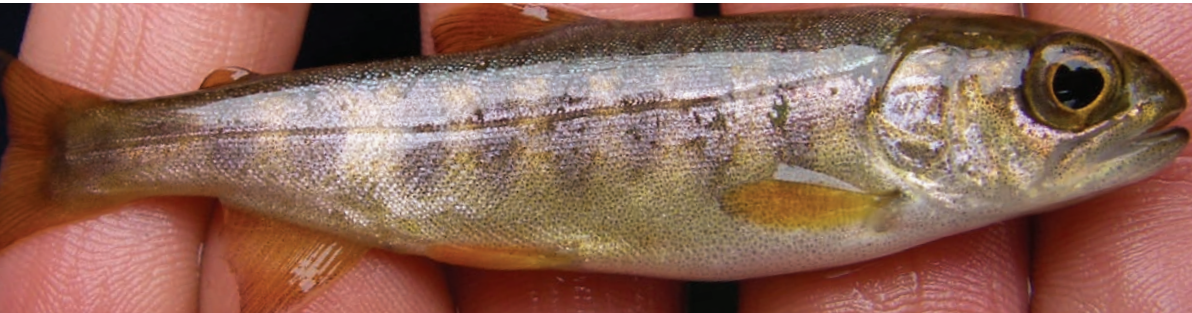


BC Hydro

## Northwest Transmission Line Project



## Bell-Irving Route Study



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# NORTHWEST TRANSMISSION LINE PROJECT BELL-IRVING ROUTE STUDY

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Prepared by:



Engineers and Scientists

Rescan™ Environmental Services Ltd.  
Vancouver, British Columbia

# Executive Summary

## Executive Summary

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BC Hydro is proposing a project to expand the existing transmission system into the northwestern region of British Columbia. The Northwest Transmission Line Project (the Project) will consist of a new 344 km long 287-kilovolt (kV) AC overhead high voltage electric transmission line. The proposed Project will commence at the Skeena Substation south of Terrace and proceed north, initially paralleling the existing 1L387 transmission line alignment, to the vicinity of Meziadin Junction, and thereafter, paralleling Highway 37 to Bob Quinn Lake.

BC Hydro submitted its Application for an Environmental Assessment Certificate (EAC) to the BC Environmental Assessment Office (EAO) in January 2010, and the formal review of the Application commenced in April 2010. The EAC Application for the proposed NTL Project presents the studies that were undertaken from 2007 to 2009, along with the effects assessments, Nisga'a and First Nations considerations, mitigation of effects, and proponent commitments.

During development of the proposed NTL conceptual route alignment, BC Hydro and a broad community of interests were involved in discussions on various facets of the design of the route alignment. Many alternatives were considered and, in the end, for most of the proposed Northwest Transmission Line (NTL) route, a single proposed route was moved forward for the full environmental assessment in the EAC Application. However, two sections of the overall NTL route contained unresolved alignment alternatives at the time that the EAC Application was submitted and at the commencement of the review process. The Gitanyow First Nation indicated early in the pre-application process that the Gitanyow opposed a route traversing Hanna and Tintina watersheds east of Meziadin Lake, and proposed three alternate routes at that time. As a result, BC EAO, BC Hydro, and Gitanyow sought further discussion and resolution on the selection of preferred routes. Through additional discussions one preferred alternative was selected for additional comparison to the proposed Hanna-Tintina route evaluated in the EAC Application.

In July 2010, a Hanna-Tintina Route Alternatives Evaluation Report (Route Alternatives Report) was prepared as a joint undertaking of the Gitanyow, BC Hydro, and their respective contractors. This report described the results of a comparative evaluation between two route segments: a westerly route, referred to in the report as the Hanna-Tintina route, which passes through the Hanna and Tintina watersheds and an easterly route, referred to in the report as the Bell-Irving route, which avoids these two watersheds and runs east of Mt. Bell-Irving. The Hanna-Tintina Route Alternatives Evaluation Report was provided as a supplement to BC Hydro's EAC Application and the Canadian Environmental Assessment review process.

The Hanna-Tintina Route Alternatives Evaluation Report recommended to the BC EAO that, if an Environmental Assessment Certificate is issued, the Bell-Irving route be selected as the preferred route for the NTL alignment. Following the completion of the Route Alternatives Report, EAO and the federal Responsible Authorities directed BC Hydro to undertake a more detailed effects assessment than that provided in the route alternatives report. Full consideration of the proposed Bell-Irving route required collecting or upgrading baseline environmental information along the route and to evaluate the Bell-Irving route in accordance with the work plans approved by the EAO, the Federal Responsible Authorities, and the Working Group.



