

APPENDIX C
MITIGATION TABLES

*Environmental Assessment
Lakeview Waterfront Connection*

Construction Activity	Standard Construction Techniques and Mitigation Measures
1. Vegetation Clearing and Grubbing	<ul style="list-style-type: none"> • Adhere to terms of licenses, permits and approvals (e.g., Permit to Burn (if required), <i>Migratory Birds Convention Act</i> and Regulations) and relevant guidelines and Ontario Provincial Standards Specifications (OPSS) – OPSS 201 (Clearing and Grubbing), OPSS 503 (Site Preparation), OPSS 565 (Tree Protection), OPSS 182 (Environmental Protection for Construction in Waterbodies and on Waterbody Banks), Erosion & Sediment Control Guidelines for Urban Construction (December, 2006). • Limit zone of construction impacts (i.e., vegetation removal, soil compaction) to the extent possible. • Hand clear (without grubbing) on steep slopes which do not require grading. • Minimize removal of riparian vegetation, particularly woody vegetation, for the project works. The woody vegetation that will likely require removal should be replaced with appropriate native species. This will be implemented through a comprehensive landscape design contract. • Protect vegetated areas bordering working areas with temporary tree protection and sediment fencing as determined in a grading plan. Equipment, storage of materials, and other construction activities will not be permitted in these working areas. • Restrict tree removal to the working areas. Vegetation removals associated with clearing, site access and staging will occur outside the key breeding bird period identified by Environment Canada for migratory birds (typically April 21 – July 31 for this area) to ensure compliance with the <i>Migratory Birds Convention Act</i>, 1994 (MBCA) and Migratory Bird Regulations (MBR). • Conduct a nest survey by a qualified avian biologist prior to commencement of works to identify and locate active nests of species covered by the MBCA, if works must be conducted during the breeding bird season. This will include the development of a mitigation plan to address any potential impacts on migratory birds and their active nests. • Restrict tree grubbing to the required working areas. Where possible, tree stumps will be cut flush to the ground and grubbing avoided minimizing soil disturbance, particularly in erosion prone areas. • Fell trees to avoid damaging other standing vegetation and away from any watercourse where it is safe to do so. • Check the cleared area edges after clearing has taken place and repair or remove any trees damaged. An arborist is to inspect damage to trees. • Dispose of cut and grubbed material through chipping. Where possible, cut material may be piled and re-used for wildlife habitat. • Avoid transportation of non-native and invasive species into sensitive vegetation communities due to seed disturbance/dispersal along cleared areas and construction equipment. Indicate the extent of the target invasive species on the contract drawings and in the field by a biologist and undertake selective removals, as required. • Thoroughly clean all equipment working in the identified invasive species locations prior to moving away from the site. • Develop a salvage plan for the necessary removal of regionally rare species as part of subsequent design phases, with agency input, prior to construction for implementation, including retaining a biologist, where regionally rare plants are the target species, to first locate and flag the relevant material. • Use soil restoration (possibly reducing soil compaction and increasing organic matter) to facilitate the success of vegetation plantings. • Inclusion of wildlife enhancement considerations in site rehabilitation and restoration planning. • All vegetative debris should be stored in designated areas, ensuring that vegetative debris are covered and ensure that transporting vehicles debris off site in trucks have covers or caps to contain the debris.

