6.1.3 Proposed Streetscaping Plan

Streetscaping is an important element in establishing an urban centre, to help in increasing the enjoyment of area residents, businesses, and visitors, and to provide some definition and character of the area. According to the ***Etobicoke Centre Secondary Plan,*** *"boulevards will be designed to provide safe, attractive, interesting and comfortable spaces by providing well-designed and coordinated tree-planting and landscaping…as part of street improvements." (Policy 4.1.2.2.2).*

As such, streetscaping is proposed to be provided along both sides of the roadways within the boulevard area, with additional buffer proposed on the south side of the east-west local road adjacent to the Bloor-Danforth Subway line. Other opportunities for additional streetscaping, such as median planting, could be explored during detail design, along with the streetscaping details which will be confirmed at that time. The streets in the Six Points Interchange study area are classified as "Special Street" in the draft Streetscape Manual. Planting will meet the City of Toronto (Etobicoke Centre Secondary Plan) urban design and the draft Streetscape Manual guidelines. A conceptual streetscaping plan is illustrated in **Exhibit 6-2**.

Artistic concepts of the typical sections, which illustrate a graphical view of boulevard streetscaping, are illustrated in **Exhibit 6-3** to **Exhibit 6-6**. The section numbers correspond to the sections identified in **Exhibit 6-1**.

6.1.4 Proposed Development Blocks

With reconfiguration of the Six Points Interchange, approximately 15.5 acres of land will be readily available for development (assuming the redevelopment of the Police Station lands. Approximately 1.75 acres of additional remnant land would be available for potential uses such as, but not limited to, small parkettes, extensions to existing parks, public art installations, other amenities or public uses, or sale to adjacent property owners). Developable block sizes range in size from approximately 1.5 to 3.0 acres. Other remnant parcels range in size from approximately 0.2 to 0.5 acres. **Exhibit 6-7** illustrates the proposed development blocks and the location of surplus parcels.

