

CUMULATIVE ENVIRONMENTAL EFFECTS AND  
SCREENING UNDER THE CANADIAN  
ENVIRONMENTAL ASSESSMENT ACT

WORKSHOP PROCEEDINGS  
TRANSPORT CANADA  
November 10, 1992  
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**Prepared For:**

**The Federal Environmental Assessment Review Office and  
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## 1. INTRODUCTION

The Canadian Environmental Assessment Act received Royal Assent on June 23, 1992, and will be proclaimed in early **1993**. Amongst other things, the Act requires that:

*“Every screening or comprehensive study of a project and every mediation or assessment by a review panel shall include a consideration of the following factors:*

*(a) the environmental effects of the project...and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;*

*(b) the significance of the effects referred to in paragraph (a); ”*  
(section 16( 1)).

The Federal Environmental Assessment Review Office (FEARO) is currently preparing a Procedural Manual which provides guidance on how to conduct environmental assessments under the Act, including the assessment of cumulative environmental effects. As well, a more detailed Reference Guide on addressing cumulative environmental effects has been drafted as a supporting document to the Manual. However, FEARO recognises that approaches and methods for assessing cumulative environmental effects are evolving rapidly and that any guidance offered should reflect best current practice.

To complement its work to date and to provide the best practical advice possible, FEARO in cooperation with other federal departments and agencies is examining how cumulative environmental effects can be considered in screenings of projects during federal environmental assessments. The departments and agencies that are participating in this initiative are:

- Environment Canada;
- Transport Canada;

- The National Capital Commission (NCC);
- The Canadian International Development Agency (CIDA);
- The Department of Indian Affairs and Northern Development;
- Fisheries and Oceans;
- Energy, Mines and Resources; and
- Agriculture Canada.

It was decided to focus the workshops on examples at the screening level of the environmental assessment process. Screening is the most routine of the four types of environmental assessment tracks (the others are comprehensive study, mediation and panel review) and is required for most smaller projects or projects that are thought to be less likely to cause any significant adverse environmental effects. The vast majority of federal environmental assessments (about 95%) are conducted at this level. Also, smaller projects that are subject to screening can be important contributors to cumulative environmental effects. In addition, it is probably more difficult to address the cumulative environmental effects of small projects than larger ones.

Each participating department or agency selected several case studies of projects that have been subjected to screening under the Environmental Assessment and Review (**EARP**) Guidelines Order (**1984**). For each case study, brief written background materials are prepared (see Chapter 2). The case studies are then presented at a series of **1-2** day workshops with staff from the department or agency involved. The case studies are used as a basis for discussing how the cumulative environmental effects of projects could be addressed in screening.

There is at least one workshop being held by each participating -department or agency. Two departments (i.e., Environment Canada and the Department of Fisheries and Oceans) will hold several workshops in different regions of the country. The Schedule of Workshops is shown in Appendix A.

Transport Canada was the first department to hold a workshop. The Airport Group at Transport Canada has had an active environmental assessment program for more than fifteen years. As a result, it has acquired an in-depth knowledge as well as extensive experience with the approaches and methods used in federal environmental assessments. The agenda and list of participants for the Transport Canada workshop is shown in Appendix B. This draft report summarises the results of the Transport Canada workshop. It is intended to summarise the discussions, rather than to provide detailed minutes. Proceedings will be prepared following each successive workshop and distributed to the participants. As well, a set of 'consolidated proceedings' will be prepared and updated after each workshop. Where possible, these 'consolidated proceedings' will be sent to the participants of each workshop in advance, so that they are aware of the discussions at all previous workshops.

At the conclusion of this initiative, the final 'consolidated proceedings' will be distributed to all participants from all workshops. As well, a final interdepartmental workshop will be organised to discuss common themes in assessing cumulative environmental effects in screenings, as well as inter-departmental collaboration and co-operation on this subject. This will probably be in March, 1993. Subsequently, **FEARO's** Procedural Manual and Reference Guide will be revised to take account of the outcome of this initiative.