## BELL-IRVING ROUTE STUDY

The field studies and office-based reviews for this Bell-Irving Route Study Report were completed in August 2010. This report presents the results of baseline information collected as well as an evaluation of potential Project effects on VECs along the Bell-Irving route. The purpose of this supplemental report was to evaluate the Bell-Irving route to the level that the other segments were evaluated in the EAC Application. Where necessary, the EAC Application sections are referred to. The report represents a time-limited assembly of known information for the Bell-Irving route and a matched assessment of information from the NTL EAC Application.

The supplemental effects assessment presented in this report follows the methods presented in the EAC Application. The effects assessment associated with this study found that potential environmental, social, economic, heritage and human health effects of the Bell-Irving route that could occur during the construction phase will be primarily associated with ROW clearing. During the operation and maintenance phase, potential adverse effects will be associated with vegetation management along the ROW and maintenance of the associated infrastructure. The majority of potential adverse effects will be mitigated through Project design, ROW alignment selection and a construction environmental management program that avoids or minimizes disturbance to sensitive fish and wildlife habitats, hazardous or unstable terrain, sensitive viewpoints, sensitive ecosystems, heritage sites, and other features. No additional mitigation will be required, other than what was suggested in the EAC Application. The outcome of the effects assessment found that significant adverse effects are unlikely.

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# Glossary and Abbreviations



## Glossary and Abbreviations

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AIA	Archaeological Impact Assessment
ARN	Aboriginal Relations and Negotiations
BC MOE	British Columbia Ministry of Environment
BC MOF	British Columbia Ministry of Forests
BC MOFR	British Columbia Ministry of Forests and Range
BC MWLAP	British Columbia Ministry of Water, Land and Air Protection
BMP	best management practice
CAC	criteria air contaminant
UWR	Ungulate Winter Ranges
CAR	Canadian Aviation Regulations
CEA Agency	Canadian Environmental Assessment Agency
CDC	Conservation Data Center
COSEWIC	Committee on the status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
EAC Application	Environmental Assessment Certificate Application
EMF	increase electric and magnetic field
ECA	Equivalent Clear-cut Area
EMP	Environmental Management Plan
FDIS	Fisheries Data Information System
FSR	forest service roads
GHG	greenhouse gas
GIS	Geographical Information System
HCA	<i>Heritage Conservation Act</i>

## BELL-IRVING ROUTE STUDY

HSR	Habitat Suitability Rating
IVMP	Integrated Vegetation Management Plan
LWD	large woody debris
ML/ARD	metal leaching and acid rock drainage
NCDs	Non-classified drainages
NTZ	no treatment zone
OGMA	Old Growth Management Areas
PAG	potentially acid generating
PFZ	pesticide free zones
PM	particulate matter
Rescan	Rescan Environmental Services Ltd.
RIC	Resources Information Committee
RISC	Resources Information Standards Committee
ROW	right-of-way
SKR	SKR Consultants Ltd.
SARA	<i>Species at Risk Act</i>
SWD	small woody debris
TPM	total particulate matter
TRIM	Terrain Resource Information Management
TSS	total suspended solids
TU/TK	traditional use and traditional knowledge
UTM	Universal Transverse Mercator
VEC	valued environmental component
VFR	Visual Flight Rules
WHA	Wildlife Habitat Area
WMU	Wildlife Management Units

# 1. Introduction

# 1. Introduction

---

## 1.1 PROJECT BACKGROUND

The Northwest Transmission Line Project (the Project) will consist of a new 344 km long 287-kilovolt (kV) AC overhead transmission line between Skeena Substation and a new substation at Bob Quinn Lake.

The Application Information Requirements for the Northwest Transmission Line (NTL) were approved in December 2009. BC Hydro submitted its Application for an Environmental Assessment Certificate (EAC Application) to the BC Environmental Assessment Office (EAO) on January 28, 2010, and the formal review of the Application commenced on April 15, 2010. BC Hydro has consulted with the public, various government agencies, First Nations and the Nisga'a Nation with respect to the proposed NTL Project.

Prior to submission of the Application, many route alternatives were considered and ultimately, for most of the proposed NTL route, a single proposed route for the Project was proposed in the EAC Application for the full environmental assessment. During the pre-application phase Gitanyow had indicated that it opposed a route traversing Hanna and Tintina watersheds east of Meziadin Lake, and initially proposed three alternate routes. At the time that the EAC Application was submitted to the EAO no agreement on a preferred route had been reached with the Gitanyow; however, BC Hydro committed to consult further with the Gitanyow regarding alternative routes. As a result of additional discussions between BC Hydro and the Gitanyow subsequent to the start of the Application review, one preferred alternative east of Mount Bell-Irving (the Bell-Irving route) was selected for additional comparison to the Hanna-Tintina route evaluated in the EAC Application.

