## Alan Ehrlich

**From:** Alan Ehrlich
**Sent:** Tuesday, February 02, 2010 11:01 AM
**To:** 'roger-catling@hotmail.com'
**Subject:** FW: Taltson transmission line
**Attachments:** DOC043.PDF

**Importance:** High

Hello Roger,

As we discussed in our phone call this morning, the e-mail below contains relevant information. Please remember that you are welcome to look at the public registry documents here in the Review Board office instead of online if you prefer.

Regards,

Alan Ehrlich
Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board

Tel: 867.766.7056 ; Fax: 867. 766.7074
Toll Free: 1.866.912.3472
aehrlich@reviewboard.ca

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**From:** Alan Ehrlich
**Sent:** Monday, February 01, 2010 5:09 PM
**To:** 'wallacef@shaw.ca'
**Subject:** Taltson transmission line
**Importance:** High

Hello Mr. Finlayson,

To recap what I told you on the phone, the Review Board is conducting an environmental assessment of Deze Energy's proposed Taltson expansion and transmission line. **The developer has recently proposed changing the transmission line route to extend past Reliance following the peninsula between Charlton Bay and McLeod Bay. (Click here to see the proposed route: http://www.reviewboard.ca/registry/project_detail.php?project_id=68&doc_stage=14 ).**

**The Review Board wants to bring this to the attention of anyone with cabins, leases, or other interests in the general area of Great Slave Lake's east arm around Reliance, Charlton Bay, Fairchild Point and the easternmost end of McLeod Bay.**

The Review Board is seeking the views of anyone with a direct interest in this area. Although the general public record is now closed for this assessment, an exception will be made for comments about this proposed route only. **Comments about the newly proposed route change will be accepted until 5:00 pm on Feb. 18th, 2010.**

I am attaching Fig. 6.4.9 from the Developer's Assessment Report, which shows part of how the towers will look. There are different types of tower designs that the developer could use in the new stretch. A bit more can be found on visual effects on **page 106** of the document titled "Commitments from Deze Energy". It is dated Nov. 2, 2009. The date will help you find it on our webpage: http://www.reviewboard.ca/registry/project_detail.php?project_id=68&doc_stage=7 .

For more information on the proposed project and the proposed route, see the Review Board website at www.reviewboard.ca or call me at the number below until this Friday. **After Feb. 5th, 2010, I will be travelling, and you should call Martin Haefele at (867) 766-7053.**

Please share this e-mail with anyone you know in the area if you are able to. Or, if you have any suggestions about how I can contact people in the area, please let me know. I certainly appreciate your providing me with Roger Catling's phone number. I will be writing a Note to File so that our conversation today will go on the public record.

Sincerely,

Alan Ehrlich
Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board

Tel: 867.766.7056 ; Fax: 867. 766.7074
Toll Free: 1.866.912.3472
aehrlich@reviewboard.ca

### 6.4.5 Main Switchyard at Twin Gorges

The Taltson Hydroelectric Expansion Project would electrically integrate the existing plant and the new generation facility at Twin Gorges such that power generated from either facility can flow to any of the connected loads. This switchyard would therefore replace the existing plant substation, and supply the existing 115 kV line to Fort Smith and the new 161 kV line to the mines. A very minor re-routing of the existing line would be required in the vicinity of the existing plant to reach the new switchyard. The general arrangement of the facilities is shown on Figure 6.4.1.

The integration of the existing and new plants would provide significantly enhanced reliability of generation into the existing 115 kV line and very likely allow elimination of the annual service interruption for maintenance of the existing Twin Gorges plant when diesel generation is required in Fort Smith. The diesel plant would continue to be required for backup support.

### 6.4.6 New Transmission Line

#### 6.4.6.1 General Characteristics

To supply the power from Twin Gorges to the mine sites, a new 161 kV and 69 kV transmission system would be constructed running from the Twin Gorges switchyard site northeast around the East Arm of Great Slave Lake to a branch point at Gahcho Kué mine site, with a westward spur to Snap Lake mine site, and a northwards extension to the Ekati mine site and a short spur to the Diavik mine site. The branch lines would be 69 kV lines interconnecting substations at Gahcho Kué and Snap Lake mine sites, and between Diavik and Ekati mine sites. A summary of the transmission line characteristics is provided in Table 6.4.3.