## 2. **CASE STUDIES**

Each department or agency participating in this initiative was asked to select several recent examples of projects subjected to screening under the EARP Guidelines Order. In most cases, these case studies represented the range of different types of projects screened by the department or agency, as well as different-sized projects and projects in different types of ecosystems.

For each case study, brief written background materials were prepared summarising:

- The project;
- The project's environmental effects;

- The screening decision reached; and
- How, and to what extent could any cumulative environmental effects be addressed.

To assist in the preparation of the background materials and to familiarise the workshop participants with the subject of assessing cumulative environmental effects, copies of a background paper on cumulative environmental effects and the draft Reference Guide prepared by FEAR0 were distributed to all workshop participants in advance.

The following case studies were presented at the workshop:

- Development of a new airport or the extension of an existing runway;
- Installation of several underground storage tanks containing petroleum;
- Apron expansion which increases the amount of stormwater runoff;
- Conducting a fire training exercise at an airport fire training area; and
- GO Transit expansion - **Whitby** to Oshawa (written material prepared but not presented at the workshop).

The background material prepared by Transport Canada is shown in Appendix C.

### 3. THE CURRENT SITUATION AT TRANSPORT CANADA

The cumulative environmental effects of projects are already at least partially addressed in the screening process, although the phrase ‘cumulative environmental effects’ has not been used. At present, cumulative environmental effects are addressed by:

- Establishing the baseline environmental conditions (the ‘sensitivity’ of the site);
- Examining the incremental environmental effects associated with the project; and
- Informally considering future projects.

Consultation with other government agencies, the public and adjacent landowners is an important component of these three activities.

In the workshop, these three activities were discussed in the context of the four case studies presented (see Appendix C), emphasising the case study on apron expansion and the associated increase in stormwater drainage. As well, several other case studies were mentioned including:

- Dredging;
- A proposed aircraft paint shop at the Ottawa International Airport;
- The St. Clair River Tunnel; and
- Site assessments prepared in connection with lease renewals at harbours and ports.

#### Establishing the Baseline Environmental Conditions

Participants stated that there are several aspects of establishing baseline environmental conditions and site sensitivity that are important. For example, in the case of stormwater drainage associated with apron expansion, it may be appropriate for Transport Canada to monitor the quality of the receiving water body upstream, where it enters airport property. For other types of projects, different measures of the baseline environmental quality or site sensitivity may be appropriate. As well, information on baseline conditions may be collected through consultation activities, with the public, other levels of government, or other departments within the federal government etc. There was agreement that consultation can also provide valuable information on previous projects or activities in the area that may affect the proposed project.

Many workshop participants were of the opinion that addressing cumulative environmental effects in environmental assessment is largely an exercise in dealing with the environmental effects of previous projects and activities. Previous projects and activities caused environmental effects that were often not mitigated effectively. Thus, environmental assessments today are having to take account of contamination and other effects caused by previous projects and activities. For example, contamination associated with old underground storage tanks is an issue when new

tanks are proposed. However, in many cases, mitigation measures have now been developed for Transport Canada projects and activities, so that the cumulative environmental effects of current and future projects should be a lot less.

#### Examining the Incremental Environmental Effects Associated with the Project

When a project is screened, the incremental environmental effects associated with it are examined. For runway expansion, this could be the incremental noise associated with constructing the runway, as well as the noise associated with aircraft traffic. Several computer models have been developed to estimate noise impacts from changes and/or increases in aircraft traffic. For the increased stormwater drainage from **apron** expansion, the incremental environmental effects could be examined by monitoring the quality of the receiving water when it enters airport property (as mentioned above) and when it leaves. The airport authorities are only responsible for mitigating the incremental effect they cause on receiving water quality. Although in some cases, modelling and/or monitoring can establish the incremental effects of the project, in others qualitative approaches combined with best professional judgement, are the best appropriate methods.

