GO Georgetown South Individual Environmental Assessment
Evaluation Method Discussion Paper

An evaluation process includes two basis steps.

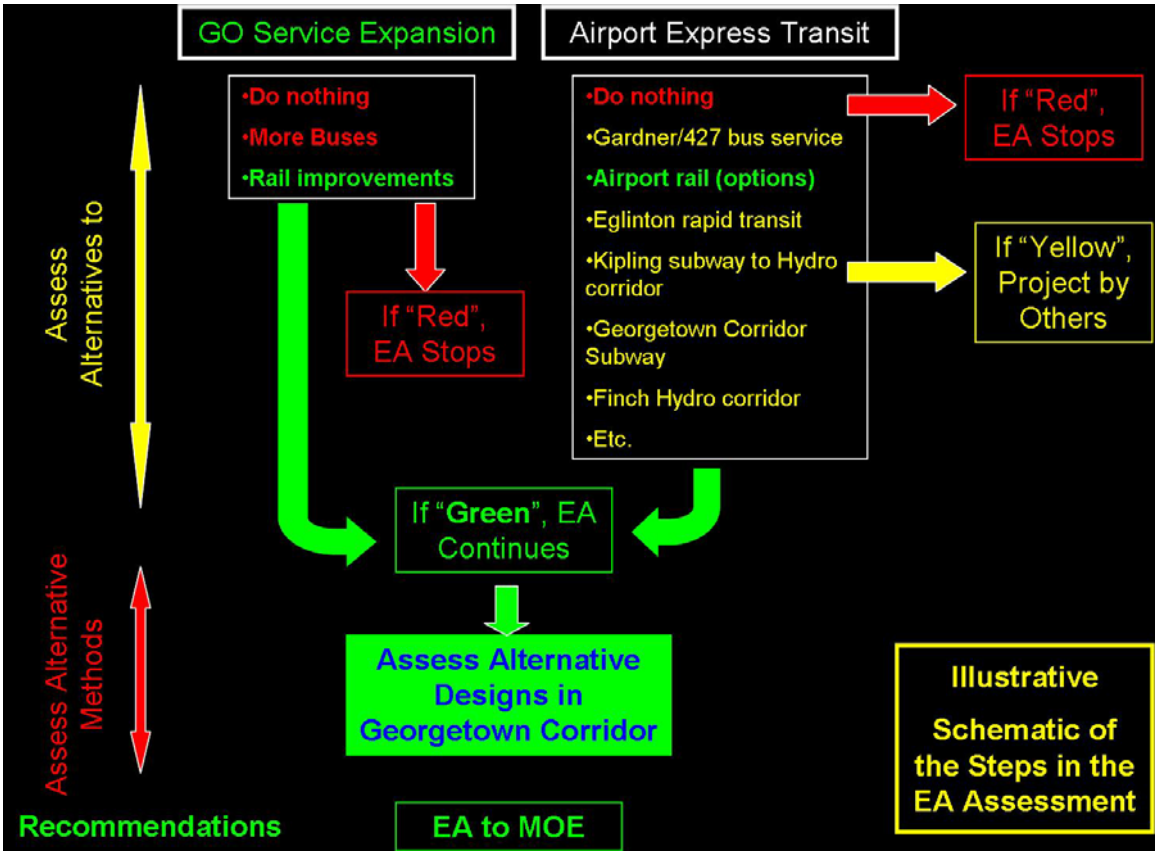
1. Predicting effects
2. Applying an evaluation method to compare the advantages and disadvantages of the alternatives in order to rationalize the selection of the preferred alternative.

The Ontario Environmental Assessment Act (OEAA) requires that two types of alternatives be examined. The first types of alternatives are "alternatives to the undertaking". These are defined as functionally different ways of addressing an identified problem or opportunity. For the purpose of this study these types of alternatives will be referred to as Planning Alternatives. The second types of alternatives are "alternative methods of carrying out the undertaking". These are defined as different ways of carrying out the undertaken once a preferred planning alternative has been considered (e.g. specific design and location alternatives). For the purpose of this study these types of alternatives will be referred to as Design Alternatives.

Given that the purpose of the study includes two components, three distinct evaluation stages are envisioned. These include:

1. Evaluation of Planning Alternatives to address the interregional commuter component
2. Evaluation of Planning Alternatives to address the airport link component
3. Evaluation of Design Alternatives for the preferred Planning Alternative for each component (only if it is within the Georgetown Corridor).

This generic process is shown schematically in the figure below.:



This discussion paper is structured to outline:

- The overall approach to predicting effects at the various stages of the study;
- The overall approach to compare the advantages and disadvantages of the alternatives in order to rationalize the selection of the preferred alternative;
- The specific approach/criteria that will be used to compare Planning Alternatives for the:
    - airport link component; and,
    - Interregional transportation component.
- The specific approach/criteria that will be used to compare Design Alternatives for the preferred Planning Alternative (only if it is within the Georgetown Corridor)

Overall Approach to Predicting Effects at the Various Stages

As note previously, two types of alternatives are required to be examined to meet the requirements of the OEAA; these include Planning Alternatives and Design Alternatives. These alternatives are fundamentally different in scope and nature. Planning Alternatives consider a number of different approaches to deal with a given problem or opportunity and once an approach has been decided upon, the Design Alternatives look at different ways of applying the chosen approach.

