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7. Step 5: Detailed Assessment of the Preferred Alternative

7.1 Approach to Step 5 Detailed Assessment

The provincial EA process under which the DMNP must seek approval requires proponents to identify and describe in detail the characteristics of the preferred alternative that minimizes negative effects to the environment and best meets the identified need for the project. The assessment uses a broad definition of environment, as stipulated in the *Ontario EA Act*, which includes the natural, social, economic and cultural components. The identified need to implement the project refers to the problem to be solved or the opportunity addressed. For the DMNP, the proponents are seeking to address the problem / opportunities previously discussed in **Chapter 2**, including:

1. Removing vulnerability to flood risk from a specified area within the Port Lands and South of Eastern Avenue;
2. Naturalizing the mouth of the Don River and creating a functional ecosystem; and,
3. Providing opportunities for the revitalization of a derelict and underutilized section of waterfront, introducing a mix of uses, including retail, office and residential.

The impact assessment has been developed to provide a certain degree of flexibility in project design and construction. This flexibility is required to address potential changes to the conceptual design, construction techniques and baseline conditions. The approach to adaptive management (described in **Chapter 8**) and the EA compliance measures (described in **Chapter 9**) will assist with the identification of changes, as well as the assessment of the effects of those changes, to ensure the integrity of the EA approval is maintained.

For many EAs, changes to project design and / or construction methods are likely to occur during detailed design between EA approval and construction. EAs have provisions for the proponent to assess whether or not the desired change exacerbates the negative project effects. In general, any change to the project should mitigate project effects rather than make them worse. Therefore, if a proponent wishes to ensure the greatest level of flexibility in the future they would define the project in a way that determined the worst acceptable level of impact at the EA stage or, in other words, assess a worst-case scenario. The impact assessment for this EA defines the *worst-case scenario* for negative project effects, since these effects will not worsen should the project design or construction methods change and can be easily dealt within the existing EA process.

The advantages of the DMNP include providing for long-term flood protection, creating an ecologically functional river mouth, allowing for the development of sustainable mixed-use communities within the Port Lands and continued employment growth in the area south of Eastern Avenue, and protecting existing residences north of Eastern Avenue. These advantages are anticipated to greatly exceed any potential negative effects during construction. The establishment / post-establishment phase of the DMNP includes a measurable improvement in ecological functioning over existing conditions and lends itself to the use of minimum design requirements (i.e., elements of the design that are described in **Chapter 6** and that must be achieved at the end of construction).

The framework for this detailed assessment recognizes that the negative effects associated with the DMNP are generally associated with construction and thus, lend themselves to bounding (*worst-case*) scenarios. Should the design change within these worst-case bounds following the completion of the detailed assessment, the effects would likely be less and thus no re-evaluation would be required.

Using the information provided in the description of the preferred alternative in **Chapter 6**, the works and activities of the DMNP were separated into two phases: Construction and Establishment / Post-Establishment. The effects assessment is organized by project objective for each phase.

7.2 Assessment Criteria and Indicators

Once the DMNP is complete, it is recognized that the Lower Don Lands area will have much improved natural communities, flood protection features and economic and cultural opportunities following establishment of the new river valley system, river mouth, floodplain and associated park system compared to what exists today. There will also be considerable economic benefits associated with flood-protecting the Port Lands and South Riverdale Community, facilitating redevelopment of the area as a new home for residents and businesses and acting as a destination for tourists and residents. Additionally, construction of a project of this magnitude will result in positive economic spinoffs due to direct and indirect employment and economic opportunities for local businesses.

To achieve these benefits, short-term impacts / effects on the environment related to construction of the DMNP are anticipated. Using the criteria developed during Steps 1 to 4 as a basis, a set of criteria, indicators and their associated measures were defined for Construction and Establishment / Post-Establishment to structure and, where possible, quantify the effects of the construction activities and establishment of the DMNP. These criteria, indicators and measures are summarized in **Appendix M**.

7.2.1 Identifying Net Effects

For each indicator, the effects to existing conditions (**Chapter 3**) due to construction and establishment / post-establishment of DMNP (**Chapter 6**) were predicted. As noted previously, text that is italicized in **Chapter 6** is generally considered to be *minimum design requirements* that the DMNP must achieve in detailed design and construction. In some cases, no net effects occur due to the application of mitigation or avoidance measures. Where *net effects* were predicted (i.e., effects remaining after mitigation is applied), they were classified as positive, negative, negligible or none.

Positive effects (e.g., improved habitat, better air quality, increased amenity value) are generally associated with establishment / post-establishment and were quantified where possible.

Negligible effects are generally short-term, localized, do not occur frequently and can be minimized to a large extent through mitigation. Examples of these include air and noise emissions from construction equipment and temporary rerouting of streets and recreational trails.

Negative effects are those that are long-term and irreversible. These include effects such as loss of dockwall access for shipping activities. For these effects, mitigation was proposed where feasible. If mitigation could not minimize the effect to the extent that it became negligible, the effect was considered a net negative effect of the DMNP.

Effects that were either negative or negligible tended to be associated with construction activities and with continued operations related to sediment and debris management during establishment / post-establishment. Ongoing management and sediment and debris within the Project Study Area is required and the effects associated with its operations will likely remain consistent with existing conditions and will continue indefinitely into the future.

7.3 Effects Assessment by Objective

The effects of the DMNP on the existing environment, as well as proposed mitigation and resulting net effects, are described in **Sections 7.3.1 to 7.3.7**. The discussions are organized by project objective with references included for each related environmental component. For each objective the effects are first presented in a table (Construction and Establishment / Post-Establishment) and are followed by a summary description of the overall success of the DMNP in meeting the Objective.

7.3.1 Objective 1: Naturalization

The Terms of Reference (ToR) for the DMNP defines the naturalization objective as “*Naturalize and rehabilitate the mouth of the Don River utilizing an ecosystem based approach*”. The ToR states that:

“The naturalization of the Don Mouth will not only improve the aquatic and naturalization habitat conditions at the mouth of the river, but will provide for the creation of a more natural form of river mouth which will over the long term do the following:

- *Improve aquatic and naturalization habitat;*
- *Improve linkages between habitats;*
- *Enhance biodiversity of aquatic and terrestrial species;*
- *Accommodate future changes in the environment;*
- *Enhance, to the extent possible, the low flow habitat conditions within the Don Narrows; and,*
- *Address the public’s risk of exposure to West Nile Virus.”*

Table 7-1 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by naturalization criteria and indicators as well as the proposed mitigation measures and net effects.

Table 7-1 Objective 1: Naturalization

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Changes to Aquatic Habitat	Disruption, destruction and alteration of aquatic habitat	<p>Aquatic Environment</p> <p><u>Phase 1</u></p> <ul style="list-style-type: none"> Permanent destruction of 4 ha of low quality aquatic habitat in the Project Study Area associated with lake filling in Essroc Quay Temporary disturbance to habitat associated with the creation of the new Keating Channel bridge as well as the removal of the existing Keating Channel bridge and abutments Temporary disturbance of 1 ha of low quality aquatic habitat in the Project Study Area associated with modifications to the northern portion of the Polson Slip <p><u>Phase 2</u></p> <ul style="list-style-type: none"> Temporary disturbance of 1 ha of low quality aquatic habitat in the Project Study Area associated with the creation of the sediment trap (e.g., widening, in-water works) and modifications to the Keating Channel and Ship Channel dockwall <p><u>Phases 3-4</u></p> <ul style="list-style-type: none"> Temporary disturbance of 1 ha of low quality aquatic habitat in the Project Study Area associated with modifications to the southern portion of the Polson Slip Temporary disturbance of 7 ha of low quality aquatic habitat within the Keating Channel associated with installation of rip rap revetment and in-channel habitat structures 	<p>Aquatic Environment</p> <ul style="list-style-type: none"> Create new high quality habitat of a larger area and greater complexity to compensate for permanent loss of low quality habitat during construction Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to Best Management Practices (BMPs) to reduce likelihood of contaminated material entering the existing channel as described in Appendix G 	<p>Aquatic Environment</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Permanent destruction of 4 ha of low quality aquatic habitat due to lake filling in Essroc Quay <p><u>Negligible</u></p> <ul style="list-style-type: none"> Temporary disturbance to 10 ha of low quality aquatic habitat in the Project Study Area due to construction will be offset by creation of new high quality habitat of a larger area and greater complexity during establishment
Effects to Aquatic Species	Nuisance effects on aquatic species from construction (noise, dust, vibration, sediment release, etc.)	<p>Aquatic Environment</p> <p><u>All Phases</u></p> <ul style="list-style-type: none"> Temporary nuisance to aquatic species due to flooding during construction resulting in sedimentation and erosion from runoff to existing habitat Temporary nuisance to aquatic species in the Inner Harbour or the Keating Channel as dredging will continue until the new sediment and debris management area is operational <p><u>Phase 1</u></p> <ul style="list-style-type: none"> Temporary nuisance to aquatic species due to lake filling activities in Essroc Quay, construction of the new Keating Channel bridge as well as removal of the existing bridge and abutments and the removal of the dockwall in the northern portion of Polson Slip which may release or mobilize sediment within the Inner Harbour <p><u>Phase 2</u></p> <ul style="list-style-type: none"> Temporary nuisance to aquatic species due the creation of the sediment trap as well as modifications to the Keating Channel and Ship Channel dockwalls which may release or mobilize sediment within the Inner Harbour <p><u>Phases 3-4</u></p> <ul style="list-style-type: none"> Temporary nuisance to aquatic species due to installation of rip rap revetments and in-channel habitat structures in the Keating Channel as well as the naturalization of the southern portion of Polson Slip which may release or mobilize sediment within the Inner Harbour 	<p>Aquatic Environment</p> <ul style="list-style-type: none"> During lake filling activities the following measures will be employed to minimize or eliminate effects to fish: <ul style="list-style-type: none"> Salvage fish once area has been enclosed When possible, avoid lake filling activities during windy days to minimize dispersion of sediment Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to Waterfront Toronto's Environmental Management Plan (EMP) and BMPs to reduce minimize dust, sedimentation and noise as a result of construction activities as described in Appendix G 	<p>Aquatic Environment</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Minimal effects on behaviour of aquatic species as a result of construction activities as existing habitat is low quality and experiences frequent disturbance during flood events Short-term, infrequent and highly localized nuisance effects on aquatic species will be minimized by Waterfront Toronto's EMP and BMPs
Changes to Naturalization (Terrestrial / Wetland) Habitat	Removal or disturbance of naturalization habitat	<p>Terrestrial / Wetland Environment</p> <p><u>Phase 2</u></p> <ul style="list-style-type: none"> Removal of 4 ha of low quality terrestrial habitat within the Project Study Area which consists of primarily urban species and non-native invasive species that are regenerating within vacant industrial sites Removal of 4 ha of the North Shore Park Environmentally Significant Area (ESA) east of the Don Roadway during construction of the valley wall feature (VWF) <p><u>Phase 3</u></p> <ul style="list-style-type: none"> Removal of 4 ha of low quality terrestrial habitat within the Project Study Area which consists primarily of urban species and non-native invasive species that are regenerating within abandoned industrial compounds 	<p>Terrestrial / Wetland Environment</p> <ul style="list-style-type: none"> Create new higher quality terrestrial and wetland habitat to compensate for loss of low quality habitat including ESA Salvage plants for replanting, where appropriate 	<p>Terrestrial / Wetland Environment</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Permanent loss of 4 ha of the North Shore Park ESA east of the Don Roadway during construction of the VWF will be compensated for by the creation of new higher quality naturalization habitat (terrestrial and wetland habitat) within the Don River Valley of the DMNP <p><u>None</u></p> <ul style="list-style-type: none"> Removal of 8 ha of low quality terrestrial habitat within the Project Study Area which will be compensated for by the creation of new higher quality naturalization habitat

Table 7-1 Objective 1: Naturalization

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Effects to Terrestrial Species	Nuisance effects on terrestrial species from construction (noise, dust, vibration, sediment release, etc.)	Terrestrial / Wetland Environment <u>All Phases</u> <ul style="list-style-type: none"> Minimal effects on behaviour of terrestrial species as a result of construction as existing naturalization habitat is limited and poor quality. Species will likely relocate to other nearby naturalized areas Temporary displacement of a few species of urban tolerant wildlife (e.g., birds, coyotes) as well as sensitive species from newly established areas (e.g., Ship Channel wetland in Phase 3) due to nuisance effects during construction 	Terrestrial / Wetland Environment <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs to reduce minimize dust, sedimentation and noise as a result of construction activities as described in Appendix G 	Terrestrial / Wetland Environment <u>Negligible</u> <ul style="list-style-type: none"> Mitigation will minimize impacts to urban tolerant wildlife and provide new high quality habitat opportunities Short-term, infrequent and highly localized nuisance effects on terrestrial species will be minimized by Waterfront Toronto's EMP and BMPs
Establishment / Post-Establishment Effects				
Area and Function of Wetland Habitat Types Created	Area and type of wetland habitat created	Wetland Environment <ul style="list-style-type: none"> Creation of approximately 13 ha of higher functioning wetland habitat, which will provide habitat for aquatic life (e.g., birds, frogs, fish, invertebrates), including: <ul style="list-style-type: none"> 10 ha of lake-connected wetlands comprised of emergent communities which includes a wetland at the Ship Channel that is 2 ha in size 2.5 ha of levee system wetland comprised of Thicket Swamp and Meadow Marsh communities (not including the top of the levees which are anticipated to succeed into non-wetland vegetation communities due to infrequent flooding) 	Wetland Environment <ul style="list-style-type: none"> Monitoring and Adaptive Environmental Management (AEM), including monitoring of invasive species, effective saturation and / or flooding of wetland substrates, etc., to ensure wetland habitat remains intact Monitoring and AEM are discussed in detail in Chapter 8 	Wetland Environment <u>Positive</u> <ul style="list-style-type: none"> Creation of approximately 13 ha of higher functioning wetland habitat
	Largest single circular wetland patch size	Wetland Environment <ul style="list-style-type: none"> Creation of a wetland 2 ha in size that has a patch size of approximately 1 ha and has the potential to attract less common marsh species (e.g., Virginia Rail, Sora, Swamp Sparrows, Common Tern) within the Project Study Area 	Wetland Environment <ul style="list-style-type: none"> Monitoring and AEM to ensure that largest single wetland patch remains intact 	Wetland Environment <u>Positive</u> <ul style="list-style-type: none"> Creation of a wetland 2 ha in size (with a patch size of 1 ha wetland) that has the potential to attract less common marsh species to the Project Study Area
Potential to Create Ecosystem Function for Wildlife Species and Communities	Performance of wetland habitat	Wetland Environment <ul style="list-style-type: none"> Wetland habitat will be higher functioning than existing conditions as a result of the design of the new river valley system which includes: <ul style="list-style-type: none"> Installation of passive barriers to restrict invasive species from accessing wetland areas to restrict movement of species of fish like carp and goby (refer to Chapter 6 for more detail) Creation of highly diverse topography / bathymetry across the floodplain Control of hydrology to ensure multiple sources of water to the wetlands 	Wetland Environment <ul style="list-style-type: none"> Monitoring and AEM to ensure that habitat continues to support desired species 	Wetland Environment <u>Positive</u> <ul style="list-style-type: none"> Wetland habitat will be higher functioning than existing conditions
	Area of terrestrial habitat created	Terrestrial Environment <ul style="list-style-type: none"> Creation of 4 ha of terrestrial habitat within the river valley system 	Terrestrial Environment <ul style="list-style-type: none"> Monitoring and AEM to ensure that the area of terrestrial habitat remains intact 	Terrestrial Environment <u>Positive</u> <ul style="list-style-type: none"> Creation of 4 ha of terrestrial habitat within the Project Study Area
	Species that will use habitat for breeding purposes	Terrestrial Environment <ul style="list-style-type: none"> Potential to increase the diversity of bird species that are less common to the Project Study Area, including woodland breeding birds (Red-Tailed Hawk, Downy Woodpecker, Black-capped Chickadee, Cedar Waxwing, Red-eyed Vireo, Baltimore Oriole); thicket breeding birds (Ruby-throated Hummingbird, Northern Flicker, Eastern Kingbird, House Wren, Indigo Bunting, American Goldfinch); and, migrant birds (flycatchers, warblers, vireos, thrushes, finches) 	Terrestrial Environment <ul style="list-style-type: none"> Use native plant species to maximize opportunities for breeding and forage Implement sustainable soil methods to maximize health and age of plantings Provide appropriate care / restoration techniques (e.g., watering) for upland plantings during initial establishment period 	Terrestrial Environment <u>Positive</u> <ul style="list-style-type: none"> Native biodiversity and resiliency will increase through greater diversity of bird species, including woodland breeding birds, thicket breeding birds and migrant birds
Effects on Native Fish Habitat or Aquatic Communities	Total area of aquatic habitat (including each type of aquatic habitat created)	Aquatic Environment <ul style="list-style-type: none"> Creation of 13 ha of higher functioning aquatic habitat within the Project Study Area (represented by 6 ha within river valley system and 7 ha within modified Keating Channel) which represents an increase of 1 ha compared to existing conditions Potential for additional habitat to be created within Don Narrows Increase in size and in quality will attract a more diverse trophic structure including bass, sunfish and occasional top piscivores together with improved age class distribution 	Aquatic Environment <ul style="list-style-type: none"> No mitigation required 	Aquatic Environment <u>Positive</u> <ul style="list-style-type: none"> Creation of 13 ha of higher functioning aquatic habitat which represents an overall net increase of 1 ha over existing low quality habitat within the Project Study Area

Table 7-1 Objective 1: Naturalization

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Effects of Hydraulics and Hydrology / Sedimentation on Sustainability of Vegetation Communities and Associated Fauna	Management of full range of flows without adverse impact on vegetation communities (e.g., high erosional stress, sediment deposits)	<p>Wetland Environment / Aquatic Environment</p> <ul style="list-style-type: none"> While lake-connected wetlands will be principally fed by lake water through feeder channels, the existing hydrodynamic and sediment transport model (see Appendix N) confirms the following: <ul style="list-style-type: none"> Levee wetland system adjacent to the low flow channel will be overtopped at the 2- to 5-year event, positively influencing wetland survivability and sustainability by providing multiple sources of water Shear stresses are approximately 2.2-2.6 newtons/m² (Pa) during the 100-year event in lake-connected wetlands, which may cause damage to emergent vegetation; however, off-line design mitigates the effects of flows that would destabilize vegetation in more frequent flood events Average depth in low flow channel during mean daily flow is approximately 1 to 2 m, which is anticipated to support limited submergent vegetation communities along the edges of the channel Velocities in low flow channel are approximately 0.5 m/s during 2-year event, which is expected to support limited vegetation Wetland communities are anticipated to adapt to climate change by accommodating a range of water levels based on varied topography and providing isolation and / or barriers from invasive species An increase in inundation frequency resulting from climate change may potentially lead to sedimentation of wetlands through increased overbank sediment deposition; sedimentation, however, will provide wetland species with nutrients that foster their health and survival over the long-term 	<p>Wetland Environment / Aquatic Environment</p> <ul style="list-style-type: none"> Optimize design of lake-connected wetlands to minimize influence on vegetation from residual fines that are not captured in the sediment trap (see Appendix N) Optimize wetland design to minimize shear stresses experienced in wetlands under more frequent flooding events Minimize sediment loads to naturalized area by regular dredging of sediment trap and trap management Monitoring and AEM to ensure that vegetation communities are not adversely affected by more frequent flood events and by sedimentation Manage flooding as described in more detail in Objective 2 (Flood Protection) below 	<p>Wetland Environment / Aquatic Environment</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Vegetation in the lake-connected wetlands within the Project Study Area is expected to survive sedimentation effects; in addition, sedimentation will provide wetland species with the necessary nutrients to ensure their health and survival over the long-term Vegetation within the river valley system is expected to survive infrequent flood events, up to the 100-year event <p><u>Positive</u></p> <ul style="list-style-type: none"> Based on the optimized frequency and duration of inundation of lake-connected wetlands, vegetation within the wetland systems will thrive during regular flow events
Effects on Wildlife Species or Communities (i.e., minimizing disturbance and connecting habitat)	Enhancement of migratory bird habitat (internal linkages as well as links external to the DMNP to both existing and planned habitat)	<p>Terrestrial Environment</p> <ul style="list-style-type: none"> Improved connectivity within the Project Study Area and to corridors outside the Project Study Area, including ESA 130, Cherry Beach and Tommy Thompson Park Improved structure of the vegetation communities created, with the potential for migratory birds, bats and insects to move through the Project Study Area as vegetation matures 	<p>Terrestrial Environment</p> <ul style="list-style-type: none"> Maintain vegetation structure through renewal of plantings over time 	<p>Terrestrial Environment</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Improved connectivity and improved structure to the vegetation communities created
	Disturbance to communities as a result of fragmentation and nuisance behaviour from human activity	<p>Wetland Environment</p> <ul style="list-style-type: none"> Proposed location of pedestrian trails, especially those potentially crossing through the Ship Channel wetland, will result in disturbance to naturalized areas and disrupt contiguous functions 	<p>Wetland Environment</p> <ul style="list-style-type: none"> Where possible, design trails (especially those related to the Ship Channel wetland) to circumvent, rather than bisect, naturalized areas Limit trail placement adjacent to other lake-connected wetlands Control access to other less sensitive wetlands through use of boardwalks and other strategies Monitor human effects on wetlands and close or modify trails as required Do not light trails or use focused, direct lighting if required 	<p>Wetland Environment</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Minimal disturbance to naturalized areas is anticipated as a result of mitigation
Effects of Water Quality on Wetland and Aquatic Habitat	Response of vegetation communities to changes in water quality, including from sediment management activities	<p>Wetland Environment / Aquatic Environment</p> <ul style="list-style-type: none"> <i>Keating Channel</i>: Water quality and periodic dredging within the Keating Channel may limit the types of vegetation communities that will survive <i>Low Flow Channel</i>: Water quality and turbidity within the upstream reaches of the low flow channel may limit the types of vegetation communities that will survive (due to the sediment trap), however, improved water quality in the lower reaches (due to an increased channel length will allow for greater turnover and circulation) will promote the survival of vegetation communities <i>Lake-connected Wetlands</i>: Improved water quality within the lake-connected wetlands will promote the survival of vegetation; feeder channels must be protected from infilling with sediments to ensure the exchange of lake water 	<p>Wetland Environment / Aquatic Environment</p> <ul style="list-style-type: none"> Ensure long-term maintenance of connecting feeder channels to eliminate infilling with sediments and effectively maintain wetlands Minimize sediment loads to naturalized areas by regular dredging of sediment trap and trap management 	<p>Wetland Environment / Aquatic Environment</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Keating Channel: Water quality within the Keating Channel may limit the types of vegetation communities that will survive <p><u>Positive</u></p> <ul style="list-style-type: none"> <i>Low Flow Channel</i>: Water quality and turbidity within the lower reaches of the low flow channel will promote the survival of vegetation communities <i>Lake-connected Wetlands</i>: Improved water quality within the lake-connected wetlands will promote the survival of vegetation communities

Discussion for Objective 1: Naturalization

Effects

Currently, the majority of existing aquatic and terrestrial habitat within the Project Study Area is low quality and provides limited habitat value. The aquatic habitat, which is located in the Keating Channel and the Inner Harbour adjacent to the Lower Don Lands, has limited to no cover or structure given its depth (between five and seven metres deep) and form (comprised primarily of straight sheet pile walls). As a result, it provides only transient habitat for a few fish species, including invasive species such as carp. Construction of the new river valley system, river mouth and floodplain will result in permanent effects on the existing low-quality habitats, including the removal of four hectares of low quality aquatic habitat and the disturbance of ten hectares of low quality aquatic habitat in the Project Study Area. Lake filling activities during construction activities may release or mobilize sediment within the Inner Harbour, which may affect fish species. Further, the temporary displacement of aquatic species around Cousins Quay and the Polson Slip, in the Keating Channel and in the Don River north of Lake Shore Boulevard may occur due to nuisance effects during construction activities.