In July 2010, the Hanna-Tintina Route Alternatives Evaluation Report (route alternatives report), jointly prepared by the Gitanyow Hereditary Chiefs Office, BC Hydro, and Rescan, was submitted to the BC EAO as a supplement to the EAC Application. This report described the results of a preliminary comparative evaluation between the Hanna-Tintina route, and the Bell-Irving route. The Hanna-Tintina Route Alternatives Evaluation Report was filed support of the environmental assessment of the NTL Project being conducted under the *Canadian Environmental Assessment Act* and under British Columbia's *Environmental Assessment Act*. A public comment period on the report occurred from August 11-25<sup>th</sup>, 2010.

Given its comparative purpose, the route alternatives evaluation report focused mainly on key biophysical and cultural values, and involved a desk-top analysis using a substantial volume of existing, previously collected and documented field data. Thus, the effects of the Project on some Valued Environmental Components (VECs) assessed in the NTL EAC Application were not evaluated, while the effects on some additional values were assessed. Information used for the Bell-Irving portion of the route during the route alternatives evaluation exercise was not ground-truthed and no new fieldwork was undertaken prior to completion of the route alternatives evaluation report.

The main conclusions of the route alternatives evaluation report were as follows:

- The Bell-Irving route has generally been subjected to more impacts in the past and is less ecologically sensitive than the Hanna-Tintina route, the use of which would result in a new set of impacts that would need to be mitigated with some element of uncertain risk.

## BELL-IRVING ROUTE STUDY

- From an environmental and cultural perspective, based on the major quantitative and qualitative differences between the two proposed routes, the Bell-Irving route is preferred.
- The joint route alternatives evaluation report recommended to the BC EAO that if an Environmental Assessment Certificate is issued for the NTL Project, the Bell-Irving route be selected as preferred over a route through the Hanna and Tintina watersheds.

The route alternative report recommended that further baseline study and effects assessment of the Bell-Irving route be conducted. BC Hydro and its consultants prepared a work plan that was reviewed by the Federal Responsible Authorities, the BC EAO and the technical working group (Rescan, 2010). Following this review, the following additional field studies were undertaken by BC Hydro:

- fisheries and aquatic resources;
- archaeology and heritage resources;
- terrain stability;
- terrestrial ecosystem mapping (terrain, wildlife, ecosystems, soils);
- wildlife Habitat Suitability (including ungulate winter range (moose, goat) and grizzly bear);
- visual landscapes; and
- navigable waters.

To complete the assessment of the Bell-Irving route, office-based reviews of existing information for the following disciplines were also undertaken:

- atmospheric environment;
- surface water hydrology and hydrogeology;
- socio-economics;
- land and resource use;
- human health (including country foods);
- traditional use and knowledge (would refer to recently completed Gitanyow and Skii km Lax Ha reports);
- Nisga'a Nation considerations to comply with Chapter 10 (section 6 and 8) of the Nisga'a Final Agreement (NFA); and
- First Nations' considerations.

In August 2010, field studies and office-based reviews were completed. This report presents the results of that work and the related assessment of the environmental, social, economic, health and heritage effects of the Bell-Irving route. Where necessary, the EAC Application sections are referred to. Limitations are identified and where appropriate recommendations to acquire further specific information are made.

## 1.2 PROJECT DESCRIPTION

### 1.2.1 NTL Project

The Project is a new 344-kilometre, 287-kilovolt transmission line connecting the Skeena Substation at Terrace with a new substation near Bob Quinn Lake. The Project will provide electrical transmission to support economic development in the area—such as mining and independent power production—and will further British Columbia’s goals of electrical self-sufficiency. The Project consists of a right-of-way (ROW) along the route of the new transmission line, the permanent structures of the transmission line itself, a new substation at Bob Quinn, some new access roads and improvements to existing roads, and additions to the existing Skeena Substation.

The Project will include a ROW for the transmission line with a width of approximately 38 metres, depending on terrain and site conditions. A range of vegetation clearing prescriptions will be implemented in various portions of the Right of Way, depending on topography, conductor clearance requirements and other engineering factors. These prescriptions will vary from no vegetation removal in some areas (full retention) to other cases where all vegetation taller than low-level brush will be cleared to allow safe construction access and provide clearance for the conductors, and this area will continue to be managed during operation of the line. Trees on either side of the ROW that could fall or interfere with electrical clearance will also be removed. Along the southern portion of the route that runs parallel to the existing transmission line, only one side of the ROW will require this additional clearing.

