Environment Canada **Environnement Canada**

Environment Canada
Prairie and Northern Region
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March 20th, 2008

Our file: 4703 003 014
Your File: 03UN114

Leslie Payette
Manager of Environmental Administration
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

Via email at lpayette@nirb.nunavut.ca

Dear Ms. Payette,

Re: Information Requests regarding the Bathurst Inlet Port and Road Project

Environment Canada has completed our initial technical review of the Draft Environmental Impact Statement (DEIS) for the above mentioned project that is comprised of Volumes 1-10. The review of the DEIS is to determine if there is sufficient information to meet the requirements of a DEIS as directed by the NIRB in their letter dated February 19th, 2008 and as per the mandated responsibilities of Environment Canada.

Attached are EC's information requests for the High Lake Project DEIS in which EC has outlined the main questions falling under the following categories:

- Closure and Reclamation
- Marine Water Quality
- Air Quality and Emissions
- Waste Management
- Wildlife and Species at Risk

EC looks forwards to continuing to work with the NIRB on the environmental assessment process for the Bathurst Inlet Port and Road Project. If you have any questions please contact Savanna Levenson at (867)-669-4772 or savanna.levenson@ec.gc.ca.

Yours truly,

Savanna Levenson
Environmental Assessment Specialist
Environmental Protection Operations

c.c: Carey Ogilvie, Head EA North, Environment Canada
Mike Fournier, Coordinator EA North, Environment Canada
Anne Wilson, Water Pollution Specialist, Environment Canada

Closure and Reclamation

Information Request (IR) Number: EC-1
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 3.0 Reclamation and Closure Objectives

Rationale:
The C&R Plan states a number of objectives:

1. to protect the environment through sound reclamation practices
2. to restore the land to its original state as closely as possible.
3. to restore land uses
4. to minimize effects to aquatic habitat and water quality with proper engineering
5. to ensure that reclaimed and abandoned areas are safe and do not pose health and safety risks

In order to achieve all of these objectives, it is critical that the proponent have a clear understanding of existing background environmental conditions throughout the entire footprint of this project. It isn't clear from the C&R Plan that adequate background studies have been completed that ensure the aquatic, terrestrial and atmospheric conditions at both the Port Site and the areas affected by road construction have been adequately characterized.

Request:
EC requests that information detailing work done to characterize this site be presented, or, if not done, be carried out prior to any construction. A description of upcoming work should be provided.

Information Request (IR) Number: EC-2
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 3.0 Reclamation and Closure Objectives

Rationale:
The C&R Plan states a number of closure objectives. The Plan does not however provide any detail on what criteria will be used to determine when these closure objectives have been satisfied. In order to ensure that the C&R plan is comprehensive and able to meet it's final objectives, the Plan will need to include more detail and describe the criteria.

Request:
The proponent is requested to provide additional information that demonstrates what criteria will be used to assess whether the stated closure objectives have been met.

Information Request (IR) Number: EC-3
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 5.4 Road/Quarry Access Roads

Rationale:
The proponent has stated that the road will likely be constructed by end-dumping onto the tundra. This means of road construction will not allow for soil salvage that would be invaluable in final reclamation.

Request:
Environment Canada requests that the proponent includes in the plan to conserve as much organic soil suitable for reseeding the roadbed as possible during the road construction process. Any salvaged soil should be protected from erosion by seeding until it is needed in the final reclamation stage.

EC also recommends that monitoring be carried out in areas where stockpiled soils (organic and topsoil) have been seeded to prevent erosion prior to any final remediation/revegetation efforts of the roadways. In addition, EC requests that monitoring be carried out to ensure the vegetation mat is sufficient to control erosion on any reclaimed areas (in both progressively reclaimed and in final reclamation areas of both roadways and port site facilities).

Information Request (IR) Number: EC-4
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 5.3.2 Fuel Storage & 5.3.3 Fuel Dispensing and Loading Area 5.3 Port Site

Rationale:
The proponent has not indicated how excess fuel will be treated post-closure, i.e., shipped out, incinerated etc. If incineration is required, EC suggest that an appropriate incineration device be selected in consultation with regulatory experts and that the proponent ensure diligent operation and maintenance of the incineration device and that appropriate training is provided to the personnel operating and maintaining the incinerator.

