3.0 ASSESSMENT APPROACH

Chapter 3 reviews the assessment approach in the Project Proposal, focusing on the following items:

- Overview of Approach
- Route Selection and Evaluation Process
- Assessment Framework
- Cumulative Effects Assessment Approach
- Determining Significance of Residual Effects
- Sources of Information

3.1 OVERVIEW OF APPROACH

The Project Proposal has been prepared in accordance with YESAA, the YESAB Guides[1] and standard environmental and socio-economic assessment practice. It sets out the information required from Yukon Energy (the Proponent), for a screening assessment of the Project by the YESAB Executive Committee. In accordance with the matters to be considered under s. 42(1) and 42(2) of YESAA, likely environmental and socio-economic effects of the Project, as well as likely cumulative adverse environmental and socio-economic effects of the Project and their significance are identified after considering the implementation of proposed mitigation, monitoring and follow-up measures. The submission utilizes and integrates available scientific, **traditional knowledge** (**TK**) and other information relevant to the assessment of Project effects.

Following the direction of s. 50(3) of YESAA, the assessment approach has incorporated an extensive consultation and public involvement process which sought views from First Nations and residents of communities where the Project is to be located or might have significant environmental or socio-economic effects (Chapter 4). Early and meaningful ongoing opportunities have been provided for First Nations, other local residents, other segments of the public and governments to receive information on, and provide views and information about the Project and the environmental and socio-economic planning and assessment process. These consultations have contributed to the mitigation of adverse environmental and socio-economic effects that could potentially be associated with the Project as well as a consideration of alternatives to the Project or alternative ways of undertaking or operating it that would avoid or minimize any significant adverse environmental or socio-economic effects.[2]

The scoping of the Project, as well as a description of Project activities and components, is provided in Chapter 5. The assessment approach addresses the distinct phases of the Project (i.e., construction, operation and maintenance, and decommissioning) and their effects on environmental components (e.g., air, land and water environments and associated aquatic and terrestrial life) and socio-economic components (e.g., resource and other land use, economies, and social components including

[1] YESAB Guides refers to the Assessor's Guide to the Assessment of Environmental Effects, v. 2006.01; the Guide to Socio-economic Effects Assessment 2006.06; Assessor's Guide to the Assessment of Cumulative Effects v. 06.01.

[2] These matters are required to be considered under s. 42(1)(e) and 42(1)(f) of YESAA.

infrastructure and services, aesthetics, cultural/heritage sites and resources, traditional and other lifestyles, culture, human health, and social well being).

The Project Proposal ultimately assesses (Chapter 8) the effects of a preferred transmission route (Project Site Area) within which it is proposed that the ROW footprint of the Project be located. The preferred transmission route has been selected only after the identification and evaluation of potential route alternatives (Chapter 7) within the Route Study Area; for the CS development connecting the WAF and MD grids this Route Study Area is generally within or near the 500 metre corridor along the Klondike Highway that was identified at the outset of this process, and for the MS development this Route Study Area is generally along or near the Minto Mine assess road.

The assessment approach focuses on the effects of Project construction and operation as well as initial assessment of anticipated decommissioning effects related to the MS development since it is anticipated that decommissioning of major parts of the MS facilities will occur when the Minto Mine closes[3]. At this time there is no timetable for decommissioning of the CS development facilities, and it is currently not feasible to provide a meaningful assessment of any likely CS decommissioning plans or the anticipated effects of decommissioning. If at a later date it is determined that the CS facilities are no longer required, then Yukon Energy would adhere to the legislation and regulations in place at that time and would review decommissioning plans with regulatory authorities and affected First Nations and other local communities.

3.2 ROUTE SELECTION AND EVALUATION PROCESS

Careful routing of the Project transmission lines, along with other mitigation measures, are key factors utilized in project planning to avoid potential significant adverse environmental and socio-economic effects.

The Route Study Area is generally an area already disturbed by established linear road development as well as other activities. The route selection process generally sought to identify areas to be avoided and/or used in order to minimize adverse effects and enhance beneficial effects; this process reflects the inherent flexibilities in selecting a final ROW for a transmission line within the Route Study Area as well as options then remaining for pole placements and clearing within that ROW.

The route selection and evaluation process relied upon public consultation and professional judgement to identify and evaluate potential routes before selecting a preferred route. This routing process utilized regional and site-specific environmental and socio-economic features to identify and evaluate viable alternative routes and to assess measures for avoidance, minimization, and mitigation of potential adverse environmental and socio-economic effects as well as avoiding cumulative adverse environmental or socio-economic effects and addressing issues of public concern.

[3] See Chapter 5, section 5.10. Closure of all Minto Mine activities and decommissioning of relevant parts of the MS facilities may occur as early as 2018; however, the life of this mine may well be extended through confirmation of additional high grade reserves to be mined and through future decisions to process stockpiled low grade materials.

The objectives of the route selection process were:

- To provide a description of the proposed Project to First Nations, other interested publics, and governments.
- To select route alternatives for the transmission lines and associated facilities to minimize adverse environmental and socio-economic effects, to enhance beneficial environmental and socio-economic effects, and to satisfy technical engineering and cost requirements for the Project.
- To assess the potential effects of the proposed Project components (lines & substations) during the relevant Project phases (construction, operation and decommissioning).
- To conduct the process with consideration of local input from:
  - Potentially affected First Nations.
  - Other local residents and communities.
  - Land and resource users and managers.
  - **Non-government organizations** (**NGOs**) and interest groups.
  - Government and the general public.
- To find practical ways to reduce potential negative effects and enhance benefits of the proposed Project.
- To prepare a Project Proposal assessment that documents the results of the route selection process and addresses issues raised by First Nations, local residents, other members of the public and governments during the process.