*Environmental Assessment
Lakeview Waterfront Connection*

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<p>2. Earthworks (e.g., soil stripping, stockpiling and storage, grading, excavation, trenching, filling and compacting)</p>	<ul style="list-style-type: none"> • Minimize vehicle traffic on exposed soils, avoid compacting or other hardening of natural ground surface, and avoid the movement of heavy machinery on areas with sensitive slopes. • Stabilize high traffic areas with clean gravel surface layer or other suitable cover material. • Construction contractors must adhere to the site-specific Soil Management Plan. • Ensure backfilling is undertaken using suitable materials that meet the applicable land use standards and fines; free of ice and frozen soils and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred. • Representative sampling and laboratory testing of the quality of the fill will be undertaken periodically to ensure that the fill complies with these standards. A testing protocol, consistent with Ontario Regulation 153/04 will be required. • In areas with high groundwater levels ensure that soils susceptible to frost heave (generally fine sands to silty soils) are not used for backfill. • If earthworks are not aimed at increasing the stability of slopes, avoid high risk areas with unstable slopes (e.g., steep slopes, soil liquefaction risk areas) keep site clearing to a minimum to maintain vegetative cover and wind breaks. • Properly contain any temporarily stockpiled material, construction or related materials (e.g., within silt fencing) in areas separated a minimum of 30 m from any waterbody. • Protect stockpiled soils from exposure to and sterilization by solar radiation (an uncovered shaded area would also achieve this). • The storage of putrescible material may be considered a waste management activity and should be avoided. Such material is also likely to be structurally unsuitable for reuse, as it is unlikely that such organic rich material is to be stockpiled on site. Reduce excavation depths and cuts near wells and sensitive areas, where safe and feasible. • Where possible limit construction time in flood prone areas and any low-lying shoreline areas to minimize flood risk. • Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation. • Restore municipal drains, test and repair as required and repair all damages to property due to project activities. • Ensure that any excavation for utilities trenches include provisions for at least 1.5 metres of clean soil (i.e. meeting Table 3 criteria of the Soil Ground Water and Sediment Standards for Use under Part XV.1 of the <i>Environmental Protection Act</i>) be placed laterally and vertically as backfill. <p><u>Dust and Tracking Control Program</u></p> <ul style="list-style-type: none"> • Preparation and implementation of a comprehensive dust and tracking control program during any demolition, excavation or remedial activity to be carried out. The dust and tracking control program is to comprise some or all of: <ul style="list-style-type: none"> ○ The daily, or more if required, wetting of all soft and hard surfaces and any excavation face on the site with water or with the addition of calcium chloride or other recognized materials as a dust suppressant, if required; ○ The daily, or more if required, wetting of the soil testing/staging stockpiles as a dust suppressant, if required; ○ the daily cleaning of the road pavement and sidewalks affected by the work at both ingress and egress points and cleanup of any soil tracking beyond that zone on an as-required basis; ○ The designation of truck loading points, where necessary, to avoid trucks tracking potentially contaminated soil off site and to minimize tracking of soil onto the sidewalk and street. If the loading point becomes contaminated, it should be cleaned or replaced; and ○ Tarping all trucks leaving the site which may have been loaded with indigenous soil.