#### Informally Considering Future Projects

When appropriate, Transport Canada staff consider how plans and future projects related to the project in question. Aircraft Services have consulted municipal land use plans to determine planned land uses in areas adjacent to their operations. One example where this has happened is the proposed aircraft paint shop at Ottawa International Airport. Consultation is the primary method used for obtaining data and information on plans and future projects.

#### **4. FUTURE DIRECTIONS**

The proposed approach for assessing cumulative environmental effects outlined in the draft Reference Guide was used as a basis for discussions on how Transport Canada could better address cumulative environmental effects at the screening level of environmental assessment.



First, it was pointed out that staff rarely ‘scope’ the proposed project or the environmental assessment at the screening level. By the time that a screening is conducted, the design engineers and others have already decided most of the project details. Thus, for many small projects, decisions about who should be involved, boundaries, etc are not normally part of the assessment process. Usually, the role of the Environmental Officer in conducting a screening is to raise issues or questions regarding mitigation measures. Thus, the concept of ‘scoping’ is often not seen as being very relevant at the screening level.

The draft Reference Guide mentions the need to establish past and future nearby projects and activities. Although this often does happen through consultation, there is no systematic process at Transport Canada to do this. Thus, there is a need, at the least, for a greater degree of consultation between government agencies. Two recent examples of this are the multi-agency consultations at the Ottawa International Airport, involving Transport Canada, the Department of National Defense and the National Research Council and discussions between Transport Canada and the Ontario Ministry of the Environment regarding air emissions from the proposed paint shop there.

Another issue that was discussed was environmental monitoring. Most workshop participants were of the opinion that to ensure the implementation of mitigation measures (as required in the Act), environmental monitoring would be necessary in all cases, even though there is no requirement in the Act for follow-up. (However, environmental assessments must consider the need for, and requirements of a follow-up program). There was concern expressed about the feasibility of conducting environmental monitoring for cumulative environmental effects. A representative from FEARO stated that there are other ways of ensuring the implementation of mitigation measures, other than environmental monitoring.

Several workshop participants mentioned that it is important to clarify who is responsible for environmental monitoring at different stages of an environmental assessment.

The issue of environmental monitoring was also related to the need for additional resources. Throughout the workshop, most of the participants mentioned the need for additional resources to assess cumulative environmental effects adequately. Participants stated that there are additional responsibilities associated with implementing the new Act, such as assessing cumulative environmental effects, yet it is unlikely that the level of resources will be sufficient. A 'resourcing' exercise is currently underway across the federal government, that is examining the additional resources needed to implement the new Act.

The Canadian Coast Guard and the Airports Group expressed concern about the environmental effects of their tenants' activities. Both groups lease federal lands to private sector companies. The Coast Guard now has a requirement to do a site assessment before every lease renewal. This can be very expensive. The federal government, in this case Transport Canada, is responsible for the environmental effects of its tenants' activities, but it is not responsible for the environmental effects of the activities of other site users that are not tenants. As well, it is virtually impossible to estimate the cumulative environmental effects of their tenants' activities, because there is often no information available. Although leases can include any clause that is not against federal legislation, current leases have no provision for assessment or remediation work to be undertaken by the tenant. The new Act may provide some assistance in this regard, as addressing cumulative environmental effects will be a legal requirement. As well, future leases will include clauses to define a tenant's environmental responsibilities.

Throughout the workshop, participants mentioned the need for better, more comprehensive environmental information. Representatives from the Canadian Coast Guard, in particular, were of the opinion that there was little that could be done to assess cumulative environmental effects until more baseline information was available and/or accessible on the environmental quality in Canadian ports and harbours. However, there was a suggestion that it may be a good idea for all the 'stakeholders' in an individual port or harbour to meet and share environmental information and examine the feasibility of developing integrated long-term environmental monitoring programs.