The assessment process sought to avoid adverse effects and enhance potential benefits whenever possible and practical. With regard to conducting an assessment for transmission lines, where effects could not be avoided, routes and/or sites were selected that were best suited to effective mitigation and sound management with regard to limiting potential negative effects on the environment and socio-economic conditions. The route selection process applied an iterative and progressively more detailed analytical approach that involved systematic refinement and reduction of the effective study area to identify issues and then assess the best balanced choice of a preferred route, with ongoing input provided through First Nation, public and government involvement. This subject is dealt with in greater detail in Chapter 7.

3.3 ASSESSMENT FRAMEWORK

For the purpose of assessing environmental and socio-economic effects of the Project, current conditions in areas potentially affected by the Project and the projected evolution of these conditions without the Project are considered as the baseline. Potential environmental and socio-economic effects of the Project on this existing baseline are predicted separately in the Project Proposal for each environmental and socio-economic component by comparing:

a) what would be expected without the Project (i.e., the "existing conditions" or baseline expected for each environmental and socio-economic component without the Project,

including as relevant consideration of other projects or activities that have been or will be carried out without the Project); and

b) what would be expected with the Project (i.e., each environmental or socio-economic component as modified or affected by the Project based on direct and indirect effects pathways[4] from the Project to the environmental or socio-economic component, including as relevant consideration of other projects or activities that have been or will be carried out in combination with the Project).

Following from the Project description and determination of the Project scope (Chapter 5), and reflecting the YESAB Guides and standard environmental and socio-economic assessment practice, the assessment framework for the Project Proposal (including cumulative effects assessment) to assess effects of the Project includes the following five basic steps:

1. **Scoping of Assessment**: It is critical at the outset to address assessment scope issues, including selecting **valued environmental and socio-economic components** (**VCs**) for the assessment[5], sources of Project effects for each VC, and scope of geographic and temporal assessment boundaries for each VC. Scoping of the assessment is generally addressed below in section 3.3.1; however, determination of specific VCs and their respective scoping is addressed in setting the framework for review of relevant environmental and socio-economic baseline conditions (Chapter 6). Overview of other specific methods of assessment approach for specific VCs is reviewed as required in Chapter 8.

2. **Existing Conditions:** This is a baseline analysis and includes review of current and evolving future VC conditions without the Project, as affected by past, current and other future projects included in the cumulative effects assessment. Each existing VC is described in the baseline analysis only to the extent needed to predict the effect of the Project on that VC as set out in the assessor's guides. A cumulative effects assessment forms an integral part of this assessment of baseline conditions (see section 3.4 regarding cumulative effects approach). The analysis of baseline conditions is provided in Chapter 6, and provides information used in the route selection analysis (Chapter 7) as well as the effects assessment related to the selected route (Chapter 8).

3. **Effects and Mitigation**: This describes quantitatively and qualitatively both positive and adverse effects on VCs likely to result from the Project, after consideration of the baseline conditions without the Project as well as proposed mitigation measures with the Project beyond those already included in the Project description. In accordance with YESAA and the assessor's guides, the scope of this assessment includes an examination of both

[4] As reviewed in the YESAB Guides, "direct effects" are the initial, immediate effects caused by a specific activity and "indirect effects" are caused by a given action, but occur later in time or further removed in distance.

[5] Valued Environmental and Socio-economic Components (VCs, sometimes referred to in YESAB Guides as VESECs) are elements of the Project Study Region valued for environmental, scientific, social, aesthetic, or cultural reasons. Selecting project-specific VCs is essential in the YESAB Guides for focusing assessments, and for determining the significance of effects.

environmental and socio-economic effects arising from the Project. Cumulative effects assessment forms an integral part of this assessment (see section 3.4 regarding cumulative effects approach). This analysis is provided in Chapter 7 for the route selection process and in Chapter 8 for the selected route.

4. **Residual Effects and their significance**: This describes summaries of the nature and extent of any residual environmental effects of the Project after implementation of proposed mitigation (including route selection), and includes characterization with rationale as to whether adverse residual environmental and socio-economic effects are significant or not significant, as defined in S. 58 of YESAA (see section 3.5 of the Project Proposal). Included as part of mitigation are any plans for responding to any known or predicted residual effects, and procedures for identifying and responding to effects that were not predicted or foreseen. This assessment is included in Chapter 8.

5. **Monitoring and follow-up**: This is a description of the proposed monitoring and follow-up activities should the Project proceed. This description is included in Chapter 8.

This framework is reviewed in more detail below for the following elements:

- Scoping of the Assessment
- Analysis of Effects (combines existing conditions with effects and mitigation steps)
- Evaluation of Significance and description of Residual Effects
- Monitoring and Follow-Up

3.3.1 Scoping of the Assessment:

This step includes:

- identifying issues of concern related to the Project,
- selecting VCs for further examination,
- identifying potential sources and pathways of effects from the Project to each VC selected,
- identifying spatial and temporal boundaries for assessing effects of the Project for each selected VC; and
- identifying other actions and effects pathways that may act cumulatively with the Project to affect the same VCs.

It is standard practice to focus an assessment on specific environmental and socio-economic components which are determined to be of particular importance. A VC based approach is intended to ensure that potential significant adverse effects to important environmental and social components will be detected and mitigated through the assessment process. Measures designed to mitigate adverse effects on major components should also minimize likelihood of adverse impacts on other environmental and social components.