Existing public and private roads will be used to access the ROW for both construction and maintenance. New permanent, semi-permanent, or temporary roads may be required along some sections of the route. Helicopters will be used in areas where terrain access is hazardous or exceptionally difficult, and to minimize potential effects to environmental resources. Temporary infrastructure will primarily include construction camps, equipment laydown/storage areas, and temporary stream crossings for road access.

A detailed Project description is provided in Chapter 4 of the EAC Application.

### 1.2.2 Bell-Irving Route

The Bell-Irving route (the exact alignment of which has not yet been finalized) extends for approximately 60 km from a turning point approximately 20 km south of Nass River, north across the Nass River about 12 km east of Meziadin Junction, then north to cross the Bell-Irving River, and then northwest to rejoin the NTL route approximately 7 km north of Bell Irving 1 Highway 37 crossing. Elevations along the route range from approximately 274 m to 840 m (Figure 1.2-1).

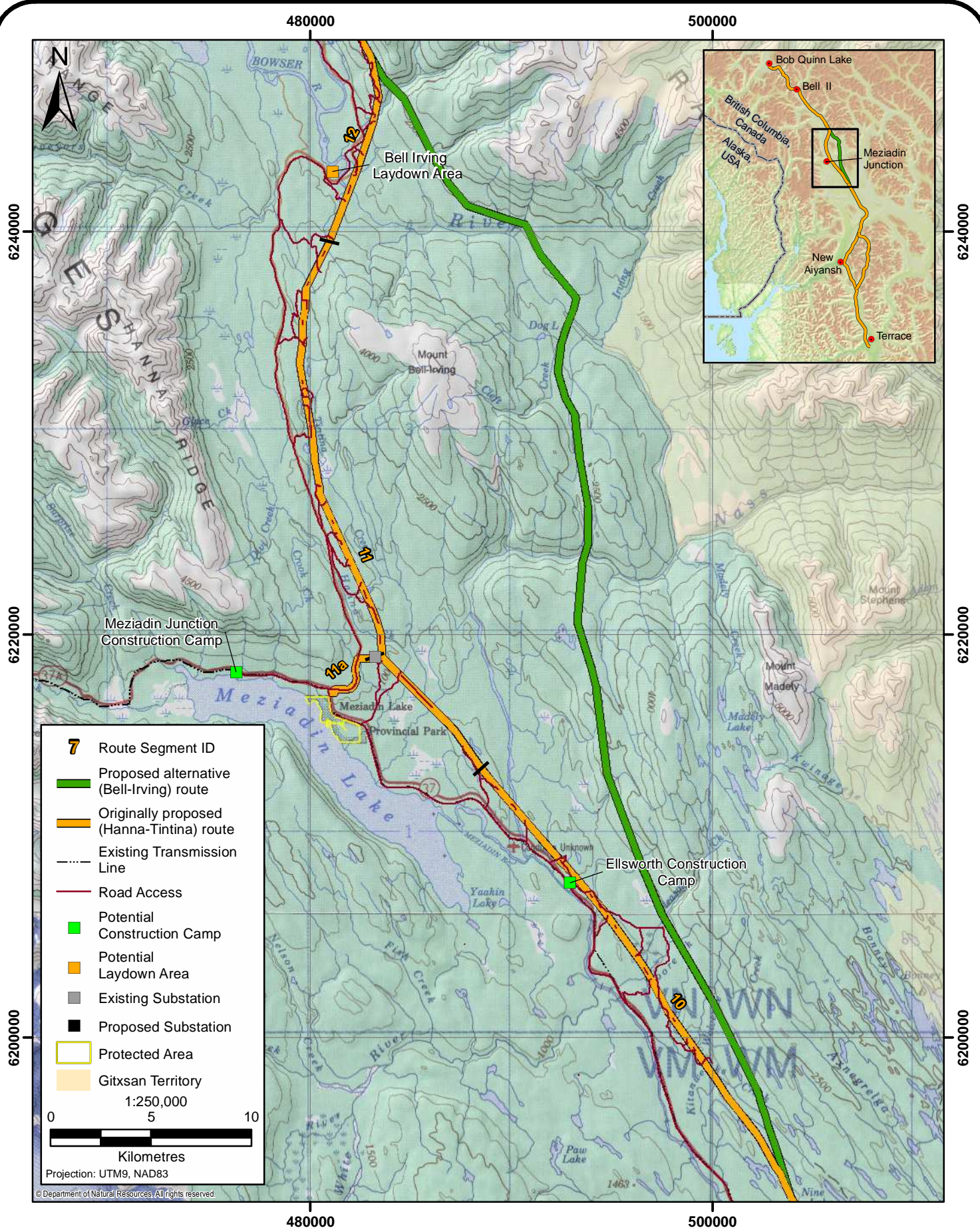
Portions of the Bell-Irving route fall within the Nass Area, including portions of the Nass Wildlife Area, as defined in the Nisga’a Final Agreement. Portions also fall within the asserted traditional territory of the Gitanyow and the Skii km Lax Ha.

