

**GAHCHO KUÉ PROJECT
ENVIRONMENTAL IMPACT STATEMENT**

**SECTION 5
TRADITIONAL KNOWLEDGE**

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5 TRADITIONAL KNOWLEDGE

5.1 INTRODUCTION

5.1.1 Context

Section 5 of the environmental impact statement (EIS) for the De Beers Canada Inc. (De Beers) Gahcho Kué Project (Project) is the stand alone section on traditional knowledge required by the *Terms of Reference for the Gahcho Kué Environmental Impact Statement* (Terms of Reference) issued on October 5, 2007. The Gahcho Kué Panel (2007) provided the following rationale for requiring that this section be included in the EIS:

The Panel will rely on both traditional knowledge and conventional scientific knowledge in its deliberations. In the Panel's view traditional knowledge holders are experts in their own right and must be treated with the same respect as scientific experts.

" . . . the EIS must contain a comprehensive, stand alone, section on traditional knowledge. This section must provide sufficient information to allow the Panel and parties, particularly those representing traditional knowledge holders, to evaluate acquisition and analysis of traditional knowledge by the developer."

While Traditional Knowledge (TK) is presented here in a holistic fashion, TK is also discussed where appropriate and where available throughout the EIS. Traditional knowledge will be incorporated in effects predictions and significance determination for individual issues, key lines of inquiry, and subjects of note, as required by the Gahcho Kué Panel (2007). Where traditional knowledge and conventional science come to different effect predictions, the EIS will identify the different conclusions and outline how De Beers proposes to deal with the disagreement.

5.1.2 Purpose and Scope

The purpose of Section 5, Traditional Knowledge, is to meet the Terms of Reference issued by the Gahcho Kué Panel (2007). The entire Terms of Reference document is included in Section 1 (Introduction), Appendix 1.I, of this EIS. The EIS is required to meet the following objectives:

- to provide a summary of efforts made to collect relevant traditional knowledge;

- to explain how traditional knowledge influenced Project design, impact predictions, and mitigation strategies; and
- to provide a plan for future cooperation between the developer and traditional knowledge holders covering the full temporal scope of the proposed Project.

To meet Section 3.2.5 of the Terms of Reference, Section 5 will address the following specific items:

- Which communities and traditional knowledge holders participated in any traditional knowledge studies and how those participants were identified and agreed upon.
- What approach was taken in working with traditional knowledge holders and in the collection and use of traditional knowledge, and why.
- Verify for each community whether there are policies and cultural practices for the acceptable standards for working with traditional knowledge holders and handling the traditional knowledge. Where these do exist, verify how they were adhered to.
- Sources of traditional knowledge that have been used to date, including specific studies, archives, and individuals interviewed.
- When traditional knowledge is collected from existing studies and reports, provide verification that secondary sources are relevant and appropriate.
- Evidence that the traditional knowledge was collected and peer-reviewed with the Aboriginal community or traditional knowledge holders, and approved by the appropriate individuals or organizations.
- How traditional knowledge and traditional knowledge holders have influenced the Project design, impact assessment, and mitigation measures, as well as closure and reclamation planning.

Subject to confidentiality considerations, Section 5 will also include, or have regard to, the following:

- who traditionally (individuals and communities) has used the area;
- who currently uses the area;
- what types of use are noted (historical and current);
- cultural practices and sacred sites;
- hunting, trapping, and gathering;
- social activities;
- land use patterns; and
- cultural significance (including spiritual significance) of the area.

The Gahcho Kué Panel (2007) acknowledged that the methods used in the acquisition, analysis, and presentation of traditional knowledge are at De Beers' discretion, but they must be consistent with the *Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessment*, prepared by the Mackenzie Valley Environmental Impact Review Board (MVEIRB 2005).

5.1.3 Study Area

5.1.3.1 General Location

The Project is situated north of the north-eastern arm of Great Slave Lake in the Northwest Territories (NWT). The Project site is about 140 kilometres (km) northeast of the nearest community, Łutselk'e, and 280 km northeast of Yellowknife (Figure 5.1-1).

5.1.3.2 Study Area Selection

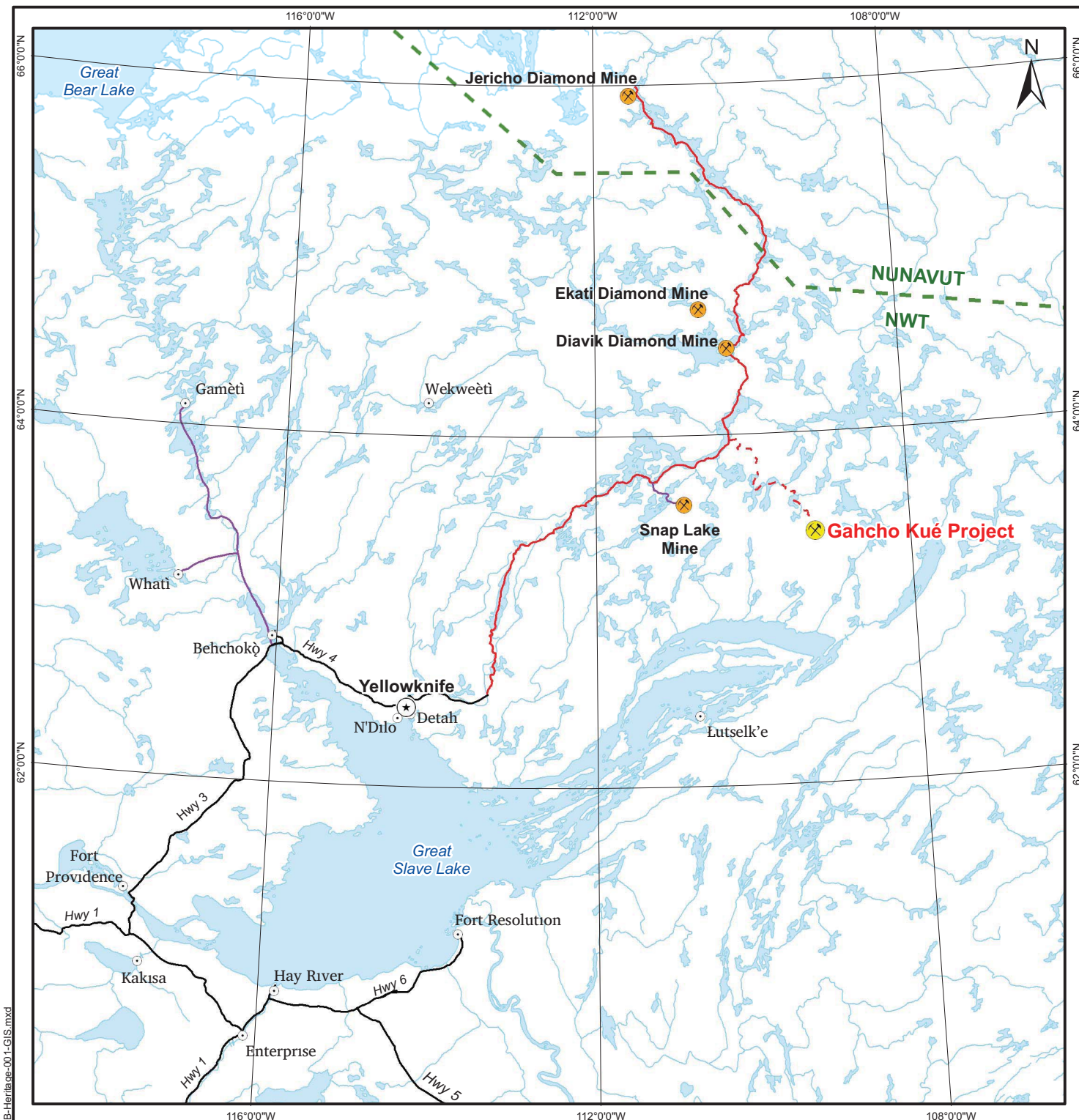
Traditional knowledge is not limited by a specific study area as measured in hectares. The study area for Section 5 consists of the Aboriginal communities that have identified traditional land and resource use areas that could be directly affected by the Project.

In the Terms of Reference, the term community is defined as any potentially affected settlement, town, village, or city as well as any First Nation or Métis group within the Tłı̨chǫ and Akaitcho regions unless otherwise specified (Gahcho Kué Panel 2007). The Tłı̨chǫ region includes those areas as defined in the Tłı̨chǫ Land Claims and Self-Government Agreement (Tłı̨chǫ et al. 2003) and the Akaitcho region includes that part of Treaty 8 that extends into the NWT. Section 5 uses the term community to refer to the specified First Nations and Métis groups within the Tłı̨chǫ and Akaitcho regions.

5.1.3.3 Traditional Knowledge Study Area

The following Aboriginal communities have traditional land and resource use areas that could be directly affected by the Project, and are included in the study area:

- Łutselk'e Dene First Nation (LKDFN);
- Yellowknives Dene First Nation (YDFN);
- Deninu Kué First Nation (DKFN);
- Tłı̨chǫ;
- Northwest Territories Metis Nation; and
- North Slave Métis Alliance.



LEGEND

- Gahcho Kué Project
- Existing Mine
- Territorial Capital
- Populated Place
- Highway
- Existing Winter Road
- Tibbitt-to-Contwoyto Winter Road
- Winter Access Road
- Watercourse
- Waterbody
- Territorial/Provincial Boundary

NOTES

Base data source: The Atlas of Canada

GAHCHO KUÉ PROJECT

Location of the Gahcho Kué Project

PROJECTION:
Canadian Lambert Conf. Conic

DATUM:
NAD83

Scale: 1:3,500,000
50 25 0 50
Kilometres



FILE No:
B-Heritage-001-GIS

DATE:
September 20, 2010

JOB NO:
09-1365-1004

REVISION NO:
8

OFFICE:
GOLD-CAL

DRAWN:
CW

CHECK:
JB

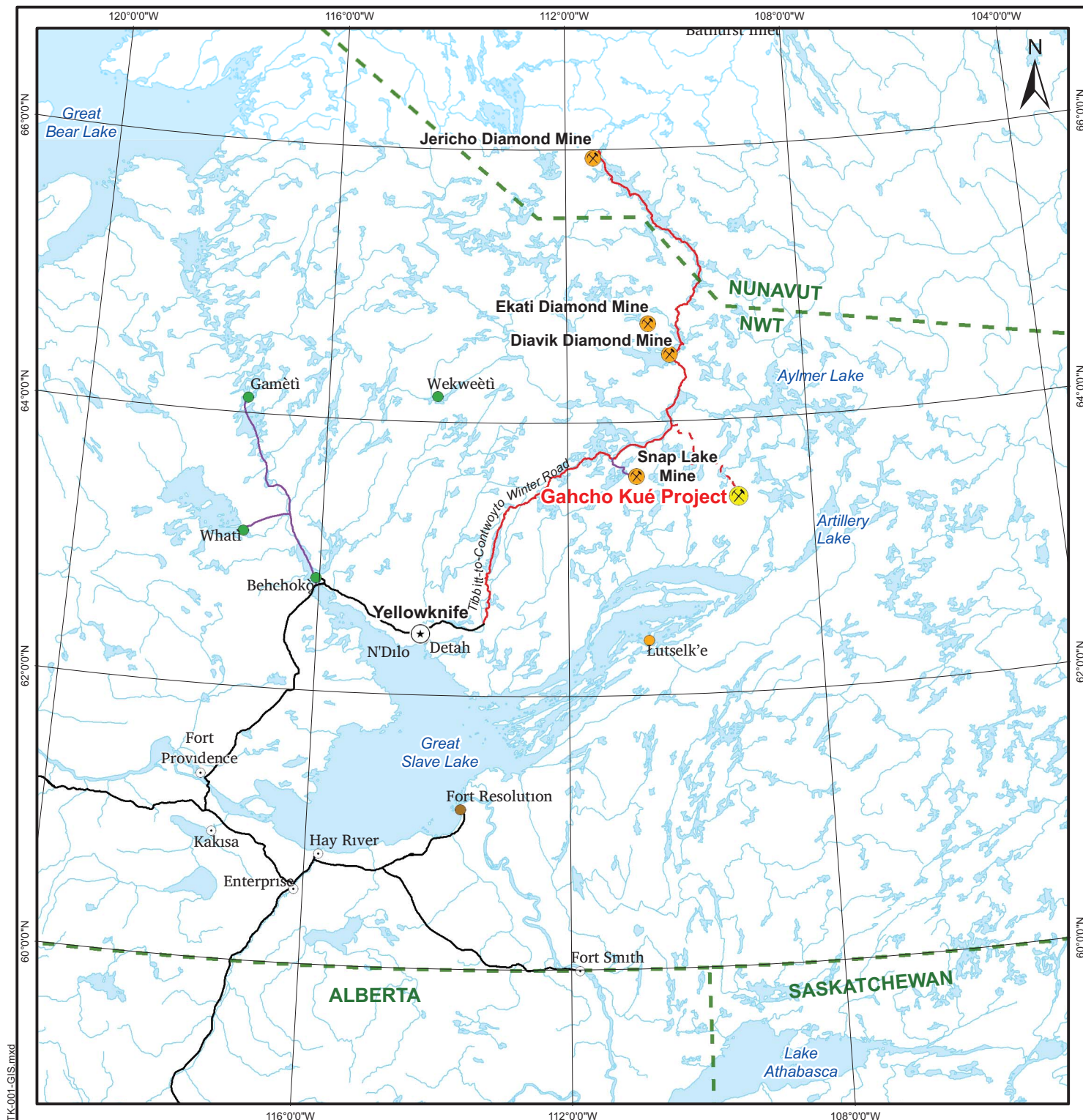
Figure 5.1-1

The location of the communities is shown in Figure 5.1-2. Although the North Slave Métis are a community, they are not identified with a specific location.

5.1.4 Content

Section 5 is the stand alone section on traditional knowledge. The following briefly describes the content under each heading of this section:

- **Traditional Knowledge Program** summarizes De Beers' approach to engagement with Aboriginal communities, which is to ask them how they want to participate in the Project. This includes how they wish to be involved in traditional knowledge studies. This section describes the community engagement program and the status of traditional knowledge and traditional land use initiatives.
- **Łutselk'e Dene First Nation Traditional Knowledge Study** summarizes the process that led to the substantive work undertaken on the LKDFN traditional knowledge study and the methods used to conduct the study and verify the results.
- **Traditional Knowledge Summary from Secondary Sources** briefly summarizes the Traditional Knowledge and Traditional Land Use Baseline (TLU) from Annex M. In the absence of traditional knowledge studies (primary data), the baseline documented the information from secondary sources. The traditional knowledge summary is a brief summary of the traditional knowledge and traditional land use of the LKDFN, YDFN, DKFN, Tłıchǫ, Northwest Territories Metis Nation and North Slave Métis Alliance. Traditional knowledge related to vegetation, wildlife, and fish is included in Section 5.4.
- **Integration of Traditional Knowledge** describes the integration of traditional knowledge in Project design, impact assessment, monitoring and mitigation, and closure and reclamation planning. It explains how traditional knowledge was incorporated in the EIS. The impact assessment sub-section is organized by key lines of inquiry and subjects of note and summarizes the traditional knowledge and concerns related to these topics.
- **References** lists all documents and other material used in the preparation of Section 5.
- **Glossary** explains the meaning of uncommon terms used in this chapter.



LEGEND

- ✕ Gahcho Kué Project
- ✕ Existing Mine
- ★ Territorial Capital
- Populated Place
- Territorial/Provincial Boundary
- Highway
- Existing Winter Road
- Tubbitt-to-Contwoyto Winter Road
- - Winter Access Road
- Watercourse
- Waterbody
- Lutselk'e Community
- Thcho Community
- Yellowknives Dene Community
- Deninu Kué Community

NOTES

Base data source: The Atlas of Canada
The North Slave Metis Community is not identified as a specific location..

GAHCHO KUÉ PROJECT

Aboriginal Communities Located Close to the Project

PROJECTION:
Canadian Lambert Conf. Conic

DATUM:
NAD83

Scale: 1:4,500,000
60 30 0 60
Kilometres



FILE No:
E-TK-001-GIS

DATE:
December 22, 2010

JOB NO:
09-1365-1004

REVISION NO:
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OFFICE:
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CW

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Figure 5.1-2

5.2 TRADITIONAL KNOWLEDGE PROGRAM

5.2.1 Program Strategy

Traditional knowledge (TK) has increased De Beers' understanding of the potential effects of the Project on the land, environment, and communities. The TK has enabled De Beers to improve the design of the Project where possible and to plan necessary mitigation. The far reaching wisdom and knowledge about the land and the environment, along with the spiritual connection to the land that is held by Aboriginal communities is recognized and valued by De Beers as specialized knowledge.

De Beers' Working with Aboriginal Communities Policy (Section 1; Appendix 1.VI), is the basis for its approach to engaging Aboriginal communities in a meaningful way. The policy not only acknowledges the status of Aboriginal people in Canada and their constitutionally entrenched rights, but also recognizes that Aboriginal people have a historical occupation, usage, and reliance on the land. The respect Aboriginal people have for the land and environment is demonstrated daily in how they live their traditions and practices, and how they continue these traditions through generations.

In addition to reviewing existing sources (Annex M), De Beers endeavoured to gather further information through engagement activities (Section 4) with First Nations and Métis communities in the study area. De Beers sought any information the community might be willing to share that would help the company understand the potential impacts of the Project so that the Project design and the impact assessment could be improved. The extent to which secondary (Annex M) or primary source information is available reflects the advancement of the ongoing engagement activities.

The method for acquiring and incorporating primary source TK into the Project and the environmental assessment is part of the approach De Beers used for community engagement and involves the following:

- to approach communities to determine how they want to be engaged, and to provide a variety of engagement options that are flexible and appropriate to each community's needs;
- to take every opportunity to listen to the concerns and advice provided by individuals in the communities during these activities; and then
- to develop the engagement relationship to a point where communities feel comfortable providing specific traditional knowledge contributions

(e.g., a traditional knowledge study specific to the Project, a verified summary of traditional knowledge from secondary sources).

Once provided, the primary sources of traditional knowledge would be presented in this section while secondary source information would be included in Annex M. The TK would then be incorporated into the other relevant sections of the EIS and included in the assessment process.

Existing sources of TK and TLU information that were available and known at the time of EIS preparation were reviewed to identify applicable TK and TLU, which has been incorporated in appropriate sections of the EIS.. As engagement activities progress, additional and available TK and TLU information will be incorporated into the assessment of the Project and provided to the Panel.