Exhibit 6-2
Conceptual Streetscaping Plan

Scale 1:2500
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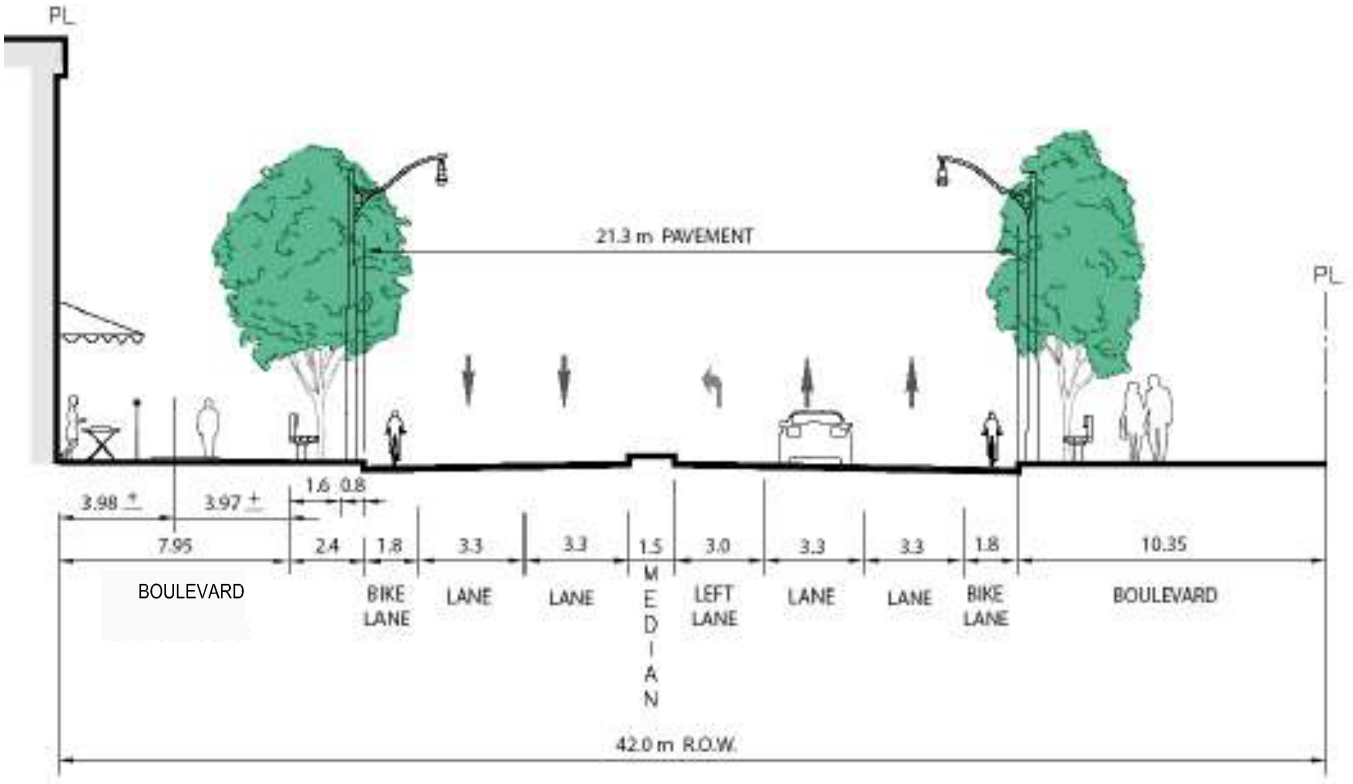
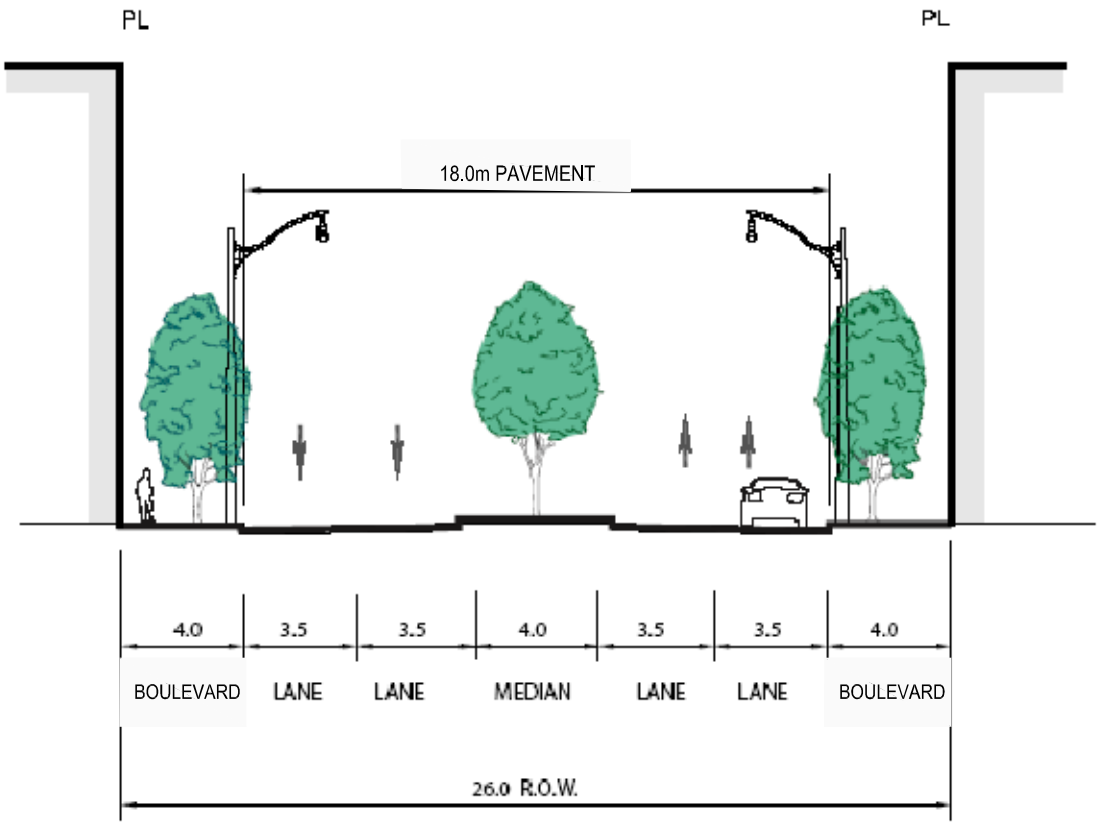


