

4. Discharge Point Alternatives for the Undertaking

The EA Act requires that the proponent identify and evaluate all reasonable alternatives available for study.

As noted previously, the DMNP is being proposed to naturalize the Don River mouth, provide for flood protection and facilitate revitalization of the Lower Don Lands. Given the critical role of the discharge point in the nature of the project, Ontario as reflected by the general area in which the Don Mouth may be relocated.

These discharge points represent different locations in which a new river mouth may be constructed. The discharge points also represent functionally different ways to address the problem or opportunity in that they each provide a range of opportunities for naturalization of the river mouth, flood protection and revitalization of the Lower Don Lands.

The discharge points identified for consideration during the EA are representative of those put forward in the past. They were refined and additional discharge points were considered based on public comment received during the preparation of the ToR. Subsequently, these alternative discharge points were re-evaluated as part of the EA in order to confirm the results of the evaluation undertaken during the preparation of the ToR and ensure that nothing had changed that would add or preclude discharge points from consideration.

Subsequent to the International Design Competition these discharge points were sensitivity tested against the design elements from the Design Concept Plan. The discharge points were evaluated against the design elements and channel modifications within the Don Narrows, which is located between the southern limit of Riverdale Park and the CN Rail bridge.

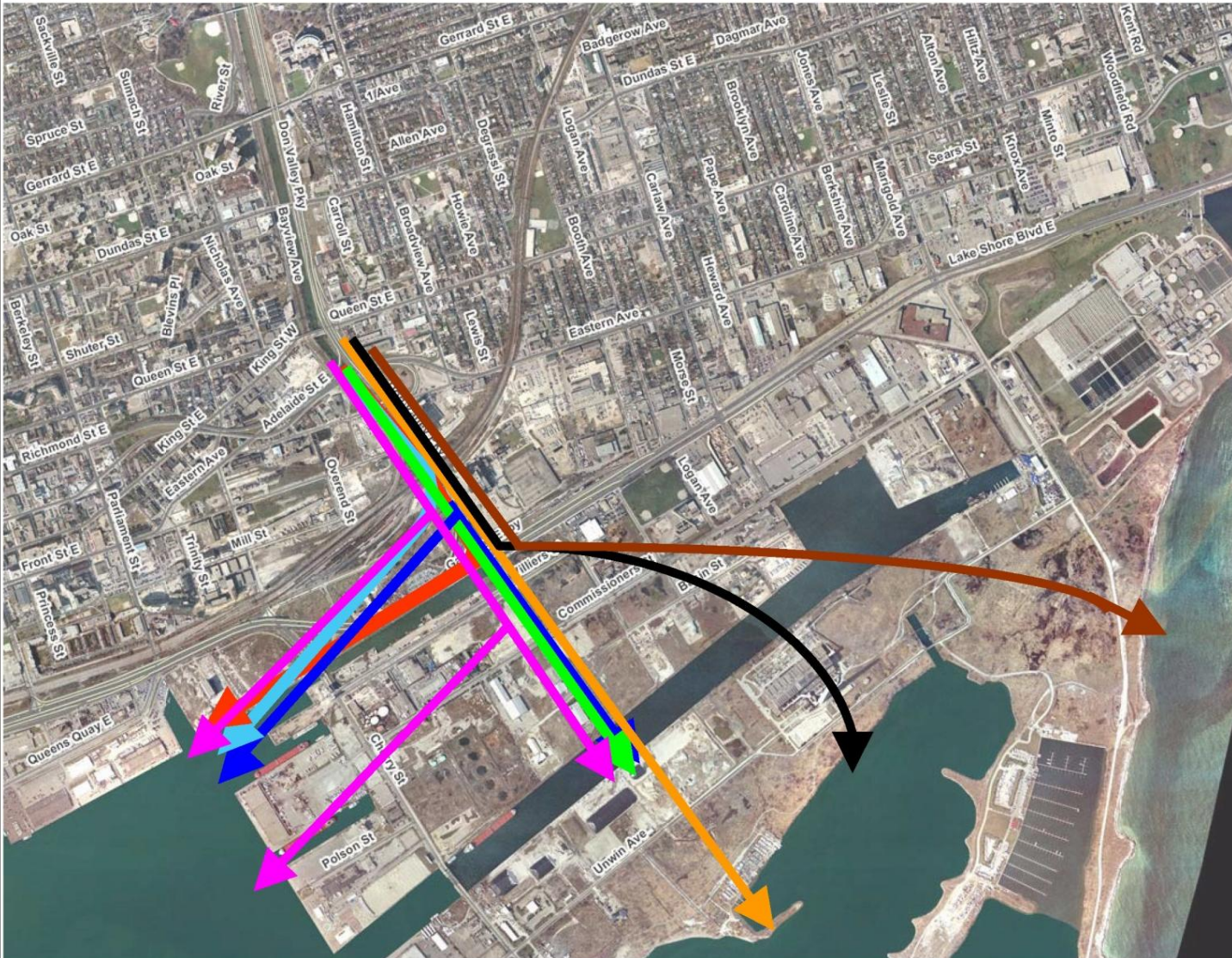
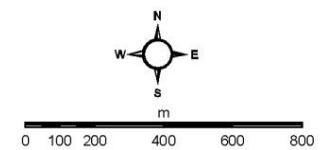
All discharge points were assessed against the design elements and channel modifications within the Don Narrows, which is located between the southern limit of Riverdale Park and the CN Rail bridge.