Primarily low quality terrestrial habitat currently exists within the Project Study Area. It is entirely comprised of cultural communities, including Cultural Meadows, Cultural Woodlands and poor Meadow Marsh, which are bisected by roads, businesses and fences and inhabited by highly urbanized species that are tolerant of human activity. Adjacent to the Project Study Area, high quality terrestrial habitat is present which is part of local Environmentally Significant Areas (ESAs) described in **Chapter 3**.

Construction activities will result in the removal of 12 hectares of low quality terrestrial habitat, which includes the removal of four hectares of the North Shore Park ESA east of the Don Roadway as part of the construction of the valley wall feature (VWF). Displacement of urban tolerant wildlife (e.g., birds and coyotes) and other terrestrial species may occur due to nuisance effects during construction. As existing terrestrial habitat is limited and of a poor quality, species will likely relocate to other nearby naturalized areas with a minimal effect on behaviour.

However, during establishment / post-establishment over 30 hectares of higher functioning aquatic and naturalization (terrestrial and wetland) habitat will be created. The implementation of DMNP results in 13 hectares of higher functioning wetland habitat created within the Project Study Area which will provide habitat for aquatic life such as breeding and foraging birds, amphibians and reptiles, mammals, fish and invertebrates as described in **Section 6.1.3.4**. In addition, approximately 13 hectares of wetland habitat will be created which includes lake-connected wetlands comprised of Thicket Swamp and Meadow Marsh communities (including one hectare of former aquatic habitat within the Inner Harbour) and levee system wetlands comprised of Sedge Meadow. The largest wetland created as part of the design is the Ship Channel wetland (located within Reach 3a) which is two hectares. This wetland has the potential to attract marsh species that are less common to the Project Study Area, such as Virginia Rail, Sora Rail, Swamp Sparrows, Great Blue Heron and Common Tern. However, the patch is not large enough to increase the probability of being protected from edge effects. Therefore, wildlife inhabiting this patch will experience some disturbance from surrounding uses, indicating that this habitat will be used as stop-over habitat.

The wetland habitat is anticipated to be higher functioning as a result of the installation of passive barriers that restrict access to new habitat by invasive species as well as the creation of highly varied topography / bathymetry across the floodplain. Improved water quality within the lake-connected wetlands will positively influence wetland survivability and sustainability.

Other effects on wetland survivability include the shear stresses in the lake-connected wetlands associated with flood events. Based on hydraulic modelling, infrequent flood events may cause damage to emergent vegetation; however, the off-line design mitigates the effects of flows that would destabilize vegetation in more frequent flood events. Additionally, the preliminary trail system design currently includes trails that cross through parts of the Ship Channel wetland, which will result in disturbance to those wetland communities and disrupt contiguous functions. Details related to the trail system design will be confirmed at a later date during future precinct planning processes.

The establishment of the new river valley system and river mouth will result in the creation of a total of 13 hectares of aquatic habitat between the Inner Harbour and Lake Shore Boulevard. The aquatic habitat is comprised of seven hectares within the new river alignment and the remainder within the modified Keating Channel. This increase in both size and quality will attract a more diverse trophic structure including bass, sunfish and occasional top piscivores together with improved age class distribution.

Water quality within the Keating Channel may limit the types of vegetation communities that will survive; however, the installation of rock revetments, including the use of growing medium on the rocks, can provide greater surface area to which vegetation can attach. Similarly, water quality and turbidity within the upstream reaches of the low flow channel may limit the types of vegetation communities that will survive. However, improved water quality in the lower reaches, which is due to an increased channel width that will allow for greater turnover and circulation, will promote the survival of vegetation communities and thus improve overall aquatic health.

The newly created river valley system and river mouth represent a significant improvement in connectivity between the various habitats within the Project Study Area. They also improve vegetation communities and migratory bird habitat that exists within the Lower Don Lands. The establishment of four hectares of terrestrial habitat is expected to attract a greater diversity of bird species within the Project Study Area, including woodland breeding birds (such as Red-Tailed Hawk, Downy Woodpecker, Black-capped Chickadee, Cedar Waxwing, Red-eyed Vireo, Baltimore Oriole), thicket breeding birds (such as Ruby-throated Hummingbird, Northern Flicker, Eastern Kingbird, House Wren, Indigo Bunting, American Goldfinch) and migrant birds (such as flycatchers, warblers, vireos, thrushes, finches), which will increase native biodiversity and resiliency. In addition, the new naturalized areas will improve linkages between habitats within and outside of the Project Study Area as vegetation matures. Specifically, it is anticipated that connections will be established between the Project Study Area and ESA 130, Cherry Beach and Tommy Thompson Park, among other important regional features.

The design of the new river valley system and naturalized river mouth recognizes that future changes in the environment are likely, whether they are a result of anticipated succession of the vegetation communities or from climate change. Wetland communities established within the naturalization habitat are anticipated to adapt to climate change by accommodating a range of flows based on varied topography. The wetland communities also provide isolation and / or passive barriers to minimize access for invasive species, which are likely to establish a greater presence over time.

Although not part of the effects assessment, this EA Report addresses enhancements to the low flow habitat conditions within the Don Narrows in **Chapter 6** and in **Appendix L**. With regard to addressing the public's risk of exposure to West Nile Virus, the design of the naturalized new river valley system and river mouth is intended to maintain a regular flow of water within the low flow channel, the lake-connected wetlands and the Keating Channel, so as to avoid standing water. Fish and other wildlife in wetland areas will also help reduce the proliferation of mosquito larvae.

Mitigation Measures

The permanent loss of habitat during construction will be compensated by creating new high quality habitat of a larger area and greater complexity.

During detailed design, a number of refinements to the lake-connected wetlands will help to improve their functionality, including minimizing flood-flow shear stresses experienced in wetlands and the influence of residual fines that are not captured in the sediment trap on vegetation, realigning the trail system to circumvent rather than cross the Ship Channel wetland. Other mitigation measures include limiting trail placement adjacent to lake-connected wetlands, controlling access to less sensitive wetlands through use of boardwalks, reducing lights used on trails and monitoring human effects on wetlands.

During construction, Waterfront Toronto's Environmental Management Plan (EMP) and other Best Management Practices (BMPs) will be used to reduce the likelihood of contaminated material entering the existing channel, dispersion of dust, sedimentation and noise. A spill response plan will also be prepared and followed, including immediately reporting and managing any leakage or spillage. Contractors will also adhere to the City of Toronto's Noise By-Law (No. 111-2003) to avoid nuisance effects on aquatic and terrestrial species.

To minimize the effects of lake filling activities on existing fish species, fish will be salvaged once the area has been enclosed and lake filling activities during windy periods will be minimized to reduce dispersion of sediment. Also, in-channel construction will be limited to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods.

During construction, existing terrestrial vegetation will be salvaged and replanted within the Project Study Area, where possible. In addition, disturbance to existing habitat will occur in a phased manner with sequential restoration of habitat. Where possible, new high quality habitat will be created to compensate for temporary displacement of species during construction activities.

Monitoring and Adaptive Environmental Management (AEM), including monitoring of invasive species, effective saturation and / or flooding of wetland substrates, are required throughout establishment / post-establishment to ensure that newly-created naturalized habitat created remains intact and high-functioning. This includes minimizing sediment loads to the naturalized area by regular dredging of the sediment trap and trap management. In addition, long-term maintenance of the feeder channels connecting the lake-connected wetlands to the lake will be required to ensure that they do not fill with sediment (see **Appendix N**). Further, monitoring and AEM are required to ensure that the vegetation communities that support aquatic habitat are not adversely affected by more frequent flood events and by sedimentation. The requirements of these programs are described in **Chapter 8**. During detailed design, it will be important to design the lake-connected wetlands so that the vegetation communities can thrive based on appropriate inundation frequency and duration.

Other measures that will be implemented during establishment / post-establishment include utilizing native plant species to maximize opportunities for breeding and forage, implementing sustainable soil methods to maximize the health and age of plantings and providing appropriate care / restoration techniques (e.g., watering) for upland plantings.

Net Effects

Short-term, infrequent and highly localized nuisance effects on aquatic and terrestrial species will be minimized by Waterfront Toronto's EMP and BMPs and a spill response plan will mitigate any effects on water quality from

contaminated material entering the watercourse during construction in Reach 1. Mitigation measures will also minimize impacts to urban tolerant wildlife and other species within the naturalized habitat during construction and establishment / post-establishment.

The DMNP will result in the creation of approximately 13 hectares of higher functioning wetland habitat, including at two hectare wetland at the Ship Channel. Refinements to the design of the lake-connected wetlands will ensure that the wetlands remain high functioning compared to existing conditions during establishment / post-establishment and can survive an increase in inundation frequency resulting from climate change.

While there will be destruction of existing low-quality aquatic habitat during construction, the creation of new high quality habitat of a greater size during establishment will offset this loss. Monitoring and AEM during establishment / post-establishment will ensure that the DMNP results in the creation of approximately 13 hectares of higher quality aquatic habitat, representing a net increase of approximately one hectare. This is a positive net effect.

Vegetation that supports aquatic habitat is expected to survive sedimentation effects based on optimized frequency and duration of inundation of lake-connected wetlands; therefore no net effects are expected from this interaction. Improved water quality within the lower reaches of the low flow channel will have a positive net effect on aquatic habitat while the maintenance of existing water quality within the Keating Channel will have a negligible net effect.

The removal of 12 hectares of terrestrial habitat, including four hectares of the North Shore Park ESA east of the Don Roadway, during construction will be compensated through the creation of 17 hectares of new, higher-quality naturalization habitat (i.e., terrestrial and wetland habitat) of a greater complexity during establishment. Further, improved connectivity and improved structure to the vegetation communities will enhance migratory bird habitat. As a result, greater diversity of bird species, including woodland breeding birds, thicket breeding birds and migrant birds will increase native biodiversity and resiliency within Project Study Area.

Summary of Project Effects Related to Naturalization

Overall, the DMNP satisfies the objective related to naturalization. The creation of new higher quality aquatic and naturalization habitat of a larger area and greater complexity as well as a more natural form of river mouth will more than offset the loss of existing low quality habitat during construction activities. To review a summary of the overall effects related to objective, refer to **Table 7-2** below.

Table 7-2 Overall Effects Related to Objective 1

Criterion	Overall Effects
Construction	
Changes to Aquatic Habitat	Negative
Effects to Aquatic Species	Negligible
Changes to Naturalization (Terrestrial / Wetland) Habitat	Negative
Effects to Terrestrial Habitat	Negligible
Establishment / Post-Establishment	
Area and Function of Naturalization Habitat Types Created	Positive
Potential to Create Ecosystem Function for Wildlife Species and Communities	Positive
Effects on Native Fish Habitat or Aquatic Communities	Positive
Effects of Hydraulics and Hydrology / Sedimentation on Sustainability of Vegetation Communities and Associated Fauna	Positive
Effects on Wildlife Species or Communities (<i>i.e., minimizing disturbance and connecting habitat</i>)	Positive
Effects of Water Quality on Wetland and Aquatic Habitat	Positive

7.3.2 Objective 2: Flood Protection

The ToR defines the flood protection objective as “*Provid(ing) flood protection for Spill Zones 1 and 2*”, which includes addressing flooding in the Port Lands and not exacerbating it elsewhere. The ToR notes that “*the removal of flood risk protects a number of people and businesses in already established communities and will remove the need to provide individual flood protection in all future development in the Port Lands area.*”

As described in **Chapter 6**, all flood protection works will be undertaken as part of the DMNP aside from the requirement to raise grades in the development blocks adjacent to the valley system. However, the EA does assume that the proponents are responsible for raising the grades as required to create the flood protection landform and valley wall feature. Consequently, the impacts associated with constructing the FPL and the raising of the Don Roadway as part of the creation of the VWF are part of the DMNP EA and have been integrated into this chapter. It is anticipated that the co-proponents will explore opportunities for partnerships / cost sharing arrangements with the various landowners associated with those properties during detailed design.

Table 7-3 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by flood protection criteria and indicators as well as the proposed mitigation measures and net effects.

Table 7-3 Objective 2: Flood Protection

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Management of Stormwater During Rainfall Storm Events	Effects of erosion during rainfall and flood events within the construction area	Aquatic Environment <u>Phases 1-4</u> <ul style="list-style-type: none"> Potential disturbance to aquatic habitat due to runoff as a result of flooding of construction areas 	Aquatic Environment <ul style="list-style-type: none"> Adhere to BMPs for managing construction runoff and erosion during less intensive and more frequent floods, such as isolating the excavation areas behind existing dockwalls during construction, as described in Appendix G 	Aquatic Environment <u>Negligible</u> <ul style="list-style-type: none"> Potential disturbance to aquatic habitat due to runoff from flooding is limited to large flood events Potential impacts during less intense and more frequent floods will be mitigated through the use of BMPs
Potential to Impact Flooding Conditions On-site During Construction	Extent of flooding within the construction area	Flooding <u>Phases 1-4</u> <ul style="list-style-type: none"> Construction activities will not exacerbate existing flood risk within the construction area 	Flooding <ul style="list-style-type: none"> Include construction sites on TRCA flood warning system to prepare site in advance of possible flood events 	Flooding <u>None</u> <ul style="list-style-type: none"> Construction activities will not exacerbate existing flood risk within the construction area
Potential to Impact Flooding Conditions Elsewhere	Extent of flooding that will continue to occur in developed areas or beyond the Project Study Area in Spill Zones 1 and 2	Flooding <u>Phases 1-4</u> <ul style="list-style-type: none"> Construction activities will not exacerbate existing flood risk off-site Existing land uses within Spill Zones 1 and 2 may potentially be affected by flooding until phases of flood protection are complete: <ul style="list-style-type: none"> During Phase 1, flooding is eliminated at Cousins Quay, Polson Quay and 309 Cherry Street During Phase 2, flooding is eliminated east of the Don Roadway north and south of Lake Shore Boulevard and the remaining portions of Munitions Block During Phase 3, flooding is eliminated in the remaining areas of the Project Study Area 	Flooding <ul style="list-style-type: none"> No mitigation required 	Flooding <u>None</u> <ul style="list-style-type: none"> Construction activities will not exacerbate flood risk off-site
Establishment / Post-Establishment Effects				
Potential to Impact Flooding Conditions Elsewhere	Extent of flooding that will continue to occur in developed areas or beyond the Project Study Area in Spill Zones 1 and 2	Flooding / Existing Land Use / Infrastructure and Utilities <ul style="list-style-type: none"> Hydraulic modelling demonstrates that the new floodplain is capable of conveying the Regulatory Flood (Appendix N-1) and will permanently eliminate flood risk to approximately 240 ha of land within Spill Zones 1 and 2 Minor adjustments to the design may be required to accommodate potential increases in flood frequency associated with climate change Areas within Reaches, 1, 2, 2a, 3, 3a and 4, up to the Regulatory Flood limits are designed to remain at risk to flooding given that the project effectively re-establishes a confining river valley system for the Don south of Eastern Avenue. Following implementation, the DMNP will not remove the entire risk of flooding from the Don River to the following areas as these will remain within the residual floodplain of the Don River: <ul style="list-style-type: none"> Don Valley Parkway south of Gerrard Street Gardiner Expressway ramps to the Don Valley Parkway Don River Trail north of and under the CN Rail bridge Portions of the GO and CP Train subdivision north of CN Rail bridge, along the west bank of the Don River Bayview Avenue east of the West Don Lands flood protection landform Enbridge Gas utility bridge and Old Eastern Avenue Bailey Bridge north of CN Rail bridge 	Flooding / Existing Land Use / Infrastructure and Utilities <ul style="list-style-type: none"> Use 2D, 3D and / or physical models (that are acceptable to the floodplain regulator) to develop detailed design to confirm conveyance of the Regulatory Flood plus desired freeboard without affecting areas beyond the new river valley system, including ensuring that channel configuration in the sediment and debris management area is such that any impacts to the adjacent areas are acceptable to the regulator (Appendix N-1) 	Flooding / Existing Land Use / Infrastructure and Utilities <u>Positive</u> <ul style="list-style-type: none"> Regulatory Flood and increases in flood frequency associated with climate change will be contained within the floodplain Flood protection will result in the permanent removal of approximately 240 ha of land area within Spill Zones 1 and 2 from flood risk
	Change in assessment values as a result of removal of flood risk	Existing Land Use / Planned Land Use <ul style="list-style-type: none"> Change in assessment values within the Lower Don Lands is dependent on land use planning approvals and availability of servicing (HR&A, 2010, Appendix O) Removal of approximately 56 ha of land within Spill Zone 1 south of the Keating Channel facilitates redevelopment of the Lower Don Lands (HR&A, 2010, Appendix O) Flood protection is estimated to result in avoided damages in the order of \$305 million (in 2010 dollars) in the event of a Regulatory Flood (TRCA, 2010, Appendix O) Assessment values within the Lower Don Lands, which includes the Project Study Area, are expected to increase from \$20 million to \$500 million (in 2010 dollars) since land removed from flood risk can be redeveloped (HR&A, 2010, Appendix O) Implementation of the DMNP will result in long-term change that will extend beyond the Project Study Area Assessment values are expected to increase as a result of the implementation of the DMNP and the changes to land use within the Project Study Area 	Existing Land Use / Planned Land Use <ul style="list-style-type: none"> No mitigation required 	Existing Land Use / Planned Land Use <u>Positive</u> <ul style="list-style-type: none"> Long-term assessment values within the Project Study Area will increase substantially due to removal from flood risk Long-term assessment values outside of the Project Study Area will increase due to removal from flood risk and proximity to parkland amenities

Table 7-3 Objective 2: Flood Protection

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
		<ul style="list-style-type: none"> Development of parkland amenities in the Project Study Area is likely to drive increases in assessment values of at least 1-2% in an area encompassing the property south of King Street between Spadina and Leslie Streets (a radius of up to 0.8 km of the parkland), representing an increase in aggregate property value of \$200 to \$400 million (in 2010 dollars) (HR&A, 2010, Appendix O) 		
Resilience of Stabilization Works for Valley, Low Flow Channel and Levees	Ability of stabilization works to maintain structural integrity of river valley, low flow channel and levees	<p>Flooding</p> <ul style="list-style-type: none"> Potential for adverse effects of flood events on structural integrity of stabilization works including scour of valley walls, relocation of low flow channel and changes in form of low flow channel (e.g., meandering to braided) if stabilization works are not appropriately designed, located and installed There is an expectation that increasing levels of maintenance will be required in the naturalized areas as the size of flood events increase, with severe damage anticipated to the wetlands and low flow channel during the Regulatory Flood (which is consistent with natural systems) 	<p>Flooding</p> <ul style="list-style-type: none"> Use hydraulic modelling during detailed design to ensure that design of stabilization works will minimize adverse effects on overall system Monitor and maintain stabilization works and naturalized areas following flood events (as required) 	<p>Flooding</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> New river valley system form is preserved during Regulatory Flood to eliminate risk to life and property <p><u>Negligible</u></p> <ul style="list-style-type: none"> Low flow channel and wetlands are preserved under more frequent flood events and may require increasing levels of maintenance as size of flood events increase

Discussion for Objective 2: Flood Protection

Effects

The results of extensive hydraulic modelling demonstrate that the new river valley system is capable of conveying the Regulatory Flood. Furthermore, the design of the new river valley system has incorporated additional conveyance capacity to be adaptive and accommodate any potential increases in flood flows associated with impacts of climate change. Based on these results, the flood risk to approximately 240 hectares of land (of approximately 290 hectares) within Spill Zones 1 and 2 will be eliminated.

While construction activities are predicted to not exacerbate the existing flood risk, portions of the Project Study Area and Spill Zones 1 and 2 will continue to be at risk of flooding during a Regulatory Flood event until construction activities are complete. As each phase of construction occurs, flood risk will be eliminated from particular areas of the Spill Zones. During Phase 1, flood risk is eliminated at Polson Quay, Cousins Quay and portions of 309 Cherry Street. During Phase 2, flood risk is eliminated from Spill Zone 2 east of the Don Roadway, north Lake Shore Boulevard and for a large portion of Spill Zone 1 south of Lake Shore Boulevard. In addition, the remaining portions of 309 Cherry Street will be protected from flooding following the completion of Phase 2. During Phase 3, flood risk is eliminated in the remaining areas of the Project Study Area. Phase 4 is essentially designed to provide parkland along the southern portion of Polson Slip, should the owner of 54 Polson Street decide to vacate the property. Minor changes in grade may be required to allow development outside the parkland in Phase 4.

The elimination of flood risk will facilitate redevelopment within the Project Study Area and the Impact Study Area, which will result in substantial increases in long-term land assessment values when compared to existing land use levels. Specifically, flood protection will result in the permanent removal of 56 hectares of land within Spill Zone 1 south of the Keating Channel, which will facilitate redevelopment of the Lower Don Lands with an expected increase in land assessment values. Furthermore, the DMNP removes the need to provide individual flood protection to existing land uses in the Port Lands area where the potential for damages are estimated to exceed \$305 million (in 2010 dollars) associated with existing development in the event of a Regulatory Flood (HR&A, 2010, **Appendix O**).

Due to the volume and velocities of water flow associated with the Regulatory Flood, there is potential for adverse effects on the structural integrity of stabilization works, including scour of valley walls, relocation of the low flow channel and changes in the form of low flow channel if these works are not appropriately designed, located and installed.

Mitigation Measures

The use of 2D, 3D and / or physical models during detailed design will confirm conveyance of the Regulatory Flood plus the desired freeboard without affecting areas beyond the new river valley system, including ensuring that the channel configuration in the sediment trap area is such that any impacts to the adjacent areas are acceptable to the regulator (**Appendix N-1** and **N-3**). Further hydraulic modelling during detailed design will help to ensure that the design of stabilization works will minimize adverse effects on the overall system.

During construction, adhering to BMPs described in **Appendix G** will aid in the management of construction runoff and erosion. Construction sites will also be included on TRCA's flood warning system to prepare the sites in advance of possible flood events. During establishment / post-establishment, monitoring and maintenance of stabilization works and of naturalized areas will occur, as required.

Net Effects

Once complete, the DMNP will contain a Regulatory Flood and there will no longer be flooding of adjacent existing or future developed areas both within and beyond the Project Study Area. This will permanently eliminate flood risk to approximately 240 hectares of land and over 850 existing buildings within Spill Zones 1 and 2 during establishment / post-establishment. In addition, stabilization will be designed to ensure the preservation of the new river valley system during the Regulatory Flood. Thus, the net effects on flooding during establishment / post-establishment will be positive.