The planning framework is based on a phased sequence of decision-making in which these two types of alternatives are assessed at an increasing level of detail as they become more focused. In the initial stages (Planning Alternatives), when the size, location or type of facility is not yet known, less detailed criteria are used. At this stage impact assessment will be conducted at a more general and strategic level, based primarily on secondary source information. At the Design Alternative phase, when it becomes more difficult to differentiate between alternatives, more detailed information is required. The specific criteria to be used at each stage are outlined in the appropriate sections of this paper.

Once a Preferred Alternative design is selected, more focused data will be collected. This process of collecting additional environmental data as the project becomes more focused ensures that current information is sought and used throughout the study process.

This approach, based on a phased sequence of decision-making, is a standard and recognized approach to EA Planning. As the planning process progresses, and the level of detail increases, it is possible that information about the predictions made about the potential advantages and disadvantages may be greater or less than anticipated in the previous evaluation stage. If these changes are significant it could result in the Project Team reexamining the evaluation of the previous stage.

Overall Approach to Compare the Advantages and Disadvantages (Evaluation Method)

As note previously, evaluation is a two-step process. The first step (assessment) entails the identification of advantages and disadvantages of the various alternatives under consideration. At this stage, each environmental feature is examined to determine the extent of impact. Net impacts will be identified; these refer to the effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the impact.

The second step is the evaluation itself. This builds upon the information obtained from the impact assessment step and involves a comparative analysis of the advantages and disadvantages of the alternatives considered to select a Preferred Alternative. At this step, the relative

importance of the environmental features is determined. A “Do Nothing” scenario will be carried forward to represent a base case for comparison to the Preferred Alternative.

The evaluation of alternatives is an integral component of the EA. A sound evaluation process is based on five key principles:

- The evaluation of alternatives must be comprehensive and systematic;
- The process must be rational and understandable;
- The results must be replicable;
- The data must be traceable; and
- The entire activity must be participatory, with broad input from the public, stakeholders, regulatory agencies, municipalities, etc.

The Ontario Ministry of Environment recommends that the evaluation approach should be clearly described and government ministries, municipalities, agencies, First Nations and the public should be asked for their comments early in the EA study. The method(s) used to predict net environmental effects and evaluate advantages and disadvantages should clearly identify the relative differences and key impact trade-offs.

A Reasoned Argument (or Trade-off) method will be used to identify a Preferred Alternative. The Reasoned Argument (trade-off) evaluation will provide a clear presentation to stakeholders of the key trade-offs between the various evaluation factors and the reasons why one alternative is preferred over another. During the EA study, the decision making process will be clearly documented to support a traceable process and to ensure that it is understandable to those who may be affected by the decisions.

This method highlights the differences in net effects associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative significance of the impacts are examined to provide a clear rationale for the selection of a Preferred Alternative. The rationale that favours the selection of one alternative over all others will be derived from the following sources:

- Government legislation, policies and guidelines;
- Municipal policy (i.e. Official Plans);
- Issues and concerns identified during consultation with ministries and agencies, municipalities, ratepayer and interest groups and the general public (including input obtained through the weighting of the relative level of importance of evaluation criteria); and,
- Project Team expertise.

Specific Approach and Criteria that will be used to Compare Planning Alternatives

Planning Alternatives provide an opportunity to examine fundamentally different ways of addressing transportation problems. In recognition of these fundamental differences among the Planning Alternatives, it is appropriate to examine the effectiveness of each type of alternative to address the problems and take advantage of opportunities at a functional level.

The assessment of Planning Alternatives at a functional level will consider broad factors and criteria that reflect objectives in addressing the stated transportation problems and opportunities, while considering potential impacts on the environment.

It should be noted that the following sections represents the minimum number of considerations for identifying the advantages and disadvantages of transportation Planning Alternatives. This listing is subject to refinement and modifications based on input received during the EA.

Airport Express Link Component

Because there are a larger number of potential alternatives for the provision of transit service from Downtown to the Airport, a two step process will be followed to narrow the long list of Planning Alternatives down to a smaller number of reasonable alternatives for more detailed examination.

The first step would focus on examining the reasonableness of the various alternatives. This will be done by examining how well the various alternatives address the primarily purpose of providing service to the airport, how well the various alternatives provide ancillary benefits of enhancing the local transit network, the public costs to implement the alternatives and the ability to implement the alternative in a timely manner.

