

8. Potential Environmental Effects, Mitigation Measures and Monitoring

8.1 Potential Environmental Effects, Mitigation Measures

Potential effects related to construction of the proposed works related to the storm sewer works and upsizing of the Mimico Creek outfall will be limited to the duration and location of construction. Based on the works associated with Alternative 2 and the proposed construction techniques, construction is expected to have varied environmental effects. By incorporating proper best management practices and construction techniques, adverse construction related effects can be minimized. To address potential effects, the following approach was taken:

- **Avoidance:** The priority is to prevent the occurrence of negative or adverse environmental effects associated with the construction of Alternative 2.
- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop appropriate measures to eliminate, or reduce to some degree, the negative effects associated with construction of Alternative 2.
- **Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation measures, compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement. Compensation is not proposed at the time of this publication for Alternative 2.

Based on the project description for the proposed storm sewer works and upsizing of the Mimico Creek outfall, as described in **Section 7**, avoidance measures can be applied in some cases, thereby reducing the extent of potential adverse environmental effects requiring the application of mitigation measures. The mitigation measures summarized below are recommended to ensure that any short-term disturbances are managed efficiently through a variety of measures. These measures should be confirmed and further refined during the preliminary and detailed design phases of the Project based on the final construction footprint.

8.1.1 Natural Environment

The following are the recommended natural environment construction mitigation measures to be implemented for the preferred Alternative 2 for the proposed storm sewer works and upsizing of the Mimico Creek outfall:

Vegetation Removal

1. Minimize vegetation removal to the extent possible and limit to within the construction footprint that will be confirmed during the preliminary and detailed design phases of the Project.
2. Construction vehicle access shall be limited to existing roadways and construction paths, where feasible. It is noted access to the Mimico Creek outfall will be required for this project.
3. Clearly delineate the construction area to avoid accidental damage to retained vegetation. Delineation will be in the form of construction fencing, staking, flagging and/or silt fence barriers with the latter implemented if erosion and sediment control is also required.
4. Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and / or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes should contain flowering herbaceous plants to support foraging habitat for pollinators, as well as common milkweed (*Asclepias syriaca*) for Monarchs, wherever feasible. Restoration/compensation will be completed in accordance with TRCA's *Guideline for Determining Ecosystem Compensation* (2018b) and in consultation with the TRCA and the City of Toronto during detailed design.
5. If applicable, removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive D-03-08: Phytosanitary requirements to prevent the introduction into and spread within Canada of the emerald ash borer, *Agrilus planipennis* (Fairmaire). To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada.

Tree Protection, Preservation, and Maintenance

1. A total of 42 trees would require removal if the full Anticipated Impact Area is disturbed. Furthermore, 29 trees would be injured. The City's *Tree Protection Policy and Specifications for Construction Near Trees* (2016) guide for tree preservation and protection should be adhered, as applicable.
2. In terms of tree compensation, a total of 93 replacement trees are required to compensate for RNFP governed tree removals and injuries. Alternatively, a monetary value of \$54,219.00 cash-in-lieu can be paid as per previous correspondence with the City. Additionally, on Toronto Region Conservation Authority regulated lands, a total of 395 replacement trees would be required as compensation.
3. Tree protection hoarding (e.g., vertical fencing or horizontal hoarding) shall be installed around trees recommended for retention within the Tree Inventory Area as per the

applicable by-laws and regulations to protect all trees proposed for retention throughout the construction process.

4. Overall, all opportunities to avoid root damage within or near tree protection zone (TPZ) shall be taken, including restricting heavy equipment usage, material storage, and excavation within the vicinity of TPZ. If machinery use or equipment storage is necessary within TPZ, horizontal hoarding shall be utilized where permitted and authorized.
5. Where branches are likely to be damaged during construction, and pruning is approved by the relevant authorities, branches shall be pruned ahead of the work to avoid branches being broken off, so that bark is not torn and wounds are not more extensive than absolutely necessary. Any branches that overhang the work area and require pruning are to be pruned using clean tools as per the latest arboricultural practices. The Contractor(s) must report immediately to the Contract Administrator any damage to trees such as broken limbs, damage to roots, or wounds to the main trunk or stem systems so that the damage can be assessed immediately.
6. Trees to be removed to facilitate the Project should be removed following permit issuance, where applicable and prior to construction activities commencing on site, as trees proposed for removal may become hazardous once construction and excavation begins on site. It is recommended that an ISA Certified Arborist be retained during tree removal operations in order to ensure that standardized arboricultural techniques are employed.
7. Clearing of vegetation outside of the breeding bird season (April 1 to August 31) is recommended to avoid impacts to potentially nesting migratory birds protected under the Migratory Birds Convention Act (1994). If this is not possible, trees can be removed during the breeding bird season given the simplicity of the site (i.e., isolated trees in an urban landscape) provided that a qualified Avian Biologist completes a nest search no more than 48 hours and confirms that there are no nests present prior to the trees being removed.
8. Trees shall be removed from the site in a manner that will prevent the emergence and spread of invasive species. Ash tree removals, if any, should follow recommendations outlined in the **Arborist Report and Tree Preservation Plan (Appendix C)**. The City of Toronto should be contacted for further details regarding proper disposal.