Environmental Assessment
Lakeview Waterfront Connection

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3. Dewatering and Flow Management	<ul style="list-style-type: none"> • Groundwater discharges will comply with the Ontario <i>Water Resources Act</i> if required. • Develop temporary flow management plans to isolate the construction zones for in-water works and to maintain clean flow downstream. These plans will be developed based relevant standards and in accordance with permit-to-take-water (PTTW) conditions and any other supporting measures as may be identified by the project hydrogeologists. • Where appropriate, properly site and design withdrawal points from the channel to prevent intake of silt or bed materials. Similarly, discharge points will be sited and designed to prevent erosion and any sediment release. • Ensure that the discharged water is directed to an appropriately sized energy dissipating outlet device to prevent bed or bank erosion at the point of discharge into the natural waterbody. • Ensure that only material meeting the applicable generic site condition standards or property specific standards derived through a risk assessment, free of fine particulate matter, will be placed in the water for temporary construction measures (e.g., coffer dams will be constructed of ‘pea gravel’ bags, geotextile fabric or other clean material) or permanent works (e.g., substrate material). • Ensure that during all temporary dewatering required for works, appropriate energy dissipation and settling/filtration measures will be used for discharge of dewatering water to minimize potential for erosion or sediment release in the watercourses / lake / drainage features. The dewatering plan will include properly sized, designed and sited temporary filtration facilities. Discharge points for release of dewatering discharge will be sited and designed to prevent erosion and sucking of sediment from the bottom of the pond, thereby ensuring that only clean flow is released to the watercourses or lake. If sheet piling is used to contain dewatering areas, it will be removed following construction to prevent obstruction of groundwater movement to the streams. • Implement any opportunities identified during construction to divert any exposed groundwater discharge directly to the stream channels, with input from the fish biologist, environmental inspector and/or hydrogeologist, and consultation with agency staff if appropriate. • Screen all hoses drawing water from streams supporting fish use during temporary flow management procedures to prevent potential entrainment of fish. • Remove and relocate any fish stranded within the construction cell using appropriate techniques by qualified fisheries specialist. • Remove accumulated sediments prior to removing barriers (e.g., coffer dams).
4. General In-water Works (e.g., lakefilling)	<ul style="list-style-type: none"> • Lakefilling material will be comprised of clean construction rubble and soil that is considered suitable as unconfined fill material under the MOE Fill Quality Guidelines. • Adhere to terms of licenses, permits and approvals (i.e., <i>Canadian Environmental Protection Act; Ontario Water Resources Act, Federal Fisheries Act, etc.</i>) relevant guidelines and procedures (e.g., Ontario Ministry of Environment Guidelines and Procedures for Water Management, Protection and Management of Aquatic Sediment Quality in Ontario, Fill Quality Management, Surface Water Quality Guidelines and Department of Fisheries and Oceans Operational Statements). • Conduct all in-water and near-water activities within the applicable in-water construction timing windows, as identified by with the MNR, to protect the resident fishery life functions. • Where possible, limit in-water construction time to minimize flood risk. • Operate heavy machinery from above the top of the streambank or on shore above the normal water level (where possible). • Ensure that all equipment which comes in contact with water is free of fluid, leaks and externally cleaned / degreased. • Conduct in stream work during dry conditions, low flow or under frozen conditions. • Suspend work prior to imminent storm events in order to minimize soil transport. • Make provisions/contingencies for occurrence of high flow or low flow conditions during

*Environmental Assessment
Lakeview Waterfront Connection*

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	<p>activity, as applicable.</p> <ul style="list-style-type: none"> • During the active filling phase, the confining structure will be designed to withstand the most significant wave that could occur in storms over a 25-year period. • At the end of the filling season or upon completion of the project, the confining structure will be designed to be protected to the estimated 100-year storm significant wave prior to the end of the calm period during which confined fill was first deposited. • Exposed fill face should not be more than a specified length, usually 15 m. • In instances where Confined Fill will be used in a lakefill, the outer structure must be constructed of material meeting the Unconfined Fill criteria (e.g., quarried stone, concrete rubble, or other similarly inert material). The outer structure must be completed to provide full enclosure before commencing placement of material classified as Confined Fill. • All machinery used on-site should be in good repair and free of excess oil and grease. Any fuelling or maintenance of such equipment should occur on the upland well away from the foreshore. • If steel piles are to be used, they must be capped to prevent the entry of wildlife.
5. Handling of Contaminated Soils	<ul style="list-style-type: none"> • Minimize onsite storage. Contaminated soil should be disposed of properly in accordance with all applicable regulations or treated to a standard that allows its reuse either locally or elsewhere within the DWA. The storage of hazardous material will meet the requirements of Ontario Regulation 347. • Test suspected soils at an approved certified laboratory. • Avoid temporary stockpiling of contaminated soils or hazardous material where possible. • Take the following precautions if temporary stockpiling is necessary: <ul style="list-style-type: none"> ○ Cover the stockpile with plastic sheeting or tarps; ○ Install a berm around the stockpile to prevent runoff from leaving the area; and ○ Do not stockpile in or near storm drains or watercourses. • Remove contaminated material and hazardous material on exteriors of transport vehicles and place either into the current transport vehicle or into the excavation prior to the vehicle leaving the site. • Monitor the air quality continuously during excavation operations at all locations containing hazardous material. • Take all necessary precautions and preventive measures to prevent the flow of water, including ground water, from entering excavations. Such preventative measures may consist of, but are not limited to berms, cofferdams, grout curtains, freeze walls, and seal course concrete or any combination thereof. If water does enter an excavation and becomes contaminated, such water, when necessary to proceed with the work, shall be discharged to clean, closed top, watertight, transportable holding tanks, and disposed of in accordance with federal, provincial, and local laws. • Collect water from decontamination procedures and treat or dispose of it at an appropriate disposal site. • Collect non-reusable protective equipment, once used by any personnel, and dispose of at an appropriate disposal site. • Install temporary security fence to surround and secure the site. Remove fencing when no longer needed. • Excavate, transport, and dispose of contaminated material and hazardous material in accordance with the rules and regulations of regulatory agencies. • Excavated soil is to be managed to prevent sediment accumulation in stormwater runoff. • Excavated soil that is suspected of or known to be contaminated is to be placed in cover bins or other sealed containers, or stockpiled and covered with plastic sheeting anchored in place. • Construction contractors must adhere to the site-specific Soil Management Plan.