Request:
EC requests that the proponent indicate and discuss how excess fuel will be treated post- closure.

Information Request (IR) Number: EC-5
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 5.3 Port Site

Rationale:
The C&R Plan states that the Port Site (at 159 ha) will include a 200 person camp with services, a 200+ million litre fuel tank farm, a diesel power plant, ammonium nitrate storage, two sedimentation ponds, a truck and trailer maintenance shop, a sewage treatment plant, a fuel disposal area, a heliport, an airstrip, a landfill/soil stockpile area, and two quarries.

Very little information is provided in this C&R Plan that outlines how all of these facilities will be decommissioned and the site subsequently reclaimed.

Request:
Environment Canada requests that substantially more information be provided such that an assessment of the success of final reclamation can be determined for all of these facilities. For example:

1. What are the technical details concerning the sewage treatment plant? What will be the fate of this facility at closure?
2. Where does the proponent intend to establish a soil bioremediation facility? What will be the capacity and the technical specifications? Will there be an area to treat petroleum hydrocarbon contaminated snow and ice?
3. What is the nature of the sedimentation ponds and will the proponent ensure there are no deleterious substances contained therein that can migrate to the receiving environment?

4. There is no discussion of the management of hazardous and/or waste materials at this site. Environment Canada recommends that a waste inventory or audit be implemented that outlines the nature, extent and eventual fate of all waste materials brought to, used and generated at this site. This type of audit will be helpful in determining appropriate landfill contents vs. items that **must** be moved offsite. Such a waste management plan should include, but not be limited to:
    - Purchasing policies that focus on reduced packaging,
    - A **hazardous materials management plan** for the site that ensures that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
    - On-site diversion and segregation programs (i.e. the separation of non-food waste items, non-combustible solid wastes etc. suitable for storage and subsequent transport and disposal or recycling).

Information Request (IR) Number: EC-6
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Appendix G-6, 5.4 Road/Quarry Access Roads

Rationale:
The C&R Plan states that bridges will be removed on closure of the roads but the Plan does not reference how any disturbed streambeds will be re-established and whether appropriate bank stabilization will be carried out if required.

Request:
EC requests the proponent provide additional detail on reclamation measures for disturbances caused to streams, streambanks and water flow paths affected by any road construction. In areas where surfaces need to be resloped, EC requests the proponent to plan for erosion control features (e.g., diversion berms, contouring etc) that will prevent gullies, rills etc.

In addition, EC requests the proponent to provide additional details on how roadcuts and fill areas will be stabilized and how access will be controlled should there be a safety hazard or where access could impact fish or wildlife populations.

<u>Marine Water Quality</u>

Information Request (IR) Number: EC-7
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Volume VI, Section 3.1

Rationale:
The proponent has provided maps with baseline sampling sites and a text description of the two different study areas, however it is difficult to determine which sites are within the zone of influence and if all areas affected by the projects activity have in fact been captured within these given study areas. A map would be helpful in identifying visually where the proponent has delineated the Local and Regional Study Areas and would also help determine whether the sample sites are in appropriate locations.

Request:
Environment Canada requests that maps are provided of the Regional and Local Study Areas for the Marine Water Quality.

Information Request (IR) Number: EC-8
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Volume VI, Section 2.0

Rationale:
The proponent states that in 2001 five sampling stations were established for marine water quality and sediment quality. In 2002 sediment quality was again sampled at one of the previous stations. In 2007 the proponent sampled an additional 5 stations within the same area. EC understands that the total amount of baseline data that has been collected for the area includes 10 stations in total and one set of samples for each station, except a second sediment sample that was collected in 2002 at one station. In order to ensure that baseline data captures the variability of the environment and to ensure that monitoring of effects will be detectable; further baseline data will need to be collected. It should also be determined that these sites are within the zone of influence of the project and that the reference sites are outside the zone of influence.

Request:
EC requests that the proponent collect further marine water quality and sediment quality baseline data as part of a comprehensive Aquatic Effects Monitoring Program and discussions as to the reasoning for the sample sites chosen.