Wildlife and Wildlife Habitat

1. Vegetation removal (i.e., ground cover, shrub and trees) should occur outside of the breeding bird season of April 1 to August 31 of any year to avoid contravention of the Migratory Bird Conservation Act. If this is not possible, nest and nesting activity searches shall be conducted, no more than 48 hours prior to vegetation removal, by a qualified Biologist in simple habitat (e.g., manicured lawn with planted trees within the

Study Area) or if minor vegetation clearing is required. If an active nest or nesting activity of a protected bird is observed, the area will be protected and no construction activities will occur until the young have fledged or until the nest is no longer active, as confirmed by a qualified Biologist. If an active nest of a migratory bird is found outside of this nesting period it still must be avoided until young birds have fledged.

2. Stockpiles shall be stored within an authorized and protected (i.e., suitable sediment fenced/greater than 30 m from a wetland or waterbody) location only.
3. If stockpiles of gravel and sandy substrates are required during the active turtle season (April 1 to October 15), install turtle exclusion fencing in accordance with best management practices (MECP, 2021) around stockpiles prior to April 1 or immediately after stockpile created if after April 1.
4. All stockpiled materials of soil, overburden or similar materials are to be maintained at a 70 degrees or less by sloping off stockpiles to create an angle that will not support nesting breeding birds during the breeding bird season (April 1 to August 31).
5. Construction personnel will be trained in ways to prevent a wildlife encounter from occurring, including the following:
 - No personnel shall approach, feed or harass wildlife;
 - Food waste will be properly stored and disposed of; and
 - Vehicles will yield to wildlife.
6. If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and / or its habitat. For example, construction activities will cease or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified Biologist will be contacted to define the appropriate buffer required from wildlife or to move the wildlife to a nearby suitable habitat outside of the construction site if necessary.

Species at Risk

1. Additional surveys (described in **Section 7.4**) are recommended to address the potential occurrence of SAR potentially affected by proposed works. These should be undertaken in consultation with MECP, and the results will be used to inform additional mitigation measures and ESA permitting needs.
2. Ministry of the Environment Conservation and Park's (MECP) Species at Risk Branch (SAROntario@ontario.ca) should be contacted within 48 hours of any observation of endangered or threatened species, and Ministry of Natural Resources and Forestry (MNR) may be contacted for species of special concern. Additionally, MECP encourages all species at risk observations to also be reported to the Natural Heritage Information Centre (<https://www.ontario.ca/page/report-rare-species-animals-and-plants>) before the end of the project.

Sediment and Erosion Control Fencing

1. Mitigation measures should be implemented for erosion and sediment control to prevent sediment from entering neighbouring properties and natural areas during construction. The primary principles and practices associated with erosion prevention and management of sediment are to:
 - Minimize the duration of soil exposure,
 - Retain existing vegetation, where feasible,
 - Encourage re-vegetation,
 - Divert runoff away from exposed soils,
 - Keep runoff velocities low, and
 - Trap sediment as close to the source as possible.
2. Details of the type and placement of sediment and erosion control to be used will be outlined in an Erosion and Sediment Control Plan to be drafted prior to construction.

Construction Vehicle Re-fuelling Stations

1. Refuelling stations should be located at least 30 m away from wetlands, watercourses, waterbodies, or other site drainage features.
2. Refuelling stations should be located within a centralized location on-site.
3. Refuelling stations should be constructed in a manner to prevent soil and/or surface and groundwater contamination from any leaks or spills.
4. An emergency response kit should be made available at each re-fuelling station in case of a spill.
5. All on-site crew members operating construction vehicles should be appropriately trained in handling a potential spill and have WHMIS Training.
6. All chemical transfer/maintenance should be conducted within the refuelling station areas.

Soil and Water Contamination

1. A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan.
2. All machinery, construction equipment and vehicles arriving on-site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al., 2013) prior to arriving and leaving the construction site in order to prevent the spread of invasive species between locations.
3. No machinery/equipment should enter or ford any wetland or watercourse at any time.

