting activities conduct short-duration trips (i.e., 1 day or less) (Calliou Group 2012b).

Market Value of the Traditional Economy

No data were available to describe the current economic value of the overall WRFN traditional economy. Activities associated with the WRFN's traditional economy are viewed by the WRFN to be Aboriginal Rights protected under the Canadian Constitution. Goldcorp acknowledges that the WRFN does not endorse any effort to monetize these rights (WRFN review comments on May 12, 2016 draft of **Appendix 18-A Socio-economic Baseline Report**); however, Yukon First Nations, including the WRFN, have adjusted to changing land uses over time to take advantage of new economic opportunities (Dobrowolsky 2014).

In addition to the value that traditional economic activities may contribute to WRFN members, WRFN members identify that it also costs money to conduct these activities. In a 2012 Community Harvest Study, WRFN members estimated that most subsistence harvesting-related trips cost under $200, one-third cost under $50, and some cost over $1,000 to conduct (Calliou Group 2012b). While assigning a monetary cost to conducting specific subsistence harvesting activities is challenging for various reasons, it is important to acknowledge that the costs associated with conducting these activities can be significant.

3.3.2.3 Selkirk First Nation Traditional Economy

The traditional economy is a valued socio-economic component to SFN and its citizens (KCB 2013). Traditional economic activities continue to currently contribute to all aspects of SFN well-being (KCB 2013). Selkirk First Nation citizens expressed "…that their ability to depend on the land and its resources is vital to their economic future" (KCB 2013).

[3] Twenty WRFN members participated in the study.

Traditional Economic Activities

The SFN traditional economy includes such traditional activities as trapping, hunting, fishing, berry picking and creating goods from materials gathered from the land (KCB 2013). These activities provide income or income in-kind, which contributes to the overall well-being of SFN citizens in Pelly Crossing (KCB 2013). Traditional economic activities involve many other considerations to function; including animals; productive habitat; time, equipment and knowledge; and a well-functioning family unit (Pearse and Weinstein 1988).

One of the activities noted of being of importance to SFN's subsistence economy was fishing for salmon and other fish. As stated by Morrell (1991), "…fish and other products of the land provide real income in kind that makes life livable in a cash-poor economy".

Level of Engagement in the Traditional Economy

Selkirk First Nation citizens have reported being actively engaged in traditional use activities during all seasons of the year (KCB 2013). The current level of citizens engaged in the traditional economy may not reflect the actual value or importance of the traditional economy, however, as SFN citizens face such barriers as a lack of time, which prevents them from spending as much time as they would like to pursuing traditional use activities (KCB 2013).

Market Value of the Traditional Economy

No data were available to describe the current economic value of the overall SFN traditional economy; however, previous research found that "…it is estimated that a portion of many of the SFN family's annual income is derived from traditional activities…[t]hese products may be sold, used for subsistence purposes, or traded." (KCB 2013). It was also identified that traditional economic activities provide value to SFN citizens by providing nutritious food; one SFN citizen shared in the KCB 2013 report that approximately 25% of the meat their family ate was harvested through traditional activities.

No data were available to describe the monetary contribution that traditional economic activities make to individual citizens. One respondent in the study estimated that half of their annual income depended on traditional activities, including furs sold from trapping, meat harvested through hunting, trapping, and fishing, as well as goods and products created from traditional use activities (i.e., using hides and furs to make and sell goods and products) (KCB 2013).

3.3.2.4 First Nation of Na-cho Nyäk Dun Traditional Economy

The FNNND traditional economy supports more than just the economic well-being of citizens; it also supports cultural well-being at an individual and community level: "Sharing the harvest is also an important part of Northern Tutchone culture… It is about taking care of each other and sharing the gifts of the land" (DPRA 2010). The culture, traditions, and community cohesion that the traditional economy fosters are an important part of FNNND culture (DPRA 2010).

Traditional Economic Activities

The wage-based economy has influenced the lifestyle and traditional economy of FNNND. As FNNND citizens have engaged more in the wage-based economy, citizens have adapted a more localized lifestyle (FNNND 2008a). Though FNNND citizens currently engage in a mixed economy, they still actively conduct such traditional activities as hunting, fishing, trapping, and gathering. These activities continue to contribute to all aspects of FNNND well-being and community life including economic, culture, diet, and health (DPRA 2010, FNNND 2008a). Specifically, trapping was identified as an important activity since it provides a source of income in the winter (InterGroup Consultants Ltd. 2009).

Level of Engagement in the Traditional Economy

Quantitative data on FNNND's current level of engagement in the traditional economy were not available. A 2008 report states that FNNND (2008b) conducts traditional activities year-round on their Traditional Territory (**Figure 1-2**) and that "…proponents should be prepared to encounter harvesters in all seasons throughout the Traditional Territory" (FNNND 2008b).

Market Value of the Traditional Economy

Traditional foods obtained through traditional activities comprise a significant portion of FNNND citizens' diets (DPRA 2010). According to FNNND citizens, traditional foods are important for their nutritional and medicinal value, the linkages that they facilitate with the land culture, and savings compared to store-bought food (DPRA 2010).

4.0 ASSESSMENT OF PROJECT-RELATED EFFECTS

This section describes the potential interactions between Project-related activities and the subcomponents, non-wage economy and traditional economy, of the Social Economy VC. Further, the methods used for assessing potential Project-related interactions and effects are also described along with mitigation measures to avoid or reduce potential effects, and resulting residual effects and their determined significance.

4.1 POTENTIAL PROJECT-RELATED INTERACTIONS WITH SOCIAL ECONOMY

Interactions have the potential to occur between Project-related activities, the non-wage economy, and the traditional economy during the Construction, Operation, and Reclamation and Closure Phases. Interactions with the non-wage economy and the traditional economy are unlikely during the Project's Post-closure Phase due to the limited nature of Project activities occurring during these phases. Potential interactions are rated using the interaction criteria presented in **Table 4-1**.

Table 4-1 Potential for an Interaction between Social Economy's Subcomponents, Non-wage Economy and Traditional Economy, and the Project

Term	Definition
No Interaction	Project activity will not interact with the Social Economy VC or its subcomponents, non-wage economy or traditional economy.
Negligible Interaction	Interaction with the Project activity will not have a substantive influence on the short- or long-term integrity of the VC (i.e., not measurable / not detectable using the identified indicator). Where a negligible interaction is anticipated, the assessment of the potential effect is not carried forward for further assessment.
Potential Interaction	Interaction between the Project activity and the VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable or detectable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

As seen in **Table 4-2** and **Table 4-3**, potential Project-related effects to the social economy can occur across Project phases since the pathways facilitating these Project-related effects may be continuous. For example, a Project-related increased demand in goods and services may contribute to a population increase, which would begin during Construction and continue through Operation. If an interaction is likely to change between Project phases, the supporting rationale for this change is clearly described.

For the non-wage economy, Project-related interactions are likely to be negligible during the overall Reclamation and Closure Phase since minimal Project employment and business opportunities are likely to translate into non-detectable changes. Although employment opportunities associated with the Project will occur during the Reclamation and Closure Phase, the effect is likely to be negligible due to the disparity in employment numbers across the different Project phases. During Reclamation and Closure, the maximum annual labour estimated for the Project is 32, compared to 663 during the Construction Phase

and 372 during the Operation Phase. It is likely that local communities including First Nations will continue to benefit from employment and contracting and procurement opportunities during this phase.

During the Post-Closure Phase, long-term monitoring is the only activity likely to occur. Due to limited Project activities, no interactions between the social economy and long-term monitoring are expected since potential effects identified for earlier Project phases are likely to cease by this phase.

Table 4-2 Potential Project Interactions with the Non-wage Economy Subcomponent

Project Component	Interaction Rating	Nature of Interaction and Potential Effect
Non-wage Economy		
Construction Phase		
Overall Construction Phase	Potential Interaction	Construction-related population increase, demand for goods and services, and development of the Project may affect the short- or long-term integrity of subsistence activities (i.e., hunting, trapping, fishing, plant gathering, etc.).
	Negligible Interaction	Interactions with non-profits and non-government organizations, and the non-wage economy are likely to be negligible.
Operation Phase		
Overall Operation Phase	Potential Interaction	Operation Phase activities may affect the short- or long-term integrity of subsistence activities (i.e., hunting, trapping, fishing, plant gathering, etc.).
	Negligible Interaction	Interactions with non-profits and non-government organizations, and the non-wage economy are likely to be negligible.
Reclamation and Closure Phase		
Overall Reclamation and Closure Phase	Potential Interaction	Reclamation and Closure may affect the short- or long-term integrity of subsistence activities (i.e., hunting, trapping, fishing, plant gathering, etc.).
	Negligible Interaction	Minimal Project employment and business opportunities associated with Reclamation and Closure activities are likely to interact with the non-wage economy due to local hiring and Project spending on goods and services; these changes are not likely to be detectable.
Post-closure Phase		
Overall Post-closure Phase	No Interaction	All potential Project-related interactions identified in early Project phases are likely to cease or be fully reversed; thus, no interaction.

Table 4-3 Potential Project Interactions with the Traditional Economy Subcomponent

Project Component	Interaction Rating	Nature of Interaction and Potential Effect
Traditional Economy		
Construction Phase		
Overall Construction Phase	Potential Interaction	Construction may change the current socio-environmental setting where traditional economic activities were historically, are currently, or may be conducted. These changes may result in changes to the traditional economy.
Operation Phase		
Overall Operation Phase	Potential Interaction	Operation Phase activities may change the socio-environmental setting where traditional economic activities were historically, are currently, or may be conducted. These changes may result in changes to the traditional economy.
Reclamation and Closure Phase		
Overall Reclamation and Closure Phase	Potential Interaction	Reclamation and Closure may influence the socio-environmental setting where traditional economic activities were historically, are currently, or may be conducted. These changes may result in changes to the traditional economy.
Post-closure Phase		
Overall Post-Closure Phase	No interaction	All potential Project-related interactions identified in early Project phases are likely to cease; thus, no interaction.

4.2 POTENTIAL PROJECT-RELATED EFFECTS

Potential Project-related adverse effects on Social Economy subcomponents (non-wage economy and traditional economy) were identified based on Project-related interactions identified in **Table 4-2** and **Table 4-3**, respectively. The potential effects are described below as they relate to the indicators listed in **Table 1-3**.

4.2.1 NON-WAGE ECONOMY

This subsection describes the nature of potential effects to be considered with respect to the subcomponent, non-wage economy. Mitigation measures for each potential effect are described in **Section 4.3**.

4.2.1.1 Potential Effect on Ability to Conduct Subsistence Activities

Depending on the preferences and values of those who relocate to the LAA, an increase in the proportion of households who consume wild foods obtained through subsistence activities, and corresponding increases to the value that meat (obtained through subsistence activities) contributes to households, have the potential to occur in the LAA as a direct result of Project activities, and as an indirect result of a Project-related increase in the demand for goods and services. Potential effects to subsistence activities in the context of the non-wage economy are likely to be experienced both positively and adversely.

Potential effects to subsistence activities that form part of the traditional economy of the potentially affected First Nations are discussed and assessed under the traditional economy subcomponent (**Section 4.2.2**).

Due to Dawson's geographic location in relation to the Project, the LAA is the only area likely to experience Project-related effects to subsistence activities; this includes potential effects to the proportion of households consuming wild foods obtained through subsistence activities and the value that meat obtained through subsistence activities contributes to households.

Access

Vehicle access to and through the LAA will improve along a portion of the NAR north of the Stewart River during summer months (between thaw and freeze-up) through upgrades and increased connectivity. As only Project-related vehicles will have access to the river crossings in both winter and summer conditions, vehicular access south of the Stewart River will not change. During winter months, the quality of the existing access via vehicles and all-terrain vehicles including snowmobiles will be improved through upgrading and route connectivity in the portion of the NAR north of the Stewart River. Access from the improved portions of the NAR to adjacent areas in the RAA will also improve, generally by increased ability to transport all-terrain vehicles closer to areas of use. Access to and through the Project area will be controlled for health and safety reasons; therefore, access on the south side of the Yukon River will not be increased. Access to and through the Mine Site will be controlled for health and safety reasons, so access on the south side of the Yukon River beyond the mine airport will not improve. Access will improve during the Construction Phase, and continue until decommissioning of improved sections during the Reclamation and Closure Phase.

Changes to how individuals and households are able to access the land and resources may translate into changes to the proportion of households consuming wild foods obtained through subsistence activities, and to the economic value that wild meat (obtained through subsistence activities) contributes to households. These changes in access may be experienced differently by different individuals or households (Interview 11, Personal Communication, 2016).

For some, an increase in access will facilitate a positive effect related to increased opportunities to access the land and resources and conduct subsistence activities. One interviewee shared that increased access would be a Project benefit to such subsistence activities as hunting, fishing, and mushroom gathering (Interview 4, Personal Communication, 2016). This individual also expressed that increasing access to such watercourses as the Stewart River would be a beneficial effect of the Project (Interview 4, Personal Communication, 2016). For others, this increase in access will result in an adverse effect since it may displace where and when individuals are currently conducting subsistence activities, in addition to influencing where individuals may consider conducting subsistence activities in the future. One RTC holder shared that they currently do not like going to their trapline in the fall because they don't like being around all the people who are out on the land hunting (Interview 15, Personal Communication, 2016). Other RTC

holders also expressed that their biggest Project-related concern was opening access to the public; they explained that increased access would likely result in an increase in the amount of people using the area for such purposes as hunting, and that such changes would likely have related biological effects to such things as wildlife abundance (Interview 14, Personal Communication, 2016).

One primary data contributor explained that potential Project-related effects to subsistence-related activities were directly linked to how the Project decided to manage the NAR and barge access. They explained that the proposed NAR would have an adverse effect on current road users, including hunters and trappers, if it was declared private; however, if the NAR (including barge crossings) was open access, it would contribute to such effects as people exploring new areas, an increased number of people using the access road, and an increased interest from hunters to hunt in the area (Interview 13, Pres. Comm. 2016). A positive potential effect to subsistence activities is likely in the LAA as a result of Project-related activities, since more people are likely to be able to engage in subsistence activities; however, the potential for adverse effects will be carried through the remainder of the assessment. Environmental concerns related to increased harvesting pressure are discussed in the **Wildlife and Wildlife Habitat Valued Component Assessment** (**Appendix 16-B**) and the **Vegetation Valued Component Assessment** (**Appendix 15-B**). Safety concerns related to increased road use are discussed in the **Community Health and Well-Being Valued Component Assessment** (**Appendix 25-A**), and the **Community Infrastructure and Services Valued Component Assessment** (**Appendix 22-A**).

