The Northumberland Strait Crossing Project
A Fisheries Perspective

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IQALUIT, N.W.T.

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"According to Public Works Minister Stewart McInnes, a fixed link will only be constructed when the federal and provincial governments are absolutely certain that there will be no adverse effects on the environment."

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HISTORICAL OVERVIEW

The project to join Prince Edward Island and the mainland via a fixed link across the Northumberland Strait dates back to the middle of the last century. Then, the only winter transportation consisted of small, open ice boats towed across the Strait's moving, shifting ice.

This isolation, limiting the economic expansion on the Island, was a key factor in the negotiations leading to the 1873 Terms of Union between P.E.I. and the Federal Government. The Island's terms for joining Confederation included a "continuous communication" clause stipulating that "the Dominion Government will assume and defray all the charges" associated with the provision of a year-round steamship service.

However, due to poor icebreaking technology, the first attempts by the Federal Government to meet its obligation were disastrous. This led in the 1880's to a campaign by Island Senator George Howlan for the construction of a permanent link.

Senator Howlan initially proposed an iron tube subway laid on the seafloor but later promoted a rail tunnel under the seabed. The project looked promising at first but was studied, found technically too ambitious for the day and thus shelved and forgotten. Prince Edward Island governments have since then made numerous representations to the Federal Government to improve service across Northumberland Strait.

Ferry service progressed steadily over the years to the sophisticated vessels with icebreaking capability employed today. Unfortunately, wind, tide and

ice still combine in the winter to slow or stop ferry service. The current cost to the Federal Government for operating the service is nearing $40 million per year.

RECENT ATTEMPTS AT A FIXED CROSSING

The next serious suggestion for a crossing project came about as a result of the successful construction of the Canso Causeway linking Cape Breton to mainland Nova Scotia. In 1965, a new P.E.I.-N.B. fixed crossing was proposed consisting of a combination bridge, tunnel and causeway.

The project was approved and construction was actually begun on the approach roads and ramps. However, as costs spiralled the project was cancelled and a compromise was offered to P.E.I. in the form of a Federal Economic Development Program which, it was hoped, would convey similar economic benefits to the Province, if not resolving the "continuous communication" issue.

In 1985, as the economic program was nearing termination, Transport Canada received three fixed link proposals from private developers. Each of these developers claimed that they could design, build, finance and operate their project for less than the cost of the Ferry Service.

The Government was interested and Public Works Canada (PWC) was asked to conduct an assessment of the feasibility of a fixed link between Borden, P.E.I. and Cape Tormentine, N.B. This marked the beginning of the NORTHUMBERLAND STRAIT CROSSING PROJECT (NSCP).

PWC set out two essential requirements for a fixed link: it must provide continuous and cost effective service, and it must do so at an acceptable level of environmental risk. The latter stipulation led PWC, in consultation with the Department of Fisheries and Oceans (DFO), to immediately reject causeway, partial causeway or sunken caisson tunnel solutions because of obvious environmental constraints. The continuous service provision eliminated a rail tunnel solution. This limited the project considerations to two alternatives: a bridge and an underground road tunnel.

Although a variety of construction and management scenarios were originally considered, it was eventually determined that the best option was to have a private developer finance, design, construct and operate the fixed link for a period of 35 years.

ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

In 1973, the Federal Government established the Environmental Assessment and Review Process (EARP) as a planning tool for predicting and minimizing the potential environmental and related socio-economic consequences of proposals that require a Federal Government decision. EARP was adjusted by Cabinet decision in 1977 and further strengthened and updated in 1984 when the Environmental Assessment and Review Process Guidelines were issued by an Order in Council under the Government Organization Act.

The process is administered by Environment Canada's Federal Environmental Assessment Review Office (FEARO), although it is based on a self-assessment

approach whereby initial assessment decisions are made by the "initiating" department (PWC in the case of the NSCP). The initiating department can seek information or expert advice from other departments with relevant expertise, i.e. Environment, DFO, etc.