Summary of Project Effects to Flood Protection

Overall, the DMNP satisfies the objective related to flood protection, as it eliminates the flood risk within Spill Zones 1 and 2, which in turn facilitates redevelopment in the region resulting in considerable economic benefits for the City of Toronto. To review a summary of the overall effects related to this objective, refer to **Table 7-4** below.

Table 7-4 Overall Effects Related to Objective 2

Criterion	Overall Effects
Construction	
Management of Stormwater During Rainfall Storm Event	Negligible
Potential to Impact Flooding Conditions On-site During Construction	None
Potential to Impact Flooding Conditions Elsewhere	None
Establishment / Post-Establishment	
Potential to Impact Flooding Conditions Elsewhere	Positive
Resilience of Stabilization Works for Valley, Low Flow Channel and Levees	Positive

7.3.3 Objective 3: Operational Management and Constructability

The objective in the ToR related to operational management refers to “*maintain(ing) the provision for navigation and existing flood protection through sediment, debris and ice management*”. The ToR recognizes that “*some form of active management such as dredging and debris removal will be necessary ... (and) in addition, the project must address the effects of future hydrologic changes as a consequence of climate change*”. In addition, this objective includes the ability to effectively and efficiently construct the new river valley system and river mouth.

Table 7-5 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by operational management and constructability criteria and indicators as well as the proposed mitigation measures and net effects.

Table 7-5 Objective 3: Operational Management and Constructability

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Management of Stormwater Related to Precipitation Events	Extent of areas inundated by stormwater runoff related to precipitation events	<p>Lake / River Water Quality Phase 1-4</p> <ul style="list-style-type: none"> Potential inundation of low-lying construction areas from local runoff and direct precipitation (including rainfall and snow melt); stormwater may also result in the formation of ruts and puddles on flatter surfaces that can contain sediment-laden water and create excessive mud build up on tires Potential for runoff to transport soils from above-grade surfaces to the Ship Channel, Keating Channel, Don River or Inner Harbour During excavation of contaminated soils within all reaches of the new river valley system, stormwater may come into contact with contaminated soils or groundwater 	<p>Lake / River Water Quality</p> <ul style="list-style-type: none"> Adhere to BMPs for managing construction runoff and erosion (e.g., treatment of contaminated stormwater before discharge), as described in Appendix G 	<p>Lake / River Water Quality Negligible</p> <ul style="list-style-type: none"> No net effects of precipitation events within the construction area on stormwater are predicted based on application of mitigation measures
Changes to Sediment and Debris Management During Construction	Effects to aquatic habitat as a result of changes to management activities during construction	<p>Lake / River Water Quality Phase 1</p> <ul style="list-style-type: none"> No effects to aquatic habitat in the Inner Harbour or the Keating Channel as a result of management activities as dredging within the Keating Channel will continue until the new sediment trap is operational <p>Phase 2-4</p> <ul style="list-style-type: none"> Aquatic habitat in the Keating Channel will be improved as a result of sediment management activities being moved to the sediment and debris management area in Reach 1 	<p>Lake / River Water Quality</p> <ul style="list-style-type: none"> No further mitigation is required regarding release of sediment 	<p>Lake / River Water Quality Positive</p> <ul style="list-style-type: none"> Aquatic habitat within the Keating Channel will be improved when management activities are moved to the sediment and debris management area in Reach 1
Effects from Construction on Lake and River Water Quality	Effects of in-water and near shore works on water quality	<p>Lake / River Water Quality Phase 1</p> <ul style="list-style-type: none"> Potential for release of sediment plume during filling of Essroc Quay (Reach 2a), construction of the new Keating Channel bridge and removal of the existing bridge and abutments, as well as the naturalization of the northern portion of the Polson Slip (Reach 4) which may result in increased turbidity in the Inner Harbour <p>Phase 2</p> <ul style="list-style-type: none"> Potential for release of sediment plume during 'in-channel' construction activity in Reach 1 associated with creation of sediment and debris management area, which may result in increased turbidity in Reach 1 and downstream within the Keating Channel and Inner Harbour Potential degradation of water quality during widening of channel in Reach 1 as a result of contaminated material (soils / groundwater) unintentionally entering the watercourse Potential degradation of water quality resulting from sediment and contaminated material unintentionally entering the watercourse during the removal of the dockwalls in the Keating Channel and Ship Channel during construction of the Greenway <p>Phase 3-4</p> <ul style="list-style-type: none"> Potential for the release of a sediment plume during the completion of the river valley system, installation of habitat improvement features in the Keating Channel and the naturalization of the south portion of the Polson Slip (Reach 4) which may result in increased turbidity in the Inner Harbour 	<p>Lake / River Water Quality</p> <ul style="list-style-type: none"> Use an excavator, a backhoe located on a barge, a bottom dump scow or end dumping with a truck place fill material on top of sediments within the containment berms during in-water works Should turbidity exceed acceptable limits during filling, construction will cease until acceptable limits are re-established Use appropriate isolation of excavated area at north end of Reach 1 during construction of Reach 1 to minimize impact to downstream water quality Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to BMPs to reduce likelihood of contaminated material entering the existing channel Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage 	<p>Lake / River Water Quality Negligible</p> <ul style="list-style-type: none"> Isolation of excavated area in Reach 1 will minimize sediment release during construction activities Implementation of BMPs and a spill response plan will mitigate any effects on water quality Methodical placement of fill on top of sediments within containment berm will minimize sediment plume release during in-water works
	Ability to manage sediment and debris during construction activities	<p>Lake / River Water Quality Phase 1</p> <ul style="list-style-type: none"> Dredging will continue in the Keating Channel until the sediment and debris management area is constructed and operating, which will have no effect on existing water quality <p>Phase 2</p> <ul style="list-style-type: none"> Upon construction of the sediment and debris management area north of Lake Shore Boulevard, sediment and debris will primarily be managed in the new trap area during construction activities Since the Keating Channel remains the primary outlet for the river, dredging in the Keating Channel will occur on an as-needed basis Sediment and debris activities during Phase 2 will have no effect on existing water quality within the river or Inner Harbour 	<p>Lake / River Water Quality</p> <ul style="list-style-type: none"> No mitigation required 	<p>Lake / River Water Quality None</p> <ul style="list-style-type: none"> Dredging will continue in the Keating Channel until the completion of the sediment and debris management area, which will maintain existing water quality within the river / lake

Table 7-5 Objective 3: Operational Management and Constructability

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
		<p><u>Phase 3-4</u></p> <ul style="list-style-type: none"> Upon completion of the new river valley system sediment and debris will be managed in the sediment and debris management area during construction activities and will have no effect on existing water quality 		
Implications of Phasing on Port Operations	Loss of potential mooring revenue	<p>Economic Base</p> <p><u>All Phases</u></p> <ul style="list-style-type: none"> Permanent loss of dockwall moorage for the Toronto Port Authority (TPA) and other long-term leaseholders in the area associated with the following: <ul style="list-style-type: none"> Phase 1 removal of approximately 1,340 m of dockwall in Essroc Quay and the Polson Slip Phase 2 removal of approximately 400 m of dockwall in the Keating Channel and Ship Channel for the construction of the Greenway Phase 4 removal of approximately 400 m in Reach 4, upon divestiture of industrial lands by owner of 54 Polson Street 	<p>Economic Base</p> <ul style="list-style-type: none"> Arrangements will be made with TPA and other long-term leaseholders in the area for lost mooring revenue (i.e., negotiations regarding compensation) Provide advance notice to TPA and other long-term leaseholders in the area in order to inform users of potential dockwall removal / modification The phasing strategy allows for mooring within the Inner Harbour along the western edge of the naturalized area in Essroc Quay in Reach 2 as well as along southern section of Polson Quay until the completion of Phase 4 to avoid negative effects to mooring revenue and Lafarge's existing operations The feasibility of increasing mooring in other areas to address dockwall removal / modification will be investigated 	<p>Economic Base</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Permanent loss of mooring revenue associated with 2,140 m of dockwall removal / modification to create the new river valley system; investigate feasibility of increasing mooring in other areas to address dockwall removal / modification
Total Cost of Construction	Total cost associated with constructing the DMNP	<p>Economic Base</p> <p><u>Phase 1-4</u></p> <ul style="list-style-type: none"> The total estimated cost of constructing the DMNP is currently being reassessed in co-ordination with the LDL MPEA amendment process Final costing will be provided in the final submission 	<p>Economic Base</p> <ul style="list-style-type: none"> No mitigation required 	<p>Economic Base</p> <p><u>None</u></p> <ul style="list-style-type: none"> Total estimated cost of constructing the DMNP will be provided in the final submission
Establishment / Post-Establishment Effects				
Potential Changes to Stormwater Quality and Quantity	Change in amount of impervious cover	<p>Stormwater Quality and Quantity</p> <ul style="list-style-type: none"> Decrease in impervious cover compared to existing conditions due to creation of the river valley system which will result in less stormwater runoff than current conditions Isolation of contaminated soils and groundwater and installation of stabilization measures to prevent erosion will ensure that stormwater quality is not affected 	<p>Stormwater Quality and Quantity</p> <ul style="list-style-type: none"> No mitigation required 	<p>Stormwater Quality and Quantity</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Stormwater quantity is reduced as a result of new floodplain and stormwater quality is not affected
Effects of Operational Management on Water Quality	Changes in water quality related to sediment management activities	<p>Lake / River Water Quality</p> <p><u>Lake-Connected Wetlands</u></p> <ul style="list-style-type: none"> Water quality within the lake-connected wetlands will be improved compared to existing conditions in the Lower Don River as the primary source of water is from the lake (and is therefore less turbid); feeder channels must be protected from infilling with sediments to ensure the exchange of lake water <p><u>Keating Channel</u></p> <ul style="list-style-type: none"> Future water quality within the Keating Channel is expected to be comparable to existing water quality in the Keating Channel due to a weir design that will allow for flushing of the channel on a regular basis and the relocation of sediment management activities to north of Lake Shore Boulevard (i.e., bedload and limited fine material will be trapped upstream of Lake Shore Boulevard and residual fines will continue downstream through the low flow channel) Stormwater from the future development blocks in the Lower Don Lands will be directed towards the Keating Channel, Inner Harbour or Ship Channel; stormwater directed towards the Keating Channel will further improve circulation <p><u>Low Flow Channel</u></p> <ul style="list-style-type: none"> Water quality and turbidity within the low flow channel is expected to be comparable to existing water quality and turbidity in the Lower Don River as residual fines will continue downstream through the low flow channel Water quality within the low flow channel is expected to improve in the lower reaches as the width of the channel in those reaches will allow for greater turnover and circulation Water quality is anticipated to improve upon completion of the City of Toronto's Don River and Central Waterfront Project. 	<p>Lake / River Water Quality</p> <p><u>Lake-Connected Wetlands</u></p> <ul style="list-style-type: none"> Minimize sediment loads to naturalized area by regular dredging of sediment trap and trap management Ensure long-term maintenance of connecting feeder channels to eliminate infilling with sediments and effectively maintain wetlands (see Appendix N-2) 	<p>Lake / River Water Quality</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Future water quality within the lake-connected wetlands will be improved compared to existing water quality in the Lower Don River Water quality within the low flow channel is anticipated to be comparable to or marginally better than existing water quality within the Lower Don River, especially within the lower reaches <p><u>Negligible</u></p> <ul style="list-style-type: none"> Water quality within the Keating Channel is anticipated to be comparable to existing water quality within the Keating Channel

Table 7-5 Objective 3: Operational Management and Constructability

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Effects to Port Operations	Changes to Toronto Port Authority works yard operations	<p>Existing Land Use</p> <ul style="list-style-type: none"> Relocation of the sediment and debris management area north of Lake Shore Boulevard will remove the need for such operations at the works yard Replacement of the Keating Channel bridge with a fixed bridge will allow low profile vessels (3-3.5 m high) to travel underneath the structure New location for the yard (including accommodation of storage for tugs, scows, navigation aids, Inner Harbour debris management, welding shop, mechanic shop, carpenter shop and space for approximately 60 staff) will be found in consultation with the TPA prior to demolition of the existing yard The new yard will likely be further from the Inner Harbour (i.e., adjacent to the Ship Channel to the east of Lower Don Lands) than the current location and will no longer deal with sediment and debris management Use of hydraulic dredge and dewatering technologies potentially provides opportunity to increase life expectancy of Confined Disposal Facility (CDF) Cell #3 by separating cleaner sands from dredgeate for better reuse 	<p>Existing Land Use</p> <ul style="list-style-type: none"> Enter into discussions with TPA to ensure that the new location for the works yard addresses their requirements and to determine operational responsibility for sediment and debris management in its new location 	<p>Existing Land Use</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> A suitable location for the works yard will be found in consultation with the TPA Relocation of the works yard will change the nature of its operations, as sediment and debris management will occur in Reach 1, although it is not yet determined which agency will be responsible for these activities <p><u>Positive</u></p> <ul style="list-style-type: none"> Use of hydraulic dredge and dewatering technologies potentially provides opportunity to increase life expectancy of CDF Cell #3 by separating cleaner sands from dredgeate for better reuse
	Changes to Port operations	<p>Existing Land Use</p> <ul style="list-style-type: none"> Potential for decreased moorage in Essroc Quay and in the Ship Channel as a result of lake filling and the creation of the Ship Channel wetland which may affect industrial users who moor their vessels along those portions of the dockwalls The design accommodates continued mooring in the Inner Harbour along the western dockwall of Cousins Quay, within the Polson Slip at 54 Polson Street, the western dockwall of Polson Quay and the majority of the Ship Channel Shallow draft vessels will be able to use dockwalls in the Keating Channel Relocation of sediment and debris management area to north of Lake Shore Boulevard, combined with separation of Keating Channel and creation of new low flow channel, is not expected to change the amount of sediment entering the Inner Harbour and therefore will have a similar effect on navigation in the Inner Harbour as current sediment management operations 	<p>Existing Land Use</p> <ul style="list-style-type: none"> Enter into discussions with TPA and other long-term leaseholders in the area to understand available remaining dockwall and identify alternative mooring locations for vessels 	<p>Existing Land Use</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Decreased moorage in Essroc Quay and in the Ship Channel <p><u>Negligible</u></p> <ul style="list-style-type: none"> Mooring in the Inner Harbour along the western dockwall of Cousins Quay, within the Polson Slip at 54 Polson Street, (until the completion of Phase 4), the western dockwall of Polson Quay and the majority of the Ship Channel will be accommodated Shallow draft vessels will be able to use dockwalls in the Keating Channel Relocation of sediment and debris management area will not change the risk of sedimentation in the Inner Harbour
	Changes to shipping activities	<p>Existing Land Use</p> <ul style="list-style-type: none"> Retaining the Keating Channel and providing a naturalized floodplain in the river valley system creates two areas to manage sediment and debris which provides redundancy and improves operational capacity Parkland adjacent to the Inner Harbour will not affect manoeuvring for larger vessels within the Inner Harbour New river mouth is not expected to negatively affect manoeuvring and loading / unloading of ships within the Inner Harbour Upon completion of the river valley system, velocities within Polson Slip will increase during storm events The completion of the river mouth requires modifications to Lafarge's current docking procedures, however, access to the dockwalls in this area will be maintained until the completion of Phase 4 The configuration of the Project avoids impacts to Redpath's existing operations and use of the dockwalls in the Port Lands The naturalized Don River Mouth is expected to attract more recreational boaters, which could lead to conflicts with larger vessels in the Inner Harbour and Polson Quay 	<p>Existing Land Use</p> <ul style="list-style-type: none"> Provide TPA and other long-term leaseholders (e.g., Lafarge) with advanced notification of anticipated high flow events via the TRCA Storm Advisory System Provide TPA and other long-term leaseholders (e.g., Lafarge) with real-time access to TRCA's Don River stream gauge information Discuss with TPA the need for: <ul style="list-style-type: none"> Installation of aids to navigation, such as wayfinding signage for recreational users to encourage them to avoid areas used for commercial purposes Implementation of communication systems, such as a website or telephone service that provide recreational users with information on pending movements of commercial vessels 	<p>Existing Land Use</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Ships will be unable to manoeuvre or load / unload in the Inner Harbour or Polson Slip during large storm events, which is similar to existing conditions Mitigation measures will minimize potential conflict between recreational boaters and larger vessels
Annual Operations and Maintenance Costs	Annual cost of sediment and debris management activities	<p>Economic Base</p> <ul style="list-style-type: none"> Aside from one-time capital costs of purchasing new sediment and debris management equipment, including hydraulic dredge and hydrocyclone, annual costs of sediment and debris management are estimated to be similar to current costs for the same activities Based on actual costs from 2005 to 2007, estimated annual costs are approximately \$700,000, including labour, equipment and other miscellaneous costs The treatment and use of dredgeate within the Project Study Area resulting from new sediment and debris management operations has the potential to extend the life expectancy of the CDF which would avoid the cost of finding new solutions for disposal farther into the future Slurry pipe that will be installed in the Keating Channel or along the Don Roadway will require regular maintenance to operate efficiently 	<p>Economic Base</p> <ul style="list-style-type: none"> No mitigation required 	<p>Economic Base</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> As future costs are anticipated to be similar to current costs, there is limited effect on operating budgets However, there are additional costs associated with maintenance of slurry pipe (i.e., regular, long-term inspection and maintenance to minimize clogging) and one-time capital costs of purchasing hydraulic dredge and hydrocyclone It should be noted that existing clamshell dredge is over 100 years old and would likely need replacing in the near future

Table 7-5 Objective 3: Operational Management and Constructability

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
	Annual cost of maintaining flood protection works, including weirs	<p>Economic Base</p> <ul style="list-style-type: none"> • Most flood protection works are passive systems and will not require regular (annual) maintenance unless there are large flood events that affect stability of the low flow channel and associated wetlands • The sideflow weir will require periodic maintenance to ensure that it operates properly during flood events • The upstream weir will require regular maintenance to ensure that it operates properly during flood events 	<p>Economic Base</p> <ul style="list-style-type: none"> • No mitigation required 	<p>Economic Base</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> • Anticipated maintenance costs for flood protection works are expected to be low

Discussion for Objective 3: Operational Management and Constructability

Effects

Stormwater may inundate low-lying areas, particularly in Reaches 2, 3, 3a and 4 during construction. Stormwater may also result in the formation of ruts and puddles on flatter surfaces that can contain sediment-laden water and create excessive mud build up on tires. There is the potential for runoff to transport soils from above-grade surfaces to the Ship Channel, Keating Channel, Don River or Inner Harbour. Furthermore, stormwater may come into contact with contaminated soils or groundwater during excavation of all reaches of the new river valley system. In such a situation, contaminated stormwater will need to be collected and treated before it can be discharged.

The aquatic habitat in the Keating Channel will be improved as a result of changes to sediment management activities being moved to the sediment and debris management area in Reach 1. No effects on aquatic habitat are anticipated during Phase 1 construction as dredging will continue within the Keating Channel until the new sediment trap is operational.

Lake and river water quality may be affected during construction by in-water or near shore works. Creation of the sediment trap in Reach 1 through dredging may result in the release of sediment plumes. Additionally, water quality may become degraded during the widening of the channel in Reach 1 as a result of contaminated material (soils / groundwater) unintentionally entering the watercourse. As a result, there may be increased short-term turbidity and contaminated surface water in Reach 1 and downstream within the Keating Channel and Inner Harbour. Further, sediment and contaminated material that may unintentionally enter the watercourse during the removal of the dockwalls in the northern portion of Polson Slip, the Keating Channel and Ship Channel has the potential to degrade the water quality. Similarly, the filling of the Essroc Quay (Reach 2a), the completion of the river valley system (Reach 3) and the naturalization of the Polson Slip (Reach 4) may result in short-term turbidity within the Inner Harbour.

The creation of the new river valley system and Ship Channel wetland, as well as filling around Essroc Quay, will have a direct effect on the TPA and other long-term leaseholders of dockwalls in the area. The DMNP requires the removal or modification of approximately 2,100 metres of dockwall within Reaches 2, 2a, 3a and 4, including 400 metres of dockwall in Reach 4 upon the divestiture of industrial lands by the owner 54 Polson Street. As a result, TPA and other leaseholders in the area will experience a permanent loss of moorage associated with the removed or modification of dockwalls. However, the design does accommodate continued mooring in the Inner Harbour along the western dockwall of Cousins Quay, the western dockwall of Polson Quay, in the majority of the Ship Channel and within the Polson Slip at 54 Polson Street until the completion of Phase 4. In addition, shallow draft vessels will be able to use dockwalls in the Keating Channel. Regarding the effects on navigation, there will be no permanent reduction of navigational space in the Inner Harbour due to construction.

The proposed phasing plan described in **Chapter 6** allows for construction of the new river valley system and river mouth to occur effectively and efficiently. The total estimated cost of constructing the DMNP is currently being reassessed in co-ordination with the LDL MPEA amendment process. Final costing will be provided in the final submission of the EA. As described in **Chapter 6**, the design of the new river valley system accommodates most sediment and debris management activities in Reach 1, located north of Lake Shore Boulevard. Relocating these activities from the Keating Channel to this location allows sediment to be captured where it is expected to drop out (due to the widening of the existing channel in this location). By capturing sediment in this location, it will maximize conveyance and flood protection downstream. It also prevents most of the sediment from entering the Inner Harbour, thereby maintaining navigation at the mouth of the river.

The improvements in dredging technology such as the hydraulic dredge, slurry pipe and hydrocyclone, are expected to provide for greater flexibility during construction activity. For example, the hydraulic dredge can be easily moved to different locations given its ability to navigate under the bridges (as compared to the current clamshell dredge) and the hydrocyclone allows for the potential reuse of clean sediment for beneficial secondary purposes. The operational costs associated with the new dredging technology are expected to be slightly higher compared to existing costs, due primarily to regular maintenance of the slurry pipe.

From the time of construction up until the time that the river is diverted into the new low flow channel and the new management area and trap are operational, the existing locations where sediment and debris management operations currently take place will remain. There will be no interruption to dredging and debris management and therefore, no change to existing flood protection during construction activities. Regarding effects during establishment / post-establishment, there is anticipated to be considerably less stormwater runoff compared to existing conditions due to the creation of the new river valley system and the associated decrease in impervious cover.

Water quality within the lake-connected wetlands will be improved compared to existing conditions in the Lower Don River as the primary source of water is from the lake and is therefore less turbid (provided that the feeder channels that connect the wetlands to the lake are protected from infilling with sediments).

Future water quality within the Keating Channel is expected to be comparable to existing water quality. The sideflow weir design will allow for flushing of the Keating Channel on a regular basis and the relocation of sediment management activities to north of Lake Shore Boulevard will trap bedload and limited fine material upstream and allow residual fines to continue downstream through the low flow channel, thereby avoiding the Keating Channel. In addition, treated stormwater from the future development areas that is directed towards the Keating Channel will further improve circulation and water quality.

Similarly, water quality and turbidity within the low flow channel are expected to be comparable to existing water quality and turbidity in the Lower Don River, as residual fines will continue downstream south of the sediment trap through the low flow channel. However, water quality is expected to improve in the lower reaches due to the width of the low flow channel in those reaches which will allow for greater turnover and circulation. Water quality within the low flow channel is anticipated to improve upon completion of the City of Toronto's Don River and Central Waterfront Project.

