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Prairie & Northern Region
Environmental Protection Operations Directorate
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October 22nd, 2012

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Chuck Hubert, Senior Environmental Assessment Officer
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Mackenzie Valley Environmental Impact Review Board
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Via email: chubert@reviewboard.ca

Attention: Mr. Hubert

**RE: Environment Canada's Technical Report Submission
Gahcho Kue Project, De Beers Canada Inc.**

Environment Canada (EC) is pleased to submit to the Mackenzie Valley Environmental Impact Review Board our Departmental Technical Report submission (attached) for the Gahcho Kue Project proposed by De Beers Canada Inc. in connection with the scheduled Public Hearing taking place between November 30th to December 8th in Dettah, Lutsel K'e and Yellowknife, NT. Furthermore, EC Departmental representatives will be in attendance at the public hearing to make a formal presentation of this intervention.

As well, please note that EC was unable to carry out a complete review of several reports recently placed on the public registry (as of October 4th, 2012) including a *"Wildlife Ecological Risk Assessment"* report submitted by the Proponent. Therefore, EC comments related to these reports are not fully reflected in this submission.

Should you wish clarification on any aspect of the submission prior to the public hearing, please contact Lisa Lowman, Senior EA Coordinator at (867) 669-4721.



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Sincerely,

Cheryl Baraniecki
Regional Director
Environmental Protection Operations (EPO)
Prairie and Northern Region
Environment Canada

Attachment

cc: David Ingstrup (Regional Director, Canadian Wildlife Service (CWS), Environmental Stewardship Branch (ESB), EC)
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ENVIRONMENT CANADA'S TECHNICAL REPORT

RESPECTING

**THE GAHCHO KUÉ PROJECT PROPOSED BY
DE BEERS CANADA INC.**

Submitted to the
Mackenzie Valley Environmental Impact Review Board
Yellowknife, NT

October 22nd, 2012

Canada 

PLAIN LANGUAGE SUMMARY

De Beers Canada Inc. (DeBeers) is proposing to construct and operate a large scale open pit diamond mine, i.e. “Gahcho Kué Mine” located at Kennady Lake, approximately 280 km northeast of Yellowknife, NWT and 80 km southeast of the existing Snap Lake Diamond Mine, just above the treeline. There will be a 2 year construction phase, followed by an 11 year operational phase. Additionally, a 120 km winter road following the route established during the exploration phase would be constructed in each winter, connecting the site to the Tibbitt-Contwoyto winter road near the top end of MacKay Lake. The Project is undergoing an Environmental Impact Review (Panel Review), by the Mackenzie Valley Environmental Impact Review Board (MVEIRB), which is the highest level of review.

During Environment Canada’s (EC) technical review, many issues were identified that required focused discussions to resolve. Overall, EC was pleased that DeBeers incorporated many of EC’s recommendations into their updated Environmental Impact Statement (EIS). Additionally, EC would like to acknowledge the professional manner with which DeBeers and their consultants have conducted the review and the cooperative approach taken to work through outstanding issues. EC maintains its view with respect to the need for a precautionary approach and a rigorous and comprehensive suite of monitoring programs that can address gaps in baseline knowledge, detect project-related impacts in the face of substantial natural variation and inform adaptive management to minimize further impacts as the project proceeds. DeBeers has demonstrated a commitment to address outstanding gaps in baseline knowledge by undertaking further surveys and field programs. They have also initiated the formation of working groups to solicit input and guidance from federal and territorial government agencies and other stakeholders in the development of their monitoring programs. These measures should help to ensure that adequate baseline data has been collected and that monitoring programs are sufficiently developed once the project, if approved, becomes operational. Adequate monitoring will assist in detecting the magnitude of residual effects and identify adaptive management triggers to prevent or minimize these effects.

The recommendations presented in this submission for consideration by the MVEIRB are designed to address outstanding issues related to EC’s mandate including the:

1. Protection of migratory birds and the environment through effective monitoring so that impacts are understood and can be effectively managed through adaptive management;
2. Monitoring of cumulative disturbance and the impacts associated with displacement of migratory birds from normally preferred habitat; and
3. Protection of water quality by reduction of uncertainty with respect to impact predictions, and ensuring that project-related effects can be detected through monitoring of lower trophic organisms which may provide early warning signals and provide opportunities for adaptive management before impacts are detected and mitigated at higher trophic levels.

In general, EC agrees with the conclusions presented in the EIS. EC is of the opinion that the conclusions drawn by DeBeers are, in general, supported by the analysis. However uncertainties in the impact assessment should be addressed.

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LIST OF ACRONYMS

AEMP – Aquatic Effects Monitoring Program
AQEMMP - Aquatic Quality and Emissions Monitoring and Management Plan
BATEA – Best Available Technology Economically Achievable
CCME – Canadian Council of Ministers of the Environment
CEPA – Canadian Environmental Protection Act
COSEWIC – Committee on the Status of Endangered Wildlife in Canada
DOE – Department of the Environment
EC – Environment Canada
EC-CWS – Canadian Wildlife Service
EEM – Environmental Effects Monitoring
EIS – Environmental Impact Statement
EQC – Effluent Quality Criteria
GNWT - Government of the Northwest Territories
IDZ – Initial Dilution Zone
IMP - Incineration Management Plan
IR – Information Request
ISR - Inuvialuit Settlement Region
KI – Key Indicator
LSA – Local Study Area
MBCA – Migratory Birds Convention Act
MBR – Migratory Bird Regulations
MDL – Method detection limits
Mt – Million Tonnes
MVEIRB - Mackenzie Valley Environmental Impact Review Board
MVRMA - Mackenzie Valley Resources Management Act
NU - Nunavut
NWT - Northwest Territories
PRISM - Program for Regional and International Shorebird Monitoring
RSA – Regional Study Area
SARA – Species at Risk Act
TSP – Total Suspended Particulate
TSS – Total Suspended Solids
WMP - Water Management Pond

SECTION 1.0: INTRODUCTION

1.1 Project Overview

De Beers Canada Inc. (DeBeers) is proposing to construct and operate a large scale open pit diamond mine, i.e. “Gahcho Kué Mine” located at Kennady Lake, approximately 280 km northeast of Yellowknife, NWT and 80 km southeast of the existing Snap Lake Diamond Mine, just above the treeline. There will be a 2 year construction phase, followed by an 11 year operational phase. Additionally, a 120 km winter road following the route established during the exploration phase would be constructed in winter each year, connecting the site to Tibbitt-Contwoyto winter road near the top end of MacKay Lake. The Project is undergoing an Environmental Impact Review (Panel Review), by the Mackenzie Valley Environmental Impact Review Board (MVEIRB), which is the highest level of review.

The Gahcho Kué Mine has an estimated 11 year life and average of 4.5 million carats to be extracted from approximately 3 million tonnes of kimberlite mined annually. The diamond-bearing kimberlite deposits are located beneath Kennady Lake, containing an indicated resource of approximately 30 million tonnes (Mt) of kimberlite rock in three economically viable ore bodies (i.e. 5034, Hearne, and Tuzo). The ore extends from near the bottom of Kennady Lake down to more than 300 metres (m) below the Lake. The ore will be extracted by open-pit mining methods, requiring dewatering of approximately 80% of Kennady Lake in order to access the ore bodies, which involves building a series of dykes, ditches, berms and ponds.

More specifically, as Kennady Lake is lowered, water will be pumped to the watershed north of the Lake and to the natural outflow to the east. All water pumped from Kennady Lake will reconnect with its natural watershed a few kilometers further downstream. The disturbed areas of the Project site will be isolated from the remainder of the Kennady Lake watershed by a series of dykes so that flows unaffected by the Project will be diverted away from the controlled area which will in turn, cause changes to the watershed including flooding of a number of lakes. The main area of the partially dewatered Lake will serve as the Water Management Pond (WMP) during operations. Generated waste streams from mine activities include lake-bed sediment and overburden, mine rock piles, fine and coarse processed kimberlite piles and general wastes. Mine rock would be stored in dewatered areas of Kennady Lake and on nearby land. Closure and reclamation activities include backfilling of the pits with waste rock and tailings, re-watering Kennady Lake (which may take approximately 8 years) with one of the pits anticipated to being a permanently stratified (i.e. meromictic) basin within the re-watered Lake, and final reconnection to the surrounding watershed.

1.2 Mandate

Environment Canada (EC) is responsible for leading the implementation of the Government of Canada’s environmental agenda and is committed to contributing to the realization of sustainable development in Canada’s North. EC’s mandate covers the preservation and enhancement of the quality of the natural environment, including water, air, soil, flora and fauna, as well as species at risk and migratory birds. Science plays a fundamental role in enabling EC to deliver on the

Department's mandate by informing environmental decision-making and regulations and by supporting the delivery of services to Canadians. In the NWT, EC provides specialist or expert information or knowledge to the MVEIRB and to licensing authorities, in accordance with the expertise that the Department has available as required under the *Mackenzie Valley Resources Management Act* (MVRMA).

In addition to EC's mandate to conserve and enhance the quality of the natural environment, the Department administers the pollution prevention provisions of the *Fisheries Act* which prohibits the deposit of a deleterious substance into fish-bearing waters. EC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to the *Canadian Environmental Protection Act, 1999* (CEPA 1999). EC is responsible for protecting and conserving migratory bird populations and individuals, under the *Migratory Birds Convention Act, 1994* (MBCA). The Department also administers the *Species at Risk Act* (SARA) in cooperation with Fisheries and Oceans Canada and the Parks Canada Agency. The objective of SARA is to prevent wildlife species from becoming extirpated or extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming threatened or endangered.

1.3 Environment Canada's Submission

This submission summarizes the results of EC's review of the EIS and supporting information provided by DeBeers throughout the review process. The submission identifies outstanding concerns related to issues the Department has identified, and makes recommendations for consideration by the MVEIRB.

A summary of the legislation from which EC's mandate arises is provided in Section 2.0. Our comments related to these topics are found in Sections 3.0 – 5.0 of this submission and finally a summary of EC's recommendations can be found in Section 6.0. Appendix 1 provides additional context on these Acts as well as other federal policies, guidelines and international agreements which helped support the content and recommendations.