In considering the existing biophysical environment and existing socio-economic conditions, the scope of study focused on examining components that could be linked to the Project. The Guide to the Assessment of Environmental Effects (YESAB, 2006(a)) sets out that the assessor should look at both project-specific issues and also identify regional environmental issues relevant to the project, with the goal of delineating valued components and associated project effects on those components through the life of the project. The Guide to Environmental Effects Assessment states in this regard:

> It is not possible for an assessment to consider all possible ecological and socio-economic interactions with respect to a project; an ecosystem alone may contain thousands, or perhaps millions, of variables. A pragmatic and widely accepted method for overcoming this challenge and focusing the assessment is to delineate priorities—valued environmental and socio-economic components. (YESAB, 2006(a), p. 13)

Similarly, the Guide to Socio-Economic Effects Assessment states:

> The assessor must bear in mind that, as discussed in Step 2 – Determine Assessment Scope, only those elements of the socio-economic environment within the established study area that are potentially affected by the project need be further identified and characterized (YESAB, 2006(b), p.47)

In this assessment VCs were determined after consultation with interested parties and experts, and consideration of any plans and policies applicable to the regional area. The selection of VCs helped to focus the analysis on components deemed to be of particular importance or of special interest to residents or to the ecosystem. Well chosen VCs can also provide a representative measure of the Project's effects on the non-selected environmental and socio-economic components.

Based on the YESAB Guides, VCs for this assessment were identified and grouped under one or more of the following headings:

- Focal species and habitat (environmental VC defining landscape attributes required to meet the needs of biota, and also the management regimes that should be applied to them).
- socio-economic context (socio-economic VC recognized as being important because of its integral connection to, or reflection of, the socio-economic system; its commercial or economic value; and/or its role in maintaining quality of life in a community).
- Representation (seek to maintain an appropriate representation of ecosystem networks and populations on the landscape over time, while recognizing and managing for natural temporal fluctuations in composition that occur).
- Special elements (may include rare or under-represented ecosystems, rare and/or threatened flora or fauna species, important harvested species, and unique landforms).
- Ecological processes (processes of social or environmental importance).
- First Nation/Resident/Community values or concerns.

The YESAB Guides provided considerable initial guidance as to scoping. Public consultations and further analysis were used to focus assessment of specific environmental and socio-economic components to define effects pathways, and to identify temporal and spatial boundaries for the assessment of Project effects on selected VCs. Section 3.4 reviews the overall approach to identify other actions or projects to address cumulative effects assessment requirements.

Temporal and geographic study area boundaries for Project effects were identified separately for each VC based on predicted links with the Project.

The time periods examined include the Project construction, operations and decommissioning periods as required to assess duration and/or timing of specific effects related to the Project. In summary, the following distinct time periods are assessed in which Project related effects accrue:

- **Construction Phase:** This phase generally consists of the estimated two years required to complete the construction of the full Project, including commissioning of the facilities; Stage One construction (CS development from Carmacks to Pelly Crossing, plus the MS development) is currently planned from mid 2007 to third quarter 2008, and Stage Two construction (CS development from Pelly Crossing to Stewart Crossing) is currently planned for 2008-2009.

- **Operation Phase:** This phase will see the operation of the CS and MS facilities and will extend from the end of construction throughout the life of the relevant components of the Project.

- **Decommissioning Phase:** For the CS Project component, there is no timetable or plan for final disposition or decommissioning of the Project facilities. The design life of the facility before substantial refurbishment is 50 to 100 years. When such plans need to be developed, Yukon Energy would submit these plans as then required for regulatory review and approval prior to its implementation. Accordingly, the Project proposal does not provide any further assessment of the CS Project final disposition.

  For the MS Project component, the timetable for final disposition or decommissioning of portions of the Project facilities (e.g., facilities other than those used on an ongoing basis to serve the community at Minto Landing) is dependant on the realized economic life of the Minto Mine. Currently, it is estimated that closure of all activities at the mine may occur as early as 2018; however, such closure may also occur several years later (see section 5.10).

The assessment process commenced with the definition of a general geographic location for the Project and a Project Study Region (Section 2.2) as well as the Route Study Area for the CS and MS developments. For assessment purposes the following areas were defined:

- **Project Site Area**: The ROW and footprint area ultimately needed for the Project construction and operation is defined as the Project Site Area. The Project Proposal describes

a preferred route area that typically reflects up to about a 100 metre width within which the Project Site Area will be located with ROW requirements of 60 metres for the CS line and 30 metres for the MS line (plus any added ROW or land acquired for substation sites).

- **Project Study Region**: A broader Project Study Region for examining environmental and socio-economic effects is defined as the portion of the Northern Tutchone Planning Region between Carmacks and Mayo that is generally in close proximity (e.g., 30 to 50 km) to the Klondike Highway and the existing access road from the Klondike Highway to the Minto Mine Site (see Figure 2.2-1). The maximum geographic extent of most environmental and socio-economic effects is expected to be included in this region. The generic nature of the definition adopted for this study region reflects the absence of any specific administrative area available for overall data collection or mapping purposes relevant to this assessment. Within this Project Study Region, the Route Study Area represents the much smaller local region examined to assess route alternatives (i.e., 500 metre corridors identified along the Klondike Highway for the CS development and a somewhat smaller corridor generally along the Minto access road for the MS development).

3.3.2 Analysis of Effects

To determine the Project's effects the baseline conditions for the selected VCs were considered. Following the YESAB Guides, the consideration of baseline conditions for VCs may include information on project components, technologies/approaches, test results, existing environmental conditions and anticipated effects. Understanding the past and current conditions in which each VC exists is considered important for providing a baseline against which present and future effects of the Project may be measured and determinations of significance of Project effects may be made.

Once baseline data was collected for each VC the assessment considered the effects of the Project, as well as other actions which may act cumulatively with the Project, on the selected VCs. Effects were examined at each phase of the Project. Applying standard practice and the YESAB Guides, the assessment of each VC provides a description of the existing baseline environment as scoped, before providing an analysis of Project effects expected to interact with the VC.

The analysis of Project effects considers both the temporal and spatial scope of effects on selected VCs. The temporal scope is VC specific and extends as long as the Project effects are predicted to occur, taking special consideration of the seasonality of effects where necessary. The spatial scope includes all areas of overlap and interaction between Project effects and VCs including determinations regarding whether Project activities overlap with one or more VCs seasonally or year round and duration of such effects.