4.1 Identification of Discharge Point Alternatives

All discharge points were initially prepared by the study team and presented to the public for feedback at Public Forum No. 1 (June 2005) and subsequent working sessions during the preparation of the ToR. Table 4-1 describes the rationale for the development of the original four discharge points.

Legend

1. Do Nothing
2. Discharge to Inner Harbour
3. Discharge through the Port Lands to the Ship Channel
4. Combination of Alternatives 2 and 3
5. Combination of 2 and 3 with a third discharge point midway between the three discharge points will be wetland
6. Discharge through the Ship Channel and Lake Ontario Park to discharge to the Outer Harbour
7. Discharge through the Port Lands and the Ship Channel to the Outer Harbour through the eastern end of the Outer Harbour
8. Eastern Port Lands discharge point (Ashbridges Bay area)



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Figure 4 E Alternative Discharge Points

Table 4.2 Rationale for Alternative Discharge Points

Alternative Discharge Points	Rationale
Alternative 1: Do Nothing	<ul style="list-style-type: none"> Status quo, does not address flood risk Consideration of this alternative is required by the <i>EA Act</i>
Alternative 2: River with Discharge to the Inner Harbour	<ul style="list-style-type: none"> Discharge point contemplated as part of Secondary Plan Land available and identified in Secondary Plan for naturalization Maintains discharge of river to Inner Harbour
Alternative 3: River with Discharge through the Port Lands to the Ship Channel	<ul style="list-style-type: none"> Use of planned greenway as potential river mouth Aligns linear corridor function (for wildlife, etc.) of greenway with river mouth function Changes how flow enters Inner Harbour
Alternative 4: Combination of Discharge Points to the Inner Harbour and Ship Channel	<ul style="list-style-type: none"> Attempt to combine advantages of Alternatives 2 and 3 Splitting of flows may provide better flood protection and increase opportunities for naturalization

The public brought forward a number of other discharge points to consider, namely:

- Add a third discharge point to Alternative 4 above to create a natural delta and eliminate developable land between the discharge points;
- Discharge to the Outer Harbour at or near the proposed alignment of the Don Greenway to create a direct aquatic link between the river and Lake Ontario;
- Discharge to the Outer Harbour at or near the eastern end of the Outer Harbour to create a direct aquatic link between the river and Lake Ontario; and
- A discharge point to Ashbridges Bay to the east in order to discharge the river direct to Lake Ontario and create potential for development of a delta away from shipping and navigation.

No additional discharge points were identified during the EA. Thus, the final list of alternatives is as follows:

Table 4.2 Alternative Discharge Points and Descriptions

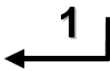




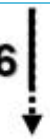

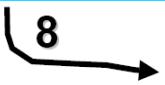
Alternative Number and Discharge Morphology	Title	Description
	Do nothing	Continuation of discharge through the Keating Channel, continued dredging of sediment and removal of debris, no naturalization of river mouth. This alternative does not alleviate flood risk, and thus no significant redevelopment of the Project Study Area could occur.
	Discharge to the Inner Harbour	Creation of naturalized river mouth in vicinity of 480 Lake Shore Boulevard and lands north of Villiers Street. This alternative assumes filling in the Keating Channel.
	Discharge through the Port Lands to the Ship Channel	This alternative assumes filling in the Keating Channel.
	Combination of Alternatives 2 and 3	Combination of primary discharge to Inner Harbour with secondary discharge through the Port Lands to the Ship Channel or primary discharge through the Port Lands to the Ship Channel with secondary discharge to Inner Harbour. This alternative assumes filling in the Keating Channel.