*Environmental Assessment
Lakeview Waterfront Connection*

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6. Erosion, Sediment, and Dust Control	<ul style="list-style-type: none"> • Adhere to terms of licenses, permits and approvals (i.e., <i>Canadian Environmental Protection Act; Ontario Water Resources Act, Federal Fisheries Act, etc.</i>) and guidelines (i.e., TRCA Erosion and Sediment Control Guidelines to Urban Construction) and Ontario Provincial Standards Specifications (OPSS) – OPSS 577 (Erosion and Sediment Control Measures), OPSS 503 (Site Preparation), OPSS 206 (Grading), OPSS 506 (Dust Control). • Install silt fences, blankets, and berms around construction areas, including the laydown area, and across sloping terrain/areas to prevent surface runoff from carrying sediment offsite and into any sewer. • Install sub-drains/catch basins in areas of excavations/trenches or areas sensitive to erosion in order to trap runoff. • Trap sediment using silt traps once sub-drains/catch basins have been installed. • Design and size ditches and stormwater management ponds appropriately to remove sediment before the water is discharged from the site. • Implement vehicle and equipment cleaning procedures and practices to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain systems or watercourses. • Install and maintain silt fences/curtains, sedimentation ponds, check dams, coffer dams or drainage swales, around soil storage sites and elsewhere as required. • Install perimeter silt fences/curtains between the work areas and all reaches of those watercourses where works are required, including ditch and drainage works that drain to watercourses that support fish habitat. The fencing/curtains will be properly installed and regularly inspected and maintained. It will be left in place and maintained until all surfaces contributing drainage to these watercourses are fully stabilized. • Completed ditches should be appropriately surfaced (e.g. with sod, stone, riprap or manufactured fibre matting). • Ditch checks consisting of straw bales or rock check dams constructed across swales, draws or ditches and/or around inlets to reduce the velocity of stormwater runoff and to intercept silt. • Direct runoff and overland flow away from working areas and areas of exposed soils or contaminated groundwater. Promote overland ‘sheet flow’ to the maximum extent possible. • Stabilize all exposed and newly constructed surfaces using appropriate means in accordance with the characteristics of the soil material. These surfaces will be fully stabilized and re-vegetated as quickly as possible following completion of the works. Possible stabilization methods can include: ‘hard’ and ‘soft’ designs or combinations of designs using rip-rap, armor stone, crib walls, revetments, gabions, erosion control blanket, live fascines, brush bundles. • Install erosion and sediment control measures prior to construction and maintain them within their effective limits throughout the construction and until the restoration of disturbed vegetation, rock revetments or similar are successfully completed. • Design, install, maintain, and remove erosion and sediment control structures according to TRCA Erosion and Sediment Control Guidelines for Urban Construction, Ontario Guidelines on Erosion and Sediment Control for Urban Construction Sites and OPSS Guidelines. • Temporarily stabilize exposed soil areas as soon as possible (or covered with tarps, erosion control blankets, etc.) to control sediment transport and erosion. In addition, natural vegetation cover will be retained wherever possible (and root grubbing minimized where possible) to provide natural erosion control. Enclose earth stockpiles with appropriate sediment and erosion control fencing. • Filter runoff from material stockpiles or site de-watering through an appropriate device (temporary settling facility, filter bag, etc.) before release. • Regularly inspect sediment control structures, and check them after storms and repaired as required. The structures will be cleaned out when accumulated sediment reaches half the design height.

