



Coffee Gold Mine

YESAB Project Proposal

Appendix 23-A Education Services Valued Component Assessment Report

VOLUME IV

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TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS	IV
SYMBOLS, AND UNITS OF MEASURE.....	IV
1.0 INTRODUCTION.....	1.1
1.1 ISSUES SCOPING.....	1.3
1.2 EDUCATION SERVICES AS A VALUED COMPONENT	1.4
1.2.1 Valued Component Selection	1.4
1.2.2 Valued Component Subcomponents	1.6
1.2.3 Valued Component Indicators.....	1.6
1.3 ASSESSMENT BOUNDARIES.....	1.7
1.3.1 Spatial Boundaries.....	1.7
1.3.2 Temporal Boundaries.....	1.10
1.3.3 Administrative Boundaries	1.10
1.3.4 Technical Boundaries	1.10
2.0 ASSESSMENT METHODS	2.1
3.0 EXISTING CONDITIONS.....	3.1
3.1 REGULATORY CONTEXT.....	3.1
3.2 BACKGROUND INFORMATION AND STUDIES	3.1
3.2.1 Traditional Knowledge	3.2
3.2.2 Scientific and Other Information.....	3.2
3.2.3 Baseline Studies Conducted during the Project’s Feasibility Program.....	3.2
3.3 DESCRIPTION OF EXISTING CONDITIONS.....	3.3
3.3.1 Primary, Secondary, and Post-secondary Education Services	3.3
3.3.2 Industry-specific, Community-based Training.....	3.13
4.0 ASSESSMENT OF PROJECT-RELATED EFFECTS	4.1
4.1 POTENTIAL PROJECT-RELATED INTERACTIONS WITH EDUCATION SERVICES	4.1
4.2 POTENTIAL PROJECT-RELATED EFFECTS.....	4.2
4.2.1 Primary, Secondary, and Post-secondary Education	4.3
4.2.2 Industry-specific, Community-based Training.....	4.5
4.3 MITIGATION AND ENHANCEMENT MEASURES.....	4.5
4.3.1 Local Hiring Practices	4.6
4.3.2 Education and Training Activities.....	4.7

4.3.3	First Nations Mentoring Program	4.8
4.3.4	Engagement Plan	4.8
4.3.5	Summary of Mitigation Measures	4.9
4.4	RESIDUAL EFFECTS AND THEIR SIGNIFICANCE	4.9
4.4.1	Residual Effects Characteristics and Significance Definitions.....	4.10
4.4.2	Primary, Secondary, and Post-secondary Enrollment Patterns	4.12
4.4.3	Summary of Project–Related Residual Adverse Effects and Their Significance.....	4.14
5.0	CUMULATIVE EFFECTS ASSESSMENT	5.1
5.1	PROJECT-RELATED RESIDUAL EFFECTS	5.1
5.2	SPATIAL AND TEMPORAL SCOPE OF THE CUMULATIVE CHANGE ANALYSIS.....	5.1
5.3	EFFECTS DUE TO OTHER PAST, PRESENT, AND FUTURE PROJECTS AND ACTIVITIES	5.1
5.4	POTENTIAL ADVERSE CUMULATIVE EFFECTS	5.5
5.4.1	Changes to Education Services.....	5.5
5.5	MITIGATION MEASURES FOR CUMULATIVE EFFECTS.....	5.5
5.5.1	Summary of Future Conditions with the Project and Other Projects and Activities	5.6
6.0	SUMMARY OF EFFECTS ASSESSMENT FOR EDUCATION SERVICES.....	6.1
7.0	EFFECTS MONITORING AND ADAPTIVE MANAGEMENT.....	7.1
8.0	REFERENCES.....	8.1
8.1	PERSONAL COMMUNICATIONS.....	8.4

List of Tables

Table 1.2-1	Candidate Valued Components for Education Services – Evaluation Summary	1.5
Table 1.2-2	Subcomponents for the Education Services Valued Component.....	1.6
Table 1.2-3	Indicators for the Education Services Subcomponents	1.6
Table 1.3-1	Spatial, Temporal, and Technical Boundary Definitions for Education Services.....	1.8
Table 3.2-1	Summary of Desktop and Field Studies Related to Education Services	3.2
Table 3.3-1	Primary and Secondary Schools in Whitehorse	3.4
Table 3.3-2	Primary and Secondary Schools in Pelly Crossing, Mayo, and Beaver Creek.....	3.6
Table 3.3-3	Summary of Available Training Opportunities in the Local Assessment Area.....	3.13
Table 4.1-1	Potential for an Interaction between Education Services and the Project.....	4.1

Table 4.1-2	Identification of Potential Project Interactions with Education Services	4.2
Table 4.2-1	Estimated Number of School-age Children Accompanying Project Workers	4.4
Table 4.3-1	Summary of Potential Adverse Effects and Mitigation Measures for Education Services	4.9
Table 4.4-1	Effect Characteristics Considered When Determining the Significance of Residual Effects to Education Services	4.10
Table 4.4-2	Summary of Effect Characteristics Ratings for Changes in Primary, Secondary, and Post-secondary Enrollment Patterns during Construction and Operation	4.13
Table 4.4-4	Summary of Potential Residual Adverse Effects for Education Services	4.15
Table 5.1-1	Project-related Residual Effects Considered in the Cumulative Effects Assessment	5.1
Table 5.3-1	Other Projects and Activities Considered in the Analysis of Cumulative Change on Education Services	5.3
Table 5.5-1	Summary of Potential Residual Cumulative Effects for Education Services	5.7

List of Figures

Figure 1.3-1	Education Services Spatial Boundaries (Local Assessment Area and Regional Assessment Area)	1.9
Figure 3.3-1	Yukon Territory School Enrollment and Population Statistics	3.7
Figure 3.3-2	Educational Attainment Trend Data for the Local Assessment Area and Regional Assessment Areas	3.10

ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
Dawson	City of Dawson
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
Project	proposed Coffee Gold Mine
Proponent	Kaminak Gold Corporation, a wholly owned subsidiary of Goldcorp Inc.
RAA	Regional Assessment Area
RSS	Robert Service School
SFN	Selkirk First Nation
TH	Tr'ondëk Hwëch'in
TK	Traditional Knowledge
TWG	Technical Working Group
VC	Valued Component
WRFN	White River First Nation
YESAA	Yukon Environmental and Socio-Economic Assessment Act
YESAB	Yukon Environmental and Socio-economic Assessment Board

SYMBOLS AND UNITS OF MEASURE

Symbol / Measurement	Definition
%	percent
km	kilometre

1.0 INTRODUCTION

Kaminak Gold Corp., a wholly owned subsidiary of Goldcorp Inc. (Proponent or Goldcorp), is proposing to construct and operate a high-grade, open-pit gold mine in west-central Yukon, on its property located approximately 130 kilometres (km) south of the town of the City of Dawson (Dawson) by a 214 km Northern Access Route in the White Gold District. The proposed Coffee Gold Mine (Project) is an open pit gold mine that will use a cyanide heap leach process to extract ore. Its temporal boundaries consist of an 30-month Construction Phase, followed by a 12-year mine life with an average operation rate of five million tonnes per annum of heap leach feed.

The Mine Site is located on Crown land within the established Traditional Territory of the Tr'ondëk Hwëch'in (TH) and the asserted territory of White River First Nation (WRFN). The NAR is located within the Traditional Territory of TH, and portions are located within the shared Traditional Territories of the Selkirk First Nation (SFN), the First Nation of Na-cho Nyäk Dun (FNNND), and the asserted territory of the WRFN.

This report provides an assessment of the potential Project-related effects and cumulative effects of the Project on the Education Services Valued Component (VC). Valued 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 Education Services, and describes the mitigation measures and protection plans that Goldcorp will implement to eliminate, reduce, or otherwise control adverse Project-related effects on Education Services.

Education Services is an important socio-economic value; the assessment of Education Services considers the subcomponents of primary and secondary education services and industry-specific, community-based training opportunities. An important aspect of education services in the Yukon is the extent to which these services are culturally responsive. Culturally responsive teaching is defined as “using the cultural knowledge, prior experiences, frames of reference and performance styles of students to make learning encounters more relevant to and effective for them” (Lewthwait et al. 2014).

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). This information also supports applications to be submitted for a Quartz Mining Licence from Yukon Government, Energy, Mines and Resources 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 Education Services. **Section 1.0** provides the rationale for the selection of Education Services as a VC, explains the selection of Education Services 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 Education Services. The spatial, temporal, and technical boundaries of Education Services assessment are also identified.

Section 2.0 describes the quantitative and qualitative approaches used to assess potential Project-related effects and cumulative effects on Education Services. The methods used to predict effects on Education Services rely on the 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 **Chapter 5.0 Assessment Methodology**, the methods described in this section are specific to those used for Education Services.

Section 3.0 describes existing or baseline conditions for Education Services to set the context for the effects assessment. The section includes a summary discussion of the regulatory context in which the Proponent has assessed effects; there is a summary section describing how Traditional Knowledge (TK), as well as scientific and other information, including the results of baseline studies conducted for the Project, informed the description of existing conditions.

Section 4.0 describes the potential effects, residual effects, and the significance of residual effects of the Project on Education Services. It also identifies mitigation measures incorporated into the Project design, and outlines other Education Services specific mitigation measures to be implemented during Project design and management. The section describes Goldcorp's practices related to the elimination or reduction of adverse effects to Education Services. 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.

Section 5.0 provides an overview of the potential combined effects of other past, present, and reasonably foreseeable future projects and activities on Education Services. The section characterizes the combined potential Project-related residual effects with the residual effects of other projects and activities that have occurred, are currently occurring, or are likely to occur to Education Services, and provides an assessment of the significance of adverse cumulative effects on Education Services. Where necessary, and if separate from Project-related effects, mitigation actions to address potential cumulative effects are described.

Section 6.0 provides an overview of the technical assessments described in the Project-related Effects and Cumulative Effects, whereas **Section 7.0** describes the approach that the Proponent will take to verify effects assessment findings and the effectiveness of mitigation measures, and to 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 demonstrates Goldcorp's intention to conduct regular monitoring and re-assessment, and Goldcorp's willingness to implement changes necessary to effectively mitigate Project-related effects or cumulative effects on Education Services.

The assessment of this VC is supported by the Demographic Intermediate Component Analysis (**Appendix 19-A**) and the Economic Conditions Valued Component Assessment (**Appendix 20-A**).

1.1 ISSUES SCOPING

The scope of this assessment is based on various guidelines provided by YESAB and by regulatory agencies. Through baseline studies undertaken during the Project's Feasibility Study (July 2014 to December 2015) and the subsequent Socio-economic Baseline Report (**Appendix 18-A**, December 2015 to April 2016), the Project team reviewed a mine plan and detailed technical information related to socio-economic 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 reviewed together with secondary source information collected from potentially affected communities.

To support issues scoping for the Project, Goldcorp has undertaken an engagement and consultation process, as defined under Section 50(3) of YESAA. **Section 3.0 Consultation** of the Project Proposal summarizes Goldcorp's consultation and engagement with potentially affected First Nations and communities, government agencies, and interested persons and other stakeholders interested in the Project and its related activities. This consultation and engagement process included a Technical Working Group (TWG) established with TH, government departments, community meetings, one-on-one and small group meetings, and ongoing communications such as print communication, and newsletters, including specific presentations and discussions regarding key themes of interest and exploration of candidate VCs, including education services, to represent the themes.

A comprehensive primary data collection program was conducted with key informant interviews, focus groups, and surveys with communities, stakeholders, and First Nations. Concerns relevant to the assessment of Education Services are related to potential increased enrollment in primary and secondary schools, effects on the education of students if parent(s) are working on the proposed Project, and the ability to maximize potential benefits related to education and training.

All of this information supported scoping of the effects assessment, including the identification of candidate VCs, the selection of the Education Services VC, and the establishment of assessment boundaries for the Education Services VC.

1.2 EDUCATION SERVICES AS A VALUED COMPONENT

Education Services was selected as a VC based on the VC selection process set out in **Section 5.0 Assessment Methodology** of the Project Proposal. Education was identified as a dimension of sustainability in the City of Dawson's and TH's Integrated Community Sustainability Plan (City of Dawson and TH n.d.).

1.2.1 VALUED COMPONENT SELECTION

In addition to professional knowledge and judgement, the selection process involved 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.