Table 4-3 Alternative Discharge Points and Descriptions

Alternative Number and Discharge Morphology	Title	Description
	Combination of Alternatives 2 and 3 with a third discharge point midway between creating a wide delta with Alternative 3	Consideration of a third discharge point somewhere within the Port Lands to create a delta function. Assumes land between discharge points would be permanently wetted for naturalization purposes and therefore would not be developed as per waterfront revitalization planning.
	Discharge through the Ship Channel and Lake Ontario Park to discharge to the Outer Harbour	This alternative would require damming the western part of the Ship Channel to just east of Cherry Street to facilitate the flow of the river to the Outer Harbour, thereby removing access to the remainder of the Ship Channel.
	Discharge through the Port Lands and the Ship Channel to the Outer Harbour through the eastern end of the Outer Harbour	This alternative would require damming the western part of the Ship Channel to facilitate the flow of the river to the Outer Harbour thereby removing access to the remainder of the Ship Channel.
	Eastern Port Lands discharge point (Ashbridges Bay area)	Movement of the river and river mouth towards a discharge point in the Ashbridges Bay area. This alternative assumes damming and filling in of eastern half of the Ship Channel and Turning Basin.

4.2 Evaluation of Alternative Discharge Points

The evaluation of alternative discharge points was based on the existing conditions in 2006 in the Port Lands area of Toronto, and the on-going planning efforts for the revitalization of the Toronto Waterfront. Table 4-3 outlines the criteria used to assess the potential of each discharge point to meet the DMNP objectives. Only those alternative discharge points with the greatest potential to meet/achieve these objectives would be considered.

To carry out this evaluation, a number of assumptions were made regarding the footprint of each alternative discharge point that would be required if implemented. This information was necessary in determining, at a coarse level, the potential of each alternative discharge point to meet the DMNP objectives.

The following assumptions were used for the evaluation of alternative discharge points:

- Low flow channel width of 20 metres;
- Lake levels vary between 73.5 metres above sea level (low), 74.5 metres above sea level (medium), and 75.5 metres above sea level (high);
- Bed of low flow channel is 72 metres above sea level;
- Width of floodplain varies from 300 to 500 metres based on the length of the river mouth;
- Sediment would be managed by dredging; and
- Debris would be managed.

The evaluation of discharge points was based on the existing conditions in 2006 in the Port Lands area of Toronto, and the on-going planning efforts for the revitalization of the Toronto Waterfront. Table 4-3 outlines the criteria used to assess the potential of each discharge point to meet the DMNP objectives.

Table 4.2.1 Criteria for Assessment of Alternative Discharge Points

Project Objectives	Criteria	Rationale	Ranking
Naturalization	Total amount of area available for naturalization?	This is the area (in hectares) within the footprint limits of each alternative assuming that all buildings and infrastructure that can be removed have been removed.	Alternatives with the largest area available for naturalization are ranked high, with a moderate area available ranked medium and with the smallest area available ranked low.
Flood Protection	Ability to remove Spill zones 1 and 2 from the Regulatory Floodplain (flood risk)?	The criterion qualitatively assesses the land required (as part of alternative footprint) to achieve Regulatory Flood protection.	Alternatives which can remove Spill Zones 1 and 2 from the Regulatory Floodplain are ranked high while those that do not are ranked low.
River Operation	Ability to provide for the management of debris?	This criterion measures if there are any differences between alternatives with respect to the ability to manage debris.	Alternatives which can manage debris and sediment easily, and do not have the potential to degrade water quality at the discharge location relative to existing water quality are ranked high and those which cannot manage debris and sediment easily and have the potential to degrade water quality at the discharge location relative to existing water quality are ranked low.
	Ability to provide for the management of sediment?	This criterion measures if there are any differences between alternatives with respect to the ability to manage sediment.	
	Ability to improve, maintain or degrade water quality at discharge location relative to existing water quality?	The water flowing out of the river mouth is currently degraded. Should the discharge location change there is the potential for significant (order of magnitude) changes to the water quality at the new discharge point. This criterion measures (qualitatively) the potential to degrade water quality.	
Integration with Infrastructure	Ability to integrate with existing and proposed infrastructure (roads, rail, pipelines, transmission lines) that cannot be moved to facilitate DMNP?	This criterion measures the length (in metres) of road lane impacted, area (in square metres) of bridge deck replaced, the length (in metres) of rail impacted, and length (in metres) of other utilities potentially requiring replacement.	Alternatives which minimize the length of infrastructure requiring removal or replacement and minimize the length of dock wall removed and Port use facilities removed are ranked high; those which maximize the length of infrastructure removed or replaced and maximize the length of dock wall removed and number of Port use facilities removed are ranked low.
	Ability to facilitate continued Port activities/commercial shipping?	This criterion measures the length (in metres) of dock wall removed and the number of Port use facilities removed. The ability to provide for a navigable river channel through the mouth will also be considered.	
Recreation, Culture and Heritage Opportunities	Potential to remove or restrict existing recreation opportunities (marinas, beaches, water use areas) already operating in the Port Lands?	This criterion measures the number of existing recreation opportunities removed or restricted by an alternative. Recreation opportunities can be water or land based and include walking trails, marinas, driving ranges, etc.	Alternatives which minimize the number of recreational opportunities removed or restricted are ranked high while those that maximize the number of recreational opportunities removed or restricted are ranked low.