**Table 6.4.3 — Summary of Transmission Line Characteristics**

| Characteristic / Option | Transmission Line |
|---|---|
| **Line Sector at 161 kV** | |
| Twin Gorges – Gahcho Kué | 388 km |
| Gahcho Kué – Ekati | 183 km |
| **Line Sectors at 69 kV** | |
| Gahcho Kué – Snap Lake | 94 km |
| Ekati – Diavik | 33 km |
| Total of 161 kV | 571 km |
| Total of 69 kV | 127 km |
| Total Line Length | 698 km |
| Design Capacity of 161 kV Line | > 100 MW |
| Maximum Expected Load from Mine Customers | ~60 MW |
| Conductor Size | 715 mcm |
| Number of Circuits | Single Circuit |
| Type of Tower (161 kV) | Guyed Steel Pole or Lattice Tower |
| Type of Tower (69 kV) | Guyed Steel Pole or Lattice Tower |

| Characteristic / Option | Transmission Line |
|---|---|
| Communications System | As required, likely Power Line Carrier |
| Total number of towers | 2400 (approx) |
| Right of Way Tenure Width Requirement | 30 m |
| Construction Period | 31 months from an October start |

The new transmission line would be constructed on a cleared right-of-way where necessary, up to approximately 30 m in width, with allowable maximum brush height of approximately 3 m in sections that do not require land-based conductor stringing and do not present a fire hazard. The towers would be either lattice steel or pole-type structures, supported on a central foundation pin and using four guy wires running from near the cross-arm structure to anchor points in opposing directions from the tower. The lattice concept structure is virtually identical to those used on the existing 115 kV line to Fort Smith and Pine Point, which have provided excellent service and reliability. A typical 161 kV transmission structure is shown in Figure 6.4.8 and a 69 kV structure in Figure 6.4.9.

The average spacing of the towers would be approximately 350 m for the 161 kV line, and slightly less for the 69 kV line, however, these spacings would vary depending on the terrain. Typically, towers would be founded on rock outcrops, and guy anchors would be simple grouted anchor bolts. Tower height would depend on terrain and line requirements at the particular station, but would be approximately 22 to 25 m. The single circuit line would include three conductors. These conductors are non-insulated, spiral wound aluminum strand over a central steel cable. The conductors would be "sagged" to meet standard electrical clearance requirements above ground, and would present no shock hazard to humans or wildlife on the ground.