5.2.2 Community Engagement Approach

Community engagement activities regarding the Project commenced as early as 1998, as documented in Section 4. The recent community, regulatory, and public engagement (Section 4) adopted by De Beers is the broad approach to involving communities in the Project. Collection of relevant TK is a component of this approach. De Beers incorporated a wide range of engagement activities (described in more detail in Section 4.4) tied to steps in the environmental assessment process, particularly:

- involvement in the Mackenzie Valley Environmental Impact Review Board (MVEIRB) scoping workshops in March and April 2006; and
- initiation of the community engagement program by De Beers in May 2007, which continued to December 2010.

De Beers was an active participant at the MVEIRB community issue scoping sessions. In addition to providing information about the Project, De Beers was there to listen to the participants during the sessions and to be available for one-on-one discussions during breaks.

The community engagement approach included the following sequence, if possible:

- initiating a meeting with a community's leaders;
- engaging the community through community-based activities such as open houses;
- inviting community representatives to the Project site; and

- extending the engagement activities to include specific topics.

De Beers first contacted each community to arrange a meeting with their leadership. At these meetings, De Beers sought direction from the leaders on how to proceed with meaningful engagement of the community and to determine how and when community engagement should proceed. De Beers also hoped to secure support for a return to these communities to hold open houses, public meetings, and interviews.

The purpose of the community open houses and meetings was to ensure that the community had an opportunity to provide feedback. De Beers sought any information the community might be willing to share that would help the company understand the potential impacts of the Project so that the Project design and the impact assessment could be improved. The company also expressed an openness to return to the community on a number of occasions and to take community members to the proposed Project site.

Engagement activities and hence the efforts to advance the acquisition of traditional knowledge was less in the second half of 2008 and 2009 due to the global economic downturn, which resulted in activities on the Project being paused. Project activities, including engagement efforts, were recommenced in 2010.

5.2.3 Traditional Knowledge Approach

The availability of, and access to, TK and community engagement are determined by the communities based on informal discussions with leaders and, eventually, meetings with Chiefs and Councils. Although De Beers has provided information about the Project, initiated discussions and proposed meetings, communities ultimately determine the pace at which discussions with the company advance regarding the incorporation of traditional knowledge in the Project design and environmental assessment of the Project.

De Beers' community engagement strategy anticipated incorporating traditional use of the area surrounding the Project in discussions with the LKDFN, YDFN, NWTMN, NSMA and Tłıchǫ Government specifically. These communities were selected because of their historical use and occupancy of Gahcho Kué (an Aboriginal place name), based on the following sources of information:

- treaty or land claim agreements with the Crown;
- information available from secondary sources;

- De Beers research conducted as part of the Snap Lake Mine environmental assessment (De Beers 2002); and
- information presented to De Beers by the Chief Negotiator for the Akaitcho Land Claim agreement in April 2007.

These communities indicated that traditional knowledge would be available as part of the community engagement process. Discussions regarding the incorporation of traditional knowledge have taken place with all of the above groups, but it is with Łutsek'e that the discussions have advanced the farthest. The extent to which secondary (Annex M) or primary source information is available reflects the advancement of the ongoing engagement activities related to traditional knowledge.

At the time of EIS submission, discussions regarding traditional knowledge for the area that may be affected by Project activities are still ongoing. While De Beers can facilitate the compilation of that knowledge and provide communities with opportunities to discuss traditional knowledge relevant to the Project, the decision to release the information ultimately rests with the knowledge-holder, community, or organization.

Currently, TK specific to the Project is limited. As a result, the EIS has relied on available information from issue scoping and community engagement activities, and secondary sources. De Beers is confident that it has sufficient and applicable TK from secondary sources to incorporate TK into Project design, to predict effects, and to identify appropriate monitoring and mitigation. De Beers is committed to continuing to engage with communities and providing opportunities for discussing the Project and traditional knowledge.

5.2.4 Status of Traditional Knowledge Program

As stated previously, the extent to which secondary (Annex M) or primary source information is available reflects the advancement of the ongoing engagement activities. This section provides the status where engagement activities have progressed to the discussion of traditional knowledge. These first Nations are discussed below.

5.2.4.1.1 Łutsek'e Dene First Nation

The Project is situated in Bedaghé Tué Region, an area traditionally used by the LKDFN. Engagement activities with the LKDFN regarding the Project have been ongoing since 1998. Discussions regarding the development of terms of reference for a traditional knowledge study for the area around the proposed

Project commenced in June 2005. The terms of reference for the study were ultimately finalized in June 2006. As a community-based initiative, the LKDFN proposed to complete a TK study. The primary goal of the study was to present their knowledge of the environment surrounding the Project. Later that month, the Detailed Traditional Knowledge Study Plan (Gahcho Kué Project Traditional Knowledge Working Group 2006) was completed, which provided the specific approach to the TK study. The site visit component of the study was completed in August 2006. As detailed in Table 5.2-1, De Beers and the LKDFN worked together extensively to develop and implement the methods used to complete the LKDFN TK study.

The study objectives were to “improve project planning and design by working with the community to reduce impacts, facilitate meaningful participation in the environmental assessment process, ensure compliance with all regulatory requirements for the use of TK in the environmental assessment, and develop TK expertise for design of Project related monitoring and mitigation issues.” The study was to conform to the *Guidelines for Incorporating Traditional Knowledge in an Environmental Impact Assessment* (MVEIRB 2005). The intended use of the TK study was stated in the Detailed Traditional Knowledge Study Plan. It states that although the TK belongs to the individuals and the community that provide it, “De Beers will be given permission to use the data for the Project ... This data will be included in environmental and socio-economic impact assessments, and developing mitigation plans. The TK report will be included as an appendix in the Developers Assessment Report” .

The components of the study included:

- A detailed work plan
- Identification by the community of the traditional holders that would be involved in the study
- Defining the study methods that included how the information would be validated.

At the time of submission of the EIS, the TK study is not available, as it has not been released by the LKDFN. Discussions between De Beers and the LKDFN to determine when the study will be released are ongoing.

Secondary sources of traditional knowledge were assembled and summarized by consultants for the Project in cooperation with participants in the study. The working group recognized that some TK held by members of the LKDFN has been previously documented in printed material, audio recordings, and maps. It is important to collect and verify this existing information, so that these materials may form a part of the TK study information base. The working group assessed

the relevance and accuracy of all identified data, before data were included in the TK study. Other documents were identified during the course of the study and afterwards; they were used in the Traditional Knowledge and Traditional Land Use Baseline (Annex M). This information is summarized in Section 5.4 and is used in the EIS in the absence of traditional knowledge from primary sources. As stated above, while the value of the secondary source information increases once a traditional knowledge holder familiar with the Project area verifies that the information is applicable for the area in question, De Beers is confident that it has sufficient and applicable TK from secondary sources to incorporate TK into project design, to predict effects, and to identify appropriate mitigation measures.

Table 5.2-1 Summary of Important Discussions and Activities Associated with the Łutselk'e Dene First Nation Traditional Knowledge Study

Date	Participants	Activities
June 23, 2005	Łutselk'e Wildlife, Land and Environment Committee (Łutselk'e WLEC) De Beers AMEC	- discussed developing a TOR for the TK study
August 3, 2005	Łutselk'e WLEC AMEC	- discussed the TOR for the TK study
June 8 to 9, 2006	Łutselk'e WLEC AMEC	- discussed and agreed upon the TOR for the TK study - signed by the Chief De Beers
June 26 to 30, 2006	Łutselk'e WLEC Elders AMEC	- established the Gahcho Kué TK Working Group
June 28 to 30, 2006	Łutselk'e WLEC Łutselk'e WLEC TK Study Coordinator (Study Coordinator) TK Working Group Elders Community researchers AMEC	- reviewed TOR - finalized TK study work plan, study area, topics, and list of interviewees - trained community researchers
July and August 2006	Study Coordinator Community researchers Elders and other TK holders	- study coordinator and community researchers undertook community interviews and mapping sessions
July 13 to 14, 2006	Study Coordinator Community researchers Elders and other TK holders AMEC	- planned field visit (postponed due to weather) - review of work completed to date - discussed next steps
August 11 to 17, 2006	Study Coordinator Community researchers Elders and other TK holders De Beers AMEC	- field visit with 13 community members

Table 5.2-1 Summary of Important Discussions and Activities Associated with the Łutselk'e Dene First Nation Traditional Knowledge Study (continued)

Date	Participants	Activities
January 26, 2007	Łutselk'e WLEC De Beers AMEC	- discussed progress, next steps, and report finalization
March 17 to 19, 2007	Łutselk'e WLEC AMEC	- validation session for final report; some minor changes are recommended
May 15 to 16, 2007	Łutselk'e WLEC	- two-day validation workshop for the final report; report finalized - Łutselk'e WLEC to recommend to Chief and Council that the report is complete and it should be released
October 2 to 3, 2007	Łutselk'e WLEC AMEC	- updated the new Łutselk'e WLEC manager and Wildlife Committee on the TK study, and discussed the process for obtaining Chief and Council's approval to release the TK study report
November 2007 to June 2008	LKDFN De Beers	- discussion between LKDFN and De Beers regarding the release of the study
September 2, 2008	De Beers	- Letter to Łutselk'e requesting an understanding of what is required for Łutselk'e to release the TK study for the Project
September 25, 2008	LKDFN Chief De Beers	Letter confirming De Beers desire to conclude the work contracted to Łutselk'e for the TK study and the importance of the study. It was De Beers' understanding that the work had been completed and the release of the study was pending Chief and Council approval.
June 30, 2010	Łutselk'e Leadership and community representatives De Beers	Presentation of Gahcho Kue Project update and discussion of Gahcho Kue and Snap Lake issues including TK study
September 8, 2010	AMEC De Beers	- e-mail informing DBC that AMEC received a request from LKDFN , Director of the WLEC, for a copy of the TK study report
September 30, 2010	AMEC De Beers	- e-mail from DBC granting AMEC permission to forward an electronic copy of the draft TK study to LKDFN , Director of the WLEC,

TOR = terms of reference; TK = traditional knowledge; WLEC = Wildlife, Lands, and Environment Committee; AMEC = AMEC Earth & Environmental; LKDFN = Łutselk'e Dene First Nation.

5.2.4.1.2 Yellowknives Dene First Nation

The Project is situated in an area traditionally used by the YDFN. During the earlier exploration phase of the Project, Monopros (a wholly-owned subsidiary of De Beers) met with the YDFN representatives on many occasions. They met with the Chiefs and Council (March 30, 1998) to discuss the winter program, and community representatives (August 25, 1998) to discuss the summer and upcoming winter program. Monopros also met with the YDFN land and environment committee to discuss potential winter access routes. The YDFN advised Monopros to avoid Lake of the Enemy and suggested that Monopros use several elders to help. Based on the YDFN advice, this route was avoided. Other aspects of the route were discussed including route access, emergency aid, and a firearms ban near the camp. Monopros met with the YDFN on April 9, 1999 to discuss the archaeological survey and a TK study of the Winter Access Road route. Archaeological updates also occurred on June 22, 1999, November 8, 1999, and November 7, 2000.

Between June 2007 and April 2008, De Beers approached the leadership of the YDFN requesting an opportunity to meet with Chiefs and Council. The purpose of the meeting was to re-introduce the proposed Project and discuss an approach for community engagement.

De Beers was not successful in securing an introductory meeting with the Chiefs and Council of the YDFN to discuss the Gahcho Kué Project, although a number of meetings were held with YDFN leadership representatives, starting with a meeting with the two Chiefs and the YDFN Community Negotiator on June 26, 2007. At that time, the Chiefs indicated that Traditional Knowledge relevant to the area of the proposed Project was available and should be considered by De Beers. They suggested that the way forward with respect to community engagement by the company and for the incorporation of Traditional Knowledge would need to be discussed and decided by Chiefs and Council. After many attempts between June 2007 and May 2009, by De Beers to obtain a meeting opportunity with Chiefs and Council regarding both its NWT Projects, YDFN granted De Beers an opportunity to meet with Chief and Council on May 4, 2009, but only to address matters related to the Snap Lake Mine, suggesting the Gahcho Kué Project would have to be addressed in a subsequent meeting. Between May 2009 and December 2010, De Beers continued to make attempts to advance discussions regarding community engagement and the incorporation of Traditional Knowledge for the Gahcho Kué Project with YDFN. This involved meetings and written correspondence between De Beers and the Chiefs and De Beers and their negotiator. In November 2009 both the YDFN and De Beers signed a letter of understanding that committed the YDFN to making an opportunity available by December 11, 2009 for De Beers to meet with the elders

senate and with the community regarding the Gahcho Kué Project. These opportunities have not yet been made available to De Beers.

Following a meeting with the Chiefs and their legal counsel in October 2009, De Beers provided the YDFN with a written offer to undertake a Traditional Knowledge Study regarding the Gahcho Kué Project. To date there has not been a response from the YDFN

De Beers did host a delegation from the YDFN at the Gahcho Kué Project site in the summer of 2010, and at that time was encouraged to hear that working with De Beers on a Traditional Knowledge Study was of interest to members of the delegation and the Chief that was in attendance.

On November 3, 2010 De Beers held a meeting with the Chiefs to discuss the way forward on Gahcho Kué community engagement and to follow up on the incorporation of Traditional Knowledge into the Project and De Beer's letter of December 2009 regarding a proposed Traditional Knowledge Study. Based on that meeting, it remains our understanding that the form of community engagement and the way forward for a Traditional Knowledge Study still requires a meeting between De Beers and Chiefs and Council, and that this will be scheduled by the YDFN at a time that is mutually agreeable. De Beers is committed to meeting and has followed up in writing indicating we are keeping our schedule open to advance this discussion and we look forward to having this opportunity.

Based on the above, Traditional Knowledge in the form of a primary study with the YDFN is not available at this time, however the company remains committed to continuing to provide opportunities to further advance this discussion and to work with the YDFN to ensure any traditional knowledge it wants to provide is incorporated into the Project.

5.2.4.2 Tłıchǵo Government

The Project is situated in Mǫwhí Gogha Dé Nı́ıhtłée, the traditional area of the Tłıchǵo people, as identified in the Tłıchǵo Land Claims and Self Government Agreement signed August 25, 2003 (Tłıchǵo et al. 2003).

In 2007, De Beers contacted leaders in the Tłıchǵo communities to arrange meetings with the community leaders to re-introduce the Project, seek permission and direction regarding future engagement with the Tłıchǵo communities, and to confirm a way forward that would respect the protocols and needs of the communities. De Beers was granted permission to proceed with

public meetings in all four communities. The meetings were held in August 2007 at Whatì (August 27), Wekweètì (August 28), and Gamètì (August 28) and in Behchokò (September 6).

On September 18, 2007, De Beers also hosted the Tłıchǵ chiefs at the Project site, which included discussions and a tour of the site.

Open houses and community meetings were held at Behchokò (October 1 and 2, 2007), Gamètì (October 23 and 24, 2007), Wekweètì (October 29 and 30, 2007), and Whatì (November 16 and 17, 2007). The focus of these meetings was to seek information related to the key lines of inquiry and subjects of note, however De Beers recorded all concerns and advice expressed by community members. The community engagement program with the Tłıchǵ communities of Behchokò, Gamètì, Whatì, and Wekweètì is outlined in detail in Section 4.

De Beers also approached the Tłıchǵ Government to initiate discussions related specifically to the Tłıchǵ people's traditional uses of the land surrounding the Project site. On November 13, 2007, De Beers sent a letter to the Executive Officer of the Tłıchǵ Government to seek direction on how to engage the community and to determine the most appropriate contact person within the Tłıchǵ Government. Wanting to make sure they had sought the Tłıchǵ Government's engagement appropriately, De Beers followed-up with a phone call on March 7, 2008 and a subsequent letter regarding this request and was referred to the Director of the Lands Protection Department.

On April 15, 2008 De Beers met with a representative of the Tłıchǵ Government. The Tłıchǵ Government confirmed that the Project is located on the eastern boundary of the traditional area of the Tłıchǵ people, and Tłıchǵ use of the area might be limited. For further information, the Tłıchǵ Government referred De Beers to a Traditional Knowledge Researcher for the Tłıchǵ Government.

On March 19, 2010, De Beers discussed traditional land use with two representatives of Tłıcho Government. They confirmed the Project was located in a shared area with the Akaitcho Dene First Nation and that the primary user of that area was the Yellowknives Dene First Nation. At that time, De Beers explained the interest in confirming that the company had a good understanding of any traditional land use land of any potential impacts the Project may have on the Tłıcho. One of the representatives confirmed that they would discuss this matter internally and would contact De Beers in the future regarding how to move forward on incorporating Traditional Knowledge.

On November 3, 2010, De Beers met with the Chief Executive Council for the Tlicho Government (the Grand chief and all four Chiefs). During that meeting, De Beers confirmed its interest in having a solid understanding of traditional use of the land in the Project area, and followed up on how to move forward with incorporation of Traditional Knowledge for the Gahcho Kué Project. The Tlicho Government confirmed that De Beers should proceed with meeting a representative who was undertaking a project to document Traditional Knowledge for the Tlicho Nation. De Beers was advised to work out an arrangement on a Traditional Knowledge Study with the Project Manager that would meet both the Tlicho Government's TK Project mandate and De Beers' requirements for the Gahcho Kué Project. The meeting was held with the Project Manager in December 2010. The Tlicho will be provide De Beers with a suggested approach in 2011. In 2010 De Beers remains committed to providing opportunities and continuing to work with the Tlicho to incorporate Traditional Knowledge into the Project that the Tłıchǫ makes available to the company.

5.3 TRADITIONAL KNOWLEDGE SUMMARY FROM SECONDARY SOURCES

The EIS has relied primarily on available information from secondary sources. The section presented here is a brief summary of the Traditional Knowledge and Traditional Land Use Baseline (Annex M), focusing on the Aboriginal communities. Traditional knowledge related to wildlife, fish, and plants is summarized under the appropriate key lines of inquiry or subjects of note in Section 5.5.

The Project is located within traditional land use areas of the LKDFN, YDFN, DKFN, Tłıchǫ, the NWT Metis Nation and the North Slave Métis Alliance.

De Beers is confident that it has sufficient applicable TK from secondary sources to incorporate TK into project design, predict project effects with confidence, and identify appropriate mitigation measures.

5.3.1 Łutsek'e Dene First Nation

Traditionally, the Dene were a nomadic people whose survival depended on their ability to harvest natural resources. In most community reports, the LKDFN refer to themselves as Denesǫline. The Denesǫline traditional territory includes the area surrounding the Project. The area known as *Kakinēne* is an important transportation and fishing area within the traditional territory that extends from MacKay and Aylmer lakes in the north to McLeod Bay in the south, and from Artillery Lake in the east to McKinlay Lake in the west.

Traditionally, the Denesöline hunted in the fall, trapped in winter and spring, and made dry meat and harvested birds, fish, and berries in the summer and fall. Denesöline often harvested around Artillery Lake, but would also travel to Fort Reliance and Fort Resolution. The Denesöline would return to the north shore of Great Slave Lake in the spring after fall trapping and trading. Gahcho Kué is located in the Bedaghé Tué Region. This area was traditionally used in the fall and winter to trap white fox and other fur-bearing animals. However, trapping is no longer common in this area as few people travel to the barrenlands.