Table 4-2 Criteria for Assessment of Alternative Discharge Points

Project Objectives	Criteria	Rationale	Ranking
Coordinate with Other Planning Efforts	Consistency with the City of Toronto Central Waterfront Secondary Plan?	This criterion measures the consistency of the alternative with the land use designations contained in the Secondary Plan (qualitative judgement).	Alternatives which are consistent with the City of Toronto Central Waterfront Secondary Plan, minimize impact on ESAs, and do not remove land designated for development are ranked high while those which are inconsistent with the Secondary Plan, remove portions of the ESA and render designated land no longer developable are ranked low.
	Ability to maintain designated environmentally sensitive areas (ESAs)?	This criterion measures the potential impact (hectares removed) of each alternative on those areas already designated for their environmental value.	
	Area of developable land which will no longer be developable as defined through the Secondary Plan?	This criterion measures the amount (hectares) of developable land, as defined by the Secondary Plan, which will no longer be developable as a result of the implementation of each alternative.	
Consistency with WT Sustainability Framework	Quantity of contaminated material to be managed	This criterion measures the relative amount (least, moderate and most) of contaminated material to be managed which is a surrogate for the ease of construction and cost.	Alternatives which minimize the quantity and severity of contaminated material to be managed are ranked high while alternatives which maximize the quantity and severity of contaminated material to be managed are ranked low.
	Severity of contamination	This criterion measures the severity (least, moderate and most) of contamination likely to be encountered.	

Table 4-4, which provides additional data on which the assessment is based. The text which follows provides more detail with respect to how each potential alternative discharge point met or did not meet DMNP objectives. **Figures 4-2 through 4-8** illustrate each alternative and the areas and existing conditions potentially affected.

