EA03-008
INAC IRs

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Our file - Notre référence

July 16, 2004

Mr. Vern Christensen
Executive Director
Mackenzie Valley Environmental Impact Review Board
P.O. Box 938 YELLOWKNIFE NT X1A 2N7

Dear Mr. Christensen

RE: DEH CHO BRIDGE PROJECT ENVIRONMENTAL ASSESSMENT

Indian and Northern Affairs Canada(INAC) are pleased to submit the attached second round of Information Requests(IR's) for the Deh Cho Bridge Environmental Assessment,(EA).

After considering the Developers Assessment Report, the first round of IR's issued by the Mackenzie Valley Environmental Impact Review Board and a presentation by the Deh Cho Bridge Corporation we have noticed numerous changes, omissions and modifications to the design. The Board should consider the scheduling of a technical meeting with the developer, its consultants, the Peer Review Design Team, and all parties prior to the Public Hearings. This would give all parties to the EA an opportunity to assess and confirm the results on many technical changes made throughout this process.

If you have any questions or concerns regarding these Information Requests, please contact Lionel Marcinkoski at 669-2590 or Eric Yaxley at 669-2569

Sincerely

David Livingstone
Director
Renewable Resources and Environment

cc: Attachments IR's Numbers (2.1- 2.14)

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MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW BOARD

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Canada

IR Number: **2.1**

Source: **Indian Northern Affairs Canada - Northern Region**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section **IR Number: 1.1.2– Development Description - Engineering design and the Role of the PEER REVIEW DESIGN TEAM.**

Terms of Reference Section : Development Description and Design Changes.

Preamble

The decision by the Deh Cho Bridge Corporation to assemble a Peer Review Design Team is an excellent approach to ensure an independent evaluation is conducted for design modification. Hopefully this review will ensure that the many numerous changes made since the inception of this project are in conformity with engineering standards and applicable codes.

Request

Please provide the Review Board with the following information:

a) Will the Peer Review Design Team final report be submitted to all parties of the EA?

b) Will project reports provided by consulting firms and scientific labs be provided to all parties of the EA.

c) When will the developer be making a submission on the final design construction plan (ie. is DCBC using concrete or steel) ?

d) What cost can the proponent place on the reclamation of the proposed bridge after a 75 year effective life for this structure?

e) Has DCBC proposed posting a securities bond for liabilities created by the bridge construction and structure?

f) Has the developer investigated the need for a median crash-barrier in the bridge design to eliminate risks to vehicles when crossing the proposed bridge?

IR Number: **2.2**

Source: **Indian and Northern Affairs Canada**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **C.11 Modifications (May 24,2004)**

Terms of Reference Section: **C – 11 Modifications**

Preamble

The DAR (p.77) states there have been a few conceptual modifications introduced in the bridge design since the submission of the Application for Water Licence of May 23, 2003.

- The pier foundations originally presented as predrilled concrete caisson have been replaced with cast in place concrete spread footings and pedestals. This modification was introduced to satisfy the actual geotechnical conditions defined by the geotechnical investigation report prepared by EBA Engineering in July 2003.

Request

Please provide the Review Board with following information:

a) Did EBA Engineering conduct a geotechnical analysis for Pier Site #6?

b) If not, will a geotechnical analysis be conducted at this site?

c) What are DCBC plans for further geotechnical investigations at this site before the bridge design and construction plans are finalized?

IR Number: 2.3

Source: Indian and Northern Affairs Canada

To: Deh Cho Bridge Corporation (DCBC)

DAR Section: C.11 Modifications (May 24,2004)

Terms of Reference Section: C – 11 Modifications

Preamble

The DAR (p.77) states there have been a few conceptual modifications introduced in the bridge design since the submission of the Application for Water Licence of May 23, 2003.

- The pier foundations originally presented as predrilled concrete caisson have been replaced with cast in place concrete spread footings and pedestals. This modification was introduced to satisfy the actual geotechnical conditions defined by the geotechnical investigation report prepared by EBA Engineering in July 2003.

Request

Please provide the Review Board with following information:

a) How has the pier foundation design considered the 2 m thick sand lens EBA Engineering's geotechnical investigation revealed within the subsurface at Pier Sites #1 and #2?

b) What likely effects will the sand lens, 3.7 m below the riverbed (p.10 EBA Report), have on the proposed sheet pile (5 m) and excavations (4 m) depths?

c) Will the pier footings and foundations be stable at these sites?

IR Number: 2.4

Source: Indian and Northern Affairs Canada

To: Deh Cho Bridge Corporation (DCBC)

DAR Section: J.4.2 Water Quantity (May 24,2004)

Terms of Reference Section: J – 4 Water Quality and Quantity

Preamble

The DAR (p.114) states changes in river hydrology resulting from bridge construction have been studied and well documented. One example is the Suncor Bridge on the Athabasca River in Northern Alberta (Golder 1996). Prior to development and design, potential effects of the placement of the Deh Cho Bridge on river hydrology and fish habitat were modeled and predicted (Trillium 2002; Golder 2004).