Fish have been and continue to be an important part of the Denesöline diet. They are harvested for subsistence and often dried and fed to dogs. Species caught include whitefish, grayling, northern pike, herring, trout, and coney. Fish provide variety to a diet founded upon caribou meat, and fish become the primary sustenance to the Denesöline when caribou are away at calving grounds.

Today, many Denesöline continue to hunt, trap, and gather for spiritual, cultural, nutritional, and economic purposes. While harvesting in the barrenlands is less frequent, small animals and caribou are harvested in the fall and winter, fish are harvested in summer and fall, and ducks and geese are harvested in the spring and fall. Contemporary harvesting occurs in areas situated closer to communities such as Łutsek'e and Artillery Lakes.

The most important cultural sites for the Denesöline are around Artillery Lake and Parry Falls (LKDFN 2005, internet site). Artillery Lake and Parry Falls are about 65 and 67 km, respectively, from the Project site. Artillery Lake is important for spiritual, cultural, social, and economic reasons. Many Denesöline travel to the area to harvest caribou, trap furbearing animals, fish, and be together on the land. As a result, there are numerous cabins, campsites, traplines, and archaeological sites in the area (LKDFN 2005, internet site). Parry Falls (Ts'ānkúí Theda) is located downstream of Artillery Lake, near Fort Reliance, and has been referred to as the most important spiritual site for the LKDFN. People travel to the "Old Lady of the Falls" to pray and ask for guidance (LKDFN 2005, internet site).

5.3.2 Yellowknives Dene First Nation

The people of the YDFN are Chipewyan Athapaskan-speaking people. Prior to the 19th century, the YDFN harvested along the northeast shore of Great Slave Lake, south along the Coppermine and Yellowknife rivers, and further east into the barrenlands. Traditionally, the YDFN way of life corresponded with migration routes of the Bathurst caribou herd. During the fall and spring migrations, caribou were driven into large corrals and harvested in large numbers for food,

tools, and shelter. Between the 19th and 20th centuries, their range shifted in response to relationships with neighbouring groups as well as the location of trading posts. Yellowknives intermarried with the Chipewyan of Fort Resolution and the Tłıchq̓ on the east arm of Great Slave Lake. Today, descendents are situated in Yellowknife Bay, Łutselk'e, and Fort Resolution. Seasonal cycles for the Yellowknives are not reviewed in existing literature, but given the geographic proximity and similar culture to the LKDFN, it is likely that the YDFN seasonal cycle would be similar.

5.3.3 Deninu Kué First Nation

Traditionally, the DKFN were nomadic people whose harvesting activities focused around the Fort Resolution area. When Fort Resolution was established in 1786, the Chipewyan began to refer to any Chipewyans who traded at the fort as Dene Nu Kwen. Therefore, the DKFN is not a specific geographic group, but includes any Chipewyans who traded at the Fort. The territory has changed throughout time and overlaps with much of LKDFN and YDFN territories. It extends from Fort Resolution and expands into the North Slave Region. By 1940, the Chipewyans' travel route was drastically reduced to include southern parts of Great Slave Lake, including the eastern arm. The DKFN would sometimes make arrangements with the Łutselk'e to trap in the barrenlands.

The DKFN were nomadic and relied on harvesting resources by hunting, fishing, and trapping in forested areas and barrenlands. In the summer and fall, animals were hunted, and meat and fish were dried. Animals were trapped in the spring and winter. The DKFN relied mainly on caribou, moose, and fish. Today caribou and fish are the main food sources.

5.3.4 Tłıchq̓

The Tłıchq̓ (formally called Dogrib) were nomadic people whose subsistence way of life involved hunting, trapping, and fishing throughout their territory. The traditional territory is one of the largest in the NWT and extends north-south from Great Bear to Great Slave lakes, and east-west from Contwoyto, Aylmer and Artillery lakes to the east side of the Mackenzie River. Within this larger territory are six regional bands that are made up of local groups or "task groups" comprised of several families (Helm 1968, 1972, 1981). Membership to task groups was dynamic, and people would join depending on their social or resource harvesting preferences.

Since the early 19th century and at the beginning of the fur trade, many Tłıchq̓ would travel to Old Fort Providence, Fort Simpson, and the Norman, Franklin,

Confidence, Resolution, and Rae forts at various times. Trapping became more important to the Tłıchǫ after 1900 with the opening of the Hudson's Bay Company, and the wage income continued to be important until 1940. During the 1960s, furbearing animals were harvested in the spring and fall, and larger animals and fish were harvested throughout the year. For most of the year the Tłıchǫ lived in fishing camps throughout the territory. In the past, caribou were the main staple of the Tłıchǫ diet. The animals were harvested mainly at Snare Lake during the spring migration to the calving grounds.

Today, caribou continue to be an important food source and the Tłıchǫ harvest more Bathurst caribou than any other group in the NWT. In addition to caribou, fish are an important resource for many Tłıchǫ families.

5.3.5 NORTHWEST TERRITORY MÉTIS NATION

The Northwest Territory Métis Nation (NWTMN) was previously known as the South Slave Métis Tribal Council, and is the umbrella organisation for the Fort Resolution Métis Council, the Hay River Métis Government Council, and the Fort Smith Métis Council (INAC 2007). The NWT Métis represented by the NWTMN are the direct descendants of the people who signed Treaty 8 at Fort Chipewyan, Smith's Landing, and Fort Resolution (NWTMN 2007).

In 1996, the NWTMN, along with the GNWT and Government of Canada, signed the NWTMN Framework Agreement to begin negotiations on land, resources and self-government, and in 2002, the same governments signed an Interim Measures Agreement (Canada 2002). The Interim Measures Agreement was signed to help advance negotiations, and among other things, set up a process whereby the NWTMN will pre-screen applications related to land use permits, water licences, disposition of the surface of Crown lands, parks and protected area. The Interim Measures Agreement also provided that the following activities of the GNWT will be pre-screened by the NWTMN:

- Disposition of Commissioner's Lands;
- Forest management;
- Tourism establishments and outfitter operations;
- Parks and protected areas; and
- Such other activities as the parties may agree (SSMTC et al. 2007).

The lands covered by the Interim Measures Agreement (SSMTC et al. 2007) include an area that overlaps the proposed Project.

5.3.6 North Slave Métis Alliance

The Métis of the NWT are descendents of the 18th century Dene women and French/Cree men who originated from the Prairies, the Great Lakes, and Old Quebec. The North Slave Métis Alliance is a registered Society under the NWT Societies Act, and identifies its members as descendents of two founding families: the Laffertys and the Bouviers, who have historical connections to Old Fort Rae and Fort Providence (NSMA 1999, internet site).

The Métis travelled throughout the North Slave Region on numerous lakes and onto the barrenlands. They focused on a wage income associated with the fur trade and supplemented their income by harvesting local resources mainly around Old Fort Rae, Fort Providence, and Fort Resolution. The Métis were more intense trappers than many First Nation groups and tended to focus on hunting to provide meat and fur to the forts. The Métis participation in the wage economy was a defining factor that distinguished them from their Dene relatives. During the 1930s, many Métis continued to carry out their traditional practices of hunting, trapping, and fishing. By the mid-1930s, many Métis moved to Yellowknife to look for economic opportunities. Today, fewer North Slave Métis continue to supplement wage income with traditional harvesting activities. However, the North Slave Métis harvest caribou for food, clothing, and tools. Caribou and traditional meat continue to make up a large percentage of the Métis diet.

5.3.7 Cultural Sites near the Project

Several LKDFN elders had cabins situated near Kennady Lake and would travel in the area to hunt and trap. To the best of De Beers knowledge, no cabins or trap lines are expected to be impacted by the Project. The Denesoline travelled to the barrenlands on foot, by dog team, and by canoe. Four main trails that led to the barrenlands were identified. They began at the shore of Great Slave Lake and lead north along the Lockhart River, MacKay Lake, Aylmer Lake, and Bedford Bay. While no LKDFN cultural sites were identified near the Project, eskers and treed areas on barrenlands have been identified as important areas for shelter, fuel, fresh water, and hunting since eskers support animals that inhabit the barrenlands such as caribou, wolves, and bears. Fish are also found in little lakes along eskers.

Based on the review of existing literature, there are no culturally significant sites for the LKDFN, YDFN, DKFN, Tłı̨chǫ, or North Slave Métis Alliance within the Kennady Lake area. However, it was stated that DKFN cultural sites are more likely to be found closer to Fort Resolution such as on Little Buffalo River, Rocher

River, Deskataway Lake, and Simpson Island. While some people travelled through the barrenlands around Snowdrift Lake, it is unclear where in the barrenlands they travelled. The Tłıchǫ cultural sites are more likely to be found around Snare Lake (an important caribou harvest location) and Rae (including Old Fort Rae). The reviewed sources also indicate that the Ek'ati area was also important for harvesting. Finally, Métis cultural sites are more likely to be found near Fort Rae (including Old Fort Rae), Fort Resolution, and Fort Providence. According to North Slave Métis Alliance (NSMA 1999, internet site), it is not common to find Métis graves in the barrenlands because the body was typically removed if a Métis person passed away.

5.4 INTEGRATION OF TRADITIONAL KNOWLEDGE

5.4.1 Contribution to Project Design

Although Traditional Knowledge (TK) specific to the Project is not available at the time of the submission of this EIS, through a thorough review of TK in secondary sources, the development of the Snap Lake Mine and discussions with Elders from the LKDFN during the visit to the proposed site of the Project, De Beers has gained an appreciation of the importance of the land, water, and animals to Aboriginal communities. The concerns raised had consistent themes based on secondary sources. Based upon this understanding, changes to the design and execution of the Project have been made. Some of these are presented below as examples; many more are presented in Section 5.5.2 since they relate directly to concerns from TK holders described in sub-sections 5.5.2.1 to 5.5.2.8. Additional design alternatives will be considered based upon the site specific TK received. De Beers understands that TK can enable the company to improve the design of the Project.

Mine Roads

I went to the mines this summer to check out the caribou. They don't like those mine roads. They're too high for them to get across, and they have sharp boulders on the sides where caribou can get hurt from falling or getting stuck. We even drove in a truck on the road, and saw the caribou having trouble going up and down the sides of the road. It's no good, and it's no good for us Dene people. Those mines should do something about this, or maybe soon our caribou will be all gone (LKDFN 2003:70, internet site).

The concern arising from the TK Study program that Project roads may cause difficulty for, or injury to the caribou was incorporated into the environmental design features. For example, road berms will be covered with small-size granular material to limit injury hazards to wildlife crossing the roads; low profile

roads will be used so that they do not act as a barrier to movement for wildlife; and snow berms will be removed from the Winter Access Road so that they do not act as a barrier to wildlife movement. A detailed presentation of the environmental design features is found in Section 7.4.1, Table 7.4-1 of the Key Line of Inquiry: Caribou.

Winter Road

De Beers considered three routes for the Winter Access Road to the Project (Section 2.3.4, Figure 2.3-10). One included a route from the Tibbitt-to-Contwoyto Winter Road through Lake-of-the-Enemy to Kennady Lake. Lake-of-the-Enemy is a significant cultural location for Aboriginal people. The YDFN requested that De Beers not use the route because of its importance. There are heritage sites and graves near Lake-of-the-Enemy. Because of these concerns, the central route alternative was discarded early in the analysis of alternatives.

Use of Mine Rock

Mine rock will be used for the construction of roads, dykes, and cover material for closure and reclamation. This unweathered rock has sharp edges and angles. Use of mine rock at the existing diamond mines has raised concerns about the possibility of caribou breaking their legs or being injured as they pass over mine rock used on the mine sites. To reduce the potential for caribou to be injured as a result of coming into contact with mine rock, the following will be done:

- The number of roads constructed at the mine site will be kept to a minimum. Where possible, the roads will be constructed with smaller sized rocks. Embankments and berms will be kept to a minimum height that meets engineering as well as health and safety requirements.
- Consideration will be given to designing the mine rock piles and processed kimberlite containment facilities in such a way that caribou are diverted away from these structures. The design will discourage their movement up the slopes where they could become injured (e.g., the slopes and tops of piles will not be vegetated).

Processed Kimberlite Containment Facilities

Traditional knowledge studies also identified concerns that include the possibility of caribou getting into tailing dumps/ponds (i.e., processed kimberlite containment [PKC] facilities). When asked why the caribou might be attracted to the tailings area, the elders gave three reasons. Some elders said that the caribou eat different kinds of mud (that is beneath the lichen) and may be mistaking the tailings for the natural muds. Other elders simply said that the tailings area was on their migration route. Another elder qualified the statement about migration stating that not all the caribou pass through the tailings area.

"The caribou pass all over this area" (LKDFN 1999:11). As a possible solution, the Denesoline recommended that these areas be fenced or blocked off so that the caribou can not access them (LKDFN 1999). Where ever possible, secondary source TK was used to help identify potential effects, and environmental design features and mitigation to limit impacts to the environment.

The processed kimberlite (PK) facilities areas are comprised of the Fine PKC Facility and the Coarse PK Pile. The most effective mitigation is progressive closure of these facilities. The Fine PKC Facility will be covered by coarse PK and then mine rock. The Coarse PK Pile will also be covered by mine rock. At closure, there will be no pond or mud to attract caribou.

Monitoring

The need to understand what is happening to the land, water, and wildlife through monitoring is a common comment made regarding mining in the north. Monitoring programs are an important component for the management of Project related effects and are required as part of the regulatory process. These programs form part of the environmental management system (EMS) for the operational management of the Project. They might indicate the need for improved or modified design features that can be considered through adaptive management and implemented if appropriate. De Beers understands that TK about the land and the environment has a different perspective than western science. Where provided, traditional knowledge will be used to improve monitoring programs.

5.4.2 Contribution to Impact Assessment

Upon completion of the TK and Traditional Land Use (TLU) study (Annex M), relevant information was distributed to each of the following disciplines: air quality, water quality, hydrology, noise, vegetation, wildlife, fisheries, and soils, terrain, and geology. Where relevant, the information from the TLU study (Annex M) was included as part of the existing conditions and also included in effects analysis, modelling, and mitigation plans.

This section addresses how TK was incorporated into the impact assessment. Key lines of inquiry and subjects of note that are directly related to the environment (e.g., air, water) and organisms (e.g., vegetation, fish, wildlife) are included. The remaining subjects of note are not included as headings because the concerns are already addressed in the following sub-sections (e.g., traffic and road issues are discussed in relation to wildlife such as caribou) or do not have a traditional knowledge component (e.g., alternative energy sources). For each

key line of inquiry and subject of note included in this section, the following is provided:

- brief section outlining the relevant issues raised during the community scoping sessions;
- summary of the available TK for the respective key line of inquiry or subject of note, including a summary of concerns raised by the community;
- summary of how the TK that was incorporated into the existing environment section; and
- how the concerns were addressed in the pathway and effects analyses.

5.4.2.1 Key line of Inquiry: Caribou

5.4.2.1.1 Issues from Scoping Workshops

During the MVEIRB (2006) Scoping Workshops, the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò identified impacts to caribou as important. Communities believe that caribou numbers have been declining in recent years, and with consensus among Aboriginal communities that caribou are in poor health, any impacts on caribou are of greatest concern. Caribou are the main food source for traditional land users and play an extremely important role in Aboriginal culture. Threats to caribou are seen not just from the proposed development alone but cumulatively from all the diamond mines, mineral exploration, and other activities within their range. Caribou can be impacted in many ways, from sensory disturbance to air quality impacting their food.

Scoping concerns for caribou include roads, which are seen as a major impediment to caribou migration by some, especially given the heavy traffic in recent years. Roads pose a hazard to caribou attempting to cross them. Roads also open up access for hunters or recreational users. Road effects include on-site roads, the Winter Access Road from MacKay Lake, and the Tibbitt-to-Contwoyto Winter Road (MVEIRB 2006:38).

In addition to considering Aboriginal concerns arising from the community scoping sessions, the assessment also considered issues from the TK study program.

5.4.2.1.2 Traditional Knowledge

Based on the reviewed TK and TLU information (Annex M), caribou was, and continues to be, the most important resource harvested by Aboriginal communities with traditional lands near the Project and, as a result, they have developed a wealth of information about these animals. Due to the importance of caribou, TK holders have spent considerable effort to record knowledge about them, including their food, migrations, health, and population (LKDFN 2003, internet site, 2005, *internet site*; Dogrib Treaty 11 Council 2001, 2002, internet site).

Caribou Food

According to the reviewed TK and TLU information, caribou consume a range of vegetation including lichen (white, black, yellow, gray reindeer lichen, northern reindeer lichen, Iceland moss, hair lichen, leaf lichen-green kidney), grass, sedge, cranberry leaf, willow leaf, cloudberry leaf, blueberry leaf, birch leaf, crowberry, and mushrooms (LKDFN 1999; Dogrib Treaty 11 Council 2001). The reviewed sources also suggest that caribou will eat dirt (LKDFN 1999).

This lichen you see all around on the rocks is the main food of the caribou. They eat it all the time. Sometimes where there is lots of caribou the rocks will be just bare, because the caribou have eaten all the food (JF in LKDFN 2001a:29).

Caribou Migration

According to the reviewed TK and TLU information (Annex M), caribou migrate through the barrenland region twice a year: once in the fall and once in the spring and that during these migrations the caribou pass through Kennady Lake (LKDFN 1999). The Tłı̨chǫ report that in March and from November to December the caribou can be found around Snare Lake (northwest of Gahcho Kué) in large numbers as they migrate to their summer calving grounds or winter feeding grounds (Helm 1981).

Fort Resolution Elders (1987), report that members of the DKFN traditionally harvested caribou around Rocher River and as far away as Łutsek'e. In more contemporary times, the DKFN travel to Thelon River Basin to hunt caribou (DKFN 2007, internet site). According to the reviewed TK and TLU information, a number of people in the DKFN community are concerned that they have to travel farther than they did in the past to harvest caribou and believe the species population is decreasing (DKFN 2007, internet site).

*....It's easy to hunt caribou because there are a lot of them in a herd....
In the old days, there used to be a lot of moose and a lot of other*

animals to hunt. Now, it isn't like that. You have to go a long way to hunt caribou now (Elder AF in Fort Resolution Elders 1987: 29).

The reviewed TK and TLU suggests that caribou migration depends on a number of factors such as temperature, habitat, fires, presence of mosquitoes and black flies, and the actions and location of people. It was also suggested in the reviewed sources that when the caribou are migrating they will try to avoid rocky areas and will often travel along eskers where it is easier for them (LKDFN 2001a).