Air Quality and Emissions

Information Request (IR) Number: EC-9
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
Reference: DEIS Volume 4, Section 2, Air Quality
TOR 11.2.1 Air Quality

Rationale:
The Air Quality and Emissions Management Plan (AQEMP) will allow an organized approach to address air issues and annual reporting will allow tracking of emissions and efforts toward minimizing impacts. This approach is being applied to several northern developments including the Mackenzie Gas Project and the DeBeers Snap Lake Diamond.

The AQEMP should include strategies to comply with applicable CCME Canada-wide Standards that both the Government of Canada and Government of Nunavut are signatories. For example the Keeping Clean Areas Clean principal of the Canada-wide Standards for PM and Ozone and the Canada-wide Acid Rain Strategy require the use of best available technologies (BAT) and best management practices (BMPs) to minimize air emissions. The use of BAT and BMPs should be documented and discussed in the AQEMP.

Residual air pollutant emissions after the application of BAT and BMPs should not exceed relevant ambient air quality standards. The AQEMP should include results from the air monitoring program to demonstrate that these standards are being met.

An example template for an AQEMP is provided in Appendix A.

Request:
Environment Canada requests that the Proponents design and implement a comprehensive Air Quality and Emissions Management Plan (AQEMP) to:

- Ensure that project emissions of air pollutants and greenhouse gases from the entire range of sources are tracked;
- Meet any emission reporting that is legally required (i.e. NPRI);

- Demonstrate the application of BAT and BMPs;
- Document the proponent's continuous improvement efforts; and
- Ensure that contaminants of potential concern are monitored over the life of the project.

The AQEMP should be designed in consultation with EC and GN and include an annual report which is publicly available.

Waste Disposal

Information Request (IR) Number: EC-10
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Volume 2, Section 4.2.3.3

Chandler. 2006. Review of Dioxins and Furans from Incineration in Support of a Canada-wide Standard Review, Prepared by A. J. Chandler & Associates Ltd. for The Dioxins and Furans Incineration Review Group, CCME.

Lanfranco. 2006.Emissions Compliance Survey Monitoring Report: Fort Smith Health Centre, Prepared by A. Lanfranco & Associates INC. for GNWT.

UNEP. 2005. Standardized Toolkit for Identification and Quantification of Dioxins and Furans Releases, Second Edition, United Nations Environment Program.
http://www.chem.unep.ch/pops/pdf/toolkit/toolkit.pdf

Webster, E.; Mackay, D., 2007. Modeling the Environmental Fate of Dioxins and Furans Released to the Atmosphere During Incineration, Prepared for Environment Canada by the Canadian Environmental Modeling Centre, CEMC Report No. 200701.
http://www.trentu.ca/academic/aminss/envmodel/CEMC200702.pdf

R**ationale:**
Environment Canada recognizes that timely disposal of camp waste - specifically food waste - is of critical importance to minimize safety risks associated with wildlife attraction. Timely disposal is usually achieved through burning. However, burning of waste products releases numerous contaminants to the air, many of them persistent, bioaccummulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans).

The type of incineration technology and the management practices can greatly affect the amount of dioxins and furans released to the environment. Incinerators capable of meeting the Canada-wide Standards for Dioxins and Furans (controlled incineration) will release about 9.5 µg TEQ of dioxins and furan per tonnes of waste combusted (Chandler 2006, Lanfranco 2006). Poor incineration equipment (uncontrolled burning) can release much greater amount of dioxins and furans, 3500 µg TEQ per tonne of waste combusted (UNEP, 2005). Webster and Mackay (2007) used an environmental fate model to predict contaminant concentrations in air, soil, water, sediment, aquatic and terrestrial wildlife (including fish, birds and terrestrial herbivores and carnivores) resulting from incineration emissions at a typical remote work camp. The conclusions from the study are quoted below.