EC based its analyses on the principle that the Project, if approved, should be planned, built, operated, and decommissioned in a manner that ensures the highest level of environmental protection so that the well-being of Canadians is enhanced and the natural environment is conserved. To that end, EC has undertaken a science-based review of the various issues of interest to the Department with the aim of assessing if the conclusions and predictions presented by the Proponent are realistic and if the data and analyses upon which they were based are credible.

In the conduct of our review, we were guided by a number of over-riding principles or concepts, including the following:

- The **precautionary principle**, which recognizes that the absence of full scientific certainty shall not be used as a reason to postpone decisions in the face of the threat of serious or irreversible harm.

- An **ecosystem approach** to environmental management, which is a method of environmental stewardship that focuses understanding, decision making, and program action on maintaining the capacity of a whole system to produce ecological goods and services by concentrating on the long-term health of ecosystem structure, processes and interactions. The intent is to proactively integrate environmental, economic, and social objectives within ecological scales and timeframes in order to achieve environmental sustainability.
- The use of **Best Available Technology Economically Achievable** (BATEA) and best management practices to prevent, reduce or eliminate the direct or indirect release of effluents and substances into aquatic, atmospheric and terrestrial ecosystems.

Though EC and DeBeers have held many useful discussions and have resolved many issues, some remain outstanding. Briefly stated, EC is of the opinion that issues related to the following topics have not been adequately addressed:

- **Freshwater Environment:** 1) water quality treatment contingencies including pit water quality at closure, and 2) mercury methylation due to flooding of shoreline areas.
- **Terrestrial Environment:** 1) avoiding incidental take of migratory birds and their nests and eggs, and 2) contamination risk to birds and species at risk using water collection ponds and water management ponds.

SECTION 2.0: EC'S MANDATE, ROLES & RESPONSIBILITIES

2.1 Introduction

The mandate of EC is determined by the statutes and regulations under the responsibility of the assigned Minister of the Environment. In delivering this mandate, the Department is responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements, and related programs.

In the NWT, the MVEIRB is charged with administering environmental assessments under the MVRMA. EC is participating in the review of the proposed Gahcho Kué Project in order to provide specialist expertise, information and knowledge to both the MVEIRB under the MVRMA and to regulators.

The scope of specialist or expert information or knowledge provided by EC in this submission to the MVEIRB is within the Department's mandate as defined by the *Department of Environment Act* and through other legislation assigned to the Minister of the Environment.

It is important to note that the *Fisheries Act*, the *Canadian Environmental Protection Act, 1999* (CEPA 1999), the *Migratory Birds Convention Act, 1994* (MBCA), the *Species at Risk Act* (SARA), and regulations made under these Acts, are applicable to the Project and binding on the Proponent.

The key pieces of relevant legislation administered by EC that influenced the content of this submission are summarized in this Section. Appendix 1 (i.e. Legislation, Regulations and Guidelines) describes in more detail these and other relevant legislation, and national environmental policies and programs.

EC's comments and recommendations in this submission are intended to provide expert advice to project proponents and decision-makers, in accordance with its program related responsibilities and associated guidelines and policies. These comments are in no way to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations. Responsibility for achieving regulatory compliance and cost effective risk and liability reduction lies solely with the project proponent.

2.2 *Fisheries Act* – Pollution Prevention Provisions

The responsibility for the administration (including the enforcement) of the pollution prevention provisions of the *Fisheries Act* has been assigned to the Federal Minister of the Environment.

Subsection 36(3) of the *Fisheries Act* specifies that, unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter

any such water. In the definition of deleterious substance (Section 34(1), the *Fisheries Act* includes “any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.” Subsection 36(3) makes no allowance for a mixing or dilution zone at the point of deposit.

In the absence of a regulation authorizing their release and to the extent that the substance is a prescribed substance or that it can be demonstrated that this substance is a “*deleterious substance*” as defined in paragraph 34(1) of the *Fisheries Act*, any release from the construction, operation, reclamation or decommissioning stages of the Project to any waters frequented by fish, or in any other circumstance set out in ss.36(3), may constitute a violation of the *Fisheries Act*.

Compliance with the terms and conditions of regulatory or permitting system does not absolve DeBeers from responsibility for compliance with the requirements of the *Fisheries Act* or other federal legislation. Further, this submission does not constitute an authorization pursuant to ss.36(4) of the *Fisheries Act*, and any deposit of a deleterious substance contrary to ss.36(3) of the *Fisheries Act* is prohibited and may warrant enforcement action.

2.3 Canadian Environmental Protection Act, 1999

In Canada, the federal government, as well as provincial, territorial and Aboriginal governments, share responsibility for protecting the environment which demands close collaboration as governments work to support the well-being of Canadians. As a cornerstone of the Government of Canada's environmental legislation, the *Canadian Environmental Protection Act, 1999* (CEPA 1999) is aimed at preventing pollution and protecting the environment and human health.

One of CEPA 1999's major thrusts is the prevention and management of risks posed by harmful substances. As well, CEPA 1999 provides for the assessment and/or management of the environmental and human health impacts of new and existing substances. CEPA manages environmental and human health impacts of products of biotechnology, marine pollution, disposal at sea, vehicle engine and equipment emissions, fuels, hazardous wastes, environmental emergencies, and other sources of pollution.

CEPA 1999 is a major legislative initiative guided by a set of principles that ensure consistent approaches for achieving clear objectives to:

- contribute to sustainable development by preventing pollution;
- promote coordinated action with provinces, territories, Aboriginal governments, and federal departments to achieve the highest level of environmental quality for the health of Canadians; and
- manage risks from harmful substances and virtually eliminate releases of those substances determined to be the most dangerous.

2.4 *Migratory Bird Convention Act*

Environment Canada's mandate includes the protection of migratory birds and their habitat. The Canadian Wildlife Service (EC-CWS) of EC administers and enforces the *Migratory Birds Convention Act, 1994* (MBCA) and *Migratory Bird Regulations* (MBR).

The purpose of the MBCA is to implement the Migratory Birds Convention between Canada and the United States by protecting and conserving migratory birds, as populations and individual birds. The MBR provide for the conservation of migratory birds and for the protection of their nests and eggs. Section 5.1 of MBCA prohibits the deposit of a substance that is harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area. The Act prohibits the possession of a migratory bird, nest or egg without lawful excuse. A prohibition against the disturbance, destruction, or taking of a nest, egg or nest shelter of a migratory bird is set out in ss.6(a) of the MBR.

2.5 *Species at Risk Act*

EC also administers and enforces the federal *Species at Risk Act* (SARA). The purpose of SARA is to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened. Section 32(1) of SARA states that no person shall kill, harm, or harass an individual of a species listed as endangered or threatened, and S.33 states that no person shall damage or destroy the residence of one or more individuals of a wildlife species listed as endangered or threatened (a “residence” being defined as a dwelling-place such as a den, nest or other similar area or place that is occupied during all or part of the species life-cycle).

SARA provides automatic protection for aquatic species and birds protected by the MBCA, if they are listed as extirpated, endangered or threatened. This protection is found in the prohibition in Sections 32 and 33 of the Act (described below) which apply whether these species are on federal, provincial or territorial lands. These automatic prohibitions also apply to all other species listed as extirpated; endangered or threatened which are located on federal lands.

The Minister of the Environment is the Competent Minister for all terrestrial species listed under SARA, while the Minister of Fisheries and Oceans is the Competent Minister for all aquatic species listed under the Act. Thus Environment Canada has responsibility for the SARA provisions for all terrestrial species when not found in National Parks (the Parks Canada Agency has responsibility for those listed species in National Parks lands).

Section 79 of SARA states that every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted must ensure that measures are taken to monitor the adverse effects of a project on listed wildlife species and their critical habitat after the environmental assessment decision has been taken.

Schedule 1 of the SARA provides a list of wildlife species at risk in Canada that are considered extirpated, endangered, threatened, or of special concern. Once a species is listed on Schedule 1, the Competent Minister must prepare recovery strategies for wildlife species listed as extirpated, endangered, or threatened. Final recovery strategies are posted on the SARA Public Registry. Management plans are developed for species of special concern.

Additional details on the prohibitions including information on critical habitat prohibitions can be found in Appendix 1, Section 6.5.

SECTION 3.0: FRESHWATER ENVIRONMENT

Issue 3.1: Monitoring and Adaptive Management

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010 Volume 6, Sections 6.8 and 6.9
- Environment Canada IR Round 1, April 2012, DFO&EC_4-4

Proponent's Conclusions:

The Proponent makes predictions of effects based on modeled data, and acknowledges that such predictions involve a degree of uncertainty, due to model inputs of dynamic parameters, understanding of effects on complex systems over extended time frames, and predictions of effectiveness of mitigation measures and project designs (page 6-28).

Monitoring and follow-up are proposed to address these uncertainties, as well as to compare observations to impact predictions and to detect unanticipated effects. Objectives of the monitoring program are noted in IR response DFO&EC_4-4, and include informing adaptive management.

EC's Conclusions:

DeBeers has done extensive modeling work, using a broad baseline dataset. However, there are inherent uncertainties associated with modeling complex ecosystems. To address this, rigorous monitoring must be coupled with adaptive management. DeBeers has developed thresholds for water, sediment and fish tissue quality, and monitoring results will be assessed against predictions and benchmarks, and appropriate actions initiated.

EC recommends that DeBeers use mine operational environmental data to increase the validity of the modeled projections, and provide more certainty with respect to the predicted effects. By periodically / regularly updating input data and re-running models, uncertainties will be reduced and models can be calibrated to actual conditions.

In addition, the use of whole effluent toxicity testing would be useful for assessing the quality of Kennady Lake waters prior to reconnection to the surrounding aquatic ecosystem. Modeling looks at individual parameters which may in fact be a complex mixture in the real world, so toxicity testing is useful to evaluate the sum of the individual contaminants and integrate effects.