Caribou always move along eskers when they are travelling through this kind of land. Musk-ox too. That is because it is smooth travelling compared to the rough rocks elsewhere (JM in LKDFN 2001a:17).

See how rocky it is here [Na Yaghe Kué Region]? Caribou have real trouble going through this kind of land. It is really rough for them. If there is an esker they can pass through (JF in LKDFN 2001a:19).

The Tłıchǫ have documented caribou harvests from 1917 to 1998 and found that the distribution of harvests tend to rotate around Snare Lake:

- in the early years harvests were east of Snare Lake;
- from 1925 to 1928 harvests were between Snare Lake and the barrenlands around Mesa Lake, Lac de Gras, Point Lake, and MacKay Lake;
- from 1929 to 1946 harvests were typically southwest and east of Snare Lake and to Rae-Edzo and Lac de Gras;
- from 1949 to 1961 harvests were distributed north-south along the river system between Great Bear Lake and Great Slave Lake; and
- from 1962 harvests were west of Snare Lake to Lac de Gras, Point Lake, and Mesa Lake (Dogrib Treaty 11 Council 2001).

According to the reviewed sources (LKDFN 2005:55, internet site), in 2002 and 2003, the caribou migrated through Artillery Lake (southeast of Gahcho Kué) in what the LKDFN refer to as the “normal” way, although some hunters noted that the caribou were more spread out than usual. In 2004 and 2005, the herd was considered to be further away from Łutselk'e. The identified TK and TLU information suggests that some LKDFN hunters were concerned that there were “less animals than there used to be in that area” (eastern side of Artillery Lake) and that the caribou were late and were “crossing at different locations than they used to, migrating more towards the north shore of Artillery Lake and not through the traditional crossings.” Two explanations were proposed for why the caribou

were migrating further away from Łutselk'e. One explanation suggests that forest fires have burned caribou habitat. Another explanation is that mining and other development activity is stressing the caribou.

One of the reasons that we don't get as much caribou around our area is because of the forest fires, they've burnt all the caribou's food (Elder NA in LKDFN 2005:56, internet site).

The caribou don't hang around as they used to. Now they tend to be far away. I believe this is due to the environmental mix-up by the mining companies, destroying their [the caribou] migration and food (JM in LKDFN 2005:33, internet site).

The Bathurst caribou were thought to be extremely skinny this past winter, and people are attributing this to the greater numbers of disturbances they have to migrate around (i.e., diamond mines). The animals are spending more time running away from disturbances and are having to travel great distances to go around or otherwise avoid these disturbances, which means they spend less time feeding and are more stressed (LKDFN 2005:56, internet site).

According to the reviewed TK and TLU, a number of LKDFN hunters expressed concern about what they considered to be an abnormal migration of caribou in 2004 and 2005. However one source suggested that the caribou have migrated further from Łutselk'e in the past.

I was 9-10 years, old that time, 1950s. After that during 50s, 60s, people used to stay around there [McKinlay Lake], there's no caribou on the south side [of the East Arm]. They go north. Use to haul meat from here [McKinley Lake] to Snowdrift [Łutselk'e]. They did that a few times and then 70s, same thing there was no caribou on this side [south side of the East Arm], 70s there was lots over here, north shore, people used to cross [to the north shore]. I was trapping at McKinlay Lake, not only me, there was some people they went hunting fall-time, December, they went across by dog team, from Snowdrift to Pearson Point ... (EB in LKDFN 2002a:27).

Caribou Health

According to the reviewed TK and TLU information, TK holders assess caribou health by observing the animal's behaviour, looking for abrasions and/or parasites, evaluating the amount of fat and considering the condition of the hide and marrow (LKDFN 2003, internet site, 2005, internet site; Dogrib Treaty 11 Council 2001).

The reviewed sources suggest that when assessing the health of an animal, by looking at its fat content, TK holders will examine the amount of brisket, back, stomach, and kidney fat on the animal, especially the caribou cows. The reviewed TK and TLU suggests that a fatter caribou has had more time to feed and is less stressed by predators, parasites, or other factors (LKDFN 2005:28, internet site).

The reviewed sources suggest that another indicator that TK holders use to assess the health of caribou is the colour and texture of the marrow. A very healthy caribou will have creamy coloured marrow that is solid. A fairly healthy caribou, but one that may be under some stress because of lack of food, illness, and/or predator or parasite harassment, will have pink-coloured marrow that is greasy. An unhealthy caribou that is malnourished or under severe stress will have red-coloured marrow that is runny (LKDFN 2005:31, internet site). Some sources suggest that TK holders have noted that it is natural that some caribou are injured or sick.

There are many caribou and some of the misfortunes that happen to them are of natural causes. Some get sick and this weakens them and they die without the help of the wolves. When the migration already happened and the injured ones are left behind maybe because of broken or injured limbs and other terminal causes. These are the ones the wolves clean up after the migration. This cycle is according to how they were created by the Creator. (SD in LKDFN 2002a:28).

Tłı̨chǫ caribou harvest data from 1916 to 1998, revealed that hunters reported harvesting at least some underweight caribou, approximately 33 out of the 1,026 cases (about 3% of the time) (Dogrib Treaty 11 Council 2001). Of these 33 cases, there were 7 instances where all caribou harvested were considered to be underweight (the winters of 1917, 1918, and 1937; the falls of 1921, 1931, and 1956; and the spring of 1957).

Skins harvested by the Tłı̨chǫ during the 1996 and 1997 season were considered to be "in good shape" (Dogrib Treaty 11 Council 2001).

But then, this ?ekwo [caribou] has been really good for the last two years, it's probably because it eats good food. That's how our parents used to talk about it, wherever there is good food for ?ekwo to eat is where they go to. That's how my late father used to tell us a story about it. Back in those days, the people had to struggle hard to make ends meet, that's where the people came from, so they know all about it. ... But then, that ?ekwo we say, the ?ekwo is really good for the last two years, if we do that to hide, [cleaning the ?ekwo hide] there is not even one maggot in the ?ekwo hide. ... But then, before it wasn't like that, our mother when they are working on ?ekwo hid, there was lots of maggots

in ?ekwo hide, the hides looked useless, but she used to make string out of it. But now, for the last two years, there is not even one maggot in the ?ekwo hides, nothing. Before in the past, it wasn't like that, even though we shouldn't struggle with it, or work on it (AW in Dogrib Treaty 11 Council 2001:59).

Based on LKDFN (2001a, 2003, internet site, 2005, internet site), the caribou are considered to be in overall good condition. None of the hunters that were interviewed for these reports observed any red or runny marrow, which indicates an unhealthy caribou that is under stress. In these reports, a number of hunters did express concern that some caribou were skinny, injured, or sick, but not all of the harvesters observed caribou health that was outside normal conditions.

I did not see any signs of sickness in the caribou I harvested, only white small cysts, which is normal I think (JM in LKDFN 2005:33, internet site).

5.4.2.1.3 Integration into the Key Line of Inquiry

Existing Environment

Traditional knowledge on the food, migration, and current health status of caribou herds was incorporated into the Existing Environment section (Section 7.3.3) of this key line of inquiry. In particular, TK on caribou food and migration was presented in the discussion on Traditional Knowledge and Resource Use (Section 7.3.3.3). Information on the current health status of herds was discussed in the section on Caribou Population Characteristics (Section 7.3.3.2.3).

Pathway Analysis and Effects Analysis

In addition to incorporating TK into the existing environment sections, the concerns about possible effects of the Project on caribou were carried into the impact assessment.

The TK Study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential noise related impacts due to mining activities. However, traditional knowledge holders have differing opinions about the impacts. For example, some traditional knowledge holders argue that mining related noise, from activities such as blasting, will frighten animals, while others argue that some animals such as caribou are curious and that they may be attracted to the mine activity (NSMA 1999, internet site; Dogrib Treaty 11 Council 2001; LKDFN 2001a; Sly et al. 2001).

I don't think it'll affect them [caribou], blasting. They've been blasting around here for a hundred years, looking for gold. I don't think it'll bother them at all (LL in NSMA 1999:110, internet site).

Caribou they won't go there. They scared. They do someplace. They might go someplace if they put a fence around, caribou don't go through. When it's noisy, caribou don't go. They hear from far, eh. They make a big turn. They go some place, some place. And there where they're working there be no caribou because they make too much noise (AL in NSMA 1999:110, internet site).

The pathway analysis for the Key Line of Inquiry: Caribou (Section 7.4.2) addressed the effects of Project noise and human activity on caribou distribution during the TK interviews. These concerns were analyzed through various pathways and carried through to the residual impact classification and/or significance determination, found in Table 7.7-2 of the Key Line of Inquiry: Caribou.

Anytime you block the caribou with a road or piles of rocks or similar things, the caribou can never cross it. On top of that all the noise chases the caribou away (LE in LKDFN 2001a:50).

The animals will be destroyed because of falling rocks, oil and other poison substances that drain into our land and lakes [from the winter road - referring to Snap Lake]. All this stuff the mines are doing is disturbing the animals with loud noises and all the traffic (MD LKDFN 2001a:50).

Startling blasts, or something like that, they are obviously going to be startled. It'll be a different reaction to a steady noise... If it is a steady noise, I think they will just become curious and wander around and check it out (BT in NSMA 1999:110, internet site).

They run away [from blasting]. [But] caribou are funny, they can get scared for three or four minutes and then they'll stop and come back to see what scared them They are very curious animals.... If you sat in a white tent on a lake and banged two pots together, you might even have one stick his head inside the tent because he just thinks that it's a snowball.... You just sit there and you're drinking tea and all of a sudden, "Hey, there's some caribou out here looking at the tent". Sure enough you go out and there will be six or seven of them all standing around wondering, "What is this snowdrift doing mumbling?" [laughs] And when we are working there in the winter in the springtime at Diavik, they are standing there watching these rigs (DM in NSMA 1999:111, internet site).

Other TK concerns were expressed in the past about potential impacts on caribou health, behaviour, and migration, due to mining activities (LKDFN 1999; LKDFN 2003, internet site, 2005, internet site; Dogrib Treaty 11 Council 2001; DKFN 2007, internet site).

The Tlicho elders think the mines, which may be, in area, the size of small cities like Yellowknife, and the associated tailings ponds, noise, smoke, and human activity, will disrupt migration patterns and, therefore, caribou distribution and vegetation, the later possibly taking several hundred years to rejuvenate. The Tlicho elders attributed loud noise and the smell of fumes and smoke during the construction phase of Ekati Mine Site as the reason the [caribou] traveled southeast of Lutselk'e in 1998 The Tlicho elders have also stated that they have observed [caribou] growing accustomed to loud noise such as planes, and the elders are therefore fearful that the [caribou] will become accustomed to the noise, smell of fumes and smoke associated with mines (Dogrib Treaty 11 Council 2001:5 and 56).

The effects of tailings (i.e., PK) on caribou health was addressed in the Subject of Note on Mine Rock and Processed Kimberlite Storage (Section 11.5). The general structure of a mine rock pile is a steep slope of loose rock, with a maintained access ramp for the haul trucks to deliver rock. The designs are slightly different between Snap Lake Mine and Diavik Diamond Mine, the observations of caribou interactions with these features is similar in that caribou do not interact with these features, or if they do, they interact at a very low frequency. As a precautionary measure against wildlife attraction, the south and west mine rock piles, Fine PKC Facility, and Coarse PK Pile will not be vegetated. A discussion of the effects of mine rock piles and PKC facilities on caribou behaviour is presented in Section 11.5.4.3 of the Mine Rock Pile and Processed Kimberlite Subject of Note.

With the exception of the effects of mine rock and processed kimberlite on caribou health, the pathways addressing the above concerns are found in Section 7.4.2, Table 7.4-2 of the caribou key line of inquiry. These include the effects of human activity on caribou distribution; the effects of Project air emissions on caribou distribution; the effects of Project activities on availability of caribou for hunting; the effects of mine tailings on caribou health; the effects of Project activities on vegetation and habitat; the effects of access roads on caribou movement; and the effects of the Project activities on water.

5.4.2.2 Water-related Key Lines of Inquiry

Traditional Knowledge holders have expressed concern about potential changes to the water of Kennady Lake and the indirect effects that this change could have on caribou and their migration (LKDFN 1999:11).

5.4.2.2.1 Issues from Scoping Workshops

Scoping sessions were held in the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò (MVEIRB 2006). The TK and concerns of the Aboriginal communities informed these key lines of inquiry. In addition to the fluctuations in volume, Aboriginal communities are worried about possible contamination. Their experience with older mines has been very negative. Like caribou, fish play an important role not only in their diet but also their culture. Several Aboriginal communities are very concerned about possible impacts on Great Slave Lake; for this reason, the Panel included it as a separate subject of note, which is addressed in the EIS.

For the Łutselk'e, water issues range from contaminants to dewatering of the lake to downstream effects of flow fluctuations. They also include potential impacts on Ts'anTui Theda, 'Old Lady of the Falls', the most sacred site for the Dene of Łutselk'e.

5.4.2.2.2 Traditional Knowledge

According to the sources of information reviewed as a part of the TK study program, fish have been, and continue to be, an important part of the Aboriginal diet, especially when caribou are scarce. Traditionally, fish were harvested for subsistence and to feed dogs.

A review of existing sources, suggests that the species of particular importance to the Aboriginal people in the area include:

- coney/inconnu;
- lake whitefish;
- grayling;
- northern pike;
- lake herring/cisco;
- round whitefish;
- trout;
- jackfish;

- loche; and
- sucker.

Of these fish, trout and whitefish were, and continue to be, the preferred catch. The amount of fish that a family would consume depended on their preferences and on the availability of caribou or other meat sources such as moose or grizzly bear. Drying fish was a common practice especially in preparation for winter and the trapping season. Fish are considered to be abundant throughout the barrenlands.

Fish are incredibly abundant throughout the Kakinyne. All the lakes and waterways are filled with lake trout, whitefish, northern pike, longnose sucker, walleye, moria (burbot) and arctic grayling. These fish are very important for Denesoaine subsistence, as they provide the primary sustenance when caribou are far away to the north in their calving grounds. Even when the caribou are near, fish provide variety to a diet founded upon caribou meat (LKDFN 2002a:29).

One source noted that it is even possible to find fish in some small lakes on top of eskers.

There is usually fish in these thai ya kué (little lakes on top of eskers). Fish live in these lakes—how did they get there? Maybe an eagle was eating a fish and the eggs fell into the water (JB in LKDFN 2001a:17).

According to the reviewed sources of information traditional knowledge holders assess fish health by examining the fat content, the texture of the flesh, and the absence of parasites, tumours or sores (LKDFN 2003, internet site; NSMA 1999, internet site). If a fish is caught and then determined to be “unhealthy” it is not eaten; skinny fish are used as dog food rather than discarded (NSMA 1999, internet site).

In general, the fish in Great Slave Lake and around Łutselk'e are considered to be in good condition (LKDFN 2003, internet site, 2005, internet site).

For as long as the Denesoline people have been around here, the fish have been good in Great Slave Lake and all the little lakes around Łutsel K'e. There's always been fish for the people, lots of fish that are easy to catch and good to eat. Some years there's more, some years there's less, it goes up and down like that depending on weather and other things. Usually you go to the place where you know there is good fishing, the places where your grandfather told you there was good fish. Then you catch more fish than you need. Sometimes fish move around, so even these really good spots can have less fish. That's how the

Creator made the lakes and the fish—it's never the same, but we can always depend on it. This year is like all other years. Some places are good for fishing, some are not. Some fish are fat, others are skinny. That's just how it goes (PC in LKDFN 2003:68, internet site).

However, a number of LKDFN anglers have expressed concern about the condition of fish in Stark Lake near the community of Łutselk'e (LKDFN 2003, internet site, 2005, internet site). No specific information on the health of fish near the Project site was identified.

The DKFN traditionally fished whitefish, trout, jackfish, coney, loche, and sucker with the preferred species for consumption being trout and whitefish. The numbers are less frequent today and are believed to be a result of the commercial fishery. Fort Resolution Elders mentioned a number of important fishing sites that include Great Slave Lake, Egg Island, Taltson River, Rat River, Salt River, Little Buffalo River, and Slave River. Fish were harvested throughout the year using nets, hooks, or traps. Drying fish was a common practise in preparation for winter and the trapping season. Dry fish was used as food for dogs or made into pemmican.

Traditionally, the Tłıchǵ harvested fish year round. Dried fish formed an important food source for early winter and the trapping season. Fish remain an important resource for the Tłıchǵ.

Fish are the second most important resource to the North Slave Métis. While the preferred species for harvest is not apparent, traditionally fish were harvested by families for dog food. Trout are known to spawn in the springtime in areas of gravel beds or sandy beaches at Lac de Gras. Skinny fish are fed to the dogs and unhealthy fish are discarded.

According to the North Slave Métis Alliance (NSMA 1999, internet site), trout spawn in the springtime in areas where there are gravel beds or sandy beaches. Once the fry/minnows are big enough, they will swim from shallow areas to deeper areas to avoid being eaten by larger trout or jackfish.

Trout would probably go more for a gravelly bed or sandy beach area or somewhere where they can stick their eggs and have them spermed, I guess.... they pick a creek feeding a smaller lake inland. They will lay their eggs there and their little fry will swim up into the lake for protection. After he gets about that big [gestures], then he'll come back down into the water system again, wherever his parents come from (DM in NSMA 1999:126-127, internet site).

[Shallow waters are] prime habitats for reproduction. They all feed in the same area, that's why they all spawn in different areas. Once they get into Lac de Gras, trout and jackfish will eat each other or other fish depending on where they are. If you go up to Lac de Gras, you'll notice in springtime little minnows swimming. They are close in the shallow water because the bigger fish will get to them. As they get bigger and feed off larvae, then they get back into the bigger waters as they get bigger. That's how their life span is (LB in NSMA 1999:127, internet site).

5.4.2.2.3 Integration into the Key Lines of Inquiry

Fish

The TK study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential impacts on fish due to mining activities. Identified concerns include:

- loss of fish habitat;
- dust and increased sedimentation especially during run-off;
- increased metal and nutrient loading; and
- noise including blasting (NSMA 1999: 127-134, internet site).

What happens when they explode the rock –everything [the dust] spread out everywhere. If that happens, the fish will die or get spoiled. Dams-they flood the area and the land dies –the overflow kills the plants. The fish start to eat the plants from the land and they die. The water we drink will also be spoiled (GM in LKDFN 2001b:73, internet site).

There are large dynamite explosions at the mine –in the water. It's very loud. I think it will kill the fish. They shouldn't use so many explosives (GM in LKDFN 2001b:73, internet site).

Aboriginal concerns and TK issues influenced modelling of the long-term biophysical effects of the Project on fish and fish habitat. This was addressed in the Key Line of Inquiry: Long Term Biophysical Effects (Section 10) and the Key Line of Inquiry: Water Quality and Fish in Kennady Lake (Section 8). The concerns identified by the NSMA and LKDFN described above were incorporated into the environmental design features (Section 8.6, Tables 8.6-1 and 8.6-3).