During the Reclamation and Closure Phase, the Project may cause a change in access to the lands and resources in the areas surrounding the improved portion of the NAR, as components of the NAR change and are returned to baseline access conditions. These changes may cause individuals to change the areas that they are accessing to conduct subsistence activities, or may change the method of transportation that they are using to access the lands and resources for subsistence purposes. Changes to accesses likely to result during the Reclamation and Closure Phase will be experienced differently by different people. Some people may feel that the change in access to the land and resources likely to occur during this Project phase is a positive effect, as it will translate to fewer people using the land for subsistence-related purposes. Others who have grown accustomed to accessing this area during Project-related Construction and Operation may feel that reduced access during this Project phase will be an adverse effect. A positive effect to subsistence activities is likely as permanent upgrades to existing portions of the NAR will facilitate general improved access to conduct subsistence activities; however, the potential for adverse effects will be carried through the remainder of the assessment.

Availability of Time

The Project will create more and different business and employment opportunities, thereby increasing the amount of income available to support non-wage activities and affecting the LAA population's ability to conduct non-wage economic activities.

A larger population may increase demand for meat from subsistence sources, depending on the preferences and values of those who relocate to the LAA. The value of wild meat obtained through subsistence activities may also rise with an increase to the LAA population.

Changes to business and employment opportunities may affect residents' participation in subsistence-related activities. The LAA business community accommodates seasonal economic variation by giving staff time off during down periods, which staff use to conduct subsistence activities (Local Business Focus Group, Personal Communication, 2016). If fewer households have time for subsistence activities, fewer of them may consume wild foods. In addition, a change to the value of wild meat (obtained through subsistence activities) that the LAA annually consumes may also occur.

Availability of Income

An increase in the amount of available income during Project Construction and Operation to support subsistence-related activities may cause changes to the proportion of households consuming wild foods obtained from subsistence activities, and to the economic contribution of wild meat to the local LAA economy. Costs associated with conducting subsistence activities can be high and potentially prohibitive for some (Interview 15, Personal Communication, 2016). For those households currently limited in their ability to conduct subsistence activities due to a lack of resources (i.e., money for fuel, transportation, equipment, supplies, etc.), having increased employment and business opportunities to earn wages will be a positive effect as it will support increased engagement in subsistence activities. Those who are currently consuming wild foods as a means of reducing food costs may experience a decrease in consumption due to increased employment and business opportunities; these households may choose to buy a greater proportion of their food rather than obtain it through subsistence activities, when financial circumstances allow.

Summary

Overall, effects to subsistence activities are likely to be both positive and adverse; however, only the potential for adverse effects will be carried through the remainder of the assessment. While some LAA residents may increase their current level of subsistence-related activities because of Project-related changes to access during Construction, Operation, and Reclamation and Closure, others are likely to decrease their current level of subsistence-related activities according to their personal preference. A Project-related increase (during Construction and Operation) and decrease (during Reclamation and Closure) in the demand for goods and services are likely in the LAA, and are likely to have a positive effect for some residents and an adverse effect for others.

4.2.2 TRADITIONAL ECONOMY

Effects to the traditional economy of each potentially affected First Nation may occur as a result of Project-related activities during the Construction and Operation Phases of the Project, as well as through Project-related changes to employment and business opportunities. While these changes are identified and discussed in the following section, the authors of this report recognize and respect that each First Nation may identify and interpret the term traditional economy differently, and may view potential Project interactions differently. Also, not all aspects of the traditional economy may be represented in this assessment, as comprehensive qualitative and quantitative secondary data specific to each potentially affected First Nation were not readily available or provided to study authors, and primary data collection was not completed with each of the potentially affected First Nations identified in this assessment.

This section describes the nature of potential effects to be considered with respect to the subcomponent, traditional economy. Mitigation and enhancement measures for each potential effect are described in **Section 4.3**.

4.2.2.1 Potential Effect to the Quantity and Diversity of Traditional Economic Activities

The activities that comprise First Nations' traditional economies are diverse and continually evolving. Project activities in the LAA during the Construction, Operation, and Reclamation and Closure Phases may affect the quantity and diversity of traditional economic activities due to changes in sensory or environmental conditions. In addition, changes to employment and business opportunities may compete with or provide people with additional income for subsistence activities. Traditional economic activities may be affected differently depending on the type of activity and time of year that an activity is conducted, the parameters necessary to conduct that activity, and people's individual preference. The LAA is likely to experience a greater effect to traditional economic activities than the RAA due to its proximity to the Project. These potential effects are individually described in the following section for each potentially affected First Nation.

Tr'ondëk Hwëch'in

Site-specific information is limited regarding where current traditional economic activities are conducted and where the materials and goods necessary to facilitate these activities are harvested. The authors of this report conservatively assume that traditional economic activities are conducted in the RAA, which includes the LAA.

The quantity and diversity of traditional economic activities conducted by citizens may be adversely and positively affected by Project-related changes to income and availability to engage in the traditional economy. These changes are likely to result from an increased demand for goods and services from the Project during the Construction, Operation, and Reclamation and Closure Phases. Potential Project-related effects to a change in citizen availability or income are discussed in **Section 4.2.2** where it was found that

availability and income would have adverse and positive effects on the level of engagement in the TH traditional economy. As concluded in Section 4.2.2.2, both positive and adverse Project-related effects to the level of engagement in the traditional economy are likely for TH citizens as a result of Project activities; therefore, positive and adverse effects to the quantity and diversity of traditional economic activities conducted by TH are also likely.

Project-related effects to traditional economic activities as a result of changes to environmental or sensory conditions were examined. The analysis resulted in the following observations:

- No significant adverse residual effects were identified for any of the Fish and Fish Habitat subcomponents (refer to **Appendix 14-B Fish and Fish Habitat Valued Component Assessment**). Although there will likely be Project-related alterations to fish and fish habitat, none of these changes will result in measurable adverse effects to Arctic Grayling, Chinook Salmon, or Chum Salmon.
- No significant adverse residual effects were identified for any of the Vegetation subcomponents (refer to **Appendix 15-B Vegetation Valued Component Assessment**). Residual effects are likely to remain for most subcomponent due to habitat loss and reduced habitat effectiveness. However, these residual effects are predicted to be not significant as the magnitude of these effects is very low and the vegetation communities are not considered to be rare.
- No significant adverse effects were identified for any of the Wildlife subcomponents (refer to **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**). Although a residual effect might occur at the individual level if Project-related activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire Wildlife population at the regional level.
- No significant adverse effects were identified for any of the Birds and Bird Habitat subcomponents at the regional level (refer to **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**). Residual effects are likely to remain for most subcomponents due to habitat loss and reduced habitat effectiveness; however, these residual effects are predicted to be not significant as they are not likely to have any population-level effects.
- With the implementation of mitigation, no significant residual effects are likely for potential Project-related effects resulting from increases to access through the development of the NAR; effects to sensory conditions; decrease of availability or quality of land and resources related to the Current Traditional Use of Land and Resources; or quality of intangible cultural and spiritual resources (refer to **Appendix 24-A Land and Resource Use Valued Component Assessment**).

White River First Nation

Site-specific information related to where current traditional economic activities are conducted and where the materials and goods necessary to facilitate these activities are harvested was identified from a 2012 harvest study (Calliou Group 2012b). The Calliou Group report states that the WRFN harvesting activities occurred throughout the report's study area, which does not overlap with the Project, but is included in the RAA; therefore, most harvesting activities were concentrated along the Alaska Highway within a 35-km distance of Beaver Creek (Calliou Group 2012b).

The quantity and diversity of traditional economic activities that citizens conduct may be both positively and adversely affected by Project-related changes to income and availability. These changes are likely to result from an increased demand for goods and services from the Project during the Construction, Operation, and Reclamation and Closure Phases. These potential Project-related effects are discussed in **Section 4.2.2.2**. As concluded in this section, positive and adverse Project-related effects to the level of engagement in the traditional economy are expected for the WRFN members as a result of Project activities; therefore, positive and adverse effects to the quantity and diversity of traditional economic activities conducted by the WRFN are also likely.

Project-related effects to traditional economic activities as a result of changes to environmental and/or sensory conditions were examined; the analysis of which is detailed above.

Selkirk First Nation

Site-specific information related to where current traditional economic activities are conducted and where the materials and goods necessary to facilitate these activities are harvested from is limited. The authors of this report conservatively assume that traditional economic activities are currently conducted in the RAA, which includes the LAA.

The quantity and diversity of traditional economic activities that citizens conduct may be both positively and adversely affected by Project-related changes to income and availability. These changes are likely to result from an increased demand for goods and services from the Project during the Construction, Operation, and Reclamation and Closure Phases. Potential Project-related effects to a change in citizen availability or income are discussed in **Section 4.2.2.2**, where it was found that availability and income would have positive and adverse effects on the level of engagement in the SFN traditional economy. As concluded in this section, positive and adverse Project-related effects to the level of engagement in the traditional economy are likely for SFN citizens as a result of Project activities; therefore, positive and adverse effects on the quantity and diversity of traditional economic activities conducted by SFN are also likely.

Project-related effects to traditional economic activities as a result of changes to environmental or sensory conditions were examined, and the analysis is detailed above.

First Nation of Na-cho Nyäk Dun

Site-specific information related to where current traditional economic activities are conducted and where the materials and goods necessary to facilitate these activities are harvested is limited. The authors of this report conservatively assume that they are conducted in the RAA, which includes the LAA.

The quantity and diversity of traditional economic activities which citizens conduct may be adversely and positively affected by Project-related changes to income and availability. These changes are likely to result from an increased demand for goods and services from the Project during the Construction, Operation, and

Reclamation and Closure Phases. Potential Project-related effects to a change in citizen availability and income are discussed in **Section 4.2.2.2**. Availability and income will have both adverse and positive effects on the level of engagement in the FNNND traditional economy. As concluded in this section, adverse and positive Project-related effects to the level of engagement in the traditional economy are likely for FNNND citizens as a result of Project activities; therefore, adverse and positive effects to the quantity and diversity of traditional economic activities conducted by FNNND are also likely.

Project-related effects to traditional economic activities as a result of changes to environmental and sensory conditions were examined; the analysis of which is detailed above.

4.2.2.2 Potential Effect to the Level of Engagement in the Traditional Economy

The collective and individual level of engagement of each First Nation or citizen in the traditional economy may be directly and indirectly affected by Project-related activities in the LAA and RAA during the Construction, Operation, and Reclamation, and Closure Phases. As discussed in **Section 4.2.2.1**, traditional economic activities are influenced by several Project-related factors that are connected to the level of engagement in the traditional economy of each respective First Nation; these include such factors as access, sensory conditions, environmental conditions, income, and availability.

Potential effects to Current Traditional Land and Resource Use are assessed in **Appendix 24-A Land and Resource Use Valued Component Assessment**. Four potential residual effects were identified, none of which were determined to be significant. These are potential changes to access, sensory conditions, amount or quality of resources, and quality of intangible cultural and spiritual resources. Change in access was characterized as both adverse and positive depending on whether First Nations are displaced from where they are currently conducting or may wish to conduct traditional land and resource use activities in the future.

Access in terms of potential changes to the traditional economy, availability of time, and changes in income are discussed below by First Nation.

Tr’ondëk Hwëch” in

Access

The ability to access Traditional Territory is required to conduct current traditional land and resource use. The potential effects to TH current traditional land and resource use in the LAA and RAA during Construction and Operation as a result of a Project-related change in access are likely to be positive and adverse. Tr'ondëk Hwëch'in Elders shared that easier access to land and resources could be beneficial to traditional land and resource use as more citizens may go out on the land to conduct activities, and increased options to access the land could increase access to hunting grounds (TH Traditional Economy and Traditional Foods Focus Group, 2016).

For some individuals, a change in access may have an adverse effect on subsistence activities by displacing where individuals are currently conducting or may wish to conduct traditional use activities in the future. One TH citizen expressed concern over the potential effects associated with increased access to areas on their Traditional Territory where they currently conduct various traditional activities. In addition, TH citizens shared that they were concerned that the increased human presence facilitated by changes to access could also adversely affect traditional use activities by causing decreased animal abundance due to increased anthropogenic activity (Interview 14, Personal Communication, 2016).

In conclusion, the potential effects to TH current traditional land and resource use in the LAA and RAA during Construction and Operation as a result of a Project-related change in access are likely to be positive and adverse. Changes to how individuals and households are able to access land and resources may translate into changes to the proportion of households consuming wild foods obtained through traditional economic activities. Increased access can be viewed as an opportunity to conduct more traditional economic activities, or as a deterrent, resulting in a decrease in traditional economic activities. During the Reclamation and Closure Phase, potential effects to TH current traditional land and resource use are likely to be positive in the LAA and RAA.

Availability of Time

Tr'ondëk Hwëch'in members' availability of time to participate in the traditional economy may both increase and decrease as a result of the Project. As direct and indirect employment and business opportunities increase, citizens may experience competition for their available time to participate in traditional economic activities at different times in the Project life cycle. Traditional harvest activities require time for mentors and mentees to demonstrate and practise skills and knowledge, in addition to the time to conduct the activities themselves once they have acquired skills and knowledge. During focus group discussions, TH members said their available time already limits their participation in the traditional economy, a constraint that is more pronounced for citizens who live outside of the Traditional Territory and who must travel to reach harvest sites (TH Traditional Foods and Traditional Economy Focus Group, TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016).

Some citizens may be more available to participate in the traditional economy as a result of the Project. If citizens choose to relocate to their Traditional Territory for Project-related employment or business opportunities, they may also choose to engage in more traditional activities because they are closer to their land, resources, and other citizens. Participation may increase by TH citizens who gain direct Project employment and work a two-week-on, two-week-off rotation, which, compared to typical working hours, allows for longer, continuous amounts of time on the land.