Recommendation EC-3.1:

EC recommends that:

- a. Further front-end design be done on a comprehensive Aquatic Effects Monitoring Program, with monitoring to be conducted during construction, operation and closure phases of the project; and*
- b. monitoring data be compared to predictions and periodically used to update and re-run models predicting future water quality. EC suggests every 3-5 years would be appropriate.*
- c. At closure, modeling predictions for lake quality be supplemented with bioassay testing (chronic and acute) prior to reconnection of Kennady Lake with Area 8.*

Issue 3.2: Water and Sediment Quality Objectives

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010 Volume 8 Section 8.9.2.2 (p. 8-345)
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010 Appendix 8.IV Derivation of Chronic Effects Benchmarks
- Golder Technical Memo dated Sept. 14, 2012 Water Quality Objectives (WQO) and sediment quality objectives (SQO) for the proposed Gahcho Kué Project – recommendations.

Proponent's Conclusions:

DeBeers has assessed a full suite of parameters, and developed water quality objectives based on predicted whole lake mixed concentrations (Kennady Lake post-closure) or concentrations at the edge of a 200m initial dilution zone (IDZ) in Lake N11. Using comparisons between baseline data, predicted water quality, and published guidelines, benchmarks have been developed for the parameters. Where the predicted water quality for a given parameter exceeds the benchmark, DeBeers proposes Interim Water Quality Objectives (WQOs) based on either baseline values or guidelines.

In the EIS, benchmarks were used for comparisons of modeled concentrations of parameters, to assess substances of potential concern. Chronic Effects Benchmarks were derived from toxicological data in literature, and represented individual-organism level effects thresholds. The “AEMP Benchmarks” proposed in the Sept. 2012 memo reflect more of an ecosystem approach, meeting goals set out in Section 3.0 of the memo for protection of the aquatic ecosystems and uses of the lakes.

DeBeers states that all water quality parameters will be monitored and compared to predicted concentrations, baseline/reference concentrations, and water quality guidelines. For the subset of

parameters which are taken forward to WQOs, these numbers are expected to provide a basis for deriving effluent quality criteria (EQC).

EC's Conclusions:

Discharges associated with this development are not the typical treatment plant or process water discharge, rather they would consist of dewatering discharges from Kennady Lake during construction, and then the closure-phase reconnection of Kennady Lake to the surrounding surface waters. To determine when Kennady Lake water quality would be suitable for reconnection, DeBeers has modeled predicted water quality on a mixed whole-lake basis, assuming the poor quality wastewater in the bottom of the Tuzo pit will remain isolated in permanent meromixis. Freshwater overlying this and the Hearne pit has been assumed to be fully mixed with the lake water.

EC is concerned that the use of a whole lake average will allow for inclusion of a gradient or “pockets” of poor quality water with areas of unacceptably high chronic toxicity occurring. There will be seasonal variations in water quality, as well as potential pulses of contaminant releases perhaps associated with groundwater inflow, tailings consolidation, waste rock/processed kimberlite sources or mediated by changes in pH. These would be masked by averaging concentrations with the whole lake. To be protective of biota which migrate into the reconnected lake basin, objectives should be met at areas of maximum concentrations in the lake.

With respect to derivation of the objectives, EC has concerns with how regional maxima were employed. These were used to determine upper bounds for natural variability in the concentrations of specific parameters, and subsequently used as the benchmark where they were higher than relevant guideline concentrations. EC suggests that when concentrations are above CCME Guidelines, that in keeping with the precautionary principle, the 95th percentile be used as the proposed AEMP Benchmark as this will dampen the effect of outlier data points. Examples of this would include aluminum, cadmium, copper and others.

Recommendation EC-3.2

EC recommends that:

- a. For substances predicted to be above the AEMP Benchmarks, the 95th percentile baseline concentration be used as the benchmark.***
- b. Monitoring to track water quality changes in Kennady Lake during closure should include measurement of deeper areas and water column profiles, as well as the waters overlying the mine pits. Assessment of the lake water quality (suitability for reconnection) should be based on individual maxima rather than whole lake mixed averages.***

Issue 3.3: Water Quality During Dewatering and at Closure, Treatment Contingency Planning

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 8, Section 8, Tables 8.9-5 to 8.9-7
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 10, Section 10.5.3
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 10, Section 10.6
- Environment Canada IR Round 1, April 2012, EC_13
- Environment Canada IR Round 1, April 2012, DFO&EC_42

Proponent's Conclusions:

Dewatering of Kennady Lake will start once Dyke A is constructed, with water being discharged to Lake N11 and Area 8 of Kennady Lake as long as discharge criteria are met. It is predicted that about half of the water in Kennady Lake can be discharged (page 8-140).

Water quality in Kennady Lake was modeled for post-closure, when the lake would include the mined-out Tuzo and Hearne pits, which will be approximately 295m and 120m deep, respectively. The Tuzo pit is predicted to be meromictic, with a saline bottom layer forming that will remain isolated from the overlying fresh water. The Hearne pit will be partially filled with fine processed kimberlite and process water, and has been modeled with full mixing assumed.

DeBeers has assessed geochemical loading of contaminants from the adjacent waste rock piles, Hearne pit, and processed kimberlite storage area. The updated modeling (incorporating 2012 changes to the project design and mitigation) concluded that seepage and surface drainage contributions will not affect the modeled predictions for water quality.

At closure, areas which have been physically altered will be resubmerged (page 8-376), including areas dominated by fine substrates (approximately 70% of the total area to be rewatered). DeBeers has stated that the refilling period of approximately eight years will provide sufficient settling time for fines to settle out.

EC's Conclusions:

DeBeers has modeled Kennady Lake water quality at closure, taking into account the various contaminant inputs and processes. EC does not disagree with the conclusions reached in the specific modeling context, but again notes the uncertainty associated with even the best modeling of multiple processes and physical behaviours in the project environment.

To address concerns with water quality at closure, monitoring of the various contaminant sources during operations will be necessary, as well as monitoring of the lake water quality and pit stratification during rewatering. Given that there will not be the typical effluent discharge, i.e.

process and contact water will remain within the lake basin, the focus should be on attaining the best possible water quality in the water management pond and above the mined-out pits.

Improvements in water quality could be realized through the implementation of treatment for process water and other in-lake areas which represent sources of contaminants. Throughout the life of mine, this could include treatment of discharges to Areas 2, 3 and 5 of Kennady Lake to minimize closure liabilities as well as maintain improved conditions in the remnant areas of the lake during operations.

Treatment of dewatering discharges should also be planned for, (as described in IR Response DFO&EC_42) to ensure water clarity is maintained in Lake N11 and Area 8 of Kennady Lake.

Recommendation EC-3.3:

EC recommends that DeBeers plan for the need to actively minimize levels of contaminants in the system. A treatment contingency plan which identifies feasible treatment methods for the operational and closure stages should be developed. Please note that dewatering and closure activities will be subject to the Pollution Prevention provisions of the Fisheries Act.

Issue 3.4: Mercury Methylation Due to Flooding of Shoreline Areas (D2, D3 and E1) and Kennady Lake

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 8, Section 8.6, Table 8.6-1, (page 8-200)
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 8, Section 8.6.2.2, (pages 8-222 to 225)
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 8, Table 8.8-2, (page 8-285)
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 8, Section 8.8.4.1, Table 8.8-13
- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Volume 10, Section 10.5.6, (page 10-97)

Proponent's Conclusions:

The EIS discusses the potential for mercury methylation in areas where shorelines will be inundated (due to flow alterations) and in Kennady Lake upon rewatering. Lakes D2 and D3 have organic material along the shoreline that will be submerged, and these lakes, as well as Lake E1 to a lesser degree, will have considerable shoreline flooding.

“Approximately ...53.1 ha and 6.8 ha of riparian habitat temporarily inundated as a result of raising Lakes D2 and D3, and E1, respectively. The riparian vegetation of the

three lakes areas that will be flooded includes scrub birch (Labrador tea tundra and cloudberry low shrub bog), and water sedge (narrowleaved cottongrass fen) over a low-gradient substrate that has a high proportion of boulder or cobble material. The larger surface area associated with the flooding of Lakes D2 and D3 has a predominance of sedges.” (8.6.2.2 page 8-222)

The analysis of potential mercury methylation concludes:

“Naturally low nutrient levels in the surface soils and cold temperatures throughout the year would limit bacterial production, resulting in much lower rates of processes such as decomposition (e.g., releasing nutrients) and methylation compared to warmer waterbodies where large increases in nutrient releases to the water column and mercury accumulation in fish have been documented. Although there is potential for temporary changes to surface water and sediment quality with the raising of Lakes A3, D2 and D3, and E1, preparation of the areas to be flooded where necessary, and monitoring will limit the potential for longterm nutrient and metals releases to the lakes and mercury methylation. Changes in water and sediment quality are predicted to be minor relative to baseline conditions. As such, residual effects to fish are anticipated to be negligible.” (page 8-225).

With respect to the refilling of Kennady Lake:

“Without a large organic carbon source to support the process, it is unlikely that methyl mercury production will be of concern in Kennady Lake once refilled.” (page 10-97).

Proposed mitigation measures include removal of vegetation cover and armoring of areas which would be susceptible to erosion (Table 8.6-1, page 8-415). Predicted concentrations of mercury will peak in fish and water during operations, then drop following closure to below water quality objectives.

Fish from Kennady Lake and Lake N16 are already above human consumption guidelines for mercury (Table 8.3-40). Modeled values for water quality post-closure are below CCME guidelines (Table 8.8-13). Bioaccumulation factors were calculated, and effects on fish tissues predicted to be below toxicological benchmarks (Table 8.9-10).

EC’s Conclusions:

Formation of methylmercury following inundation of shorelines is a well-documented phenomenon. The Proponent identifies potential mitigation strategies (vegetation removal) and monitoring, and has modeled mercury levels in water, sediments, and fish. Given the small stature of vegetation, and the potential for surface erosion associate with removal, EC questions whether this mitigative measure would be effective, or whether this disturbance would lead to problems with sedimentation and/or potentially thermal erosion.

Other factors influencing the methylation of mercury include sulphate concentrations (as the methylation is mediated by sulphate-reducing bacteria), and anoxia. Sulphate levels in Kennady

Lake are predicted to increase following closure (page 8-471, Table 8.8-13)). Lakes D2 and D3 have low baseline sulphate (<1 mg/L) but will be subject to sulphate deposition during operations (Table 8.8-12).