With regard to TPA and other long-term leaseholders in the area, arrangements (i.e., negotiation regarding compensation) will take place for the loss of mooring associated with dockwall removal or modification. Since there will be less space within Essroc Quay and the Ship Channel available for mooring in the long-term, other industrial users who moor along those portions of the dockwalls may be affected by changes to existing operations. The design accommodates continued mooring in the Inner Harbour along the western dockwall of Cousins Quay, within the Polson Slip at 54 Polson Street, the western dockwall of Polson Quay and the majority of the Ship Channel.

The change in the location of sediment and debris management operations and the replacement of the Keating Channel bridge will necessitate relocating the TPA works yard. A suitable location for the yard(s) will be found in conjunction with the TPA prior to demolition of the existing yard.

The presence of the parkland adjacent to the Inner Harbour will not affect the ability of vessels to manoeuvre within the Inner Harbour. As is currently the case, Lafarge will be unable to manoeuvre and / or load and unload its boats during large storm events. Further, the naturalized Don River Mouth is expected to attract more recreational boaters to the area which could lead to conflicts with larger vessels in the Inner Harbour and Polson Quay.

There are annual operations and maintenance costs associated with sediment and debris management activities and with flood protection works. Aside from one-time capital costs of purchasing new management equipment, including a hydraulic dredge and hydrocyclone, the annual costs of sediment and debris management are estimated to be similar to current costs for the same activities (approximately \$700,000 per year based on actual costs from 2005 to 2007, including labour, equipment and other miscellaneous costs). In addition, the slurry pipe that will be installed along the Don Roadway will require regular maintenance to operate efficiently. A benefit of treating and using dredgeate within the Project Study Area at the sediment and debris management area is that the life expectancy of the Confined Disposal Facility (CDF) will likely be extended and will avoid the cost of finding new solutions for disposal farther into the future.

There are limited maintenance costs associated with flood protection works, as most are designed to operate passively. However, the upstream weir will require regular inspection and maintenance while the sideflow weir will require periodic maintenance to ensure that they will operate properly during flood events.

Mitigation Measures

During construction, contractors will be required to adhere to BMPs to effectively manage construction runoff and erosion for the control and management of stormwater and contaminated material, as described in **Appendix G**. A spill response plan including immediately reporting and managing any leakage or spillage will also be prepared and followed.

To manage turbidity associated with the construction of in-water works, appropriate isolation of the excavated area at the north end of Reach 1 will be applied during construction of the sediment trap. For filling of Essroc Quay, lake fill material will be placed on top of sediments within the containment berms using an excavator, a backhoe located on a barge, a bottom dump scow or by end dumping with a truck. If turbidity exceeds acceptable limits during filling activities, work will cease until acceptable limits are re-established. In-channel construction will be limited to specific times of year to avoid adverse flow conditions and avoid fish spawning and migration periods. An excavator, a backhoe located on a barge or a bottom dump scow could also be used to methodically place fill material on top of sediments within the containment berms during in-water works.

During detailed design, the proponents will look at opportunities to optimize mooring. Discussions with TPA and other long-term leaseholders will be required to understand available remaining dockwall and to identify alternative mooring locations for vessels. Arrangements (i.e., negotiation regarding compensation) will be made to address the permanent loss of mooring revenue associated with dockwall removal and modification. As well, phasing has been developed to allow for mooring in the Inner Harbour along the western dockwall of Cousins Quay, the western dockwall of Polson Quay and in the majority of the Ship Channel during all phases and within the Polson Slip at 54 Polson Street until the completion of Phase 4 to avoid negative effects to mooring revenue and Lafarge's existing operations. Discussions with TPA regarding the new location of the works yard as well as with TPA and other long-term leaseholders regarding mooring opportunities will ensure that these agencies' interests are addressed.

During establishment / post-establishment, regular dredging of the sediment trap and trap management will minimize sediment loads to naturalized areas. Furthermore, maintenance of connecting feeder channels between the river and the lake-connected wetlands on an as-needed basis will ensure that the channels do not fill with sediments (see **Appendix N-2** and **N-3**).

Advance notice of storm events will be provided to TPA, other users of the Don River Mouth and dockwall users to avoid impacts to manoeuvring and loading / unloading. In addition, discussions with TPA regarding the need for the installation of navigation aids and the implementation of communication systems will be held to minimize conflicts between recreational users and larger vessels.

Net Effects

The effects of construction on stormwater and lake and river water quality are predicted to be negligible, since they will be short-term and will be minimized by BMPs. The effects of establishment / post-establishment on stormwater will be positive, as there will be a decrease in impervious cover and an associated improvement in stormwater quality. During establishment / post-establishment, water quality within the lake-connected wetlands is expected to be better than existing water quality within the Lower Don River, which is considered to be a positive net effect. Similarly, water quality within the low flow channel is anticipated to be comparable to or marginally better than existing conditions, especially within the lower reaches and is considered to be a positive net effect. In comparison, water quality within the Keating Channel is anticipated to be comparable to existing conditions within the Lower Don River and negligible net effects are predicted.

While compensation will minimize the effects of dockwall removal and modification, TPA and other long-term leaseholders will have less space within the Inner Harbour and the Ship Channel available for mooring in the long term. As a result, there remains a permanent negative net effect of construction on TPA and other long-term leaseholders.

Mitigation measures, including navigational aids and the implementation communication systems, will minimize potential conflict between recreational boaters and larger vessels resulting in a negligible effect. Further, Lafarge's boats currently experience restricted manoeuvring and loading / unloading capabilities due to large storm events, therefore the effect of the new Don River Mouth is negligible.

During establishment / post-establishment, there are annual costs of sediment and debris management, which are expected to be similar to current costs, plus the additional costs associated with maintenance of the slurry pipe to ensure that it functions efficiently. There are also the one-time capital costs associated with purchasing the hydraulic dredge and hydrocyclone. These costs are negative net effects associated with maintenance.

Summary of Project Effects Related to Operational Management and Constructability

Overall, the DMNP satisfies the objective related to operational management by providing for navigation and flood protection through ongoing sediment, debris and ice management. The EA recognizes that construction of the DMNP will result in negative effects on TPA operations and the operations of its users. There are also negative effects associated with ongoing maintenance costs. To review a summary of the overall effects related to this objective, refer to **Table 7-6** below.

Table 7-6 Overall Effects Related to Objective 3

Criterion	Overall Effects
Construction	
Management of Stormwater Related to Precipitation Events	Negligible
Changes to Sediment and Debris Management during Construction	Positive
Effects from Construction on Lake and River Water Quality	Negligible
Implications of Phasing on Port Operations	Negative
Total Cost of Construction	None
Establishment / Post-Establishment	
Potential Changes to Stormwater Quality and Quantity	Positive
Effects of Operational Management on Water Quality	Positive
Effects to Port Operations	Negative
Annual Operations and Maintenance Costs	Negative

7.3.4 Objective 4: Integration with Infrastructure

The objective in the ToR related to infrastructure states that the project must “*integrate existing infrastructure functions that could not be reasonably moved or removed*” which includes road, rails, utilities, trails and power.

Table 7-7 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by integration with infrastructure criteria and indicators as well as the proposed mitigation measures and net effects.

Table 7-7 Objective 4: Integration with Infrastructure

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Changes to Existing and Planned Roads and Bridges Solely Due to DMNP	Nuisance effects as a result of modifications to Lake Shore Boulevard at the Don Roadway, the Don Roadway, Cherry Street, Villiers Street, Keating Channel bridge, Commissioners Street and Basin Street	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <p><u>Phase 1</u></p> <ul style="list-style-type: none"> Construction activities associated with the removal of the existing bridge and abutments over the Keating Channel at Cherry Street, the construction of new Keating Channel bridge and the partial realignment of Cherry Street from the new Keating Channel bridge to Commissioners Street will result in nuisance effects to residents and businesses Potential short-term nuisance effects resulting from construction activities on existing residents and businesses will include: <ul style="list-style-type: none"> Traffic disruption, which will be short-term, infrequent and localized Dust and combustion emissions associated with modifications to roads and bridges, which will be short-term (during construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area; furthermore, majority of earthworks will require movement of wet or damp soils, which will minimize the amount of airborne dust Limited potential for nuisance effects associated with noise, as there are anticipated to be few sensitive receptors in the vicinity of construction during Phase 1 and noise emissions will be short-term, infrequent and localized to the construction areas <p><u>Phases 2-4</u></p> <ul style="list-style-type: none"> Construction activities associated with the following infrastructure works will result in nuisance effects: <ul style="list-style-type: none"> Lengthening of Lake Shore Boulevard crossing Reconstruction of the Don Roadway south of Lake Shore Boulevard to accommodate the VWF Construction of Commissioners Street bridge Removal of Villiers Street within footprint of future new river valley system Realignment of Cherry Street south from Commissioners Street across the new river valley system Construction of Basin Street Bridge Potential short-term nuisance effects resulting from construction activities on residents and businesses within mixed-use developments built in Phases 2-4 may include: <ul style="list-style-type: none"> Noise emissions, which will be short-term and infrequent and localized to the construction areas Traffic disruption, which will be short-term, infrequent and localized Limited potential for nuisance effects associated with dust, as majority of modifications to roads will require movement of wet or damp soils, which will minimize the amount of airborne dust Combustion emissions associated with earthworks will be short-term (during Construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <ul style="list-style-type: none"> Use a traffic management plan and standard traffic control measures to safely co-ordinate traffic flow Provide alternate access and re-routing signage to businesses as required and maintain emergency access to adjacent structures and buildings Consult with emergency services (i.e., Toronto Fire Service, Emergency Medical Service (EMS) and police) in advance of any road closures so that alternative emergency dispatch protocols can be implemented if required Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions, noise and traffic disruption will be minimized by Waterfront Toronto's EMP and BMPs The effects associated with the road closures are attributable to the improvements being undertaken as part of the Lower Don Lands Environmental Assessment Master Plan (LDL EAMP)
Changes to Existing Rail Lines or Yards or Access Roads Leading to Rail Yards	Nuisance effects as a result of modifications to rail lines, yard or access roads (e.g., Harbour Lead spur and yard, Keating Yard, GO Transit / Don Yard)	<p>Atmospheric Environment / Existing Land Use</p> <p><u>Phase 2</u></p> <ul style="list-style-type: none"> Potential short-term infrequent and localized nuisance effects on residents and businesses (e.g., temporary traffic / service disruptions, noise, dust, combustion emissions) due to the modifications to existing infrastructure (e.g., lengthening of the Harbour Lead spur); however, there are anticipated to be few sensitive receptors in the vicinity of construction Potential short-term service disruption to users of the Harbour Lead rail line along Unwin Avenue, Leslie Street and Lake Shore Boulevard 	<p>Atmospheric Environment / Existing Land Use</p> <ul style="list-style-type: none"> Use a traffic management plan and standard traffic control measures to safely co-ordinate traffic flow Provide alternate access and re-routing signage to access rail yards as required and maintain emergency access to adjacent structures and buildings Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Existing Land Use</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions, noise and traffic disruption will be minimized by Waterfront Toronto's EMP and BMPs

Table 7-7 Objective 4: Integration with Infrastructure

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Changes to Existing, Planned and Proposed Underground Utilities Due to Location of Floodplain and Low Flow Channel	Disturbance and / or displacement of underground utilities due to location of the floodplain and low flow channel, including: <ul style="list-style-type: none"> • Enbridge gas pipeline • Water and wastewater utilities • Hydro One Networks Inc. (HONI) underground lines • Other underground utilities 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Phases 2-4</u></p> <ul style="list-style-type: none"> • Construction activities will result in the disturbance and / or displacement of the following underground utilities within the Project Study Area, including: <ul style="list-style-type: none"> ▪ Two storm sewer outfalls (SSOs) located on the east side of Don River near Lake Shore Boulevard would potentially provide a pathway for flood waters in the Don to flow under the Flood Protection Landform that is constructed in Phase 2 ▪ Need to lengthen the Lake Shore Boulevard bridge and the relocation or extension of the Enbridge gas pipeline and Toronto Hydro line in Phase 2 ▪ Placement of fill to create the FPL and VWF in Phase 2 may impact the ability of existing HONI underground circuits to dissipate heat 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <ul style="list-style-type: none"> • Install backflow prevention devices or reroute SSOs to convey stormwater away from the Don River • Continue to meet with utility providers, including HONI, to confirm that these utilities may be removed, retrofitted, relocated or extended, explore cost sharing opportunities and to develop an approach to maintain servicing during construction • In some instances, utility providers will be responsible for relocating their own infrastructure as part of the implementation of the DMNP • An agreement has been reached with Toronto Hydro that they will be responsible for the relocation of their infrastructure over Lake Shore Boulevard during the implementation of the DMNP • Develop a strategy with HONI to ensure that impacts to underground circuits as a result of filling are adequately mitigated or compensation is provided for relocation 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> • Construction of the river valley system and flood protection features will result in the removal and replacement of existing underground utilities within the Lower Don Lands • A suitable servicing and replacement / compensation strategy, which includes opportunities for cost sharing and partnerships for replacement old infrastructure nearing the end of its life, will be found through ongoing consultation with utility providers <p><u>Negligible</u></p> <ul style="list-style-type: none"> • Construction of the river valley system and flood protection landform will require the installation of backflow prevention devices or reroute SSOs to convey stormwater away from the Don River • An agreement has been established with Toronto Hydro that they will relocate their infrastructure over the Lake Shore Boulevard during the implementation of the DMNP • Displacement and disturbance effects on HONI infrastructure will be mitigated through ongoing consultation with HONI to explore cost sharing opportunities for aging infrastructure and, where required, adequate compensation for relocation of infrastructure will be provided
	Nuisance effects as a result of modifications to underground utilities due to location of the floodplain and low flow channel	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Phases 2-4</u></p> <ul style="list-style-type: none"> • Construction activities associated with the following infrastructure works will result in nuisance effects to residents and businesses: <ul style="list-style-type: none"> ▪ Removal or retrofit of the storm sewer outfalls (SSOs) in Phase 2 on the east side of Don River near Lake Shore Boulevard during construction of the east bank Flood Protection Landform ▪ Removal or extension of the Enbridge gas pipeline and Toronto Hydro line in Phase 2 ▪ Relocation of HONI underground circuits during the construction of the VWF and potentially the FPL in Phase 2 • Potential short-term nuisance effects resulting from construction on residents and businesses will include: <ul style="list-style-type: none"> ▪ Noise emissions, which will be short-term (during construction only) and infrequent (at certain times of the day) and localized to the construction areas ▪ Dust and combustion emissions associated with earthworks will be short-term (during construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area • No loss of water and wastewater servicing to businesses south of Ship Channel and of Commissioners Street in Reach 3 (Phase 3) as existing water and sewer connections will be maintained until existing uses are connected to new servicing • No loss of stormwater services are predicted for areas outside of floodplain, since existing connections will be maintained until relocation or modification of storm sewers along the east bank downstream of the CN Rail has occurred • No loss of service due to modifications to existing underground utilities, including the HONI underground high voltage cables (Phase 2), due to construction as existing connections will be maintained until existing uses are connected to new utilities 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <ul style="list-style-type: none"> • Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G • Adhere to City of Toronto's Noise By-Law (No. 111-2003) • Provide advanced notification to Toronto Fire Service prior to construction works associated with municipal water flow to any fire hydrants and / or buildings 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> • Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions and noise will be minimized by Waterfront Toronto's EMP and BMPs <p><u>None</u></p> <ul style="list-style-type: none"> • Water and wastewater servicing to businesses will be maintained during construction • SSOs north of Lake Shore Boulevard will be maintained during and following Construction • Stormwater servicing will be maintained during Construction

Table 7-7 Objective 4: Integration with Infrastructure

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Changes to Existing Above Ground Utilities	Disturbance and / or displacement of above ground utilities due to location of the floodplain and low flow channel, including: <ul style="list-style-type: none"> The Hydro Bridge HONI overhead lines and towers Other utilities (assuming bridge lengthened or buried underneath the river) 	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Phase 2-4</u> <ul style="list-style-type: none"> Construction activities will result in the disturbance and/or displacement of the following above ground utilities: <ul style="list-style-type: none"> Removal or lengthening of the Hydro Bridge, including the potential relocation of circuits should the bridge be removed Placement of fill near the base of three hydro towers during Phase 2 as part of the construction of the sediment and debris management area and the VWF east of the Don Roadway may cause corrosion of the foundation, while fill loadings could cause foundation instability Concerns of maintaining minimum vertical clearances between the raised ground and overhead circuits needs to be considered 	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <ul style="list-style-type: none"> Continue to meet with utility providers, including HONI, to confirm that these utilities may be removed, retrofitted, relocated or extended, explore cost sharing opportunities and to develop an approach to maintain servicing during construction Co-ordinate with HONI to ensure vertical clearances are sufficient and that protective treatment to the base of the towers is applied to prevent corrosion and ensure the towers remain stable Develop a strategy with HONI to ensure that the circuits on the utility bridge can be relocated without disruption to service prior to the removal of the bridge 	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Negative</u> <ul style="list-style-type: none"> Construction of the river valley system and flood protection features will result in the removal and replacement of existing above ground utilities within the Lower Don Lands <u>Negligible</u> <ul style="list-style-type: none"> Displacement and disturbance effects on HONI infrastructure will be mitigated through ongoing consultation with HONI to explore cost sharing opportunities for aging infrastructure and, where required, adequate compensation for relocation of infrastructure will be provided
	Nuisance effects as a result of modifications to the hydro bridge, HONI overhead lines and towers and other utilities (assuming bridge lengthened or buried underneath the river)	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Phase 2-4</u> <ul style="list-style-type: none"> Construction activities associated with the removal of hydro towers within Reach 1 as well as the removal or lengthening of the hydro bridge will result in nuisance effects to residents and businesses Nuisance effects on residents and businesses within mixed-use developments built following Phase 1 will include: <ul style="list-style-type: none"> Noise emissions, which will be short-term (during construction only) and infrequent (at certain times of the day) and localized to the construction areas Dust and combustion emissions associated with earthworks, which will be short-term (during construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area No loss of above-ground servicing as a result of construction as services, including HONI utility bridge (Phase 2) will be maintained until all existing uses are connected to new network 	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP, HONI BMPs for Construction, and other BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Negligible</u> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions and noise will be minimized by Waterfront Toronto's EMP and BMPs <u>None</u> <ul style="list-style-type: none"> Above ground services will be maintained until new servicing is available
Changes to Dockwalls	Nuisance effects as a result of modifications to dockwalls	Atmospheric Environment <u>Phase 1</u> <ul style="list-style-type: none"> Construction activities associated with lake filling and the removal of dockwall in Essroc Quay, construction of the new Keating Channel bridge including the removal of the existing bridge and abutments, as well as removal of dockwall along northern portion of the Polson Slip will result in nuisance effects on residents and businesses surrounding Cousins Quay <u>Phase 2</u> <ul style="list-style-type: none"> Construction activities associated with the removal of dockwalls in the Keating Channel and Ship Channel will result in nuisance effects on new residents and businesses <u>Phases 3-4</u> <ul style="list-style-type: none"> Construction activities associated with the excavation of the river valley system, installation of habitat improvement features in the Keating Channel and naturalization of the southern portion of the Polson Slip will result in nuisance effects on new residents and businesses <u>All Phases</u> <ul style="list-style-type: none"> Nuisance effects on residents and businesses in the vicinity of the construction activities listed above will include: <ul style="list-style-type: none"> Noise emissions, which will be short-term (during construction only) and infrequent (at certain times of the day) and localized to the construction areas Dust and combustion emissions associated with earthworks, which will be short-term (during construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area 	Atmospheric Environment <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	Atmospheric Environment <u>Negligible</u> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions and noise will be minimized by Waterfront Toronto's EMP and BMPs

Table 7-7 Objective 4: Integration with Infrastructure

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Costs of Infrastructure Modification / Relocation Associated with DMNP	Total cost of infrastructure modification / relocation	<p>Economic Base <u>Phases 1-4</u></p> <ul style="list-style-type: none"> Estimated cost of approximately \$130 million (in 2010 dollars) for modifying / relocating existing infrastructure and installing new infrastructure associated with DMNP (HR&A, 2012, Appendix O) 	<p>Economic Base</p> <ul style="list-style-type: none"> No mitigation required 	<p>Economic Base <u>None</u></p> <ul style="list-style-type: none"> Estimated cost of approximately \$130 million (in 2010 dollars) for modifying / relocating existing infrastructure and installing new infrastructure associated with DMNP (HR&A, 2010, Appendix O)
Establishment / Post-Establishment Effects				
Roadway / Bridge Maintenance	Long-term maintenance implications for Lake Shore Boulevard, Cherry Street, Don Roadway, Commissioners Street, Basin Street and Gardiner Expressway substructures	<p>Infrastructure and Utilities</p> <ul style="list-style-type: none"> A section of the Gardiner Expressway substructure, Lake Shore Boulevard, Cherry Street, Commissioners Street and Basin Street (within the floodplain) will potentially be prone to erosion / scour and will require long-term maintenance and associated costs The Gardiner Expressway substructure and part of the Lake Shore Boulevard structure are currently within the river and therefore already prone to erosion / scour Maintenance requirements are not part of the DMNP but are directly associated with the LDL EAMP 	<p>Infrastructure and Utilities</p> <ul style="list-style-type: none"> Ensure long-term maintenance takes place to prevent degradation and replacement costs 	<p>Infrastructure and Utilities <u>None</u></p> <ul style="list-style-type: none"> All structures within the floodplain will require long-term maintenance The Gardiner Expressway substructure and part of the Lake Shore Boulevard structure are currently prone to erosion / scour
Provision for Water-Based Emergency Services	Ability of water-based emergency services to navigate the river valley system	<p>Infrastructure and Utilities</p> <ul style="list-style-type: none"> Vehicular and pedestrian bridges have been designed to convey Regulatory Flood and therefore will not limit access by water-based emergency services The sediment and debris management area includes an access ramp for emergency watercraft (zodiacs) to access north of Lake Shore Boulevard 	<p>Infrastructure and Utilities</p> <ul style="list-style-type: none"> No mitigation required 	<p>Infrastructure and Utilities <u>None</u></p> <ul style="list-style-type: none"> No limitations to access by water-based emergency services
Effects on Maintaining Servicing	Effects of maintaining servicing on the new river valley system and low flow channel	<p>Wetland Environment</p> <ul style="list-style-type: none"> Servicing that is maintained through underground utility conduits or similar mechanisms that eliminate the need to disturb the naturalized area once it is established will have no effects on the river valley system and low flow channel 	<p>Wetland Environment</p> <ul style="list-style-type: none"> No mitigation required 	<p>Wetland Environment <u>None</u></p> <ul style="list-style-type: none"> The low flow channel and floodplain will not be disrupted by servicing through underground utility conduits or similar mechanisms

Discussion for Objective 4: Integration with Infrastructure

Effects

Infrastructure within the Lower Don Lands is expected to change. The design of the new river valley system has been directly integrated with the infrastructure and land use changes described in the Lower Don Lands Environmental Assessment Master Plan (LDL EAMP) and associated Framework Plan. Thus, the new river valley system integrates those infrastructure changes, including new bridge crossings and replacements of existing crossings. Existing infrastructure that must be integrated into the floodplain design to achieve the goals of the DMNP includes the lengthening of Lake Shore Boulevard East and the associated Harbour Lead Rail Spur as well as raising the elevation of the Don Roadway and a small portion of Eastern Avenue north of the CN Rail Kingston Line. Construction of the new river valley system will require removing or modifying existing infrastructure, including roads, rail, above and underground utilities and dockwalls that cross the footprint of the floodplain.