## 1.3 REFERENCE DOCUMENTS

### 1.3.1 NTL EAC Application

The proposed NTL EAC Application presents the baseline studies that were undertaken from 2007 to 2009, along with the effects assessments, Nisga’a and First Nations’ considerations, mitigation of effects and proponent commitments. This Bell-Irving route study is provided as a supplement to the EAC Application. Thus, the content of the EAC Application, which contains baseline studies that were undertaken from 2007 to 2009 and effects assessments, provides a foundation for the assessment of the Bell-Irving route. To avoid repetition, the EAC Application is extensively referenced and relied upon in this report.





Proposed Northwest Transmission Line  
Bell-Irving Route

FIGURE 1.2-1  
Rescan™

### **1.3.2 Hanna-Tintina Route Alternatives Assessment Report**

The Hanna-Tintina Route Alternatives Evaluation Report provides discipline-specific desk-based information pertaining to the Bell-Irving route as well as Gitanyow knowledge of the route. Information presented in the Hanna-Tintina Route Alternatives Evaluation Report, pertaining to the Bell-Irving route, is also be referenced herein.

### **1.3.3 Minutes of BC EAO Technical Working Group Meetings**

The BC EAO has held several technical working group meetings since the beginning of the review period of the EAC Application on April 15, 2010. Meeting minutes pertaining to the Bell-Irving route were reviewed in support of the additional field work and the supplemental effects assessment presented herein. Relevant information from these minutes is referenced throughout this report. Additional information regarding the BC EAO technical working group meetings is provided in Section 4.3.

## 2. Scope of the Bell-Irving Route Study

## 2. Scope of the Bell-Irving Route Study

---

### 2.1 INTRODUCTION

The scope of this study is to:

- describe the Bell-Irving route;
- summarize the consultation and information exchange pertaining to the Bell-Irving route;
- present the additional baseline information collected through both field and desk-based studies; and
- present an evaluation of potential effects of constructing and operating the NTL transmission line using the Bell-Irving route.

### 2.2 FIELD STUDY

Additional field studies were conducted for the following disciplines:

- fisheries and aquatic resources;
- archaeology and heritage resources;
- terrain stability;
- terrestrial ecosystem mapping (terrain, wildlife, ecosystems, soils);
- wildlife habitat suitability (including ungulate winter range (moose, goat) and grizzly bear);
- visual landscapes; and
- navigable waters.

The methods and results of these studies will be presented in the discipline specific sections of Chapter 6.

### 2.3 DESK-BASED STUDY

Additional existing desk based information was collected for the following disciplines:

- atmospheric environment;
- surface water hydrology and hydrogeology;
- socio-economics;
- land and resource use;
- human health (including country foods);
- traditional use and knowledge
- Nisga'a Nations, including considerations required under c. 10(6) and c. 10(8) of the NFA; and
- First Nations' considerations.



The results of each of the field and desk-based studies are presented in the discipline-specific topic sections of Chapter 6. Nisga'a Nation considerations and First Nations' considerations are presented in Chapters 7 and 8.

### 2.4 EFFECTS ASSESSMENT

BC Hydro considers both the proposed Hanna-Tintina and Bell-Irving routes to be technically feasible. However, as a result of the route alternatives evaluation exercise and report, BC Hydro considers the Bell-Irving route to be the preferred route. Accordingly, this report was prepared to provide an assessment of the significance of potential effects of the Bell-Irving route in accordance with the scope of assessment approved by the EAO, the Federal Responsible Authorities, and the Working Group. The purpose of this report is not to provide a further comparison with the Hanna-Tintina route alternative.

### 3. Bell-Irving Route Description

### 3. Bell-Irving Route Description

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The proposed Bell-Irving alternative route extends for approximately 60 km from a turning point approximately 20 km south of Nass River, north across the Nass River about 12 km east of Meziadin Junction, then north to cross the Bell-Irving River, and then northwest to rejoin the NTL route about 7 km north of Bell Irving 1 Highway 37 crossing (Figure 1.2-1). Elevations along the route range from approximately 274 m to 840 m.