The following are a few examples of the environmental design features from Section 8.6, Tables 8.6-1 and 8.6-3 that are relevant to the TK described above:

- regular watering of exposed lake bottoms, roads, the airstrip, and laydown areas will facilitate dust suppression around the site; and
- raising the water levels in Lake A3 and in lakes to the east of Kennady Lake to replace habitat lost during Project activities.

Traditional knowledge on the Aboriginal use of fish was used to assign weightings for the Habitat Evaluation Procedure (Section 8.10.4.1). Additionally, TK concerning fish behaviour was used to design habitat enhancement structures for the re-establishment of fish populations in Kennady Lake (Section 8.11). Concerns about the downstream effects of the Project on fish were also addressed below in the water quality section of the key line of inquiry.

Water

The reviewed TK and TLU information suggest that in general, the water in the barrenlands is clean, and that traditional knowledge holders advise of the importance that it be protected. Waterways serve as major transportation corridors for traditional land users in the area.

I used to travel around here when I was younger. We are mostly concerned about the water. Water is important for everything. I heard on the news that water down south is contaminated. This region is the last resource of clean water. We must make sure that it stays good and clean. All the Elders have the same concern (AM in LKDFN 2001a:21).

You should protect the areas and waterways that flow into the Lockhart River. Even as far as McKinley Point to MacKay Lake should be protected. At one time in the dry years –it may not seem like the water flows that way but in the spring you can see it –it all flows into Great Slave Lake (PC in LKDFN 2001a:21).

According to the reviewed information, traditional knowledge holders consider water found in muskeg to be “good” if it is clear and cold.

The water in this wetland [near Snap Lake Project] is dirty. Usually water in the muskeg is clear and cold. You always know that there is good water to drink in pools in the muskeg. Not here though (JM in LKDFN 2001a:35).

Traditional knowledge holders from the LKDFN think that climate change has resulted in a decrease in water levels and that a number of small streams and creeks are drying up (LKDFN 1999:40).

The rain takes care of the land. The wind hasn't changed that much but the lake water has gone down a great deal. The rain and wind don't seem to have changed but still somehow we seem to be losing water (ML in LKDFN 2001b:76, internet site).

The TK Study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential impacts on water quality, and the risk of contamination, due to mining activities. Traditional knowledge holders have explained that the watersheds in the barrenlands are interconnected, and that contamination could impact downstream lakes, including Great Slave Lake.

Even if the ground is contaminated, it can be fixed. But if the water is contaminated, everything will be affected. We need to watch [monitor] even the smallest streams (JBR in LKDFN 2001a:39).

So if that [mining contaminating a lake] happens up there [Lac de Gras] and it spreads to other lakes, there's rivers, rivers in here, you know. All the lakes are interconnected. From there, it will seep into other lakes. It will be polluted all the way around. That's what we have to watch out for. Now much grows up there, and whatever does, it could be all gone because of somebody's mistake (Lawrence Lafferty in NSMA 1999:98, internet site).

In the wintertime some elders were over there (Gahcho Kue). They could see them drilling on the ice. There was a lot of oil on the ice. In summer, a geologist was collecting some samples from under the lake. All the oil and snow on the ice were mixed together. I know they throw it on the land but I don't know where it goes from there. I was out there in the spring. There was no good vegetation left around the tailings area. In future, the water might be polluted (Łutselk'e Elder Jonas Catholique, referring to observations he made during the Spring 1998 field visit to Gahcho Kué, LKDFN 1999:16).

There is going to be a lot of garbage and waste left on the snow during the winter. In springtime, it will flow down into Great Slave Lake and contaminate the water. Water has to be monitored carefully, especially runoff from the mine. The southern biologists don't know our traditional knowledge or our Dene way of life (JBR in LKDFN 1999:17)

When you drill for diamonds –what you use [drilling muds] spoils the water. You can't just throw it on the ground. When you are drilling at the mines –this mud you use – I understand it makes it easier to drill. This mud along with the sewage and the garbage make a big mess. You can't just throw it away. What do you do with it? Do you throw it on the ice? It's no good. Even if you throw it on the land, there are tiny streams that run into the water –eventually this water all gets to Great

Slave Lake. You have to be careful of these things (PM in LKDFN 2001b:73, internet site).

We don't know where the groundwater goes in this area. All that dirty water underground will go into the groundwater. They can't catch it all and pump it all out. Maybe that dirty water will come out someplace else through a hole in the rocks [spring], maybe on land or into another lake (LA in LKDFN 2001a:40).

For the Chipewyan of Deninu Kue, the Great Slave Lake is like a heart and all the rivers, streams and channels are like veins that supply the heart with blood. If you contaminate the blood, everything begins to shut down, and soon your heart stops. This is what we see for the future of the Great Slave Lake with all the development north, south, east and west of it (DKFN 2007:20, internet site).

Concern has also been expressed about the overall concept of drawing down the lake, removing the diamonds, and then reclaiming the area.

Draining a lake and scooping out the diamonds and putting the water back in again and putting the fish back in doesn't sound right to me (Tłıchǫ Elder Edward Lafferty, Referring to Ekati Diamond Mine in Legat et al. 1995:21).

The TK issues arising from the community scoping sessions and the TK Study program were incorporated into the

- pathway analysis of the water-related key lines of inquiry;
- environmental design features; and
- modelling of long-term biophysical effects of the Project on Kennady Lake.

Pathway validation for the TK issues relating to water quality may be found in all water-related key lines of inquiry. Aboriginal concerns and TK also influenced the environmental design features (Section 9.6). Numerous features were implemented in the Project design to reduce downstream effects on water quality, fish, and fish habitat. For example, diversion channels will be designed and constructed to provide fish passage from N watershed to the B, D, and E watersheds to prevent interruption of fish migrations.

A full description of the environmental design features implemented to reduce Project effects on water quality and fish issues identified by Aboriginal

communities during scoping sessions and the TK study program are found in Section 9.6, Table 9.6-1 and Table 9.6-4.

5.4.2.3 Subject of Note: Air Quality

5.4.2.3.1 Issues from Scoping Workshops

During MVEIRB scoping meetings, the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò identified potential Project effects on air quality as a concern (MVEIRB 2006). The concerns were identified in the issues to be addressed in the Subject of Note: Air Quality (Section 11.4). Air quality will be impacted by diesel power generation, the extraction and hauling of rock using diesel-powered heavy equipment, and the transportation of all materials, equipment, and supplies over a large distance by diesel powered trucks. This will be the fifth diamond mine in the general area contributing to air pollution. Dust generated by traffic, use of explosives, and the exposed lake bottom is another source of air pollution. Fort Resolution community members were concerned about impacts to the local geophysical environment because of rock crushing and dust generation.

Scoping concerns include increased dust from exposed lake bed; waste incineration impacts; and impacts from emissions. Air quality may impact the quality of vegetation available to ungulates, as well as sensory disturbance to the animals.

In addition to considering the Aboriginal concerns arising from the community scoping sessions, the assessment also considered the issues from the TK study program.

5.4.2.3.2 Traditional Knowledge

Traditional knowledge related to air quality is based mainly on recent experience at existing diamond mines. Concerns identified from this experience relate to potential effects of the Project. For this reason, the traditional knowledge is incorporated in the next section.

5.4.2.3.3 Integration into the Subject of Note

Existing Environment

Traditional knowledge holders have not commented on the existing (baseline) air quality at the Project site.

Pathway Analysis and Effects Analysis

The TK Study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential impacts on air quality and global warming, due to mining activities, such as exhaust from diesel generators, dust from gravel transportation, and ash from garbage incinerators.

They use a furnace [diesel generator] for heat at the mine and the exhaust goes in to the air. Then the animals eat that when it gets on the ground. In the past we used dog teams to get around –there was no pollution from that... (LE in LKDFN 2001b:72, internet site).

As far as I guess the mine itself [Diavik], the disturbance associated with the mine itself, and contributions to increasing carbon dioxide in the atmosphere. They're burning how much diesel fuel between these two places [Diavik and BHP]. You look at the total N.W.T. contribution to carbon dioxide and the global warming scenario. I mean there's got to be a pretty dangerous jump in carbon dioxide... these big facilities. So there's that and what are the global warming effects on caribou? I mean there's all kinds of scenarios I guess affecting migration routes, parasites, changes in parasites (AD in NSMA 1999:111, internet site).

I've worked at the mine last spring, Winspear [De Beers- Snap Lake] from what I've seen about ten-mile radius north, west south and east, toward the north east side about ten miles radius I've walked. When I was walking around I sunk my feet in to the snow. I kind of wondered about it. Two days later I traveled in a helicopter around the area and noticed dust that fly from the trucks that haul gravel. At that time the wind was mostly coming from the north. I've noticed the dust particles fly at least ten miles radius to the eastside on to the ground, which will effect the environment and caribou habitat (JD in LKDFN 2001a:43).

At the Gahcho Kue (Kennady Lake) advanced exploration camp, the snow is just black from the incinerator. Those guys in the camp lived in constant ash falling from the incinerator fires (AnM in LKDFN 2001a:42).

They should watch [monitor] to see in which way the dust mostly blows, and how far from the mine site. They should make sure that this dust does not turn the plants black, or sometimes white with so much dust (JD in LKDFN 2001a:43).

One of my main concerns is dust and the cumulative effect on vegetation. The dust will be blowing from many different places, year after year. It will affect the vegetation (LA in LKDFN 2001a:43).

The Tlicho elders attributed loud noise and the smell of fumes and smoke during the construction phase of Ekati Mine Site as the reason

the [caribou] traveled southeast of Lutselk'e in 1998 (Dogrib Treaty 11 Council 2001:5 and 56).

Aboriginal concerns about air quality that were raised during the community scoping sessions and the TK study program were addressed in several subjects of note or key lines of inquiry. For example, concerns about dust from transportation and mining activities affecting vegetation were addressed in the Subject of Note: Vegetation (Section 11.7). Effects of Project mining activities on caribou were addressed in the Key Line of Inquiry: Caribou (Section 7). Community and other TK concerns about air quality were incorporated into the assessment by informing the air quality modelling, and in designing environmental design features and mitigation (i.e., best practices) for the Project.

Air quality modelling considered the TK concerns about emissions from diesel exhaust, and waste incineration in its modelling for nitrogen oxides (NO_x) (Section 11.4.5.3) and particulate matter (Section 11.4.5.5). Additionally, TK concerns were considered by De Beers in developing environmental design features and incorporating mitigation into the Project, such as the following examples:

- use of low sulphur fuel for fleet vehicles;
- possible use of diesel engine exhaust catalytic converters to reduce NO_x emissions from its mobile fleet; and
- water spray application to control dust emissions on haul roads during the summer.

A detailed listing of these environmental design features and mitigation measures are found in Section 11.4.3 of the Subject of Note: Air Quality.

5.4.2.4 Subject of Note: Vegetation

5.4.2.4.1 Issues from Scoping Workshops

Although the subject of note for vegetation did not identify any scoping issues, various Aboriginal communities did express concerns about the potential effects of the Project on vegetation through increased dust deposition (Figure 3-4 in MVEIRB 2006). Other concerns were expressed indirectly by Aboriginal communities through their concerns for wildlife. For example, the Łutselk'e, Deninu Kué, NWT Métis Nation, and the YDFN expressed concerns that the Project may affect caribou by impacting their food source through air quality (MVEIRB 2006). The subject of note incorporated these concerns, as well as the following TK data into its assessment.

5.4.2.4.2 Traditional Knowledge

Based on a review of the existing sources, particularly *Habitats and Wildlife of Gahcho Kué and Katth'i Nene* (LKDFN 1999), the plant species found in Gahcho Kué include species listed below. The species listed under LKDFN are the common LKDFN names identified through the existing literature review. When possible, the scientific name for those species has been identified.

Table 5.5-1 Plant Species Found in Gahcho Kué

LKDFN Name	Scientific Name
beaked willow	<i>Salix bebbiana</i> Sarg.
green alder	<i>Alnus viridis</i> (Vill.) Lam and DC. ssp. <i>crispa</i> (Ait.) Turrill
bear berries	<i>Arctostaphylos alpina</i> (L.) Spreng. And <i>Arctostaphylos rubra</i> (Rehd. & Wilson) Fern. And <i>Arctostaphylos uva ursi</i> Sprengl
juniper berries	<i>Juniperus communis</i>
back berries	
Labrador tea	<i>Ledum groenlandicum</i> Oeder and <i>Ledum palustre</i> L.
black lichen	<i>Umbilicaria vellea</i> (L.) Ach.
lingen berry (cranberry)	<i>Oxycoccus microcarpus</i> Turcz
black spruce trees	<i>Picea mariana</i> (Mill.) B.S.P.
northern bog laurel	<i>Kalmia polifolia</i>
blueberries	<i>Vaccinium uliginosum</i> L.
spaghnum (moss)	<i>Sphagnum angustifolium</i> (Russ.) Tolf. <i>Sphagnum capillaceum</i> Lindb. <i>Sphagnum fuscum</i> (Schimp.) Klingr. <i>Sphagnum girgensohnii</i> Russ. <i>Sphagnum magellanicum</i> Brid. <i>Sphagnum squarrosum</i> Lindb. <i>Sphagnum warnstorffii</i> Russ.
bog birch (dwarf birch)	<i>Betula nana</i> Michx.
spiny wood fern	<i>dryopteris</i>
cloudberries	<i>Rubus chamaemorus</i> L.
spray paint lichen	
club lichen (red pixie cup)	<i>Cladonia borealis</i> (L.) Willd.
spruce trees	<i>Picea glauca</i> (Moench) Voss <i>Picea mariana</i> (Mill.) B.S.P.
turf moss	
crowberries	<i>Empetrum nigrum</i> L.
whiskey jack eye	

Source: LKDFN 1999.

LKDFN = Łutselk'e Dene First Nation.

Berries

According to the reviewed sources of information containing TK and TLU, the most commonly harvested berries include raspberries, blueberries, cranberries, cloudberries, and crowberries. These berries are typically found throughout

Gahcho Kué. According to the reviewed information, the Denesqline think that blueberries harvested on the barrenlands taste better than those below the treeline (LKDFN 2002a:40).

Ts'ââchogh (blueberries) are good for jams and for eating right there. These berries are better in the barrenlands than below treeline. There are two kinds of these—some really black, some are really blue. Black ones grow on higher bushes, but there are more blue ones on their bushes (MD in LKDFN 2001a:29).

According to the LKDFN, the amount of berries depends on a number of factors, such as temperature and amount of rain (LKDFN 2002a:41).

Last year there weren't many berries because it was too warm. But this summer [2001] was the best season to pick berries. It goes like that each year—sometimes there is less or more (LE in LKDFN 2002a:41).

I noticed there were more berries this year than other years because it rained a lot this year and it was not as hot as other years (BC in LKDFN 2002a:41).

Based on reports by LKDFN (2005, internet site), summer and fall berry patches (raspberries, blueberries, cloudberries, cranberries, and crowberries) are mostly located around Łutselk'e and down the Snowdrift River. Raspberries are harvested in mid-summer, blueberries and cloudberries in summer, and cranberries and crowberries in early fall (LKDFN 2005:50, internet site).

I enjoy picking berries. They taste good and they're healthy, and you get some time out on the land (VD in LKDFN 2005:51, internet site).

Berry picking is a family tradition, and I get to go outdoors. I ate them, and used them to make jam and for other baking (LA in LKDFN 2005:51, internet site).

The DKFN collected berries and medicinal plants, particularly spruce trees. Harvested berries were collected on Paulette Island, Salt River, and Mission Island. Berries were eaten fresh, or were preserved by drying, canning or freezing in the cellar. Medicinal plants included spruce gum, Indian tea, and rat root. Moss bags were used for babies and spruce branches used to cover the floor of a tent in winter. Birch syrup was also harvested as a treat.

Berries were an important traditional food source for the Tłıchq̓. Birch and spruce were used to make canoes and lodges, and willow was used for fishing.

It is unclear from available literature how important plant resources were for the North Slave Métis. However, berries were harvested and moss bags were used as diaper bags.

Medicinal Plants

Based on the reviewed sources of information containing TK and TLU, a number of medicinal plants were traditionally harvested including Labrador tea, club lichen, juniper berries, crowberries, spiny wood fern, cranberry, spruce gum, northern bog laurel, and rat-root (Fort Resolution Elders 1987; LKDFN 1999).

The new leaves on nagoth cho aeaze (medium-sized Labrador tea) are the best for tea. Drinking it is just like good medicine, when you have a cold or even a headache (LA in LKDFN 2001a:29).

This plant with the purple flower is kuzi hala (northern bog laurel). It only grows near water. It is really good medicine. You boil the whole thing and then put it on sores (MD in LKDFN 2001a:30).

nitâ'yŕ (cranberries) that are purple or black after a winter on the bush, they are really good for sugar-diabetes (MD in LKDFN 2001a:30).

The inner bark from spruce tree was used for burns. They peeled the bark off the tree and they took the inner bark that was around the tree. They made a juice with it and put it on the burn and wrapped it with a cloth (Elder GS in Fort Resolution Elders 1987: 69).

We used the spruce gum for burns. We boiled the spruce gum before putting it on the burn and the burn would heal up well. Spruce gum was used for deep cuts as well. They put the spruce gum on a piece of cloth or hide then pressed the edges of the cut together and placed the cloth over the cut. They tied the cloth on until the cut was healed up. For infections, we used to scrape all the juice off of the spruce bark and put it on the infection while the juice was still fresh. It would suck all the pus out (Elder JJ in Fort Resolution Elders 1987:67).

I was taught that if someone was spitting blood they should drink the liquid of boiled spruce gum (Elder JJ in Fort Resolution Elders 1987:67).

Plant Communities

Based on the reviewed sources of information containing TK and TLU, the Tłıchǫ and LKDFN often classify plants in terms of communities and land types which are based on geographic features, available vegetation, and land use.

As shown in Table 5.5-2, the LKDFN identified four land types (flat land, rocky areas, eskers, and wetlands) which support different types of land use. As shown in Table 5.5-3 these four land types are further broken down into more detailed classifications depending on the specific type of vegetation found in the area.

As shown in Table 5.5-4, the Tłıchǫ also identify four main environmental regions, which include Nǫdìı, Detsłta, Detsłlaa, and Hozıı (Dogrib Treaty 11 Council 2001:15-16). As shown in Table 5.5-5, each of these environmental regions have are further categorized by types of soils, waterbodies, and vegetation.