While the importance of cumulative environmental effects is undeniable, at present, there isn't enough information to be able to establish maximum levels or 'ceilings' for cumulative environmental effects. In the U.S., tradeable emissions permits are already being used. These provide maximum levels of cumulative environmental effects in an area or region. Workshop participants were of the opinion that we don't have enough information to do this in Canada.

## 5. **RECOMMENDATIONS TO FEAR0**

The workshop participants were of the opinion that the draft Reference Guide and Background Paper would be helpful in addressing cumulative environmental effects under the Canadian Environmental Assessment Act. Several people mentioned the need to include specific examples or case studies in these documents (this was one of the reasons for organising the workshop series).

There was a consensus that more background information was needed on the concept of cumulative environmental effects, as well as on addressing cumulative environmental effects at the project-level of federal environmental assessments (e.g., a primer).

APPENDIX A  
SCHEDULE OF WORKSHOPS

| <u>DEPARTMENT</u>  | <u>LOCATION</u>         | <u>DATE</u>                                |
|--|-------------------------|--|
| Transport Canada   | Ottawa                  | November 10                                |
| National Capital Commission                                  | Ottawa                  | November 26-27                             |
| Canadian International Development Agency                    | Ottawa                  | December 8-9                               |
| Department of Fisheries and Oceans                           | Ottawa                  | January 12-13                              |
| Department of Environment/Department of Fisheries and Oceans | Halifax<br>Vancouver    | January 14-15<br>January 25-26<br>or 26-27 |
| Department of Indian Affairs and Northern Development        | Vancouver               | January 28-29                              |
| Energy, Mines and Resources                                  | Ottawa                  | February 4-5                               |
| Agriculture Canada   | <b>TO BE DETERMINED</b> |  |

APPENDIX B  
TRANSPORT CANADA  
WORKSHOP AGENDA AND LIST OF PARTICIPANTS

WORKSHOP AGENDA

CUMULATIVE ENVIRONMENTAL EFFECTS AND SCREENING UNDER  
THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT

Tuesday, November 10, 1992  
8:30 a.m. - 4:30 p.m.  
Room 1237, Tower C, Place de Ville  
Ottawa, Ontario

|          |   |                  |
|----------|---|------------------|
| 8:30 am  | Welcome, Review of Agenda and Purpose of Workshops  | Linda Jones      |
| 8:45 am  | Introductions   |                  |
| 9:00 am  | Presentation and discussion of 5 case studies<br>(10 minutes for each presentation followed by 5 minutes<br>for questions of clarification)   | Transport Canada |
| 10:15 am | Coffee  |                  |
| 10:30 am | Procedures and methods for assessing cumulative<br>environmental effects during screening using case studies <ul style="list-style-type: none"><li>. Setting boundaries</li><li>. Examining interactions</li><li>. Identifying past and future projects</li></ul> | Kate Davies      |
| Noon     | Lunch   |                  |
| 1:00 pm  | Procedures and Methods (continued)  |                  |
| 3:00 pm  | Coffee  |                  |
| 3:15 pm  | Summary   |                  |
| 4:00 pm  | Recommendations to FEARO  |                  |
| 4:30 pm  | Adjourn   |                  |

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APPENDIX C  
TRANSPORT CANADA  
CASE STUDIES

1. Development of a New Airport or the Extension of an Existing Runway

Project Description: The major environmental impact and concern with either of these projects is the noise problem on the surrounding community associated with the increase in aircraft traffic.

Screening Decision: 3 - Adverse effects may be mitigated with known technology.

Possible Mitigation: The following items are possible mitigation measures for this environmental impact:

- . Set up a noise management committee.
- Monitor and evaluate the noise on a continuous basis and update abatement procedures.
- Continue to investigate measures for identifying and abating noise problems.
- Adapt airport operations in order to ease noise.
- Increase noise monitoring sites around airport.
- High speed **taxiway** exits to reduce the need for reverse thrusts.
- Review and update restrictions on residential development.
- Develop a noise awareness program.