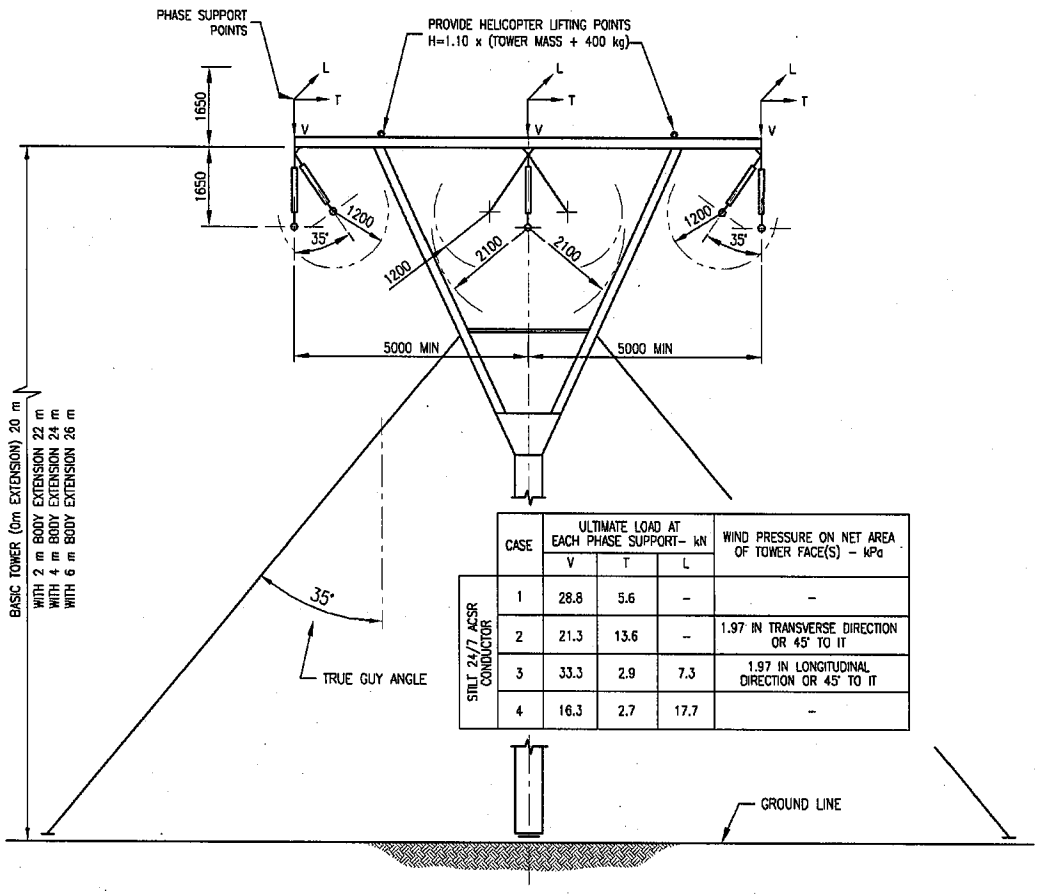
An Electromagnetic Field Affect study has been completed for the line (Teshmont Consultants, 2008), which considers audible noise, radio interference, and electric field and magnetic flux density magnitudes. These assessments are compared to industry standards and/or regulations. For the specified right-of-way width and conductor clearances, all of the parameters are well within recognized limits.

The transmission line technical design optimizes the cost of the conductor versus the line loss, which normally decreases as the conductor gets larger in diameter and hence more expensive. As line losses represent very high monetary value for this project, the cost optimization has resulted in a line capacity much higher than the anticipated maximum generation potential and customer load projected for the Taltson Hydroelectric Expansion Project.

Dezé energy

TALTSON EXPANSION PROJECT 161 kV TRANSMISSION LINE
TYPE 'A' 0-3 DEGREE TOWER

| | |
|---|---|
| PHYSICAL CHARACTERISTICS OF CONDUCTOR | "STILT" 715.5 kcmil, 24/7 ACSR |
| CONDUCTOR | 26.31 mm DIAMETER |
| RATED TENSILE STRENGTH | 113.4 kN |
| MAXIMUM TENSION WITH 19 mm ICE, 0 WIND @ -25°C | 66.7 kN |
| UNIT MASS OF BARE CONDUCTOR | 1.371 kg/m |
| UNIT MASS OF CONDUCTOR WITH 19 mm ICE | 3.850 kg/m |
| UNIT MASS OF CONDUCTOR WITH 12.7 mm ICE | 2.792 kg/m |
| 287 Pa WIND ON CONDUCTOR PLUS 12.7 mm ICE | 1.514 kg/m |
| 287 Pa WIND ON BARE CONDUCTOR | 0.770 kg/m |
| WEIGHT SPAN | 450 m |
| WIND SPAN | 410 m |
| LINE ANGLE | 3° |