In accordance with standard assessment practice, YESAA and the YESAB Assessor's Guides, the Project Proposal includes identification of mitigation as part of the effects analysis. Mitigation measures considered during the assessment process includes measures to reduce, eliminate or control adverse affects. As set out in YESAA and the guides such measures may also include compensation and

alternative ways of undertaking or operating a proposed project that would avoid or minimize any significant adverse effects.

3.3.3 Evaluation of Significance and Describing Residual Effects

This step evaluates the significance of adverse residual effects likely to result from the Project after consideration of recommended mitigation. Evaluation of significance was carried out in accordance with YESAA, and involves (where feasible) comparing such residual effects against thresholds for a VC. Examples of thresholds that may be used include specified goals or targets, standards or guidelines, carrying capacity or limits of acceptable change. Significance may also be measured by land use objectives or trends, as well as a range of other methods.

In the absence of thresholds or other specified guides, YESAB Guides set out criteria such as likelihood, duration, magnitude and extent that can be used to provide a preliminary identification of potentially significant effects (see Section 3.5).

3.3.4 Follow-up and Monitoring

This step sets out recommended monitoring and effects management measures. The need for monitoring environmental and socio-economic effects is required for consideration for screenings by the Executive Committee under YESAA. Effects monitoring may be necessary to ensure the success of any mitigation measures that are to be implemented and to ensure the accuracy of any assumptions made regarding predicted effects and their mitigation.

Follow up monitoring may prove valuable to ensure that the Project does not have any unanticipated adverse significant effects through providing additional information regarding whether predictions were accurate, whether any unanticipated effects occur and whether the Project remains in compliance with any terms and conditions specified in its approval.

3.4 CUMULATIVE EFFECTS ASSESSMENT APPROACH

The **cumulative effects assessment** (**CEA**) is integral to the assessment approach and examines the likely effects of the project in combination with the likely effects of other past, existing and future projects and activities. To be considered a cumulative effect, the other past, existing and future projects being considered in the assessment must affect a VC that is also being affected by the principal project; in this way the projects act cumulatively upon a valued component.

The CEA for the Project Proposal was conducted concurrently with the other elements of the environmental and socio-economic effects assessment and there is no explicit distinction in the submission between the CEA and other effects being assessed. As reviewed in Section 3.3.1, this approach is consistent with common environmental assessment practice and not inconsistent with YESAA or the Assessor's Guide.

Sections 3.4.2 and 3.4.3 review other projects and activities specifically considered as part of the CEA.

3.4.1 YESAA Requirements and Overall Approach for the Project Proposal

YESAA Requirements

YESAA requires that an Executive Committee Screening consider the significance of any adverse cumulative environmental or socio-economic effects of a project in combination with the ongoing effects of existing projects or the predicted effects of projects that will occur in the future. In environmental assessment practice the effects pathways from other projects and human activities must overlap with the effects pathways identified for the project being assessed in order to be considered to act cumulatively on identified VCs.

Although YESAA does not require that a project proposal submission to the Executive Committee consider cumulative effects[6], CEA is standard to good environmental assessment practice and has been included as part of this submission. The cumulative effects analysis conducted is designed to assist in determinations regarding whether there will be any significant adverse cumulative environmental or socio-economic effects.[7]

YESAA [8] describes the criteria for projects that must be included in a CEA as:

- Other projects for which proposals have been submitted under Subsection 50(1) of YESAA.
- Other existing or proposed activities in or outside Yukon that are known to the Designated Office, Executive Committee or Panel of the Board from information provided to it or obtained by it under YESAA.

Only those projects whose effects are likely to act in combination with the anticipated effects of the proposed project must be considered for the purposes of a CEA under YESAA.

Overall Assessment Approach

The *Assessor's Guide to the Assessment of Cumulative Effects* (YESAB, 2006(c)) suggests the application of a cumulative effects framework which closely mirrors the process outlined for the assessment of environmental effects and includes:

- The identification of regional VCs;
- The compilation of cumulative effects VC baseline information;
- The determination of spatial boundaries for the assessment;
- Identification of other projects and activities and a determination regarding their residual effects;
- The determination of the temporal boundaries of the assessment;

[6] See, YESAA, s. 50(2)(a)
[7] See, YESAA, s. 42(1)(d)
[8] At, YESAA, s. 42(1)(d)

- Identification of potential cumulative effects, the characterization of such effects and identification of mitigation measures; and
- Determination of significance of identified cumulative effects.

Following the above-noted guidance from YESAB, the assessment approach considered other projects and activities which may potentially act cumulatively with effects of the Project and affect selected VCs. The CEA identified all inputs from other projects that could act in concert with effects of the principal Project and influence the VCs identified, including:

- Past, present and likely future projects and activities in the area that may affect identified VCs
- Other existing or anticipated pressures (direct or indirect) on identified VCs

In identifying future projects or activities to be included in the cumulative effects analysis the assessment considers:

- Projects or activities that have already been approved;
- Projects or activities that are already in a government approvals process and on the YESAB registry;
- Other eligible projects or activities not subject to a formal government approvals process are included if there is a high level of certainty that they will occur; and
- The environmental effects of uncertain or hypothetical projects were not considered.

The assessment examined the YESAB Registry and selected those projects for further examination which were anticipated to cause effects within the same spatial and temporal scope in which the effects of the principal Project were anticipated to act. Eligible past, current and future activities that could potentially overlap with the Project were identified, and a description of these activities along with their spatial and temporal scale and additional assumptions and analysis regarding how they were addressed in the Project Proposal is discussed further for each VC in Chapter 8.