Potential Impacts to Watercourse Form and Function

1. Complete hydraulic analysis prior to the installation of new upsized outfall to predict proposed velocities and shear stresses compared to existing conditions. This can be used to assess whether current bed and bank materials will be susceptible to erosion and/or depositional processes due to changes in velocity and shear stress.
2. Consider additional sediment inputs into the embayment, the creek, and its effects to the navigability of the watercourse through the detailed hydraulic model.
3. Consider and investigate the effects of increased sediment inputs to aquatic habitat
4. Diffuse or overland shallow flows using low impact development principles are the preferred alternative to minimize negative impacts from the stormwater discharge to the identified sensitive areas on the west embayment and Mimico Creek.
5. If direct discharge of concentrated stormwater flows into the west bank embayment and Mimico Creek are part of the design, the discharge should be through a properly designed channel that is able to convey expected flows, using fluvial geomorphic and hydraulic principles.
6. Impacts stemming from upstream future developments, namely the Bonar Creek Stormwater Management Facility (AECOM, 2018) should be considered as both projects move forward.

Excess Materials and Waste

1. Adhere to Ministry of Environment, Conservation and Parks' regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) which supports improved management of excess construction soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment.
2. These activities will be completed in accordance with the Ministry of Environment, Conservation and Parks' current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).
3. All waste generated during construction must be disposed of in accordance with ministry requirements.

Control of Inadvertent Spills

1. Contamination of soils through spills and leaks can be avoided by ensuring that fuel storage, refuelling and maintenance of construction equipment are handled properly and not allowed in or adjacent to watercourses.
2. Contingency plans will be prepared before construction begins for the control and clean-up of a spill, should one occur.

3. The Ministry of Environment, Conservation and Parks Spills Action Centre must be contacted if a spill occurs.

Climate Change – Carbon Footprint and Resilience to Extreme Weather Events

1. The idling of construction equipment will be avoided and equipment will be in good working order to reduce inefficiencies in the operation of the equipment.

8.1.2 Socio-Cultural

The following are the recommended socio-cultural construction mitigation measures to be implemented for the preferred Alternative 2 for the proposed storm sewer works and upsizing of the Mimico Creek outfall:

Disruption to Existing Community (Traffic, Noise, Dust, Access)

1. Complete Traffic Management Plan.
2. Use of Best Management Practices for dust control and vibration monitoring. Non-chloride dust suppressants should be applied during construction.
3. Use of low noise equipment during construction, where possible.
4. Notify impacted property owners and travelling public prior to construction.
5. Maintain access to fronting properties.

Cultural Heritage Environment

1. Conduct field review to confirm the result of archaeological potential.
2. If a Stage 2 archaeological assessment is determined to be required during the early stages of detailed design based on the field review and area of project impacts, the City will notify and engage the appropriate Indigenous Communities to participate in any future assessments.
3. Should archaeological material be encountered during construction, all activities impacting archaeological resources will cease immediately, the Ministry of Citizenship and Multiculturalism will be contacted, and a licensed archaeologist will be engaged to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists. Further, if human remains are encountered, all activities must cease immediately and the local police as well as the coroner must be contacted.

8.1.3 Technical

The following are the recommended technical construction mitigation measures to be implemented for the preferred Alternative 2 for the proposed storm sewer works and upsizing of the Mimico Creek outfall:

Servicing and Utility Conflicts

1. Existing utility information will be collected through utility circulation and Subsurface Utility Engineering (SUE) Level-B investigation during preliminary design. Any potential conflict will be investigated through SUE Level-A investigation during detail design. Effort shall be made during detail design to eliminate any conflict through design modification. If that is not technically feasible or economically viable, then options for utility relocation will be investigated and implemented to complete the utility relocation prior to tendering. Contact with all affected utility owners will be established during early stage of design to complete any utility relocation in time.

8.2 Proposed Construction Monitoring

Contract tender documents will address mitigation in an explicit manner to ensure that contract specifications and compliance is maintained. Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

All erosion and sediment control measures should be inspected weekly, after every rainfall and significant snow melt event, and daily during periods of extended rain or snow melt.

All damaged erosion and sediment control measures will be repaired and / or replaced within 48 hours of the inspection.

Further, it is recommended that an ISA Certified Arborist is retained to regularly monitor the Project's construction activities in order to ensure that all trees that are recommended for protection and retention are being maintained adequately, in relation to standard arboricultural practices and the aforementioned tree protection protocols.

Similarly, encroachment into the tree protection zone (TPZ) of trees permitted for injury should be conducted under the supervision of an ISA Certified Arborist, where permitted.

8.3 Post-Construction Monitoring

Following construction, the operation of the new storm sewers and Mimico Creek outfall is not expected to result in any negative impacts to the environment. Post construction monitoring will be required following construction to ensure that any disturbances have been properly addressed and restored (e.g., grading, seeding, and planting), as required.

It is recommended that an ISA Certified Arborist conducts a post-construction assessment to evaluate the health and structure of trees that were retained during construction and identify opportunities for mitigation should any trees display signs of stress (i.e., falling

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limbs, declining health, etc.). Additional mitigation measures may be prescribed following construction such as monitoring, mulching, vertical mulching, irrigation, fertilization, and pruning.

Post construction monitoring details will be developed during detailed design.