Table 5.5-2 Chipewyan Land and Vegetation Types with Corresponding Land Use

Land Type	Associated Land Uses
1. Flat Land	<ul style="list-style-type: none"> - Travel, setting camp, gathering berries and medicines - Barrenland sheltered with small trees – setting camp - Treeline sheltered with drywood – setting camp - High ground – seeing - Barrenlands, high ground with large boulders (k'a) – caribou hunting
2. Rocky Areas	<ul style="list-style-type: none"> - Gathering berries and medicines, hunting - Barrenlands, round rocky areas (hare/ground squirrel, ptarmigan, etc. habitat) – hunting - Barrenlands, pointed rocky areas (hare/ground squirrel, ptarmigan, etc. habitat) – hunting
3. Eskers	<ul style="list-style-type: none"> - Travel and setting camp, gathering berries and medicines - Esker sides – (wolf, white fox habitat) - Trapping, hunting, shelter, setting camp - Esker tops (traveling, seeing, hunting)
4. Wetland	<ul style="list-style-type: none"> - Gathering berries and medicines, hunting - Hummock-berries, medicines, mosses - Barrenland marsh – geese, ducks (hunting) - Treeline marsh – moose, muskrat, beaver habitat (hunting)

Source: LKDFN 2001b:66.

Table 5.5-3 Chipewyan Types of Land

Chipewyan Term	English	Description
Tsudai Cheneh	Upland Spruce, Spruce Crowberry (Picea Empetrum)	<ul style="list-style-type: none"> Occurs along lakes and rivers and in seepage areas often as small stunted stands; however, some stands can be extensive. Vegetation consists of white spruce with an understorey of crowberry, bog, blueberry, and Labrador tea.
Thai T'ath	Esker top/ Esker sides (Saifraga-Silence/ Betula Empertrum)	<ul style="list-style-type: none"> Occurs almost entirely on top of eskers. Saxifrage and moss-campion are common with crowberry, bearberry, and lichen also present. A large portion of this unit is unvegetated. Occupies esker side slopes and morainal veneers on slope crests. Vegetation is typically an open mat of dwarf birch, crowberry, and bearberry, with significant lichen cover.
Dez/ Tue	Water	
Nikel	Marshy Ground	
Tthenen	Barren/Lichen –Boulder Field (Exposed Bedrock/ Umbilicaria)	<ul style="list-style-type: none"> Exposed bedrock. Often dominated by lichen. Vegetation is sparse and consists of various lichen species and vascular plants where thin organic layers have developed in crevasse among bounders.

Source: LKDFN 1999:19-27.

Table 5.5-4 Tłıchǵ Environmental Regions

Tłıchǵ Term	Description
Nǵdii	a large plateau where both woodland and barrenland caribou are hunted, and where small fur bearing animals are trapped and several important medicinal plants are found
Detsıta	a general term used for a forested area consisting of spruce, poplar, and birch
Detsılaa	Treeline
Hozii	Barrenlands

Source: Dogrib Treaty 11 Council, 2001:15-16.

Table 5.5-5 Tłıchǵ Habitat Types

Tłıchǵ Term	Description
?ehatǵǵ	An area of black dirt associated with plants such as wild rose bush, jack pine, and various types of grasses and sedges
?ehtı'ǵǵ	A general term for an area of sticky and/or soft mud, and is often associated with ts'oo
Dahdǵooǵǵ	A bog, swampy land that is considered "floating land".

Table 5.5-5 Tłıchǫ Habitat Types (continued)

Tłıchǫ Term	Description
Dedlǫnǫ	A place that has never had a forest fire
Dègok'eeek'ò	An area that has had a forest fire
Dègotsoò	A type of swampy, wet ground.
Goèhʔaa	A valley characterized by a particular predominate shrub or tree and a small stream. There are several types. Goèhʔaa are important for such resources as securing wood for fires and smoking meat and fish as well as for using willows to make fishing nets in the past. K'ògoèhʔaa –stream valley with predominately willow. Ts'igoèhʔaa-stream valley with predominately spruce. Kigoèhʔaa- stream valley with predominately birch.
Gok'enǫk'ò o	A burned area
Gòlo	A burned forest area
Googho	An area of thick bushes, thicket, and brambles
Gòzo	A meadow or a prairie
Hozìishia	A low, dry, sandy hill found in the barrenlands
Kw'ah	A large area of predominately moss
Kw'ia	A stand of black spruce on the barrenlands and important for firewood in association with a good campsite. Unlike the habitat known as goèhʔaa, the kw'ia is not in a valley.
Kwekàashı	A rocky hill
Nòhkwoèkwekà	A mossy ground in a rocky area. Although this area is predominately moss, there are several associated plants. It is usually fairly flat area and is land surrounded by lakes.
Tata	A large area found in the barrenlands where caribou live and wander around.
Tłoga/Tł'otè	These are both grasslands on the barrenlands where caribou wander and feed in the fall. During their discussion of vegetation, Louis Whane explained that tł'otè was a blanket of grass usually associated with ts'oo, and when the grass looks like a white blanket then that grass is called tłoga. The soil is moist in parts and dry in others and grasses and sedges predominate.
Tł'otia	A grassy pond
Ts'oo	An area characterized by hummocks which dry quickly after a rain but are surrounded by wet land.
Whagweè	An area of sandy, dry ground that is flat and good for camping as it drains well. Whagwee is not a bushy area although a few may grow. There are a number of important resources found in association with whagwee. Whagwee is similar in the boreal forest and on the barrenlands, but the whagwee in the boreal forest is characterized by jackpine.
What'à	An area characterized by dryness, with gravel and sand. Known in English as esker.
Whatè	A prairie like area with sandy soil.

Source: Dogrib Treaty 11 Council 2001:17-19.

5.4.2.4.3 Integration into the Subject of Note

Existing Environment

Subject of Note: Vegetation augmented the existing environment section by including the traditional use plants (Table 5.5-2) and the medicinal plants derived from TK.

Pathway Analysis and Effects Analysis

The TK study program identified a number of concerns that TK holders have expressed in the past about potential impacts on vegetation and plant communities due to mining activities, including loss of animal habitat, contaminated vegetation, and the impacts on animals and people.

We should also look at the vegetation –berries. We don't want to it spoiled. We eat it –and the little birds eat it too (AM in LKDFN 2001a:30).

(Dust) it's got to affect their [the caribou's] food. If they're eating the lichens, the plants on the ground, it's covered with dust from a mine site, I don't believe it's going to be that healthy for them [the caribou]... I don't know how they'll react (to smoke and other emissions), or if they'll be able to notice all those smells that ...I imagine they can't be that good for anything, I mean exhaust isn't good for anybody... (Bob Turner discussing Diavik in NSMA 1999: 111-112, internet site).

...Dust will affect their [caribou's] food. To what extent, I don't know what studies have said, what kind of studies have been done. ...Lichens and muskeg they are a sort of sponge. They pick up some contaminants, but not all. I don't know how the dust would affect the lichen. It would just be on top, then it washes away? I don't know (Leroy Bloomstrand discussing Diavik in NSMA 1999: 112, internet site).

According to the reviewed information, traditional knowledge holders consider water found in muskeg to be “good” if it is clear and cold and if the vegetation in the muskeg is healthy. They recommend that the vegetation around wetlands be monitored.

The water in this wetland [near Snap Lake Project] is dirty. Usually water in the muskeg is clear and cold. You always know that there is good water to drink in pools in the muskeg. Not here though (JM in LKDFN 2001a:35).

It would be good to monitor this wetland [near Snap Lake Mine] to see if there are any changes in the next few years. We should tell the environmental people here to watch these plants, and they can tell us

how they are doing [the plants in the wetland] then we can tell them why the plants are having problems (LE in LKDFN 2001a:37).

The above concerns about the potential effects of the Project on wildlife habitat, and the potential to contaminate vegetation were incorporated into the Subject of Note: Vegetation in the following ways:

- The concerns were incorporated into the pathway validation (Section 11.7.3).
- The concerns were considered in the Project design through environmental design features and mitigation measures (Section 11.7.3, Table 11.7-13).
- The concerns were specifically considered in the impact assessment (Section 11.7.5).

Additionally, the subject of note specifically considered the potential effects of the Project on the traditional plant species identified in the TK Study program. The pathways analysis relating to Aboriginal concerns about potential effects on wildlife habitat, plant contamination, and traditional plants is detailed in Section 11.7.3, Table 11.7-13. The potential effects of the Project on traditional plants are specifically assessed in Section 11.7.4.

Aboriginal concerns and TK informed several of the environmental design features and mitigation measures for the Project. Examples of these are:

- regular watering of roads, airstrip and laydown areas to facilitate dust suppression;
- surface water runoff will be collected in ditches and water management ponds prior to release; and
- use of low sulphur diesel fuel.

A full listing of the environmental design features and mitigation measures that have been implemented to address Aboriginal concerns about plant contamination and wildlife habitat are found in Section 11.7.3, Table 11.7-13.

Aboriginal concerns about the potential effects of the Project on wildlife through plant contamination have also been incorporated into the assessments for the Key Line of Inquiry: Caribou (Section 7), Subject of Note: Carnivore Mortality (Section 11.10), and the Subject of Note: Species at Risk and Birds (Section 11.12).

5.4.2.5 Subject of Note: Carnivore Mortality

5.4.2.5.1 Issues from Scoping Workshops

During the MVEIRB (2006) Scoping Workshops, the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò did not identify specific concerns related to carnivore mortality. However, other topics included concerns about wildlife, which may be extended to include carnivore mortality. These issues include road traffic, hunting, esker habitation, and the increased number of access roads that have opened up in the area. These topics are addressed below.

5.4.2.5.2 Traditional Knowledge

Grizzly Bear

The reviewed sources of TK and TLU information suggested that bears use areas near eskers to find shade and build their dens.

Those little bushes, T'à bathe (bog birch), that is where the bears stay in the summer, in the shade. That's why it is said to never go downhill of eskers quickly because bears might be there (LE in LKDFN 2001a:17).

The Grizzly Bears, from what I have seen, never have their dens on the eskers. They have their dens on the outskirts of the eskers where there are these small patches of hilly sand. And another thing too is that they don't make their dens on the south side, only on the west side [sic] where the wind blows (ND in LKDFN 2001a:27).

Wolverine

According to the reviewed TK and TLU information sources, wolverines were traditionally harvested primarily for their fur. The reviewed sources suggest that wolverines were sometimes killed as an emergency food source, a practice that is no longer common.

This year [2000] the wolverines are abundant where we trapped—you can see them almost everywhere. Michael Sanderson killed three of them a while ago. About here on the map—I had mentioned before that we had lived there in the past along with your late grandfather Enzoe. This area here near the new proposed mine site [Snap Lake], this is a good place for wolverines and this here is (Kenus Dez) Cook River (ND in LKDFN 2002a:35).

The reviewed sources suggest that wolverines are known as scavengers, but are also known to kill caribou or smaller animals such as mice. Wolverine are

described in the reviewed sources as thieves that are mischievous and strong, but slow.

Wolverine will also kill caribou. The wolverine also steals food, usually from other animals (Elder in LKDFN 1999:13).

If it steals something, it will hide it. Wolverines have stolen a lot of things from me. Even if you cache your food in the tree, the wolverine will still get at it. They are strong little animals. I once saw a wolverine carry a moose head with antlers. It can't kill too many animals because it is slow (Elder in LKDFN 1999:13-14).

One time my son saw a wolverine with two young ones. He found its den and discovered it had been stealing papers, white gas containers, and mosquito dope. His den was just like a little store (Elder JB Rabesca in LKDFN 1999:14).

The reviewed TK and TLU information sources suggest that if there are ample resources for the wolverines they will be fat. In the summer they have their young. Summer is also a time when the wolverines will eat minnows that can be found along the shore lines.

If there is lots of the white fox to eat, he will be fat. The wolverine is the same. In summer, they will have their young. In summer when the water is shallow, minnows are on the shore because it is shallow, they eat those too (Elder in LKDFN 1999:13).

The reviewed sources suggest that wolverines make their dens in rough terrain.

The wolverines have their dens just about anywhere—inside cracks of cliffs, anywhere where there is rough terrain. I went after one wolverine because I had wounded him. At the time I was a young man and I was good at walking around. I kept on going after him and he stopped at some moss-covered marsh with small Labrador tea plants (nagathe Æeze). You can see that he had paused there because he had been eating these small Labrador tea (nagathe Æeze) (ND in LKDFN 2001a:27).

The North Slave Métis report that wolverine are long-distance travelers and can travel up to 40 miles in one day looking for food (NSMA 1999, internet site). The wolverine diet includes ptarmigan, lemming, ground squirrel, mouse as well as dead animals left by wolves. They are described by NSMA member Peter Arychuk as being “very, very cautious like a wolf”, but if there is food available “they are very bold” (NSMA 1999: 142, internet site).

Wolf

Wolves were trapped primarily for fur between Aylmer Lake, MacKay Lake, Fletcher Lake, and Walmsley Lake up to Artillery Lake. One elder stated that since 2000, fewer wolves are seen at Artillery Lake and Cook Lake. Usually wolves travel in packs of ten, but today they are generally seen alone or in pairs (LKDFN 2002a). During a 1999 Project site visit, the participants had several sightings of wolves within the Project area (LKDFN 1999:13).

The reviewed TK and TLU sources suggest that wolf dens are made on eskers and barrenlands, and that wolves will hunt and fish.

One time I came across a pile of bones in the barrenlands. It was a wolf den. The wolf would bring the meat back to its young. The wolf is a very good hunter. He can also fish. The wolf makes a den in an esker—that's where he has his young (Elder in LKDFN 1999:13).

Eskers are the main places where wolves make their dens. Also you can find fox and ground squirrels holes in eskers (JF in LKDFN 2001a:17).

I haven't seen wolves this year [2000] nothing. But during the fall time after freeze-up we went to Artillery Lake [AEedacho Tue] and further north to Kezus Tue) Cook Lake—about here on the map. Four wolves had passed by there—we knew by the tracks. Usually there is about ten in a pack that travel around together. Today it is not like that, maybe one or two wolves and nothing else (ND in LKDFN 2002a:35).

The wolves too make their dens on the eskers, just about anywhere on the eskers. You can see them in the springtime if you are travelling around. My wife knows about it because she used to travel around with me looking for wolves. At the time they had a bounty on their head and we used to collect the ears for money. Because of this my wife knows about it pretty well what I'm talking about (ND in LKDFN 2001a:27).

During a 1999 site visit to Kennady Lake, the participants sighted a wolf or wolves on three occasions, as well as a wolf kill (caribou carcass) that was situated along the Eastern Shore of Gahcho Kué (LKDFN 1999:13).

According to NSMA members, wolves typically have large territories and typically travel in pairs (NSMA 1999, internet site). They describe wolves as being shy and adaptive, and state that they will generally avoid humans (NSMA 1999, internet site).

White Fox

According to the LKDFN and the NSMA, traditionally, a number of their members would travel to the barrenlands to trap white fox (LKDFN 1999; LKDFN 2001a; NSMA 1999, internet site). The reviewed sources suggest that fox were an important source of income. However since the decline of fur prices, most Aboriginal communities have experienced a decline in the number of people who trap (LKDFN 2005, internet site; NSMA 1999, internet site). According to one LKDFN Elder, the last time someone from LKDFN went to the barrenlands to trap white fox was in the late 1950s.

The last time I remember a lot of Dene people trapping for white fox was in the year 1942. It was on the barrenlands—in all this area over here to the east and northeast around Campbell Lake, Ptarmigan Lake, and also in this area here around MacKay Lake; and this here is Fort Reliance (Kach Kue). The late Louie Drybones [Noel Drybones brother] trapped in the area too; and Joe Nelson was trapping also around there. That year, 1942, a lot of people from Fort Resolution (Deninue Kue) and Rocher River passed through here going to the barrenlands to trap for white foxes; and they trapped a lot. My father too trapped many white foxes and at the same time there was caribou everywhere on the barrenlands. The late Louie Drybones was probably the last one to trap for white foxes on the barrenlands. It was in 1957 (PC in LKDFN 2001a:28 and 29).

According to the reviewed sources, TK holders have indicated that the number of white fox in the LKDFN traditional territory has declined. The reasons for this decline are not clear. Some TK holders suggest that the white fox population has a natural fluctuation, while others claim that the reason for the white fox population decline was poison set by white trappers to kill wolves. According to the LKDFN (1999), the Elders hypothesized that mining activity was not likely affecting the white fox populations. However, some traditional knowledge holders have recommended fencing off areas like tailings ponds so that the white fox cannot get into them (LKDFN 1999).

According to the sources reviewed, the LKDFN explain that white fox migrate in a pattern similar to the caribou, and that the two animal populations are interrelated.

White fox migrate like caribou. There used to be a lot of white fox in the area (Elder in LKDFN 1999:12).

Caribou and white fox are the same. If there are lots of white fox there are lots of caribou. Non-native people used to kill white fox in the thousands. If there were lots of white fox, Dene people would travel out to katth'l nene for trapping (Elder in LKDFN 1999:12).

As carnivores, white fox will hunt small animals such as hare, ptarmigan, mice, and lemming but they are known to be scavengers that eat the kills of wolves and other predators. They will also eat eggs and insects.

In the summer the white fox also eats eggs, especially in the barrenlands after break up. They also eat fat insects from the water (Elder in LKDFN 1999:12).

The white fox will kill small animals—hare, ptarmigan, mice and lemming. The fox only lives on meat. If he sees a ptarmigan sitting—he would see it get close and jump. They also hunt mice on top of snow (Elder in LKDFN 1999:12).

At the end of November is when the white fox turns white. They are not a “scared” animal. They will go after a caribou carcass as soon as the hunter leaves (Elder in LKDFN 1999:12).

Similar to the wolf, white fox will also make its den in and around eskers.

There are lots of dens in the rocky rock areas (the chale)—all year round (LKDFN 1999:12).

The people followed the eskers to direct them when travelling on the barrenlands. Near the big eskers there are little narrow eskers which are sand only and no rocks. This is where the white foxes raise their pups in their dens. This is where I will set my traps. White foxes mate near rough terrain on the tundra around boulders and rocks. They make dens under snow—they might even have a wife under there. But this is not their regular den site—it's like a rough cliff with broken-up rocks (ND in LKDFN 2001a:26 and 27).

5.4.2.5.3 Integration into the Subject of Note

Existing Environment

Traditional knowledge was used to augment baseline information from other sources. Traditional knowledge on grizzly bear, wolverine, wolf, and white (Arctic) fox was incorporated into Existing Environment (Section 11.10.2) of the subject of note. In particular, TK on grizzly bear dens and diet is found in (Section 11.10.2.3.1); on wolverine dens and diets is found in Section 11.10.2.3.2; on wolf dens, hunting, fishing, and sightings is found in Section 11.10.2.3.3; and fox population, dens, diet, and inter-relation with caribou population is found in Section 11.10.2.3.4.