*Environmental Assessment
Lakeview Waterfront Connection*

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	<ul style="list-style-type: none"> • Restoration of soil surfaces immediately following final grading, with surface restoration to include features that minimize erosion (e.g. placing sod). • Re-stabilize and re-vegetate exposed surfaces as soon as possible, using native vegetation seed mixes and plantings or other appropriate cover, in consultation with agencies. • Capture and adequately filter drainage from any unstabilized surface prior to discharge to natural areas, including receiving drainage features. • Protection of catch basins, manholes and other storm sewer features (e.g. ditch inlets) from sediment-laden inflows through installation of sealing covers or geotextile filter media at their inlets. • Construction of a stormwater management pond to collect and contain runoff for a sufficient period of time to allow for settlement of sediment in suspension, where warranted based on project characteristics (e.g., duration, physical extent). • Ensure all materials placed below the high water mark of the water body are clean and free of silt and clay sized particles. All materials must meet relevant lakefill guidelines including the Ontario Ministry of the Environment “Fill Quality Guidelines for Lakefilling in Ontario. • Contingency procedures, materials and notification procedures will be readily available for use in the event of a silt release, and for general application in regular maintenance and repair. • Use dust suppression methods (water or other as appropriate) in dust sensitive areas, as required, to control off-site migration of particulates. The use of calcium chloride or magnesium chloride as a dust suppression method should be minimized. A dust suppressant license will be required from MOE for use of registered dust suppressants other than water. <p><u>Dust Control Measures:</u></p> <ul style="list-style-type: none"> • On-site vehicle and equipment idling is to be discouraged and where practical, limited. • Water spray or similar techniques will be used to control dust generation from construction activities, storage piles and exposed soils/surfaces. • Tracking of earth or soil from the site on trucks should be minimized through the use of mud mats (e.g. granular pads located at site entrance). Where a mud mat is not effective in controlling the tracking of earth or soil onto adjacent roads, the physical removal of earth from vehicles is to be implemented. • Vehicles hauling soil, aggregates or fine or dusty material are to be covered to minimize the generation of dust. • Construction activities are to be scheduled or planned to limit areas of soil exposed at any given time. • Exposed soil areas and adjacent roads are to be monitored for dust generation potential, with attention paid to areas used for pedestrian walkways and vehicle traffic. • On-site (including roadways) flushing, sweeping and cleaning are to be performed on a regular basis, with consideration for the containment and management of any wash water. • Exposed fill/stock piles that may be a source of fugitive dust are to be covered with tarpaulins, soil binders or other appropriate means, where practical. • Soil surfaces are to be restored and re-vegetated as soon as possible. • Construction activities such as cutting and grinding are to be scheduled and planned to limit the release of dust and noise to adjacent properties. • Transportation and delivery of construction materials are to be scheduled to minimize the amount of bulk construction materials stored on-site at a given time. • Speed limits within the site are to be maximum 40 km/h to control dust generation.