Request

Please provide the Review Board with following information:

a) The Trillium report consistently uses the 100-year event for peak discharge (p.9), water level (p.11) and ice jam water level (p.15) for bridge design purposes. Why is the 50-year maximum upstream ice thickness used for evaluating ice forces?

b) How many years of data were used to calculate the ice strength used for bridge design?

c) Is the 100-year event suitable for the life expectancy of this bridge?

d) Will a worst case scenarios be developed by the proponents for these potential events?

IR Number: **2.5**

Source: **Indian and Northern Affairs Canada**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **J.4.1 Water Quality (May 24,2004)**

Terms of Reference Section: **J – 4 Water Quality and Quantity**

Preamble

The DAR (p.112) states the main water quality issues related to the bridge project relate to the potential release of sediments or chemicals into the river channel, primarily during construction.

Mitigation measures include implementing standard erosion control measures (e.g. rip rap, revegetation), monitoring and follow-up maintenance, and the use of adaptive management practices (as necessary). Additional mitigation measures could include:

- Building coffer dams to isolate abutments during construction and /or complete construction of abutments during winter conditions.

Request

Please provide the Review Board with following information:

a) Will the developer consider these two mitigation measures noted above for abutment excavation and construction?

b) Has DCBC considered coffer dams for excavation of existing ferry causeways and or the haul-out area to minimize TSS or contaminates discharges into the Mackenzie River?

IR Number: **2.6**

Source: **Indian and Northern Affairs Canada**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **C.6.2 Excavations of material from Reclamation Areas related to removal of existing ferry infrastructure (May 24,2004)**

Terms of Reference Section: **C – 6 Waste Management**

Preamble

The DAR (p.71) states the excavated material is composed of 20,000 cu m granular backfill, 80 cu m structural concrete, 90 cu m structural timber and 30,000 cu m structural steel.

It is possible that the material is contaminated with hydrocarbons or other substances harmful to the fish habitat. In order to establish if any contaminants are present, the GNWT Department of Transportation has commissioned a study with the environmental consultant Dillon Consulting Ltd.

Request

Please provide the Review Board with following information:

a) What is the status of this study and will reports be submitted to reviewers when the final report is completed?

b) Will the water quality monitoring program include hydrocarbon detection during excavation?

IR Number: 2.7

Source: Indian and Northern Affairs Canada

To: Deh Cho Bridge Corporation (DCBC)

DAR Section: N/A

Terms of Reference Section: MVEIRB IR 1.1.5

Preamble

The Review Board indicated that the DAR states bridge design could incorporate features to facilitate spill containment and clean up. DCBC was asked to describe the specific design features that will be incorporated to facilitate spill containment and clean up.

The developer indicated that the designed features would direct all rainwater (and potential fuel spill) towards the abutments at both ends of the bridge. From that point the rain water or spill will be directed into open gutters, sloping down the embankment shoulders and ending at the toe of the shoulders some 20 m to 25 m behind the water line. The gutters will have 12% to 15% longitudinal slopes and will be built of precast concrete elements. The gutters would discharge into containment ditches, parallel to the waterline, where a fuel spill could be managed similar to any spill along the 7 km section of highway that extends along the north shore.

Request

Please provide the Review Board with following information:

a) How will the containment ditches be protected from erosion due to the longitudinal gutter slopes

b) Have the potential risks of such a design been considered? If containment ditches along banks are full of water or ice, what is the potential for diverted fuel overtopping the ditches and contaminating the soils in and around the approaches? How will the containment ditches prevent the saturation of bridge abutments and soil?

c) Will the containment ditches be monitored and maintained following an extreme rainfall event?

d) In the event of a significant fuel spill and fuel release from the containment ditches to soils around the abutments, what would be the impacts on the underlying soils? Would there be any stability issues if

the soils were grossly contaminated with fuels, ie, Would soil particles become "lubricated" reducing shear strength?

e) Would the containment ditches be maintained free of snow and ice in the winter?

f) Has this design been incorporated and proven effective in other similar bridge designs?

g) Has a risk-benefit analysis been conducted on this design vs. more conventional spill contingency, ie. Spill response using large scale river spill equipment and material stocked in a readily accessible OSCAR unit?

h) Will the Peer Review Design Team be analysing and commenting on this aspect of bridge design?

IR Number: 2.8

Source: Indian Northern Affairs Canada - Norther Region

To: Deh Cho Bridge Corporation (DCBC)

DAR Section DAR pages 71, C.6.2, 75 and 76, C-8

Term of Reference: Points 6 and 8 of the Scope of Development Section 4.2, C-8

Preamble: The Scope of Development includes removal and disposal of materials from the existing and temporary ferry landings. Disposal to be in the North and South Borrow Areas of which the South Borrow Area is on Federal Crown Land.