Education Services was identified as a VC because there are distinct interactions between the Project and Education Services, the Project's potential effects on Education Services can be measured, and there are distinct pathways of effects **Table 1.2-1**. The Project may affect economic conditions locally and regionally through induced, indirect employment opportunities and the attraction of speculative workers. Site-based employment will be offered on a two-week-on/two-week-off rotational shift (two-week rotational shift). These potential employment opportunities and the two-week rotational shift may change local and regional demographic characteristics. Further, the Proponent and local First Nations or local communities anticipate supporting or developing locally available training opportunities. Education Services was identified as a VC to assess Project-induced effects and changes that may affect local and regional education services (targeted at primary and secondary students) and community-based training opportunities (aimed at adult or post-secondary individuals).

Table 1.2-1 Candidate Valued Components for Education Services – 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			
Education Services – primary, secondary and post-secondary	Yes	Construction and Operation-phase activities	The Project's local hiring practices may be supported by related education and training requirements for interested people. Potential in-migration may affect enrollment at primary and secondary schools; thus, the Project has the potential to influence education services in the Project Area.	<ul style="list-style-type: none"> • First Nations • Public • Stakeholders 	<ul style="list-style-type: none"> • First Nations, Government • Public • Stakeholders Concerns related to: <ul style="list-style-type: none"> • Ability to maximize potential benefits related to education and training 	None	Yes	Through direct and/or indirect employment, the Project may cause a population increase that may affect access to education services, as well as the type of education services, and the demographics to which education services are targeted.
Education Services – culturally valued education	Potentially	Construction and Operation-phase activities	Rotational schedules may have indirect effects on culturally responsive education.	<ul style="list-style-type: none"> • First Nations 	<ul style="list-style-type: none"> • Reduced ability of parents on work rotation schedules to participate in students' education 	None	No	Information on existing parental involvement in culturally responsible education was not available, and effects could not be assessed. Measures to support other educational services will indirectly support culturally valued education.

1.2.2 VALUED COMPONENT SUBCOMPONENTS

Education Services VC subcomponents were identified to further structure and focus the assessment of the VC. In selecting VC subcomponents, consideration was given to First Nations and local communities, as identified through a review of available information, including TK, collected through the Project’s consultation and engagement program (see **Section 3.0 Consultation** of the Project Proposal). Education Services subcomponents are:

- Primary, secondary and post-secondary education
- Community-based training.

In addition to being identified through primary data collection, the VC subcomponents were supported by secondary data sources (Lewthwait et al. 2014; AFN 2009). The rationale for the selection of the VC subcomponents is summarized in **Table 1.2-2**.

Table 1.2-2 Subcomponents for the Education Services Valued Component

Subcomponent	Represents	Selection Rationale
Primary, secondary, and post-secondary education services	Local and regional youth and local and regional families	Identified through primary data collection processes
Industry-specific community-based training	Availability of local, relevant training opportunities	Identified through primary data collection processes

1.2.3 VALUED COMPONENT INDICATORS

Indicators are quantitative or qualitative measures used to describe existing VC conditions and trends, and evaluate potential Project-related effects and cumulative effects to the VC. Education Services VC subcomponent indicators and rationale for their selection are listed in **Table 1.2-3**.

Table 1.2-3 Indicators for the Education Services Subcomponents

Subcomponent	Indicators	Rationale for Indicator Selection
Primary, secondary, and post-secondary education services	Enrollment trends Educational attainment	Enrollment trends and education attainment provide qualitative data on the success of primary and secondary schools at attracting students and in the students’ success at achieving the educational requirements.
Industry-specific community-based training	Opportunities Linkages to industry needs	Types and number of locally available training opportunities linked to current and anticipated industry needs are an indicator of an effective training program.

1.3 ASSESSMENT BOUNDARIES

This section identifies the spatial, temporal, administrative, and technical boundaries established for the assessment of Education Services. The spatial and temporal boundaries for this assessment encompass the areas within and times when the Project is likely to interact with Education Services. 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

The spatial boundaries for the Education Services VC are defined in **Table 1.3-1** and shown in **Figure 1.3-1**.

1.3.1.1 Local Assessment Area

The Local Assessment Area (LAA) corresponds to the area closest to Project activities in which direct effects are most likely to be experienced. The LAA comprises Dawson, Pelly Crossing, Beaver Creek, Mayo, and the City of Whitehorse. Due to Dawson's geographic location in relation to the Project, this community is likely to provide a source of labour, goods, and services associated with the Project. Dawson and Whitehorse are also likely to experience a population influx from Project workers, which may also result in interactions with Whitehorse's and Dawson's local education services.

The LAA also encompasses the communities of Beaver Creek, Pelly Crossing, and Mayo, thereby capturing data related to the administrative centres of the WRFN, SFN, and FNNND. The LAA boundaries were approximated based on the apparent physical boundaries of the communities, since not all of these communities have administrative boundaries, and do not necessarily exclude entities that may be located immediately adjacent to the LAA. Although these smaller communities are a further distance from the Project location and are unlikely to experience population influxes associated with the Project, relationships with individual First Nations may affect industry-specific and community-based training opportunities and the communities may still provide a source of labour, goods, and services associated with the Project.

1.3.1.2 Regional Assessment Area

The Regional Assessment Area (RAA) is defined as the areas where potential direct and indirect or cumulative effects may occur, and provides a larger regional context when quantifying the potential effects of the Project on Education Services. The RAA encompasses the LAA and Yukon Territory, reflecting the broader labour market and economy of the Territory. Yukon Territory is also included in the RAA for statistical comparative purposes where useful to provide context.

Table 1.3-1 Spatial, Temporal, and Technical Boundary Definitions for Education Services

Spatial Boundary	Description of Assessment Area
Education Services	
Local Assessment Area	City of Whitehorse, City of Dawson, Beaver Creek, Mayo, and Pelly Crossing. The Project footprint has not been included, as changes to Education Services are not expected to take place in the Project footprint.
Regional Assessment Area	Yukon Territory
Cumulative Effects Assessment Area	An area inclusive of active and proposed major mine projects, as shown in Appendix 5-B Projects and Activities Inclusion List .

COFFEE GOLD MINE

Education Services Spatial Boundaries

Legend

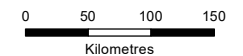
- Highway
- National/International Border
- Project Footprint
- Local Assessment Area
- Regional Assessment Area

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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NAD 1983 UTM Zone 8N

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Figure 1.3-1

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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 Education Services encompass these Project phases.

Baseline data were gathered, at a minimum, for 10 years (wherever possible and applicable).

1.3.3 ADMINISTRATIVE BOUNDARIES

The LAA and RAA spatial boundaries have been defined to reflect Yukon Territory and local government administrative boundaries where possible, as well as the apparent physical boundaries of the communities described in **Section 1.3.1**. The administrative centres of the WRFN, SFN, and FNNND reflect the availability of demographic and education data at the community scale.

1.3.4 TECHNICAL BOUNDARIES

Technical boundaries refer to the constraints imposed on the assessment by limitations in the ability to collect data or predict the effects of a project. Data restrictions exist with the underlying statistical information. Statistical data are provided by the Yukon Bureau of Statistics and Statistics Canada Census Program. Some communities, in particular smaller communities, may not be accurately reflected in statistical data due to sampling errors, rounding, and suppression. Also, not all Aboriginal communities agree with the Census results or the Aboriginal Peoples Survey results. Although limitations to statistical data exist, the information provides some of the few available published statistical data at the community level across the RAA, and provides an indication of existing conditions and trends. For a detailed discussion of statistical data limitations, refer to **Appendix 18-A Socio-economic Baseline Report**.

Information was not available on cultural responsiveness of education services in the LAA, specifically information on existing parental involvement in student education. As a result, assessment of this aspect of education services was not possible.

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 Education Services VC assessment, including the assessment of Project-related effects, and cumulative effects, was conducted according to the methods set out in **Section 5.0 Assessment Methodology** of the Project Proposal. The assessment has been informed by input (e.g., TK, statistical, and other information) provided through consultation and engagement with government agencies, affected First Nations, and the public. Primary data collection methods included interviews with key informants, and focus groups following a semi-structured group interview format. Specific methodologies applied in the analyses in the supporting Intermediate Component (IC) report is presented in that report.

3.0 EXISTING CONDITIONS

A summary of existing regulatory and baseline conditions is provided to provide local context and to enable reviewers to identify and understand the potential interactions between the Project and Education Services. Existing conditions are described based on available information, including legislation or policy applicable to the Education Services VC, available TK relevant to Education Services (subject to confidentiality constraints), statistical and other information, and baseline studies conducted during the Project's Feasibility Program.

3.1 REGULATORY CONTEXT

The following legislation, regulations, and government-led programs are relevant to the Education Services VC, which considers primary and secondary education services and community-based training opportunities.

Education services are regulated under the Yukon Education Act, RSY 2002, c.61 (amended by SY 2016 c.5), which sets out rights and responsibilities for territorial administration, students, and parents. This Act includes the provision that:

- The development of instructional materials for teaching Aboriginal languages and training Aboriginal language teachers must be made available.
- Every school administration, in consultation with the Local Indian Education Authority or Yukon First Nation, shall include in the school program activities relevant to the culture, heritage, traditions, and practices of the Yukon First Nation served by the school. (S.Y. 2002, c.61, s.55).

The teaching profession in Yukon is regulated under the *Teaching Profession Act*, RSY 2002, c.215. Training is regulated under four acts, which provide for trades, apprenticeships, Yukon College, and occupational training. Trade schools are regulated under the *Trade Schools Regulation Act*, RSY 2002, c.221, and apprenticeship is regulated under the *Apprentice Training Act*, RSY 2002, c.7. The *Yukon College Act*, RSY 2002 c.234 (amended SY 2014, c.16) governs educational programs, services, and activities to meet the needs of people in Yukon. The Minister may establish, organize, and promote programs to develop and improve the occupational and other skills of persons under the *Occupational Training Act*, RSY 2002, c.160; this includes entering into agreements on behalf of the Government of Yukon with any municipality, agency, organization, or corporation for the purpose of arranging for or providing programs, research, or services relating to occupational or other skills; or the improvement of the labour force.

3.2 BACKGROUND INFORMATION AND STUDIES

This section presents information related to TK, scientific and other information, and baseline studies conducted during the Project's feasibility program to inform the assessment of potential Project-related effects on Education Services.

3.2.1 TRADITIONAL KNOWLEDGE

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 2012; Dobrowolsky 2014), and primary data collection, as described in **Section 3.2.3**.

Traditional Knowledge related to Education Services was generally obtained from information present in previous reports (Bates et al 2014, TH 2012). Tr’ondëk Hwëch’in contributed TK through discussions on education and training during the TWG meetings held March 22 and 23, 2016.

3.2.2 SCIENTIFIC AND OTHER INFORMATION

Secondary sources used to characterize baseline conditions in the LAA and RAA included Statistics Canada (2001 (Statistics Canada 2003), 2006 (Statistics Canada 2007), and 2011 Census of Population and 2011 National Household Survey (Statistics Canada 2011a)), and Yukon Education’s Student Network (YESNet 2016a).

3.2.3 BASELINE STUDIES CONDUCTED DURING THE PROJECT’S FEASIBILITY PROGRAM

The Socio-economic Baseline Report (**Appendix 18-A**) was developed to support the assessment of potential Project-related socio-economic and health effects, including Education Services (described in **Table 3.2-1**). The Socio-economic Baseline Report was informed by local secondary and primary data, as well as by consultation with regulators, First Nations, and communities. Primary research included four interviews to address data gaps and enhance desktop research results.

Table 3.2-1 Summary of Desktop and Field Studies Related to Education Services

Study Name	Study Purpose and Duration
Appendix 18-A Socio-economic Baseline	Desktop research for Yukon and communities in LAA: <ul style="list-style-type: none"> • Documentation of existing conditions from statistical data sources including Statistics Canada (2001, 2006, and 2011 Census of Population and 2011 National Household Survey), and Yukon Education’s Student Network website. • December 2015 to April 2016.
	Primary Research: <ul style="list-style-type: none"> • Four interviews (February to March 2016, Dawson)

3.3 DESCRIPTION OF EXISTING CONDITIONS

Existing conditions without the Project 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 based on regulatory context, TK, scientific and other information, and baseline studies undertaken for the Project

3.3.1 PRIMARY, SECONDARY, AND POST-SECONDARY EDUCATION SERVICES

This section describes the existing conditions for youth and young adults receiving primary, secondary, and post-secondary education services in the LAA, and discusses enrollment trends and educational attainment trends. Early-year education and child care are discussed in **Appendix 25-A Community Health and Well-being Valued Component Assessment**.