During the Reclamation and Closure Phase, Project-related employment and business opportunities will decrease, but will remain higher than pre-Project conditions. The potential positive and adverse effects to individuals' availability to conduct traditional economic activities are the same as described for the Construction and Operation Phases, but are likely to be experienced to a lesser extent due to a reduction of Project spending on goods and services.

In conclusion, the potential effects to the current TH level of engagement in traditional economic activity are likely to be both positive and adverse. As described above, it is likely that TH will experience both positive and adverse effects related to availability.

Income

Some traditional economic activities require monetary support for items such as gas, equipment, and transportation. Increased direct and indirect employment and business opportunities during Construction, Operation, and Reclamation and Closure will increase income for some First Nations and individual citizens. Increased income may affect involvement in the TH traditional economy both positively and adversely.

As with availability of time, the extent of changes to traditional economy as a result of income will depend on members' personal choice. Some members said that increased income would help fund access to traditional harvest through purchase of hunting equipment (Interview 10, Personal Communication, 2016). For other citizens who use traditional harvest out of economic necessity, increased income as a result of the Project may encourage them to choose purchased food rather than wild food they harvest themselves.

Project-related employment and business opportunities will decrease during Reclamation and Closure, but will remain higher than pre-Project conditions. Effects to traditional economic activities as a result of increased income are likely to be the same as those for Construction and Operation, although to a lesser extent.

Summary

Overall, the Project's potential effects on the level of engagement on TH's traditional economy are likely to be both positive and adverse. While some citizens may experience a decrease in their engagement in the traditional economy as a result of Project-related changes to access, availability, and income, other citizens may experience an increase in their engagement in the traditional economy as a result of these same changes.

White River First Nation

Access

Changes in access to the WRFN Traditional Territory are likely to occur during the Construction and Operation Phases in the LAA as a direct result of Project activities. These changes may be experienced and characterized differently by different members at the community level. For some, a Project-related change in access will facilitate a positive effect to current traditional land and resource use as a result of increased opportunities to access the land and resources for traditional use-related purposes. A 2012 Harvest Study with the WRFN identified that hunting activities are primarily conducted by members along highway corridors (Calliou Group 2012b), suggesting that hunting by road is a preferred method for some WRFN Nation members to conduct some current traditional land and resource use.

Changes to access may have a neutral effect on the current land and resource use of those WRFN members, if specific or preferred areas for conducting traditional land and resource use activities do not interact with this Project activity. This preference is suggested by reports that the WRFN members conducted most harvesting activities in an area within 35 km of Beaver Creek along the Alaska Highway (Calliou Group 2012b). For some WRFN members, a change in access may have an adverse effect on traditional land and resource use by displacing where individuals are currently conducting or may wish to conduct activities in the future.

In conclusion, the potential effects to the WRFN current traditional land and resource use in the LAA and RAA during Construction and Operation as a result of a Project-related change in access are likely to be positive and adverse. Changes to how individuals and households are able to access land and resources may translate into changes to the proportion of households consuming wild foods obtained through traditional economic activities. Increased access may be viewed as an opportunity to conduct more traditional economic activities, or as a deterrent resulting in a decrease in traditional economic activities. During the Reclamation and Closure Phase, potential effects to WRFN current traditional land and resource use are likely to be positive in the LAA and RAA.

Availability of Time

Project activities during the Construction and Operation Phases are likely to have a positive or adverse effect on the level of engagement in the traditional economy, at the community level. An increased level of engagement in the WRFN traditional economy may result at a community level if the availability of citizens increases as a direct, indirect or induced effect of the Project. Numerous scenarios may result which may influence an increased level of engagement in the traditional economy. Though it is not possible to anticipate all potential scenarios which could contribute to an increase in availability at a community level, some examples are provided to illustrate the described pathway of effect. Availability may increase as a result of the Project if citizens who have been living outside of Yukon are able relocate back to take advantage of Project-related employment or business opportunities. These citizens may be able to engage

in more traditional activities because they are closer to their land and resources, as well as to other members. Further, an increased level of engagement may be experienced by WRFN members who gain direct Project employment and work a two-week on, two-week off rotation during the Construction and Operation Phases. As a result of this shift rotation schedule, WRFN members may be able to spend longer, continuous amounts of time conducting various traditional economic activities; hence, increasing their level of engagement in the traditional economy. This may be especially advantageous for those individuals who require or prefer conducting traditional economic activities over longer continuous time periods (i.e. hunting, trapping, etc.). An increased level of engagement in the WRFN traditional economy is considered to be a beneficial Project-related effect.

Income

Similar to the TH, the WRFN may experience both positive and adverse effects to participation in the traditional economy as a result of the Project's increased employment and business opportunities. See the discussion of potential effects to TH above.

Summary

Overall, the Project's potential effects on the level of engagement on the WRFN's traditional economy are likely to be both positive and adverse. While some citizens may experience a decrease in their engagement in the traditional economy as a result of Project-related changes to access, availability, and income, other citizens may experience an increase in their engagement in the traditional economy because of these changes.

Selkirk First Nation

Access

Access to Traditional Territory is required to conduct current traditional land and resource use. Through secondary research data collection, it was identified that SFN citizens are currently accessing their Traditional Territory for purposes related to traditional land and resource use (KCB 2013, Easton et al. 2013; Pearse and Weinstein 1988).

Changes in access to the SFN Traditional Territory are likely to occur during the Construction and Operation Phases in the LAA as a direct result of Project-related activities. These changes may be experienced and characterized differently by different citizens at the community level. For some, a Project-related change in access will facilitate a positive effect to current traditional land and resource use as a result of increased opportunities to access the land and resources for traditional use purposes. For others, a change in access may have an adverse effect on traditional land and resource use by displacing where individuals are currently conducting or may wish to conduct activities in the future.

In conclusion, the potential effects to SFN current traditional land and resource use in the LAA and RAA during Construction and Operation as a result of a Project-related change in access are likely to be positive and adverse. Changes to how individuals and households are able to access land and resources may translate into changes to the proportion of households consuming wild foods obtained through traditional economic activities. Increased access may be viewed as an opportunity to conduct more traditional economic activities, or as a deterrent, resulting in a decrease in traditional economic activities. During the Reclamation and Closure Phase, potential effects to SFN current traditional land and resource use are likely to be positive or neutral in the LAA and RAA.

Availability of Time

Though no SFN specific primary data were obtained to inform how availability influences the overall level of engagement in the SFN traditional economy, it is assumed that the influences described in TH primary data reflect similar influences that affect the engagement of members in the SFN traditional economy. As identified for TH, SFN may experience both positive and adverse changes to the amount of availability of time that members have to spend on traditional economic activities, depending on individual personal preference and other factors. See the discussion of potential effects to TH above.

Income

Though no SFN specific primary data were obtained to inform how income influences the overall level of engagement in the SFN traditional economy, it is assumed that the influences described in TH primary data reflect similar influences that affect the engagement of members in the SFN traditional economy. As identified for TH, SFN may experience both positive and adverse effects to participation in the traditional economy as a result of the Project's increase employment and business opportunities. See the discussion of potential effects to TH above.

Summary

Overall, the Project's potential effects on the level of engagement on SFN's traditional economy are likely to be both positive and adverse. While some citizens may experience a decrease in their engagement in the traditional economy as a result of Project-related changes to access, availability and/or income, other citizens may experience an increase in their engagement in the traditional economy because of these same changes.

First Nation of Na-cho Nyäk Dun

Access

Access to Traditional Territory is required to conduct current traditional land and resource use. Secondary data collection identified that FNNND citizens are currently accessing their Traditional Territory for traditional land and resource use related purposes (FNNND 2015; DPRA 2010; InterGroup Consultants Ltd. 2009).

Changes in access to the FNNND Traditional Territory may occur during the Construction and Operation Phases in the LAA as a direct result of Project-related activities. These changes are likely to be experienced and characterized differently by citizens at the community level. For some, a Project-related change in access will facilitate a positive effect to current traditional land and resource use as a result of increased opportunities to access the land and resources for traditional use purposes. For others, a change in access may have an adverse effect on traditional land and resource use by displacing individuals from where they are currently conducting or may wish to conduct activities in the future.

In conclusion, the potential effects to FNNND current traditional land and resource use in the LAA and RAA during Construction and Operation as a result of a Project-related change in access are likely to be positive and adverse. Changes to how individuals and households are able to access land and resources may translate into changes to the proportion of households consuming wild foods obtained through traditional economic activities. Increased access may be viewed as an opportunity to conduct more traditional economic activities, or as a deterrent, resulting in a decrease in traditional economic activities. During the Reclamation and Closure Phase, potential effects to FNNND current traditional land and resource use are likely to be positive in the LAA and RAA.

Availability of Time

Though no FNNND-specific primary data were obtained to inform how availability influences the overall level of engagement in the FNNND traditional economy, it is assumed that the influences described in TH primary data reflect similar influences affecting the engagement of members in the FNNND traditional economy. As indicated for TH, FNNND may experience both positive and adverse changes to the amount of availability of time that members have to spend on traditional economic activities, depending on individuals' personal preference and other factors. See the discussion of potential effects to TH above.

Income

Though no FNNND specific primary data were obtained to inform how income influences the overall level of engagement in the FNNND traditional economy, it is assumed that the influences described in TH primary data reflect similar influences affecting the engagement of members in the FNNND traditional economy. As for TH, FNNND may experience both positive and adverse effects to participation in the traditional economy as a result of the Project's increased employment and business opportunities. See the discussion of potential effects to TH above.

Summary

Overall, the Project's potential effects on the level of engagement on FNNND's traditional economy are likely to be both adverse and positive. While some citizens may experience a decrease in their engagement in the traditional economy as a result of Project-related changes to access, sensory conditions, availability, and income, other citizens may experience an increase in their engagement in the traditional economy because of these same changes.

4.2.2.3 Potential Effects to the Value of the Traditional Economy

The traditional economy of each First Nation reflects tangible (e.g., monetary, goods, materials) and intangible (e.g., sense of place, quality of life, cultural and spiritual well-being) value. The value of the traditional economy may be directly and indirectly affected by Project-related activities in the LAA and RAA during the Construction, Operation, and Reclamation and Closure Phases. As discussed in **Section 4.2.2.1**, traditional economic activities are influenced by several Project-related factors, which are correlated to the value of the traditional economy of each respective First Nation; these factors include environmental and sensory conditions, income, and availability.

Tr'ondëk Hwëch'in

Limited primary data were available to describe the monetary value of the TH traditional economy. The intangible value of the TH traditional economy is challenging to measure, despite its great value to TH and importance in Dawson land use planning (TH 2012a). The importance of the traditional economy is included as part of the assessment of potential Project-related effects to the quality of intangible cultural and spiritual resources in the **Land and Resource Use Valued Component Assessment** (**Appendix 24-A**).

White River First Nation

Limited information was received through primary data collection activities to describe the monetary value of the WRFN traditional economy. Since no data are available to support an assessment of the value of the traditional economy, however, this effect is not considered further in this assessment. The importance of the traditional economy is discussed and addressed as part of the assessment of potential Project-related effects to the quality of intangible cultural and spiritual resources in the **Land and Resource Use Valued Component Assessment** (**Appendix 24-A**).

Selkirk First Nation

Limited information was received through primary data collection activities to describe the monetary value of the SFN traditional economy. The intangible value of the SFN traditional economy is challenging to measure, even though the authors of this report understand and respect that it is of great value to SFN. The importance of the traditional economy is discussed and addressed as part of the assessment of potential Project-related effects to the quality of intangible cultural and spiritual resources in the **Land and Resource Use Valued Component Assessment** (**Appendix 24-A**). Consequently, this report does not include an assessment of potential Project-related effects on the current value of the traditional economy beyond what has already been described in the Project Proposal.

First Nation of Na-cho Nyäk Dun

Limited information was received through primary data collection activities to describe the monetary value of the FNNND traditional economy. The intangible value of the FNNND traditional economy is challenging

to measure, even though the authors of this report understand and respect that it is of great value to FNNND. The importance of the traditional economy is discussed and addressed as part of the assessment of potential Project-related effects to the quality of intangible cultural and spiritual resources in the **Land and Resource Use Valued Component Assessment** (**Appendix 24-A**). Consequently, this report does not include an assessment of potential Project-related effects on the current value of the traditional economy beyond what has already been described in the Project Proposal.

Summary

As limited to no data are available to support an assessment of effects to the value of the traditional economy for all potentially affected First Nations, this potential effect is not considered further in the assessment. Goldcorp will consider any future understanding of the value of the traditional economy as the Project progresses, if such data becomes available at a later date.

4.3 MITIGATION AND ENHANCEMENT MEASURES

This section describes mitigation measures, which are consistent with the definition provided by YESAA (i.e., measures for the elimination, reduction, or control of adverse environmental or socio-economic effects). Mitigation measures comprise any practical means taken to manage potential adverse effects and may include applicable standards, guidelines, and best management practices (BMPs) supported by specific guidance documents such as *Engaging with Yukon First Nations and Communities, A Quick Reference Guide to Effective and Respectful Engagement Practices* (FNNND, TH, and Yukon Chamber of Mines 2012). This section also describes measures that will be used to enhance potential beneficial effects of the Project.

The selection of mitigation and enhancement measures for Social Economy was informed by primary and secondary data collection, a review of mitigation and enhancement measures and follow-up programs undertaken for past projects, and First Nation and public input. Mitigation and enhancement measures to address potential adverse effects to the Social Economy discussed in the previous section of the report are described below and summarized in **Table 4-4**. The final column in the table identifies whether there is the potential for a residual effect. Residual effects are subsequently carried forward in the assessment (see **Section 4.4**).

4.3.1 PROJECT DESIGN MEASURES

The Proponent has limited the potential effects to social economy through the design of the Project, including measures such as the following, to the extent possible:

- Project siting – minimizing Project footprint size, using existing roads, avoiding sensitive habitats, and maintaining key habitat features
- Minimizing vehicle traffic along the NAR by rotating personnel on a fly-in, fly-out basis as much as possible.