The route parallels Highway 37 generally, but at its farthest distance is about 15 km east of the highway in an area with an extensive network of forest access roads and trails in the Bell-Irving River valley. Much of the access would require some rehabilitation of existing roads and stream crossings to support the Project construction, and some new access, permanent and temporary, would need to be constructed off the Windfall, Kotcho, and Irving main forest road systems. The Nass River crossing area is devoid of roads and could require road access to the crossing structure sites, or helicopter-supported construction. No new bridge crossings of the Nass or Bell-Irving Rivers are proposed.

The entire length of the Bell-Irving route passes through the Timber Harvesting Land Base, through terrain largely suitable for logging (Pers. Comm., Bernie Banovic, 2010). The Bell-Irving route at the southern end diverges from the currently proposed BC Hydro alignment near the Windfall Main road area, and avoids a wetland area to the west by staying at a higher elevation. Moving northwards, the route passes through a dry forest type as it approaches the Nass River crossing. On the north side of the Nass River is the Kotcho Mainline road area, which is heavily affected by forest harvesting and road building.

The Bell-Irving route crosses the Bell Irving River approximately 2 km to the east of Dog Lake and parallels the northeastern bank of the Bell-Irving River, at a relatively high elevation a considerable distance from the riparian zone. Where it crosses the Bell-Irving River it passes out of Gitanyow Territory and into Skii Km Lax Ha Territory, before connecting to the original BC Hydro alignment for the NTL, as described in the EAC Application, north of Bell 1 crossing.

The Bell-Irving route passes through several smaller watersheds within the larger Nass and Bell-Irving River watersheds. These include: Kitanweliks Creek, Moore Creek, Gleason Creek, Cleft Creek, and Bell Creek.

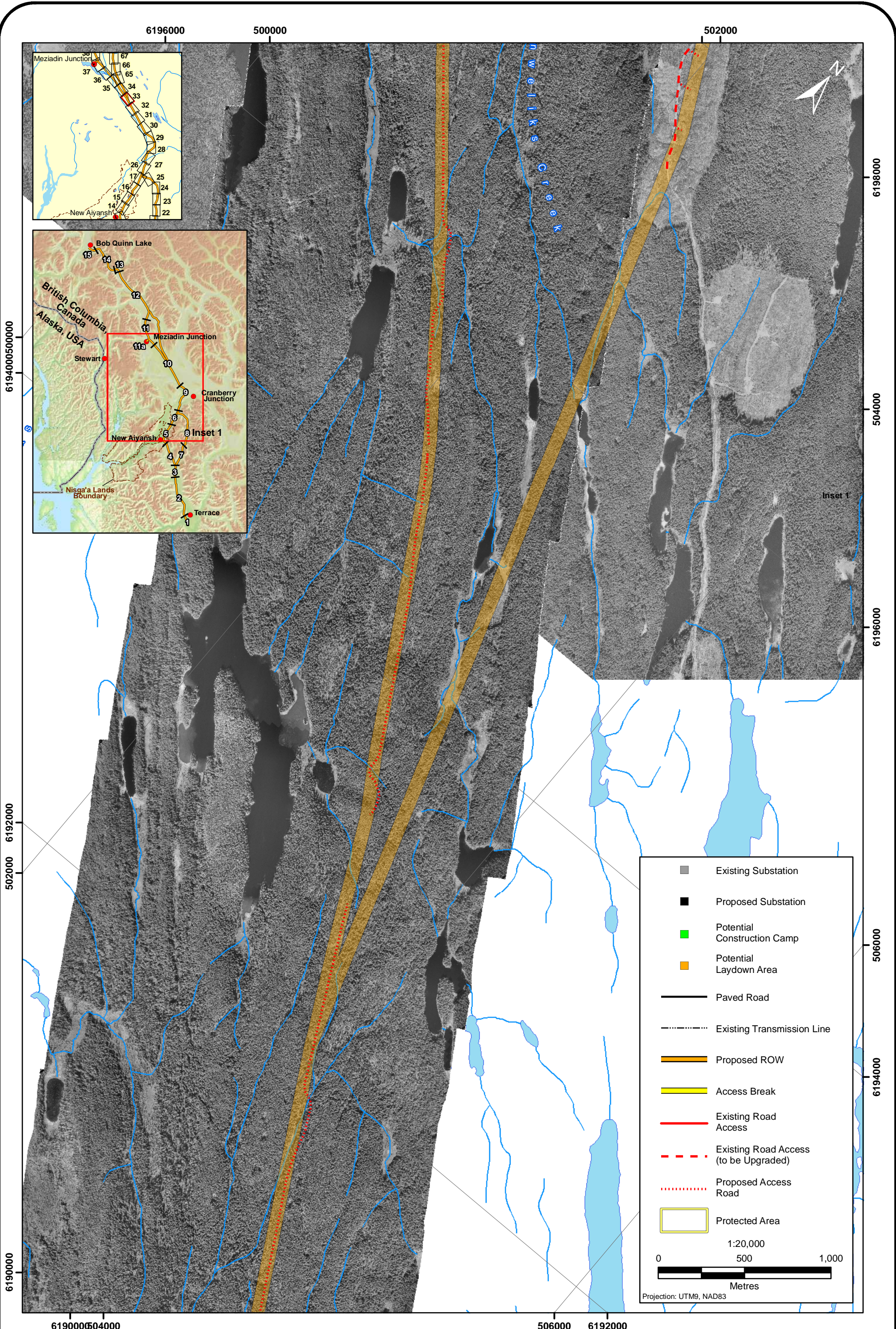
The Bell-Irving route was purposefully located adjacent to existing mainline logging roads. The line is in areas designated as Timber Harvesting Land Base, which do not have the salmon, grizzly bear, and moose habitat quality of the Hanna-Tintina route.