For the most part, changes to infrastructure within the Project Study Area are attributable primarily to redevelopment of the surrounding Lower Don Lands and the effects of such changes are therefore addressed by the LDL EAMP. These include changes to municipal infrastructure that are not required for flood conveyance purposes.

Construction of the DMNP has the potential to have nuisance effects such as dust, combustion emissions and noise on adjacent businesses, residents and recreational users in the Project Study Area during the modifications to roads, bridges and dockwalls. Atmospheric emissions typical of a construction site include dust from earthworks and combustion emissions from construction equipment. These emissions will occur in the short-term (during construction) and will generally be infrequent (only at certain times of the day). It is unlikely that atmospheric emissions from construction works will have measurable effects outside of the Project Study Area. For activities involving earthworks (including changes to roads, utilities and dockwalls), the majority of soils will be wet or damp, thereby minimizing the amount of airborne dust emitted to the atmosphere. All work is expected to be completed using conventional construction methods and noise effects will not occur frequently (only when heavy machinery is operating) and will be a short-term effect (only during construction). The noise will be a result of activities such as vegetation clearing and grubbing; earthworks; demolition or relocation of existing buildings, operations, infrastructure and utilities; and removal / rehabilitation of dockwalls. These activities will require the use of various pieces of heavy equipment (e.g., backhoes, bulldozers, bobcats, trucks, trailers, barges, weed harvesters, etc.). Other construction activities, such as installation of stabilization, are expected to generate less noise.

Infrastructure modifications that are required for flood protection purposes – including, for example, the construction of the new Keating Channel bridge and removal of the old bridge and abutments, lengthening of Lake Shore Boulevard and the associated Harbour Lead Spur, constructing the FPL and VWF including the raising of the Don Roadway - will result in traffic delays due to lane closures during construction activities. The lengthening of the rail spur will also result in service disruptions for users along Lake Shore Boulevard East (east of the Don River), Leslie Street and Unwin Avenue during construction activities.

Other changes to infrastructure that are attributable to the DMNP include the installation of backflow prevention devices or the rerouting of sanitary sewer overflows (SSOs), lengthening of the Lake Shore Boulevard bridge, relocation or extension of the Enbridge gap pipeline and Toronto Hydro Line and the removal and lengthening of the Hydro bridge, which may include the relocation of existing circuits should the bridge be removed. In addition, effects on existing HONI infrastructure may occur as a result of placement of fill to create the FPL and VWF in Phase 2 which may impact the ability of existing underground circuits to dissipate heat, cause corrosion of the foundations of overhead towers, result in instability of the foundations from additional loading, and cause impacts associated with maintaining minimum adequate vertical clearances between raised grades and overhead circuits.

Most of the infrastructure that crosses the floodplain will be installed during the construction of the new river valley system and designed to go either over or under the new river valley system; therefore, there are few effects on infrastructure as a result of establishment / post-establishment. Similarly, there are no effects anticipated with maintaining servicing on the naturalized communities as all utilities and municipal services will be located within underground utility conduits or similar mechanisms.

The features that do not fully span the floodplain, which include the Gardiner Expressway structure (in its existing configuration), the bays associated with the lengthened Lake Shore Boulevard East and Harbour Lead Spur, the causeway under the future Basin Street extension and any abutments and piers associated with the Commissioners and Keating Channel crossings will potentially be prone to erosion and scour during flood events. Regular inspection and maintenance of the infrastructure within the floodplain will be required to prevent degradation due to erosion and scour. It should be noted that some of these structures, such as those associated with the Gardiner Expressway and Lake Shore Boulevard East, are already within the existing river. Furthermore, the maintenance implications of the new infrastructure are attributable to the LDL EAMP and not to the DMNP. Similarly, regular inspection and maintenance of the slurry pipes along the Don Roadway will also be required to minimize clogging and maintain conveyance of sediment.

With regard to water-based emergency services, vehicular and pedestrian bridges are designed to convey the Regulatory Flood and therefore will not limit access by such services. The sediment and debris management area includes an access ramp for emergency watercraft (zodiacs) to access north of Lake Shore Boulevard.

Servicing that is maintained through underground utility conduits or similar mechanisms that eliminate the need to disturb the naturalized area once it is established will have no effects on the river valley system and low flow channel.

Mitigation Measures

Waterfront Toronto's EMP will be implemented to reduce potential effects to air quality. Where work is being undertaken on or in the vicinity of HONI infrastructure, Best Management Practices (BMPs) will be employed that adhere to the specific requirements for construction outlined by HONI. In addition, BMPs will be employed where appropriate for dust suppression, such as on-site watering, gravel aggregate on roads and limiting the speed of vehicles travelling on roads. During the excavation, on-site movement and stockpiling of contaminated soils, dust levels will be measured using real-time monitoring systems. Well-maintained equipment will keep combustion emissions to a minimum. Noise reduction BMPs such as using well-maintained equipment will help meet the requirements of the City of Toronto's Noise By-Law (No. 111-2003) to minimize noise impacts. BMPs are described in more detail in **Appendix G**. Additionally, advance notice of service disruptions will be provided to TPA and the users of existing rail lines and yards to lesson nuisance effects on their operations.

A traffic management plan and standard traffic control measures will be required during construction activities to safely co-ordinate traffic flow and minimize the anticipated traffic delays in the Project Study Area. Where required, alternate access and appropriate re-routing signage will be provided, including access for recreational users. During construction, temporary servicing connections will be established to the existing network in order to maintain above ground and underground servicing network. Discussion with various utility providers will be held to develop an approach to maintaining servicing during construction. Regarding the removal of the HONI infrastructure, discussions will need to be held with HONI to find an alternate means of connecting its network and to develop an approach to maintain servicing during construction.

The Study Team will also continue to meet with local utility providers throughout detailed design and construction to ensure impacts to existing infrastructure are minimized and, when required, to confirm that utilities may be removed, retrofitted, relocated or extended and that opportunities for cost sharing are explored. In addition, a strategy will be developed with HONI to ensure that local infrastructure that requires relocation can be done without disruption to service. During establishment / post-establishment, regular inspection and maintenance of the infrastructure will be required to prevent degradation due to erosion, scour and annual wear and tear. Long-term maintenance will also ensure that replacement costs are kept to a minimum.

Net Effects

For construction and establishment / post-establishment, nuisance effects associated with dust, noise and combustion emissions will generally be short-term and will be localized. Mitigation measures are known to be effective and negligible net effects are predicted.

During construction, traffic disruption associated with modifications to infrastructure will be minimized through the implementation of a traffic management plan, including provision of alternate access. As a result, there should be minimal effects on emergency response time. These effects will be short-term, infrequent and localized and are thus considered negligible.

By operating truck traffic associated with off-site soils transportation during off-peak hours, further degradation of traffic conditions within the Project Study Area and along haul routes will be minimized where possible. While existing traffic conditions within the Project Study Area are poor and will be affected further as a result of construction activities taking place as part of the DMNP, the effects on traffic will be short-term, infrequent and are therefore considered negligible.

The construction of the river valley system and flood protection features will result in the removal and replacement of existing underground and above ground utilities within the Lower Don Lands, resulting in negative net effects. However, hydro towers will likely need to be removed to accommodate the construction of flood protection features and allow future development to proceed. Displacement and disturbance effects on HONI infrastructure will be mitigated through the development of a suitable servicing and replacement / compensation strategy will be found through ongoing consultation with utility providers, including HONI, to ensure that servicing during and after construction will be maintained. For example, an agreement has been established with Toronto Hydro that they will be responsible for the relocations their infrastructure over the Lake Shore Boulevard during the implementation of the DMNP. Therefore, it is anticipated that utility users will only experience negligible net effects associated with short-term, infrequent, and localized nuisance effects as a result of construction (e.g., dust, combustion emissions and noise).

During establishment / post-establishment, the new river valley system will contain the Regulatory Flood and eliminate flooding along roads currently within Spill Zones 1 and 2. There will be maintenance implications for structures within the new floodplain, although regular inspection and maintenance of the infrastructure will prevent or slow degradation of these features due to erosion, scour and annual wear and tear.

There will be no limitations to access and therefore no effect on water-based emergency services.

Summary of Project Effects Related to Integration with Infrastructure

The DMNP satisfies the overall objective of integrating with infrastructure by integrating those functions that cannot be moved or removed and by providing for new infrastructure that must cross the new river valley system. This EA recognizes that there is an additional cost associated with constructing and maintaining infrastructure that is located within or immediately adjacent to the floodplain. To review a summary of the overall effects related to this objective, refer to **Table 7-8** below.

Table 7-8 Overall Effects Related to Objective 4

Criterion	Overall Effects
Construction	
Changes to Existing and Planned Roads and Bridges Solely Due to DMNP	Negligible
Changes to Existing Rail Lines or Yards or Access Roads Leading to Rail Yards	Negligible
Changes to Existing, Planned and Proposed Underground Utilities Due to Location of Floodplain and Low Flow Channel	Negative
Changes to Existing Above Ground Utilities	Negative
Changes to Dockwalls	Negligible
Costs of Infrastructure Modification / Relocation Associated with DMNP	None
Establishment / Post-Establishment	
Roadway / Bridge Maintenance	None
Provision for Water-based Emergency Services	None
Effects on Maintaining Servicing	None

7.3.5 Objective 5: Recreational and Cultural Opportunities

The ToR defines the objective related to recreation and cultural opportunities as “*encourag(ing) and contribut(ing) to the development of compatible recreation, cultural and heritage opportunities as well as provide for public and handicap accessibility to the Don Mouth*”. The ToR refers specifically to improving pedestrian and bicycle trail linkages between Lake Ontario and the Don watershed, creating opportunities for greater appreciation of the industrial heritage of the area and improving local aesthetics.

Table 7-9 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by recreational and cultural opportunities criteria and indicators and the proposed mitigation measures and net effects.

Table 7-9 Objective 5: Recreational and Cultural Opportunities

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Effects on Recreational Users from Construction	Nuisance effects (noise, dust and combustion emissions) from construction activities in the vicinity of recreational uses	<p>Atmospheric Environment / Land-based and Marine Recreation Phases 1-4</p> <ul style="list-style-type: none"> Recreational users may experience nuisance effects typical of conventional construction methods, including: <ul style="list-style-type: none"> Noise emissions, which will be short-term (during construction only) and infrequent (at certain times of the day) and localized to the construction areas Dust and combustion emissions associated with earthworks, which will be short-term (during construction only), infrequent (at certain times of the day) and will have no effects outside of Project Study Area Transportation of soil off-site will result in frequent nuisance effects, including noise and combustion emissions, for users of the Martin Goodman Trail along Lake Shore Boulevard; this effect extends outside of the Project Study Area 	<p>Atmospheric Environment / Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs for dust suppression (e.g., on-site watering, gravel aggregate on roads and limiting the speed of vehicles on roads) and noise reduction (e.g., alerting residents, project scheduling) and combustion emissions (e.g., use well-maintained equipment) as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Land-based and Marine Recreation Negligible</p> <ul style="list-style-type: none"> Short-term, infrequent and highly-localized nuisance effects associated with noise, dust and combustion emissions will be minimized by Waterfront Toronto's EMP and BMPs Limited potential for recreational users to experience nuisance effects associated with dust, as majority of earthworks will require movement of wet or damp soils, which will minimize the amount of airborne dust <p>Negative</p> <ul style="list-style-type: none"> Frequent and off-site effects to recreational users from transportation of soils off-site will not be eliminated through mitigation measures
Effect from Construction on Archaeological Resources	Significance of archaeological resources within floodplain and low flow channel	<p>Archaeological Resources Phases 1-4</p> <ul style="list-style-type: none"> Limited potential for the survival of significant pre-contact or early contact period. However deeply buried capped deposits may remain and may be disturbed during construction including: <ul style="list-style-type: none"> LDP-1: Don Breakwater (portion of) (Phase 3) LDP-2: Government Breakwater (portion of) (Phases 1-3) LDP-3 Toronto Dry Dock (Phase 3) LDP-4: original land forms-Sand Bar and Fisherman's Island Peninsula (Phases 1-3) According to the Archaeological Conservation Management Strategy (ACMS) (Waterfront Toronto, 2008), the following resources do not require archaeological documentation due to their types of significance / value criteria: <ul style="list-style-type: none"> LDP-5: Simcoe Beach Park, Cottages, Boat Houses, etc. (Phase 1) LDP-8: British Forgings site (Phase 3) 	<p>Archaeological Resources</p> <ul style="list-style-type: none"> A professional archaeologist will be on-site at regular intervals to monitor excavation in areas of archaeological potential, including in the vicinity of LDP-1, 2, 3 and 4 and other areas cited in the ACMS which form part of the study area If artifacts are found, the Ministry of Tourism, Culture and Sport will be notified and construction in the area of the find will cease until the significance of the resource can be evaluated by a professional licenced archaeologist If Aboriginal artifacts are encountered, the City of Toronto's protocol for engaging Aboriginal communities will be followed LDP-1, LDP-2, LDP-3 and LDP-4 will be documented by a professional archaeologist monitoring construction in the site areas as required by the ACMS. LDP-5 and LDP-8 will be recognized through signage or other interpretive material or programs as required by the ACMS All features cited in the ACMS are worthy of site commemoration and interpretation 	<p>Archaeological Resources Negative</p> <ul style="list-style-type: none"> Limited potential for the survival of significant pre-contact or early contact period Aboriginal archaeological resources Inventoried archaeological resources have already been partially disturbed, however intact deposits may remain in other areas Should significant resources be encountered during construction monitoring, construction must be halted and the consulting archaeologist will require adequate time to document the resources and provide further recommendations for conservation as required
Effect from Construction on Traditional Uses of Lands by Aboriginal Peoples	Extent of traditional uses of lands within floodplain and low flow channel	<p>Aboriginal Interests Phases 1-4</p> <ul style="list-style-type: none"> There are no traditional uses within the new river valley system However, this area is within the Toronto Purchase Specific Claim Area, which was settled in 2010, which recognizes the historical interest of the Mississaugas of the New Credit First Nation in the area 	<p>Aboriginal Interests</p> <ul style="list-style-type: none"> Incorporate heritage aspects into the design of the DMNP where feasible Through consultation with Aboriginal communities, opportunities were identified to incorporate heritage aspects, such as using specific vegetation communities (e.g., wild rice) and the need for carp controls to allow for the establishment of wild rice, into the design of the DMNP. Further consultation with the Aboriginal groups as requested, will occur during the final design and construction of the DMNP 	<p>Aboriginal Interests Positive</p> <ul style="list-style-type: none"> While there are no traditional uses within the new river valley system, continuing engagement with the Mississaugas of the New Credit First Nation, the Métis Nation of Ontario and other First Nations and Aboriginal groups in the DMNP will ensure that their interests are represented and addressed
Changes to Use of River Mouth for Boating	Effects of construction on recreational boating	<p>Land-based and Marine Recreation Phase 1-4</p> <ul style="list-style-type: none"> Short-term, infrequent and localized access disruption will occur during construction for the following users: <ul style="list-style-type: none"> Recreational marine uses in Phase 1 during lake filling of Essroc Quay (Reach 2a), construction of the new Keating Channel Bridge including removal of the existing bridge and abutments as well as the naturalization of the northern portion of the Polson Slip (Reach 4) Recreational boating during construction of sediment trap (Reach 1) in Phase 2; however, this area is infrequently used by recreational boaters Recreational boating in the Keating Channel due to the installation of habitat improvement features (Reach 2a) Recreational uses around the naturalized river mouth (Reach 4) during the naturalization of the southern portion of the Polson Slip in Phase 4 	<p>Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Areas of in-water works will be appropriately marked for navigation Safe access will be maintained during construction activities and proper signage will signal where recreational marine users may go 	<p>Land-based and Marine Recreation Negligible</p> <ul style="list-style-type: none"> Construction will restrict navigation in some areas (Reach 1, Reach 2a, Reach 4); however, effects to recreational marine users will be short-term, infrequent and localized

Table 7-9 Objective 5: Recreational and Cultural Opportunities

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Changes to Existing Pedestrian / Cycling Trails	Effects of construction on existing pedestrian / cycling trail access	<p>Land-based and Marine Recreation</p> <p><u>Phases 1-3</u></p> <ul style="list-style-type: none"> Location of Martin Goodman Trail and Lower Don Trail may change temporarily to accommodate construction activities associated with the removal of the existing Keating Channel bridge (Phase 1) and construction of sediment and debris management area (Phase 2) 	<p>Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Trail access will be maintained through temporary realignments Advanced notification of changes to trail access will be provided Where needed, construction signage and detours implemented 	<p>Land-based and Marine Recreation</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Disruption to trail access will be short-term (only during construction activities), localized and alternative access will be provided Phasing will ensure that not all trails will have restricted access at once
Displacement of Built Heritage Resources as a Result of the DMNP	Effects to cultural heritage value (changes to structures) of built heritage resources and cultural heritage landscapes within low flow channel or floodplain	<p>Built Heritage and Cultural Landscape Resources</p> <p><u>Phases 1-4</u></p> <ul style="list-style-type: none"> Potential decrease in value of the following built heritage resources and cultural heritage landscapes due to partial or complete displacement (i.e., located partially or completely within the footprint of the floodplain) during construction: <ul style="list-style-type: none"> Port Lands Industrial District (CHL 1) (Phases 1-3) Commissioners Street streetscape (CHL 9), Villiers Street at east terminus (CH 17) and Cherry Street streetscape (CHL 27) (Phases 1-3) Keating Channel (CHL 28) (Phase 2) Polson dockwall (BHR 3) (Phases 3-4) Marine Terminal 35, Atlas Crane site and one storey brick warehouse at 242-292 Cherry Street (BHR 21) (Phase 3) Keating Channel Bridge (BHR 29) (Phase 1) Railway Line (CHL 2) (Phase 2) Some heritage resources and landscapes outside of the floodplain may be displaced as a result of the LDL EAMP and Cousins Quay Precinct Planning processes. The need for and method of relocating resources will be determined in the future and their associated effects are not attributable to the DMNP. However, should the following resources remain in place there is a potential for a decrease in value due to disturbance (i.e., nuisance effects related to noise, dust and vibration) during construction: <ul style="list-style-type: none"> Concrete silos on property at 54 Polson Street (CHL 6) (Phases 1-3) Toronto Harbour Commissioners Storage Buildings at 62 Villiers Street (BHR 16) (Phases 1-2) Three warehouses on north side Villiers Street, west of Don Roadway (BHR 18, 19, 20) (Phases 1-2) Commissioners Street streetscape (CHL 9) and Don Roadway streetscape (CHL 31) (Phase 2) Former Dominion Bank building at 275 Cherry Street (built heritage resource) (Phase 1) Toronto Hydro Substation at 281 Cherry Street (built heritage resource) (Phase 1) Essroc Toronto Terminal silos at 312 Cherry Street (BHR 26) (Phase 1) Fire Hall No. 30 at 39 Commissioners Street (BHF 10) as well as the one-storey brick building beside the Fire Hall (BHF 11) Other built heritage resources are avoided by the alignment of the new river valley system 	<p>Built Heritage and Cultural Landscape Resources</p> <ul style="list-style-type: none"> Recognize heritage value of displaced cultural heritage landscapes, including Port Lands Industrial District, Commissioners, Villiers and Cherry Streets (including Keating Channel bridge) and Polson dockwall through signage and / or plaques or other commemorative interpretive material or programs Prepare a cultural heritage evaluation report(s) or a municipal Heritage Impact Assessment for the Marine Terminal 35, Atlas Crane site and one storey brick warehouse at 242-292 Cherry Street in collaboration with the City's Heritage Preservation Services unit and other heritage stakeholders, which will assess the property's cultural heritage value, the impacts to the property and potential conservation and mitigation options which would include conserving, relocating, raising or commemorating the resource Relocate potentially displaced built heritage resources (i.e., structures) on- or off-site where possible or incorporate the resource into the design of the new river mouth; where relocation is not possible, recognize heritage value of displaced resources through signage and / or plaques or other commemorative interpretive material or programs Mitigate construction-related disturbance to built heritage resources and cultural heritage landscapes through landscaped buffering, stabilization and maintenance of vehicular access as required Adhere to Waterfront Toronto's EMP and BMPs for dust and noise reduction as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Built Heritage and Cultural Landscape Resources</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Decrease in heritage value of Marine Terminal 35, Atlas Crane site and the one store brick warehouse at 242-292 Cherry Street, Port Lands Industrial District, Commissioners, Villiers and Cherry Streets (including Keating Channel bridge), Keating Channel and Polson dockwall due to displacement will be minimized by relocating the resources (where possible), incorporating the resource into the design of the new river mouth (Keating Channel) and through the preparation of commemorative interpretive material <p><u>Negligible</u></p> <ul style="list-style-type: none"> Decrease in heritage value of concrete silos on property at 54 Polson Street, Toronto Harbour Commissioners Storage Buildings, Former Dominion Bank building, Toronto Hydro Substation, Essroc Toronto Terminal silos and Commissioners Street and Don Roadway streetscapes will be avoided through mitigation during construction; however, the former Dominion Bank building, Fire Hall No. 30 and the one-storey brick building beside the Fire Hall as well as the Toronto Hydro Substation will be displaced during build-out of the River Precinct within the Lower Don Lands
Effects to Visual Landscape Due to Sediment and Debris Management / Construction Equipment (cranes, debris booms, hydraulic dredge, etc.)	Changes to visual landscape due to construction and maintenance equipment	<p>Visual Effect</p> <p><u>Phase 1-4</u></p> <ul style="list-style-type: none"> Barge and debris cranes will be seen from some vantage points along the Lower Don River trail, Gardiner Expressway and Don Valley Parkway during construction activities. Construction equipment will be visible from various vantage points within the Project Study Area during construction phases 	<p>Visual Effect</p> <ul style="list-style-type: none"> No mitigation required 	<p>Visual Effect</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> The existing landscape is highly industrialized and a net change in views is not predicted Temporary changes in views due to the construction of the sediment and debris management area will be short-term and localized