- Implementing phased mine development and progressive Reclamation
- Aligning the NAR route from its junction with the North Klondike Highway, and following existing government-maintained roads up to Sulphur Creek. The route beyond that point will generally follow existing roads utilized by placer miners, and will be upgraded and realigned to be suitable for year-round access.

Such measures will reduce the effects of changes in land availability, and changes in access for various land and resource users.

4.3.2 TRADITIONAL ECONOMY ENHANCEMENT MEASURES

Enhancement measures associated with the traditional economy are intended to support the potential benefits that the Project may contribute to the LAA First Nations throughout all phases of the Project:

- Changes to traditional economic activities
- Changes to the level of engagement in the traditional economy.
- Changes to the value of the traditional economy.

Suggested traditional economy enhancement measures include:

- Describing the traditional economy in the orientation presented to all mine employees as part of the onboarding procedure.
- Encouraging employees to pursue traditional economy activities by providing a 2-week on, 2-week off schedule.

The enhancement measures associated with the traditional economy will be implemented in conjunction with other socio-economic mitigation measures, such as the Engagement Plan and cultural awareness training, among others. The development of traditional economy enhancement measures was informed by primary data collection, desktop research, and Project consultation and engagement. These enhancement measures reflect the Project proponent's commitments to continue to work closely with local First Nations and maximize local benefits associated with the Project.

4.3.3 NORTHERN ACCESS ROUTE MITIGATION

Mitigation measures associated with the NAR are intended to address the potential effects to subsistence activities throughout all phases of the Project by managing access and improving safety. Measures to minimize effects of the NAR are included in the Access Route Construction Management Plan (**Appendix 31-A**) and the Access Route Operational Management Plan (**Appendix 31-B**). These mitigation measures include, but are not limited to:

- Implementing access control at river crossings of the Stewart and Yukon Rivers.
- Permitting only Proponent-authorized vehicles to use the Proponent's barges and ice bridges on the Stewart and Yukon Rivers.

- Posting signage on Hunker Road at Sulphur Creek and at each barge landing advising the public of the hazards of using the NAR. The signs will also provide safety and emergency contact information including radio call-out procedures and radio frequencies.
- Prior to opening the road, the Proponent will advertise and hold at least one public meeting in Dawson to explain the hazards of using the road. Safety protocols and considerations will also be reviewed.
- Developing indicators for monitoring how traffic is affected by the Project and adapt management protocols accordingly.
- The Proponent will develop a NAR Emergency Response Plan, which will include incident prevention and response measures.

The Proponent will consider the wildlife-related concerns expressed by First Nations, regulators, and stakeholders, and when practical incorporate into the access route management plans. The Proponent will also consider and incorporate, where feasible, the land use and access-related concerns expressed by First Nations, regulators, and stakeholders.

The mitigation measures associated with the Access Route Construction and Operational management plans will be implemented in conjunction with other Project mitigation and management plans. For example, other measures associated with the NAR and applicable to addressing potential Project-related effects to subsistence activities are summarized in **Section 31.0 Environmental and Socio-economic Management Program**.

Access Route Construction and Operational Management Plans measures will be implemented prior to the start of the Construction Phase, and will be carried out through subsequent Project phases. Uncertainty regarding the effectiveness and the ability to implement the identified mitigation measures are associated with the Construction and Operation of the NAR. As part of the proposed socio-economic monitoring (refer to **Section 8.0**), the Proponent will track the effectiveness of these management plans from a community perspective through socio-economic monitoring, and will adapt its strategies as needed based on feedback received.

4.3.4 CULTURAL AWARENESS TRAINING

Goldcorp will develop cultural awareness training in cooperation with First Nations, and will be conducted during site orientation and periodic refresher training will be conducted thereafter. At a minimum, cultural awareness training will involve the following information:

- Pre-contact and post-contact history
- Basic First Nation governance structures
- Current cultural practices.

4.3.5 ENGAGEMENT PLAN

Goldcorp recognizes the importance of engaging and consulting First Nations, on whose Traditional Territory the Project will be located, as well as engaging with local communities, and establishing long-term, good-neighbour relationships. As part of this recognition and Goldcorp's commitment to engagement, an Engagement Plan will be developed for the Project. Mitigation measures associated with the Engagement Plan are intended to address potential effects to Social Economy throughout all phases of the Project, including:

- Subsistence activities
- Quantity and diversity of traditional economic activities
- Level of engagement in the traditional economy
- Value of the traditional economy.

The Engagement Plan will comprise several specific mitigation measures, including the following:

- Goldcorp will continue to communicate the status and schedule of the Project with local communities, residents, and organizations.
- Goldcorp will implement a Community Response Protocol to respond to questions and concerns regarding the Project. The Engagement Plan will lay out the strategy and actions required to publicize this protocol through the course of ongoing engagement to ensure it is accessible.
- Goldcorpwill communicate with its contractors and employees, as well as governments of all assessment area communities, regarding the Project's status and schedule. Goldcorp will communicate any temporary or seasonal closure.
- Goldcorp will continue to engage with First Nations, and consider their concerns, interests, and priorities.
- Goldcorp will consider the values, needs, and concerns expressed by First Nation and non-First Nation land and resource users in the development of Project plans, procedures, and communications.

Successful engagement and consultation are likely to lead to First Nations and local communities' understanding the Project, and sharing in Project-related benefits and economic opportunities. Past, present, and future engagement and consultation activities will also give Goldcorp first-hand knowledge of the concerns and priorities expressed by members of First Nations and local communities about the Project. Goldcorp will implement the mitigation measures associated with the Engagement Plan in conjunction with other socio-economic mitigation and enhancement measures.

Several of the Engagement Plan mitigation measures were informed by primary data collection and other Project communications. The Engagement Plan mitigation measures are generally standard in the industry, and reflect the Proponent's commitments to continue to work closely with First Nations and local communities. The Engagement Plan will be implemented for the Project's Construction Phase begins.

Communications regarding status and schedule as the Project transitions through Project phases will allow those engaged in the non-wage and traditional economy to begin planning accordingly. Uncertainty regarding the effectiveness and the ability to implement Engagement Plan mitigation measures will depend on the dynamic nature of the values, needs, and concerns of First Nations and individuals engaged in the non-wage and traditional, economy. In the event the Engagement Plan mitigation measures are not effective, potential benefits associated with the Project may not be realized to their fullest extent by local communities and residents, and miscommunications may occur. As part of the proposed socio-economic monitoring (refer to Section 8.0), Goldcorp will track the effectiveness of Engagement Plan mitigation measures, and adapt its strategies as needed based on feedback.

4.3.6 SUMMARY OF MITIGATION AND ENHANCEMENT MEASURES

Table 4-4 summarizes the potential effects, mitigation, and whether residual effects are likely following the application of mitigation measures.

Table 4-4 Summary of Potential Effects, Mitigation, and Enhancement Measures for the Social Economy Valued Component

Summary of Potential Effect	Project Components	Contributing Project Activities	Proposed Mitigation and/or Enhancement Measure(s)	Detectable / Measurable Residual Effect (Yes / No)
Non-wage Economy				
Potential effects on ability to conduct subsistence activities – access	Overall Construction, Operation, and Reclamation and Closure Phases	Project activities will change access to the LAA and therefore ability to conduct subsistence activities (non-wage economy).	• NAR Mitigation Measures • Engagement plan	Yes
Potential effects on ability to conduct subsistence activities – availability of time and income	Overall Construction, Operation, and Reclamation and Closure Phases	Labour needs and goods and services spending during the Construction and Operation Phases will result in an increase to the overall engagement in subsistence activities, and will change the availability and ability of individuals to conduct subsistence activities.	• NAR Mitigation Measures • Engagement plan	Yes
Traditional Economy				
Potential effect to the quantity and diversity of traditional economy activities	Overall Construction, Operation, and Reclamation and Closure Phases	Project activities during the Construction, Operation, and Reclamation and Closure Phases may affect the quantity and diversity of traditional economic activities due to changes in sensory or environmental conditions.	• Traditional Economy Enhancement Measures • Cultural Awareness Training • Engagement plan	No

Summary of Potential Effect	Project Components	Contributing Project Activities	Proposed Mitigation and/or Enhancement Measure(s)	Detectable / Measurable Residual Effect (Yes / No)
Access-related decrease in level of engagement in the traditional economy	Overall Construction, Operation, and Reclamation and Closure Phases	Traditional economic activities are influenced by several Project-related factors that are connected to the level of engagement in the traditional economy of each respective First Nation, including: access, sensory conditions, environmental conditions, income, and availability.	• Traditional Economy Enhancement Measures • Cultural Awareness Training • Engagement plan	Yes
Availability-related decrease level of engagement in the traditional economy (time)	Overall Construction, Operation, and Reclamation and Closure Phases	Traditional economic activities are influenced by several Project-related factors that are connected to the level of engagement in the traditional economy of each respective First Nation, including: access, sensory conditions, environmental conditions, income, and availability.	• Traditional Economy Enhancement Measures • Cultural Awareness Training • Engagement plan	No
Income-related decrease level of engagement in the traditional economy	Overall Construction, Operation, and Reclamation and Closure Phases	Traditional economic activities are influenced by several Project-related factors that are connected to the level of engagement in the traditional economy of each respective First Nation, including: access, sensory conditions, environmental conditions, income, and availability.	• Traditional Economy Enhancement Measures • Cultural Awareness Training • Engagement plan	Yes
Potential effect to the value of the traditional economy	Overall Construction, Operation, and Reclamation and Closure Phases	Traditional economic activities are influenced by several Project-related factors, including: environmental and sensory conditions, income, and availability.	• Traditional Economy Enhancement Measures • Cultural Awareness Training • Engagement plan	No

4.4 RESIDUAL EFFECTS AND THEIR SIGNIFICANCE

This section describes anticipated residual effects of the Project (i.e., effects likely to occur subsequently to the application of mitigation measures) to the Social Economy.

This section also determines the significance of residual effects to Social Economy, including non-wage and traditional economies that may occur due to interactions with the Project. This section discusses the significance of each residual effect for the Social Economy VC, as well as the likelihood of the residual effect and the level of confidence associated with the determinations of significance and probability. The assessment recognizes that both adverse and beneficial components of the effects were identified in the potential effects discussion, however the residual effects assessment focusses on mitigation of adverse effects. The determination of significance for the potential residual effects on the VC is based on consideration of the residual effects characteristics and socio-economic context of the Social Economy VC.

4.4.1 RESIDUAL EFFECTS CHARACTERISTICS AND SIGNIFICANCE DEFINITIONS

4.4.1.1 Residual Effects Characteristics

Definitions for ratings applied to residual effects characteristics developed with specific reference to the Social Economy VC are presented in **Table 4-5**.

Table 4-5 Effect Characteristics Considered When Determining the Significance of Residual Effects to the Social Economy

Residual Effects Characteristic	Definition	Rating
Direction	Identifies whether the residual effect will be adverse or positive.	• Adverse – The trend of the effect is considered undesirable or worsening from baseline conditions. • Neutral – The trend of the effect is considered neither worsening nor improving from baseline conditions. • Positive – The trend of the effect is considered desirable or an improvement from baseline conditions.
Magnitude	Size or severity of the residual effect – generally measured in terms of the proportion of the VC affected within the LAA, relative to the range of historic variation.	• Negligible – No effect is detectable from baseline conditions, or is in the normal range of variability in socio-economics. • Low – Effect is detectable, but is not likely to be experienced at the community-wide level. The effect is limited to an inconvenience or nuisance, and is compatible with existing available policy guidance. • Moderate – Effect will result in demonstrable change and is possible at the community-wide level, but remains within historic norms, and does not present a management challenge. • High – Effect will result in changes beyond historic norms, and presents a management challenge.

Residual Effects Characteristic	Definition	Rating
Geographic Extent	Spatial scale over which the residual effect is likely to occur. Note that while all effects occur within the LAA, the LAA for some VCs extends out as far as the RAA or beyond.	• Local (limited to LAA). • Regional (limited to RAA or beyond RAA).
Timing	Occurrence of the residual effect with respect a temporal attribute important to the VC (e.g., time of day, season, stage in life cycle).	• Seasonal – effect is likely to occur during a time of year. • Not applicable – effect is likely to occur year-round.
Frequency	How often the residual effect is likely to occur.	• Infrequent – occurs once. • Frequent – occurs at irregular intervals. • Continuous – occurs on a regular basis and at regular intervals.
Duration	Length of time over which the residual effect is likely to persist.	• Short-term – occurs during the Construction Phase. • Long-term – occurs throughout the Operation and Reclamation and Closure Phases. • Permanent – occurs during the Post-closure Phase and beyond.
Reversibility	Whether the residual effect can be reversed once the activity causing the residual effect ceases. Irreversible effects are considered to be permanent.	• Reversible – effect can be reversed to baseline or equivalent conditions, considering non-Project-related change to the Social Economy VC. • Partially reversible – effect can be reversed partially to baseline or equivalent conditions. • Irreversible – effect is permanent.
Probability of occurrence	Likelihood that the predicted residual effect will occur.	• Likely – past experience indicates that the effect is likely to occur as a result of the Project. • Unlikely – past experience indicates that the effect is not likely to occur as a result of the Project.
Context	The extent to which the VC has been affected by past and present socio-economic processes and conditions, its potential sensitivity to the Project-related residual effect, and its ability to recover from that effect (i.e., resilience).	• Low – limited ability of community to respond to disturbances. • Moderate – moderate ability of community to respond to disturbances. • High – strong ability of community to respond to disturbances.

4.4.1.2 Significance Definition

The significance of potential residual effects was determined based on the residual effect characteristic rating, a review of secondary data sources, consultation with government agencies, feedback obtained through primary data collection, and professional judgement. The level of each residual effect has been rated as Not Significant, or Significant, as follows:

Not Significant Effects determined to be Not Significant are those that are greater than negligible but do not meet the definition of Significant. Adverse residual effects that are determined to be Not Significant are carried forward to the CEA.

Significant Effects determined to be Significant are those characterized as high magnitude, any geographic extent, continuous frequency, long-term duration, and likely to occur. Context, in particular low or moderate resiliency, is also considered. Significant adverse residual effects are carried forward to the CEA.