Monitoring of the inundated areas and the water, sediment and fish in the lakes will be important to validate predictions for mercury concentrations. EC seeks further information on adaptive management responses that would be available should levels increase above benchmarks. For the lakes that would be inundated during operations (D2 and D3) periodic monitoring should be done, with trends tracked to identify changes in methylmercury concentrations.

Recommendation EC-3.4:

EC recommends that DeBeers identify what specific management response actions would be feasible in the event mercury concentrations approach benchmarks or predicted levels in water, fish and sediments.

SECTION 4.0: TERRESTRIAL ENVIRONMENT

Issue 4.1: Avoiding Incidental Take of Migratory Birds and Their Nests and Eggs

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Section 11.12.7
- De Beers Canada Inc. Round 1 IR #EC-3 Response, 04 April 2012
- De Beers Canada Inc. and EC, Meeting Report, 04 July 2012
- De Beers Canada Inc. Round 2 IR #EC-1 Response, 10 September 2012
- De Beers Canada Inc. Gahcho Kué Project Draft Wildlife Effects Mitigation and Management Plan v3, October 2012

Proponent's Conclusions:

The Proponent has indicated that the following key mitigation practices will be implemented for birds and bird species at risk: clearing land outside the migratory bird breeding season (May 15th to September 15th) if birds are nesting in a work area, avoiding disturbance of active nest sites, and preventing birds from nesting on manmade structures.

The Proponent has identified a risk of damaging or destroying bird nests due to flooding of terrestrial habitat. Construction of Dyke F and Dyke G on the west side of Kennady Lake is required to keep water away from mining operations. Construction of these dykes is expected to raise water levels by 2.8m in lakes D2 and D3 and by 0.79 meters in Lake E1, leading to flooding of roughly 60 hectares of terrestrial habitat over a period of three years. The largest increases in water level are anticipated to occur during the month of June in each year due to spring freshet, which corresponds to the period when migratory birds may be establishing nests in areas that will become flooded. The Proponent met with EC on two occasions (May 8th and July 4th, 2012) to discuss potential mitigation measures to avoid incidental disturbance or destruction of nests due to flooding. EC asked the Proponent to provide a description of potential mitigation options, potential limitations of each option and a rationale for the final options selected (i.e. Round 2 IR #EC-1). The Proponent considered grubbing vegetation to remove nesting habitat, managing the timing of flooding, pumping water to flood the area after the nesting season, removal of shrub vegetation only and the use of bird deterrents as mitigation options. Grubbing vegetation and adjusting the timing of dyke construction were not considered to be viable options. Water could be actively pumped from Kennady Lake to fill areas D and E prior to May 15th during dewatering such that flooded areas would reach their maximum water level before the nesting period begins. The Proponent has indicated that they will further investigate the feasibility of this option. Targeted removal of shrubs along drainage courses prior to the nesting season could help to reduce available nesting habitat. The Proponent plans to do surveys in 2013 to identify areas where shrub removal will contribute to mitigation. Although deterrents could further reduce the possibility of nesting in areas subject to flooding, they would

need to operate remotely and be weather resistant. The Proponent plans to further discuss deterrent options with EC.

EC's Conclusions:

Activities that physically disturb or destroy terrestrial habitat during the breeding season can result in the inadvertent disturbance or destruction of nests and eggs of migratory birds. This “incidental take” of migratory bird nests and eggs is prohibited under S.6(a) of the federal *Migratory Birds Regulations*. Under the legislation, EC cannot issue a permit to authorize the disturbance or destruction of a nest in circumstances of incidental take. As a result, project proponents are responsible for taking appropriate measures to ensure that they comply with the legislation.

Activities where migratory birds are killed or harmed may be found to violate the regulatory prohibitions in Section 5 of the *Migratory Birds Regulations*, which prohibit hunting of a migratory bird except under authority of a permit. The term “hunt”, as defined in the *Regulations*, means to chase, pursue, worry, follow after or on the trail of, lie in wait for, or attempt in any manner to capture, kill, injure or harass a migratory bird, whether or not the migratory bird is captured, killed or injured.

The Proponent is aware of the prohibitions under the *Migratory Birds Convention Act*, 1994 and associated *Migratory Birds Regulations* and has acknowledged their responsibility to take measures to remain in compliance with this legislation.

EC notes that the Proponent is planning to conduct a fish salvage in Areas 2-7 of Kennady Lake prior to de-watering (EIS Supplement Section 8 page 8-8). The Proponent noted on page 11.12-87 of the EIS that loons were killed at both the Ekati and Diavik diamond mines after becoming entangled in gill nets. EC reminds the Proponent that precautions must be taken to avoid incidental take of birds during fish salvage operations.

General mitigation measures to avoid incidental take of nests and eggs:

EC generally recommends that project proponents avoid engaging in potentially destructive activities during the key migratory bird breeding period as primary mitigation to reduce the risk of nest destruction. In the southern Arctic region of the NWT and NU, migratory birds may be found incubating eggs from May 14th until July 30th, and young birds can be present in the nest until September 12th.

The Proponent's intention to “*complete clearing land outside the migratory bird breeding season (May 15th to September 15th) if birds are nesting in a work area*” seems to suggest that areas might be cleared during the migratory bird breeding season if there is no indication that birds are nesting in a work area, which would imply that areas are searched for active nests beforehand. Except when nests are known to be easy to locate, active nest searches are generally not recommended given 1) searchers may disturb or stress nesting birds and 2) in most habitats, the likelihood of detecting all active nests in a given search area is known to be low.

Therefore EC is of the view that scheduling clearing outside the migratory bird breeding season should be the primary mitigation measure. In the event that clearing cannot be scheduled outside the breeding season, areas should be thoroughly surveyed for active nests within 4 days of destruction/clearing by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food). Nest surveys should be carried out using a scientifically sound approach.

If nests containing eggs or young of migratory birds are located or discovered, all activities in the nesting area should be halted until nesting is completed (i.e. the young have left the vicinity of the nest). Any nest found should be protected with a buffer zone appropriate for the species and the surrounding habitat until the young have left the nest.

Mitigation measures to avoid incidental take of nests and eggs from flooding of terrestrial habitat:

According to Figure 8.1-1 of the EIS, under baseline conditions, water from Lakes D2, D3 and E1 flows into Kennady Lake (EIS Figure 8.1-1). Construction of Dyke F and Dyke G will block the flow of water from these Lakes into Kennady Lake causing water levels in Lakes D2, D3 and E1 to rise until they reach a level at which they begin to drain into Lake N14 (EIS Supplement – Figure 3.5-1). The Proponent anticipates that it will take 3 years for this to occur. Active pumping of water into Lakes D2 and E1 during dewatering of Kennady Lake could accelerate the rise of water levels and shorten the period of time it would take to reach the point at which these lakes begin to drain into Lake N14. If this could be achieved outside of the migratory bird breeding season, it may help to minimize the risk of incidental take of nests and eggs of migratory birds. However, until the feasibility of this option is explored further, it would be prudent to assume that a combination of approaches will be necessary to reduce the risk of incidental take due to flooding. EC agrees that removing shrub vegetation outside of the nesting season and the use of deterrent measures could be viable options to reduce the attractiveness of this area to nesting birds. To assess the potential efficacy of these options, a better understanding of the bird species and number of individuals nesting in the areas that will be flooded is required.

Recommendation EC-4.1:

EC recommends that:

- a. DeBeers consult the fact sheet “Planning Ahead to Reduce Risks to Migratory Bird Nests” available at: <http://www.ec.gc.ca/paom-itmb/>;***
- b. DeBeers avoid clearing land during the migratory bird breeding season;***

In the event that clearing or disturbance cannot be scheduled outside of the nesting season, areas should be thoroughly surveyed for active nests using a scientifically sound approach a maximum of 4 days before destruction/clearing. Surveys should be carried out by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food);

- c. The following setback distances should be used to protect the nests of different groups of tundra-nesting birds from disturbance:***

| Species Group | Pedestrians /ATVs (m) | Roads / Construction / Industrial Activities (m) |
|--------------------|-----------------------|--|
| Songbirds | 30 | 100 |
| Shorebirds | 50 ^a | 100 ^a |
| Terns/Gulls | 200 ^b | 300 ^b |
| Ducks | 100 | 150 |
| Geese | 300 | 500 |
| Swans/Loons/Cranes | 500 | 750 |

^a If project activities are within the breeding ranges of American Golden Plover or Ruddy Turnstone, these setbacks should be increased to 150 m for Pedestrians/ATVs and 300 m for Roads/Construction/Industrial Activities respectively. If project activities are within the breeding ranges of Black-bellied Plover, Whimbrel or Redknot (a Species at Risk), these setbacks should be increased to 300m for Pedestrians/ATVs and 500m for Roads/Construction/Industrial Activities. If field crew are trained in the identification of these species, then these higher setbacks need only apply to these more sensitive species, and lower setbacks can be used for the remaining shorebird species. In areas where several species are nesting in proximity, setbacks for the most sensitive species should be used if they are present.