Table 7-9 Objective 5: Recreational and Cultural Opportunities

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Establishment / Post-Establishment Effects				
Changes to Use of River Mouth for Recreational Boating	Compatibility of recreational boating activities with naturalization	<p>Land-based and Marine Recreation</p> <ul style="list-style-type: none"> The length of the Don River will be permanently increased, thereby providing more opportunities for recreational boating within the low flow channel Naturalization will improve recreational boaters' enjoyment of the area and will create a shoreline with greater amenity value for non-motorized recreational boating in the long-term Non-motorized recreational boating is not anticipated to have an effect on the sustainability of naturalized communities provided that boaters remain within the low flow channel Motorized boating may affect the sustainability of naturalized communities within the low flow channel 	<p>Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Erect signage and / or barriers to discourage or prevent motorized watercraft from entering low flow channel and non-motorized watercraft from wetland areas 	<p>Land-based and Marine Recreation</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Increase in the length of the Don River available for boating Increase in the naturalized land area available for users' enjoyment Negligible effects of motorized boating within the low flow channels and non-motorized boating within the wetlands
Recreational Users' Enjoyment of Parkland and Trails	Effects of increased parkland and trails on users' enjoyment	<p>Land-based Recreation</p> <ul style="list-style-type: none"> Approximately 12 ha of parkland for recreational uses outside of the floodplain will be created including uses that may include sports fields, event spaces, lawns, playgrounds, public gardens and other park program components as may be appropriate. The trail system will include a variety of new trails within the Project Study Area south of the Keating Channel New trails will increase users' enjoyment and the amenity value of the Project Study Area in the long term 	<p>Land-based Recreation</p> <ul style="list-style-type: none"> No mitigation required 	<p>Land-based Recreation</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Increased users' enjoyment and amenity values of the DMNP and Project Study Area due to a naturalized river valley system, trail system and additional parkland created outside the floodplain
Effects on Recreational Users from Operations Nuisances	Nuisance effects (noise, dust, combustion emissions) from sediment and debris management equipment in the vicinity of recreation uses	<p>Atmospheric Environment / Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Noise and combustion emissions produced by dredging in Reach 1 are anticipated to be less than the noise and emissions caused by traffic in the area and thus will not be an additional nuisance to recreational users in the immediate vicinity (see Appendix P) Noise and combustion emission levels produced by dewatering of the slurry at Reach 3a or 2a (barge-mounted hydrocyclone) will produce emissions that could potentially affect recreational users for approximately 45 days per year¹ (see Appendix P) Dust levels are not predicted to measurably increase as the debris being handled within the sediment and debris management area will be wet 	<p>Atmospheric Environment / Land-based and Marine Recreation</p> <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs for dust suppression (e.g., on-site watering, gravel aggregate on roads and limiting the speed of vehicles on roads) and noise reduction (e.g., alerting residents, project scheduling) and combustion emissions (e.g., use well-maintained equipment) as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Land-based and Marine Recreation</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Infrequent, highly localized noise levels and combustion emissions will be minimized by Waterfront Toronto's EMP and BMPs
Effects to Visual Landscape Due to Sediment and Debris Management Equipment (cranes, debris booms, hydraulic dredge, etc.)	Changes to visual landscape due to equipment	<p>Visual Effect</p> <ul style="list-style-type: none"> Views may be disrupted for recreational users by the presence of heavy equipment used for sediment and debris management in Reach 1 and Reach 3a or 2a Most equipment (hydraulic dredge, debris booms, hydrocyclone) is low profile and will not be seen from most vantage points especially compared to existing equipment This effect will be permanent and is consistent with existing views in Reach 1 	<p>Visual Effect</p> <ul style="list-style-type: none"> Use landscaping or other measures, such as screening walls or berms dressed with plantings, to screen views of equipment 	<p>Visual Effect</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Disruption to views will be minimized by mitigation and views are not incongruous with existing views of existing operations within the area

1. Assumptions regarding the duration of sediment dewatering operations are included in **Appendix Q**.

Discussion for Objective 5: Recreational and Cultural Opportunities

Effects

During construction activities, existing trails such as Martin Goodman Trail and the Lower Don River Trail will remain open, however, they may need to be detoured at several points. Project phasing will ensure that all trails are not restricted at once. Noise, dust and combustion emissions associated with on-site construction activity will be mitigated to avoid any nuisance effects for recreational users, although, recreational users along the Martin Goodman Trail may experience these effects while soils are being transported off-site along Lake Shore Boulevard.

The filling of Essroc Quay in Reach 2a and naturalization of the Polson Slip in Reach 4 may restrict navigation for recreational boaters from boat clubs / boat rentals within the Inner Harbour. Construction will mainly affect commercial docking facilities, as the remainder of the Inner Harbour will stay open for use for recreational boaters. While construction in Reach 1 and 2a (sediment / debris maintenance, bridge footings and Keating Channel) will limit access to the Keating Channel and the river north of Lake Shore Boulevard. However, this area is infrequently used by recreational boaters today.

The alignment for the new river valley system was designed to avoid as many built heritage resources as possible, although these heritage resources may be disturbed by dust and noise during construction.

Development of the Lower Don Lands is expected to protect a number of the heritage features that are outside the floodplain which will provide additional opportunities for appreciation of the area's industrial heritage.

A number of built heritage resources and cultural heritage landscapes within the Project Study Area will be displaced during construction activities, including the Marine Terminal 35, Atlas Crane site, Port Land Industrial District, Commissioners Street / Villiers Street / Cherry Street, Keating Channel and Polson dockwall. For those heritage resources or landscapes that are displaced, their heritage value will be recognized through signage or other interpretive material or programs as a means of creating a greater appreciation of the area's industrial heritage. Where possible, potentially displaced built heritage resources will be relocated on or off-site or incorporated into the detailed design of the river valley system and river mouth.

Some heritage resources and landscapes outside of the floodplain may be displaced as a result of the LDL EAMP and Cousins Quay Precinct Planning processes. These resources include the concrete silos at 54 Polson Street, Toronto Harbour Commissioners Storage Buildings at 62 Villiers Street, warehouses on the north side Villiers Street, Commissioners Street streetscape, the former Dominion Bank building at 275 Cherry Street, Toronto Hydro Substation at 281 Cherry Street, Essroc Toronto Terminal silos at 312 Cherry Street and Fire Hall No. 30 at 39 Commissioners Street as well as the one-storey brick building beside the Fire Hall. The need for and method of relocating resources will be determined in the future and their associated effects are not attributable to the DMNP. However, should these resources remain in place there is a potential for a decrease in value due to disturbance (i.e., nuisance effects related to noise, dust and vibration) during construction.

There is little likelihood of finding any Aboriginal archaeological or heritage resources in the Project Study Area, since the land is entirely comprised of fill. While there are no traditional uses by Aboriginal peoples within the area of the river valley system, this area is within the Toronto Purchase Specific Claim Area which recognizes the historical interest of the Mississaugas of the New Credit First Nation in the area.

There are four potential archaeological features that will be displaced during construction activities, which the Waterfront Toronto Archaeological Conservation and Management Strategy (ACMS) has evaluated as Grade 2 resources. These

consist of buried remains of the Don Breakwater (LDP-1), the Government Breakwater (LDP-2), the Toronto Dry Dock (LDP-3 and any remnants of the original Sand Bar and Fisherman's Island Peninsula landforms (LDP-4). Two other resources will be displaced, the Simcoe Beach Park and associated cottages, boat houses, etc. (LDP-5) and the remains of the British Forgings plant (LDP-8) have been evaluated as a Grade 3 resource by the Waterfront Toronto ACMS.

With regard to visual effects, heavy equipment will be used during construction. Although these cranes and other equipment will be seen from some vantage points along local trails (Don River) and roadways (Gardiner, Don Valley Parkway), sediment and debris management equipment that is used today is visible due to existing operations. Additionally, the existing landscape is highly industrialized and will remain so throughout much of the construction of the DMNP.

During establishment / post-establishment, naturalization of the Lower Don Lands will support recreational opportunities that currently do not exist within the Project Study Area. The creation of approximately 12 hectares of parkland and a variety of new and improved pedestrian and cycling trails will increase users' accessibility and enjoyment and the amenity value of the Project Study Area. These trails will also provide improved linkages between Lake Ontario and areas upstream along the Don by connecting directly with the Lower Don River Trail. It is anticipated that at least some of the trails will be accessible for persons with disabilities. The new river valley system and Don Mouth will also improve recreational boaters' enjoyment of the area and will create a shoreline with greater amenity value for non-motorized recreational boating due to the increased length of the Don River.

Recreational users may experience nuisance effects such as noise and combustion emissions following establishment from sediment and debris management equipment in the vicinity; however, it is anticipated that these effects will be less than those caused by traffic in the area. Further, views for recreational users, planned communities and motorists travelling on Lake Shore Boulevard, the Gardiner Expressway and smaller roadways may be disrupted by sediment and debris management equipment. However, most of the equipment used during operations for sediment and debris management is low profile (hydraulic dredge, debris booms, hydrocyclone) and would not be easily seen from roadways and trails. Additionally, since large parts of Reach 1 are built up (bridge crossings, bridge footings), the views of cranes are not incongruous with a built environment in the vicinity of Reach 1.

Mitigation Measures

While some of the trails are in close proximity to operational management features and equipment, such as the sediment and debris management area, hydrocyclone and dredge, implementation of Waterfront Toronto's EMP and BMPs described in **Appendix G** related to noise, dust and combustion emissions will minimize any nuisance effects. Further, the City of Toronto's Noise By-Law (No. 111-2003) will be adhered to.

Changes in views of the area, due to construction and sediment and debris management equipment will be minimized where possible and are generally not incongruous with the industrial nature of the area. Landscaping or other measures, such as screening walls or berms dressed with plantings, will help to screen views of the equipment in both Reach 1 and Reach 3a or 2a.

During construction, trail access will be maintained through temporary realignments. Installed signage will alert pedestrians and cyclists of restricted roads and changes to trails. Detours will be provided to ensure usage of the trails continues during construction.

To minimize the effects of construction activities on recreational boating, areas of in-water works will be appropriately marked for navigation. Safe access will be maintained during construction activities and proper signage will signal

where recreational marine users may go. Following establishment / post-establishment, signage and / or barriers will be erected to discourage or prevent motorized watercraft from entering the low flow channel and non-motorized watercraft from wetland areas.

For those heritage resources or landscapes that are displaced, their heritage value will be recognized through signage or other interpretive material or programs. Where possible, potentially displaced built heritage resources will be conserved, relocated, raised or commemorated. If relocated, the heritage resource may be moved on— or off-site where possible or incorporated into the design of the new river mouth. Construction-related disturbance to built heritage resources and cultural heritage landscapes will be mitigated through landscaped buffering, stabilization and maintenance of vehicular access as required.

A cultural heritage evaluation report(s) for the Marine Terminal 35 and Atlas Crane site, Fire Hall No. 30, one storey brick building beside Fire Hall, Toronto Harbour Commissioners Storage Buildings at 62 Villiers Street and the one-storey brick warehouse located at 242-292 Cherry Street will be prepared in collaboration with the City's Heritage Preservation Services unit and other heritage stakeholders. The report(s) will include an assessment of the property's cultural heritage value, the impacts to the property and potential conservation and mitigation options that exist.

Despite measures to recognize the heritage value of these features, their displacement is permanent and irreversible. There will be a decrease in the heritage value of Port Lands Industrial District, Commissioners, Villiers, Cherry Street and Polson dockwall due to displacement, but this will be minimized through interpretive material. The Marine Terminal 35, Atlas Crane site and one storey brick warehouse at 242-292 Cherry Street will also decrease in heritage value. A cultural heritage evaluation report(s) or a municipal Heritage Impact Assessment will be prepared for this resource will be prepared in collaboration with the City's Heritage Preservation Services unit and other heritage stakeholders to assess the property's cultural heritage value, the impacts to the property and potential conservation and mitigation options which would include conserving, relocating, raising or commemorating the resource. In addition, the heritage value of the Keating Channel will decrease but this will be minimized by incorporating the resource into the design of the new river mouth and through the preparation of commemorative interpretive material. Further, disturbance to heritage resources including the concrete silos on property at 54 Polson Street, the Toronto Harbour Commissioners Storage Buildings, Fire Hall No. 30, the one storey brick building beside the Fire Hall, the former Dominion Bank building, the Toronto Hydro Substation and Essroc Toronto Terminal silos will be minimized through mitigation during construction.

To ensure that there are no effects on potential Aboriginal archaeological or heritage resources, a professional archaeologist will monitor excavation in areas of archaeological potential periodically. If artifacts are found, the Ministry of Tourism, Culture and Sport will be notified and construction in the area of the find will cease until the value of the find can be ascertained. Aboriginal groups that would likely be interested in the finds will also be notified.

The buried remains of the Don Breakwater (LDP-1), the Government Breakwater (LDP-2), the Toronto Dry Dock (LDP-3) and any remnants of the original Sand Bar and Fisherman's Island Peninsula landforms (LDP-4) will be documented by a professional archaeologist monitoring construction in the site areas, as required by the Waterfront Toronto ACMS. The heritage values of the Simcoe Beach Park (LDP-5) and British Forgings plant (LDP-8) will be recognized through signage or other interpretive material or programs as required by the Waterfront Toronto ACMS. All features cited in the ACMS are worthy of site commemoration and interpretation.

Regarding potential effects on traditional uses of lands by Aboriginal peoples, consultation activities with Aboriginal communities have identified opportunities for heritage aspects will be incorporated into the design of the DMNP where

feasible. Ongoing engagement of the Mississaugas of the New Credit First Nation, the Métis Nation of Ontario and other Aboriginal communities in the DMNP during detailed design will ensure that their interests are represented and addressed. It is recognized that the addition of recreational features will place new demands on maintenance staff, such as ongoing clean-up, debris removal and garbage collection, maintenance of trail surfaces and access to trails and maintenance of any fencing or other barriers separating the trails and the naturalized areas.

Net Effects

During construction, the effects of changes to the use of river mouth, the Inner Harbour and existing pedestrian / cycling trails will be short-term, infrequent and localized and are not expected to affect the users' enjoyment of the area and the water in the Inner Harbour. Thus, the overall net effects are predicted to be negligible. The only exception are effects associated with transporting soils off-site which will have a negative effect on recreational users along the Martin Goodman Trail despite the application of mitigation.

During construction, the decrease in heritage value of displaced resources will be minimized but not eliminated by mitigation. Thus, they are considered negative net effects of the DMNP on built heritage and cultural landscape resources (e.g., Commissioners and Don Roadway Streetscapes). Additionally, nuisance effects on other heritage resources due to construction activities will be minimized through mitigation, resulting in negligible net effects.

Since Aboriginal artifacts will likely not be found during construction activities there are no predicted net effects on these resources. During construction, the decrease in heritage value of the identified potential archaeological resources will be minimized but not eliminated by mitigation. Thus, they are considered negative net effects of the DMNP on archaeological resources (e.g., the Don Breakwater, the Government Breakwater, the Toronto Dry Dock, any remnants of the original Sand Bar and Fisherman's Island Peninsula and British Forgings).

There are currently no traditional uses in the Project Study Area; therefore, net effects are predicted to be negligible. Consultation with Aboriginal communities will continue following the EA process and recommendations from this consultation will be included in the final DMNP design. As such, the DMNP has positive net effects on Aboriginal Interests.

Since nuisance effects associated with operation of the sediment and debris management equipment will be infrequent and localized, net effects on recreational users are also predicted to be negligible.

The establishment / post-establishment of the DMNP will provide recreational users with a longer, more naturalized stretch of river (i.e., the low flow channel) to enjoy. Similarly, the creation of over 12 hectares of new parkland and numerous cycling trails as well as the incorporation of interpretation and commemoration opportunities as required by the ACMS within the Project Study Area will increase user enjoyment and the amenity value of the DMNP and surrounding areas.

While there will be additional maintenance requirements associated with new park spaces and facilities adjacent and within the new river valley system that will affect City or other agency resources, it should be noted that the parkland and facilities are not formally a part of the DMNP.

During construction and establishment / post-establishment, the views of construction and sediment and debris management equipment, respectively, on the visual landscape are predicted to have negligible net effects as the existing landscape is already highly industrialized.

Summary of Project Effects Related to Recreational and Cultural Opportunities

Overall, the DMNP satisfies the objective of providing recreational and cultural opportunities, including approximately 12 hectares of parkland, a variety of new and improved pedestrian and cycling trails and a naturalized shoreline for boating. While there are effects on existing built heritage features and cultural heritage landscapes that cannot be fully mitigated, the design protects and enhances the value of other resources within the Lower Don Lands. To review a summary of the overall effects related to this objective, refer to **Table 7-10** below.

Table 7-10 Overall Effects Related to Objective 5

Criterion	Overall Effects
Construction	
Effects on Recreational Users from Construction	Negative
Effect from Construction on Archaeological Resources	Negative
Effect from Construction on Traditional Uses of Lands by Aboriginal Peoples	Positive
Changes to Use of River Mouth for Boating	Negligible
Changes to Existing Pedestrian / Cycling Trails	Negligible
Displacement of Built Heritage Resources as a Result of the DMNP	Negative
Effects to Visual Landscape Due to Sediment and Debris Management / Construction Equipment	Negligible
Establishment / Post-Establishment	
Changes to Use of River Mouth for Recreational Boating	Positive
Recreational Users' Enjoyment of Parkland and Trails	Positive
Effects on Recreational Users from Operations Nuisances	Negligible
Effects to Visual Landscape Due to Sediment and Debris Management Equipment	Negligible

7.3.6 Objective 6: Co-ordination with Other Planning Initiatives

Regarding this objective, the ToR explain that the project “*must co-ordinate with other planning and development efforts for the revitalization and sustainability of the waterfront, including the Toronto and Region Remedial Action Plan and associated foreseeable infrastructure in order to ensure that the best outcome is achieved for all projects.*” The ToR specifically mentions the Central Waterfront Secondary Plan as the regulatory document that dictates future land use in the area.

Table 7-11 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by co-ordination with other planning initiatives criteria and indicators and the proposed mitigation measures and net effects.

Table 7-11 Objective 6: Co-ordination with Other Planning Initiatives

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Removal of or Changes to, Existing Land Use	Number and type of displaced and disrupted land uses	<p>Existing Land Use</p> <p><u>Phase 2</u></p> <ul style="list-style-type: none"> Disruption of land uses on the 11 Sunlight Park Road property due to grade modifications east of the Don River Disruption of land uses east of the Don Roadway due to construction of the VWF, however, it is important to note that Pinewood Toronto Studios was constructed to accommodate future raised grades <p><u>Phases 2-3</u></p> <ul style="list-style-type: none"> Businesses on short-term leased, publicly-owned property that will be removed as a result of construction activities of the river valley system include (property ownership shown in brackets): <ul style="list-style-type: none"> Phase 2: Enterprise 2000 Cruise Lines (TPLC), Green for Life (TPLC), Atlas Crane (TPLC), Harbour Remediation and Transfer Inc. (TPLC), National Rubber Technologies (TPLC), T&T Supermarket (TPLC, but leased to private company and sub-leased to T&T) Phase 3: United Rentals / Studio City Rentals (TPLC), TPLC Port Lands Office (TPLC) <p><u>Phase 4</u></p> <ul style="list-style-type: none"> No displacement or disruption of existing land uses as Phase 4 will only occur once the owner of 54 Polson Street has relocated its operation 	<p>Existing Land Use</p> <ul style="list-style-type: none"> Mitigate construction-related disturbance to the 11 Sunlight Park Road property through landscaped buffering, stabilization and maintenance of vehicular access as required Explore opportunities at detailed design for partnerships / cost sharing arrangements with the various landowners associated with the creation of the VWF to address grade change issues related to geotechnical and soil contamination, as appropriate Where property is under ownership by the City of Toronto or its agents (i.e., TPLC), lessees will be given proper notice and leases will be terminated or not renewed prior to commencement of construction activities as per the terms of the leases Where property is privately held, is subject to longer-term leases or is owned by the TPA, arrangements will be made for loss of property and / or activity (i.e., negotiations for potential relocation and / or compensation) 	<p>Existing Land Use</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Short-term and highly localized nuisance effects associated with grade modifications will be minimized through ongoing consultation with landowners and, where possible, through landscaped buffering, stabilization and maintenance of vehicular access Leases will be terminated or not renewed prior to construction activities for those uses leasing from TPLC <p><u>Negative</u></p> <ul style="list-style-type: none"> Permanent removal of property from public and private owners Overall changes to land uses are anticipated as a result of long-standing planning for revitalization of the Lower Don Lands
Employment Created from Construction Activities	Changes in employment levels (direct and indirect)	<p>Economic Base</p> <p><u>Phases 1-4</u></p> <ul style="list-style-type: none"> Infrastructure investment is expected to result in 3,900 full-time job years in direct employment and 4,900 full-time job years in indirect and induced employment (HR&A 2010, Appendix O) 	<p>Economic Base</p> <ul style="list-style-type: none"> No mitigation required 	<p>Economic Base</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Infrastructure investment is expected to result in 3,900 full-time job years in direct employment and 4,900 full-time job years in indirect and induced employment
Effects from Construction Activities on Future Residential and Business Uses	Nuisance effects from construction activities on future residential and business uses within the Project Study Area	<p>Atmospheric Environment</p> <p><u>Phases 2-3</u></p> <ul style="list-style-type: none"> Residential and business uses may experience nuisance effects as a result of construction activities including excavation, earthmoving and fill placement Nuisance effects may include: traffic disruption and noise, dust and combustion emissions that are short term, infrequent and localized 	<p>Atmospheric Environment</p> <ul style="list-style-type: none"> Use a traffic management plan and standard traffic control measures to safely co-ordinate traffic flow Provide alternate access and re-routing signage to businesses as required Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G 	<p>Atmospheric Environment</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with dust, combustion emissions, noise and traffic disruption will be minimized by Waterfront Toronto's EMP and BMPs
Establishment / Post-Establishment Effects				
Consistency with the Intent of the Central Waterfront Secondary Plan	Consistency of DMNP with objectives of Central Waterfront Secondary Plan (cross referenced to other indicators as appropriate)	<p>Planned Land Use</p> <ul style="list-style-type: none"> DMNP is consistent with the objectives of the existing Secondary Plan, including: <ul style="list-style-type: none"> Removing barriers / making connections - Naturalized areas created within the river valley system will link with other terrestrial habitat along the Don Valley, in Tommy Thompson Park and the Toronto Islands. The newly rerouted mouth of the Don River will have a more natural, meandering connection with the Inner Harbour. In addition, removal of flood risk leading to the development of the remainder of the Lower Don Lands will improve connections through the creation of new pedestrian and cycling trails and transit lines Building a network of spectacular waterfront parks and public spaces - The DMNP will include approximately 12 ha of parkland for active and passive recreational uses. These areas will be publicly accessible and will have views of the water. There are no active recreational facilities planned within the floodplain Promoting a clean and green environment - As stated in Section 1.2, the DMNP aims to naturalize the Don Mouth, which will improve aquatic and terrestrial habitat and habitat linkages thus enhancing biodiversity. Additionally, the DMNP will lead to the remediation and revitalization of brownfields 	<p>Planned Land Use</p> <ul style="list-style-type: none"> No mitigation required 	<p>Planned Land Use</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> All DMNP planning was co-ordinated with the Secondary Plan and the revisions proposed to it and is therefore consistent