EARP is a means to identify unwanted effects before they occur and to determine appropriate mitigation measures. It deals with the physical, chemical and biological influence of development proposals upon air, land, water, plants, animals and people. Its scope covers the potential environmental and directly related socio-economic effects of proposals; that is, effects that could bring adverse changes to the natural environment and the directly resulting effects that these changes could have on people.

Under EARP, a proposal is first screened to assess its environmental implications. When screening reveals that potentially adverse effects are unknown, the proposal is given further study until a decision can be made. This step entails a documented assessment of the potential environmental impacts of the proposal, and it requires that further study be done to provide information on the nature, extent, and significance of impacts and the efficacy of known mitigation measures. The work is documented in a report called an Initial Environmental Evaluation (IEE) which may or may not be submitted to public scrutiny, at the discretion of the initiating department.

If the IEE concludes that effects are understood and can be mitigated, the project may then proceed with prescribed mitigation and monitoring measures. If, as a result of the IEE, effects or public concern or both are deemed

significant, the proposal is then referred to the Minister of the Environment for production of an Environmental Impact Statement (EIS) and a public review by a Panel of independent experts selected by FEARO. In such a case, a project cannot proceed until the review is completed (1-2 yrs) and recommendations are made to the Ministers of the Environment and the initiating department. In all cases, responsibility for the ultimate decision to approve project implementation is left in the hands of the initiating department.

EARP AND THE NSCP

When it came time to apply EARP to the NSCP, the federal government was faced with the fact that a fixed link to PEI was an extremely emotionally charged and environmentally complex issue. Yet the project at this stage was nothing more than a vague concept, not well suited to an indepth EARP analysis. A decision was needed on whether to immediately forward the project to the Minister of Environment for full Panel Hearings or adopt the more gradual stepwise approach to environmental assessment just described. The government rather decided upon a compromise: it would hold the review at the IEE stage but with far greater public scrutiny than is normal at what is essentially a preliminary planning step.

Also, because of the indefinite nature of the proposal at such an early stage, it was decided to call for a "Generic" or preliminary IEE as a test to see if there were issues which would absolutely preclude development. Only afterwards would it decide if a "Specific" proposal should be called for and, with it, the preparation of a "Specific" IEE.

Two factors must be kept in mind in judging the decision of not proceeding immediately to a full EIS and Panel Hearings.

First, the more rigorous assessment and public review which has taken place at the "Generic" IEE (GIEE) stage has ensured that proper environmental planning could take place at a much earlier stage in development than normally occurs. As a consequence, major project changes could be made which, under other circumstances, would have doomed the project. Secondly, at any point in the stepwise process of environmental assessment being followed by the federal government, a full EIS with Panel Hearings may still be initiated, if warranted.

Other aspects of the government's approach to environmental assessment in this project have been unusual. Normally, the principal role in EARP served by resource agencies such as DFO, is to assist initiating departments by providing them with all the necessary data on resources they manage. In this case, at the request of PWC, DFO agreed to take on a more active role by actually advising PWC on the Terms of Reference for environmental studies. DFO thus cooperated to a great extent in ensuring that the consultants prepared comprehensive and accurate reports. DFO also acted as advisors to PWC on the acceptability of the completed studies.

This has helped DFO to focus its attention on a few critical concerns. First and foremost among these is the potential for a bridge structure to affect the ice dynamics of Northumberland Strait. A minor change in ice dynamics accompanied by a similarly minor change in marine climate could have major

consequences for herring, lobster and scallops, among other species, and affect the commencement of fishing seasons for Spring herring and lobsters. Analysis of recent ice data collection in the Strait is ongoing and DFO should be able to enunciate a position on this issue before a final decision is made on the project.

Other less critical fisheries concerns include construction-related fisheries exclusion zones and potential gear damage, the coverage of natural habitat by bridge piers along with associated potential sediment scour and movement, and the disposal of dredge spoil. These, however, are considered mitigable, either by compensation or by suitable restorative measures where required.

While DFO harbours these concerns, it is reassuring, however, that the process of environmental assessment employed by PWC is one of intense consultation with other federal and provincial agencies, the fishing industry and the general public. The iterative nature of the assessment, involving first a Generic IEE, then a Specific IEE and finally an EIS if required should ensure that none of these outstanding concerns remain outstanding when and if the project proceeds to construction.