^b If project activities are in proximity to nests of Ross's Gull (Threatened – SARA Schedule 1) these setbacks should be increased to 500m Pedestrians/ATVs and 750m for Roads/Construction/Industrial Activities. The draft Recovery Strategy for Ivory Gull (Endangered – SARA Schedule 1) currently identifies the area within a 2-km radius around colonies where at least one individual was observed nesting any time between 2002 and 2009 as Critical Habitat. As a precautionary approach, a 2-km setback should also be applied to any Ivory Gull nest that is encountered in an area that is not currently identified as Critical Habitat in the Recovery Strategy.

d. The following setbacks should be used to protect nests of birds designated as species at risk that may be encountered in the project area:

- **Rusty Blackbird (Species of Special Concern, Schedule 1 of Species at Risk Act) – 300 m¹**
- **Short-eared owl (Species of Special Concern, Schedule 1 of Species at Risk Act) – 1.5 km¹**
- **Peregrine Falcon (anatum/tundrius Species of Special Concern, Schedule of Species at Risk Act) – 1.5 km¹**
- **Horned Grebe (assessed by COSEWIC as species of Special Concern) – 100 m from the high water mark of the wetland or waterbody containing a nest;**

e. DeBeers include EC's recommended setback distances for tundra nesting birds and species at risk in their Wildlife Effects Mitigation and Management Plan;

f. In cases where it is not feasible to use the recommended setback distances to protect a nest, nest-specific guidelines and procedures should be developed to protect the nest;

g. Nests should be monitored to determine the success of mitigation measures and the results of monitoring should be provided in annual wildlife monitoring reports;

h. DeBeers provide EC with an updated assessment of the feasibility of pumping water into Lakes D2 and E1 during de-watering of Kennady Lake to raise water levels outside of the migratory bird breeding season;

i. DeBeers undertake field surveys in summer 2013 to determine the species and density of nesting birds within the area that will be flooded and to identify potential areas for targeted shrub removal outside of the nesting season. The results of these surveys

¹ Based on setback distances recommended in Table 6 of: Aboriginal Affairs and Northern Development Canada. 2011. Northern Land Use Guidelines Volume 09a – Northwest Territories Seismic Operations. 47 pgs.

should be used to provide EC with an updated assessment of the feasibility of shrub removal and use of deterrents as methods to reduce attractiveness of the area for nesting birds; and

- j. DeBeers provide EC, prior to the start of construction, with a plan to avoid incidental take of nests and eggs from flooding of terrestrial habitat.*

Issue 4.2: Contamination Risk to Birds and Species at Risk Using Water Collection Ponds and the Water Management Pond

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Section 11.12 - Table 11.12-12, Pg. 11.12-74 and 11.12-75
- De Beers Canada Inc. Gahcho Kué Project EIS 2012 Supplement, April 2012, Section 8.2.5.1.1
- De Beers Canada Inc. Gahcho Kué Project EIS Mine Environmental Monitoring and Management Framework, May 2012, Section 3.2.2
- De Beers Canada Inc. Gahcho Kué Project EIS Wildlife Effects Mitigation and Management Plan v3, October 2012
- De Beers Canada Inc. Gahcho Kué Project Wildlife Monitoring Plan, October 2012
- De Beers Canada Inc. Gahcho Kué Project Wildlife Monitoring Plan, October 2012, Appendix A – Draft De Beers Canada Inc. Gahcho Kué Project Wildlife Surveillance Monitoring
- De Beers Canada Inc. Gahcho Kué Project Wildlife Ecological Risk Assessment, October 2012

Proponent's Conclusions:

The Proponent concluded that potential effects to survival and reproduction of birds and species at risk from ingestion of soil, exposed sediments, vegetation and water (including seepage and surface water runoff from processed kimberlite and mine rock piles), or inhalation of air and dust emissions were pathways with “no linkage”. In the EIS, the Proponent acknowledged there was a concern that birds and species at risk might drink from water collection ponds or containment ditches, resulting in negative health effects on birds. Contained runoff from the coarse and fine processed kimberlite piles and mine rock piles will drain into Area 3 of Kennady Lake which will become the Water Management Pond (WMP) during construction and operation of the project. Water from Area 3 will be monitored and discharged to the downstream receiving environment via Lake N11. The EIS cited the results of an ecological risk assessment which found that there was a potential for effects to aquatic-dependent species (waterfowl and shorebirds) due to elevated boron levels in Kennady Lake after refilling during the closure phase. However, it was concluded that the risk assessment corresponded to an extreme condition that has a low likelihood of occurring. The ecological risk assessment cited in the EIS was not included in appendices filed with the EIS in Dec. 2010.

A wildlife ecological risk assessment was recently submitted to the public registry on Oct. 4th, 2012. This assessment evaluated the risk to terrestrial and aquatic birds using Lakes N11 and 410, which are water bodies that will receive controlled discharges from Kennady Lake during the construction and operations phases. Although it was acknowledged that water quality impacts in Kennady Lake would be of higher magnitude than lakes downstream, an assessment of the risk to wildlife using Kennady Lake was not deemed appropriate because it was assumed that 1) fish will be removed from water management areas of Kennady Lake, eliminating the food source for piscivorous wildlife, 2) dewatering of water management areas will disrupt aquatic habitat limiting availability of aquatic invertebrates, 3) disturbance from mining activity within and adjacent to Kennady Lake will be a deterrent for wildlife, and 4) water consumed from water management areas would only comprise a small fraction of the total dose of chemicals in food chain models.

The risk assessment identified chromium, copper and iron as parameters of potential concern with exposure hazard quotients that exceeded 1, indicating a potentially low risk to birds. However, it was concluded that the risk of project-related adverse effects to avian receptors from these metals was low and likely to be negligible because of the level of conservatism built into the risk assessment.

The Environmental Monitoring and Management Framework submitted in May 2012 stated that *“To provide for the safety of waterbirds using the Project area, the collection ponds and Water Management Pond will be surveyed from the ground for the presence of waterbirds as part of Wildlife Surveillance Monitoring. Weekly surveys will be conducted from the ground (approx. May-November) and Environment Canada will be informed if there is regular use of WMPs by waterbirds”*.

The more recent Wildlife Effects Mitigation and Management Plan and Wildlife Monitoring Plan submitted in October 2012 did not include plans to survey the use of collection ponds and the WMP by waterbirds as part of the regular Wildlife Surveillance Monitoring Program.

EC's Conclusions:

Monitoring data from other operating mines in the NWT suggests that waterfowl and waterbirds can make extensive use of water management ponds, especially if these areas are subject to earlier thaw than natural water bodies. For example, monitoring at the Diavik Diamond mine reported that 47% of waterbird observations occurred on mine-altered water bodies (i.e. engineered lined ponds to collect site runoff water) (DDMI, 2011).

The Proponent has not provided a detailed assessment of the contamination risk to waterbirds using water collection ponds and the WMP during the operational phase of the project. Water quality modeling presented in Section 8.2.5.1.1 of the 2012 EIS Supplement, suggested that during operations chromium, iron, cadmium and copper concentrations in Area 3 of Kennady Lake (i.e. the WMP) would be above CCME Chronic Aquatic Life Water Quality Guidelines. The Proponent's rationale for not conducting a risk assessment for birds using this area during operations is based on untested assumptions that do not appear to be supported by results of monitoring at existing diamond mines in the NWT. The Proponent did not provide a rationale

for dropping surveys of waterbird use of collection ponds and the WMPs in the most recent version of the Wildlife Surveillance Monitoring Program. EC reminds the Proponent that Section 5.1 of the *Migratory Birds Convention Act* prohibits persons from depositing substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

EC is of the opinion that, as a precautionary measure, surveys of water collection ponds and the WMP should be carried out during the construction and operation phases of the project to document their use by waterbirds.

Recommendation EC-4.2:

EC recommends that:

- a. DeBeers should include surveys of waterbird use of collection ponds and WMP as part of the Wildlife Surveillance Monitoring Program as outlined in the May 2012 Environmental Monitoring and Management Framework. Further details on this component of the Wildlife Surveillance Monitoring Program should be provided in the next draft of the Wildlife Effects Mitigation and Management Plan; and*
- b. Monitoring results should be included in annual monitoring reports and EC should be notified of any incidents involving injury or mortality of a migratory bird.*

Literature Cited

Diavik Diamond Mines Inc. (DDMI) 2011. Wildlife Monitoring Program Report – 2010. 115 pp.

Issue 4.3: Upland Birds – Contribution to Regional Monitoring Programs

Reference:

- De Beers Canada Inc. Gahcho Kué Project Wildlife Monitoring Plan, October 2012

Proponent's Conclusions:

The Proponent is proposing to monitor population trends of upland birds during the life of the Project to contribute towards filling existing information gaps in the N7 Bird Conservation Region. The objective of the monitoring program for upland birds would be to detect changes in regional bird populations over time. The Proponent is proposing to use a standard technique for surveying shorebirds, the Program for Regional and International Shorebird Monitoring (PRISM), which includes EC's rapid survey approach. The Proponent intends to solicit input from EC to determine the location and number of plots to meet the monitoring objectives.

Environment Canada's Conclusions:

The proposed monitoring program would provide a valuable contribution to regional migratory bird monitoring programs undertaken by the Canadian Wildlife Service (EC-CWS). Adoption of the PRISM methodology and protocols would allow for integration of the data collected by the Proponent with existing regional databases for the Canadian Arctic. These monitoring protocols have been adopted by other mines operating in the Canadian Arctic such as the Meadowbank Gold Mine, the Doris North Hope Bay Gold Mine and the proposed Mary River Iron Mine and can be tailored to meet the specific objectives of each monitoring program. EC would be pleased to work with the Proponent to further elaborate the proposed monitoring program for upland birds.

Recommendation EC-4.3:

EC recommends that DeBeers implement the proposed monitoring program for upland birds.

Issue 4.4: Identification of Adverse Effects, Mitigation and Monitoring for Avian Species at Risk

Reference:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Sections 11.12.2, 11.12.4, 11.12.5, and 11.12.7

Proponent's Conclusions:

Rusty blackbird, horned grebe, peregrine falcon and short-eared owl were the only avian species at risk observed in the Regional Study Area (RSA) during baseline surveys. The Proponent assessed that the direct incremental impacts from the project and the cumulative impacts from the Project and other developments on birds and avian species at risk would be negligible (<1% change) to low (1 to 10% change from the project relative to baseline values) in magnitude. This conclusion applied to both direct habitat loss and indirect changes to habitat quality beyond the Project footprint. The Proponent concluded that the incremental and cumulative impacts from the Project and other developments would not significantly influence the persistence of avian species at risk and other birds.

EC's Conclusions:

The Proponent has correctly identified avian species at risk that could potentially be encountered within the project area. Table 1 includes the full list of terrestrial species at risk that may be encountered in the Regional Study Area for the Gahcho Kué Project that have been assessed as being at risk by COSEWIC and are either on Schedule 1 of SARA or are being considered for addition to Schedule 1 of SARA. EC anticipates that the Government of Northwest Territories, Environment and Natural Resources will provide expertise as to the adequacy of the information

provided, and the mitigation and monitoring measures proposed for Peregrine Falcon, Short-eared Owl, Grizzly Bear and Wolverine.