The levels of confidence (i.e., low, moderate, high) for each predicted Project-related effect are discussed to characterize the level of uncertainty associated with significance determinations. Level of confidence is typically based on expert judgement, and is characterized as follows:

- **Low** – Judgement is hampered by an incomplete understanding of the cause-effect relationship, or a lack of data or primary data feedback on a specific topic.
- **Moderate** – Reasonable understanding of the cause-effect relationship exists, and there is adequate data; however, outcomes may be influenced by external influences, preferences, and choices
- **High** – There is a good understanding of the cause-effect relationship and ample data, including regular feedback during primary data collection.

Predications regarding the characterization of residual effects on the Social Economy as a result of the Project carry an element of uncertainty due to the dynamic nature of socio-economics, including external influences such as environmental conditions and individual choices.

For socio-economic VCs, standards, guidelines, objectives, and thresholds are not well defined, understood, nor agreed-upon (YESAB 2005). Characterizing the significance of residual socio-economic effects is more subjective, therefore, and is strongly based on professional judgment, and feedback and input from primary data collection. For example, during primary data collection activities, several individuals interviewed defined “significant effect to the social economy” in the following ways:

- To have workers live in the LAA and contribute to the non-wage economy and community. Having people stay and not just flow through Dawson would be a positive significant effect (Interview 23, Personal Communication, 2016; Interview 25, Personal Communication, 2016).
- The Proponent getting involved in the non-wage economy through financial and/or in-kind donations (Interview 12, Personal Communication, 2016; Interview 25, Personal Communication, 2016; Interview 30, Personal Communication, 2016)

- Increasing the connectivity of roads in the LAA through the NAR, as well as having roads maintained year-round, which may result in an increase in anthropogenic activities in the area including (but not limited to) mining, hunting, fishing, and recreational use (Interview 4, Personal Communication, 2016; Interview 11, Personal Communication, 2016; Interview 13, Personal Communication, 2016; Interview 24, Personal Communication, 2016; Interview 29, Personal Communication, 2016).

The above feedback describes how individual interpretations of significance can vary, reflecting the perceptions and values of potentially affected communities. Incorporating feedback identified through primary data collection is a means to consider the context in which residual effects may be experienced. Given the challenges of a lack of defined thresholds, integrating community context, resiliency, and perceptions, and inherent uncertainty regarding the dynamic nature of socio-economics, it is necessary to undertake a qualitative assessment approach for socio-economic VCs using both quantitative and qualitative data.

4.4.2 NON-WAGE ECONOMY

This subsection describes the residual effects anticipated for the Non-wage Economy. As discussed above, the context that refers to sensitivity and resiliency of the communities in the LAA and RAA plays an important role in characterizing the significance of residual effects. In terms of community economic resiliency, the context in the LAA and RAA is likely to shape the way residual effects materialize in the different communities. The community economic resiliency in the LAA and RAA is generally likely to be similar for each non-wage economy residual effect. As such, the context and resiliency in the LAA and RAA are discussed here.

In the LAA and RAA, mining and the boom and bust cycles (annual or longer-term) that accompany the industry are strongly familiar with the communities that may be affected by the Project. The economies, and therefore influences on the non-wage economy, across all assessment areas are inherently tied to mining, and will likely cycle through various boom and bust cycles regardless of whether the Project proceeds. Moreover, the communities in the LAA and RAA have experienced historical up and down cycles tied to external factors such as commodity prices and the US dollar. In terms of gold specifically, up cycles were experienced from 1985 to 1988, 1993 to 1996, and 2001 to 2011 (Paradigm Capital 2016). Regardless, achieving sustainable economic development has been identified across the communities in the assessment areas as a priority and a step towards other community visions, such as growing local populations and labour forces. In the RAA, although mining comprises a portion of Yukon's economy, other sectors such as tourism and public administration are also strong contributors. Awareness of the need to diversify local economies and to be cautious regarding the benefits associated with large mining projects exists. This awareness, accompanied by tangible community-led goals, demonstrates the social capital of communities, particularly in the LAA, and their ability to harness opportunities available through the Project, and translate them into other opportunities at the time of closure, whether a temporary or permanent

planned or unplanned event. Ultimately, the smaller populations, labour forces, and focused local economies of the LAA render these communities less resilient than the broader RAA, but still capable of responding to influences as a result of the Project.

4.4.2.1 Access-related Residual Effect on Ability to Conduct Subsistence Activities (Non-wage Economy)

The residual effect of an access-related change in ability to conduct subsistence activities is likely to begin in the Construction Phase, and extend through the Operation and Reclamation and Closure Phases until such time as access route improvements are decommissioned. It is likely that access-related changes to the ability of individuals to conduct subsistence activities will be experienced as an adverse effect.

The effects characteristics ratings for change in ability to conduct subsistence activities are summarized in **Table 4-6**. The development of the Project will cause a direct change in access to the lands and resources in the areas surrounding the section of the NAR from Stewart River north to the southern end of the existing road. Increases to the road network and improvement to the overall condition of the road, among other upgrades, within the improved portion of the NAR north of Stewart River, represent changes to how individuals and/or households may be able to access the land and resources, which may further translate into changes to the proportion of households consuming wild foods obtained through subsistence activities.

The changes are likely to be experienced differently by different individuals and households. For some, a change in access will facilitate a positive effect related to increased opportunities to access the land and resources and conduct subsistence activities. For others, this change in access will facilitate an adverse effect as it may change where and when individuals are currently conducting subsistence activities, in addition to influencing where individuals may consider conducting subsistence activities in the future. Differing views on whether increased and improved access via the NAR will benefit subsistence activities were identified throughout primary data collection activities (e.g., Interview 4, Personal Communication, 2016, Interview 13, Pres. Comm. 2016, Interview 14, Personal Communication, 2016, Interview 15, Personal Communication, 2016).

In the Community Health and Well-Being, and Community Infrastructure and Services VC Assessment Reports (**Appendices 25-A** and **22-A**, respectively), it was determined that through the application of mitigation, such as road improvements, communication protocols, continuous education and information sharing, and country food monitoring, no detectable or measurable residual effects will result in relation to food security, accidents and injuries, or increased vehicle traffic. In the **Vegetation Valued Component Assessment** (**Appendix 15-B**), it was determined that vegetation will be lost as a result of clearing activities in the Project footprint, but the magnitude will be low with the application of mitigation, such as restricting clearing to the defined footprint, retaining riparian vegetation wherever possible, and minimizing scarring and destruction of native vegetation outside of the Project footprint. In the **Wildlife and Wildlife**

Habitat Valued Component Assessment (**Appendix 16-B**), it was determined that residual effects on the subcomponents will likely occur, but that the magnitude will be low.

In addition to the measures identified for the Community Health and Well-Being, Community Infrastructure and Services, Vegetation, and Wildlife VCs, the Proponent's commitments to developing the Access Route construction and operational management plans, as well as the engagement plan, will further enhance and mitigate access-related effects to conducting subsistence activities.

The adverse aspects of the residual effect will likely be not significant and will be low to moderate in magnitude, local but pronounced in winter, continuous in frequency, long-term in duration, partially reversible, and likely to occur.

Table 4-6 Summary of Effect Characteristics Ratings for Access-related Change in Ability to Conduct Subsistence Activities (**Non-wage Economy**)

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	A Project-related change in access is likely as an adverse outcome of the Project. Increased access may be viewed as a deterrent to conducting subsistence activities, resulting in a decrease in subsistence activities.
Magnitude	Low to Moderate	Depending on the time of year and specific area along the NAR, change to subsistence activities may range from low to moderate in magnitude.
Geographic Extent	Local	Changes to subsistence activities will likely be focused on the LAA, which exhibits a smaller population and more a frequent use of the LAA for subsistence purposes.
Timing	Seasonal	Project-related changes to access are likely throughout all seasons, but will be most pronounced in the winter, as existing portions of the NAR will be closed during this time of year.
Frequency	Continuous	An increase in Project-related access is likely to result in changes to subsistence activities through the Construction and Operation Phases. Permanently upgraded sections of the NAR are likely to enhance access to those existing portions of the NAR that will remain accessible to the public during the Reclamation and Closure Phase.
Duration	Long-term	A Project-related increase or improvement in access, and resulting changes to subsistence activities are likely to occur throughout the life of the Project (i.e., Construction, Operation, Reclamation and Closure).
Reversibility	Partially reversible	An increase in Project-related access is likely to diminish after the Operation Phase.
Probability of Occurrence	Likely	Subsistence activities will likely change as a result of a Project-related increase in access in the LAA along the NAR.
Context	Moderate	The LAA communities demonstrate a moderate ability to respond to disturbances.

4.4.2.2 Decrease in Availability of Time and Ability to Conduct Subsistence Activities (Non-wage Economy)

The adverse residual effect of a decrease in availability and an ability to conduct subsistence activities related to the non-wage economy are likely to begin in the Construction Phase and extend through the Operation and Reclamation and Closure Phases. Project-related employment opportunities are likely to result in an increased population in the LAA and RAA, although the precise number of temporary and permanent workers who will reside in either LAA or RAA communities is difficult to determine. It is assumed that a Project-related population increase will therefore increase the amount of people who are available to participate in the LAA non-wage economy. Depending on the preferences and values of those who relocate to the LAA, a change to the proportion of households who consume wild foods obtained through subsistence activities may occur. Project-related increases to local business and employment opportunities may influence such related effects as a reduced availability of the local population to conduct non-wage economic activities, and an increase in the amount of income available to support non-wage activities.

In addition to the measures identified for the Vegetation and Wildlife VCs that relate to the ability to engage in subsistence activities, the Proponent's commitments related to the Access Route management plans, and the engagement plan will further enhance and mitigate a change in availability and ability to conduct subsistence activities related to the non-wage economy.

Ultimately, a Project-related change in availability and the ability to conduct subsistence activities related to the non-wage economy are likely to be experienced as an adverse outcome of the Project. The residual effect of a decrease in availability and ability to conduct subsistence activities related to the non-wage economy are likely to be not significant. This effect is rated as negligible to low in magnitude, local but pronounced in winter, continuous in frequency, long-term in duration, fully reversible, and likely to occur.

Table 4-7 Summary of Effect Characteristics Ratings for Change in Availability of Time and Ability to Conduct Subsistence Activities (Non-wage Economy)

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	A Project-related change in the overall availability and income of the LAA population is likely as an adverse outcome of the Project. Project employment or increased local business commitments may result in a decreased availability of time for subsistence activities related to the non-wage economy.
Magnitude	Negligible to Low	Depending on the type(s) of subsistence activities that individuals are interested in conducting, their availability and flexibility at that time of year, and the overall changes to income as a result of the Project, a change in the availability and ability to conduct subsistence activities is likely to not be detectable or detectable at a low level.
Geographic Extent	Local	Changes to subsistence activities will likely be focused on the LAA, which exhibits a smaller population and more a frequent use of the LAA for subsistence-related purposes.

Residual Effects Characteristic	Rating	Rationale for Rating
Timing	Seasonal	A Project-related change in the availability and ability of individuals to conduct subsistence activities are likely to occur throughout all seasons, but will be most pronounced in the winter, as existing portions of the NAR will be closed during this time of year and subsistence activity levels are generally lower at this time of year. Moreover, subsistence activities are connected to harvesting seasons.
Frequency	Continuous	A Project-related change in the availability (time) and ability of individuals to conduct subsistence activities are likely to occur through the Construction and Operation Phases. Permanently upgraded sections of the NAR are likely to enhance access to those existing portions of the NAR that will remain accessible to the public during the Reclamation and Closure Phase.
Duration	Long-term	A Project-related change in the availability and ability of individuals to conduct subsistence activities are likely to occur throughout the life of the Project (i.e., Construction, Operation, Reclamation and Closure).
Reversibility	Fully reversible	Project-related change in the availability and ability of individuals to conduct subsistence activities is likely to diminish after the Operation Phase of the Project.
Probability of Occurrence	Likely	The availability of individuals to conduct subsistence activities will likely change as a result of the Project in the LAA, along the NAR.
Context	Moderate	The LAA communities demonstrate a moderate ability to respond to disturbances.

4.4.3 TRADITIONAL ECONOMY

The residual effects to the current traditional economy have been assessed for the Project as a whole, and have not differed between First Nations; however, Goldcorp recognizes that the Project is likely to affect First Nations differently, depending on the extent of their Traditional Territory within the Project footprint and assessment areas, as described below in **Table 4-8**. The Project is located on Crown lands that are within the established Traditional Territory of TH, and portions of the proposed NAR are within the established Traditional Territory of the SFN and the FNNND. The Project is located outside of the Traditional Territory of the WRFN as currently recognized by the Yukon Government; the Project is within their asserted territory as defined in the *Northern Boundary Document* presented to Canada and Yukon Government in February 2013 (Easton et al. 2013). Based on communication from the WRFN with Government and the Proponent regarding the WRFN's expressed need to be consulted and accommodated on the Project, the discussion of current traditional use of land and resources considers the asserted territory of the WRFN.

Table 4-8 Interaction Matrix between First Nation Traditional Lands and Project Area

First Nation	Interaction	Area of Project Footprint Overlap with Traditional Territory (ha)[1]	Percent Overlap of Traditional Territory (%)	Description of Overlap	Traditional Land Use Study Available?	TK Available?	Considerations Based on Traditional Land Use Study and TK
Tr'ondëk Hwëch'in	Likely	3404	0.05	Project footprint overlaps the Traditional Territory.	Yes	Yes	Traditional Land Use Study and TK information describe historical and current traditional use of the areas of interaction between TH Territory and the Project.
White River First Nation (Recognized Territory)	Unlikely	-	0.00	Project footprint does not overlap with Traditional Territory as recognized by the Yukon government.	Yes	Yes	Traditional Land Use Study and TK information describe historical traditional use of the Coffee Creek area as a meeting place with other First Nations.
White River First Nation (Asserted Territory)	Likely	2418	0.04	The Mine Site and a portion of the NAR are within the WRFN asserted territory as defined in *Northern Boundary Document* that was presented to Canada and Yukon Government in February 2013.	Yes	Yes	Traditional Land Use Study and TK information describe historical traditional use of the Coffee Creek area as a meeting place with other First Nations.
Selkirk First Nation	Likely	308	0.007	The southern-most section of the NAR, mainly new build, overlaps with the western portion of the Traditional Territory. Category B lands are not in the footprint.	No[2]	Yes	TK information describes historical traditional use of the Coffee Creek area and current traditional use of the Traditional Territory in general. No specific references to the areas of interaction between SFN Territory and the Project; noting the lack of Traditional Land Use Study available.
First Nation of Na-cho Nyäk Dun	Unlikely	665	0.00	A northern portion of the existing NAR (providing placer mine access) overlaps the south west portion of the Traditional Territory.	No	Yes	TK information describes historical traditional use of the Coffee Creek area and current traditional use of the Traditional Territory in general, No specific references to the areas of interaction between FNNND territory and the Project.