To properly assess the implications from disposal of these materials on Crown land information on quantity of materials designated for each of the two borrow areas, method of contamination assessment, and disposal method are needed. New waste disposal areas on Crown lands is discouraged and requires a pre-authorization.

Request: What measure will be in place to ensure no contaminated materials, steel or timber are disposed of in the South Borrow Area? Will an inventory of materials and quantities disposed of at each location be implemented and maintained?

IR Number: 2.9

Source: **Indian and Northern Affairs Canada- Northern Region**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section **DAR page 26, B-2**

ToR **Section 4.2, B-2 & C-10.**

Preamble: This section is silent to the ownership of facilities associated with the Bridge Development. More specifically, facilities related to the administration and collection of toll facilities are not listed..

This information is used to validate the land requirements/components of the project by ownership of the facilities.

Request: Please provide information on the ownership of the toll collection facilities.

IR Number: 2.10

Source: **Indian and Northern Affairs Canada- Northern Region**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **DAR page 77, C-10**

ToR Line: **Points 11 & 12 of the Scope of Development Section 4.2, C-10.**

Preamble: The Scope of Development includes the " location, construction and operation of the toll facilities", and, "additional infrastructure in support or connected to the bridge.." which both contribute to the size and configuration of land requirements.

With out knowing the location and details of this development as part of the overall project, we cannot assess impacts to existing land and recreational uses of the area.

Request: Please provide information on location, type of facilities, and the land requirements for the toll collection facilities.

IR Number: 2.11

Source: Indian and Northern Affairs Canada- Northern Region

To: Deh Cho Bridge Corporation (DCBC)

DAR Section: Appendix 2 - Key Correspondence to Environmental Screening Application

TOR Section:

Preamble: In Andrew Gamble's February 10, 2004, letter to Mr. Ed Hornby, District Manager, DIAND - SMD, Mr. Gamble states that "The majority of user groups have indicated support on this basis". In the July 13, 2004, presentation to the regulatory agencies, DCBC indicated that the toll facility will require and annual operating cost of $ 250,000.00

Request:

Please provide the Review Board with the following information:

a) Which user groups were contacted ?

b) Which user groups supported the toll structure ?

c) Which user groups opposed the toll structure ?

d) Of the user groups opposing the toll structure, what were the concerns being expressed ?

e) Were the user groups aware of the $ 250,000.00 annual operating costs during consulations, or is this new information ?

IR Number: **2.12**

Source: **Indian and Northern Affairs Canada- Northern Region**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **Appendix 2 - Key Correspondence to Environmental Screening Application**

TOR Section:

Preamble: In Andrew Gamble's February 10, 2004, letter to Mr. Ed Hornby, District Manager, DIAND - SMD with respect to the proposed benefits of the Project, Mr. Gamble states that "We believe that the result will be a net environmental benefit".

Request:

Please provide the Review Board with the following information:

a) Has a cost-benefit analysis (CBA) been conducted to support this assumption ?

b) Has a "significant impact analysis" been conducted to identify all possible environmental impacts from the project, both short-term (construction) and long-term (maintenance), and possible bridge failure scenarios ?

IR Number: **2.13**

Source: **Indian and Northern Affairs Canada- Northern Region**

To: **Deh Cho Bridge Corporation (DCBC)**

DAR Section: **Appendix 2 - Key Correspondence to Environmental Screening Application**

TOR Section:

Preamble: In Andrew Gamble's February 10, 2004, letter to Mr. Ed Hornby, District Manager, DIAND - SMD with respect to the need for a public hearing, Mr. Gamble states that "TD Securities will be financing the construction phase and will have some $ 50 million at risk." In the July 13, 2004, presentation to the regulatory agencies, DCBC indicated that construction costs were now "into the 60's" (millions).

Request:

Please provide the Review Board with the following information:

a) What is the financial capacity to cover current and future cost overruns, as well as possible project failure ?

IR Number: 2.14

Source: Indian and Northern Affairs Canada- Northern Region

To: Deh Cho Bridge Corporation (DCBC)

DAR Section: Appendix 2 - Key Correspondence to Environmental Screening Application

TOR Section:

Preamble: In Jivko Enineering's February 9, 2004, letter to Mr. Andrew Gamble, regarding construction of pier foundation, Mr. Jivkov states that the "The water contained in the cofferdam will be pumped out into the river. Prior to pumping out, the water will be tested for suspended solids and the levels of pH will be adjusted if required. In the July 13, 2004, presentation to the regulatory agencies, no details could be provided with respect to how the pH would be adjusted or monitored.

Request:

Please provide the Review Board with the following information:

a) What will the expected pH levels be within the cofferdam environment, given the presence of curing concrete ?

b) If the cofferdam pH is basic, how will the pH be adjusted ie: by "batch" acidification of the water contained within the cofferdam, or by in-line injection ?

c) How will the pH be monitored during discharge from the coffer dam into the river ?