Table 1. Terrestrial species at risk with ranges that overlap with the Gahcho Kué Project Regional Study Area.

| Terrestrial Species at Risk ¹ | COSEWIC Designation | Schedule of SARA | Government Organization with Lead Management Responsibility ² |
|---|---|-------------------------|---|
| Horned Grebe (Western population) | Special Concern | Pending | EC |
| Peregrine Falcon | Special Concern (<i>anatum-tundrius</i> complex ³) | Schedule 1 | GNWT |
| Short-eared Owl | Special Concern | Schedule 1 | GNWT |
| Rusty Blackbird | Special Concern | Schedule 1 | GNWT |
| Grizzly Bear | Special Concern | Pending | GNWT |
| Wolverine (Western population) | Special Concern | Pending | GNWT |

¹ The Department of Fisheries and Oceans has responsibility for aquatic species.

² Environment Canada (EC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the Migratory Birds Convention Act (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.

³ The *anatum* and *tundrius* subspecies of Peregrine Falcon were reassessed by COSEWIC in 2007 and combined into one subpopulation complex. This subpopulation complex was assessed by COSEWIC as Special Concern, and was added to Schedule 1 of SARA in July 2012.

Implementation of the general mitigation measures for migratory birds identified in the Proponent's draft Wildlife Effects Mitigation and Management Plan, the species-specific setback distances recommended by EC in Section 4.1 and surveillance monitoring of waterbird use of water collection ponds and the Water Management Pond will help to mitigate and monitor potential adverse effects to Horned Grebe and Rusty Blackbird should they be encountered during project undertakings.

Recommendation EC-4.4:

EC recommends that:

- a. If species at risk or their nests and eggs are encountered during project activities or monitoring programs, the primary mitigation measure for each species should be avoidance. The species-specific nest setback distances recommended by EC in Section 4.1 should be used to determine zones of avoidance. Monitoring should be undertaken to ensure that mitigation measures are successful and the results of monitoring should be provided to the relevant agency with management responsibility for each species; and*
- b. DeBeers should ensure that mitigation and monitoring strategies are consistent with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the project and should consult with the Government of Northwest Territories and EC on adaptive management strategies should they be required.*

Issue 4.5: Reducing Aircraft Disturbance to Migratory Birds

References:

- De Beers Canada Inc. Gahcho Kué Project EIS, December 2010, Section 11.8.3.3 – Table 11.8-15, and Section 11.12 - Table 11.12-12
- De Beers Canada Inc. Gahcho Kué Project Draft Wildlife Effects Mitigation and Management Plan v3, October 2012, Section 3.2

Proponent's Conclusions:

The Proponent is proposing that aircraft should maintain a minimum flight altitude of 300 m, except during take-off and landing, in order to reduce sensory disturbance to wildlife.

EC's Conclusions:

Disturbance of birds by aircraft, which includes both noise as well as a visual component, has been widely observed. Outside of the winter road season (April – December), the Proponent estimated that there could be 45 flights/month of large propeller aircraft and 10 flights/month of small propeller aircraft during the operations phase. There would be an additional 50-75 helicopter flights each year. A literature review conducted by EC in response to a request by the Inuvialuit Wildlife Management Advisory Council (NWT) for recommendations on minimum flight altitudes for aircraft in areas where birds are present revealed that birds reacted in only 25% of studies when aircraft were above 650 m. This was established as the minimum flight altitude to protect birds in the Inuvialuit Settlement Region (ISR). Although this guideline was developed for the ISR, it is relevant to all tundra habitats where migratory birds are found and is

provided as part of standard advice by EC in reviews of development projects in the NWT and Nunavut. The minimum altitudes for aircraft proposed by the Proponent would not be sufficient to protect migratory birds from disturbance during spring migration, the breeding season and fall migration.

Recommendation EC-4.5:

In order to reduce aircraft disturbance to migratory birds, EC recommends the following general mitigation measures, safety permitting:

- *Plan flight paths that minimize flights over habitat likely to have birds and maintain a minimum flight altitude of 650m (2100 feet);*
- *Avoid excessive hovering or circling over areas likely to have birds; and*
- *Inform pilots of these recommendations and areas known to have birds.*

SECTION 5.0: ATMOSPHERIC ENVIRONMENT

Issue 5.1: Commitments for Management Plans

References:

- De Beers Canada Inc. Gahcho Kué Project EIS – December 2010, Air Quality Section: 11.4.9
- De Beers Canada Inc. Gahcho Kué Project SIR Response (April 2012) to EC 3 and EC 9
- De Beers Canada Inc. Gahcho Kué Project Draft Air Quality and Emissions Monitoring and Management Plan, September 2012
- De Beers Canada Inc. Gahcho Kué Project Draft Incinerator Management Plan, September 2012

Proponent's Conclusions:

Within Section 11.4.9 of the EIS and in the Proponent's responses to the Information Requests (IRs) EC 3 and EC 9, they committed to developing an Air Quality and Emissions Monitoring and Management Plan (AQEMMP) and an Incineration Management Plan (IMP). The Proponent has provided draft versions of the AQEMMP and IMP.

EC's Conclusions:

EC supports the approach presented in the draft AQEMMP and IMP. Furthermore, these Monitoring Programs and Management Plans should be finalized in consultation with EC and the GNWT.

DeBeers has committed to develop these Monitoring Programs and Management Plans. To formalize these commitments, EC requests that the Board include the development and implementation of these Plans as a Board measure.

Recommendation EC-5.1:

EC supports the commitments made by DeBeers and recommends that:

- a. DeBeers provide a commitment table outlining all commitments to Management Plans including those relating to Air Quality and Incineration Management; and***
- b. The Board include the development and implementation of these Plans as a Board measure.***

SECTION 6.0: CONCLUSION & SUMMARY OF RECOMMENDATIONS

While the revised EIS is greatly improved, EC maintains its view with respect to the need for a precautionary approach and a rigorous and comprehensive monitoring program that can address gaps in baseline knowledge, detect project-related impacts in the face of substantial natural variation and inform adaptive management to minimize further impacts as the project proceeds. DeBeers has demonstrated a commitment to address outstanding gaps in baseline knowledge by undertaking further surveys and field programs. They have also initiated the formation of working groups to solicit input and guidance from federal and territorial government agencies and other stakeholders in the development of their monitoring programs. These measures will be important in determining that adequate baseline data has been collected and whether monitoring programs are sufficiently developed once the Project, if approved, becomes operational.

EC is of the opinion that the conclusions drawn by DeBeers are, in general, supported by the analysis. As well, EC acknowledges and appreciates the effort that DeBeers has, and will continue to, invest in monitoring. Furthermore, the additional monitoring requested will ensure that project related impacts can be detected and adaptive management decisions are based on accurate baseline information.

The specifics of EC's outstanding issues have been discussed in this submission but for convenience EC's recommendations are listed below:

Issue 3.1: Monitoring and Adaptive Management

Recommendation EC-3.1:

EC recommends that:

- a. Further front-end design be done on a comprehensive Aquatic Effects Monitoring Program (AEMP), with monitoring to be conducted during construction, operation and closure phases of the project; and
- b. monitoring data be compared to predictions and periodically used to update and re-run models predicting future water quality. EC suggests every 3-5 years would be appropriate.
- c. At closure, modeling predictions for lake quality be supplemented with bioassay testing (chronic and acute) prior to reconnection of Kennady Lake with Area 8.

Issue 3.2: Water and Sediment Quality Objectives

Recommendation EC-3.2:

EC recommends that:

- a. For substances predicted to be above the AEMP Benchmarks, the 95th percentile baseline concentration be used as the benchmark; and
- b. Monitoring to track water quality changes in Kennady Lake during closure should include measurement of deeper areas and water column profiles, as well as the waters overlying the mine pits. Assessment of the lake water quality (suitability for reconnection) should be based on individual maxima rather than whole lake mixed averages.

Issue 3.3: Water Quality During Dewatering and at Closure, Treatment Contingency Planning
Recommendation EC-3.3:

EC recommends that DeBeers plan for the need to actively minimize levels of contaminants in the system. A treatment contingency plan which identifies feasible treatment methods for the operational and closure stages should be developed. Please note that dewatering and closure activities will be subject to the Pollution Prevention provisions of the *Fisheries Act*.

Issue 3.4: Mercury Methylation due to Flooding of Shoreline Areas (D2, D3 and E1) and Kennady Lake

Recommendation EC-3.4:

EC recommends that DeBeers identify what specific management response actions would be feasible in the event mercury concentrations approach benchmarks or predicted levels in water, fishes and sediments.

Issue 4.1: Avoiding Incidental Take of Migratory Birds and Their Nests and Eggs

Recommendation EC-4.1:

EC recommends that:

- a. DeBeers consult the fact sheet “*Planning Ahead to Reduce Risks to Migratory Bird Nests*” available at: <http://www.ec.gc.ca/paom-itmb/>;
- b. DeBeers avoid clearing land during the migratory bird breeding season;
In the event that clearing or disturbance cannot be scheduled outside of the nesting season, areas should be thoroughly surveyed for active nests using a scientifically sound approach a maximum of 4 days before destruction/clearing. Surveys should be carried out by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food);
- c. The following setback distances should be used to protect the nests of different groups of tundra-nesting birds from disturbance:

| Species Group | Pedestrians /ATVs (m) | Roads / Construction / Industrial Activities (m) |
|----------------------|------------------------------|---|
| Songbirds | 30 | 100 |
| Shorebirds | 50 ^a | 100 ^a |
| Terns/Gulls | 200 ^b | 300 ^b |
| Ducks | 100 | 150 |
| Geese | 300 | 500 |
| Swans/Loons/Cranes | 500 | 750 |

^a If project activities are within the breeding ranges of American Golden Plover or Ruddy Turnstone, these setbacks should be increased to 150 m for Pedestrians/ATVs and 300 m for Roads/Construction/Industrial Activities respectively. If project activities are within the breeding ranges of Black-bellied Plover, Whimbrel or Redknot (a Species at Risk), these setbacks should be increased to 300m for Pedestrians/ATVs and 500m for Roads/Construction/Industrial Activities. If field crew are trained in the identification of these species, then these higher setbacks need only apply to these more sensitive species, and lower setbacks can be used for the remaining shorebird species. In areas where several species are nesting in proximity, setbacks for the most sensitive species should be used if they are present.