Pathway Analysis and Effects Analysis

The TK study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential impacts on animals such as bear, wolf, fox, and wolverine, due to mining activities (NSMA 1999, internet site).

It'll attract bears, you know, just the food, garbage dumps, and that's got to be looked after. Wolverines, the employees, like people working at the mine site, feeding them from their lunch. You don't want animals around. That's what happened up at BHP. You know people were feeding wolverines, foxes, so they hung around camp. People like to see them. Get pictures of them, so they feed them. They hang around camp. This one person just about got bit by a wolverine. Trying to go up and take a close picture, I guess. So they'd have to watch that. Watch the employees. Make sure they don't start feeding the animals because they'll hang around there. If they know there's food there, they'll hang around. That's the way it is... They're not scared of humans. That's bad. It takes away one of their instincts, eh. They not scared of humans anymore ... Well, it would screw up the food chain in the area. They'll all hang around that mine [Diavik], if they're being fed. It makes common sense (LL in NSMA 1999: 138, internet site).

They have to try and keep the animals away from the mine site. They have to keep garbage hidden away and make sure people don't feed and touch the animals. Or else they will stay at the mine and never leave (LC in LKDFN 2001a:45).

They should use local trappers to trap out the small animals that hang around the mines, like foxes and wolverines. These animals get used to people, and they just hang around. They could even be dangerous. If you move them, they will just come back. They should trap these animals out. It would help out the local trappers too (LE in LKDFN 2001a:44).

Concern was expressed about the number of animals that might be killed by road traffic or by hunters using the road. The concern is that these dead animals or parts would attract scavengers (NSMA 1999: 138, internet site).

Concern was also voiced about the impact of small animals consuming unhealthy vegetation and the contaminants affecting the food chain (NSMA 1999:141, internet site).

It's hard to tell how the foxes will be impacted. I mean if the environment in the immediate area isn't healthy from the dust and all the fuel and everything else that's settling on the ground.... There are going to be, I imagine, rabbits and mice or little lemmings ... that are food for foxes and all those other little carnivores. So if the mice and

rabbits are eating the food that's contaminated ...it goes into the other carnivores that eat them.... It's a chain, so if you impact the bottom of the food chain, it's going to work its way up to the top (BT in NSMA 1999:139, internet site).

The pathway validation of the Carnivore Mortality Subject of Note (Section 11.10.3.2) addressed the concerns arising from the TK secondary sources. These include the presence of food and garbage at mine sites attracting animals; and animals consuming contaminated vegetation caused by mining activities. In addition, animal mortality as a result of vehicle collisions and increased hunting along the Winter Access Road were addressed. The concerns identified in the TK study program are incorporated into the following pathway description in Section 11.10.3.2:

- dust deposition may change the chemical content of soil, vegetation, water, and air, which may affect survival and reproduction; and
- attraction of carnivores to site (e.g., food waste, oil products) may increase human-carnivore interactions.

5.4.2.6 Subject of Note: Other Ungulates

5.4.2.6.1 Issues from Scoping Workshops

During the MVEIRB (2006) scoping workshops, the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò did not identify specific concerns related to muskoxen or moose.

5.4.2.6.2 Traditional Knowledge

The TK and TLU information about muskoxen or moose that is available from secondary sources is very limited. The following summarizes the available TK information.

Muskoxen

The available TK information consisted of references to muskoxen food and distribution. The existing sources that were reviewed identified that muskoxen eat fern moss on the barrenlands (LKDFN 1999:22). Information provided by the LKDFN on the value of eskers, although not specific to muskoxen, was also used.

Caribou always move along eskers when they are travelling through this kind of land. Musk-ox too. That is because it is smooth travelling compared to the rough rocks elsewhere (JM in LKDFN 2001a:17).

In recent times, the LKDFN (Denesq̓line) have noticed that the muskoxen are using Kennady Lake more heavily than in the past (LKDFN 2005:9-11, internet site). One reviewed source suggested that the muskoxen were not native to Gahcho Kué.

I've never seen musk-ox around here, just farther east. In Artillery too, only in the past 20 years musk ox have been found around there (MD in LKDFN 2002a:23).

Moose

The reviewed TK and TLU information suggests that moose are not common to the barrenlands and the Gahcho Kué area. Moose are more often harvested in forested areas such as the East Arm of Great Slave Lake around McLean Bay, the North Shore, Wildbread Bay, Basile Bay, Regina Bay, Stark Lake, Duhamel Lake, and a number of other places with bays and weeds (LKDFN 2005, internet site).

The DKFN describe moose as smart, cautious, wild animals that watch everything and will run away from noise.

The moose isn't like a caribou, the moose is just for guys who know how to hunt moose. It isn't easy to hunt moose. Moose are smart and they are wild. [If you] hunt them you have to be careful (Elder JJ in Fort Resolution Elders 1987: 30).

5.4.2.6.3 Integration into the Subject of Note

Existing Environment

The secondary TK sources did not identify any specific concerns related to muskoxen or moose. Traditional knowledge was used to augment baseline information from other sources in the Existing Environment (Section 11.11.2) of this subject of note. Results for the muskoxen's use of habitat and TK regarding eskers (i.e., eskers are important transportation corridors; LKDFN 2001a) was used to supplement information from LKDFN (2001a) on muskoxen preference for esker slopes in late March. Traditional knowledge (i.e., muskoxen eat fern moss; LKDFN 1999) was also added to the description of the muskoxen diet. Traditional knowledge that identified muskoxen as an introduced species to the region, also indicated that muskoxen habituate to the Gahcho Kué region more frequently than in the past (LKDFN 2002a, 2005, internet site).

The TK information on moose distribution and habitat was likewise incorporated into the subject of note (Sections 11.11.5). Traditional knowledge (i.e., moose are not common to the barrenlands and the Kennady Lake area, but are often

harvested in forested areas and a number of other places with bays and weeds; LKDFN [2005]) was added to the description of moose habitat in the Project area.

Pathway Analysis and Effects Analysis

While TK interviews did not elicit any concerns about the potential effects of the Project on muskoxen or moose, the subject of note (Section 11.11) addressed the potential effects of the Project on their population sizes and distributions. Additionally, the subject of note (Sections 11.11.4 and 11.11.5) assessed potential Project impacts on traditional muskoxen and moose harvesting activities.

5.4.2.7 Subject of Note: Species at Risk and Birds

5.4.2.7.1 Issues from Scoping Workshops

The MVEIRB Scope and Methods section (MVEIRB 2006:3) indicates that passerines, shorebirds, raptors, and waterfowl bird species are all present in the Project area in varying densities. The Project is situated closer to the tree line than the existing mines, and there may be additional species to consider in the area. Otherwise, no specific scoping issues were raised for this subject of note. The assessment also considers TK issues derived from the TK study program. This subject of note provided the in-depth, primary assessment for birds, but species at risk were only summarized since they are addressed in other sections of the EIS. The TK summarized here focuses on birds.

5.4.2.7.2 Traditional Knowledge

According to the reviewed sources of information containing TK and TLU, birds have been an important resource for the Aboriginals in the area and have provided not only food, but also important materials, such as feathers, which were used to make blankets and pillows. Based on a review of the existing sources, the bird species that seem to be of particular importance to Aboriginal people include geese, ducks, ptarmigan, grouse, loon, and eagle. Throughout the generations, people have depended upon the ducks and geese to use the same migration routes to reach their staging and nesting areas in the Kakinène. People travel to these waterfowl gathering areas in the spring to harvest the migrating birds (LKDFN 2002a:32).

You can eat any body parts from the ducks—everything from the stomach, kidney, liver ... Most people enjoy eating ducks. If you are going to cook it on the fire—first singe the feather and then burn out what is remaining ... That's what they do with geese. I enjoy eating

ducks ... From the ducks and geese we used the feathers for making feather blankets and pillows ... (MD in LKDFN 2001b:66, internet site).

The North Slave Métis, for example, have identified pintail duck, black duck, goose, swan, crane, loon, and robin as inhabiting the North Slave Region (NSMA 1999, internet site). Birds hunted by DKFN include duck, geese, grouse, and ptarmigan. Ducks were found everywhere, while geese were harvested to the east at Stoney Point. Existing sources indicate that the Tłı̨chǫ harvested duck, ptarmigan, and grouse.

In *Habitats and Wildlife of Gahcho Kué and Katth'i Nene* (LKDFN 1999), TK holders from Łutselk'e identified 36 bird species that are known to have their habitat around Kennady Lake (Table 5.5-6).

Table 5.5-6 Bird Species Identified by Traditional Knowledge Holders as Having Habitat at Gahcho Kué

Edible Water Birds	Non-edible Water Birds
American wigeon	Arctic tern
Scooter, surf scooter	northern harrier
Arctic loon	bald eagle
White-winged scooter	red-bellied wood pecker
Bufflehead	Bonaparte gull
Semi-palmated plovers	rough-legged hawk
Canada goose	chickadee
Snow goose	sandhill crane
Common loon	common flicker
Spruce grouse	snowbird (lapland longspur)
Horned grebe	downy woodpecker
Trumpeter swan	snowy owl
Northern pintail	golden eagle
Tundra swan	solitary sandpiper
Old squaw	herring gulls, thayer gulls
Willow ptarmigan	yellow-bellied sapsucker
Red-throated loon	less yellowleg sandpipers
Yellow-bellied loon	
Ross's goose	

Source: LKDFN 1999.

Based on reports by LKDFN (2003, internet site, 2005, internet site), the main fall harvesting locations for ducks and geese are Stark River, Snowdrift River, the Gap, Łutselk'e Bay, McLean Bay, Basile Bay, Stark Lake, Murky Channel, Back

Bay, and Pekanatui Point. The favourite fall hunting spots for grouse and ptarmigan are Stark River, Murky Lake, Łutselk'e Bay, Duhamel Lake and around Łutselk'e. In the past and today, the Denesłine travel to Kakinëne in the spring to harvest duck and geese in their nesting areas.

The reviewed sources suggest that many of the birds that inhabit the area are migratory and can be found in the area only during certain times of the year, depending on the weather.

In mid-May, most kinds of birds come back each year. They come up north in the springtime. Some birds go to the barrenlands such as ducks, geese, Oldsquaw, ptarmigan, snowbirds and loons. They stay in the barrens until fall time, until it gets cold for them. Then they go back down south. I used to live at Margaret Lake [northwest of Gahcho Kué] in 1957. I used to hear all kinds of birds. I saw longspurs and snowbirds. The snowbirds go there all year (LA in LKDFN 2002a:33).

It's been a really long winter [2002-2003], and spring came late to this country. Really late. Usually the ducks are back around here [Łutsel K'e] in early May, sometimes even at the end of April. But this year it was too cold, and the rivers were still all frozen up, bays too. Some places the ice is still four or five feet thick. Ducks and geese need water to eat, because they eat things like bugs in the winter. So if it's frozen they can't eat. That's why they came late this year (ND in LKDFN 2003:67, internet site).

They [ptarmigan] stay all year round on the tundra and come down to Autsyl K'e [in the spring]. The grouse come back [around Autsyl K'e] in April to October, then go south for the winter (LA in LKDFN 2002a:38).

The barrenlands were discussed in the reviewed TK and TLU sources as important bird habitat, especially in the summertime when they migrate to the area to lay their eggs.

In the wintertime, they go south. In the summertime, I see they're coming from back down this way. That's where they lay eggs, on the tundra, the barrenlands. That's the most important part (Anon in NSMA 1999: 146-147, internet site).

5.4.2.7.3 Integration into the Subject of Note

Existing Environment

Traditional knowledge on upland breeding birds, waterfowl, and raptors was incorporated into the Existing Environment (Section 11.12.2) of this subject of note.

Pathway Analyses and Effects Analysis

While TK interviews did not elicit any concerns about the potential effects of the Project on species at risk and birds, the secondary TK sources identified several specific concerns related to birds.

The TK Study program identified a number of concerns that traditional knowledge holders have expressed in the past about potential impacts on birds, due to mining activities. These concerns include loss of habitat, and fine particulates (dust) or spills that the birds might eat or that might coat their feathers and then kill them (by poison or by affecting their insulation capabilities). As one elder stated:

We should also look at the vegetation –berries. We don't want to it[sic] spoiled. We eat it –and the little birds eat it too (AM in LKDFN 2001a:30).

Based on the review of existing TK sources, eagles were identified as a particularly respected bird with spiritual importance.

Eagles are very much respected. A lot of people used to use eagles for medicine. This medicine was very strong. A lot of people chose to heal people instead of hurting people. It was hard for people to sleep when they were bothered by strong medicine. But not all eagle medicine is the same. Some medicine is good; some is bad. If you use the medicine in a good way, it will come back to you in a good way (PM in LKDFN 2001a:23).

The concerns identified in the TK study program are incorporated into the following pathway description in Section 11.12.3.2:

- dust deposition may change the chemical content of soil, vegetation, water, and air, which may affect survival and reproduction.

Section 11.12.6.3 identified that eagles are a particularly respected bird and have high spiritual importance, based on traditional knowledge.

5.4.2.8 Appendix 11.7.I: Geology, Terrain, and Soils

5.4.2.8.1 Issues from Scoping Workshops

Scoping sessions were conducted in the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò (MVEIRB 2006). Although the sessions did not identify any specific TK issues related to geology, terrain, and soils, the TK study program identified issues that were incorporated into the assessment.

5.4.2.8.2 Traditional Knowledge

There was TK and TLU information about the importance of eskers. The reviewed information suggests that eskers are important because they provide relatively easy land to travel upon. Also, they support animals such as white fox, wolves, grizzly bears, and wolverines, and are therefore, good hunting, and trapping locations.

The people followed the eskers to direct them when travelling on the barrenlands. Near the big eskers there are little narrow eskers which are sand only and no rocks. This is where the white foxes raise their pups in their dens. This is where I will set my traps. White foxes mate near rough terrain on the tundra around boulders and rocks. They make their dens under snow –they might have a wife under there. But this is not their regular den site –it's like a rough cliff with broken-up rocks (ND in LKDFN 2001a:26 and 27).

5.4.2.8.3 Integration into the Environmental Impact Statement

Traditional knowledge was incorporated into a specific TK section that augmented the Geology, Terrain, and Soils Assessment (Appendix 11.7.I). For example, information on the importance of eskers for travelling, as well as their use by the various wildlife species was incorporated into the TK section (Appendix 11.7.I, Section 11.7.I.2.3). The TK information on the importance of eskers informed the pathway validation, wherein they are included in the potential pathways in Appendix 11.7.I, Section 11.7.I.3, Table 11.7.I-14. An assessment of the potential effects of the Project on eskers is detailed in Section 11.7.I.4.1.

Traditional knowledge information on the importance of eskers also informed the environmental design features. For example, the Project footprint was kept to a minimum to lessen the effects of surface disturbance (Appendix 11.7.I, Section 11.7.I.3, Table 11.7.I-14).

5.4.2.9 Subject of Note: Culture, Heritage and Archaeology

5.4.2.9.1 Issues from Scoping Workshops

Scoping sessions were conducted in the Aboriginal communities of Detah, Łutselk'e, Fort Resolution, and Behchokò (MVEIRB 2006). Issues identified during the scoping sessions related to loss of spiritual connections and knowledge; loss of spiritual and aesthetic values of place, especially Lockhart River, Artillery Lake and Old Lady of the Falls; and the impact on heritage and archaeological sites. The following section presents TK information from literature review relating to the above themes.

5.4.2.9.2 Traditional Knowledge

Cultural identity for many is at the core of community life. *If people wish to understand the meaning landscapes have, then it is best to regard them as part of the people that created them and not separate from them. One part of the cultural landscape cannot be separated out from the other pieces* (Evans et al. 2001).

As former Chief Darrell Beaulieu of the Yellowknives Dene First Nation stated:

It's a land filled with, ..., our forefathers' culture and, you know, my culture. ... Our main point is that we don't want our cultural identity treated like points on a map that can be simply managed and mitigated or made less important. Those places, the cultural representations, the landscape and the information those places contain are not just archaeological sites. They're part of our social, spiritual and cultural identity. They represent a small fragment of our current, recent and distant past. Those places out there are how we communicate who we are and pass on our culture to our children (MVEIRB et al. 2003:12, internet site).

Information About the Environment

The Dene often name places where activities have taken place (e.g., a kill site or fishing eddy). The name of a place frequently refers to a specific event, which occurred at the time it was first used (Collignon 2006; Saxon et al. 2002, internet site; Legat et al. 2001, internet site; Hanks and Winter 1986). Unlike Western place names, which often refer to individuals, Dene names normally reflect the activities, events, aesthetics, and rewards associated with places (e.g., Ne'dzee W'ee Tu'we', "place where people watch caribou cross a narrows"). Ne'dzee W'ee Tu'we' not only names the actual narrows where the hunt would take place,

but implies a system of sites connected with hunting caribou around this narrows (Hanks and Winter 1986).

For example, research conducted with the Tłıchq̓ (Saxon et al. 2002, internet site; Legat et al. 2001, internet site) found that place names provide essential information, such as water flow, topography, and biodiversity of areas within their traditional territory. Many place names serve the purpose of providing vital information about how to survive on the land. Place names may also carry information on places where resources should be available, and places to be avoided because they are hazardous (Legat et al. 2001, internet site). Tłıchq̓ Elders emphasize that if individuals know the place names, they will know what to expect and will be able to manage and monitor traditional lands (Saxon et al. 2002, internet site).

The Denesq̓line also have place names and legends that demonstrate the long-lived relationship that people have had with their landscape (Parlee et al. 2005:30; LKDFN 2001b, internet site). Names such as ʔeda “caribou crossing”, desnethch’e “where the water flows out” and des delghai “white river”, provide specific details about landscape features. Names such as “small portage”, “open water” provide details regarding where to travel and where not to travel in both summer and in winter (LKDFN 2001b:53, internet site).

Information About Living

Being told about a place is often not enough, and many of the most important stories can only be meaningfully related at the narrator’s home (Hanks 1997:179). Thus, it is not solely the landscape or the individual place names that are of importance. It is also the place name being experienced in the context of the land to which it refers that is meaningful. Place names stimulate story telling that contain knowledge of socio-political relationships, social behaviour, resources, ancestral use, graves, and obstacles while traveling and camping in an area. Often a place name will be mentioned to stimulate the listener’s memory, hoping to encourage them to think and act in a certain way (Legat et al. 2001:15, internet site).

These place names reflect many different social, cultural, spiritual and ecological values as an integrated whole. An example of this is Ts’anTui Theda - the “Old Lady of the Falls” located on the Lockhart River. Many of the Denesq̓line visit the site every year to seek spiritual guidance and direction. The Denesq̓line have named, used, and recognized the places referred to in their place names and their traditional stories for thousands of years, and have regarded them as critical for their own well-being as well as the well-being of the many wildlife species (Parlee 2006:96).