Notes: [1] Established Traditional Territory of the TH, SFN, FNNND, and the entire asserted territory of the WRFN.
[2] Traditional Land Use Study information to be integrated into relevant management plans when available.

Table 4-9 Anticipated Scope of Residual Effects to First Nations

Residual Effect to Traditional Economy	Tr'ondëk Hwëch'in	White River First Nation	Selkirk First Nation	First Nation of Na-cho Nyäk Dun
Access-related decrease in level of engagement in the traditional economy	Likely	Unlikely	Possible	Unlikely
Income-related decrease in level of engagement in the traditional economy	Likely	Unlikely	Possible	Unlikely

Notes:

Unlikely: Effect is limited in extent and therefore not likely to have a substantive influence on the short- or long-term current use of land and resources.

Possible: Effects are limited in extent, however may overlap for a small percentage of the Traditional Territory.

Likely: Effect is more extensive within the Traditional Territory and is likely to affect the land and resource use by the First Nation

4.4.3.1 Access-related Decrease in Level of Engagement in the Traditional Economy

The adverse residual effect of access-related change in the ability to conduct traditional economic activities is likely to begin in the Construction Phase, and extend through the Operation and Reclamation and Closure Phases until such time as access route improvements are decommissioned. Access-related changes in the ability to conduct traditional economic activities will likely be experienced as both a positive and adverse effect.

The effects characteristics ratings for change in ability to conduct traditional economic activities are summarized in **Table 4-10** as being positive and adverse in direction, low to moderate in magnitude, local to regional in geographic extent, seasonal, continuous in frequency, long-term in duration, partially reversible, and likely to occur.

The development of the Project will cause a direct change in vehicular access to the lands and resources in the areas surrounding the Project footprint. In the winter, vehicular access will be possible to the Mine Site, whereas currently there is only access a short distance from the Alaska Highway. In the summer, access will be extended a little closer to the barge landing on the Stewart River. An increase in the road network and improvements to the section of the NAR between Stewart River and the end of the existing road, may result in changes to how individuals and/or households are able to access land and resources, which may further translate into changes to the proportion of households consuming wild foods obtained through traditional economic activities.

The changes are likely to be experienced differently by different individuals among First Nations. For some, a change in access will facilitate a positive effect related to increased opportunities to access the land and resources and conduct traditional economic activities. For others, this change in access will facilitate an adverse effect as it may displace where and when individuals are currently conducting traditional economic activities, in addition to influencing where individuals may consider conducting traditional economic

activities in the future. Differing views on whether increased and improved access via the NAR will benefit traditional economic activities were identified throughout primary data collection activities (e.g., TH Traditional Economy and Traditional Foods Focus Group, 2016; Interview 14, Personal Communication, 2016).

As presented in the Community Health and Well-Being and Community Infrastructure and Services VC Assessment Reports (**Appendices 25-A** and **22-A**, respectively), the application of mitigation such as road improvements, communication protocols, continuous education and information sharing, and country food monitoring, no detectable or measurable residual effects will likely result in relation to food security, accidents and injuries, or increased vehicle traffic. In the **Vegetation Valued Component Assessment** (**Appendix 15-B**), it was determined that vegetation will be lost as a result of clearing activities in the Project footprint, but that the magnitude will be low with the application of mitigation, such as restricting clearing to the defined footprint, retaining riparian vegetation wherever possible, and minimizing scarring and destruction of native vegetation outside of the Project footprint. In the **Wildlife and Wildlife Habitat Valued Component Assessment** (**Appendix 16-B**) it was determined that residual effects on the subcomponents would occur, but that the magnitude would be low.

In addition to the measures identified for the Community Health and Well-Being, Community Infrastructure and Services, Vegetation, and Wildlife and Wildlife Habitat VCs, the Project proponent's commitments related to traditional economy enhancement measures, the Access Route Management Plans, and the Engagement Plan will further enhance and mitigate access-related effects to conducting traditional economic activities.

It is likely that both the positive and adverse aspects of the residual effect will be not significant. The residual effects are likely to be low to moderate in magnitude, focused on the improved portion of the NAR, seasonal, continuous in frequency, long term in duration, partially reversible within communities with a moderate ability to respond to disturbances, and likely to occur.

Table 4-10 Summary of Effect Characteristics Ratings for Access-related Change in Ability to Conduct Traditional Economic Activities

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	Increased access may be viewed as a deterrent to conduct more traditional economic activities, resulting in a decrease in traditional economic activities.
Magnitude	Low to Moderate	Depending on the time of year and specific area along the NAR, change to traditional economic activities may range from low to moderate effects.
Geographic Extent	Local to Regional	Changes to traditional economic activities are likely to be focused on the improved portion of the NAR north of Stewart River and adjacent areas of the RAA.
Timing	Seasonal	Project-related changes to access are likely throughout all seasons, but will be most pronounced in the winter, as existing portions of the NAR will be closed during this time of year.
Frequency	Continuous	An increase in Project-related access is likely to result in changes to traditional economic activities through the Construction and Operation Phases. Permanently upgraded sections of the NAR are likely to enhance access to those existing portions of the NAR that will remain accessible to the public during the Reclamation and Closure Phase.
Duration	Long-term	A Project-related increase and/or improvement in access, and resulting changes to traditional economic activities are likely to occur throughout the life of the Project (i.e., Construction, Operation, Reclamation and Closure).
Reversibility	Partially reversible	An increase in Project-related access is likely to reverse after the Operation Phase of the Project.
Probability of Occurrence	Likely	Traditional economic activities will likely change as a result of a Project-related increase in access in the LAA, along the NAR.
Context	Moderate	The LAA communities demonstrate a moderate ability to respond to disturbances.

4.4.3.2 Income-related Decrease in Level of Engagement in the Traditional Economy

The adverse residual effect of income-related change in the ability to conduct traditional economic activities is likely to begin in the Construction Phase, and extend through the Operation and Reclamation and Closure Phases. The not significant residual effect is likely low to moderate in magnitude, predominantly in the LAA, seasonal, continuous in frequency, long term in duration, fully reversible, and likely, within communities with a moderate ability to respond to disturbances.

The effects characteristics ratings for income-related change in the ability to conduct traditional economic activities are summarized in **Table 4-10**.

Table 4-11 Summary of Effect Characteristics Ratings for Income-related Change in Ability to Engage in Traditional Economic Activities

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	A Project-related change in income is likely as both an adverse outcome of the Project. Increased income may be viewed as a deterrent to conducting traditional economic activities, resulting in a decrease in traditional economic activities.
Magnitude	Low to Moderate	Depending on the amount of income that one invests in conducting traditional economic activities, the magnitude of effects may range from low to moderate effects.
Geographic Extent	Local to Regional	Changes to traditional economic activities are likely to be focused on the LAA, though some changes may be experienced in the RAA.
Timing	Seasonal	Project-related changes to availability are likely throughout all seasons.
Frequency	Continuous	An increase in Project-related availability is likely to result in changes to traditional economic activities through the Construction and Operation Phases.
Duration	Long-term	A Project-related increase in availability is likely to occur through the Construction and Operation Phases.
Reversibility	Fully reversible	Employment opportunities and resulting changes in incomes are likely to diminish after the Operation Phase of the Project.
Probability of Occurrence	Likely	Traditional economic activities will likely change as a result of a Project-related increase in income in the LAA, along the NAR.
Context	Moderate	The LAA communities demonstrate a moderate ability to respond to disturbances.

4.4.4 SUMMARY OF PROJECT–RELATED RESIDUAL ADVERSE EFFECTS AND SIGNIFICANCE

The Project is likely to result in potential effects on the Social Economy that are perceived as positive, and adverse; however, only the assessment of residual adverse effects was carried forward. **Table 4-12** summarizes the residual effects of the Project and the determination of significance of these residual effects on the non-wage economy subcomponent, and **Table 4-13** summarizes the residual effects of the Project and the determination of significance of these residual effects on the traditional economy subcomponent of the Social Economy VC. The residual effects to the non-wage and traditional economies have been determined to be not significant, based on the characterization of the effects. It is unlikely that any of the residual effects will result in changes beyond historic norms, or present a management challenge, particularly with the implementation of mitigation and enhancement measures.

Table 4-12 Summary of Potential Residual Adverse Effects for Non-wage Economy

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Notes for details)										
			Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Likelihood	Context	Significance	Level of Confidence
Construction and Operation Phase													
Access-related residual effect on ability to conduct subsistence activities	Construction and Operation-related population increase, demand for goods and services, and Project development may have a measurable influence on the short- or long-term integrity of subsistence activities.	• NAR Mitigation Measures • Engagement plan	A	LM to MM	LAA	S	CF	PR	L	M	M	NS	M
Decrease in availability of time and ability to conduct subsistence activities.	Construction and Operation-related population increase, demand for goods and services, and Project development may have a measurable influence on the short- or long term integrity of subsistence activities.	• NAR Mitigation Measures • Engagement plan	A	NM to LM	LAA	S	CF	PR	L	M	M	NS	M
Reclamation and Closure Phase													
Access-related residual effect on ability to conduct subsistence activities	Reclamation and Closure may have a measurable influence on the short- or long-term integrity of subsistence activities.	• NAR Mitigation Measures • Engagement plan	A	LM to MM	LAA	S	CF	PR	L	M	M	NS	M

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Notes for details)										
			Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Likelihood	Context	Significance	Level of Confidence
Decrease in availability of time and ability to conduct subsistence activities	Reclamation and Closure may have a measurable influence on the short- or long-term integrity of subsistence activities.	• NAR Mitigation Measures • Engagement plan	N	NM to LM	LAA	S	CF	LT	C	L	M	NS	M

Notes:

Direction	Positive (P), Neutral (N), Adverse (A).
Magnitude:	NM = Negligible, LM = Low magnitude, MM = Moderate magnitude, HM = High magnitude
Geographic Extent:	No = none, Site = negligible, LAA = low, RAA = regional, T = territorial
Timing:	S=seasonal
Duration:	LT = Long-term, MT = Moderate-term, ST = Short-term, TT = Transient term
Frequency:	CF = Continuous, FF = Frequent, UF = Uncommon, RF = Rare
Reversibility:	FR = Fully Reversible, PR = Partially Reversible, I = Irreversible, C = Change but may fluctuate from positive to adverse for the duration
Context:	L=Low, M=Moderate, H=High
Likelihood:	L=Likely, U=Unlikely
Significance:	NS = Not-Significant, S = Significant
Level of Confidence:	L=Low, M=Moderate, H=High

Table 4-13 Summary of Potential Residual Adverse Effects for Traditional Economy

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Notes for details)										
			Direction	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Likelihood	Context	Significance	Level of Confidence
Construction and Operation Phase													
Access-related decrease in level of engagement in the traditional economy	Project-related activities will change access to the LAA by First Nations and decrease the ability to conduct traditional economic activities.	• NAR Construction and Operational Management Plans • Traditional Economy Enhancement Measures • Cultural awareness training • Engagement plan	A	LM to MM	LAA to RAA	S	LT	CF	PR	L	M	NS	L
Income-related decrease in level of engagement in the traditional economy	Labour needs and goods and services spending during the Construction, Operation, and Reclamation and Closure Phases will result in a change in income to conduct traditional economic activities.	• Traditional Economy Enhancement Measures • Cultural awareness training • Engagement plan	A	LM to MM	LAA to RAA	S	LT	CF	FR	L	M	NS	L

Notes:
Direction: Positive (P) Adverse (A).
Magnitude: NM = Negligible, LM = Low magnitude, MM = Moderate magnitude, HM = High magnitude
Geographic Extent: No = none, Site = negligible, LAA = low, RAA = regional, T = territorial
Timing: S= Seasonal
Duration: LT = Long-term, MT = Moderate-term, ST = Short-term, TT = Transient term
Frequency: CF = Continuous, FF = Frequent, UF = Uncommon, RF = Rare
Reversibility: FR = Fully Reversible, PR = Partially Reversible, I = Irreversible, C = Change but may fluctuate from positive to adverse for the duration
Context: L=Low, M=Moderate, H=High
Likelihood: L=Likely, U=Unlikely
Significance: NS = Not-Significant, S = Significant
Level of Confidence: L=Low, M=Moderate, H=High

5.0 CUMULATIVE EFFECTS ASSESSMENT

This section presents an assessment of potential cumulative effects to the subcomponents of Social Economy. Cumulative effects result from interactions between Project-related residual effects and the incremental effects on the VC of other past, present, and reasonably foreseeable projects and activities. These projects and activities are identified in the Project and Activity Inclusion List provided in the Project Proposal in **Section 5.0 Assessment Methodology**, **Appendix 5-A Project Interactions Matrix**). The CEA is consistent with guidance provided in the *Proponent's Guide to Information Requirements for Executive Committee Project Proposal Submissions* (YESAB 2005), other widely accepted Canadian guidance documents (e.g., *Cumulative Effects Assessment Practitioners' Guide* (Hegmann et al. 1999)), and the language regarding CEA in YESAA (section 42(d)).

As mentioned above, anthropogenic disturbances (including mining activities) do influence where and what type of traditional economic activities are conducted by individuals and First Nations. As a whole, this increased activity may decrease the total amount of undisturbed, appropriate land that citizens or members have available to conduct traditional economic activities in the RAA. For example, a 2010 Development, Planning, Research & Analysis Ltd. (DPRA) report states that "Elders have reported that the moose population in the Dublin Gulch area has been declining, likely due to the noise and activity in the area resulting from placer and quartz mining activity," thus highlighting how mining activity has had an effect on wildlife in other areas of the FNNND Traditional Territory (DPRA 2010).