Following standard assessment practice, where adverse cumulative effects were considered probable, mitigation was applied and determinations were made regarding the significance of the residual adverse cumulative effects after the application of those mitigation measures. While the effects of other projects on selected VCs must be considered, mitigation could only be applied with regard to the Project being proposed.

3.4.2 Existing Activities

Past and current projects and activities were considered to form an integral part of the existing environment against which predicted effects are assessed. These activities, along with their projected future levels, are accounted for in the initial assessment of Project effects. Past projects considered in the cumulative effects assessment included the Mayo Dawson Transmission Project, the North Klondike Highway, past and current Minto Mine development activities (including the existing access road), and existing diesel generation activities at Pelly Crossing.

The existing environment in which the Project will take place is described in detail in Chapter 6. It is described with consideration of potential overlaps with Project effects, i.e., it is described with potential effects in mind and in sufficient detail to permit the evaluation of significance of Project effects in that environment set out in Chapter 8.

3.4.3 Projects for which proposals have been submitted

There are over 50 projects listed within the Mayo Assessment District, where the proposed Project will occur. Many of these projects are located at distances farther than the scope of the Project Study Region. In order to determine which projects are relevant to the CEA, the following rationale was used for inclusion:

- Only projects using Carmacks, Pelly Crossing and Stewart Crossing as a reference point were selected; and
- Projects had to be located north of Carmacks and south of Stewart Crossing.

Table 3.4-1
Other Projects Considered for Cumulative Effects – Projects with proposals submitted to YESAB

Number		Title	Proponent	Description	Status	Seeking Views End Date
Forestry – *Total of 1 project listed*						
1.	2006-0144	Minto Slash Burning	Minto Explorations	The principal activity of this project is to burn slash piles that were piled in association of clearing land on an existing quartz exploration program near Minto Creek. This project is physically located 40.4 km from Pelly Crossing. Accessory activities include: Use of heavy equipment to moving slash piles. Hauling burned debris with heavy equipment.	Preparing Recommendation	2006-05-18
Mining – *Total of 30 projects listed*						
2.	2006-0220	Freegold	Northern Freegold Resources	The principal project is a five year quartz exploration program to locate new mineralization and define and expand on known mineralization targets on the Freegold property. The principal project is located approximately 70km from the Village of Carmacks.	Recommendation Sent	2006-08-03
3.	2006-0158	Sonora 2006 Drilling Program	Firestone Ventures Inc.	The principal activity of this project is a drilling exploration program approximately 110km north of the Village of Carmacks near Hayes Creek	Decision Document Issued	2006-06-08
4.	2006-0146	Carmacks Copper Drill Program	Western Copper	The principal activity of this project is a quartz exploration drilling program, approximately 40 claims 45km from the Village of Carmacks, in the Williams Creek.	Recommendation Sent	2006-05-23

Number		Title	Proponent	Description	Status	Seeking Views End Date
5.	2006-0156	Tinta Hill	Northern Freegold Resources Ltd	The principal activity of this quartz exploration drilling program on approximately 62 claims is located 38 km from the Village of Carmacks near Stoddart and Merrice Creek	Recommendation Sent	2006-05-30
6.	2006-0123	Klaza	Rob Schneider	Trenching on prospecting leases to ascertain gold bearing potential	Decision Document Issued	2006-05-09
7.	2006- 0122	Iron	Rob Schneider	Trenching on prospecting leases to ascertain gold bearing potential	Decision Document Issued	2006-05-09
8.	2005-0028	Carmacks Coal (Tantalus Butte)	Cash Minerals	The principal purpose of this project is exploration drilling, and the creation of two test holes and associated activities, located 4km north of the Village of Carmacks. The principle activities involved are drilling of two holes with reverse circulation drill.	Decision Document Issued	2006-01-24
9.	2005-0025	Carmacks Coal (Rink Rapids)	Cash Minerals	The principal activity is drilling for coal and the associated activities for 2 holes at Rink Rapids 27km north of the Village of Carmacks. Activities involved include the construction of a 1200m winter trail with heavy equipment, drilling of two holes with reverse circulation drill, reclamation of trail by replacing cut brush on trail.	Decision Document Issued	2006-01-23
Agriculture – *Total of 3 projects listed*						
10.	2006-0189	Scientific Research/ Wildlife Mgmt McIntyre Salmon	Northern Research Institute, Yukon	The principal activity for this project is the collection, incubation and release of Chinook salmon from Tatchun Creek and Takhini River. Principal activities include: Collecting Chinook Salmon eggs and milt, Releasing	Decision Document Issued	2006-06-27

Number		Title	Proponent	Description	Status	Seeking Views End Date
		Incubation Project		Chinook fry. Accessory activities include: Incubating Chinook Eggs, Rearing and tagging Chinook fry.		
11.	2006-0175	Fisheries-Yukon River Drainage Collection/ Release Project	Fisheries and Oceans Canada	The proposed fisheries project will provide 50-75 salmon eggs for each Yukon school participating in the "Stream to Sea" educational program over the next ten years. The collection and release of salmon will occur on various tributaries flowing into the Yukon River drainage system. The proposed creeks and rivers include … Tatchun Creek-25km from Carmacks… Yukon. Activities associated with the principal project include the following: The capture of adolescent Chinook or Chum Salmon broodstock (August/ October, 2006- 2016); Collection of eggs and milt; Incubation of eggs at the McIntyre salmon facility and various register classrooms in the Yukon Territory; and Rearing, transport and release of salmon fry back into the tributaries they originated from (May/June 2007-2017).	Decision Document Issued	2006-07-04
Utilities – *There are three projects within the Village of Carmacks (water supply test wells, waste water and treatment facility, LSCFN community septic field) which should have no interaction or effect on the CS transmission project &/or its VEC's.*						

3.4.4 Other proposed activities that are currently known

In order to consider the effects from other projects and activities the *Assessor's Guide to the Assessment of Cumulative Effects* (YESAB, 2006(c)) provides that it is necessary to identify all inputs from other projects that could influence the identified VCs.