Table 7-11 Objective 6: Co-ordination with Other Planning Initiatives

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Consistency with Planning Policies and Planning Studies (Currently Underway and Completed)	Consistency of DMNP with planning studies and projects underway in the vicinity of the Project Study Area	<p>Planned Land Use</p> <ul style="list-style-type: none"> DMNP has been co-ordinated with and informed by previous and ongoing plans and studies related to the Lower Don Lands as listed in Section 1.4.2 Co-ordination with some of these plans is as follows: <ul style="list-style-type: none"> The DMNP has been developed in co-ordination with the LDL EAMP and is therefore consistent The ToR for the Gardiner Expressway and Lakeshore Boulevard Reconfiguration EA and Integrated Urban Design Study references the need to be consistent with the DMNP EA, especially with regard to any effects on flood conveyance The Port Lands Planning Framework, including the Transportation and Servicing Master Plan for the balance of the Port Lands and South of Eastern areas, will reflect the LDL EAMP and DMNP EA and therefore will be consistent Precinct plans for Cousins Quay and the Film Studio District will reflect the LDL EAMP and the DMNP EA and will therefore be consistent <ul style="list-style-type: none"> A comprehensive Official Plan Amendment will be developed for Port Lands to reflect the undertaking for the DMNP The DMNP has been prepared in co-ordination with the implementation of the East Bayfront and West Don Lands projects and the City's Combined Sewer Outfall study for the Don River and Central Waterfront Project Reach 1 has been designed to accommodate storage shafts and tunnels in the sediment and debris management area Planning for the DMNP has taken into account the location and needs of Pinewood Toronto Studios complex (Film Studio Precinct) by ensuring that they will remain flood-protected 	<p>Planned Land Use</p> <ul style="list-style-type: none"> No mitigation required 	<p>Planned Land Use</p> <p><u>None</u></p> <ul style="list-style-type: none"> The DMNP has been co-ordinated with and with an understanding of all other EA / planning efforts
	Consistency with the Provincial Policy Statement (PPS), the <i>Places to Grow Act</i> and the Growth Plan for the Greater Golden Horseshoe (Growth Plan).	<p>Planned Land Use</p> <ul style="list-style-type: none"> Implementation of the DMNP directly supports policies of the PPS related to: <ul style="list-style-type: none"> Public Spaces, Parks and Open Space, including providing a publicly-accessible natural setting for recreation and opportunities for public access to shorelines Long-Term Economic Prosperity, including promoting redevelopment of brownfield sites Natural Heritage, including improving the diversity and connectivity of natural features in an area and the long-term ecological function and biodiversity of natural heritage systems Water, including maintaining (and in this case improving) linkages and related functions among surface water features, hydrologic functions and natural heritage features and areas Cultural Heritage and Archaeology, including conservation of significant built heritage resources and cultural heritage landscapes (e.g., Keating Channel) Natural Hazards, including directing development to areas outside of hazardous lands impacted by flooding and / or erosion hazards Human-Made Hazards, including remediating contaminated sites prior to any activity on the site The DMNP enables development of the Lower Don Lands in a manner that supports many other policies of the PPS, including those related to Managing and Directing Land Use to Achieve Efficient Development and Land Use Patterns, Employment Areas, Housing and Infrastructure and Public Service Facilities Implementation of the DMNP directly supports policies of the <i>Places to Grow Act</i> and the Growth Plan related to: <ul style="list-style-type: none"> Urban intensification, including the development of mixed-use communities (Section 2.2.3) Land use planning and infrastructure investment to support growth (Section 3.2.1) Public engagement in planning (Section 5.4.4(3)) 	<p>Planned Land Use</p> <ul style="list-style-type: none"> No mitigation required 	<p>Planned Land Use</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Implementation of the DMNP enables redevelopment of the Lower Don Lands in a manner that is consistent with the policies outlined in the PPS, <i>Places to Grow Act</i> and Growth Plan
Nuisance Effects on the Planned Surrounding Communities	Nuisance effects from sediment and debris management equipment in the vicinity of residential uses	<p>Atmospheric Environment / Planned Land Use</p> <ul style="list-style-type: none"> Dust levels are not predicted to measurably increase as the sediment and debris being handled within the sediment and debris management area will be wet Noise and combustion emissions produced by dredging in Reach 1 are anticipated to be less than those caused by traffic in the area and will not be a nuisance for planned communities Noise and combustion emission levels produced by dewatering of the slurry at Reach 3a or 2a (barge-mounted hydrocyclone) could be audible to planned communities for approximately 45 days per year (see Appendix P) 	<p>Atmospheric Environment / Planned Land Use</p> <ul style="list-style-type: none"> Update the noise assessment during detailed design once the dewatering technology has been selected to confirm effects on receptors near Reach 3a Should the updated noise assessment identify effects on receptors, relocate dewatering operations to Reach 2a or other areas or enclose the hydrocyclone in Reach 3a to reduce noise levels, as required Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Planned Land Use</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Infrequent, highly localized noise, dust and combustion emissions will be minimized by Waterfront Toronto's EMP and BMPs

Discussion for Objective 6: Co-ordination with Other Planning Initiatives

Effects

Overall, the DMNP will have positive effects on existing land uses adjacent to the Project Study Area as a result of the elimination of flood risk and the creation of a nearby valuable public amenity. However, land uses within the footprint of the DMNP will be displaced while other uses may experience nuisance effects during construction. Future residential and business uses within the Project Study Area may experience nuisance effects such as noise, dust and combustion emissions as a result of construction activities.

In addition, TPA-owned properties will be infilled due to construction of portions of Reach 4 during Phase 1. All of the property owners within the Project Study Area are aware of and, in many cases, have participated in the planning for the anticipated land use changes throughout the central waterfront. Most recognize that as planning and construction progresses they will likely need to relocate their operations to facilitate the revitalization of the waterfront.

While there are considerable construction costs associated with the DMNP, construction activities will also result in 3,900 full-time job years in direct employment and 4,900 full-time job years in indirect and induced employment.

As mentioned previously, the removal of flood risk by the Establishment / Post-Establishment of the DMNP will facilitate redevelopment of the Port Lands. Planning for the naturalization of the new river valley system and river mouth has been co-ordinated with relevant planning documents and policies throughout the EA process. This includes conforming with the *Ontario Places to Grow Act* (2005) and subsequently the Growth Plan for the Greater Golden Horseshoe (2006) as the completion of the project supports urban intensification, land use planning and infrastructure investment to support growth and public engagement in planning as described in Sections 2.2.3, 3.2.1 and 5.4.4(3) of the Growth Plan, respectively.

The DMNP is consistent with the objectives of the Central Waterfront Secondary Plan, including removing barriers and making connections, building a network of spectacular waterfront parks and public spaces, promoting a clean and green environment and creating dynamic and diverse communities. Similarly, the DMNP supports the policies of the PPS in promoting publicly accessible parkland, economic prosperity, natural and cultural heritage and water functions, while minimizing natural and human-made hazards. A comprehensive Official Plan Amendment will be developed for the Port Lands to reflect the undertaking for the DMNP EA. Similarly, the DMNP has been developed in co-ordination with the LDL EAMP.

The DMNP has been prepared in co-ordination with the implementation of the Central Waterfront Secondary Plan and is generally consistent with the core principles and directions of the Plan. Additionally, other planning studies and projects are being co-ordinated with some underway in the vicinity of the Project Study Area (refer to **Section 1.4.2**). Regarding the East Bayfront and West Don Lands projects, Reach 1 has been designed to accommodate the CSO storage shafts and tunnels in the sediment and debris management area and Keating Yard. The Gardiner Expressway and Lakeshore Boulevard Reconfiguration EA and Integrated Urban Design Study will need to reflect the DMNP EA, as the latter is expected to be approved first. The Port Lands Planning Framework, including the Transportation and Servicing Master Plan for the balance of the Port Lands and South of Eastern areas, will reflect the LDL EAMP Report and DMNP EA.

Due to the integrated nature of the LDL EAMP and the DMNP EA, the naturalized and built areas were designed to function together. As a result, there are minimal nuisance effects associated with the operational management areas on the planned surrounding communities. Sediment and debris management activities in Reach 1 and

Reach 2a will produce some noise and combustion emissions but at levels lower than vehicles from nearby transportation corridors and thus the adjacent communities will not be affected. While noise emitted from the hydrocyclone near Reach 3a may affect recreational users and planned communities based on current technology, the noise assessment to be completed during detailed design will determine the need for relocating dewatering operations to Reach 2a or other areas or to enclose operations in Reach 3a in order to avoid such effects.

Mitigation Measures

Regarding effects of construction activities on existing land uses, the majority of these uses are on property owned by the City of Toronto or its agents (i.e., TPLC) and the leases will be terminated or not renewed prior to the commencement of construction activities as per the terms of each lease. Lessees will be given proper notice prior to termination or non-renewal of the leases. While the loss of existing land uses will have an economic cost with respect to lost lease values and lost revenue, the economic benefit associated with the removal of flood risk to permit the mixed use redevelopment has considerably greater long-term economic value which offsets these losses. Where property is privately held, is subject to longer-term leases or is owned by the TPA, arrangements will be made for loss of property and / or activity (i.e., negotiations for potential relocation and / or compensation). Regarding effects to Lafarge's operations, the construction phasing strategy will provide continued dockwall and waterlot access for Lafarge at their current location until they no longer operate on the property.

Waterfront Toronto's EMP and BMPs as described in **Appendix G** will be implemented to minimize nuisance effects during construction of the DMNP and operation of the sediment and debris management area. The City of Toronto's Noise By-Law (No. 111-2003) will also be followed. The noise assessment will be updated during detailed design once the dewatering technology has been selected to confirm effects on receptors near Reach 3a. Should the updated noise assessment identify effects on receptors, relocate dewatering operations to Reach 2a or other areas or enclose the hydrocyclone in Reach 3a to reduce noise levels, as required.

Net Effects

Construction of the DMNP will lead to the permanent displacement or disruption of private property owners or lessees within the footprint of the future new river valley system. Mitigation measures to address the displacement of or permanent disruption to their operations can minimize but not eliminate the negative effect. Therefore, there are predicted to be negative net effects on these businesses. Businesses that are located on public property will have their leases terminated or not renewed prior to construction, resulting in negligible net effects. It should be noted that overall changes to land uses are anticipated as a result of long-standing planning for revitalization of the Lower Don Lands.

Construction of the DMNP will have a positive net effect on the economic base as it will result in the creation of approximately 8,800 full-time job years in direct, indirect and induced employment.

Nuisance effects on the planned surrounding communities will be infrequent and localized; thus negligible net effects on planned land uses are predicted.

During establishment / post-establishment, land area will be removed from flood risk and property values will increase, leading to positive net effects of the DMNP. Additionally, the DMNP has been co-ordinated with the Secondary Plan and is consistent with planning policies and studies as well as the Provincial Policy Statement (PPS), the *Places to Grow Act* and the Growth Plan for the Greater Golden Horseshoe (Growth Plan). There are no predicted net effects from a policy perspective since the project is consistent with these planning policies.

Summary of Project Effects Related to Co-ordination with Other Planning Initiatives

Overall, the DMNP satisfies the objective related to co-ordination with planning efforts and supports the development of future land uses within the area. While existing land uses will be affected by the DMNP, it is recognized that overall changes to land uses are anticipated as a result of long-standing planning for revitalization of the Lower Don Lands. To review a summary of the overall effects related to this objective, refer to **Table 7-12** below.

Table 7-12 Overall Effects Related to Objective 6

Criterion	Overall Effects
Construction	
Removal of or Changes to, Existing Land Use	Negative
Employment Created from Construction Activities	Positive
Effects from Construction Activities on Future Residential and Business Uses	Negligible
Establishment / Post-Establishment	
Consistency with the Intent of the Central Waterfront Secondary Plan	Positive
Consistency with Planning Policies and Planning Studies (Currently Underway and Completed)	Positive
Nuisance Effects on the Planned Surrounding Communities	Negligible

7.3.7 Objective 7: Consistency with Waterfront Toronto Sustainability Framework Objective

The final objective from the ToR addresses the “*sustainability of the project and its compliance with applicable provincial and federal legislation*”. It refers to TWRC’s (now Waterfront Toronto) Sustainability Framework, which “*seeks to ensure that sustainability principles are integrated into all facets of waterfront revitalization management, operations and decision-making*” and identifies actions that will lead to remediated brownfields and improved air and water quality, among other goals.

Table 7-13 below describes the potential effects of construction and establishment / post-establishment of the DMNP on existing conditions by consistency with Waterfront Toronto Sustainability Framework criteria and indicators and the proposed mitigation measures and net effects.

Table 7-13 Objective 7: Consistency with Waterfront Toronto Sustainability Framework Objective

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Construction Effects				
Effects of Transporting Soils Off-site	<ul style="list-style-type: none"> Nuisance effects (traffic, noise, dust, combustion emissions) associated with transportation of soils off-site 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Phases 1-4</u></p> <ul style="list-style-type: none"> Potential for nuisance effects on existing residents and businesses of the area associated with transporting soils off-site, specifically: <ul style="list-style-type: none"> Noise and combustion emissions associated with transportation of soils off-site Limited exposure to dust, as majority of earthworks will require movement of wet or damp soils, which will minimize the amount of airborne dust Degraded traffic conditions within the Project Study Area in the short-term but levels of service are expected to remain acceptable Compounded traffic congestion at the intersection of Lake Shore Boulevard / Parliament Street / Queens Quay Street to access the Gardiner Expressway 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities</p> <ul style="list-style-type: none"> Operate truck traffic for off-site disposal during off-peak hours when possible Adhere to Waterfront Toronto's EMP and BMPs for dust suppression and noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) 	<p>Atmospheric Environment / Existing Land Use / Infrastructure and Utilities <u>Negative</u></p> <ul style="list-style-type: none"> Short-term, infrequent and highly localized nuisance effects associated with transporting soils off-site, if required, will be minimized by Waterfront Toronto's EMP and BMPs but will nonetheless have a negative impact Short-term, localized degradation of traffic conditions within the Project Study Area will remain within acceptable conditions Short-term degradation of already poor traffic conditions at the intersection of Lake Shore Boulevard / Parliament Street / Queens Quay Street will be minimized if trucks operate during off-peak hours
Environmental Implications of Soil Management Activities During Construction	<ul style="list-style-type: none"> Nuisance effects (noise, dust, combustion emissions) associated with excavation, on-site movement and stockpiling of contaminated materials 	<p>Atmospheric Environment <u>Phase 1</u></p> <ul style="list-style-type: none"> Limited potential for nuisance effects within the Project Study Area associated with noise, as there are anticipated to be few sensitive receptors in the vicinity of haul routes and noise emissions will be short-term, infrequent and localized However, existing and future residents, businesses and users of the area may experience the following effects: <ul style="list-style-type: none"> Noise, dust and combustion emissions associated with excavation, on-site movement and stockpiling of contaminated materials that are located above the water table will be short-term (during construction activities only) and localized but frequent (occurring throughout the day) Limited potential for dust associated with contaminated materials that are saturated with water, as wet or damp soils will minimize the amount of airborne dust Short-term odour effects due to disturbance of hydrocarbon impacted soils associated with former petroleum refining and bulk storage facilities during construction activities, although odour levels are anticipated to be less than other sources of odour in the vicinity <p><u>Phases 2-4</u></p> <ul style="list-style-type: none"> Nuisance effects on residents and businesses within mixed-use developments in the vicinity of excavation, on-site movement and stockpiling of contaminated materials may include: <ul style="list-style-type: none"> Noise, dust and combustion emissions, which will be short-term (during construction activities only) and localized but frequent (occurring throughout the day) Limited potential for dust associated with contaminated materials that are saturated with water, as wet or damp soils will minimize the amount of airborne dust Short-term odour effects due to disturbance of hydrocarbon impacted soils associated with former petroleum refining and bulk storage facilities during construction activities; these effects will be especially noticeable during excavation of Reaches 3 and 3a (Figure 6-1), although odour levels are anticipated to be less than other sources of odour in the vicinity 	<p>Atmospheric Environment</p> <ul style="list-style-type: none"> Minimize the exposure time of contaminated soils prior to conversion to control odours and ensure ongoing odour management during construction activities Adhere to Waterfront Toronto's EMP and BMPs for dust suppression and noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) Use real-time monitoring systems to measure dust levels 	<p>Atmospheric Environment <u>Negative</u></p> <ul style="list-style-type: none"> Short-term, localized, but frequent nuisance effects associated with excavation, on-site movement and stockpiling of contaminated materials will be minimized by Waterfront Toronto's EMP and BMPs
	<ul style="list-style-type: none"> Effects on soils from excavation 	<p>Geology and Soils <u>Phases 1-4</u></p> <ul style="list-style-type: none"> Due to the nature of the underlying soils (contaminated fill from industrial activity) and the depth of excavation, there are no effects on native geology or soils Excavation of the new river valley system, including low flow channel, wetlands and adjacent naturalized areas, will improve soil quality by removing soils that are contaminated with: inorganic compounds represented by metals and general compounds; and organic substances represented by polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs) including benzene, toluene, ethylbenzene and xylene (BTEX) compounds Permanent removal of abandoned pipelines along the north side of Commissioners Street (Reach 2), along the north side of the dockwall at the Ship Channel (Reach 3a), within the property at 51 Commissioners Street (between Cherry Street and Don Roadway) and at other unknown locations and other utilities due to location of floodplain and low flow channel, could lead to soil contamination through leakage of oil Potential degradation of soil quality as a result of spills (oil, gas and lubricants) associated with construction activities 	<p>Geology and Soils</p> <ul style="list-style-type: none"> Remove oil, cut and cap all uncovered abandoned pipelines Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage 	<p>Geology and Soils <u>Positive</u></p> <ul style="list-style-type: none"> Removal of contaminated soils during excavation will improve soil quality within the Project Study Area <p><u>Negligible</u></p> <ul style="list-style-type: none"> Potential leakage from permanent removal of abandoned pipelines will be mitigated by removal of oil and cutting and capping of pipelines Very infrequent and highly localized effects resulting from spills will be addressed through implementation of the spill response plan

Table 7-13 Objective 7: Consistency with Waterfront Toronto Sustainability Framework Objective

Criteria	Indicator(s)	Effects	Mitigation Measures	Net Effects
Environmental Implications of Groundwater Management Activities During Construction	<ul style="list-style-type: none"> Contaminated groundwater requiring treatment / management 	<p>Groundwater Quality</p> <p><u>Phases 1-4</u></p> <ul style="list-style-type: none"> There is a potential for groundwater seepage to occur within excavated areas throughout all reaches Groundwater is known to be contaminated with PHCs, PAHs and inorganic substances such that it is not suitable for direct discharge to the sewer or open water and may result in contamination of soils or stormwater if there is contact Potentially large volumes of groundwater will require control to permit development work The active product control / recovery pumping system that operates in the vicinity of southwest corner of Commissioners Street and Cherry Street could be potentially disturbed during construction activities as soils are excavated 	<p>Groundwater Quality</p> <ul style="list-style-type: none"> Where possible, conduct construction activities “in the dry” (i.e., physically separated from the lake and river during construction) Implement full-time groundwater control (which will involve dewatering), treatment and disposal Install sheet piles at approximately five metres below depth of excavation to prevent groundwater migration during earthworks or well point dewatering network to suppress water table during construction or combination of the two Treat groundwater on-site or at some off-site licensed receiver Remove all associated LNAPL and decommission active product control / recovery pumping system to facilitate Risk Assessment / Risk Management (RA/RM) 	<p>Groundwater Quality</p> <p><u>Negligible</u></p> <ul style="list-style-type: none"> Mitigation will minimize but not remove groundwater seepage <p><u>None</u></p> <ul style="list-style-type: none"> LNAPL will be removed and active product control / recovery pumping system will be decommissioned
Total Cost of Soil Management	<ul style="list-style-type: none"> Total cost associated with managing soil associated with the DMNP 	<p>Geology and Soils</p> <p><u>Phases 1-4</u></p> <ul style="list-style-type: none"> Total cost related to the management of soil is dependent on a number of factors Essentially, the soil will be generated at a certain rate and transported to a treatment facility for processing or taken off-site for disposal The total estimated cost associated with the management of soils is currently being reassessed in co-ordination with the LDL MPEA amendment process Detailed costing associated with the management of soils will be provided in the final submission of the DMNP 	<p>Geology and Soils</p> <ul style="list-style-type: none"> Use a risk management approach to reduce quantities of soil requiring treatment or disposal 	<p>Geology and Soils</p> <p><u>Negative</u></p> <ul style="list-style-type: none"> Treatment or disposal of contaminated soils will be a considerable cost associated with construction of the DMNP, which can potentially be reduced through a risk management approach
Establishment / Post-Establishment Effects				
Soil Quality as a Result of the DMNP	<ul style="list-style-type: none"> Soils that meet O.Reg. 153/04 	<p>Geology and Soils</p> <ul style="list-style-type: none"> Soils within the new floodplain will meet applicable generic site conditions standards or property specific standards derived through a risk assessment and will therefore be suitable as a growing medium and as habitat for terrestrial and aquatic wildlife Any remaining contaminated soils will be separated from clean material by a barrier to eliminate the risk of migrating contaminants 	<p>Geology and Soils</p> <ul style="list-style-type: none"> No mitigation required; however, monitoring will be required to ensure the integrity of the barrier 	<p>Geology and Soils</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Soils within the floodplain will remain uncontaminated and therefore support terrestrial and aquatic wildlife
Reuse of Clean Sediment for Beneficial Purposes	<ul style="list-style-type: none"> Ability to reuse clean sediment for beneficial purposes 	<p>Geology and Soils</p> <ul style="list-style-type: none"> While the quantity of soils / sediment that can be reused for beneficial purposes is unknown, there are opportunities to reuse soils and sediment that are uncontaminated or readily treatable 	<p>Geology and Soils</p> <ul style="list-style-type: none"> No mitigation required 	<p>Geology and Soils</p> <p><u>Positive</u></p> <ul style="list-style-type: none"> Opportunities available to reuse soils and sediment that are uncontaminated or readily treatable

Discussion for Objective 7: Consistency with the Waterfront Toronto Sustainability Framework Effects

Effects

Planning for the naturalization of the river valley system and river mouth has been undertaken in the context of Waterfront Toronto's Sustainability Framework. The DMNP is anticipated to implement many of the themes of the Sustainability Framework, including the use of native species and control of invasive species in naturalized areas, provision of enhanced aquatic habitat, public accessibility to the water's edge and provision of parklands. The DMNP will also support opportunities to reuse sediment through the use of the hydrocyclone. Other aspects of the Sustainability Framework related to urban land uses are anticipated to be fulfilled through the LDL EAMP and precinct planning in the Lower Don Lands.

Construction of the DMNP has the potential to affect air quality in the Project Study Area. Atmospheric emissions typical of a construction site include dust from earthworks and combustion emissions from construction equipment which have the potential to cause nuisance effects for businesses and recreational users adjacent to areas under construction. These emissions will occur in the short-term (during construction) and will generally be infrequent (at certain times of the day). It is unlikely that atmospheric emissions from construction works will have measurable effects outside of the Project Study Area. Additionally, for activities involving earthworks (including changes to roads, utilities and dockwalls), the majority of soils will be wet or damp, thereby minimizing the amount of airborne dust emitted to the atmosphere.

The excavation, on-site movement and stockpiling of contaminated materials that are located above the water table and are therefore not wet or damp may result in dust dispersion during construction. The transportation of contaminated soils off-site for disposal will also result in dust and combustion emissions, based on estimated truck volumes of up to 200 loads per day. Furthermore, potential short-term odour is anticipated during construction in Reach 3a due to the disturbance of hydrocarbon-affected soils and other buried organic materials. However, odour levels are anticipated to be less than other sources of odour in the area (e.g., Ashbridges Bay Wastewater Treatment Plant).