Table 4 Criteria Based Assessment

Project Objectives	Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Naturalization	Total amount of area available for naturalization.	0 ha	41.2 ha	23.6 ha	56.4 ha	59.6 ha	47.8 ha	67.1 ha	110 ha
	SUMMARY	Low rank	Medium rank	Low rank	High rank	High rank	High rank	High rank	High rank
Flood Protection	Ability to remove Spill zones 1 and 2 from the Regulatory Floodplain (flood risk)?	No ability to remove Spill Zones 1 and 2 from Regulatory Floodplain.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.	Alternative able to remove Spill Zones 1 and 2 from Regulatory Floodplain. Some flood protection landforms required.
	SUMMARY	Low rank	High rank	High rank	High rank	High rank	High rank	High rank	High rank
Operational Management and Constructability	Ability to provide for the management of debris?	Debris would continue to be managed by TPA.	Debris would be managed.	Debris would be managed.	Debris would be managed.	Debris would be managed.	Debris would be managed.	Debris would be managed.	Debris would be managed.
	Ability to provide for the management of sediment?	Sediment would continue to be managed by TPA.	Sediment would likely end up at the lake however, there is flexibility to let it fall out elsewhere	Sediment would likely end up in new river channel and Ship Channel; however, there is flexibility to let it fall out elsewhere.	Sediment would likely end up at the lake or ship channel; however, there is flexibility to let it fall out elsewhere.	Sediment would be managed by the creation of a large delta.	Sediment would need to be managed upstream of discharge point necessitating access by dredge barge.	Sediment would need to be managed upstream of discharge point necessitating access by dredge barge.	Sediment would need to be managed upstream of discharge point necessitating access by dredge barge.
	Ability to improve, maintain or degrade water quality at discharge location relative to existing water quality?	Existing discharge point will not change therefore there is no potential to degrade or improve water quality.	Existing discharge point will not change therefore there is no potential to degrade water quality.	Discharge point will change to Ship Channel which already has degraded water quality and little or no natural features; therefore, no potential to degrade water quality.	Partial discharge to Ship Channel which already has degraded water quality and little or no natural features; therefore, no potential to degrade water quality.	Partial discharge to Ship Channel which already has degraded water quality and little or no natural features; therefore, no potential to degrade water quality.	Discharge of river and CSO outfall from Turning Basin to Outer Harbour where water quality is generally good therefore, alternative would degrade water quality in the Outer Harbour and particularly for Cherry Beach	Discharge of river and CSO outfall from Turning Basin to Outer Harbour where water quality is generally good therefore, alternative would degrade water quality in the Outer Harbour and particularly for Cherry Beach	Discharge of river and CSO outfall from Turning Basin to Ashbridges Bay where there are existing water quality problems which will potentially be made worse
SUMMARY	High rank	High rank	High rank	High rank	High rank	High rank	Low rank	Low rank	Low rank
Integration with Infrastructure	Ability to integrate with existing and proposed infrastructure (roads, rail, pipelines, transmission lines) that cannot be moved to facilitate DMNP?	No infrastructure removed or replaced. Potential effect is low	Removed or replaced approximately 22,330 linear metres of infrastructure and 31,000 m ² of bridge work. Potential effect is medium	Removed or replaced approximately 12,550 linear metres of infrastructure and 12,350 m ² of bridge work. Potential effect is low.	Removed or replaced approximately 28,990 linear metres of infrastructure and 32,340 m ² of bridge work. Potential effect is medium	Removed or replaced approximately 14,315 linear metres of infrastructure and 11,140 m ² of bridge work. Potential effect is low	Removed or replaced approximately 14,955 linear metres of infrastructure and 23500 m ² of bridge work. Potential effect is medium	Removed or replaced approximately 30,615 linear metres of infrastructure and 34,800 m ² of bridge work. Potential effect is high	Removed or replaced approximately 36,774 linear metres of infrastructure and 34,000 m ² of bridge work. Potential effect is high
	Ability to facilitate continued Port activities/commercial shipping?	No dock wall removed and no Port facilities removed or affected. Potential effect is low	1,855 m of dock wall removed and no Port facilities removed or affected. Potential effect is low	300 m of dock wall removed and no Port facilities removed or affected. Potential effect is low.	4,855 m of dock wall removed and no Port facilities removed or affected. Potential effect is low	2,316 m of dock wall removed and no Port facilities removed or affected. Potential effect is high.	4,588 m of dock wall removed and access to the Ship Channel and Turning Basin will be removed since Ship Channel will be dammed just east of Cherry Street. Potential effect is high	3,593 m of dock wall removed and access to the Ship Channel and Turning Basin will be removed since Ship Channel will be dammed just east of Cherry Street. Potential effect is high	2,868 m of dock wall removed and Ship Channel and Turning Basin will be removed since Ship Channel will be dammed at the Hearn Generating Station Potential effect is high
SUMMARY	High rank	Medium rank	High rank	Medium rank	Medium rank	Low rank	Low rank	Low rank	Low rank
Recreational and Cultural Opportunities	Ability to remove or restrict existing opportunities (marinas, water use areas) already operating in the Port Lands?	No existing recreation facilities or opportunities removed or restricted.	No existing recreation facilities or opportunities removed or restricted.	No existing recreation facilities or opportunities removed or restricted.	No existing recreation facilities or opportunities removed or restricted.	Alternative will remove or restrict recreational facilities associated with the Docks (now known as Sound Academy).	Alternative may close Cherry Beach to recreational swimming due to e. coli contamination. Marinas on north shore of Outer Harbour may be affected and will require new access road, and recreational boating within the Ship Channel may be affected.	Alternative may close Cherry Beach to recreational swimming due to e. coli contamination. Marinas in Outer Harbour may be affected and recreational boating within the Ship Channel may be affected	Alternative may create larger water quality and sedimentation problem in Ashbridges Bay affecting the marinas and boating organizations located there, Bayside Rowing Club and associated recreational boating within the Ship Channel will be displaced.
	SUMMARY	High rank	High rank	High rank	High rank	Low rank	Low rank	Low rank	Low rank
Coordination with Other Planning Initiatives	Consistency with the Central Waterfront Secondary Plan?	Inconsistent . secondary plan assumes a naturalized river mouth in a different location.	Consistent . alternative approximates that which was assumed for secondary plan.	Consistent - use of planned greenway as potential river mouth aligns linear corridor function with river mouth function.	Consistent . alternative approximates that which was assumed for secondary plan and use of planned greenway as potential river mouth aligns linear corridor function with river mouth function.	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.
	Ability to maintain designated environmentally sensitive areas (ESAs, fish spawning areas)?	No area removed from ESA 130.	No area removed from ESA 130.	No area removed from ESA 130.	No area removed from ESA 130.	No area removed from ESA 130.	5.16 ha removed from ESA 130.	3.32 ha removed from ESA 130.	30.08 ha removed from ESA 130.
	Area of developable land which will no longer be developable as defined through Secondary Plan.	No change to area of developable land.	5.54 ha of developable land is no longer developable.	7.20 ha of developable land is no longer developable.	12.75 ha of developable land is no longer developable.	40.76 ha of developable land is no longer developable.	21.8 ha of developable land is no longer developable.	41.2 ha of developable land is no longer developable.	45.17 ha of developable land is no longer developable.
SUMMARY	Medium rank	High rank	High rank	High rank	Low rank	Low rank	Low rank	Low rank	
Consistency with WT Sustainability Framework	Quantity of contaminated material to be managed	No material to be managed	Moderate quantity of contaminated material to be managed.	Least quantity of contaminated material to be managed.	Moderate quantity of contaminated material to be managed.	Most quantity of contaminated material to be managed.	Moderate quantity of contaminated material to be managed.	Most quantity of contaminated material to be managed.	Most quantity of contaminated material to be managed.
	Severity of contamination	None	Most severe contamination	Least severe contamination.	Most severe contamination.	Most severe contamination.	Moderately severe contamination.	Moderately severe contamination.	Most severe contamination.
SUMMARY	High rank	Medium rank	High rank	Medium rank	Low rank	Medium rank	Medium rank	Low rank	