^b If project activities are in proximity to nests of Ross’s Gull (Threatened – SARA Schedule 1) these setbacks should be increased to 500m Pedestrians/ATVs and 750m for Roads/Construction/Industrial Activities. The draft Recovery Strategy for Ivory Gull (Endangered – SARA Schedule 1) currently identifies the area within a 2-km radius around colonies where at least one individual was observed nesting any time between 2002 and 2009 as Critical Habitat. As a precautionary approach, a 2-km setback should also be applied to any Ivory Gull nest that is encountered in an area that is not currently identified as Critical Habitat in the Recovery Strategy.

- c. The following setbacks should be used to protect nests of birds designated as species at risk that may be encountered in the project area:
- Rusty Blackbird (Species of Special Concern, Schedule 1 of *Species at Risk Act*) – 300 m¹
 - Short-eared owl (Species of Special Concern, Schedule 1 of *Species at Risk Act*) – 1.5 km²
 - Peregrine Falcon (*anatum/tundrius* Species of Special Concern, Schedule of *Species at Risk Act*) – 1.5 km¹
 - Horned Grebe (assessed by COSEWIC as species of Special Concern) – 100 m from the high water mark of the wetland or waterbody containing a nest;
- d. DeBeers include EC's recommended setback distances for tundra nesting birds and species at risk in their Wildlife Effects Mitigation and Management Plan;
- e. In cases where it is not feasible to use the recommended setback distances to protect a nest, nest-specific guidelines and procedures should be developed to protect the nest;
- f. Nests should be monitored to determine the success of mitigation measures and the results of monitoring should be provided in annual wildlife monitoring reports;
- g. DeBeers provide EC with an updated assessment of the feasibility of pumping water into Lakes D2 and E1 during de-watering of Kennady Lake to raise water levels outside of the migratory bird breeding season;
- h. DeBeers undertake field surveys in summer 2013 to determine the species and density of nesting birds within the area that will be flooded and to identify potential areas for targeted shrub removal outside of the nesting season. The results of these surveys should be used to provide EC with an updated assessment of the feasibility of shrub removal and use of deterrents as methods to reduce attractiveness of the area for nesting birds; and
- i. DeBeers provide EC, prior to the start of construction, with a plan to avoid incidental take of nests and eggs from flooding of terrestrial habitat.

Issue 4.2: Contamination Risk to Birds and Species at Risk Using Water Collection Ponds and the Water Management Pond

Recommendation EC-4.2:

EC recommends that:

- a. DeBeers should include surveys of waterbird use of collection ponds and Water Management Pond as part of the Wildlife Surveillance Monitoring Program as outlined in the May 2012 Environmental Monitoring and Management Framework. Further details on this component of the Wildlife Surveillance Monitoring Program should be provided in the next draft of the Wildlife Effects Mitigation and Management Plan; and

² Based on setback distances recommended in Table 6 of: Aboriginal Affairs and Northern Development Canada. 2011. Northern Land Use Guidelines Volume 09a – Northwest Territories Seismic Operations. 47 pgs.

- b. Monitoring results should be included in annual monitoring reports and EC should be notified of any incidents involving injury or mortality of a migratory bird.

Issue 4.3: Upland Birds – Contribution to Regional Monitoring Programs

Recommendation EC-4.3:

EC recommends that DeBeers implement the proposed monitoring program for upland birds.

Issue 4.4: Identification of Adverse Effects, Mitigation and Monitoring for Avian Species at Risk

Recommendation EC-4.4:

EC recommends that:

- a. If species at risk or their nests and eggs are encountered during project activities or monitoring programs the primary mitigation measure for each species should be avoidance. The species-specific nest setback distances recommended by EC in 4.1 should be used to determine zones of avoidance. Monitoring should be undertaken to ensure that mitigation measures are successful and the results of monitoring should be provided to the relevant agency with management responsibility for each species; and
- b. DeBeers should ensure that mitigation and monitoring strategies are consistent with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the project and should consult with the Government of Northwest Territories and Environment Canada on adaptive management strategies should they be required.

Issue 4.5: Reducing Aircraft Disturbance to Migratory Birds

Recommendation EC-4.5:

In order to reduce aircraft disturbance to migratory birds, EC recommends the following general mitigation measures, safety permitting:

- a. Plan flight paths that minimize flights over habitat likely to have birds and maintain a minimum flight altitude of 650 m (2100 feet);
- b. Avoid excessive hovering or circling over areas likely to have birds; and
- c. Inform pilots of these recommendations and areas known to have birds.

Issue 5.1: Commitments for Management Plans

Recommendation EC-5.1:

EC supports the commitments made by DeBeers and recommends that:

- a. DeBeers provide a commitment table outlining all commitments to Management Plans including those relating to Air Quality and Incineration Management; and
- b. The Board include the development and implementation of these Plans as a Board measure.

APPENDIX 1: RELEVANT LEGISLATION, REGULATIONS AND GUIDELINES

1. INTRODUCTION

The mandate of EC is determined by the statutes and regulations under the responsibility of the Minister of Environment. In delivering this mandate, the Department is also responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements and related programs. The following lists specific legislation and national environmental policies and programs administered or adhered to by EC that influenced the content of this submission.

Legislation

Department of the Environment Act
Canadian Environmental Protection Act, 1999
Fisheries Act – Pollution Prevention Provisions
Migratory Birds Convention Act, 1994
Species at Risk Act

Other

Canadian Environmental Quality Guidelines
Environmental Code of Practice for Metal Mines (2009)
Guidelines for the Assessment of Alternatives for Mine Waste Disposal (2011)

2. DEPARTMENT OF ENVIRONMENT ACT

The mandate of EC is defined by the *Department of Environment Act* (DOE Act) which provides EC with general responsibility for environmental management and protection. The Department's obligations extend to and include all matters over which Parliament has jurisdiction and have not, by law, been assigned to any other department, board, or agency of the Government of Canada. The DOE Act delegates responsibility to the Minister of the Environment for:

- Preservation and enhancement of the quality of the natural environment, including water, air, and soil quality;
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water;
- Meteorology;
- Enforcement of any rules or regulations made by the International Joint Commission relating to boundary waters and questions arising between the United States and Canada, as they relate to the preservation and enhancement of the quality of the natural environment; and
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The DOE Act states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment.

The applicable legislation can be found at: <http://laws-lois.justice.gc.ca/eng/acts/E-10/index.html>

3. CANADIAN ENVIRONMENTAL PROTECTION ACT

Proclaimed on March 31, 2000, the goal of the updated *Canadian Environmental Protection Act, 1999 (CEPA)* is to contribute to sustainable development through pollution prevention and the protection of the environment, human life and health from the risks associated with toxic substances. *CEPA* shifts the focus from managing pollution after it has been created to preventing pollution before it happens. *CEPA* provides the federal government with tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity. *CEPA* also manages environmental and human health impacts of products of biotechnology, marine pollution, disposal at sea, vehicle engine and equipment emissions, fuels, hazardous wastes, environmental emergencies, and other sources of pollution. Substances that are declared “toxic” under *CEPA* are added to the List of Toxic Substances in Schedule 1 of the Act.

CEPA 1999 Guiding Principles

Work under *CEPA* 1999 is guided by principles that contribute to and reinforce the importance of:

Sustainable development: *Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

Pollution prevention: *The use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants or waste and reduce the overall risk to the environment and human health.*

Virtual elimination: *Ensuring that releases into the environment of non-naturally occurring, persistent (meaning they take a long time to break down) and bioaccumulative substances (meaning they collect in living organisms) resulting from human activity are reduced to extremely low levels.*

Ecosystem approach: *Reflecting the dynamic interrelationships between living organisms (plant, animal and microorganism communities) and their non-living environment.*

Precautionary principle: *Where there are threats of serious or irreversible damage, lack of full scientific certainty will not postpone cost-effective measures to prevent environmental degradation.*

Intergovernmental cooperation: *Recognition that all governments in Canada face environmental problems that can benefit from cooperative resolution.*

Polluter-pays principle: *Producers and users of harmful substances, pollutants and wastes have a responsibility for bearing the costs associated with the safe use and disposal of these substances and wastes.*

Science-based decision making: *Decisions based on scientific information and traditional Aboriginal knowledge (where available), using a weight of evidence approach along with the application of the precautionary principle, where necessary.*

Regulations

CEPA establishes authority to enact regulations or other control instruments to manage toxic substances to reduce or eliminate their release into the environment. Examples of preventive and control instruments include:

- Regulations;
- Pollution prevention plans;
- Environmental emergency plans;
- Environmental codes of practice; and
- Environmental release guidelines.

One of the regulations under CEPA that may be relevant to the Project is the *Environmental Emergency Regulations*.

Environmental Emergency Regulations

Part 8 of CEPA provides the authority for EC to require emergency plans for toxic or other hazardous substances. The *Environmental Emergency Regulations* are aimed at enhancing the protection of the environment and human life and health by promoting the preparedness for response to and recovery from environmental emergencies, at fixed facilities, of a release of a substance listed on Schedule 1 to the Regulations. The Regulations require those who own, have charge, management or control of toxic and hazardous substances set out in Schedule 1 to the Regulations at or above the specified thresholds to provide required information on the substance(s), their quantities and to prepare and implement environmental emergency plans. The primary goal of preparing and implementing an environmental emergency plan is to prevent emergencies from occurring and provide appropriate response activities in the event that an emergency does occur.