There are 31 schools in Yukon, 16 in Whitehorse, 1 in Dawson and 14 in rural communities. Education is always a key area in the development of any community.

Citizens of Dawson have previously noted that “Dawson is relatively well served in terms of facilities and infrastructure, although shortcomings are well documented (City of Dawson and TH n.d.).” These shortcomings have been noted to relate to maintaining and developing partnerships with service providers and stakeholders, providing incentives and initiatives to encourage students to participate in programs and being able to offer vocational training opportunities. Infrastructure has also been noted as “limited in regards to potential for expansion, and that improvements to education facilities and funding are always high on the agenda (City of Dawson and TH n.d.)

Primary, secondary, and post-secondary opportunities are available in Whitehorse. Outside of traditional public school education, The Individual Learning Centre is a drop-in learning centre that provides alternative education programs for students in Grade 9 to Grade 12 looking to graduate in a self-paced manner (ILC 2017). The 15 public schools in Whitehorse are:

- One primary school (K-3) (Grey Mountain)
- Seven elementary schools (Elijah Smith, Golden Horn, Hidden Valley, Jack Hulland, Selkirk, Takhini, Whitehorse)
- Two Catholic elementary schools (Christ the King, Holy Family Elementary)
- Two secondary schools (Porter Creek, FH Collins)
- One Catholic secondary school (Vanier)
- One K-12 school that offers French as a first language (École Emilie-Tremblay)
- One 6-12 “virtual school,” which allows students to take courses online (Aurora Virtual School). (YESNET 2016a).

Student enrollment and teaching staff data, as well as the average student-teacher ratio of the 15 public schools and the Individual Learning Centre, are represented in **Table 3.3-1**.

Table 3.3-1 Primary and Secondary Schools in Whitehorse

School	Grades	Student Enrollment	Teaching Staff	Average Student-to-Teacher Ratio
Primary and Elementary Schools				
Grey Mountain Primary School	(K-3)	67 students	4 teachers	16.7:1
Elijah Smith Elementary School	(K-7)	309 students	20 teachers	15.4:1
Golden Horn Elementary School	(K-7)	199 students	13 teachers	15.3:1
Hidden Valley School	(K-7)	80 students	7 teachers	11.4:1
Selkirk Elementary School	(K-7)	225 students ¹	15 teachers	15:1
Jack Hulland Elementary School	(K-7)	325 students	26 teachers	12.5:1
Takhini Elementary School ²	(K-7)	171 students	--	
Whitehorse Elementary School	(K-7)	457 students	27 teachers	16.9:1
French Immersion Schools				
École Emilie-Tremblay	(K-12)	255 students	18 teachers	14.1:1
Secondary Schools				
F.H Collins Secondary School	(8-12)	662 students ¹	61 teachers	10.8:1
Porter Creek Secondary School	(8-12)	465 students	34 teachers	13.6:1
Parochial (Catholic) Schools				
Holy Family Elementary School	(K-7)	171 students	10 teachers	17.1:1
Christ the King Elementary School	(K-7)	345 students	21 teachers	16.4:1
Vanier Catholic Secondary School	(8-12)	376 students	26 teachers	14.4:1
Non-traditional Schools				
Aurora Virtual School	(6-12)	74 students	3 teachers	24.6:1
Individual Learning Centre	(9-12)	165 students	5 teachers	33:1

Source: YESNET 2016b;

YESBET 2016c

Yukon Teachers' Association 2016

Notes: ¹ Includes English and French student enrollment

² No publicly available data for Takhini Elementary School teaching staff

In the 2016 – 2017 school year, 490.24 full-time equivalent teachers are allocated for the projected student enrollment of 5,375 students in Yukon (including 74 students at Aurora Virtual school), demonstrating a ratio of 10.9 students for every 1 educator, which is the lowest ratio in the country (YTA 2016, Auditor General 2009, Statistics Canada 2015). The Statistics Canada Summary Public School Indicators Report for 2005 – 2006 found similar trends, noting Yukon had the lowest five-year average ratio in Canada, of 11.7:1, whereas the country-wide ratio over the past five years was 15.5:1 (Auditor General 2009). According to the Yukon Department of Education's 2006 – 2007 Annual Report, rural schools had low student-educator ratios because the schools were required to be staffed but that enrollment was declining (Auditor General 2009).

A 2009 Auditor General Report on the Yukon Department of Education found that during the period between 2003 and 2007, Yukon increased teaching resources while student enrollment numbers declined (Auditor General 2009). Specifically, there was a 4 percent (%) increase in the number of teachers and a 14% increase in education assistants and remedial tutors, while student enrollment dropped 8% over that period (Auditor General 2009). In 2009, the Assistant Deputy Minister created a committee to improve enrollment. Since that time, annual information reports show increased student enrollment. Among the changes made since that time are “non-brick-and-mortar” programs, such as the Individual Learning Centre and Aurora Virtual School, which allow students to learn more flexibly (YTA 2016).

There is one public school in Dawson, the Robert Service School (RSS), which provides a Kindergarten through Grade 12 curriculum. With a current enrollment of 209 students, 10 elementary teachers, and 8 secondary teachers, there is an average student-teacher ratio of 10:1. While the school is not currently operating at the official capacity of 348 students, it was noted during primary research that some in the community perceive that the school is limited in terms of how many additional students it can accommodate:

“Robert Service School does not have the capacity to accommodate more students, due to the programming and the holistic approach to education that RSS is taking. This would be negatively influenced if more students were to enroll.” (Interview 17, Personal Communication, 2016).

“RSS currently has large class sizes. Kindergarten class is currently oversized. Special permission was required to allow for such a large class size in the 2015 – 2016 school year” (Interview 17, Personal Communication, 2016).

Enrollment trend data for RSS are relatively consistent with population growth. Enrollment trends are detailed in **Figure 3.3-1**. Three additional schools are located in the LAA, two of which provide a K-12 program and one that provides K-9 (**Table 3.3-2**).

Table 3.3-2 Primary and Secondary Schools in Pelly Crossing, Mayo, and Beaver Creek

Community	School	Grades	Student Enrollment	Teaching Staff	Average Student-Teacher Ratio
Pelly Crossing	Eliza Van Bibber School	(K-12)	58 students	Nine teachers	6:1
Mayo	J.V. Clark School	(K-12)	53 students	10 teachers	5:1
Beaver Creek	Nelna Bessie John School	(K-9)	Six students	One teacher	6:1

Source: YESNET 2016c, 2016d, 2016e





Enrollment trends for Whitehorse and Yukon are described in **Figure 3.3-1**. **Figure 3.3-2** (see Educational Attainment section below) summarizes Yukon Bureau of Statistics data for the highest education level achieved in Yukon in 2001, 2006, and 2011, and itemizes education attainment for Whitehorse.

Enrollment trend data for these LAA schools are relatively consistent with population fluctuations, as described in **Figure 3.3-1** and **Figure 3.3-2**.

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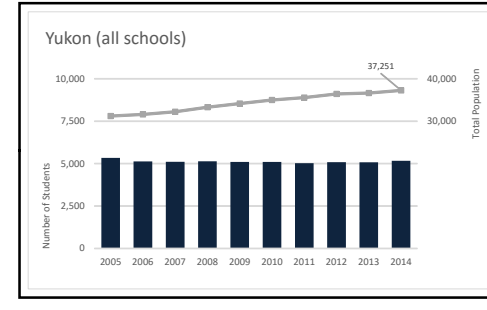
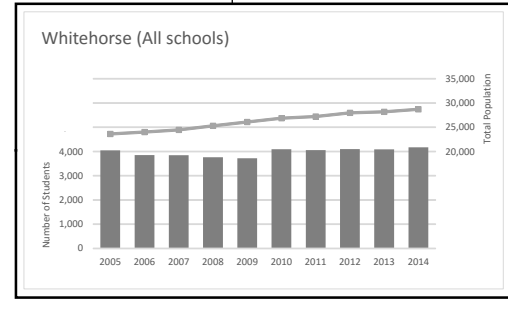
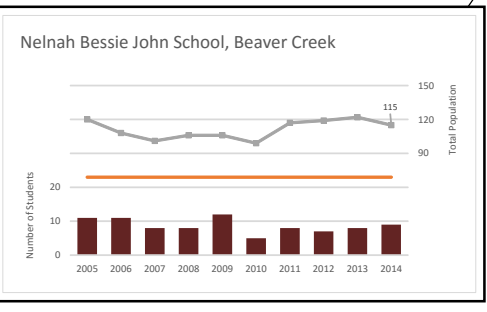
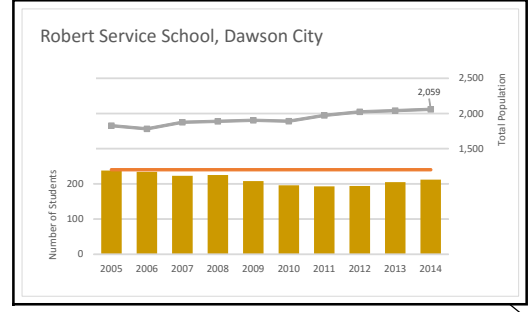
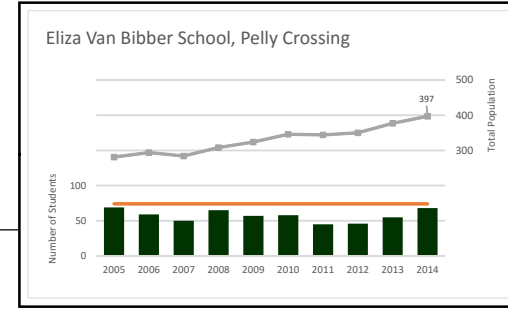
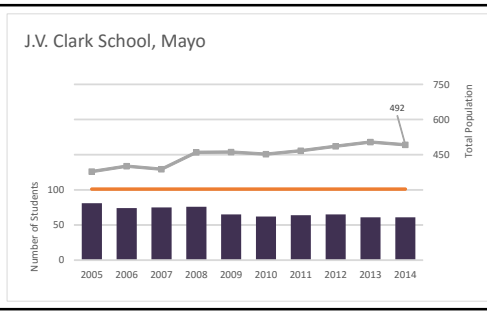
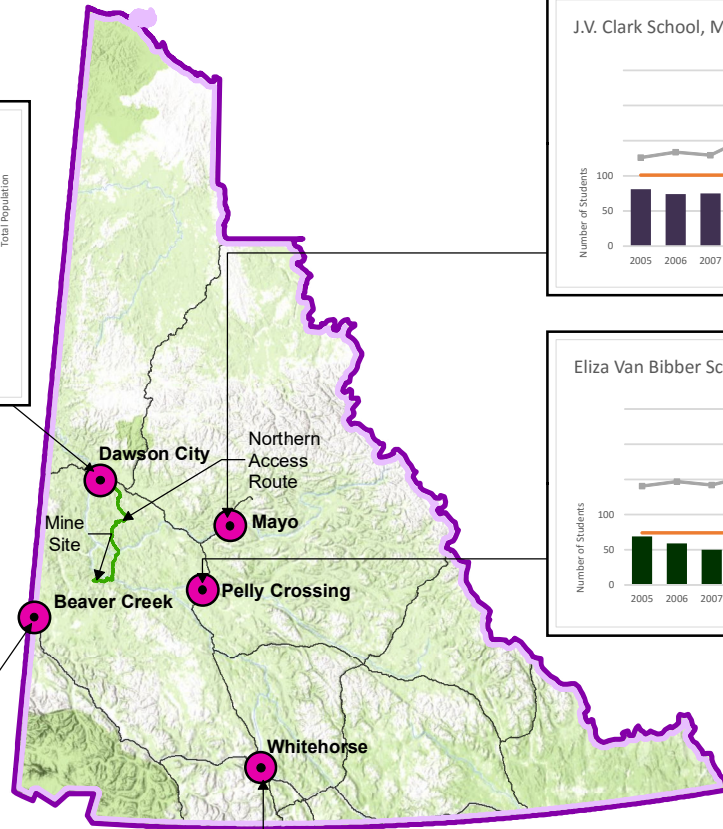
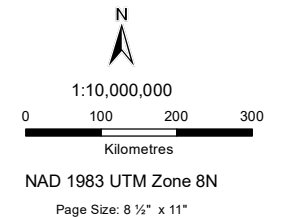
Yukon Territory School Enrollment and Population Statistics

Legend

-  Highway
-  Project Footprint
-  Local Assessment
-  Regional Assessment

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.