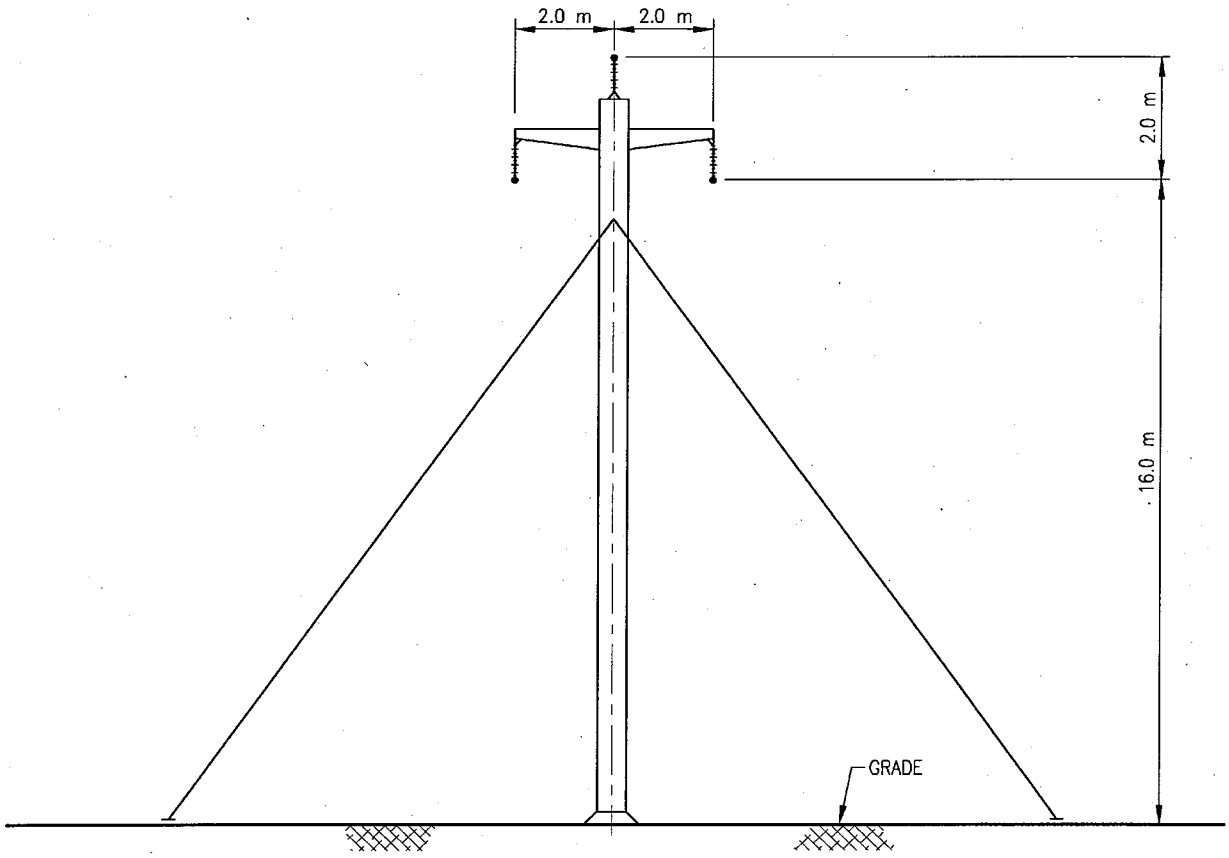

| | CASE | ULTIMATE LOAD AT EACH PHASE SUPPORT- kN | | | WIND PRESSURE ON NET AREA OF TOWER FACE(S) - kPa |
|---|---|---|---|---|---|
| | | V | T | L | |
| STILT 24/7 ACSR CONDUCTOR | 1 | 28.8 | 5.6 | - | - |
| | 2 | 21.3 | 13.6 | - | 1.97 IN TRANSVERSE DIRECTION OR 45° TO IT |
| | 3 | 33.3 | 2.9 | 7.3 | 1.97 IN LONGITUDINAL DIRECTION OR 45° TO IT |
| | 4 | 16.3 | 2.7 | 17.7 | - |

NOTES:
1. THE VERTICAL, TRANSVERSE AND LONGITUDINAL CONDUCTOR LOAD IN CASES 1, 2 & 3 ARE TO BE APPLIED AT ANY ONE, ANY TWO OR ALL THREE PHASE SUPPORT POINTS.
2. THE VERTICAL, TRANSVERSE AND LONGITUDINAL CONDUCTOR LOADS IN CASE 4 ARE TO BE APPLIED AT ANY ONE OR ANY TWO PHASE SUPPORT POINTS. WITH THE LOADS OF CASE 1 ON THE REMAINING PHASE SUPPORT POINT(S).
3. THE LOADS OF ALL LOAD CASES MUST BE MULTIPLIED BY 1.2 FOR FOOTING DESIGN.
4. THE SLOPE OF CONDUCTOR TO THE HORIZONTAL WILL BE -5 AND +25 DEGREES.
5. MINIMUM CLEARANCE FROM CENTER LINE OF CONDUCTOR TO THE EDGE OF TOWER STEEL IS 1200 mm FOR VERTICAL STRING INSULATORS.
6. TRANSVERSE AND LONGITUDINAL LOAD SHALL BE CONSIDERED TO ACT IN EITHER THE POSITIVE OR NEGATIVE DIRECTION.
7. TOWER CONFIGURATION SHOWN IS TO ILLUSTRATE REQUIRED DIMENSIONS ONLY.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