For more information: <http://www.ec.gc.ca/CEPARegistry/regulations/detailReg.cfm?intReg=70>

Information Gathering: National Pollutant Release Inventory

Part 3 of CEPA establishes a national reporting system and inventory known as the National Pollutant Release Inventory (NPRI). The NPRI provides Canadians with access to information on the releases and transfers of key pollutants in their communities. In the area of the

environment, it is the only national, legislated, publicly accessible inventory of its kind in Canada. The NPRI is a major starting point for identifying and monitoring sources of pollution in Canada. It is an important consideration in managing risks to the environment and human health as well as in monitoring indicators for the quality of our air, land and water. It is also emerging as an indicator for corporate environmental performance.

The NPRI requires facilities, including companies, to report information on releases and transfers of pollutants to the Minister of Environment on an annual basis. EC makes the information available to Canadians in an annual public report, and maintains a detailed inventory that can be accessed and searched through an on-line database. Some of the pollutants that must be reported may be released during construction and operation of the Project. CEPA is designed to protect the environment and human health and to promote sustainable development. It contains information-gathering provisions and, provisions that require the Minister to establish and publish a national inventory of releases of pollutants. These provisions under CEPA form the primary legislative basis for the NPRI.

For more information: <http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=D44ED61E-1>

4. FISHERIES ACT – POLLUTION PREVENTION PROVISIONS

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish and fish habitat. In this context, EC works to:

- Advance pollution prevention technologies;
- Promote the development of preventative solutions; and
- Work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act*.

The Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* states that compliance with the federal *Fisheries Act* is mandatory. Subsection 36(3) of the *Fisheries Act* specifies that, unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. Proponents should note that only a federal regulation under the *Fisheries Act* or another Act of Parliament can authorize a discharge of a deleterious substance as per ss.36(4); no federal permit, provincial, territorial or municipal regulatory permit or approval allows for exemption from the *Fisheries Act*.

The act of depositing a deleterious substance is a violation of the *Fisheries Act*, regardless of whether the water itself is made deleterious by the deposit. Subsection 36(3) of the *Fisheries Act* makes no allowance for a mixing or dilution zone. Any measurements or tests to determine

whether something is deleterious should be done where the substance is at its highest concentration, typically at the point of discharge to the receiving water.

For more information: <http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=9ABFA22F-1>

5. MIGRATORY BIRDS CONVENTION ACT

The purpose of the *Migratory Birds Convention Act, 1994* (MBCA) is to implement the *Convention for the Protection of Migratory Birds in Canada and the United States* by protecting and conserving migratory birds, as populations and individual birds, their habitat and nests. The *Migratory Birds Regulations* provide for the conservation of migratory birds and for the protection of their nests and eggs. Subsection 5.1(1) of the MBCA prohibits depositing or permitting the deposit of a substance that is harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area. A prohibition against the disturbance, destruction, or taking of a nest, egg or nest shelter of a migratory bird without a permit is set out in ss.6(a) of the Regulations. Possession of a migratory bird, nest or egg without a permit is also prohibited.

“Incidental take” is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. At present, no permit can be issued for the incidental take of migratory birds or their nests as a result of economic activities.

For more information: <http://www.ec.gc.ca/nature/default.asp?lang=En&n=7CEBB77D-1>

6. SPECIES AT RISK ACT

The *Species at Risk Act* (SARA) is intended to prevent species from becoming extirpated or extinct; to provide for the recovery of extirpated, endangered or threatened species; and to manage species of special concern. The Act applies to all of Canada; all wildlife species listed as being at risk; their residences and their critical habitat.

6.1 Risk Categories

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent, expert committee that assesses the level of risk to wildlife species. Assessments are based on the best available science, Aboriginal traditional knowledge, and community knowledge. Species may be assigned to the following categories:

- *Special Concern* (SC) species may become threatened or endangered because of a combination of biological characteristics and identified threats;
- *Threatened* (THR) species are likely to become endangered if nothing is done to reverse the factors leading to extirpation or extinction;
- *Endangered* (END) species face imminent extirpation or extinction from the wild in Canada;
- *Extirpated* species no longer exist in the wild in Canada, but do exist elsewhere in the world;

- *Extinct* species no longer exist in the world;
- *Not at Risk* means a species that has been evaluated and found to be not at risk of extinction given the current circumstances; and
- *Data Deficient* applies when the available information is insufficient to resolve a wildlife species' eligibility for assessment or to permit an assessment of the wildlife species' risk of extinction.

6.2 SARA Listing

In 1999, COSEWIC adopted new assessment criteria based on World Conservation Union criteria. The relevant Minister (the Minister of the Environment and/or the Minister of Fisheries and Oceans, depending on the species), after receiving the COSEWIC assessment, consults the affected parties with respect to the proposed listing (as appropriate). After consultation, the Minister can recommend one of three things: accept the assessment and recommend that the species be added to Schedule 1; decide not to list the species; or refer the matter back to COSEWIC for more information. In cases where the species was already listed, the Minister of the Environment can also recommend that the species be reclassified or removed from Schedule 1.

6.3 Recovery Actions

Once listed, the relevant Minister must complete, and post on the public registry, recovery strategies and action plans for endangered, threatened or extirpated species and management plans for species of special concern. Recovery strategies are planning documents that identify actions that need to be taken to conserve the species such as stopping or reversing the decline of a species. Action plans outline the specific projects or activities required to meet the goals and objectives outlined in the recovery strategy. Recovery strategies must be completed within one year of listing for endangered species and two years of listing for threatened or extirpated species. Action plans are to be completed within the timelines set out within the recovery strategies.

Management plans set goals and objectives for maintaining sustainable population levels of species that are particularly sensitive to environmental factors, but not in danger of becoming extinct.

6.4 General Prohibitions

The prohibitions under Sections 32 and 33 of SARA, which came into force in June 2004, make it an offence to:

- Kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species;
- Possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species, or a threatened species, or any part or derivative; or
- Damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species or that is listed as an extirpated species if a recovery strategy has recommended its reintroduction into the wild in Canada.

The application of these prohibitions will vary depending upon the circumstances:

- These prohibitions apply to all migratory birds, as protected by MBCA and all listed aquatic species, as defined in SARA, on all federal, territorial, provincial and private lands.
- These prohibitions also apply to all species on federal lands in the provinces and on lands in the territories under the authority of the Minister of the Environment (i.e. National Wildlife Areas, Migratory Bird Sanctuaries, and National Parks).
- These prohibitions may apply with respect to species (that are not migratory birds or aquatic species) on the remaining lands within a province or a territory by order of the Governor in Council if they are not protected effectively by a province or territory.

6.5 Critical Habitat Prohibitions

Under SARA, it is prohibited to destroy any part of the critical habitat, as identified within a recovery strategy or action plan, of an endangered or threatened species. It is also prohibited to destroy any part of the critical habitat of an extirpated species if a recovery strategy has recommended that the species be reintroduced to Canada. These prohibitions apply anywhere in Canada, with respect to listed aquatic species as defined in SARA and listed migratory birds protected under MBCA. The application of these prohibitions to other species depends upon the land involved:

- The prohibition applies to critical habitat identified within a National Park, Migratory Bird Sanctuary, or a National Wildlife Area within 90 days after the description of the critical habitat is published in the Canada Gazette.
- With respect to critical habitat on other federal lands that is not already protected by provisions in, or measures under SARA or another Act of Parliament, the prohibition applies once a Ministerial Order has been made by the appropriate competent minister.
- With respect to critical habitat on non-federal lands (provincial or private lands), the prohibition applies once an Order in Council has been made by the Governor in Council.

6.6 Environmental Assessment and Species at Risk

SARA requires that certain considerations are addressed during the environmental assessment phase of a project. Specifically, it requires that:

- adverse effects of the project on listed wildlife species and their critical habitat be identified and that the competent Minister(s) be notified of these effects without delay;
- all measures have been taken to avoid or lessen those adverse effects in a way that is consistent with any applicable recovery strategy or action plan; and
- monitoring be undertaken in respect of those adverse effects.

For more information: <http://www.ec.gc.ca/alef-ewe/default.asp?lang=en&n=ED2FFC37-1>

7. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES

The guidelines provide nationally endorsed science based goals for the quality of atmospheric, aquatic, and terrestrial ecosystems. The guidelines provide chemical-specific fact sheets that

summarize the key scientific information and rationale for each substance, detailed summary tables of recommended guidelines for the different media and resource uses, and the protocols used in developing the guidelines, along with their associated implementation guidance. Indices of Water Quality, Soil Quality and Sediment Quality are also included.

For more information: http://www.ccme.ca/publications/ceqg_rcqe.html

8. ENVIRONMENTAL CODE OF PRACTICE FOR METAL MINES

The Environmental Code of Practice for Metal Mines (2009) applies specifically to metal mines however provides useful guidance for all sectors of the mining industry including the Gahcho Kué Project. The Code describes operational activities and associated environmental concerns of this industrial sector. The document applies to the complete life cycle of mining, from exploration to mine closure, and environmental management practices are recommended to mitigate the identified environmental concerns. The recommended practices in the Code include the development and implementation of environmental management tools, the management of wastewater and mining wastes, and the prevention and control of environmental releases to air, water and land. The Code of Practice has been adopted by EC and others as a guidance document that recommends environmental protection practices for the mine life cycle.

The objective of the Code is to identify and promote recommended best practices in order to facilitate and encourage continual improvement in the environmental performance of mining facilities throughout the mine life cycle, in Canada and elsewhere. The document is intended to be a resource for mine owners and operators and regulatory agencies, as well as the general public, particularly those who live in communities potentially affected by mining activities.

For more information: <http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=CBE3CD59-1>

9. GUIDELINES FOR THE ASSESSMENT OF ALTERNATIVES FOR MINE WASTE DISPOSAL

The Guidelines for the Assessment of Alternatives for Mine Waste Disposal (September, 2011) pertain to metal mines where a Tailings Impoundment Area (TIA) has been proposed in a natural water body frequented by fish. However, the requirements for the conduct of alternatives assessments that are presented in **Part 2** provide useful guidance for the assessment of all mine waste disposal areas including those developed on land. The overall objective of the alternatives assessment process is to minimize the environmental footprint of the disposal area.

For more information:
<http://www.ec.gc.ca/pollution/default.asp?lang=En&n=C6A98427-1>