There is no project proposal for the Carmacks Copper Mine project currently on the YESAB registry, but there is a reasonable degree of certainty that it will proceed through the YESAB project proposal adequacy review stage and into a full YESAB review process in the near future. The project is considered more than hypothetical, thus, it is included in the CEA as a "currently known" activity. Assumptions with regard to this project are outlined below.

There is no project proposal at this time for YECL distribution line connection from the Pelly Crossing local community distribution system to the CS development substation at Pelly Crossing. Nevertheless, there is a high degree of certainty that this project will proceed concurrently with the CS project in order to enable Pelly Crossing to hook up to grid power and thereby displace operation of diesel fuel generation currently serving that community. The project is considered more than hypothetical, thus, it is included in the CEA as a "currently known" activity. On a similar basis, but without assuming necessary concurrent timing, it is reasonable to anticipate a future project proposal for YECL distribution line connection from the Carmacks local distribution system to the new CS substation at Carmacks, and then a future proposal for decommissioning of the existing YEC WAF substation at Carmacks.

SFN is currently in the engineering and planning phase to develop a sewage lagoon to service the needs of the community of Pelly Crossing. No application for the sewage lagoon has been made to YESAB, nor is one expected in the next year. Yukon Energy has been in discussion with SFN and the engineering design consultant to ensure the CS development where practical complements this potential future development.

In dealing with uncertain future projects or activities, it is important to note that any such project would typically be subject to its own regulatory review and approvals. Issues related to the cumulative effects of new future development in combination with the Project can therefore be best and most properly be assessed when and if such new government approvals are sought for such projects.

Carmacks Copper Mine

The Carmacks Copper Mine is the only known "uncertain future" project that is currently in the system, but not beyond the YESAB adequacy review stage. The Carmacks Copper Mine is an advanced-stage, copper mining project located in central Yukon 38 km northwest of Carmacks and 180 km north from Whitehorse. The project site is located within a group of mineral claims covering 1,000 ha. (Western Silver Corporation, 2005)

It is anticipated that the open-pit mine will have a stripping ratio of 4.6 tonnes of waste to 1 tonne of ore, and it will treat oxide ore to produce 14,310 tonnes of copper cathodes per year at a recovery rate

of 80%. Copper in solution will be recovered from the oxide ore by acid heap leaching of crushed minus 19 mm, agglomerated ore. (Western Silver Corporation, 2005)

Active mining is estimated to last for eight years once operations begin. During the project's expected life, crushing and heap leach pad loading will take place during 200 days of the year over early summer and fall and ore leaching will continue year round. Mine operations will be carried out using conventional mining equipment and process facilities. Ultimate leach pad, open pit and waste rock storage will occupy an area of approximately 100 ha. Other site facilities will include offices, change house, operations camp, gatehouse/first-aid, work shops/warehouse and laboratory water supply and distribution system, power supply, fuel storage, acid storage, sewage treatment, and communications system. (Western Silver Corporation, 2005)

Western Copper has confirmed with Yukon Energy its interest in potential future transmission development to connect the mine site with the CS development in the vicinity of McGregor Creek, with a potential start of service for operations as early as 3rd quarter of 2008 if construction on the mine starts in summer 2007. The Carmacks Copper Mine plans currently assume on-site diesel generation.

3.5 DETERMINING SIGNIFICANCE OF RESIDUAL ENVIRONMENTAL EFFECTS

Predicted residual environmental and socio-economic effects of the Project (i.e., effects after implementation of mitigation measures) are set out in Chapter 8 for the identified VCs. Environmental and socio-economic effects, including the potential effects of accidents and malfunctions, are examined at all stages of the Project's life-cycle from construction to operation and maintenance activities and, for the MS development, to the decommissioning of certain MS facilities. The assessment approach looks at both positive and adverse residual effects of the Project and includes full consideration of cumulative effects. As required by YESAA (S. 58), the assessment includes a determination as to whether adverse residual effects are significant, or not significant, and the rationale for this determination.

3.5.1 Significance Determination Approach

Environmental and socio-economic effects and their significance are identified and determined using standard assessment practice, the requirements of YESAA, and methodologies set out in the YESAB Assessor's Guides. (YESAB, 2006(a); YESAB, 2006(b))

Deciding whether a project is likely to cause significant adverse environmental or socio-economic effects is central to the concept and practice of project assessment under YESAA and other assessment legislation. The concept of "significance" in this regard cannot be separated from the concepts of "adverse" and "likely".[9]

[9] YESAA S.58, regarding ultimate decisions for an Executive Committee screening assessment of a project. See *Assessor's Guide for the Assessment of Socio-economic Effects*, YESAB, 2006 (sections 11 and 12) on the need to determine significance only for adverse effects. See *Assessor's Guide for the Assessment of Environmental Effects,* YESAB, 2006 (section 2.8) on the relevance of "likely". Also, *Determining Whether a Project is likely to Cause Significant Adverse Environmental Effects: A Reference Guide for the Canadian Environmental Assessment Act (Federal Environmental Assessment Review Office.1994).* The **Canadian Environmental Assessment Act** (**CEAA**) Guide also notes; "The 'likely' applies to the environmental effects of the project that are both adverse

Determining "significance" involves scientific (including traditional ecological knowledge) analysis and interpretation of environmental and socio-economic effects, and consideration of effects of environmental or socio-economic changes caused by the Project on the following (YESAA, s.42):

- the need to protect the rights of Yukon Indian persons under final agreements;
- the special relationship between Indian Yukon persons and the wilderness environment of Yukon; and
- the cultures, traditions, health and lifestyles of Yukon Indian persons and other residents of Yukon.