| | | | |
|---|---|---|---|
| **TALTSON** HYDROELECTRIC EXPANSION PROJECT | Developer's Assessment Report 2009 | Typical 161kV Transmission Structure Twin Gorges to Ekati | FIGURE 6.4.8 |

| REV. # | DESCRIPTION | DATE | BY |
|---|---|---|---|
| A | FEASIBILITY STUDY | MAY/06 | M.R. |




AVERAGE SPAN 250.0 m
APPROXIMATE MASS = 900 kg
CONDUCTOR "OSTRICH" 26/7 ACSR

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

| | | | |
|---|---|---|---|
| **TALTSON** HYDROELECTRIC EXPANSION PROJECT | **Developer's Assessment Report 2009** | **Typical 69 kV Transmission Structure Ekati to Diavik Route** | **Figure 6.4.9** |

### 6.4.6.2 TRANSMISSION LINE SECTOR ROUTING DESCRIPTION

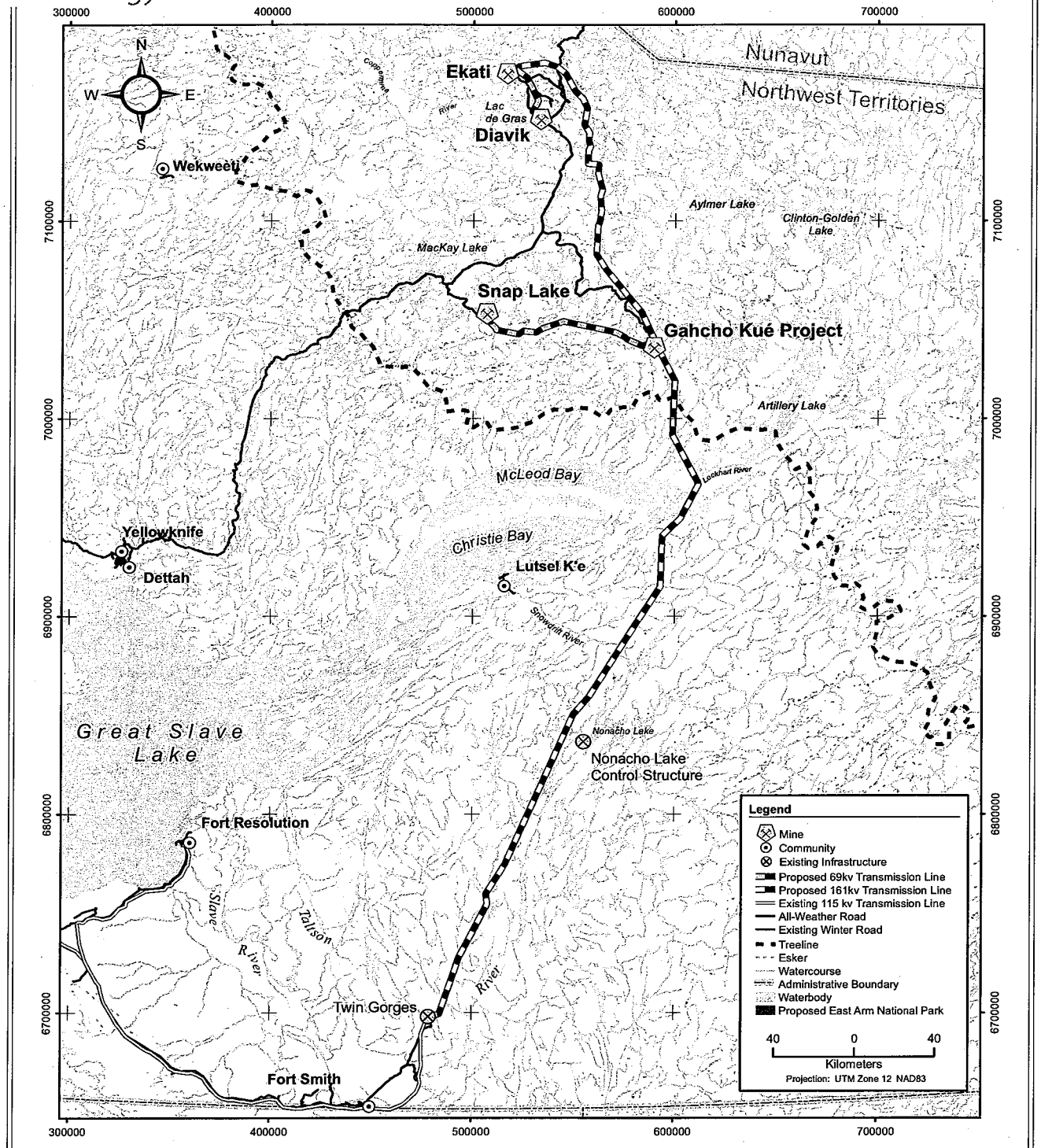
The transmission line route is shown in Figure 6.4.10. A table of key Point of Intersections (PIs) along the route is provided in Table 6.4.4. The transmission line route can be described as having a number of sectors, wherein a sector is characterized by the terrain and particularly the access provisions influencing the construction approach for the line. Five sectors are used to define the line: Southern, East Great Slave Lake, Northern Section, Gahcho Kué-Snap Lake, and Ekati-Diavik (see also Section 6.5 and Figures 6.5.3 to 6.5.5).