Chapter 4 of the EAC Application presents the NTL Project description. All construction methodologies and engineering considerations described in this chapter will also apply to the Bell-Irving route. This includes the construction and maintenance of the ROW, access roads, and structures as well as maintenance of vegetation. In addition, all mitigation, environmental management and commitments presented in the EAC Application will also apply to the Bell-Irving route.

**BELL-IRVING ROUTE STUDY**

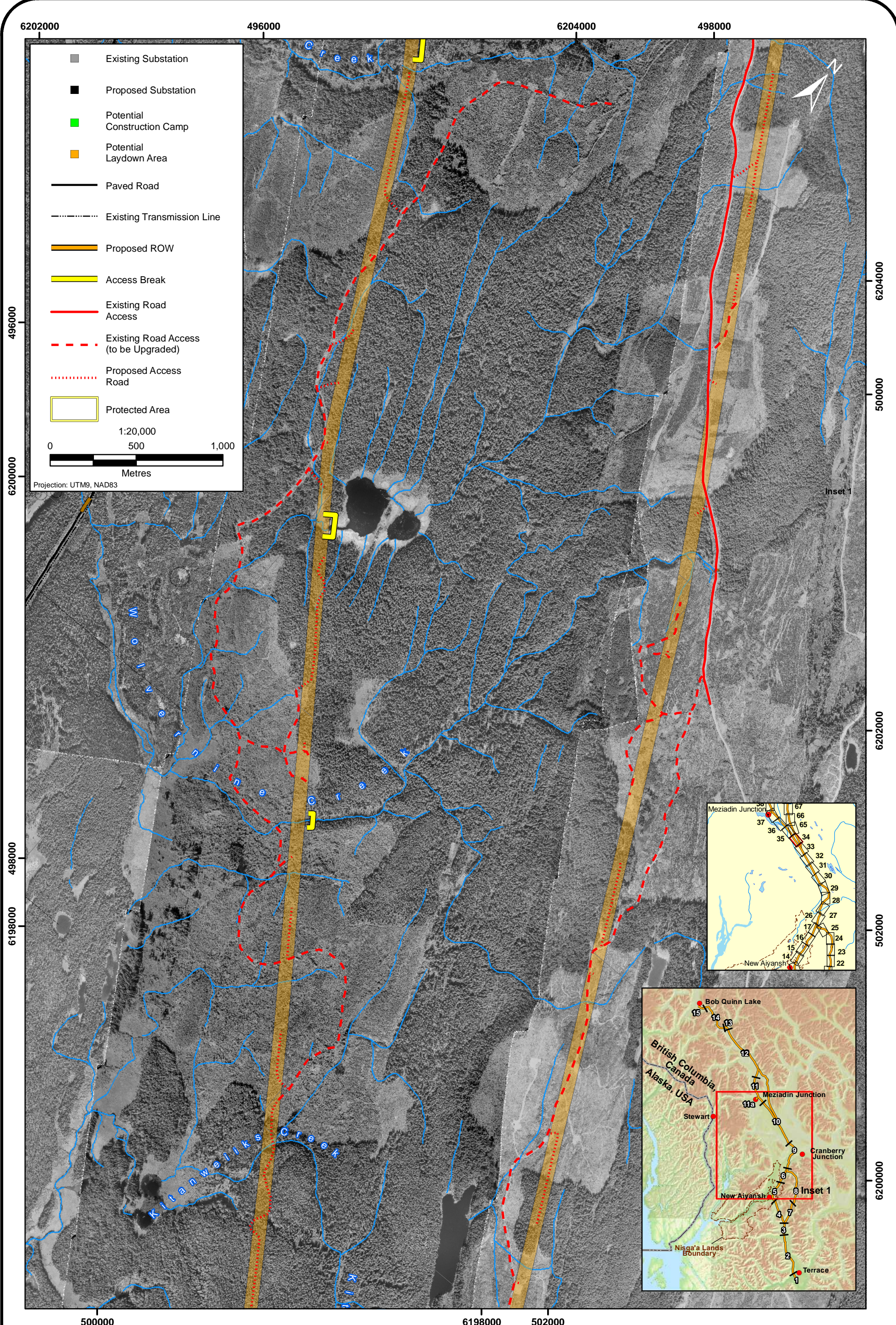
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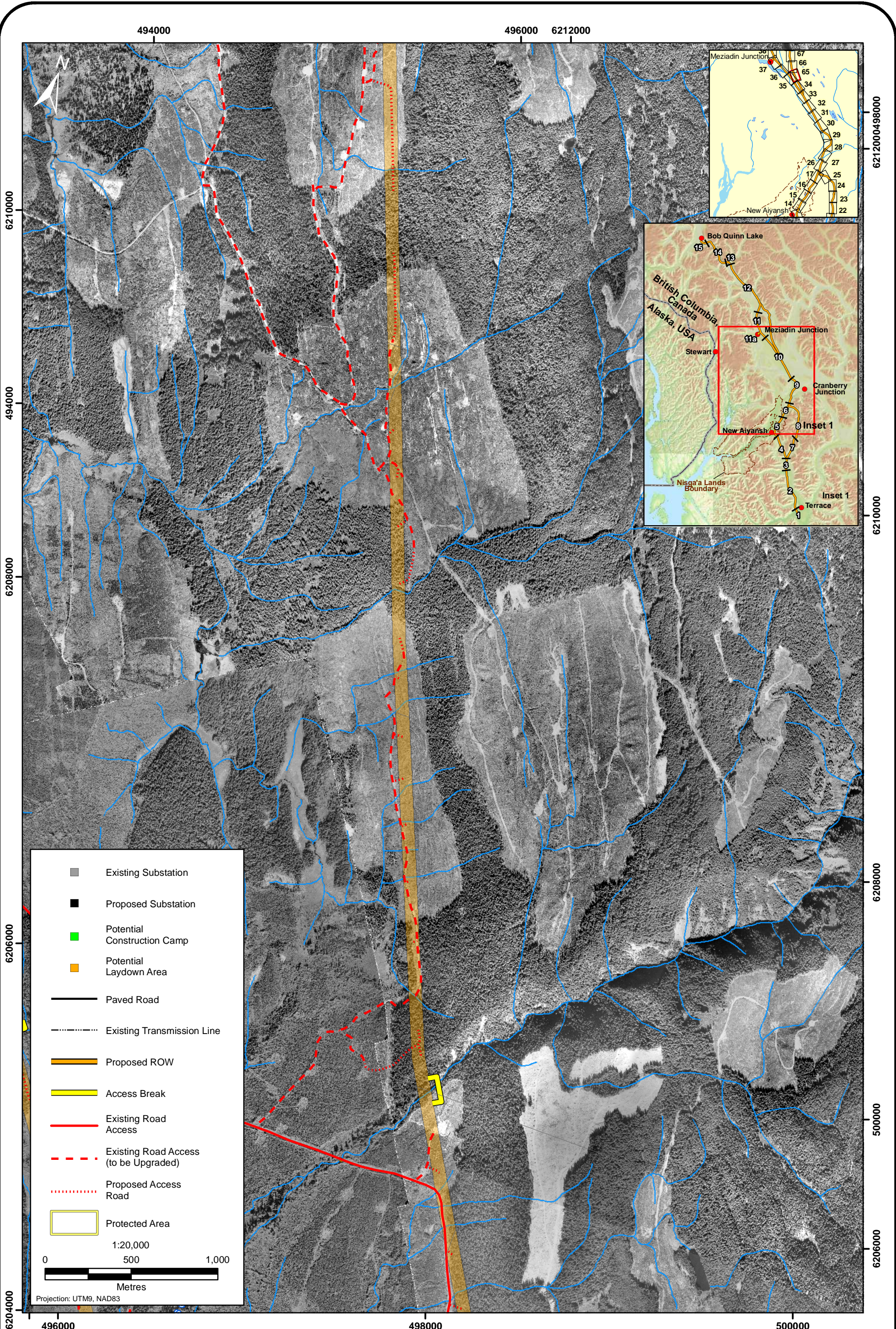
**Proposed Northwest Transmission Line  
Proposed Bell-Irving Route - Map 33**





**Proposed Northwest Transmission Line  
Proposed Bell-Irving Route - Map 34**





**Proposed Northwest Transmission Line  
Proposed Bell-Irving Route - Map 65**