Mitigation measures and strategies can be important in the assessment of residual effects. Possible mitigation options include (a) integral parts of the Project design and implementation (e.g., route selection measures and EPP measures adopted during construction and operation), (b) a specific "no net loss" habitat regeneration measure approved by a specific regulatory authority, and (c) other measures to manage specific risks (including adaptive management strategies that identify and respond in the event of unexpected adverse effects or when mitigation measures may not be effective).

The determination of significance of residual effects may involve comparing such effects against thresholds for environmental components such as specified goals or targets, standards or guidelines, carrying capacity, or limits of acceptable change. Land use objectives and trends may also be utilized to determine significance of residual effects. However, it is recognized in standard assessment practice that the assessment of project effects is often hindered by a lack of specific thresholds.

Pursuant to standard assessment practice and YESAB Guides, the following criteria were used in the Project Proposal to evaluate the significance of adverse residual environmental and socio-economic effects:

- **Direction or nature of the effect:** positive, neutral, or negative/adverse; in the case of socio-economic effects, as noted in the YESAB Guides, effects may at times be considered to be both positive and negative (see comments below).

- **Magnitude of the effect** (level of detectability of effect):
  - low (effect unlikely to be detectable or measurable, or below established thresholds of acceptable change; for some environmental assessments, less than 5% of the VC population or area is affected).
  - moderate (effect could be detectable within normal range of variation with a well designed monitoring program,[10] or below established thresholds of acceptable change; for some environmental assessments, from 5 to 10% of the VC population is affected).
  - high (effect would be readily detectable without a monitoring program and outside normal range of variation, or exceeds established thresholds of acceptable change; for

and significant." Notwithstanding differences in wording of YESAA and CEAA on this matter, the ultimate assessment requirement remains to determine significance for effects that are adverse and likely.

[10] Implies that effects are statistically significant as determined by such a well-designed monitoring program.

some environmental assessments, greater than 10% of the VC population or area is affected).

- **Geographic or socio-economic extent of the effect:**
  - low (effect extends only within the Project footprint or Project Site Area; for socio-economic effects, includes residents and activities in Route Study Area other than communities).
  - moderate (effect extends beyond footprint and is within the Project Study Region; for socio-economic effects, extend to a moderate number of people within a definable group in this region).
  - high (effect extends beyond Project Study Region and is within Yukon, or extends outside Yukon; for socio-economic effects, extend to a major portion of a definable group of people, e.g., a major portion of specific communities).

- **Duration of the effect** (how long the effect would last):
  - low (short-term effects lasting less than one year, or not materially beyond the duration of the construction phase or the decommissioning phase of the Project).
  - moderate (medium-term effects lasting from 1 to 10 years, or no more that one-generation span of the species affected).
  - high (long-term effect lasting more than 10 years or more than one generation of the species affected; effects lasting throughout a major portion of the operations phase of the Project).

- **Frequency of the effect** (how often the impact would occur):
  - low (never, once, seldom).
  - moderate (occasionally).
  - high (continuously - on a regular basis or at regular intervals).

- **Reversibility of the effect** (how soon could restoration occur to acceptable conditions):
  - low (less than one year).
  - moderate (1 to 10 years, or no more that one-generation span of the species affected).
  - high (greater than 10 years, or more than one generation of the species affected).

- **Ecological or Socio-Economic Context** (sensitivity to environmental or socio-economic disturbance, capacity to adapt to change):
  - low (VC is resilient to imposed change).
  - moderate (VC has some capacity to adapt to imposed change).
  - high (VC is fragile and has low resilience to imposed change).

The assessment of significance for environmental effects typically can determine a clear overall direction of change (positive, neutral or negative/adverse) for a specific VC, although issues can arise when a specific species or habitat has positive effects in some areas and is harmed in other areas. In contrast, the assessment of significance for socio-economic effects also considers the following:

- the relevance of perceptions in affecting how people view changes;
- differing perspectives and values among different groups of people about their community and region, as well as their individual and family circumstances; and
- the problems inherent in assessing separately effects on different aspects or components (i.e., different VCs) of people's lives that each contribute to an overall "effect" on any group of people, i.e., effects may be either positive or negative, depending on the people affected, and may be both positive and negative when different groups are affected differently or when different VCs are considered for the same group.

Potential adverse effects that are likely were initially ranked in the Project Proposal based on three of the above criteria: duration, magnitude and geographic or socio-economic extent of the effects. The initial rating of these likely adverse residual effects used the following definitions (see Figure 3.5-1):

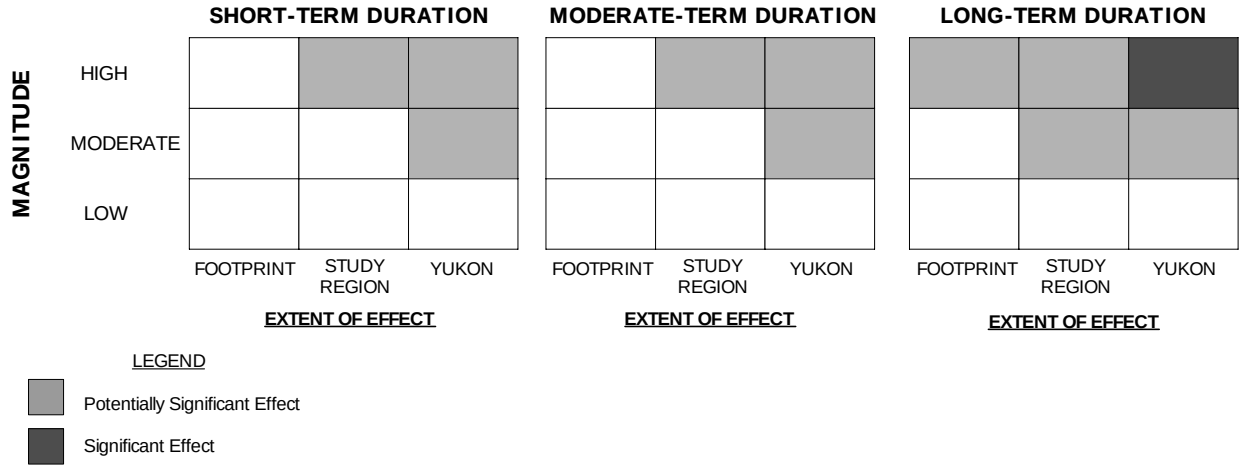
- **Significant - High Residual Effect:** Effects are long-term (high) duration, large (high) magnitude, and extend beyond the Project Study Region (high geographic or socio-economic extent).