Post-secondary Education

Yukon has two post-secondary institutions: Yukon College and the Yukon School of Visual Arts. Yukon College has 13 community-based campuses located throughout Yukon, with the main campus located in Whitehorse that has an average total enrollment of 5,671 students since 2008 (Yukon College 2016a). In the LAA, campus locations include Pelly Crossing (Het sedan Ku situated next to Eliza Van Bibber School), Mayo (housed in the JV Clark School), and Dawson. The Yukon School of Visual Arts is located in Dawson. The school receives its accreditation through Yukon College, and is in partnership with the College, Dawson City Arts Society, and TH (Yukon School of Visual Arts n.d.).

Yukon College is made up of 10 schools that service a variety of study topics, offering one-year certificate programs, two-year diploma programs, and degree programs (Yukon College 2012a). These schools include:

- The School of Management
- Tourism and Hospitality
- School of Trades
- Technology and Mining
- School of Liberal Arts
- School of Academic and Skill Development
- School of Science
- School of Community Education and Development
- School of Continuing Education and Training
- The School of Health, Education, and Human Services.

Apprenticeships and certifications are required for nearly 50 different trade-related occupations in the Territory, which is why Yukon College offers 11 distinct trades certifications to ensure students are adequately trained for existing employment opportunities (Yukon College 2012a). The trade certificates include:

- Air Rotary Drilling – Helper Training
- Building Northern Apprentices
- Carpentry
- Electrical
- Heavy Equipment Technician Pre-Apprenticeship (Period 1)
- Introduction to Surface Mining Operations/Heavy Equipment Operations
- Oil Burner Mechanic Apprenticeship

- Pipe Trades
- Underground Mining Operations
- Welding
- Yukon Water and Wastewater Operations.

Yukon College also recently built the Centre for Northern Innovation in Mining (CNIM), an \$8.3-million state-of-the-art trades training facility in Whitehorse (Yukon College 2012b). The Centre was developed to enrich and expand the local skilled workforce to improve Yukoners' likelihood of employment at mines in the Territory (Yukon College 2012b). The CNIM provides unique training for students through innovative facilities, mobile classrooms, and high-tech simulators. Students also receive applied training on mine sites, as well as exploration and reclamation areas, improving their integration into the mining industry following graduation (Yukon College 2012b). The CNIM also offers an Apprenticeship Program that partners with industry to grow the local workforce based on direct industry needs (Yukon College n.d.). The CNIM assumes an employer role that sponsors apprentices, which allows students to maintain their apprenticeship status while pursuing full-time education at the College (Yukon College n.d.).

Educational Attainment

Educational attainment provides an indication of the success of education services in the study area, and provides a potential indicator of available, qualified, local candidates for direct and indirect Project-related employment.

Education attainment is defined by Statistics Canada as the highest level of education a person has attained. At the primary and secondary school level, educational attainment refers to the number of grades completed. At the post-secondary level, it refers to institutions attended and certificates, degrees, or diplomas obtained (Statistics Canada 2011b). **Figure 3.3-2** summarizes Statistics Canada data for highest education level achieved in Yukon in 2001, 2006, and 2011, and itemizes education attainment for communities within the LAA (Statistics Canada 2013a, 2007, 2003). For each Census year, the proportion of the population having not completed high school is first shown on the left, followed by the proportions that have completed high school. The last three columns indicate the proportion of the population that has completed some form of post-secondary education (trade certificate, college, or university degree). The post-secondary education numbers 'float' as this level of education implies completion of high school.

COFFEE PROJECT

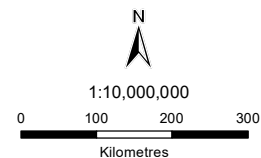
Yukon Territory Education Statistics

Legend

-  Highway
-  Project Footprint
-  Local Assessment
-  Regional Assessment

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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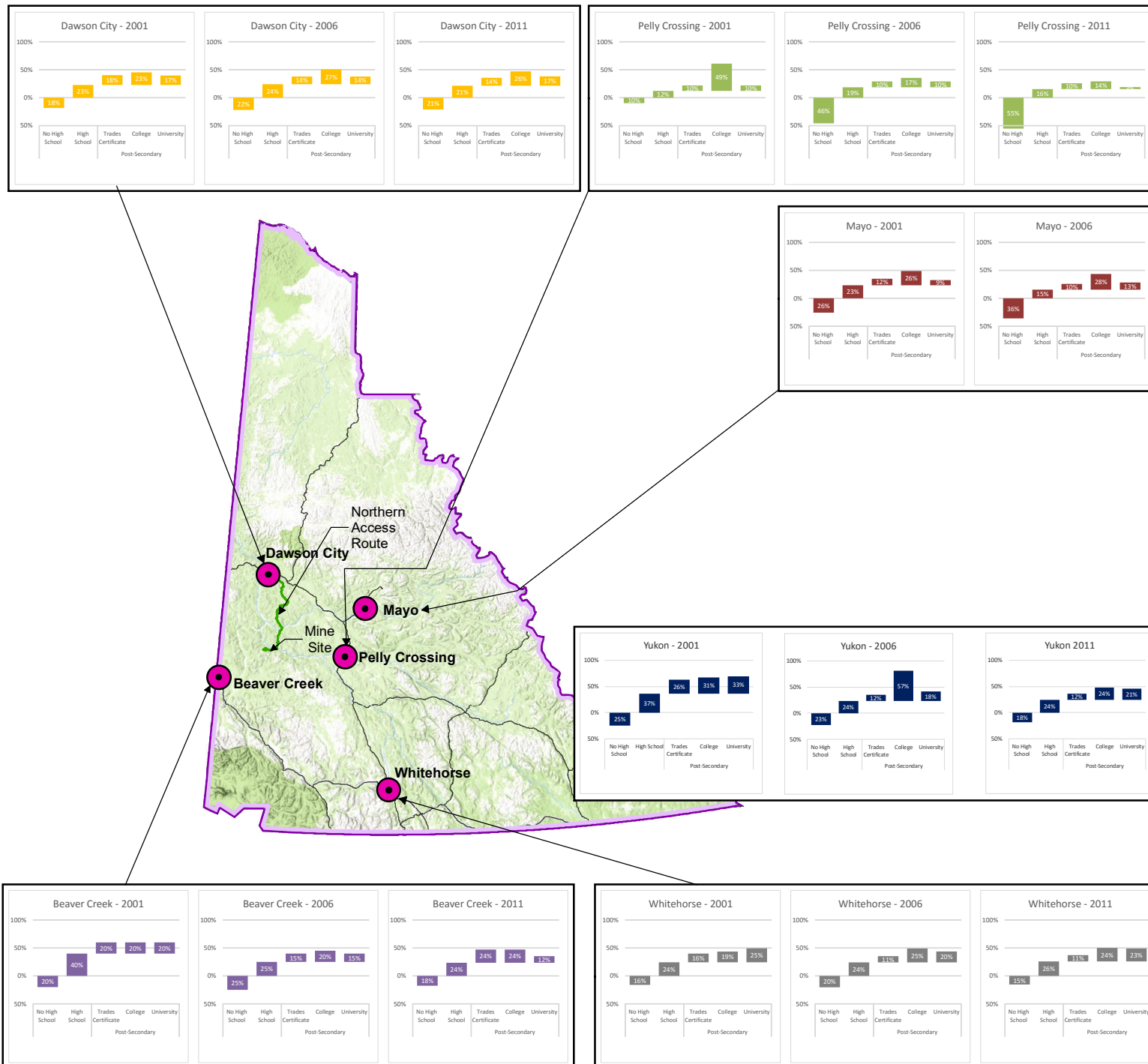
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Figure 3.3-2

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Mar 23, 2017

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JS

Reviewed:
DP



In Yukon, 57 percent of the workforce age population had post-secondary education in 2011, either a trades certificate, college, or university degree. This included 10,940 persons in Whitehorse, 680 in Dawson, 80 in Pelly Crossing and 50 in Beaver Creek. The number of individuals of workforce age with a high school diploma or equivalent was 4,820 in Whitehorse, 255 in Dawson, 45 in Pelly Crossing and 20 in Beaver Creek. Information regarding the number of individuals in Mayo of workforce age with a high school diploma was unavailable due to privacy and data suppression. (Statistics Canada 2013a)

Overall, the information and data required to establish trends over time is not sufficient or unavailable due to data suppression, privacy and/or the absence of long form census information.

Absenteeism

School absenteeism is a recognized barrier to an individual’s capacity-building and negatively affects student performance (SFN et al. 2016). Students who regularly attend school are noted to have enhanced personal growth and develop lifelong habits essential to their successful future participation as citizens in the workplace and community (Yukon Education 2008).

The Yukon Education Policy defines two types of school absences:

- Unexcused Absence – Student is not attending school or school related activity and there is no reason provided for the absence.
- Excused Absence – Student is not attending school or school related activity where the school has been notified by the parent or guardian and the absence is according to section 22 (2) of the Education Act (Yukon Education 2008).

Historically, attendance rates for Yukon schools have been low compared to the national average, however, Yukon Education has been working to improve attendance rates by identifying obstacles to attendance and by implementing various programs and initiatives to encourage higher attendance rates **Table 3.3.4-1** (Yukon Education 2008).

Table 3.3-3 Average Absence Days 2014 – 2015 School Year

Rural/Urban	First Nations	Non-First Nations	Students (number)
Rural	35	27	32
Urban	22	15	17
Yukon	27	17	20

Source: YG 2016

Obstacles and barriers to attendance vary per community, however, overarching factors have been identified through research and interview initiatives of Yukon Education, (CBC News 2012, Blakesley 2015) such as:

- Holidays outside of regularly scheduled breaks in the school year.
- Perception of indifference towards regular school attendance, not seeing the relevance of school, or negative past experiences (for both parents and children).
- Lack of structured schedules (i.e. late bedtimes, looking after siblings, etc.).
- Complex interrelated factors; history, socio-economic status, motivation, family engagement, transportation, etc.
- First Nations students are often away from home attending high school, and may have to return to their communities for extended periods of time to attend funerals or other important events. Other cultural activities and family obligations may also extend absences.
- Lack of engagement in the education process.

In 2012, the Yukon department of Education starting working with the Victoria Gold Student Encouragement society on the Every Student, Every Day initiative. Through this fund-raising initiative the goal is to raise funds to support community-based projects and impact and improve school attendance and support student success (YG 2016).

In the fall of 2014 Yukon Education introduced an optional “blended learning” program, which allows students to access school courses online. This approach has been noted as valuable for young parents or students who participate in the traditional economy through hunting. This program also allows for accessible learning at the students own pace (CBC News 2014).

3.3.2 INDUSTRY-SPECIFIC, COMMUNITY-BASED TRAINING

Industry-specific community-based training was identified through primary data collection as being key to successful program completion: “...when you take citizens out of their home community to go train, the biggest problem is them being in the city by themselves and changing their culture, and people end up wanting to return home right away.” (TWG Meeting, Personal Communication 2016). Currently, Yukon College’s goal is to provide as many community-based programs as possible (Interview 2, Personal Communication, 2016).

A variety of programs and courses are available through Yukon College at the Tr’odëk Hätr’unohtän Zho (Klondike Learning House) Campus in Dawson. The campus provides various programs from upgrading, prep level courses (on campus or via videoconference), to Trades training programs which support local employment needs. The Dawson Campus also has an affiliation with the Klondike Institute of Art and Culture and the Yukon School of Visual Arts, where special interest options are available to community members all year round (Yukon College 2016b). The following support for community based training or direct industry specific community based training opportunities are available in the LAA (**Table 3.3-3**):

Table 3.3-4 Summary of Available Training Opportunities in the Local Assessment Area

Organization Providing Training Opportunity	Program Description
TH Human Resources and Community Education Department	<ul style="list-style-type: none"> • Provides TH government staffing and training (supports all other departments by helping with recruitment and hiring activities and providing training for employees). • Provides adult education programming. • Administers post-secondary funding for students. • Provides Tr’ondëk Hwëch’in citizens with: <ul style="list-style-type: none"> ▫ Funding for training ▫ Job search assistance ▫ Academic advising ▫ Job creation program ▫ Career Week, Career Fair and related activities/workshops ▫ Co-op program.
Selkirk First Nation	The SFN government provides <ul style="list-style-type: none"> • Scholarships and post-secondary grants to applicants to meet criteria publicized on the nation’s website • Career counselling for qualifying SFN students.
First Nation of Na-cho Nyäk Dun	The FNNND government offers post-secondary scholarships and training for qualified members. It facilitates links to external training delivered in person or online for eligible members, and posts opportunities on its website (FNNND 2017).
White River First Nation	The WRFN government provides links to external training through Yukon College on its external website (WRFN n.d.).