In addition to these nuisance effects, during construction there may be congestion associated with transporting soils off-site. The intersection of Lake Shore Boulevard / Parliament Street / Queens Quay Street, which is along the proposed haul route for accessing the Gardiner Expressway, is near capacity in the PM peak hour. Thus, the addition of truck traffic will further compound traffic congestion in this location.

The effects on soil quality from excavating and either treating or disposing of contaminated soils are positive overall. There are no effects of construction on native geology or soils due to the depth of excavation and the nature of the underlying soils, which is predominantly comprised of contaminated fill from industrial activity. With regard to remediated brownfields, the DMNP will result in considerable improvements to soil quality within the Project Study Area. Excavation of the river valley system during construction activities will improve soil quality by removing and treating or disposing of approximately 2 million cubic metres of soils that are contaminated with inorganic and organic compounds, including metals and general compounds and organic substances represented by polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs) including benzene, toluene, ethylbenzene and xylene (BTEX) compounds.

There may be some negative effects as a result of excavation due to the potential for further contamination of soils as a result of spills associated with construction activities and through the removal of abandoned pipelines located throughout the Project Study Area. These abandoned pipelines are located along the north side of Commissioners

Street (Reach 2), along the north side of the dockwall at the Ship Channel (Reach 3a), within the property at 51 Commissioners Street (between Cherry Street and Don Roadway) and at other unknown locations along the length of the new river valley system. There is also potential to find oil that is contained within any of the abandoned pipelines. Thus, removal of the pipelines could lead to soil contamination through leakage of oil.

The costs associated with managing the contaminated soil will be dependent on the rate of soil that will be generated, whether the soils will be treated on-site (or nearby) or disposed of off-site and whether material will be left in place as part of a Risk Management approach. Detailed costing associated with the management of soils will be provided in the final submission of the DMNP. While soil management will be costly, these costs can potentially be reduced through a risk management approach.

During construction, there is also a potential for groundwater seepage to occur within excavated areas. Groundwater within the Project Study Area is known to be contaminated with PHCs, PAHs and inorganic substances such that it is not suitable for direct discharge to the sewer or open water and may result in contamination of soils or stormwater if there is contact.

There currently exists an active product control / recovery pumping system in the vicinity of Commissioners Street and Cherry Street, which pumps contaminated groundwater to the surface for treatment, thereby ensuring that there is no groundwater movement off-site. This system could be potentially disturbed during construction as soils are excavated within Reach 3 and 4.

Soil quality during establishment / post-establishment will be greatly improved compared to existing conditions as a result of construction activities. Soils within the river valley system will meet applicable generic site conditions standards or property specific standards derived through a risk assessment and will therefore be suitable as a growing medium and as habitat for terrestrial and aquatic wildlife. Any remaining contaminated soils will be separated from clean material by a barrier to eliminate the risk of migrating contaminants as defined by the RA/RM.

In order to enhance the sustainability of the DMNP, there may be opportunities to reuse soils and sediment for beneficial purposes provided the material is uncontaminated or readily treatable. At this time, the quantity of soils and sediment that can be reused for beneficial purposes is unknown.

Management of soils and groundwater during construction activities will be consistent with the principles and approaches described in Waterfront Toronto's Soils Management Master Plan and the corresponding Groundwater Management Master Plan. This will include the application of strict excavation management, segregation, treatment, off-site disposal and imported fill material requirements in a timely manner and that meet municipal by-laws and agreements and comply with applicable provincial laws, regulations and guidelines.

Mitigation Measures

During construction and establishment / post-establishment, Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in **Appendix G** will be implemented and the City of Toronto's Noise By-Law (No. 111-2003) will be followed. During the excavation, on-site movement and stockpiling of contaminated soils, real-time monitoring systems will be used to measure dust levels. Well-maintained equipment will keep combustion emissions to a minimum. Odours will be managed by minimizing the exposure time of contaminated soils prior to conversion.

To eliminate the potential for further contamination of soils through the removal of abandoned pipelines, all the oil must be removed and all uncovered abandoned pipelines must be cut and capped. Addressing accidental spills of

oil, gas and lubricants associated with construction activities will require preparing and following a spill response plan and immediately reporting and managing any leakage or spillage.

Regarding the costs of managing soils, it is anticipated that a risk management approach will be used to determine the suitability of soils for reuse in development of lands and to reduce the quantities of soils requiring treatment and / or disposal during construction, as described in **Chapter 6**.

Truck traffic should operate only during off-peak hours to limit the effects from transporting soils off-site on the Lake Shore Boulevard / Parliament Street / Queens Quay Street intersection.

Groundwater control measures (including conducting construction activities “in the dry” and dewatering), treatment and disposal should be implemented during construction. Shoring through sheet piles at approximately five metres below depth of excavation or installing a well point dewatering network to suppress the water table would prevent groundwater migration during earthworks. Any dewatered groundwater will need to be treated on-site or at some off-site licensed receiver.

To ensure that there are no residual issues with LNAPL, all associated LNAPL will be removed and the active product control / recovery pumping system will be decommissioned. Removal of LNAPL is also required to facilitate completion of a Risk Assessment.

Net Effects

By operating truck traffic associated with off-site soils transportation during off-peak hours, further degradation of traffic conditions within the Project Study Area and along haul routes will be minimized. The effects will be short-term, infrequent and are therefore considered negligible.

Short-term, localized, but frequent nuisance effects associated with excavation, on-site movement and stockpiling of contaminated materials will be minimized by Waterfront Toronto’s EMP and BMPs.

With appropriate mitigation measures in place, very little groundwater seepage is anticipated though it may not be completely eliminated. Removal of associated LNAPL and decommissioning of the active product control / recovery system will ensure that there are no residual LNAPL issues.

The removal of contaminated soils during excavation will improve soil quality within the Project Study Area. Large amounts of soils will be treated and then reused or disposed of off-site. Soils that are either reused or trucked in from off-site to create the new river valley system will meet applicable generic site conditions standards or property specific standards stipulated in O.Reg. 153/04 and any remaining contaminated soils will be separated from clean material by a barrier to eliminate the risk of migrating contaminants. As a result, there will be an overall improvement in the soil conditions in the Project Study Area during establishment / post-establishment that will allow for the creation of habitat and recreational uses.

Although there is potential for leakage during the removal of any abandoned pipelines that have not been properly decommissioned, this effect can be mitigated by cutting and capping the pipelines; thus, no net effects from removal of pipelines on soil conditions are predicted. Similarly, implementing a spill response plan will help to ensure that there is no further contamination from accidents during construction.

Summary of Project Effects Related to Consistency with the Waterfront Toronto Sustainability Framework

Overall, the DMNP satisfies the objective related to sustainability, as it provides for more naturalized areas and parkland, greater access to the water's edge and effectively manages contaminated soils and groundwater. To review a summary of the overall effects related to this objective, refer to **Table 7-14** below.

Table 7-14 Overall Effects Related to Objective 7

Criterion	Overall Effects
Construction	
Effects of Transporting Soils Off-site	Negative
Environmental Implications of Soil Management Activities During Construction	Negligible
Environmental Implications of Groundwater Management Activities During Construction	Negligible
Total Cost of Soil Management	Negative
Establishment / Post-Establishment	
Soil Quality as a Result of the DMNP	Positive
Reuse of Clean Sediment for Beneficial Purposes	Positive

7.4 Summary of Mitigation Measures

Table 7-15 summarizes the mitigation measures identified for each potential effect and the Project Objectives they relate to.

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
Nuisance Effects (to naturalized area, businesses, recreational users, residents)	1, 4, 5, 6, 7	<p><i>Atmospheric Environment</i></p> <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs for dust suppression (e.g., on-site watering, gravel aggregate on roads and limiting the speed of vehicles on roads) and noise reduction (e.g., alerting residents, project scheduling) and combustion emissions (e.g., use well-maintained equipment) as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) Minimize the exposure time of contaminated soils prior to conversion to control odours and ensure ongoing odour management during construction activities Use real-time monitoring systems to measure dust levels
	1	<p><i>Aquatic Environment</i></p> <ul style="list-style-type: none"> During lake filling activities the following measures will be employed to minimize or eliminate effects to fish: <ul style="list-style-type: none"> Salvage fish once area has been enclosed When possible, avoid lake filling activities during windy days to minimize dispersion of sediment Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to Waterfront Toronto's Environmental Management Plan (EMP) and BMPs to reduce minimize dust, sedimentation and noise as a result of construction activities as described in Appendix G
	4	<p><i>Infrastructure and Utilities</i></p> <ul style="list-style-type: none"> Provide advanced notification to Toronto Fire Service prior to construction works associated with municipal water flow to any fire hydrants and / or buildings Adhere to Waterfront Toronto's EMP, HONI BMPs for construction, and other BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003)
	4,7	<p><i>Existing Land Use</i></p> <ul style="list-style-type: none"> Use a traffic management plan and standard traffic control measures to safely co-ordinate traffic flow Provide alternate access and re-routing signage to access rail yards as required and maintain emergency access to adjacent structures and buildings Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003)
	4,7	<p><i>Infrastructure and Utilities</i></p> <ul style="list-style-type: none"> Adhere to Waterfront Toronto's EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G Adhere to City of Toronto's Noise By-Law (No. 111-2003) Use a traffic management plan and standard traffic control measures to safely co-ordinate traffic flow Provide alternate access and re-routing signage to businesses as required and maintain emergency access to adjacent structures and buildings Operate truck traffic for off-site disposal during off-peak hours when possible Ensure long-term maintenance takes place to prevent degradation and replacement costs Consult with emergency services (i.e., Toronto Fire Service, Emergency Medical Service (EMS) and police) in advance of any road closures so that alternative emergency dispatch protocols can be implemented if required

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
	5	<p><i>Land-Based and Marine Recreation</i></p> <ul style="list-style-type: none"> Adhere to Waterfront Toronto’s EMP and BMPs for dust suppression (e.g., on-site watering, gravel aggregate on roads and limiting the speed of vehicles on roads) and noise reduction (e.g., alerting residents, project scheduling) and combustion emissions (e.g., use well-maintained equipment) as described in Appendix G Adhere to City of Toronto’s Noise By-Law (No. 111-2003)
	6	<p><i>Planned Land Use</i></p> <ul style="list-style-type: none"> Use a traffic management plan and standard traffic control measures to safely coordinate traffic flow Provide alternate access and re-routing signage to businesses as required Adhere to Waterfront Toronto’s EMP and BMPs for dust suppression, noise reduction and combustion emissions as described in Appendix G. Update the noise assessment during detailed design once the dewatering technology has been selected to confirm effects on receptors near Reach 3a Should the updated noise assessment identify effects on receptors, relocate dewatering operations to Reach 2a or other areas or enclose the hydrocyclone in Reach 3a to reduce noise levels, as required Adhere to City of Toronto’s Noise By-Law (No. 111-2003)
Geology and Soils	7	<ul style="list-style-type: none"> Remove oil, cut and cap all uncovered abandoned pipelines Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage Use a risk management approach to reduce quantities of soil requiring treatment or disposal Monitoring will be required to ensure the integrity of the barrier.
Groundwater Quality	7	<ul style="list-style-type: none"> Where possible, conduct construction activities “in the dry” (i.e., physically separated from the lake and river during construction) Implement full-time groundwater control (which will involve dewatering), treatment and disposal Install sheet piles at approximately five metres below depth of excavation to prevent groundwater migration during earthworks or well point dewatering network to suppress water table during construction or combination of the two Treat groundwater on-site or at some off-site licensed receiver Remove all associated LNAPL and decommission active product control / recovery pumping system to facilitate Risk Assessment / Risk Management (RA/RM)
Hydrology and Surface Water	2	<p><i>Flooding</i></p> <ul style="list-style-type: none"> Include construction sites on TRCA flood warning system to prepare site in advance of possible flood events Use 2D, 3D and / or physical models (that are acceptable to the floodplain regulator) to develop detailed design to confirm conveyance of the Regulatory Flood plus desired freeboard without affecting areas beyond the new river valley system, including ensuring that channel configuration in the sediment and debris management area is such that any impacts to the adjacent areas are acceptable to the regulator (Appendix N-1) Use hydraulic modelling during detailed design to ensure that design of stabilization works will minimize adverse effects on overall system Monitor and maintain stabilization works and naturalized areas following flood events (as required)
	2, 3	<p><i>Stormwater Quality and Quantity</i></p> <ul style="list-style-type: none"> Adhere to BMPs for managing construction runoff and erosion during less intensive and more frequent floods, such as isolating the excavation areas behind existing dockwalls during construction, as described in Appendix G Adhere to BMPs for managing construction runoff and erosion (e.g., treatment of contaminated stormwater before discharge), as described in Appendix G

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
	3	<p><i>Lake / River Water Quality</i></p> <ul style="list-style-type: none"> Use an excavator, a backhoe located on a barge, a bottom dump scow or end dumping with a truck place fill material on top of sediments within the containment berms during in-water works Should turbidity exceed acceptable limits during filling, construction will cease until acceptable limits are re-established Use appropriate isolation of excavated area at north end of Reach 1 during construction of Reach 1 to minimize impact to downstream water quality Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to BMPs to reduce likelihood of contaminated material entering the existing channel Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage Minimize sediment loads to naturalized area by regular dredging of sediment trap and trap management Ensure long-term maintenance of connecting feeder channels to eliminate infilling with sediments and effectively maintain wetlands (see Appendix N-2)
Aquatic Environment	1	<p><i>Sediment Quality and Quantity, Aquatic Biota, Aquatic Habitat</i></p> <ul style="list-style-type: none"> Create new high quality habitat of a larger area and greater complexity to compensate for permanent loss of low quality habitat during construction Prepare and follow a spill response plan, including immediately reporting and managing any leakage or spillage Limit in-channel construction and conform to fish timing window guidelines to avoid adverse flow conditions and avoid fish spawning and migration periods Adhere to Best Management Practices (BMPs) to reduce likelihood of contaminated material entering the existing channel as described in Appendix G Minimize sediment loads to naturalized area by regular dredging of sediment trap and trap management Monitoring and AEM to ensure that vegetation communities are not adversely affected by more frequent flood events and by sedimentation Ensure long-term maintenance of connecting feeder channels to eliminate infilling with sediments and effectively maintain wetlands Minimize sediment loads to naturalized areas by regular dredging of sediment trap and trap management
Naturalization Habitat	1	<p><i>Vegetation Communities, Wildlife Habitat, Wildlife Biota, Wildlife Linkages / Connectivity</i></p> <ul style="list-style-type: none"> Create new higher quality terrestrial and wetland habitat to compensate for loss of low quality habitat including ESA Salvage plants for replanting, where appropriate Use native plant species to maximize opportunities for breeding and forage Implement sustainable soil methods to maximize health and age of plantings Provide appropriate care / restoration techniques (e.g., watering) for upland plantings during initial establishment period Maintain vegetation structure through renewal of plantings over time Monitoring and AEM to ensure that the area of terrestrial habitat remains intact
	1	<p><i>Wetland Biota, Wetland Habitat</i></p> <ul style="list-style-type: none"> Create new high quality wetland habitat to compensate for loss of low quality habitat including the ESA Salvage plants for replanting, where appropriate Manage flooding as described in more detail in Objective 2 (Flood Protection) as described in Section 7.3.2 Optimize design of lake-connected wetlands to minimize influence on vegetation from residual fines that are not captured in the sediment trap (see Appendix N)

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
		<ul style="list-style-type: none"> • Optimize wetland design to minimize shear stresses experienced in wetlands under more frequent flooding events • Monitoring and Adaptive Environmental Management (AEM), including monitoring of invasive species, effective saturation and / or flooding of wetland substrates, etc., to ensure wetland habitat remains intact • Monitoring and AEM to ensure that largest single wetland patch remains intact • Monitoring and AEM to ensure that habitat continues to support desired species • Monitoring and AEM to ensure that vegetation communities are not adversely affected by more frequent flood events and by sedimentation • Monitoring and AEM are discussed in detail in Chapter 8 • Where possible, design trails (especially those related to the Ship Channel wetland) to circumvent, rather than bisect, naturalized areas • Limit trail placement adjacent to other lake-connected wetlands • Control access to other less sensitive wetlands through use of boardwalks and other strategies • Monitor human effects on wetlands and close or modify trails as required • Do not light trails or use focused, direct lighting if required • Ensure long-term maintenance of connecting feeder channels to eliminate infilling with sediments and effectively maintain wetlands • Minimize sediment loads to naturalized areas by regular dredging of sediment trap and trap management
Socio-Economic	3	<p><i>Economic Base</i></p> <ul style="list-style-type: none"> • Arrangements will be made with TPA and other long-term leaseholders in the area for lost mooring revenue (i.e., negotiations regarding compensation) • Provide advance notice to TPA and other long-term leaseholders in the area in order to inform users of potential dockwall removal / modification • The phasing strategy allows for mooring within the Inner Harbour along the western edge of the naturalized area in Essroc Quay in Reach 2 as well as along southern section of Polson Quay until the completion of Phase 4 to avoid negative effects to mooring revenue and Lafarge’s existing operations • The feasibility of increasing mooring in other areas to address dockwall removal / modification will be investigated
	3, 6	<p><i>Existing Land Use</i></p> <ul style="list-style-type: none"> • Enter into discussions with TPA to ensure that the new location for the works yard addresses their requirements and to determine operational responsibility for sediment and debris management in its new location • Enter into discussions with TPA and other long-term leaseholders in the area to understand available remaining dockwall and identify alternative mooring locations for vessels • Provide TPA and other long-term leaseholders (e.g., Lafarge) with advanced notification of anticipated high flow events via the TRCA Storm Advisory System • Provide TPA and other long-term leaseholders (e.g., Lafarge) with real-time access to TRCA’s Don River stream gauge information • Discuss with TPA the need for: <ul style="list-style-type: none"> ▪ Installation of aids to navigation, such as wayfinding signage for recreational users to encourage them to avoid areas used for commercial purposes ▪ Implementation of communication systems, such as a website or telephone service that provide recreational users with information on pending movements of commercial vessels • Where property is under ownership by the City of Toronto or its agents (i.e., TPLC), lessees will be given proper notice and leases will be terminated or not renewed prior to commencement of construction activities as per the terms of the leases

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
		<ul style="list-style-type: none"> Where property is privately held, is subject to longer-term leases or is owned by the TPA, arrangements will be made for loss of property and / or activity (i.e., negotiations for potential relocation and / or compensation) Ensure long-term maintenance takes place to prevent degradation and replacement costs Mitigate construction-related disturbance to the 11 Sunlight Park Road property through landscaped buffering, stabilization and maintenance of vehicular access as required Explore opportunities at detailed design for partnerships / cost sharing arrangements with the various landowners associated with the creation of the VWF to address grade change issues related to geotechnical and soil contamination, as appropriate
	4	<p><i>Infrastructure and Utilities</i></p> <ul style="list-style-type: none"> Install backflow prevention devices or reroute SSOs to convey stormwater away from the Don River Continue to meet with utility providers, including HONI, to confirm that these utilities may be removed, retrofitted, relocated or extended, explore cost sharing opportunities and to develop an approach to maintain servicing during construction An agreement has been reached with Toronto Hydro that they will be responsible for the relocation of their infrastructure over Lake Shore Boulevard during the implementation of the DMNP Develop a strategy with HONI to ensure that impacts to underground circuits as a result of filling are adequately mitigated or compensation is provided for relocation Co-ordinate with HONI to ensure vertical clearances are sufficient and that protective treatment to the base of the towers is applied to prevent corrosion and ensure the towers remain stable Co-ordinate with HONI to ensure vertical clearances are sufficient and that protective treatment to the base of the towers is applied to prevent corrosion and ensure the tower's remain stable Develop a strategy with HONI to ensure that the circuits on the utility bridge can be relocated without disruption to service prior to the removal of the bridge
	5	<p><i>Land-Based and Marine Recreation</i></p> <ul style="list-style-type: none"> Erect signage and / or barriers to discourage or prevent motorized watercraft from entering low flow channel and non-motorized watercraft from wetland areas Areas of in-water works will be appropriately marked for navigation Safe access will be maintained during construction activities and proper signage will signal where recreational marine users may go Trail access will be maintained through temporary realignments Advanced notification of changes to trail access will be provided Where needed, construction signage and detours implemented
	5	<p><i>Visual Effect</i></p> <ul style="list-style-type: none"> Use landscaping or other measures, such as screening walls or berms dressed with plantings, to screen views of equipment
Physical and Cultural Heritage Resources	5	<p><i>Built Heritage and Cultural Landscape Resources</i></p> <ul style="list-style-type: none"> Recognize heritage value of displaced cultural heritage landscapes, including Port Lands Industrial District, Commissioners, Villiers and Cherry Streets (including Keating Channel bridge) and Polson dockwall through signage and / or plaques or other commemorative interpretive material or programs Prepare a cultural heritage evaluation report(s) or a municipal Heritage Impact Assessment for the Marine Terminal 35, Atlas Crane site and one storey brick warehouse at 242-292 Cherry Street in collaboration with the City's Heritage Preservation Services unit and other heritage stakeholders, which will assess the property's cultural heritage value, the impacts to the property and potential conservation and mitigation options which would include conserving, relocating, raising or commemorating the resource

Table 7-15 Summary of Mitigation Measures by Effect

Effect	Project Objective(s)	Mitigation Measures
		<ul style="list-style-type: none"> Relocate potentially displaced built heritage resources (i.e., structures) on- or off-site where possible or incorporate the resource into the design of the new river mouth; where relocation is not possible, recognize heritage value of displaced resources through signage and / or plaques or other commemorative interpretive material or programs Mitigate construction-related disturbance to built heritage resources and cultural heritage landscapes through landscaped buffering, stabilization and maintenance of vehicular access as required
	5	<p><i>Archaeological Resources</i></p> <ul style="list-style-type: none"> A professional archaeologist will be on-site at regular intervals to monitor excavation in areas of archaeological potential, including in the vicinity of LDP-1, 2, 3 and 4 and other areas cited in the ACMS which form part of the study area If artifacts are found, the Ministry of Tourism, Culture and Sport will be notified and construction in the area of the find will cease until the significance of the resource can be evaluated by a professional licenced archaeologist If Aboriginal artifacts are encountered, the City of Toronto’s protocol for engaging Aboriginal communities will be followed LDP-1, LDP-2, LDP-3 and LDP-4 will be documented by a professional archaeologist monitoring construction in the site areas as required by the ACMS. LDP-5 and LDP-8 will be recognized through signage or other interpretive material or programs as required by the ACMS All features cited in the ACMS are worthy of site commemoration and interpretation
<p>Aboriginal Interests (Traditional Land and Resources Use, Cultural Heritage)</p>	5	<ul style="list-style-type: none"> Incorporate heritage aspects into the design of the DMNP where feasible Through consultation with Aboriginal communities, opportunities were identified to incorporate heritage aspects, such as using specific vegetation communities (e.g., wild rice) and the need for carp controls to allow for the establishment of wild rice, into the design of the DMNP. Further consultation with the Aboriginal groups as requested, will occur during the final design and construction of the DMNP