Q1. How was the screening decision reached?

Best professional judgement and the review of all relevant technical material related to noise mitigation available in Transport Canada and the air industry. Also, all the technical work completed for the EARP Panel Reports for the proposed runway projects at Vancouver and Toronto.

Q2. To what extent could any cumulative environmental effects be addressed in screening the project and how could this be done?

Since the aircraft industry is constantly changing the aircraft and engines to produce a quieter aircraft, any cumulative effect is being decreased. The measure of noise impact accumulating is measured over a period of time and are currently accounted for in projected NEF noise contours.

2. Installation of Several Underground Storage Tanks Containing Petroleum

Project Description: The major environmental impact and concern with this project is potential contamination of soils and groundwater associated with leaking tanks, overfilling, spills, and in general improper fuel handling.

Screening Decision: 3 - Adverse effects may be mitigated with known technology.

Possible Mitigation: The following items are possible mitigation measures for this environmental impact:

- Adherence to the Environmental Code of Practice for Underground Storage Tanks.
- Qualified tank installers.

- Qualified fuel handlers.
- Increased and better monitoring of all tank sites.
- Better training for fuel handlers.
- Development and updating of an Emergency Spills Response Plan.
- Installation of oil/water separators.

Q1. How was the screening decision reached?

Best professional judgement and the review of all relevant technical materials related to fuel handling available in Transport Canada and the fuel industry. Also, the results of our environmental audits conducted at several airports confirm the extent of the impact of fuel on the environment. Previous assessment records based upon proper site investigations also confirmed our mitigation measures.

Q2. To what extent could any cumulative environmental effects be addressed in screening the project and how could this be done?

Since the extent of this problem has just been recently determined, the measuring of potential cumulative environmental effects may be hard to determine. Once the contaminated sites are remediated and new tanks are installed, the effectiveness of the mitigation measures can be monitored through future environmental audits conducted over future years.

3. Apron Expansion Which Increases & Amount of Stormwater Runoff

Project Description: The major environmental impact and concern with this project is potential contamination of soils and groundwater associated with all of the chemicals used in airport operations on an apron.

Screening Decision: 3 - Adverse effects may be mitigated with known technology

Possible Mitigation: The following items are possible mitigation measures for this environmental impact:

- Increased stormwater monitoring around the stormwater discharge points.
- Secondary containment for fuelling operations.
- Centralized de-icing facility for glycol containment.
- Environmentally suited chemical runway de-icers.
- Better training for fuel handlers.
- Development and updating of an Emergency Spills Response Plan.
- Installation of oil/water separators.
- Construction of a holding lagoon to contain runoff.

Q1. How was the screening decision reached?

Best professional judgement and the review of all relevant technical material related to stormwater monitoring available in Transport Canada and the provinces. Also, the results of our environmental audits conducted at several airports confirm the extent of the impact of these chemicals when discharged to the environment.

Q2. To what extent could any cumulative environmental effects be addressed in screening the project and how could this be done?

Since the extent of this problem has just been recently determined, the measuring of potential cumulative environmental effects may be hard to determine. Once the stormwater discharge can be analyzed and the chemical usage reduced, then the cumulative effect should decrease over time.

4. Conducting a Fire Training: Exercise at an Airport Fire Training: Area

Project Description: The major environmental impact and concern with this project is potential **contamination** of soils and groundwater associated with all of the chemicals used in a fire training exercise.

Screening Decision: 3 - Adverse effects may be mitigated with known technology.

Possible Mitigation: The following items are possible mitigation measures for this environmental impact:

- Construction of new fire training areas which better protect the environment.
- Secondary containment for fuelling operations.
- Centralized fire training, therefore the potential for fewer contaminated site%
- Containment of all effluent released during an exercise.
- Use of propane fuel.
- Cease all fire training and decommission the site.
- Continued monitoring of soils, groundwater and surface water.