Organization Providing Training Opportunity	Program Description
Yukon College	<ul style="list-style-type: none"> • Provides education and training opportunities in the community, including both locally delivered courses and video conference courses sourced from other campuses. • Delivers the Northern Adult Basic Education Program. The college engages in a number of partnerships with TH, Yukon Government, Parks Canada, Klondike Institute of Art and Culture, and Klondike Region Training Society.
Yukon Government, Department of Advanced Education	Supports programs that offer support to employers and/or job seekers, including: <ul style="list-style-type: none"> • Sector-based training funds • Project-based training funds • The Dawson campus of Yukon College accesses these funds to deliver targeted courses • Student financial assistance • Student employment / trade schools • Apprenticeship and tradesperson certification • Other labour market initiatives (e.g., literacy, Licensed Practical Nurse Program, School of Visual Arts, etc.).
Klondike Region Training Fund	Klondike Regional Training Fund provides financial support for training.
Klondike Outreach	Provides services to job seekers, employers, and those interested in training. Serves as the local case manager for participants in skills development programs funded by the Government of Yukon Advanced Education: <ul style="list-style-type: none"> • Skills Development • Self-Employment • Targeted Wage Subsidy • Job Creation Partnership.
Klondike Development Organization	Klondike Development Organization provides enterprise and investment facilitation and business advisory services for local businesses and start-up entrepreneurs.

4.0 ASSESSMENT OF PROJECT-RELATED EFFECTS

This section describes the potential interactions between Project activities and the Education Services VC including primary, secondary, and post-secondary education; and community-based training. 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 EDUCATION SERVICES

Interactions have the potential to occur between Project-related activities; primary, secondary, and post-secondary education; and community-based training during the Project's Construction, Operation, and Reclamation and Closure Phases. Interactions 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 4.1-1**.

Table 4.1-1 Potential for an Interaction between Education Services and the Project

Term	Definition
No Interaction	Project activity will not interact with the VC.
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).
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.

Potential Project interactions with Education Services are presented in **Table 4.1-2**. When no interaction between the Project and Education Services is anticipated or if the interaction is considered negligible (i.e., not measurable or detectable using the identified indicator), the effect is not considered further in the assessment.

Table 4.1-2 Identification of Potential Project Interactions with Education Services

Project Component	Interaction Rating	Nature of Interaction and Potential Effect
Overall Construction Phase		
Demand for goods and services, and employment opportunities	Potential Interaction	Economic effects of the Project include employment opportunities and demand for goods and services, which may result in induced and indirect employment. These employment opportunities may interact with the demographic characteristics of the LAA and RAA. Demographic changes may adversely affect primary, secondary, and post-secondary education services. Industry-specific community based training has the potential to be positively affected through increased demand for skills acquired during training. No interaction is foreseen between the Project's demand for goods and services and rates of educational attainment. Some Project-related in-migrants may choose to spend additional income on post-secondary education, but this choice is personal and cannot be assessed.
Overall Operation Phase		
Demand for goods and services, and employment opportunities	Potential Interaction	Economic effects of the Project include employment opportunities and demand for goods and services, which may result in induced and indirect employment. These employment opportunities may interact with the demographic characteristics of the LAA and RAA. Demographic changes may adversely affect primary, secondary, and post-secondary education services. Industry-specific community based training has the potential to be positively affected through increased demand for skills acquired during training. No interaction is foreseen between the Project's demand for goods and services and rates of educational attainment. Some Project-related in-migrants may choose to spend additional income on post-secondary education, but this choice is personal and cannot be assessed.
Reclamation and Closure Phase		
Demand for goods and services, and employment opportunities	Negligible Interaction	Minimal Project employment and expenditures associated with Reclamation and Closure-phase activities may interact with Education Services due to local hiring, although these changes are not anticipated to be detectable.
Post-closure Phase		
Overall Post-closure Phase	No Interaction	N/A

Interactions likely to result in potential effects to Education Services are discussed further in **Section 4.2**.

4.2 POTENTIAL PROJECT-RELATED EFFECTS

This section includes consideration of potential adverse Project-related effects on the Education Services VC arising from potential interactions, as identified in **Table 4.1-2**, and in relation to the indicators listed in **Table 1.3-1**. This section also describes the nature of potential effects to be considered with respect to Education Services. Mitigation measures for each potential effect are described in **Section 4.3**. Effects to Education Services are correlated with potential population influx due to employment opportunities and rotational shift work.

4.2.1 PRIMARY, SECONDARY, AND POST-SECONDARY EDUCATION

Education services may be affected by an increased demand for primary, secondary, and post-secondary education in Dawson and Whitehorse during the Project's Construction and Operation Phases as a result of changes to the Demographics Intermediate Component (**Appendix 19A**). Primary, secondary and post-secondary enrollment may be affected by workers and their families moving to the LAA for Project-related direct, indirect, and induced employment opportunities (MIHR 2012). The assessment of potential changes to the Demographics IC (**Appendix 19A**) found that a maximum of 740 children under age 15 have the potential to move to the RAA with parents who have direct, indirect, or induced employment by 2021.¹ (**Table 4.2-1**)

4.2.1.1 Effects to Enrollment Patterns

A maximum of an additional 740 children in the RAA as a result of the Project has the potential to affect enrollment patterns and adversely affect the student-teacher ratio and class sizes. According to official statistics, approximately 70% of Yukon's population lives in Whitehorse (YBS 2016). If Yukon communities continue their projected growth patterns,² 75% of the 740 children (555 children) have the potential to enroll in schools in Whitehorse. Dawson, which forms 6% of Yukon's population, could receive 33 children under the age of 15 if communities grow in size due to the Project and in proportion to their current growth patterns. It is difficult to predict with certainty what ages the children of Project workers will be. The assessment has assumed that in the absence of reliable information, the number of children of Project-related in-migrants will be evenly spread over the ages of 0 to 15 years. This means that 33.3% of the children of Project-related migrants aged 0 to 15 would be under age 5; therefore, may affect enrollment patterns in daycare and preschool, rather than primary and secondary schools. The remaining 66.7% of children (aged 5 to 15) would be enrolled in primary or secondary schools. **Table 4.2-1** shows estimates of the number of school-age children who have the potential to move to Yukon, as well as the LAA communities of Whitehorse and Dawson as a result of the Project.

¹ The Demographics IC section takes a conservative (large) approach to assuming Project-related in-migration to Yukon, and as such estimates are a maximum. **Appendix 19A Demographics Intermediate Component Analysis** outlines the assumptions taken in estimating potential Project-related in-migration. The number of school-age children was estimated using age 15 as a cut-off point, understanding that people ages 16 and above are legally able to work, and as such have the potential to be Project-related direct, indirect, or induced workers.

² Projected growth patterns are based on official Yukon Bureau of Statistics predictions (YBS 2011).

Table 4.2-1 Estimated Number of School-age Children Accompanying Project Workers

Age	% of School-age Children	Number of Children Accompanying Project Workers			School Enrollment Category Applicable
		Yukon (RAA)	Whitehorse (LAA)	Dawson (LAA)	
		100% of Yukon population	75% of Yukon population	6% of Yukon population	
0-1	3.3%	25	19	1	None
2-5	30.0%	222	166	13	Daycare or preschool
5-10	33.3%	246	185	15	Elementary
10-12.5	16.7%	124	93	7	Elementary
12.5-15	16.7%	124	93	7	Secondary
TOTAL	100%	740	555	44	

Sources: YBS 2016, Project employment data, Hemmera calculations

The Project study team estimates that Whitehorse may experience an estimated additional 278 elementary students and 93 additional secondary students as a result of the Project. In Dawson, an estimated additional 22 elementary students and 7 secondary students may enter the school system due to the Project.

Whitehorse’s student-teacher ratios suggest that the elementary and secondary school systems in that city will be resilient in the face of Project-related change. Student-teacher ratios in Yukon in general are the lowest in the country, and data from Whitehorse schools shows that both the public and parochial school systems can absorb enrollment at the levels that the Project may affect. The effects to elementary and secondary education are assessed as neutral.

The Project’s potential effect on enrollment can be viewed as adverse in Dawson. Dawson’s Robert Service School is already at capacity, and primary data collection revealed that increased enrollment would adversely affect the educational environment (Interview 17, Personal Communication, 2016).

Population growth as a result of the Project in Beaver Creek, Pelly Crossing, and Mayo was not able to be predicted due to alternate patterns of growth and decline and lack of a definable growth trend. . Teacher-to-student ratios in the three communities suggest that there is capacity to absorb additional elementary and secondary student enrollment without affecting the quality of education as expressed by the student-to-teacher ratio (YESNet, 2016c, 2016d, 2016e).

Overall, while the Project is likely to adversely increase enrollment in the LAA, the effect is anticipated to be more strongly experienced in Dawson due to limitations in the Robert Service School’s ability to accept new students.

The Project's effects on post-secondary enrollment are likely to be neutral. The Project will require skilled tradespeople, including graduates from the newly established the Centre for Northern Innovation in Mining at Yukon College. Increased enrollment as a result of Project demand for skilled trades is not anticipated to adversely affect the quality of education as expressed by the student-teacher ratio.

4.2.2 INDUSTRY-SPECIFIC, COMMUNITY-BASED TRAINING

The Project's direct, indirect, and induced employment opportunities may increase demand for community-based training during Construction and Operation as community members in Dawson, Beaver Creek, Mayo, and Pelly Crossing can perceive the potential for training to lead to employment as a result of the Project. Effects to enrollment, and therefore quality of education, may be adverse or beneficial. Effects would be adverse if Project-related enrollment rises to the extent that causes student-teacher ratios to rise and the quality of education to subsequently decline. Effects would be positive if Project-related enrollment increases sufficiently enough to contribute to the long-term sustainability of programs due to sustained demand and proven success of graduates attaining employment. The decision to participate in training is personal, and may also be affected by factors that are not connected to the Project (e.g., family commitments, interest in other types of work). Goldcorp plans to support relevant industry-specific training opportunities, and will monitor the effectiveness of training.

4.3 MITIGATION AND ENHANCEMENT MEASURES

This section describes mitigation measures consistent with the definition provided in 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 supported by specific guidance documents. The selection of mitigation measures for Education Services was informed by primary and secondary data collection, a review of mitigation measures and follow-up programs undertaken for past projects, and First Nation and public input.

Mitigation measures to address potential adverse effects to Education Services are described below and summarized in **Table 4.3-1**. The final column in the table identifies whether or not there is the potential for a residual effect. A potential (i.e., non-negligible) residual effect must be carried forward in the assessment (see **Section 4.4**). This section also describes applicable enhancement measures that are identified to further expand any positive effects as a result of the Project.

The mitigation measures proposed in the next sections expand on the Proponent's objectives related to social performance under Goldcorp's Sustainability Excellence Management System, which identifies standards on, among other things, local employment, local procurement, training, closure and reclamation, and community contributions that Goldcorp must follow. The Sustainability Excellence Management System is described in more detail in the **Section 1.0 Project Overview** of the Project Proposal.

4.3.1 LOCAL HIRING PRACTICES

Local hiring practices are intended to address potential enrollment changes in primary and secondary education services throughout all phases of the Project. By prioritizing local hiring, the Project will reduce the potential changes to Demographics that may increase the local population and its increased demand for Education Services.