With reference to Figure 6.4.10, the Southern section starts at Twin Gorges, and extends to the crossing of the Snowdrift River, a total length of approximately 250 km, all at 161 kV. This section is entirely within the treeline, and would require full right-of-way clearing except in areas of past burn. Terrain in this section is undulating rock ridges with many lakes and a few wetlands. The line route generally stays next to lakes on the rock terraces and ridges. The line generally parallels the Taltson River system and Nonacho Lake, which would allow winter road development for construction access to the actual line routing. A number of camp and staging areas would be required along this section of line during construction – these are described further in Section 6.5. Line construction would be done using a mix of aerial and land-based methods in this section.

The East Great Slave Lake sector of the line commences at the Snowdrift River, where the line turns northward towards Charlton Bay. Inland along the south side of the bay, the line continues approximately 104 km, over Glacier Creek (Pikes Portage) and the Lockhart River to treeline, on the route to Gahcho Kué. Limited access is considered feasible into this remote and high-relief area, and the line would be constructed by aerial methods, using two camp/staging areas located close to the shore of Great Slave Lake, with materials supplied by barge. This sector comprises relatively rugged terrain, including the Macdonald Bluff and the Lockhart River crossing. The ground conditions are primarily rock.

The Northern sector of the line commences at treeline 50 km south of Gahcho Kué, and runs through that mine site and northward to the Ekati Mine site, a sector length of approximately 218 km, all at 161 kV. This sector would not require clearing, and would be constructed primarily through the use of winter access tracks along the line route, supplied by staging areas at the mine sites and several intermediate points. This terrain is low relief, but poses more difficult foundation conditions due to the large-scale presence of broken rock, wetlands, and some zones of permafrost.

The spur sectors - Gahcho Kué to Snap Lake at 69 kV or 161 kV, and Ekati to Diavik at 69 kV, are similar to the northern sector in terrain type and construction approach. Construction of the Gahcho Kué to Snap Lake section would be by winter track developed along the route, with two intermediate staging areas, both accessible from extension of the existing ice roads. The Ekati to Diavik section would be constructed along the existing all-weather road towards Misery Pit, with a short overland section running southward to Diavik built by winter track along the line. No intermediate staging would be required in this sector.




| TALTSON Hydroelectric Expansion Project | Developer's Assessment Report 2009 | Proposed Transmission Line Route | Figure 6.4.10 |
|---|---|---|---|

N:\Active\GIS\2008\07-1328-0013 Taltson\Mapping\MXD\DAR_Figures\YK_139 East Route