Łutselk'e Denesłine Cultural Landscape

The Łutselk'e Denesłine have described their traditional territory as Denesłine Nēne (Annex M, Figure M4.4-1). The Denesłine Nēne is the heart and spirit of the Denesłine way of life. It is within this area that the cultural and environmental features of value to the Denesłine people manifest themselves (LKDFN 2003, internet site).

The Kakinēne is an area described by Denesłine Elders as a region “beyond the end of the lake” and as an area rich with resources (LKDFN 2001b, internet site; LKDFN 2003, internet site). The Kakinēne encompasses Kaché Tł'azí (McLeod Bay) and the East Arm of Tu Nedhe (Great Slave Lake). One concept used by Łutselk'e Dene to talk about Kakinēne is “nēne”, which is commonly translated as “the land”. In addition to the land itself, nēne appears to refer to everything that depends upon or affects the land, including changes in the weather, climate, animals and people (LKDFN 2001b:24, internet site). Thus the health of Kakinēne as a whole is intimately related to the health of the community (LKDFN 2001b:82, internet site).

Kakinēne extends from Nidítagh Tué (MacKay Lake) and Tł'a Gai Tué (Aylmer Lake) in the North, to McLeod Bay in the south, and from Æedacho Tué (Artillery Lake) in the east, to Łu Tué (McKinlay Lake) in the west (LKDFN 2003, internet site). Figure M4.2-2 in Annex M shows the eight regional land classifications that make up Kakinēne. A description of the meaning of the land classifications is found in Section M4.4.1 of Annex M.

Important Places – Old Lady of the Falls

One area of particular importance within Æedacho Tué is Ts'anTui Theda or the Old Lady of the Falls. The following story, as directly quoted from LKDFN (2001b:44, internet site), conveys the importance of this location to the Denesłine.

I will tell you a true story about how it was in the beginning and how Ts'anTui Theda (the Old Lady of the Falls) came to be. This story was passed on to me as it was passed on from generation to generation. The Old Lady of the Falls has been there since the earliest of times.

It started in the place called Kaché (Fort Reliance) and Æedacho Tué (Artillery Lake). It used to be called Beaver Lake in those days because there was a beaver living there. You could see the beaver's lodge if you happened to be out at Æedacho Tué. People were often in that area

because that is where they went caribou hunting in the fall time. Even today Dene people still go there to hunt caribou.

In those days there used to be a man. His name was Hachoghe. He was a big man. One day Hachoghe saw the beaver's lodge. He could see it because it was on top of a small hill. He decided he wanted to kill the beaver but saw that he would have to get the beaver out of the lodge. So he started to push the dirt to one side. (Today you can even see where he pushed the dirt to one side.). He was so busy digging and moving the dirt that he didn't notice that the beaver had another lodge in the narrows close to the main land. It wasn't far from the main route that the Dene people used when they travelled in that area.

But the beaver did not stop at that lodge. Instead he went down the Lockhart River to the main lake – Tue Nedhe. The people there were starving. When they saw the beaver they thought they may be able to kill him. It was then that Hachoghe saw the beaver and ran after him with a shovel. He threw the shovel into the water but the smart beaver swam away. The handle of the shovel broke and Hachoghe had to leave it there, sticking out of the water. That is why when you go to the north end of Aedacho Tué you see a rock sticking out of the water. That is the handle of Hachoghe's shovel.

After Hachoghe broke his shovel, he didn't give up. He continued to follow the smart beaver back up the Lockhart River. By then the Dene people from Tue Nedhe were following Hachoghe. The river was strong and the beaver soon got tired and Hachoghe killed him. The Dene people were so hungry they went after the meat right away. There was enough meat from that beaver for all the Dene people for two or three days. But there was one woman who asked for the beaver's blood. Hachoghe told her he could not give her the beaver blood because there was not very much left. So the woman sat down at the falls and waited.

All of the other Dene people followed Hachoghe who was chasing another beaver down the river. They were heading toward the east arm of Tue Nedhe. After a while, the people noticed that the woman was still back at the falls. So Hachoghe picked two healthy people to go back and look for her. They went all the way back up the Lockhart River and they found her sitting at the falls. She had been sitting there a long time and so she was stuck in the earth. The two people told her that Hachoghe was asking for her to return to Tue Nedhe. She said, "I cannot return with you. I have been sitting here too long and now I will be here for all eternity." Then she said, "Go back to where you came from. Go back to

Hachoghe and the others and give them this message.” So the two people returned to Hachoghe and the others and gave them the message. This is how the Dene people learned about the Old Lady of the Falls (Ts’anTui Theda). From that day forward the Dene people have gone to visit the Ts’anTui Theda to pay their respects, share their worries and to ask for help. (Zep Casaway, Translated by Archie Catholique in LKDFN 2001b:44, internet site)

Morris Lockhart in his quote below explains the significance of Ts’anTui Theda or the “Old Lady of the Falls” to the Łutselk’e Denesłine:

... there is one place called “Thun-ket-la”. Now it’s called Parry Falls. That’s the spiritual site. That’s where the old lady is. It is really a big thing for us, as Chipewyan people. We use that to get help from her for sickness or sometimes like, even for caribou. Sometimes you go there and you want to know where the caribou are, you ask this old lady if she can help by telling us which side the caribou are on. And she’ll tell you because after that you can see smoke going up. Smoke, and it points to where the caribou are. That’s why it really means a lot to us. It means a lot to us that spiritual site. It has been there for a long time now. Before even the doctors came, before anybody knows anything about doctors, or before even the whitemen came on this side. People used to go there to get healed of sickness. They would go down there and talk to this old lady. They would cleanse themselves with the water. They would wash themselves. That’s how they would get help, like that. I know some places in the south, some lakes where people go, a holy place like that. This is a similar place. A really holy place. It’s going to be here forever. That’s the way it is set up that. They went there for that, for anybody who wants to get help. It’s still there today. That’s why in this area here, we are sort of keeping an eye on it, and why we should stop some other people who are trying to take it away from us. There is another spiritual place somewhere on the north side too. I heard a story about it a long time ago. It’s the same thing. A spiritual site. This one here sort of went down underground there, but it is still there. ... That spiritual site too has been found by the Chipewyan people. Now, when we have treaty payment, we combine it with a spiritual gathering. We go out there by boat. We go down there right to the mouth of the Lockhart River. Every summer we have a spiritual gathering. From there we fly some people up here to Parry Falls, and then whatever type of help they want, they go up there and pray, or whatever. Just recently, people started to recognize that spiritual place. This summer, there will be a lot of people coming, people from Yellowknife, from Dogrib Nation area, people from Hay River, Fort Smith, Fort Resolution, plus some other people, they will be down

there this summer. So there's a lot of people coming in the summer to try to get help from that place for themselves. When we go down there, usually we have treaty payments too. People, they will go down there and they have drum dances, whatever. Some people go up to the spiritual place, as I mentioned. That's in July. (Morris Lockhart in Raffan 1992:124-125)

Important Places - Tłá Gai Tué (Aylmer Lake)

Tłá Gai Tué (Aylmer Lake) as it is known by the Denesłłine, or Ts'eèhgootł as it is known by the Tłıchų is another of special significance to both peoples. Like Æedacho Tué (Artillery Lake), Tłá Gai Tué represents a diversity of important values – cultural, social, spiritual and ecological importance. As part of the waters of Desnethch'e, (the Lockhart River watershed), its significance is even greater because of its connection to the Old Lady of the Falls (LKDFN 2001b, internet site).

Elders describe the area based on their experiences hunting, trapping, and traveling through the area. Many Elders who lived at Æedacho Tué (Artillery Lake) know about Tłá Gai Tué (Aylmer Lake), as it was a common destination for hunting and trapping. Elders also used to travel there enroute to MacKay Lake to the west, or to the Thelon region to the east (LKDFN 2001b, internet site).

I used to go to Aylmer Lake (Tłá Gai Tué) only in the winter with my father and to Fletcher Lake. This was just for trapping. There are a lot of people who used to go to Aylmer Lake (Tłá Gai Tué) from Łutsël K'e. I traveled from Aylmer Lake (Tłá Gai Tué) to the Thelon River (Thelon Deze) a few years back (NA 01 15 01) (LKDFN 2001b:61, internet site).

Denesłłine Elders also call Tłá Gai Tué (Aylmer Lake) - Thai T'ath Tué - the lake where there are lots of eskers. The many eskers have always been important for trapping, as well as for camping. Eskers are used as denning habitat for many species, including wolverine, wolf and whitefox (LKDFN 2001b, internet site), and their varied plant life attracts animals such as caribou and grizzly bear. Finally, eskers provide shelter where people could camp in the small groups of trees and use dechēn (drywood) for fuel and setting tents (LKDFN 2001b, internet site).

The vegetation around Aylmer Lake (Tłá Gai Tué) is very healthy – it's not disturbed or polluted. The plants there are very small. Even the Labrador tea, rosehips, and other plants – they are very short and small. We used to live at Artillery Lake (Æedacho Tué) so we knew the area very well. (JM 01 15 01) (LKDFN 2001b:61, internet site)

Important Places – Lockhart River

The Deninu Kué First Nation expressed the following concern for the protection of water:

The Akaitcho Dene has both the inherent and treaty right to use and enjoy the Creator's gift of water. Our rituals and stories teach about the sacred right to live with water, a responsibility to use traditional knowledge and cultural practices to protect and sustain pure water for the continued cleansing and healing of our communities. (DKFM 2007:3, internet site)

An Elder expressed the following concern specifically for the Lockhart River watershed:

You should protect the areas and waterways that flow into the Lockhart River. Even as far as McKinlay Point to MacKay Lake should be protected. At one time in the dry years – it may not seem like the water flows that way but in the spring you can see it. - it all flows into Great Slave Lake (PC 01 29 01) (LKDFN 2001b:64, internet site)

Travel Routes

As Elder Maurice Lockhart described, trails and portages were created generations ago by the Thai Denesöline (ancient people).

These canoe routes and trails into the barren lands have been here for generations. Our ancestors (Thai Denesöline) used these routes and trails. Now we still use them to go hunting for caribou. It has been passed on from our great ancestors to today – from Taltheilei to Fort Reliance (ML 08 31 00) (LKDFN 2001b:52, internet site).

The following quote from J.C. Catholique expresses the connection Denesöline have to the land and their movement throughout it:

As far as the Chipewyan people are concerned, they like to live off of the land. They like to go out – sometimes they go flying out by plane, away out to Artillery Lake, or the barren lands. That's where people used to live up there, before. A way out – Artillery Lake, the barren lands, Thelon River – all over the place. They say there are still historical marks like tipi rings, rock, things that you can find out there, like arrowheads. There are also spiritual places out there. There is a lot of animals out there. Like the caribou (J.C. Catholique in Raffan 1992:104-105).

Supporting the J.C Catholique statement above, Figure M4.4-4 in Annex M shows the extensive range used for hunting and trapping activities, historically and in more recent times. The primary difference between historic and present times is the extent of travel. Today, travel on the land stays closer to Great Slave Lake, whereas earlier, more extensive travel was probably linked to following both the Bathurst and Beverly caribou herds for survival (Kendrick et al. 2003, internet site). The need to travel such distances is not as necessary in present day.

5.4.2.9.3 Integration into the Subject of Note

Traditional Knowledge was used in the pathways analysis and helped to determine valued components and potential pathways for direct and indirect effects of the Project. For example, VCs were selected to focus the SON on key issues raised through the concerns of the communities, and others, such as government and other stakeholders, and identified in the Report of Environmental Assessment (MVEIRB 2006). The Gahcho Kué Panel used these issues and VCs to provide the basis for each KLOI and SON in the *Terms of Reference* (Gahcho Kué Panel 2007), which was the principal method for selecting VCs in the EIS.

The pathway analysis for the Socio-Economic VCs are found in Section 12.6, and Section 12.7 which describe the direct and indirect effects pathways, respectively. For example, Project construction will result in disturbance to the landscape, which may result in a loss of spiritual connection and the aesthetic value of place, important concerns identified by the communities in MVEIRB (2006).

The TK information was reviewed and sorted under the following themes to address the SON in (Section 12.7.5);

- Information about living;
- Łutselk'e Denesoline cultural landscape;
- Important places (Old Lady of the Falls, Aylmer Lake, Lockhart River; and
- Travel routes.

5.4.3 Monitoring and Mitigation

This section presents additional monitoring and mitigation recommendations that arose from traditional knowledge.

5.4.3.1 Vegetation Monitoring

Vegetation programs implemented during the life of the Project will be a combination of environmental monitoring (including a vegetation management plan) to track conditions and implement further mitigation as required, and follow-up monitoring to verify the accuracy of impact predictions and implement further mitigations as required. Environmental design features and mitigation that will be used to limit effects on vegetation include:

- compact layout of the surface facilities will limit the area disturbed at construction and increase site operations efficiency;
- mine rock will be used as the source of aggregate production, thereby, reducing the need for separate quarries;
- to the extent practical, the total amount of area disturbed by Project activities at any one time will be reduced through the use of progressive reclamation;
- at closure, transportation corridors and the airstrip will be scarified and loosened to encourage natural revegetation, and re-contoured where required;
- reclamation trials will be completed throughout the Project life to determine which prescriptions may be most effective for reclamation
- prohibit recreational off-road use of all terrain vehicles ;
- compact layout of the surface facilities will reduce traffic, and therefore dust and air emissions, around the site;
- watering of roads, airstrip, and laydown areas will facilitate dust suppression; and
- mine rock piles will not be covered or vegetated to limit attraction of wildlife to them after Project closure.

5.4.3.2 Reducing Impacts on Eskers

No eskers will be disturbed by the Project.

5.4.3.3 Design of Fish Habitat Enhancement

The observation that lake trout fry remain in the shallows to avoid predators until large enough to seek protection in deeper areas of the lake was used to design and position habitat enhancement structures as partial compensation for habitat losses in Kennady Lake due to mining.

5.4.3.4 Reducing Impacts on Water Quality

Traditional knowledge interviews identified the Gahcho Kué area as a source of clean drinking water. Surface water hydrology incorporated mitigation measures to prevent erosion and increases in suspended sediments, in accord with federal regulations. Mitigation measures were put in place to limit Project-related high flows and low flows, and to limit effects on downstream waterbodies. Environmental design features and mitigation that will be used to limit effects on water quality include:

- mine rock used to construct the dykes will be non-acid generating (NAG);
- any mine rock containing kimberlite will be separated from the tundra by at least 2 m of inert and kimberlite-free rock to prevent drainage with low pH;
- the potential acid generating (PAG) rock will be enclosed within enough NAG rock that the active frost zone (typically two meters) will not extend into the enclosed material and water runoff will occur on the NAG rock cover areas;
- the performance of the dykes will be monitored throughout their construction and operating life; instrumentation monitoring together with systematic visual inspection will provide early warning of many conditions that can contribute to dyke failures and incidents. Additional mitigation will be applied, if required;
- a system of ditches and sumps will be constructed, maintained, and upgraded throughout the operation phase of the Project to manage groundwater from the open pits; and
- thermistors will be installed within the mine rock piles to monitor the progression of permafrost development. The upper portion of the thick cover of mine rock over the waste repository will be subject to annual freeze and thaw cycles, but the PK and PAG rock sequestered below are expected to remain permanently frozen.

5.4.3.5 Air Quality Monitoring

Traditional knowledge identified dust from the dry lake bed as a concern. De Beers will include the potential for dust from the drained lakebed in its air quality monitoring program, and develop contingency plans should monitoring data indicate excessive dust concentrations (Section 11.4.3).

5.4.4 Closure and Reclamation Planning

Traditional knowledge was and will continue to be considered during Project closure. The recommendation to consider TK during project closure so that roads do not pose a threat to caribou was addressed both during the environmental design as well as in the closure and reclamation planning. The closure and reclamation of roads should be completed in accordance with best practices, taking into account the information provided by traditional sources (LKDFN 2003, internet site).

During closure and reclamation, all site roads not required for post-closure maintenance and monitoring will be decommissioned and reclaimed at the end of the closure phase. The rest will be reclaimed by the end of the post-closure monitoring. Post-closure access to the site will be primarily by aircraft, with minimal vehicle traffic.

Reclamation planning is based on the feedback from open houses and traditional knowledge information. For example, the expressed desire for Kennady Lake to be restored as quickly as possible has resulted in planning for water to be diverted from Lake N11 to reduce the time to fill the lake to 8 years.

5.4.5 Plans for Future Cooperation

De Beers is committed to considering and incorporating TK into all stages to the Project life: the assessment, permitting, construction, operations and closure of the Project. This will be achieved by:

- Continuing to advance engagement activities with communities that will provide opportunities to discuss the Project and any traditional knowledge that the community is willing to provide;
- Incorporating any TK that is provided into the Project;
- Continuing to work with the LKDFN to finalize and release the TK study;
- Hosting site visits on an regular basis to enable the exchange of information between elders/TK holders and De Beers staff. Visiting communities regularly to provide updated information regarding the project and incorporating an opportunity in this visit for TK holders to meet with the company to provide expertise and advice;
- From time to time, the company will provide community based workshops as part of the company's planning processes or to address specific topics. ;

- Involving elders and students from their home communities together in on site and field monitoring programs from time to time; and
- Featuring the events and activities that the company undertakes with the involvement of elders in the company's internal newsletters to employees and in the on-site the cultural centre as a means to sharing the knowledge and advice of elders with all staff.

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5.6 ABBREVIATIONS, ACRONYMS, UNITS AND GLOSSARY

5.6.1 Abbreviations and Acronyms

AMEC	AMEC Earth & Environmental
De Beers	De Beers Canada Inc.
DKFN	Deninu Kué First Nation
e.g.	for example
EIS	environmental impact statement
ELC	ecological land classification
EMS	environmental management system
et al.	group of authors
i.e.	that is
KLOI	key line of inquiry
LKDFN	Łutselk'e Dene First Nation
MVEIRB	Mackenzie Valley Environmental Impact Review Board
NO_x	nitrogen oxides
NSMA	North Slave Métis Alliance
NWT	Northwest Territories
PKC	processed kimberlite containment
Project	Gahcho Kué Project
SON	subject of note
TK	traditional knowledge
TLU	traditional land use
WLEC	Wildlife, Lands, and Environment Committee
YDFN	Yellowknives Dene First Nation

5.6.2 Units of Measure

km	kilometre
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5.6.3 Glossary

Key line of inquiry	The topic of the greatest concern that requires the most attention during the environmental impact review and the most rigorous analysis and detail in the environmental impact statement.
Subject of note	An issue that requires serious consideration and a substantive analysis, although it does not have the same priority as a key line of inquiry.
Community	Any potentially affected settlement, town, village, or city as well as any First Nation or Métis group within the Tłıchǫ and Akaitcho regions unless otherwise specified.