It is recognized that first step does not include an examination of potential environmental effects. However the rationale for this approach is that if an alternative does not address the purpose of the study to a meaningful degree at a reasonable cost it would not be considered a reasonable alternative no matter how high or low the potential environment effects were. Potential environmental effects will be considered in the second step of the process as well as during the evaluation of design alternatives. It is at that point that it will be determined whether the advantages outweigh the disadvantages. The specific measures to be examined during this step are:

1) The level of airport ridership accommodated
2) The level of other transit (local/intra-city) ridership accommodated
3) The overall public capital and operating cost
4) The feasibility of implementation of the project in a timely fashion

The alternatives that are carried to the second step of the process would then go through a more rigorous comparative evaluation using the following criteria:

Criteria	**Measure**
Transportation/Ability to Address Purpose of the Undertaking	
Ridership forecasts	▪ Estimated AM peak period airport ridership ▪ Estimated AM peak period other transit ridership
Travel time	▪ Time to get from downtown to the airport
Road expansion requirements	▪ Estimated reduction or addition of lane requirements at selected screenlines within the corridor based on AM peak hour peak direction auto demand
Compatibility with GTA "higher order" transit system	▪ Subjective measure to assess reinforcement of the other elements of the approved GTA network
Natural Environment	
Potential Impacts to Fisheries and Aquatic Resources	▪ Qualitative assessment by a qualified fisheries biologist reviewing the types of potential crossing and sensitivities of the crossing locations. Will include a listing of potential crossing impacts after standard mitigation is applied.
Potential Impacts to Environmentally Sensitive Areas, Natural Heritage Systems and Wildlife Corridors	▪ Qualitative assessment by a qualified ecologist reviewing the habitat potentially displaced or severed. Will include a listing of potential features impacted after standard mitigation is applied.

Criteria	Measure
Air Quality	▪ Quantitative assessment of pollutant loading based on general emission standards, type of vehicles and number of vehicles/km trips.
Socio-Economic Environment	
Potential Nuisance effects (noise, vibration, aesthetics, air quality)	▪ Number of residents within 300 m of surface facilities. The rationale for this is that nuisance effects tend to reduce the further away receptors are located from the facility. The number of receptors in close proximity is appropriate for strategically comparing Alternatives to the Undertaking. Detailed modeling and assessment will be undertaken at the Alternatives Method Stage.
Potential Impacts to Recreational Facilities including schools	▪ Number of recreational facilities displaced. ▪ Number of recreational features within 300 m of surface facilities (similar rationale as in nuisance effects)
Potential Impacts to Access	▪ Assessment of potential road closures or diversions. Will include a listing of potential crossing impacts after mitigation is applied (i.e. is it feasible to provide at-grade or grade separated crossings).
Potential Impacts to Future Land Use and Economic Development	▪ Qualitative assessment of the degree to which the proposed transportation system supports existing and planned future land use and growth including recognition of growth management plans and policies as articulated in approved provincial and municipal plans and policy documents.
Displacement of Built Heritage Features and Cultural Landscapes	▪ Number of built heritage features displaced or disrupted. ▪ Qualitative assessment of the change in character of the areas (i.e, is a new use being introduced, is an existing use being extended to such an degree that it potentially displaces features which are unique to the area).
Impacts to lands with Archaeological Potential	▪ Areas affected that have previously been undistributed by development.
Cost	
Capital cost	▪ High level comparative costs to the public based on previous studies if available or new estimates if not. All costs will be updated to 2006 dollars
Operating and maintenance costs	▪ High level comparative costs to the public based on previous studies if available or new estimates if not. All costs will be updated to 2006 dollars

Interregional Commuter Component

For the evaluation of the GO Transit Planning Alternatives the following factors will be considered when evaluating the three alternatives. These options will be assessed at a high strategic level and will assess:

- The degree to which the alternative accommodates projected transit ridership.
- The degree to which the alternative attracts additional readership.
- The degree to which the alternative impacts other road and pedestrian facilities.
- The degree to which the alternative impacts environmental (natural, socio-economic and cultural) features, functions, systems and communities.
- The degree to which the alternative requires funding for capital construction, maintenance and operating cost.
- Comparative impact on the natural, social and cultural environment

Specific Approach and Criteria that will be used to Design Alternatives

The data collected on the study area will assist in identifying the types of impacts each alternative will have on each component of the environment. The specific measures will be developed during the course of the EA. Impacts will be quantified according to the list of components listed below. The factor specific environmental specialists will be responsible for determining the overall impact of the various alternatives on the natural, socio-economic and cultural environment. In determining the overall impact, the specialists will consider how the various factors and criteria interact and function together. For example, for the natural environment this would include an overall assessment of the impact on local and regional ecosystem form, function and connectivity. The evaluation components listed below represent the minimum requirements in the process of evaluating Design Alternatives are subject to refinement and modification during the EA based on study findings, provincial policy and input received from stakeholders.

Natural Environment

- Effect on fisheries and aquatic habitat
- Effect on wildlife habitat
- Effect on vegetation and wetland resources
- Effect on quality and quantity of groundwater and surface water
- Effect on local and global air quality
- Impacts to properties with contaminated materials

Social Environment

- Direct Effect on individual properties and access
- Effects on community features
- Effect of changes in noise and vibration levels
- Impact on approved land use plans

Economic Environment

- Effect on businesses and other land uses
- Effect on access
- Effect on capital, operating, and maintenance costs

Cultural Environment

- Disruption and/or destruction of archaeological resources
- Effect on built heritage features and cultural landscapes.

Transportation

- Ability to accommodate future transit demand
- Impact on existing road , rail and pedestrian systems