NSCP'S INITIAL ENVIRONMENTAL ASSESSMENT

In December of 1986, PWC proceeded to explore the environmental, socio-economic and engineering feasibility of generic bridge and tunnel project alternatives. DFO, at PWC's request, assisted in developing Terms of Reference for environmental studies to ensure acceptability of proposals

particularly from a marine resource perspective. Fifteen consulting companies, mostly Atlantic based, were commissioned to help in preparing a conceptual level project description for each alternative and to conduct the following studies:

- Fishery and Environmental Resources Assessment;
- Erosion and Scour Assessment;
- Winds, Waves, Tides and Currents Assessment;
- Ice Climate Assessment;
- Vessel Traffic and Bridge Safety Study;
- Social Impact Assessment;
- Financial and Economics Assessment;
- Substructure Design and Construction Review;
- Superstructure Design and Construction Review;
- Tunnel Feasibility.

Independent of these investigations, two other consulting firms were also to join and use the results of these studies to conduct a generic Initial Environmental Evaluation (IEE) of the project for PWC.

The Generic IEE was finalized and released for public review on March 15, 1988 after having been scrutinized by over one hundred environmental and social scientists, resource managers and engineers from federal and provincial regulatory agencies. Public review, not only of the Generic IEE but of the project as a whole, included 16 PWC-sponsored open houses held in the three Maritime Provinces, five meetings with the fishery community hosted by DFO and a series of public debates on P.E.I. held on behalf of the

Provincial government by the Institute of Island Studies. The culmination of all this Public Scrutiny was the January 18, 1988 plebiscite held on the Island at the requet of P.E.I. Premier Joe Ghiz, in which close to 60% of participants answered "yes" to the question "Are you in favour of a fixed crossing?".

The Generic IEE, a 400 page document, evaluates environmental risks, identifies better ways of reducing or avoiding negative impacts, and highlights areas where more studies are required. It concludes that "at the concept level, the predicted environmental effects are not significant".

Additional studies commissioned by PWC to fill data gaps are:

- Superstructure Icing (AES);
- Geotechnical Investigation and Overview;
- Geophysical Surveys;
- Ice Dynamics (additional to the original analysis);
- Fisheries Impacts;
- Corrosion Protection System;
- Financial Analyses (2);
- Till Scour Review;
- Dynamic Behavior of Northumberland Till;
- Determination of Sediment Transport Threshold;
- Fishery Monitoring Program 1987 and 1988;
- Marine Habitat Baseline Data Collection;
- Terrestrial Baseline Data Collection;

- Road Network Impact Study (P.E.I., N.B. and N.S.);
- Borden/Tormentine - Opportunities and Impacts.

For the purposes of EARP, PWC is designated as both the "initiating agency" and the "proponent" responsible for environmental assessment at the early stages of the NSCP. When a successful design is selected, the developer will become the proponent and must secure environmental approval of the specific design of the project by preparing and submitting a specific IEE for regulatory and public review. At that time PWC will continue to serve as "initiating agency" and as such will maintain full responsibility for project management and environmental safety on behalf of the Government of Canada.

THE PROPOSAL STAGE

On March 28, 1988 PWC's Minister Stewart McInnes, in the presence of P.E.I. Premier Joe Ghiz, announced in Charlottetown, that the Federal Government had invited seven prequalified developers to submit proposals for the construction of a bridge or a drive-through tunnel across the Northumberland Strait. Minister McInnes had already stated that the project would only proceed if all environmental regulations were met, the proposed option was safe and the province of PEI was in agreement. Premier Ghiz's conditions for supporting the project included public review of environmental studies and compensation for fishermen. The Province of New Brunswick stated again the need for environmental protection when it announced its support for the project.

The Proposal Call document issued to the developers included a 104 page "Requirements for Environmental Assessment, Review and Planning" section based on the findings of the Generic IEE. It calls for public information/consultations during the design phase of the project and continuously throughout construction and operation, in addition to the public meetings associated with the specific IEE preparation and review.