*Environmental Assessment
Lakeview Waterfront Connection*

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7. Stormwater Management	<ul style="list-style-type: none"> • For Stormwater Management during construction, practices shall adhere to existing guidelines which includes the following: <ul style="list-style-type: none"> ○ Project-related stormwater and surface water is to be managed in a manner that does not adversely affect fish habitat and considers associated requirements of the federal <i>Fisheries Act</i>; ○ All works are intended to protect and manage the quality and quantity of surface water and groundwater; ○ An MOE ECA for Industrial Sewage Wastewater Discharge may be required as stipulated by the OWRA (sections 33 and 53) to regulate effluent discharge directly to surface water bodies during construction and other project-related works; and ○ The Erosion Protection Plan is to ensure the protection of water quality during construction and demolition through adherence to onsite erosion and sediment control guidelines and the implementation of an erosion and sediment control plan. • Specific requirements shall include the following: <ul style="list-style-type: none"> ○ The installation of silt fences, blankets, and berms around construction areas, including the laydown area, and across sloping terrain/areas to prevent surface runoff from carrying sediment offsite and into any sewer; ○ Install sub-drains/catchbasins with silt traps in areas of excavations/trenches or areas sensitive to erosion in order to trap runoff; ○ Design and size ditches, oil/grit separators and stormwater management ponds appropriately to remove sediment before the water is discharged from the site; ○ On-site washing of equipment and vehicles is discouraged. Where necessary to control the migration of contaminated soil, an area for the washing of vehicles, which includes containment and treatment of wash water, is to be designated and located away from sensitive receivers; ○ Only clean, uncontaminated material, as approved by may be used as fill; ○ An appropriate spill prevention, containment, and clean up contingency plan for hydrocarbon products (e.g. fuel, oil, hydraulic fluid, etc.), and other deleterious substances shall be put in place prior to work commencing, and appropriate spill containment and cleanup supplies shall be kept available on-site whenever the works are occurring. Further, all personnel working on the project should be familiar with implementing the spill cleanup plan and the deployment of spill response materials; and ○ All machinery used on-site should be in good repair and free of excess oil and grease. Any fuelling or maintenance of such equipment should occur on the upland well away from the foreshore.
8. Operation of Heavy Equipment and Vehicles (e.g., backhoes, bulldozers, bobcats, trucks, trailers, barges, weed harvesters, etc.)	<ul style="list-style-type: none"> • Use new or well-maintained heavy equipment and machinery with mandatory fully functional emission control systems/ muffler/ exhaust system baffles, engine covers, etc. • Depending on the sensitivity of the surrounding area, regular monitoring may consist of hourly or daily site inspections or perimeter sampling. • Inspection of control features, and repair and/or replacement on a regular basis, as required. • A daily inspection of all machines is to be conducted by the construction contractor before start-up to ensure that no potential exists for contamination of soils and watercourses. Operators are responsible for ensuring that no potential exists for oil, grease or other deleterious substances to enter into the environment. • Install a tarpaulin on haulage trucks as appropriate. • Use heavy equipment and machinery within operating specifications. • Minimize operation and idling of vehicles, and avoid operating and idling vehicles and gas-powered equipment during smog advisories. • Minimize traffic along access roads and maintain safe driving speeds.

*Environmental Assessment
Lakeview Waterfront Connection*

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	<ul style="list-style-type: none">• Ensure that the Contractor develops a Spills Prevention and Response Plan and keeps it on site at all times.• Ensure refuelling and construction staging areas where contaminants are handled are located off-site where possible, or well away from a waterbody and from critical wildlife habitat.• Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads, provide berms if necessary.• Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of all reportable spills.• Maintain an adequate supply of cleanup materials at the work site.• Clean heavy machinery and equipment prior to transport to new construction areas.• Conform to local noise by-laws/ordinances.• Notify residents of planned events that may cause disturbance, and schedule these activities to avoid sensitive time periods.• Vehicle entry and exit points considering the evolving stages of construction.• Queuing locations for arriving vehicles if not solely on-site.• Work zones for any area of public land to be occupied including plans of the affected area and the duration of occupation.