Mitigation measures to improve local hiring practices will comprise several components, including the following:

- Goldcorp will develop a Local Employment Strategy to encourage the recruitment of local and territorial labourers in accordance with Goldcorp's internal sustainability management system.
- Goldcorp will provide first consideration for employment opportunities to qualified local, regional, and First Nations residents with appropriate skills and qualifications.
- Goldcorp will communicate typical job descriptions, employment requirements (including skills and qualifications), and other information in a timely manner to enable local residents to prepare and seek any required training or experience in advance of Project Construction and Operation.
- Goldcorp will develop a program for First Nations employees to encourage work site integration and retention.
- Goldcorp will advertise employment opportunities with appropriate local organizations and through appropriate venues.
- Goldcorp will track the number of local applicants and employees through socio-economic monitoring.
- Goldcorp will implement a Community Feedback Protocol to respond to questions and concerns regarding Project employment opportunities.
- Goldcorp will engage with local businesses, industry partners, and organizations if potential concerns are identified related to local or regional labour competition. The Proponent will work with these groups to identify appropriate means to offset any challenges, such as additional training and education initiatives.
- Goldcorp will engage educational bodies in the LAA and RAA to promote opportunities for experiential learning that will allow students to consider potential career paths within the mining industry.

Goldcorp will implement the mitigation measures associated with local hiring practices in conjunction with other socio-economic mitigations, such as education and training activities, Engagement Plan, local contracting and procurement practices, and workforce transition strategy, among others.

Several of the mitigation measures developed to support local hiring practices were informed by primary data collection and other Project communications. In addition, the local hiring practices mitigation measures are generally standard in the industry, and reflect the Proponent's intent to continue to work closely with local communities and maximize local benefits associated with the Project. The mitigation

measures for local hiring practices are likely to become effective before the Project's Construction Phase begins. Uncertainty regarding the effectiveness of and the ability to implement mitigation measures in support of local hiring practices are largely associated with the dynamic nature of labour markets and other Project labour demands in the region and Territory. As part of the proposed socio-economic monitoring (refer to **Section 31.0 Environmental and Socio-economic Management Program**), the Proponent will track the effectiveness of mitigation measures developed to enhance local hiring practices, and will adapt its strategies as needed based on feedback.

4.3.2 EDUCATION AND TRAINING ACTIVITIES

Enhancement measures associated with providing or supporting training activities are intended to address an increased demand for industry-specific, community-based training opportunities, and are subject to general socio-economic management practices. The following enhancement measures are intended to be applied throughout all phases of the Project, and broadly comprise several components, including the following:

- Goldcorp will coordinate with local education and training organizations and institutions to identify programs or courses necessary for Project employment available to local and regional residents.
- Limited on-the-job training will be available for employees who identify a need or who express an interest in furthering their career.
- Career development opportunities will be available to encourage retention of employees and further develop the skills of the local labour force.
- New employee orientation will include cultural awareness training.
- Goldcorp will provide or facilitate training opportunities for under-represented groups in the mining sector, such as First Nations and women.
- Goldcorp will offer an Employee Assistance Program that will support career development.

Developing and supporting industry-specific, community-based training opportunities will assist in maximizing direct employment and employment-related incomes of the LAA labour force. In addition, facilitating, developing, and supporting training programs specific to members of affected First Nations will assist in addressing under-representation by identifying strategies for capacity building and overcoming barriers to employment. The mitigation measures associated with training activities will be implemented in conjunction with other socio-economic mitigation, such as the Project's Engagement Plan and local hiring practices, among others.

Several of the training enhancement measures were informed by primary data collection and other Project communications. The training enhancement measures reflect the Proponent's intention to continue to work closely with local communities and maximize local benefits associated with the Project. As part of the proposed socio-economic monitoring (refer to **Section 31.0 Environmental and Socio-economic Management Program** of the Project Proposal), the Proponent will track the effectiveness of training enhancement measures, and adapt strategies as needed based on feedback received.

4.3.3 FIRST NATIONS MENTORING PROGRAM

Goldcorp will develop a First Nations Mentoring Program as a mitigation measure to support the Education and Training program for First Nations. Providing on-site mentorship to First Nation employees delivers additional support structure to individuals on-site, and provides an additional support structure to facilitate re-integration into the community during non-work weeks

4.3.4 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 in establishing long-term, good-neighbour relationships. As part of this recognition, and the Proponent's engagement practices, the Proponent will develop an Engagement Plan for the Project. Mitigation measures associated with the Engagement Plan are intended to address effects on primary and secondary education services (**Table 4.3-1**).

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 employees, contractors, local communities, government, and other organizations. The Proponent will communicate any temporary and seasonal closure.
- Goldcorp will implement a Community Response Protocol to respond to questions and concerns regarding Project.
- Successful engagement and consultation is likely to lead to an enhanced understanding of the Project by First Nations and local communities. It will also provide the Proponent with first-hand knowledge of any concerns and priorities that First Nations and local communities may have about the Project.

Several of the Engagement Plan mitigation measures were informed by primary data collection and other Project communications, and all will be implemented in conjunction with other socio-economic mitigation and enhancement measures before the Project's Construction Phase begins. Generally standard in the industry, the Engagement Plan mitigation measures reflect the Proponent's intention to continue to work closely with First Nations and local communities. Uncertainty regarding the effectiveness of the Engagement Plan mitigation measures and the ability to implement them depends on the dynamic nature of the values, needs, and concerns of First Nations. 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 7.0**), Goldcorp will track the effectiveness of Engagement Plan mitigation measures, and adapt its strategies as needed based on feedback received.

4.3.5 SUMMARY OF MITIGATION MEASURES

The mitigation measures for Education Services comprise several topics, including local hiring practices, training activities, , First Nations mentorship, and development and implementation of an Engagement Plan. **Table 4.3-1** summarizes the potential effects and mitigation, and whether residual effects are anticipated following the application of mitigation measures.

Table 4.3-1 Summary of Potential Adverse Effects and Mitigation Measures for Education Services

Summary of Potential Effect	Project Components	Contributing Project Activities	Proposed Mitigation and Enhancement Measures	Detectable / Measurable Residual Effect (Yes / No)
Construction and Operation Phases				
Increase in primary and secondary enrollment	Overall Construction and Operation Phases	Direct and indirect Project-related employment opportunities during the Construction and Operation Phases may result in changes to demographics.	<ul style="list-style-type: none"> Local Hiring Practices Education and Training Activities First Nations Mentoring Program Engagement Plan 	Yes
Increased demand for community-based training	Overall Construction and Operation Phases	Direct and indirect Project-related employment opportunities during the Construction and Operation Phases may result in changes to demographics	<ul style="list-style-type: none"> Local Hiring Practices Education and Training Activities First Nations Mentoring Program Engagement Plan 	No. Effects may be adverse or positive. Goldcorp will monitor to ascertain potential effects.

4.4 RESIDUAL EFFECTS AND THEIR SIGNIFICANCE

This section describes anticipated residual effects of the Project (i.e., effects anticipated to occur following the application of mitigation measures) to Education Services.

This section also determines the significance of residual effects to Education Services that may occur due to interactions with the Project employment, rotational shift schedule, and training practices. This section provides a determination of the significance of each potential residual effect for Education Services, as well as the likelihood of the residual effect, and the level of confidence associated with the determinations of significance and probability. The determination of significance for the potential residual effects on the VC is based on a consideration of the residual effects characteristics and socio-economic context of Education Services.

4.4.1 RESIDUAL EFFECTS CHARACTERISTICS AND SIGNIFICANCE DEFINITIONS

This section presents information pertaining to the characteristics of residual effects on Education Services, as well as a determination of significance for each residual effect on primary, secondary, and post-secondary enrollment patterns and rotational shift work.

4.4.1.1 Residual Effects Characteristics

Definitions for ratings applied to residual effects characteristics developed with specific reference to the Education Services VC are presented in **Table 4.4-1**.

Table 4.4-1 Effect Characteristics Considered When Determining the Significance of Residual Effects to Education Services

Residual Effect Characteristic	Definition	Rating
Direction	Identifies whether the residual effect will be adverse or positive.	<ul style="list-style-type: none"> Adverse – The trend of the effect is considered undesirable or worsening from baseline conditions. Neutral – The trend of the effect is considered neither a worsening nor improvement 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	<ul style="list-style-type: none"> 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 results in demonstrable change and is possible at the community-wide level, but remains within historic change rates and does not present a management challenge. High – Effect results in changes beyond historic norms, and presents a management challenge.
Geographic Extent	Spatial scale over which the residual effect is likely to occur	<ul style="list-style-type: none"> Local (limited to LAA) Regional (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, etc.)	<ul style="list-style-type: none"> N/A.
Frequency	How often the residual effect is likely to occur	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

Residual Effect Characteristic	Definition	Rating
Reversibility	Whether or not the residual effect can be reversed once the activity causing the residual effect ceases; irreversible effects are considered to be permanent	<ul style="list-style-type: none"> • Reversible – Effect can be reversed to baseline or equivalent conditions, considering non-Project-related change to socio-economics. • Partially reversible – Effect can be reversed partially to baseline or equivalent conditions. • Irreversible – Effect is permanent.
Probability of occurrence	Likelihood that the potential residual effect will occur	<ul style="list-style-type: none"> • 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.
Resilience	Ability to counteract or adapt from disturbances	<ul style="list-style-type: none"> • Low • Medium • High

In addition to the effect characteristics defined in **Table 4.4-1**, above, each residual effect provides a narrative description of the socio-economic context of Education Services (i.e., the extent to which Education Services 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). The resilience of community economies, or their ability to counteract or adapt to disturbances (natural, economic, social, or political) can be defined as maintaining non-declining economic standards of living (Dinh and Pearson 2015). Components of community resiliency can include:

- Dependence on vulnerable economies or diversity of the economy
- Ability of the local labour supply to participate in the current and future economy
- Social inclusion and the availability of local employment opportunities
- Labour forces with human capital acquired through education, training, and experience
- Financial capital investment
- Ability to provide a flow of goods and services
- Social capital, or the networks and bonds between groups in a community
- Accessibility to opportunities (Advantage West 2010, Dinh and Pearson 2015).

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 that do not meet the definition of significant. Residual effects determined to be not significant are not carried forward to the cumulative effects assessment.

Significant Effects determined to be significant are those characterized as high magnitude, local or regional geographic extent, continuous frequency, long-term duration, and likely to occur. Context, and in particular resiliency, is also considered. Significant residual effects are carried forward to the cumulative effects assessment.

The levels of confidence (i.e., low, moderate, high) for each potential Project-related effect is 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 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 Education Services as a result of the Project carry an element of uncertainty due to the dynamic nature of socio-economics, including external influences such as global markets and individual choices.

For Human Environment 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 subjective, therefore, and is strongly based on professional judgment, feedback, and input from primary data collection. Incorporating feedback identified through primary data collection is a means of assessing socio-economic VCs to consider the context in which residual effects are anticipated to be experienced. The challenges associated with a lack of defined thresholds, integrating community context, resiliency, and perceptions, and inherent uncertainty regarding the dynamic nature of socio-economic analysis requires a qualitative assessment approach for socio-economic VCs, using both quantitative and qualitative data.

4.4.2 PRIMARY, SECONDARY, AND POST-SECONDARY ENROLLMENT PATTERNS

The residual effect to enrollment patterns is anticipated to begin during the Construction Phase and will extend through the Operation Phase. Though employment opportunities associated with the Project (and subsequent changes in income) will occur during the Reclamation and Closure Phase, the effect is anticipated to be negligible due to the much lower Project-related employment.

Enrollment pattern effects are anticipated to occur in the LAA as a result of increases in population resulting from direct, indirect, and induced employment related to Project expenditures and purchases of goods and services. Mitigation measures such as local hiring practices and local procurement and contracting may assist in minimizing influx and associated increases in primary, secondary, and post-secondary school enrollment numbers, particularly in Whitehorse, but will not enable the Proponent to meet all of the Project’s employment requirements. Residual adverse effects are likely in Dawson, where primary data indicate that perceived quality of education would be affected through an unfavourable change in the student-to-teacher ratio. Residual effects in Dawson are anticipated to be moderate in magnitude, local in extent, occurring continuously during the Construction and Operation Phases, and reversible (**Table 4.4-2**). Effects in Whitehorse are likely to be neutral, moderate, local, continuous, long-term, fully reversible, and likely. Whitehorse has medium resilience to changes in enrollment. While changes to population size in Beaver Creek, Pelly Crossing, and Mayo are impossible to predict in terms of their direction or magnitude (see **Appendix 19A Demographics Intermediate Component Analysis**), student-to-teacher ratios show that primary and secondary education institutions in these communities can accommodate population-driven increases to enrollment.