The Proposal Call also stipulated that the agreement between the Government of Canada and the selected developer will provide for a $30 M Prime Cost Sum funded by the developer and to be used for compensation, change order and other purposes. The Prime Cost Sum will be administered by PWC with disbursements to be at the sole discretion of PWC. Administration and disbursements from the Prime Cost Sum will be subject to Auditor General scrutiny.

On June 13, 1988 six developers submitted seven proposals - six for a bridge, one for a tunnel - which are now in the process of being evaluated according to their environmental, technical, financial, managerial and regional benefits content by five corresponding evaluation working groups of PWC's Evaluation Coordinating Committee. Fisheries and Oceans participates on two of these teams: the Environmental and the Technical Working Groups. Each team has established its own operating procedures. In the case of the Environmental Working Group, each proposal will be evaluated on a PASS/FAIL basis and will require unanimity from the six voting members (P.E.I., N.B., N.S., DFO, DOE, PWC) in order to pass.

During the Summer months developers will work to respond to deficiences identified in their proposals by one or more of the Working Groups. In September, 1988 proposals which pass final screening will be returned to the developers who will be asked to price their solutions. Bids are expected to be opened in October and the lowest bidder is to become the selected developer. The selected developer will then have until December to submit a Specific IEE, while the selected proposal will undergo public review. Following regulatory and public review of the Specific IEE, the Project will either go to the design phase if no significant environmental effects are identified, or it will be delayed pending formation of a Panel under EARP, production of an Environmental Impact Statement and full public hearings.

THE FISHERIES SECTOR AND DFO'S INVOLVEMENT

Latest figures show that 5,462 fishermen with 7,660 fishing licenses, and 1,803 vessels are registered at ports within the three Maritime provinces along the Northumberland Strait.

The Strait's fishery was valued at $70 M in 1986, representing 9% of the landed value of the whole Atlantic fishery. Lobster accounts for 73% of the Strait's fishery and a quarter of all Atlantic lobster landings is attributable to the Strait. Other commercial fisheries in the Strait are herring and other pelagic fish (9.6%), scallop (4.1%) and other shellfish (7.5%), groundfish (2.1%) and others (3.5%).

The Department of Fisheries and Oceans (DFO) has been involved in this Project since the very beginning in accordance with its mandate to protect fish habitat, fish and fisheries. DFO was afforded a unique opportunity in this case, however, to be even more directly involved in environmental planning thanks to PWC's early invitation to take part in the overall project planning phase.

As a consequence of this special status, DFO was instrumental in PWC's decision to reject proposals to build a causeway, a partial causeway or a sunken caisson tunnel due to the associated risks to marine resources.

DFO is a participating member of the PWC's senior, interdepartmental, intergovernmental Project Planning Committee, dealing with policy and planning issues, and sits on the Committee's Technical Working Group which has immediate influence on the conduct of environmental studies.

DFO has also established its own Technical and Scientific Working Group of scientists, managers, economists and engineers which has produced Terms of Reference for environmental studies, assisted consultants in performing their tasks and provided constructive criticism on the resulting reports to PWC. The Department has also hosted five regional meetings between PWC, its consultants and the fishing community.

Last April, DFO created a managerial position to coordinate its increasing involvement in the Project. The incumbent's responsibilities include the establishment, at PWC's request, of a federal/provincial/industry Fisheries

Liaison Committee to focus on the Project and its impact on the fishery, and the coordination of DFO's input in the planning, development and review of monitoring studies and activities aimed at appraising the impact of project construction, the success of mitigation strategies and the validity of compensation claims.

The 20-member Fisheries Liaison Committee reports to the Project Planning Committee and comprises representatives of the Strait's fishermen and processors, the fisheries departments of the Maritime Provinces, PWC, Environment Canada and DFO.

The Committee's mandate includes the review of all matters concerning direct physical impact, medium and long term ecological impacts and the ways and means of mitigating these so as to limit Project-related environmental and socio-economic impacts on the fishery. The Committee will specifically review the arbitration mechanism set up for the receipt and timely processing of all claims for compensation raised by the fishing industry in reference to any element of the Project.