5.1 PROJECT-RELATED RESIDUAL EFFECTS

Project-related residual effects on Social Economy, and rationales for their inclusion in, or exclusion from, the CEA is provided in **Table 5-1**. Residual effects that were assessed as negligible are not considered likely to interact cumulatively and consequently are not carried forward into the CEA. Cumulative effects to the non-wage economy and the traditional economy are assessed together, as the effects characteristics are similar at the scale of the cumulative effects assessment.

Table 5-1 Project-related Residual Effects Considered in the Cumulative Effects Assessment

Project-related Residual Effect	Included in CEA	Rationale
Non-wage Economy		
Access-related residual effect on ability to conduct subsistence activities	Yes	Access-related effect on ability to conduct subsistence activities is likely to be an adverse residual effect. The adverse aspect of the residual effect is carried forward into the CEA.
Decrease in availability of time and ability to conduct subsistence activities	Yes	Availability and income-related ability to conduct subsistence activities in the non-wage economy is likely to be an adverse residual effect and is carried forward into the CEA.

Project-related Residual Effect	Included in CEA	Rationale
Traditional Economy		
Access-related decrease in level of engagement in the traditional economy	Yes	Access-related decrease in ability to conduct traditional economic activities is likely to be an adverse residual effect and is carried forward into the CEA.
Income-related decrease in level of engagement in the traditional economy	Yes	Income-related decrease in ability to conduct traditional economic activities is likely to be an adverse residual effect and is carried forward into the CEA.

5.1.1 CUMULATIVE EFFECTS BASELINE INFORMATION

Primary data collection activities and TK were used to inform the assessment of effects to the non-wage economy and traditional economy subcomponents. Traditional Knowledge was also used to gain an understanding of how each First Nation defines traditional economy and to understand the type of activities and values that each First Nation associates with traditional economic activities. Other baseline information used to inform the CEA is provided in **Section 1.0 Introduction**, **Section 3.0 Existing Conditions**, and the **Socio-economic Baseline Report** (**Appendix 18-A**).

5.2 SPATIAL AND TEMPORAL SCOPE OF THE CUMULATIVE EFFECTS ASSESSMENT

As described in **Section 1.3.1**, the spatial boundaries of the CEA for Social Economy are different for the non-wage economy and traditional economy subcomponents. The spatial boundaries of the CEA for the non-wage economy subcomponent are defined as Yukon Territory, which includes the LAA. The spatial boundaries of the CEA for the traditional economy subcomponent are defined as the entire Traditional Territory of the TH, SFN, FNNND, and the entire asserted territory of the WRFN.

The temporal characteristics of the Project's Construction, Operation, Reclamation and Closure, and Post-Closure Phases are described in **Section 2.0 Project Description** of the Project Proposal. The temporal boundaries established for the assessment of Project-related effects on the Social Economy, including CEA, encompass these Project phases, as described in **Section 1.3.2**.

5.3 EFFECTS DUE TO OTHER PROJECTS AND ACTIVITIES

Other relevant projects and activities within the spatial and temporal scope of the CEA that may result in residual adverse effects to the non-wage economy and traditional economy and interact with the Project-related residual adverse effects are identified in **Table 5-1**. An overview description of each of these projects and activities is provided, along with relevant potential residual effects on the non-wage economy and traditional economy. Relevant projects and activities were identified from the Project and Activity Inclusion List in the Project Proposal (**Section 5.0 Assessment Methodology**). The other projects and activities have been grouped into general categories for initial screening.

The following definitions were used to classify the status of projects and activities that may interact with the Project:

- Past – Projects and land use activities that occurred in the past and are no longer active.
- Present – Existing and active projects and land use activities; all projects or land use activities that applied for approval or permitting prior to 2015 are assumed to be present projects or land use activities.
- Future – Reasonably foreseeable future projects or land use activities for which proposals have been submitted to YESAA (subsection 50(1)), or have entered a formal approval or permitting process; applications submitted in 2015 and 2016 are assumed to be future projects or land use activities.

Effects of past and present projects and activities have been captured in the description of existing conditions (**Section 3.0**); therefore, the CEA will focus on interactions with reasonably foreseeable future projects and activities. Mineral exploration and placer mining projects have occurred and will likely continue to occur in the Project region. Although the claim blocks can be very extensive and numerous, actual works are likely to be limited to several focal areas for either a short period or seasonally for many years, as is the case for several quartz claims in the area. Projects in each category summarized in **Table 5-3** were assessed in relation to the type of disturbance and potential interaction with each subcomponent.

Table 5-2 Potential Residual Adverse Effects of Other Projects and Activities on Social Economy

Other Project / Activity Category	Description	Potential Residual Effects
Quartz projects	Mining of hard rock ore bodies: Two existing quartz mining projects are in reclamation and closure stages, two are in operation stage, multiple quartz projects are in exploration, and five quartz projects are considered as foreseeable future mines during the lifetime of the Project.	Yes. Potential residual effects from other quartz projects to the non-wage economy and traditional economy are likely to be similar to those from the proposed Project.
Placer projects	Mining of alluvial deposits for minerals: activities include placer exploration and placer mining; and multiple current, future, and past placer projects overlap the RAA.	Yes. Potential residual effects from placer projects to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Transportation	Access roads construction and upgrades, bridges, and culverts: Multiple projects currently operating within the RAA.	Yes. Potential residual effects from transportation projects to non-wage economy and traditional economy are likely to be similar, but will be smaller in magnitude to those from the proposed Project

Other Project / Activity Category	Description	Potential Residual Effects
Utilities	Water supply wells, wastewater treatment, and on-site sewage disposal systems: Five utilities projects overlap the RAA, including continued operation of municipal water supply, waste treatment, airport access and transmission line, water supply upgrades, and fibre optic lines; and future upgrades to an existing force main.	Yes. Potential residual effects from utilities projects to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Energy	Air emissions permits and electric power transmission lines: Multiple energy projects are currently operating within the RAA, mostly transmission line projects.	Yes. Potential residual effects from energy projects to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Forestry	Timber harvesting activities for commercial purposes or clearing of forest resources incidental to other activities: Five past forestry projects have been identified.	Yes. Potential residual effects from forestry projects to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Agriculture	Soil-based agricultural land applications and livestock grazing land applications: Eight agriculture activities are currently operating within the RAA.	Yes. Potential residual effects from agriculture to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Settlements	Residential and commercial land use, community infrastructure, and historic sites: Existing communities that overlap the RAA include Dawson and Pelly Crossing.	Yes. Potential residual effects from settlements to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Industrial	Installation and upgrade of oil and solid fuel-burning appliances and fuel oil storage tanks: Four industrial projects overlap the RAA including fuel storage tank upgrades, biomass boiler, and quarry.	Yes. Potential residual effects from industrial projects to non-wage economy and traditional economy are likely to be similar, but smaller in magnitude, to those from the proposed Project.
Wildlife	Registered trapping concession areas and guide outfitter concession areas: Multiple Trapline Concession Areas and nine Guide Outfitter Concession Areas overlap with the RAA.	Yes. Potential residual effects to traditional economy from changes in environmental conditions.

The Projects or activities that are likely to have an interaction are included in the CEA on Social Economy subcomponents. Consistent with the **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**, the CEAs for both Social Economy VC subcomponents rely on the same assumptions about the spatial and temporal boundaries and timing of other projects and activities:

- **Placer mining**: All past, present, and future placer projects are assumed to be active throughout the life of this Project. Timing of placer mining is seasonal during the summer.
- **Quartz Exploration:** All past, present, and future quartz exploration projects were assumed to be active throughout the life of this Project. Each project was assumed to have a 10 ha footprint around the project centre. Quartz exploration is seasonal during the summer.

- **Quartz mining** (**past and present**)**:** footprints for operating mines (Minto) and past mines (Mt Nansen, Clinton Creek) are based on the existing disturbance footprints visible in satellite imagery. Mining activity for operating projects is assumed to occur year-round for the life of this Project.
- **Quartz mining** (**future**)**:** Reasonably foreseeable future mines considered were Casino, Revenue, Hoochekoo, Carmacks, and Lonestar. Where available (Casino, Carmacks), proposed mine footprints from YESAB submissions were used to defined disturbance areas. Where proposed footprints were not available (Revenue, Hoochekoo, and Lonestar), a probable disturbance area was inferred.
- **Roads:** The spatial extent of disturbance due to roads was based on Yukon Government roads data.
- **General disturbance:** Spatial footprints of settlements and forestry were based on Yukon Government map data from high-resolution satellite imagery.

5.4 POTENTIAL CUMULATIVE EFFECTS

This section presents the potential interactions between Project-related residual effects on both Social Economy subcomponents and those of other projects and activities, as identified in **Table 5-3**. The potential adverse cumulative effects resulting from these interactions are also described.

The potential for interactions was determined by assessing the spatial and temporal overlap of the future foreseeable project with the RAA of each subcomponent. Projects and activities deemed to have potential for cumulative interactions with the Project were those that:

- Had comparable residual effects to land and resource use as the Project
- Could be reasonably characterized in terms of their spatial and temporal boundaries
- Had spatial overlap in residual effects with the Project
- Had temporal overlap in residual effects with the Project.

Potential projects and activities were considered not to have potential for cumulative interactions if:

- The available spatial and temporal information indicated there was overlap with another project or activity that had a larger footprint or
- The spatial or temporal extent of a potential project or activity was deemed too small to have a significant interaction with the Project.

Table 5-3 Potential Cumulative Effects on Social Economy from Interactions between the Project and Other Projects and Activities

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale
Quartz exploration (Past, Present, Future)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	Yes –Multiple quartz exploration projects within the Land and Resource Use RAAs could interact cumulatively with the Project. Exploration activities are likely to have similar localized residual effects.
Quartz mining (Past, Present, Future)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	Yes – Existing and reasonably foreseeable future quartz mines within the Land and Resource Use RAAs may interact cumulatively with the Project. Other quartz mines activities are likely to have similar residual effects.
Placer (Past, Present, Future)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	Yes – Numerous past, present, and future placer claims within the Land and Resource Use RAAs may interact cumulatively with the Project. Other placer mines activities are likely to have similar, more localized, residual effects.
Industrial (Present and Future)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	No – Potential interactions from present and future industrial projects are located within established communities or along road rights-of-way (ROWs). An effect from these projects will not be distinguishable from effects of settlements and roads.
Utilities (Present and Future)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	No – Potential interactions from present and future utility projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.
Energy (Present)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	No – Potential interactions from present and future energy projects are located within established communities, along road ROWs, or part of quartz mining footprints. An effect from these projects will not be distinguishable from effects of settlements, roads, and quartz mining.
Transportation (Present)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	No – Potential interactions from present and future transportation projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.
Forestry (Past)	Decrease in ability to conduct subsistence or traditional economic activities related to visual experience, environmental conditions, availability, and income	No – Forestry projects identified in the land and resource use RAAs are all past activities that should be returning to a naturally vegetated state. Any effects these of projects will be assessed as part of existing ground disturbance and roads.
Agriculture (Present)	Decrease in ability to conduct subsistence or traditional economic activities related to visual experience, environmental conditions, availability, and income	No – Agricultural activities in the land and resource use RAAs overlap with residual effects from the Project; however, any disturbance from agriculture would be short-term and localized, and is not likely to interact cumulatively.

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale
Settlements (Present)	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, environmental conditions, availability, and income	Yes – Existing communities have the potential to have residual effects on land and resource uses that interact with the Project. Other present settlement projects are located within these established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of existing communities and roads.
Existing road network	Decrease in ability to conduct subsistence or traditional economic activities related to access, traffic, visual experience, and environmental conditions	Yes – Roads affect land and resource use in terms of access, sensory conditions, amount or quality of resources, and quality of intangible cultural and spiritual resources. Vehicle traffic also creates sensory disturbance and may affect quantity of available resources by increasing collision-related wildlife mortalities.
Trapping and hunting	Decrease in ability to conduct subsistence or traditional economic activities related to environmental conditions,	No – Any disturbance from hunting and trapping would be short-term and localized, and is not likely to interact cumulatively, assuming harvesting activities are well managed and do not exceed sustainable harvest thresholds.

Note: No – no interaction or not likely to interact cumulatively; Yes – potential for cumulative effect.

5.4.1 Access-related Potential Cumulative Effect on Ability to Conduct Non-wage Subsistence Activities and Traditional Economic Activities

Access-related potential cumulative effects on non-wage subsistence activities and traditional economic activities are expected from interactions with past, present, and future quartz exploration, quartz mining, and placer mining projects as well as present settlements and the existing road network.

5.4.2 Decrease in Availability of Time and Potential Cumulative Effect on Ability to Conduct Subsistence Activities (Non-wage Economy)

Decrease in availability of time and potential cumulative effect on ability to conduct subsistence activities (non-wage economy) are expected from interactions with past, present, and future quartz exploration, quartz mining, and placer mining projects, as well as present settlements and the existing road network.

5.4.3 Income-related Potential Cumulative Effect to Ability to Engage in Traditional Economic Activities

Income-related potential cumulative effects on the ability to engage in traditional economic activities are expected from interactions with past, present, and future quartz exploration, quartz mining, and placer mining projects, as well as present settlements and the existing road network.

5.5 MITIGATION MEASURES FOR CUMULATIVE EFFECTS

There are no additional mitigation measures proposed beyond what Goldcorp has already committed to at the Project-specific level. These mitigation measures are described in detail in **Section 4.3** and summarized in **Section 31.0 Environmental and Socio-economic Management Program** of the Project Proposal.

5.6 RESIDUAL CUMULATIVE EFFECTS AND THEIR SIGNIFICANCE

This section describes the total anticipated residual cumulative effect on Social Economy that may remain after implementation of technically and feasible mitigation measures. These effects are described using the effects characteristics set out in **Table 5-4**.

The determination of significance for the potential residual cumulative effect(s) on non-wage economy and traditional economy is based on consideration of the residual effects characteristics and environmental or socio-economic context of non-wage economy and traditional economy presented in **Section 4.4**. The section also describes the Project's contribution to that effect(s).