Table 4.4-2 Summary of Effect Characteristics Ratings for Changes in Primary, Secondary, and Post-secondary Enrollment Patterns during Construction and Operation

Residual Effect Characteristic	Definition	Rating
Direction	Neutral to Adverse	Population changes from direct, indirect, and induced employment opportunities in the LAA and the RAA may result in effects to primary and secondary schools that are operating at capacity (Dawson).
Magnitude	Moderate	Enrollment number increases may be detectable in localized portions of the LAA (Dawson), but not detectable in the RAA.
Geographic Extent	Local	Changes in enrollment will be experienced primarily in Dawson.
Timing	N/A	N/A
Frequency	Continuous	Population-driven enrollment changes are likely to be continuous throughout the Construction and Operation Phases.
Duration	Long-term	Enrollment numbers will also likely be affected throughout the Construction and Operation Phases.
Reversibility	Fully reversible	Employment opportunities are likely to reduce after the Operation Phase of the Project; associated primary and secondary enrollment are also likely to decrease.
Probability of Occurrence	Likely	Enrollment numbers are predicted to change as a result of employment opportunities associated with the Project.
Resilience	Medium	The LAA as a whole is resilient to change, with the exception of Dawson, where primary data indicates the K-12 school is not resilient to changes in enrollment.

4.4.3 SUMMARY OF PROJECT-RELATED RESIDUAL ADVERSE EFFECTS AND THEIR SIGNIFICANCE

The potential, not significant, residual effect for changes in enrollment patterns to the primary, secondary and post-secondary education subcomponent are summarized in **Table 4.4-4**. The residual effect is characterized as adverse, and moderate magnitude in Dawson. Residual effects to the community based training subcomponent were not identified.

Table 4.4-3 Summary of Potential Residual Adverse Effects for Education Services

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Adverse Effects Characterization										
			Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence	Resilience
Construction and Operation Phases													
Primary and secondary enrollment patterns	Labour needs and goods and services spending during the Construction and Operation Phases will result in employment opportunities	<ul style="list-style-type: none"> Local Hiring Practices Education and Training Activities Engagement Plan 	A	M to H	LAA	LT	C	R	L	M to H	NS	M	M

Notes:

- Direction: P = Positive, A = Adverse
- Magnitude: L = Low, M = Moderate, H = High
- Geographic Extent: Site = Specific location within Project footprint, PF = Project Footprint, LAA = Local, RAA = Regional, T = Territorial
- Timing: B = Breeding season, Y = Year-round
- Frequency: I = Infrequent, F = Frequent, C = Continuous
- Duration: S = Short-term, L = Long-term, P = Permanent
- Reversibility: F = Fully reversible, P = Partially reversible, I = Irreversible
- Likelihood: U = Unlikely, L = Likely
- Context: H = High, M = Moderate, L = Low
- Significance: N = Not significant, S = Significant
- Level of Confidence: L = Low, M = Moderate, H = High
- Resilience: L=Low, M=Moderate, H=High

5.0 CUMULATIVE EFFECTS ASSESSMENT

This section presents an assessment of potential cumulative effects to Education Services. 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.

5.1 PROJECT-RELATED RESIDUAL EFFECTS

The Project is anticipated to result in three residual effects on the Education Services VC, two with a potential neutral to adverse trend direction, one with a positive direction. A rationale for the inclusion of the potentially adverse residual effect is presented in **Table 5.1-1**.

Table 5.1-1 Project-related Residual Effects Considered in the Cumulative Effects Assessment

Project-related Residual Effect	Included in Cumulative Effects Assessment	Rationale
Changes to primary and secondary enrollment patterns	Yes	Regardless of local hiring policies, the Project will be required to hire from labour markets in the RAA and beyond to fill labour demands, which are likely to adversely affect local populations and primary and secondary enrollment patterns.

5.2 SPATIAL AND TEMPORAL SCOPE OF THE CUMULATIVE CHANGE ANALYSIS

Because the main driver for effects to the Education Services VC is change in population, the spatial boundary of the cumulative effects assessment is defined as the same boundary for the Demographics IC. The boundary is the cumulative effects area in **Figure 5B-1** in **Section 5.0 Assessment Methodology**, with consideration of other mining projects that may also affect populations in LAA communities..

The temporal boundaries for consideration of potential cumulative effects are defined as the life of the Project including the Construction, Operation, Reclamation and Closure, and Post-closure Phases, which are described in **Section 1.3.2**.

5.3 EFFECTS DUE TO OTHER PAST, PRESENT, AND FUTURE PROJECTS AND ACTIVITIES

Other projects and activities have or may result in residual adverse changes that may interact with adverse Project-related effects to Education Services within the spatial and temporal scope of the cumulative change analysis. These have been identified in the Project and Activity Inclusion List (included in the Project Proposal **Section 5.0 Assessment Methodology**) and summarized below in **Table 5.3-1**.

Agricultural, energy, forestry, industrial, placer mine, quartz mine, settlements, transportation, and utility projects may contribute to changes in demographics in the LAA and RAA (see **Section 19.0 Demographics Analysis** in the Project Proposal) and consequently Education Services. Current and future agricultural, energy, forestry, industrial, settlement, transportation, placer mining and utility projects are not likely to dramatically affect employment numbers and subsequently result in significant effects to Education Services in either the LAA or RAA. Such activities are included in current population projections. Major mine projects, both active and proposed, in Yukon may result in significant additional employment opportunities, however, and therefore may affect Education Services in the RAA. Current and future mining projects include:

- Bellekeno (Alexco Keno Hill Mining Corp.)
- Brewery Creek (Golden Predator Canada Corp.)
- Carmacks Copper (Carmacks Mining Corp.)
- Casino (Casino Mine Corporation)
- Eagle Gold (Stratagold Corporation)
- Kudz Ze Kayah (BMC Minerals)
- MacTung Tungsten Mine (North American Tungsten Corporation Ltd.)
- Minto (Minto Explorations Ltd.)
- Wolverine (Yukon Zinc Corporation).

Each of these mines are at various stages of development, from project proposal application (e.g., Casino), to pre-production and development (e.g., Eagle Gold), to production (e.g., Minto), to temporary closure (e.g., Wolverine), and closure (e.g., Brewery Creek).

A summary of mining projects that may cumulatively change demographics and consequently have effects on education services is provided in **Table 5.3-1**.

Table 5.3-1 Other Projects and Activities Considered in the Analysis of Cumulative Change on Education Services

Other Project / Activity	Description	Potential Residual Effects	Potential for Interaction Resulting in Cumulative Change and Rationale
Project Name			
Bellekeno (Alexco Keno Hill Mining Corp.)	The Bellekeno silver mine, commenced commercial production at the beginning of calendar year 2011 and was Canada's only operating primary silver mine from 2011 to 2013	Project employment leading to population changes and subsequent changes to education enrollment patterns	No – Mine operations at Bellekeno are currently suspended. As it is unknown if/when operations will commence the Project is not anticipated to result in a cumulative change on Demographics.
Brewery Creek (Alexco Resource Corp.)	Brewery Creek is a gold mine located 55 km east of Dawson. It was operated from 1997 to 2001, and is currently completing reclamation and closure.	Project employment leading to population changes and subsequent changes to education enrollment patterns	No – a mine project in reclamation and closure phase is anticipated to consist of a negligible workforce, and any interaction with the Project is not anticipated to result in a cumulative change on Demographics.
Carmacks Copper (Copper North Mining Corp.)	Carmacks Copper is a copper, gold, and silver mine project located 38 km northwest of Carmacks and 192 km north of Whitehorse. The Project received its Quartz Mining Licence in 2009, but has been in a state of temporary closure since that time. Temporary closure is anticipated to continue until 2020.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes, with population size
Casino (Casino Mining Corp.)	Casino is a copper, gold, molybdenum, and silver mine project located 300 km northwest of Whitehorse. It is proposing a 22-year mine life. The Project was recently referred to a Panel Review.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes, with population size
Eagle Gold Project	Eagle Gold is a gold deposit project located 85 km by road northeast of Mayo.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes, with population size
Kudz Ze Kayah (BMC Minerals)	The Kudz Ze Kayah Project is a proposed copper, lead, zinc project located in the northern Pelly Mountains, 135 km south of Ross River in South Central Yukon.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes

Other Project / Activity	Description	Potential Residual Effects	Potential for Interaction Resulting in Cumulative Change and Rationale
Project Name			
MacTung Tungsten Mine (North American Tungsten Corporation Ltd.)	The Mactung property is located in Yukon in the Selwyn Mountain Range and covers the area around Mt. Allan, approximately eight kilometers northwest of MacMillan Pass. The nearest settlement accessible by road, Ross River, is 250 km away to the southwest. The project is currently under screening pursuant to YESAA.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes
Minto (Capstone Mining Corp.)	Minto is an open pit copper mine located 240 km north of Whitehorse. As of 2016, the mine has seven years of operating life remaining. The Project currently employees 307 staff, including contract employees.	Project employment leading to population changes and subsequent changes to education enrollment patterns	Yes, with population size
Wolverine (Yukon Zinc Corp.)	Yukon Zinc's Wolverine Mine is a high grade zinc-silver-copper-lead-gold underground mine located approximately 280 km north east of Whitehorse	Project employment leading to population changes and subsequent changes to education enrollment patterns	No – Mine operations at Wolverine are currently suspended. As it is unknown if/when operations will commence the Project is not anticipated to result in a cumulative change on Demographics.

Notes: **No:** no interaction or not likely to interact cumulatively; **Yes:** potential for cumulative change.

5.4 POTENTIAL ADVERSE CUMULATIVE EFFECTS

This section describes potential adverse cumulative effects to Education Services resulting from interactions with the other projects and activities identified in **Table 5.5-1**.

5.4.1 CHANGES TO EDUCATION SERVICES

Cumulative changes to the population driver for changes to primary and secondary enrollment patterns are presented in **Appendix 19-A Intermediate Component Analysis Report Demographics**. The greatest increase in population due to other projects within Yukon (excluding the Project) is anticipated to occur between 2020 and 2023 where workers (direct employment only) may add an average of 6,750 people to the total population. The predictions assume that all workers are bringing three dependents, one adult and two minors. With respect to the Project only, peak population will occur in 2019 with the Project workforce contributing 1,348 to the Yukon population, 674 of which will be minors.

Over the ten year period from 2018 to 2027, cumulative projects from other projects, including Coffee are estimated to account 7.5 % to 16.1 % of the total Yukon population. Of this proportion, the Coffee Project will account for approximately 2.0% of the anticipated future population size. As with all other projects, the greatest cumulative increase in worker's population will occur from 2021 to 2024 while all projects are in operation. Peak population will occur in 2021 with accumulative workers and dependents accounting for 16.1% (8,316 persons) of the total Yukon population. Workforce demand, and related population estimates are anticipated to drop beyond 2024 as some projects complete operations and move into closure and reclamation phases which do not require the same level of personnel. Workforce estimates are based on publicly available information, and therefore subject to change based on other proponents' business decisions and market conditions.

With the underlying assumption for this cumulative population increase that one adult and two children accompany each worker, cumulative effects to primary and secondary enrollment patterns in LAA communities are also likely.

5.5 MITIGATION MEASURES FOR CUMULATIVE EFFECTS

No additional measures are proposed to reduce the Project's contribution to adverse cumulative effects on Education Services, as it is assumed that other projects of similar size and scale will implement appropriate mitigation measures to eliminate, reduce, or control project-specific adverse effects to Education Services.

5.5.1 SUMMARY OF FUTURE CONDITIONS WITH THE PROJECT AND OTHER PROJECTS AND ACTIVITIES

This section provides a summary of the preliminary analysis of the cumulative effects and the Project's contribution to those cumulative effects to Education Services (**Table 5.5-1**). Potential cumulative residual effects from all projects to changes in primary and secondary enrollments as a result of increased population are likely to be demonstrable within the LAA communities (moderate magnitude), Project contributions will extend from Construction through Operation Phases, continuous but fluctuating, with a moderate level of confidence for the Construction Phase but a low confidence for the Operation Phase, and therefore not significant. The Project contribution to the cumulative effect is likely to be low. Goldcorp will monitor effects in the socio-economic monitoring plan to address uncertainties associated with other mining project effects due to a lack of available information, and engage in adaptive management if needed.