> *"It is concluded that uncontrolled burning of waste could result in substantial accumulations of dioxins and furans in the local ecosystem, some of which will persist for some 8.5-years with exposure levels approaching those considered to be of toxicological concern. The use of controlled incineration will substantially reduce the expected contamination levels and correspondingly reduce the likely exposure and effects."*

To minimize the release of contaminants the Proponent should include the following as part of the incineration management plan:

Technology:
The proponent should ensure that the incineration device is capable of meeting the emission limits established under the *Canada-wide Standards (CWS) for Dioxins and Furans* and the *CWS for Mercury Emissions* (both the Government of Canada and the Government of the Nunavut are signatories to these Standards and are required to implement them according to their respective jurisdictional responsibility). The minimum requirement for incineration technology should be a dual-chamber controlled-air incinerator.

Waste Management:
The goal should be to minimize the amount of waste to be incinerated and only incinerate appropriate types of waste.

- The amount of waste should be reduced through purchasing policies that focus on reduced packaging and on-site diversion and segregation programs (i.e. the separation of non-food waste items suitable for storage and subsequent transport and disposal or recycling).
- Only food and food contaminated waste should be incinerated.
- Used absorbent materials, oily or greasy rags, and equipment servicing wastes (such as used engine oil, antifreeze, hydraulic oil, lead acid batteries, brake fluid and other lubricants) should be safely stored and transported in sealed containers (odour free to prevent animal attraction) and safely transported to a facility that is authorized for the treatment and disposal of industrial hazardous wastes.

Operation:
Proper operation and maintenance of incineration equipment is essential to minimizing the release of contaminants

- Appropriate training should be provided to the personnel operating and maintaining the incinerator.
- Maintenance records should be kept and reported in an annual report
- The amount of waste incinerated is recorded and reported in an annual report.

R**equest:**
Environment Canada requests that Proponent develop an Incineration Management Plan in consultation with EC. The management plan should include annual reports to provide details on the following:

- Recycling/segregation waste program
- Incineration technology selected
- Waste audit -- amount and types of waste incinerated
- Operational and maintenance records
- Operator training
- Emission measurements
- Incineration ash disposal

Information Request (IR) Number: EC-11
IR Directed To: Bathurst Port and Road Project Joint Venture Ltd. (the "Proponent")
IR Submitted By: Environment Canada (EC)
References: DEIS Volume 2, Section A2 Section 5.1, 5.2.2.2, 5.4.2; Water Licence Application Form Section 7; Volume 2 Section A3 page 4-48

Rationale:
Mobile camps will be used during road construction, housing 60 persons and moving every 60 days. Tertiary-treated sewage will be discharged to the tundra from a skid-mounted treatment plant. During construction at the port, a 150-person camp will utilize a similar treatment system, with release onto the tundra. During operations, port camp effluent will be discharged into the marine environment. The water licence application states this is to be overland, while page 4-48 of the Feasibility Study states this will be via submarine pipe, and utilize disinfection. A 20-person camp will be set up at Contwoyto Lake, and there are conflicting descriptions of effluent disposal for this site also (land vs subaqueous disposal to Contwoyto Lake).

Specifications for the treated sewage equate to tertiary treatment, however there may still be toxicity associated with the effluent due to ammonia levels. There are also concerns with fluctuations in treated wastewater quality, as such systems may be subject to upset or take a while to achieve optimum performance, and nutrient additions to oligotrophic waters. For these reasons, EC discourages the direct discharge of treated wastewater to Contwoyto Lake. Similarly, wastewater discharged to the marine environment must also be non-toxic and comply with the *Fisheries Act* Section 36(3).

Disinfection of wastewater is generally done when there is a public health risk, rather than for reasons of environmental protection. It is not specified what disinfection method will be used, nor why it is necessary. Use of chlorination for disinfection is strongly discouraged.

Request:
Please clarify:

1. what the receiving environment will be for treated sewage effluent, and how compliance with the *Fisheries Act* will be achieved.
2. Why and how wastewater will be disinfected.