- . Protective equipment.
- Public awareness.

Q1. How was the screening decision reached?

Best professional judgement and the review of all relevant technical material related to fire training available in Transport Canada. Also, the results of our environmental audits and work with the National Contaminated Sites Remediation Program conducted at several airports confirm the extent of the impact of these chemical when discharged to the environment.

Q2. To what extent could any cumulative environmental effects be addressed in screening the project and how could this be done?

Since the extent of this problem has just been recently determined, the measuring of potential cumulative environmental effects may be hard to determine. Once better designed fire training areas are constructed, then the cumulative effect should decrease over time.

5. GO Transit Expansion - Whitby to Oshawa [not presented at workshop)

Introduction

The Canadian National Railway Company proposes to extend its rail corridor along its Kingston Subdivision between the east side of Brock Street, Town of Whitby to Oshawa, City of Oshawa, as part of the extension of the GO Transit Service.

This expansion project, to be undertaken over the next 3 to 4 years, calls for the construction of the following railway works:

- . Two extra mainline tracks along this 2.6 mile corridor;
- . Addition and modification to the signal system;

- Grading and drainage work, including extension or reconstruction of existing culverts and re-alignment of Pringle Creek;
- Different works, at public grade crossings and separations, to accommodate the additional tracks: construction of a Victoria Street Grade separation, alterations to the South Blair Street grade crossing, addition to the Thickson Street grade separation and reconstruction of the Hopkins Street grade separation.

#### Problematical

An objection under subsection 8(2) of the Railway Safety Act was received from two parties who objected specifically to the impact on adjacent properties of a grade separation at mile 304-59 of the Kingston Subdivision which is part of the project.

Subsection 10(3), RSA, gives the Minister of Transport the authority to approve railway works that are subject to an objection if the Minister is satisfied that the work is consistent with safe railway operations and the requirements of EARP.

#### Environmental Screening

##### 1) Nature of the Project:

The GO Transit project has been carried out in response to the increasing demand for inter-regional transportation facilities in the greater Toronto area. The project affects the following municipalities: Regional Municipality of Durham, the Town of **Whitby**, the City of **Oshawa** and the Town of Newcastle.

##### 2) Natural Environment

Natural environmental features for the initial stage study area were documented under the following headings: physiography, soils, vegetation, wildlife, water resources and fisheries, and sensitive ecosystem. The general picture of the study points out an area having a moderately low sensitivity.

3) Adverse Environmental Effects:

Addition and modification to the signal system is excluded from environmental assessment (excluded under EARP Guidelines Order).

Environmental Impact on Adjoining Land: No significant environmental effects has been identified in the Environmental Assessment Report submitted by GO Transit.

Effects on Drainage: Drainage within the immediate area of the grade separation will be affected, since Pringle Creek will need to be realigned and the culvert will be increased. However, this should not produce any significant effect since the flood plain is not modified.

Cumulative Environmental Effects

1) Identifying past projects and activities and their environmental effects:

Present CN or CP traffic: There will be no increase in vibration levels with the addition of GO train tracks along the same alignment. Although vibrations will occur at more frequent intervals, the duration of GO Train **passby** is much less than freight trains. The increase of noise is also insignificant.

Sewage Treatment Plant upstream: The re-alignment of Pringle Creek does not have any significant environmental effect since the water quality is very poor and no creeks within the study area have been identified as being highly sensitive or important for sport fisheries.

2) Identifying future projects and activities and their environmental effects:

Telecommunication CN & CP: Telecommunication cable and signal plant within CN and CP right-of-way would be relocated. No adverse environmental effects can be produced.

Municipal services: An extensive network of local service water and sewer will be required. No adverse environmental effects are expected.



3) Assessing interactions between items 3 and 4:

The interaction between items 3 and 4 do not add any significant environmental effects.

4) Determining the significance of the cumulative environmental effects:

None.