- **Potentially Significant – Moderate Residual Effect**: Effects which fall between "high" and "low" in this list of initial definitions, and thus are "potentially significant" and merit consideration of additional significance criteria. In essence, "moderate" effects are either
  - Within the Project footprint or Project Site Area (low in extent) and high in both magnitude and duration; or
  - Beyond the footprint and into the Project Study Region (moderate in extent) and either high in magnitude (regardless of duration), or moderate in magnitude and high in duration; or
  - High in extent (Yukon region or beyond) and either moderate or high in magnitude (regardless of duration).

- **Not Significant or Insignificant - Low Residual Effect**: Effects are either
  - Low in magnitude (regardless of duration or extent), as the effect cannot be detected; or
  - Low in extent (e.g., footprint of Project) and not high in both magnitude and duration, or
  - Short-term (low) or moderate in duration, and not high in magnitude or extent (i.e., not extend beyond the Project Study Region).

- **Not Significant or Negligible (Insignificant) Residual Effect**: No definable effects at any level or insufficient to be termed a low effect, and generally indistinguishable from project baseline conditions.

Figure 3.5-1
Potentially Significant and Significant Effects on Environmental or Socio-economic VCs[1]



1. In addition to the above criteria, "potentially significant effects" are further assessed in terms of frequency, reversibility, and ecological or socio-economic context (resilience).

Figure 3.5-1, demonstrates that when the criteria of duration, magnitude and geographic extent are applied in order to determine if there are significant or potentially significant effects, there is no practical distinction between effects that are short-term in duration and effects that are moderate-term in duration. Accordingly, to simplify the discussion in Chapter 8, the duration of effects is addressed as being either "short-term" or "long-term".

For "potentially significant" and "significant" effects, initially ranked on the above basis, it is relevant to consider other significance criteria such as frequency, reversibility, and ecological/socio-economic context or resilience. For example, if an environmental VC is known to be highly resilient (i.e., adaptable and recovers well from disturbance), effects that would otherwise be considered significant could be determined as insignificant, despite magnitude and/or duration or the extent of the effects. Conversely, it is likely that thresholds or guides will identify highly vulnerable environmental VCs where the loss of even a few individuals may affect the long-term status of the population. For socio-economic VCs, additional factors that may need to be considered include concurrent effects on other socio-economic VCs affecting the same group of people or others in the same community or region, effectiveness of mitigation measures and the degree to which the affected people have any control over mitigation (which may affect "vulnerability" in socio-economic terms), the extent to which the socio-economic component is affected by the Project (magnitude, frequency, reversibility of the effects), and overall confidence in the assessment after consideration of proposed mitigation measures.

In the event that significant adverse effects are predicted for residual effects on VCs, the likelihood is discussed in terms of both the probability of occurrence of the significant adverse effect and the degree of "scientific uncertainty".

Assessment conclusions are supported by technical information, TK and local knowledge based on experience in Yukon and elsewhere. Deficiencies in the information base about potential effects have been noted and are addressed further in Section 8.6 Environmental Protection and Monitoring.

3.5.2 Adverse Cumulative Environmental or Socio-Economic Effects

YESAA requires that the Executive Committee determine whether the Project might contribute significantly to cumulative adverse environmental socio-economic effects in Yukon. The Project Proposal has examined whether the Project will interact with other past, existing or proposed projects cumulatively and whether such intersection will have adverse impacts in Yukon.

As reviewed in Section 3.4, consideration of adverse cumulative environmental or socio-economic effects was conducted concurrently with other elements of the environmental and socio-economic assessment. This cumulative effects analysis involves the consideration of likely residual cumulative effects after the application of measures designed to mitigate any potential adverse cumulative effects on VCs. As with determining the significance of other environmental and socio-economic effects, the probability of success of mitigation and the uncertainty inherent in any assumptions about possible effects and their significance are considered.

3.6 SOURCES OF INFORMATION

The assessment incorporates original studies[11] commissioned by Yukon Energy specific to the Project, including identification of potential facility design prepared by engineers and scientific and technical reports and papers on topics relevant to the Project, and local knowledge and available experience. Other information sources include meetings with First Nations, regulatory agencies and existing public and unpublished information.

The assessment process for the Project has emphasized consultation and involvement with potentially affected First Nations, communities, and other interested groups. This consultation and public involvement has provided the Project Proposal with important information with regard to local knowledge, concerns and interests as well as available experience.

Meetings with YESAB as well as territorial departments were also held to discuss the status of the environmental and socio-economic studies and provide information to assess ongoing changes to this program (Chapter 1, Section 1.5).

Detailed literature searches and personal contacts were conducted to identify both published and unpublished information. A list of documents utilized and depended on in this assessment is provided in the reference section in Chapter 10.

[11] Primary references in this regard are Mougeot GeoAnalysis Report, 2000 (Appendix 3A), I.A. Hayward Corridor Review and Requirement Report, 2001 (Reference Materials 3R-1), Stantec Report, 2002 (Reference Materials 3R-2) and A.B. Sturton Report, 2003 (Reference Materials 3R-3).