For each predicted residual cumulative effect to Social Economy, based on the definitions and possible ratings presented in **Table 5-4**, ratings are assigned to each residual cumulative effect characteristic (**Table 5-5** and **Table 5-6**). Cumulative residual effects to the non-wage economy and the traditional economy are discussed together for access-related effects and income-related effects, as the effects characteristics are similar at the scale of the cumulative effects assessment.

5.6.1 ACCESS-RELATED RESIDUAL CUMULATIVE EFFECT ON ABILITY TO CONDUCT NON-WAGE SUBSISTENCE ACTIVITIES AND TRADITIONAL ECONOMIC ACTIVITIES

Access-related residual adverse cumulative effect on the ability to conduct non-wage subsistence activities and traditional economic activities is likely to be moderate in magnitude, local to regional, however not expected to occur across the RAA, seasonal, continuous in frequency, long-term in duration, partially reversible, and likely to occur. Residual cumulative effects are not expected to occur across the RAA and are likely throughout the Construction, Operation, and Reclamation, and Closure Phases. A decrease for the non-wage economy from changes in access would be detectable in the LAA. A residual cumulative effects would result in demonstrable change but remains within historic norms and does not present a management challenge. The access-related residual cumulative effect on the ability to conduct non-wage subsistence activities and traditional economic activities is viewed as not significant.

Table 5-4 Summary of Effect Characteristics Ratings for Access-related Adverse Residual Cumulative Effect on Ability to Conduct Non-wage Subsistence Activities and Traditional Economic Activities

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Moderate	A decrease for the non-wage economy from changes in access would be detectable in the LAA. Residual cumulative effect would result in demonstrable change but remains within historic norms and does not present a management challenge.
Geographic Extent	Local to Regional	Residual cumulative effects are not expected to occur across RAA.
Timing	Seasonal	Changes in access may affect non-wage subsistence activities and traditional economic activities differently with respect to different uses.
Frequency	Continuous	Changes to access are likely to occur throughout the Construction, Operation, and Reclamation and Closure Phases.
Duration	Long-term	Changes to access are likely to occur throughout the Construction, Operation, and Reclamation and Closure Phases.
Reversibility	Partially reversible	Project-related changes to access will be reversed partially to baseline or equivalent conditions.
Probability of Occurrence	Likely	Changes to ability to conduct non-wage subsistence activities and traditional economic activities are expected as result of the Project

5.6.2 Availability and Ability-related Residual Cumulative Effect on Ability to Conduct Subsistence Activities (Non-wage Economy)

The availability- and ability-related residual cumulative effect on the ability to conduct subsistence activities related to the non-wage economy is likely to be low in magnitude, local to regional, seasonal, continuous in frequency, long-term in duration, partially reversible, and likely to occur. A residual cumulative effect is expected to occur across the RAA and is likely throughout the Construction, Operation, and Reclamation, and Closure Phases. Availability-related changes are expected to affect subsistence activities differently with respect to different uses, but remain within historic norms and do not present a management challenge. The availability- and ability-related residual cumulative effect on the ability to conduct subsistence activities related to the non-wage economy is likely to be not significant.

Table 5-5 Summary of Effect Characteristics Ratings for Availability and Ability-related Adverse Residual Cumulative Effect on Ability to Conduct Subsistence Activities (Non-wage Economy)

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	Availability and ability-related cumulative effect would be detectable at a low level in the RAA. Residual cumulative effect would result in a change but remains within historic norms and does not present a management challenge.
Geographic Extent	Local to Regional	Residual cumulative effects are expected to occur across RAA.
Timing	Seasonal	Availability-related changes are expected to affect subsistence activities differently with respect to different uses.
Frequency	Continuous	Availability-related changes are likely to occur throughout the Construction, Operation, and Reclamation, and Closure Phases.
Duration	Long-term	Availability-related changes are likely to occur throughout the Construction, Operation, and Reclamation, and Closure Phases.
Reversibility	Partially reversible	Availability-related changes will be reversed partially to baseline or equivalent conditions.
Probability of Occurrence	Likely	Changes to ability to conduct traditional economic activities are expected as result of the Project

5.6.3 INCOME-RELATED POTENTIAL CUMULATIVE EFFECT ON ABILITY TO ENGAGE IN TRADITIONAL ECONOMIC ACTIVITIES

The income-related residual cumulative effect on the ability to conduct traditional economic activities is likely to be moderate in magnitude, local to regional, seasonal, continuous in frequency, long-term in duration, and partially reversible. A residual cumulative effect is expected to occur across the RAA and is likely throughout the Construction, Operation, and Reclamation, and Closure Phases. A residual cumulative effect would result in demonstrable change but remains within historic norms and does not present a management challenge. The income-related residual cumulative effect on the ability to conduct traditional economic activities is likely to be not significant.

Table 5-6 Summary of Effect Characteristics Ratings for Income-related Adverse Residual Cumulative Effect on Ability to Conduct Traditional Economic Activities

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Moderate	Income-related effects would be detectable in the RAA. Residual cumulative effect would result in demonstrable change but remains within historic norms and does not present a management challenge.
Geographic Extent	Local to Regional	Residual cumulative effects are expected to occur across RAA.
Timing	Seasonal	Income-related changes are expected to non-wage subsistence activities and traditional economic activities differently with respect to different uses.
Frequency	Continuous	Income-related changes are likely to occur throughout the Construction, Operation, and Reclamation, and Closure Phases.
Duration	Long-term	Income-related changes are likely to occur throughout the Construction, Operation, and Reclamation, and Closure Phases.
Reversibility	Partially reversible	Income-related changes will be reversed partially to baseline or equivalent conditions.

5.7 SUMMARY OF ADVERSE RESIDUAL CUMULATIVE EFFECTS AND SIGNIFICANCE

The Project may result in not significant cumulative residual adverse effects on non-wage economy (access-related potential cumulative effect on ability to conduct subsistence activities; and decrease in availability of time and potential cumulative effect on ability to conduct subsistence activities), and traditional economy (access-related potential cumulative effect on ability to conduct traditional economic activities; and income-related potential cumulative effects on the ability to engage in traditional economic activities). Cumulative residual adverse effects are likely to occur throughout the Construction, Operation, and Reclamation and Closure Phases. All cumulative adverse residual effects are likely to extend across both the LAA and RAA; however, the way in which they will materialize for each First Nation and for respective citizens or members will be unique. **Table 5-7** summarizes the cumulative effects of the Project and the determination of significance of these cumulative effects on the non-wage economy subcomponent, and **Table 5-8** summarizes the cumulative effects of the Project and determination of significance of these cumulative effects on the traditional economy subcomponent of the Social Economy VC.

Table 5-7 Summary of Potential Residual Adverse Cumulative Effects for Non-wage Economy

Potential Residual Adverse Cumulative Effects	Other Projects / Activities	Proposed Mitigation Measures	Residual Cumulative Effects Characterization (see Notes for details)								
			Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Level of Effect (Significance)	Likelihood	Level of Confidence
Construction, Operation, and Reclamation and Closure Phases											
Access-related residual cumulative effect to ability to conduct non-wage subsistence activities	Past, present, and future quartz exploration, quartz mining, and placer mining projects as well as present settlements and the existing road network	None	M	R	L	C	P	L	NS	L	L
Availability- and ability-related residual cumulative effect to conduct non-wage subsistence activities	Past, present, and future quartz exploration, quartz mining, and placer mining projects as well as present settlements and the existing road network	None	L	R	L	C	P	L	NS	L	L

Notes:
Magnitude: N = Negligible, L = Low magnitude, M = Moderate magnitude, H = High magnitude
Geographic Extent: L = local (LAA), R = regional (RAA) =
Timing: S = Seasonal, Y= Year-round
Duration: P = Permanent, LT = Long-term, ST = Short-term,
Frequency: CF = Continuous, FF = Frequent, IF = Infrequent
Reversibility: R = Reversible, P = Partially Reversible, I = Irreversible
Context: L=Low, M=Moderate, H=High
Likelihood: L=Likely, U=Unlikely
Significance: NS = Not-Significant, S = Significant
Level of Confidence: L=Low, M=Moderate, H=High

Table 5-8 Summary of Potential Residual Adverse Cumulative Effects for Traditional Economy

Potential Residual Adverse Cumulative Effects	Other Projects / Activities	Proposed Mitigation Measures	Residual Cumulative Effects Characterization (see Notes for details)								
			Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Level of Effect (Significance)	Likelihood	Level of Confidence
Construction, Operation, and Reclamation and Closure Phases											
Access-related residual cumulative effect to ability to conduct traditional economic activities	Past, present, and future quartz exploration, quartz mining, and placer mining projects as well as present settlements and the existing road network	None	M	R	L	C	P	L	NS	L	L
Income-related potential cumulative effect to ability to engage in traditional economic activities	Past, present, and future quartz exploration, quartz mining, and placer mining projects as well as present settlements and the existing road network	None	M	R	L	C	P	L	NS	L	L

Notes:
Magnitude: N = Negligible, L = Low magnitude, M = Moderate magnitude, H = High magnitude
Geographic Extent: L = local (LAA), R = regional (RAA) =
Timing: S = Seasonal, Y= Year-round
Duration: P = Permanent, LT = Long-term, ST = Short-term,
Frequency: CF = Continuous, FF = Frequent, IF = Infrequent
Reversibility: R = Reversible, P = Partially Reversible, I = Irreversible
Context: L=Low, M=Moderate, H=High
Likelihood: L=Likely, U=Unlikely
Significance: NS = Not-Significant, S = Significant
Level of Confidence: L=Low, M=Moderate, H=High

6.0 SUMMARY OF EFFECTS ASSESSMENT ON SOCIAL ECONOMY

Potential interactions between the Project and Social Economy are likely during the Construction, Operation, and Reclamation and Closure Phases. Potential Project interactions with Social Economy were assessed through two subcomponents: non-wage economy and traditional economy. The Project is likely to interact with the non-wage economy through positive, neutral, and adverse effects related to available access, availability, and changes in the ability to conduct subsistence activities. The Project is likely to interact with the traditional economy through positive and adverse effects related to access, traffic, availability, and income-related changes in the ability to engage in traditional economic activities, as well as changes in environmental conditions.

The selection of mitigation and enhancement measures for Social Economy was informed by primary and secondary data collection, a review of mitigation and enhancement measures and follow-up programs undertaken for past projects, and First Nations and public input. Specifically, feedback was received regarding working with local communities, relocating employees to local communities, supporting training opportunities, communication, and cross-cultural awareness training.

Key mitigation and enhancement measures for Social Economy include:

- Project design measures
- Traditional economy enhancement measures
- Northern Access Route mitigation
- Cultural awareness training
- Engagement plan.

With the application of mitigation and enhancement measures, four residual effects are likely to result from the Project at various assessment area scales. All residual effects were determined to be not significant. The residual effects are likely to materialize in different ways depending on the community, and the assessment area. It is not likely that the Project will result in either positive or adverse significant residual effects because although the smaller populations, labour forces, and focused local economies of the LAA would render these communities less resilient than populations in the broader RAA, they would still be capable of responding to influences as a result of the Project.

The adverse residual effects that may interact with other reasonably foreseeable projects and activities were carried forward to a CEA for Social Economy. The four cumulative effects are likely to occur at the regional scale, and the contribution of the Project is not likely to result in significant adverse cumulative effects in any of these cases.

7.0 EFFECTS MONITORING AND ADAPTIVE MANAGEMENT

Due to the dynamic nature of socio-economics, Goldcorp will develop a socio-economic monitoring program (refer to the Socio-economic Management Plan in **Section 31.0** of the Project Proposal) to 1) verify the accuracy of the residual effects predictions and the value of proposed mitigation measures; 2) assess the efficacy of proposed mitigation measures and the need for modifications to those measures to ensure effects predictions remain valid; 3) identify unexpected socio-economic outcomes or problems; and 4) implement additional mitigation measures as per adaptive management plans.

It is likely that the socio-economic monitoring program will track and respond to various topics across the socio-economic VCs and IC, including Social Economy, as well as Economic Conditions, Community Infrastructure and Services, Education Services, Land and Resource Use, Community Health and Well-being, and Demographics. The approach and methods, including data sources, will be developed in conjunction with the Governments of the LAA, and with the Yukon Government. Goldcorp is committed to developing a socio-economic monitoring program with these parties as the Project proceeds.

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8.1 PERSONAL COMMUNICATIONS

Interview 4, Gerberding, L., Lancaster, J., Regimbal, J. February 8, 2016. Building Maintenance, Public Works Lead Head, Fire Chief, City of Dawson Public Works Department, Dawson City Fire Department, Dawson, Yukon.

Interview 10, Beaumont, J., Nagano, D. February 10, 2016. Traditional Knowledge Specialist, Director, Tr'ondëk Hwëch'in (TH) Heritage Department, Dawson, Yukon.

Interview 11, Hastings, D., Van Enderslev, E., Guimoni, S. February 10, 2016. President, Vice-President, Board Member, Conservation Klondike Society (CKS), Dawson, Yukon.

Interview 12, Bonnici, A. February 10, 2016. Programs Manager, Klondike Institute of Art and Culture, Dawson, Yukon.

Interview 13, Meister, K. February 12, 2016. Manager, Conservation Officer Services, Dawson, Yukon.

Interview 14, February 10, 2016. Anonymous Contributor. Registered Trapping Concession, Dawson, Yukon.

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Interview 24, Whalen, L. March 1, 2016. Heritage Officer, Tr'ondëk Hwëch'in (Tr'ondëk Hwëch'in) Heritage Department, City of Dawson, Yukon.

Interview 25, Parker, G., Pearse, K., Robitaille, P. March 2, 2016. Executive Director, Marketing and Events Assistant, Marketing and Events Manager, Klondike Visitors Association (KVO), Dawson, Yukon.

Interview 28, Wickham, M. March 4, 2016. Project Manager, Klondike Development Organization (KDO), Dawson, Yukon.

Interview 29, de Jager, T. March 22, 2016. Owner, Yukon Wide Adventures, Whitehorse, Yukon.

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