The following sections describe the assessment of each alternative based on the criteria in **Table 4-4**. It should be noted that the assessment is based on information collected during preparation of the ToR in 2005 and 2006 [TWRC and TRCA, 2006].

Alternative 1: Do Nothing

This alternative ranked low for two key project objectives: naturalization and flood protection. There is no potential for naturalization of the mouth of the Don River. Spill Zones 1 and 2 remain susceptible to flooding during a regional storm event thus waterfront revitalization cannot be realized. The alternative is only ranked medium with respect to coordination with other planning efforts as it is inconsistent with the Secondary Plan and will not permit development to occur. The Do Nothing alternative is preferred for the revitalization of the Toronto Waterfront. For the objectives for which this alternative is ranked high, the high rank reflects a lack of impact rather than a benefit accruing as a result of the DMNP. The alternative is preferred for these objectives because river operations are unaffected, there is no need to integrate with infrastructure, no existing recreation opportunities are removed or restricted, and there is no contaminated material to be managed. **Thus, this alternative has very low potential to meet key project objectives and as such should not be carried forward for comparison purposes; therefore, this alternative was carried forward.**

Alternative 2: Discharge to the Inner Harbour

This alternative ranked high or medium for all project objectives. Disadvantages associated with this alternative relate to the quantity and severity of contaminated material requiring management which is related to the large area available for naturalization, and the amount of infrastructure to be removed/replaced. This alternative has the potential to remove the TPA Works Depot, the Keating Channel Pub, Essroc Canada and a small park on Villiers at the Don Roadway. However, the advantages of this alternative relate to the area available for naturalization (41.2 ha), flood protection, no effect on existing recreation opportunities except for a small parkette, it permits the development of the Lower Don Lands by the removal of flood risk and that it is consistent with other planning efforts. **Therefore, this alternative has good potential to achieve all project objectives and was considered further in the EA.**

Figure 4-2 Alternative 2 from the MOE-Approved ToR