Table 5.5-1 Summary of Potential Residual Cumulative Effects for Education Services

Potential Cumulative Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Notes for details)									
			Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Level of Effect and Significance	Likelihood	Level of Confidence	
Construction Phase												
Effects to primary and secondary enrollment patterns	Anticipated major mining projects	Project	M	LAA	MT	CF	C	M	NS	L	M	
Operation Phase												
Effects to primary and secondary enrollment patterns	Anticipated major mining projects	Project	M	LAA	MT	CF	C	M	NS	L	L	

Notes:

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: NA
 Duration: LT = Long-term, MT = Moderate-term, ST = Short-term, TT = Transient term
 Frequency: CF = Continuous, FF = Frequent, UF = Uncommon, RF = Rare
 Reversibility: R = 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

6.0 SUMMARY OF EFFECTS ASSESSMENT FOR EDUCATION SERVICES

Due to potential influx to the LAA as a result of direct, indirect and induced Project employment opportunities and two-week rotational shift work, the Education Services VC is likely to be adversely affected by the Project during Construction and Operation. Specifically, primary and secondary enrollment patterns are likely to be adversely affected, and community-based training opportunities are likely to be both enhanced and potentially adversely affected. Primary and secondary enrollment patterns may be affected by new residents with their families. The development and support for community-based training opportunities may be increased due to an increased demand for industry-specific community-based training as a result of the Project.

Local hiring practices, education and training activities, a First Nation mentoring program, and the Engagement Plan will likely minimize or mitigate adverse effects on Education Services and maximize positive effects.

Residual effects to primary and secondary enrollment may occur despite mitigation plans, though these residual effects are likely to be not significant.

The residual cumulative adverse effects are anticipated to materialize in different ways depending on the community. The contribution of the Project to cumulative effects is likely to be low, based on the projected cumulative population changes from other projects.

7.0 EFFECTS MONITORING AND ADAPTIVE MANAGEMENT

Due to the dynamic nature of socio-economics, Goldcorp will develop a socio-economic monitoring program 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 verify the validity of effects predictions; 3) identify unexpected socio-economic outcomes or problems; and 4) implement additional mitigation measures as per adaptive management plans.

The socio-economic monitoring program will track and respond to various topics across the Socio-economic VCs and IC, including Education Services, as well as Demographics (**Appendix 19-A**), Economic Conditions (**Appendix 20-A**), Social Economy (**Appendix 21-A**), Community Infrastructure and Services (**Appendix 22-A**), Land and Resource Use (**Appendix 24-A**), and Community Health and Well-being (**Appendix 25-A**). The approach and methods, including data sources, will be developed in conjunction with the City of Dawson, TH, and Yukon Government. Goldcorp anticipates developing an effective socio-economic monitoring program with these parties as the Project proceeds.

8.0 REFERENCES

- Advantage West Midlands Strategy Team (Advantage West). 2010. Scoping Study of Good Practice in Finance and Delivery Models for Low Carbon Housing Retrofit. Report prepared for City Region as part of Low Carbon Economy Leadership Program. Available at http://www.sustainabilitywestmidlands.org.uk/wp-content/uploads/SWM_housing_retrofit_finance_report-final-22nd_June_2010.pdf. Accessed July 2016.
- Assembly of First Nations (AFN). 2009. Community Dialogues on First Nations Holistic Lifelong Learning Model: Learning as a Community for Renewal and Growth. AFN Education Secretariat. Available at http://www.afn.ca/uploads/files/education2/community_dialogues_on_first_nations_holistic_lifelong_learning_2009.pdf. Accessed February 2017.
- Bates, P., S. DeRoy, and The Firelight Group, with White River First Nation. 2014. White River First Nation Knowledge and Use Study. Private report prepared for Kaminak Gold Corporation.
- Canadian Broadcasting Corporation (CBC) News. 2014. Whitehorse resident's line up for chance at family doctor. Available at: <http://www.cbc.ca/news/canada/north/whitehorse-residents-line-up-for-chance-at-family-doctor-1.2519448>. Accessed April 22, 2016.
- Canadian Broadcasting Corporation (CBC) News. 2012. Whitehorse Baby Boom Means Daycare Crunch. Available at: <http://www.cbc.ca/news/canada/north/whitehorse-baby-boom-means-daycare-crunch-1.1297200/>. Accessed May 2016.
- City of Dawson and Tr'ondëk Hwëch'in (TH). n.d. After the Gold Rush: The Integrated Community Sustainability Plan. Available at: http://www.infrastructure.gov.yk.ca/pdf/icsp_dawson.pdf/. Accessed April 2016.
- Dinh, H. and L. Pearson. 2015. Specifying Community Economic Resilience - A Framework for Measurement. Australasian Journal of Regional Studies, Vol. 21, No. 3, 2015: 278-302. ISSN 1324-0935. Available at <http://search.informit.com.au/documentSummary;dn=881474101261737;res=IELHSS>. Accessed July 2016.
- Dobrowolsky, D. 2014. Compilation of Information relating to Coffee Creek / White River Areas. Prepared for Kaminak Gold Corporation, Tr'ondëk Hwëch'in First Nation, and White River First Nation.
- First Nation of Na-cho Nyäk Dun (FNNND). 2017. Education: Mission Statement of Na-cho Nyak Dun. Website available at <http://www.nndfn.com/departments/education/>. Accessed February 2017.

Government of Canada. 2016. Educational Services (NAICS 61): Definition. Available at:

<https://www.ic.gc.ca/app/scr/sbms/sbb/cis/definition.html?code=61>. Accessed March 31 2016.

Lewthwaite, B., B. McMillan, R. Renaud, and T. Owen. 2014. Culturally Responsive Teaching in Yukon First Nation Settings: What Does it Look Like and What is its Influence? Available at

<http://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwj39NKPsvPSAhVN02MKHTnPCmUQFgggMAE&url=http%3A%2F%2Fwww.umanitoba.ca%2Foutreach%2Fcrystal%2FYukonResources%2FCulturally%2520Responsive%2520Teaching%2520in%2520Yukon%2520First%2520Nation%2520Settings-Results%2520of%2520Phase%2520One.doc&usg=AFQjCNGLjt4vB1KljhH7lvXF1F-pRq48aA>.

Accessed March 2017.

Mining Industry Human Resources Council (MIHR). 2012. Yukon Hiring Requirements and Available Talent Forecast, 2013. Prepared for the Yukon Government in partnership with Derome and Associates Development and Management Inc. Kanata, ON. Available at:

http://www.education.gov.yk.ca/pdf/yukon_hiring_requirements_talent_forecasts_2013.pdf

Accessed August 28, 2015.

Office of the Auditor General (Auditor General). 2009. Public Schools and Advanced Education: Yukon Department of Education. Available at: http://www.oag-bvg.gc.ca/internet/docs/yuk_200901_e.pdf. Accessed February 2017.

Statistics Canada. 2015. Summary of Elementary and Secondary School Indicators for Canada, the Provinces, and Territories, 2006/2007 to 2010/2011. Catalogue no. 81-595-M – no. 099. Available at: <http://www.statcan.gc.ca/pub/81-595-m/81-595-m2013099-eng.pdf>. Accessed February 2017.

Statistics Canada. 2013a. NHS Profile, 2011. Catalogue no. 99-004-X. Available at:

<http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E>.

Statistics Canada. 2011a. NHS User Guide - National Household Survey, 2011. Catalogue no. 99-001-X2011001. Available at: http://www12.statcan.gc.ca/nhs-enm/2011/ref/nhs-enm_guide/99-001-x2011001-eng.pdf. Accessed May 2016.

Statistics Canada. 2011b. Educational attainment of person. Available at: <http://www.statcan.gc.ca/eng/concepts/definitions/education02>. Accessed May 2016.

Statistics Canada. 2007. 2006 Census of Population – Community Profiles. Available at:

<https://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E>.

Accessed March 2016.

Statistics Canada. 2003. 2001 Census Data. Catalogue no. 93F0053XIE. Available at:

<http://www12.statcan.gc.ca/english/census01/Products/standard/themes/DataProducts.cfm?S=1>.

Accessed March 2016.

Tr'ondëk Hwëch'in (TH). 2012. Coffee Creek Traditional Knowledge Survey, Final Report. Private report prepared for Kaminak Gold Corporation. White River First Nation (WRFN). n.d. Website. Available at <https://whiteriverfirstnation.com/>. Accessed February 2017.

White River First Nation (WRFN). n.d. Employment and Training. Available at:

<https://whiteriverfirstnation.com/employment-training/>. Accessed March 2017.

Whitehorse Individual Learning Centre (ILC). 2017. Website. Available at

<http://ilc.yukonschools.ca/program.html>. Accessed February 2017.

Yukon Bureau of Statistics (YBS). 2016. Population Report Third Quarter 2016. Information sheet no. 60.

Available at: http://www.eco.gov.yk.ca/stats/pdf/populationSep_2016.pdf. Accessed February 2017.

Yukon Bureau of Statistics (YBS). 2011. Population Projections 2021. Information sheet no. 66. Available

at: <http://www.eco.gov.yk.ca/stats/pdf/Projections2011.pdf>. Accessed March 2016.

Yukon College. 2016a. Statistics. Available at: https://yukoncollege.yk.ca/about/pages/fast_facts.

Accessed January 2017.

Yukon College. 2016b. Dawson City Tr'odëk Hätr'unohtän Zho Campus. Available at:

https://yukoncollege.yk.ca/about/campuses/dawson_city_trodek_haetrunohtaen_zho_campus_

Accessed January 2017.

Yukon College. 2012a. Programs. Available at: <https://yukoncollege.yk.ca/programs>. Accessed February 2017.

Yukon College. 2012b. About CNIM. Available at:

http://www.yukoncollege.yk.ca/programs/pages/about_cnim. Accessed February 2017.

Yukon College. n.d. Centre for Northern Innovation Mining. Available at:

https://www.yukoncollege.yk.ca/downloads/CNIM_web_FINAL.pdf. Accessed February 2017.

Yukon Education. (2008). Yukon Education Student Attendance Policy: Student Attendance Policy 4001.

Available at http://www.education.gov.yk.ca/pdf/policies/student_attendance_policy.pdf. Accessed March 2017.

Yukon Education Student Network (YESNet). 2016a. Yukon Schools. Available at:

<http://www.yesnet.yk.ca/schools/>. Accessed May 2016.

Yukon Education Student Network (YESNet). 2016b. Elementary Schools. Available at:

<http://www.yesnet.yk.ca/schools/elementary.html>. Accessed February 2017.

Yukon Education Student Network (YESNet). 2016c. Secondary Schools. Available at:

<http://www.yesnet.yk.ca/schools/secondary.html>. Accessed February 2017.

Yukon Education Student Network (YESNet). 2016d. Eliza Van Bibber School. Available at:

<http://evb.yukonschools.ca/staff.html>. Accessed May 2016.

Yukon Education Student Network (YESNet). 2016e. J.V. Clark School. Available at:

<http://jvc.yukonschools.ca/staff.html>. Accessed May 2016.

Yukon Environmental and Socio-economic Assessment Board (YESAB). 2005. *Proponent's Guide to Information Requirements for Executive Committee Project Proposal Submissions*. v 2005.11.

Available at: <http://www.yesab.ca/wp/wp-content/uploads/2013/04/Proponents-Guide-to-Info-Requirements-for-EC-Project-Submission.pdf>. Accessed December 2015.

Yukon School of Visual Arts. n.d. What is SOVA?. Available at: http://yukonsova.ca/blog/?page_id=302.

Accessed February 2017.

Yukon Teachers' Association (YTA). 2016. Staffing Allocation Handbook 2015/16. Available at:

<http://www.yta.yk.ca/index.php/component/search/?searchword=staffing%20allocation&ordering=newest&searchphrase=all>. Access February 2017.

8.1 PERSONAL COMMUNICATIONS

Interview 17. February 11, 2016. Community Education Liaison Coordinator, Education Manager, Principle, Education Outreach Coordinator, Tr'ondëk Hwëch'in (TH) Education Department, Robert Service School, City of Dawson, Yukon.

Interview 2, February 8, 2016. Anonymous Contributor. Yukon College, City of Dawson, Yukon.

Tr'ondëk Hwëch'in Technical Working Group, 2016. City of Dawson, Yukon.