Wildlife and Species at Risk

Information Request (IR) Number: 1

IR Directed To: Bathurst Inlet Port and Road Joint Venture Ltd. (the "Proponent")

IR Submitted By: Environment Canada (EC)

References:

- Bathurst Inlet Port and Road Project – Draft Environmental Impact Statement: Volume Vb, Appendix D-10, Section 4 – Bathurst Inlet Waterfowl Survey, pages 4-1 to 4-2.
- Bathurst Inlet Port and Road Project – Draft Environmental Impact Statement: Volume VI, Appendix E-4 – Polar Bear and Seabird Effects Assessment

Rationale: The proponent has assessed the impacts of the proposed shipping route on birds (murres and eiders), but no assessment was provided in regards to specific impacts to birds that may be using the local marine area around the proposed port site. In order to evaluate the potential impacts to marine birds of the construction and operation of the proposed port, EC requires information on the use of the proposed area by birds. Birds such as sea ducks use marine areas for feeding, brood-rearing, and moulting, and are sensitive to disturbance at these times. Information on bird use of the area will help to determine potential impacts on birds and appropriate mitigation measures to minimize any impacts. The proponent did undertake an aerial waterfowl survey of Bathurst Inlet on June 25, 2007, although it is not clear on the exact extent of the area covered during this survey.

Request:

1. The proponent is asked to provide a map showing transects and/or coverage of the June 2007 surveys, locations where birds were observed, the area of the proposed port, and the shipping route within the southern part of Bathurst Inlet (i.e., in the immediate vicinity of the proposed port).
2. The proponent is asked to indicate whether any further wildlife information/data was collected on birds in the marine area around the proposed port. Information on numbers of birds using the area in late summer would especially be helpful, because this may indicate whether the area is being used by brood-rearing or moulting waterfowl. If information is available, the proponent is asked to provide details on the bird information collected. Useful information would include survey/observation methods, number of birds, species, location, whether birds were alone, in small groups or large flocks, if young birds were present, and if birds were moulting. Even if no formal baseline surveys were conducted, any observations of birds collected during other work in the area may be useful.

Appendix A: Example template of the Air Quality and Emissions Management Plan (AQEMP)

The following is an example of air quality and emissions plan that has been used in other the northern developments.

An air quality and emissions management plan should be designed in consultation with representatives of the appropriate governments, agencies and communities. It should include, but not be limited to:

- Clearly defined goals, objectives and methodologies for each of the component programs within the plan
- An emissions tracking and monitoring program including:
  - annual estimation of emissions from the facility, apportioned by major sources, using the same methodology as that used in the Environmental Assessment (EA). Emissions include:
    - nitrogen oxides (NO_x),
    - sulphur dioxide (SO_2),
    - particulate matter (PM) apportioned as total suspended particulate (TSP), PM_{10} and $PM_{2.5}$,
    - greenhouse gases (GHG) apportioned as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O)
  - annual summary of fuel use, apportioned by major source, and confirmation of use of ultra-low sulphur diesel fuel
  - a fugitive dust abatement program to minimize the generation of non-point source particulate (e.g. from roads, waste rock piles, quarries etc)
  - documentation of mitigation measures and pollution prevention strategies (e.g. best management/environmental plans, energy conservation strategies, best available control technology) used to ensure emissions are minimized
  - contingency or response plan to increasing trends or exceedances of emission estimates used in the EA
- An ambient air quality monitoring program including:
  - monitoring of pollutants of concern
  - monitoring of fugitive dust to determine the effects of dust deposition on the surrounding environment
  - monitoring of relevant meteorological parameters
  - documentation of quality assurance and quality control (QA/QC) procedures used to ensure valid data collection
  - contingency or response plans to increasing trends or exceedances of air quality criteria/dispersion modelling predictions
- An annual report summarizing and analyzing the emissions and ambient monitoring information, including:
  - comparison of annual emission estimates to previous years and the estimates used in the EA dispersion modelling
  - comparisons of ambient air quality and deposition monitoring results to previous years and the predictions of the EA dispersion modelling
  - analysis of emissions and ambient air quality trends and effectiveness of strategies employed to minimize emissions
  - responses (either initiated and/or planned) to issues (e.g. equipment failure, data loss, increasing trends or exceedances of air quality criteria/dispersion modelling predictions)
- A commitment to participate in future regional and cumulative effects assessment and monitoring programs