BLOOR STREET AT KIPLING AVENUE
INTERSECTION - SECTION 1

Exhibit 6-3
Artistic Concept
Bloor Street at Kipling Avenue Intersection

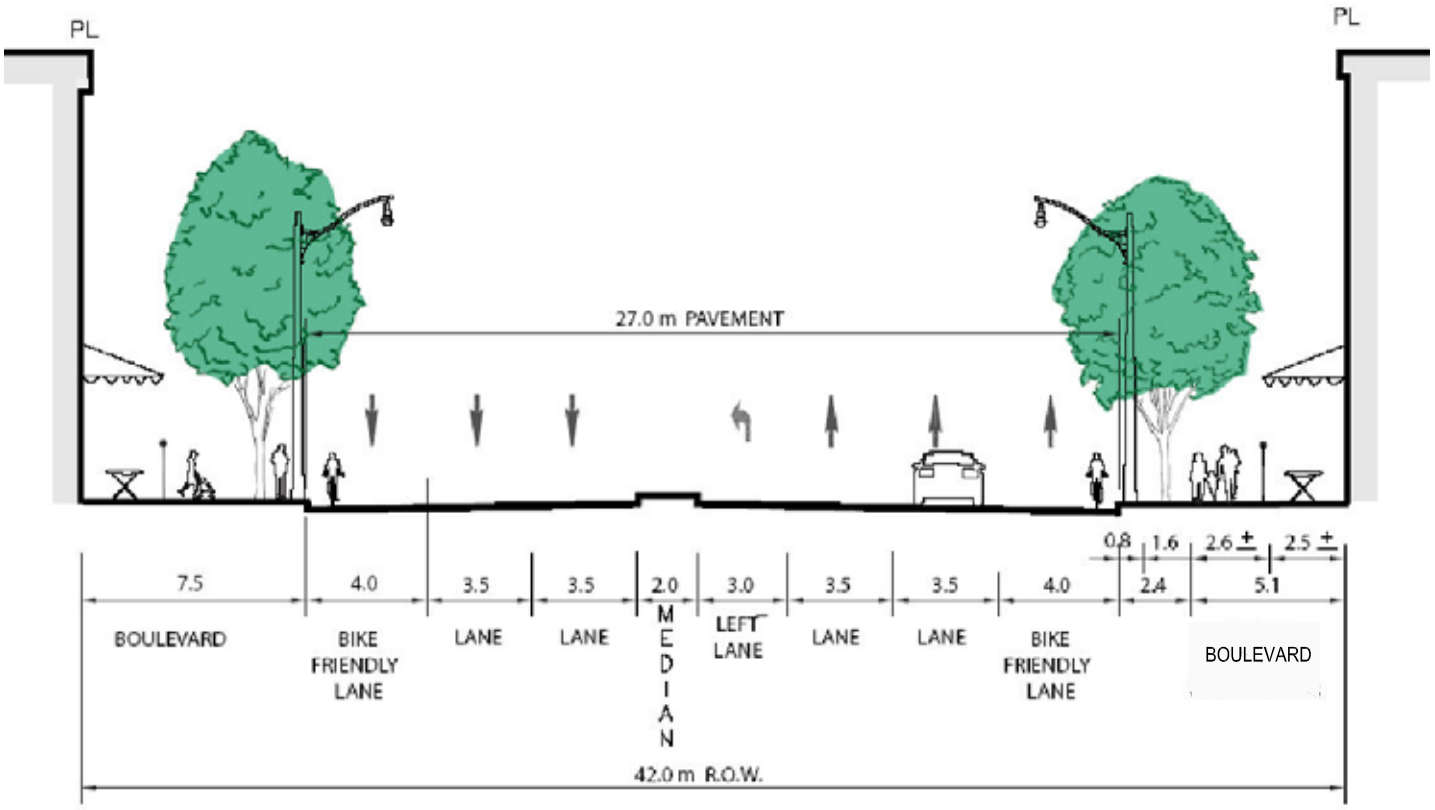
Scale 1:250



DUNBLOOR ROAD AT BLOOR STREET
INTERSECTION - SECTION 2

Exhibit 6-4
Artistic Concept
Dunbloor Road at Bloor Street Intersection

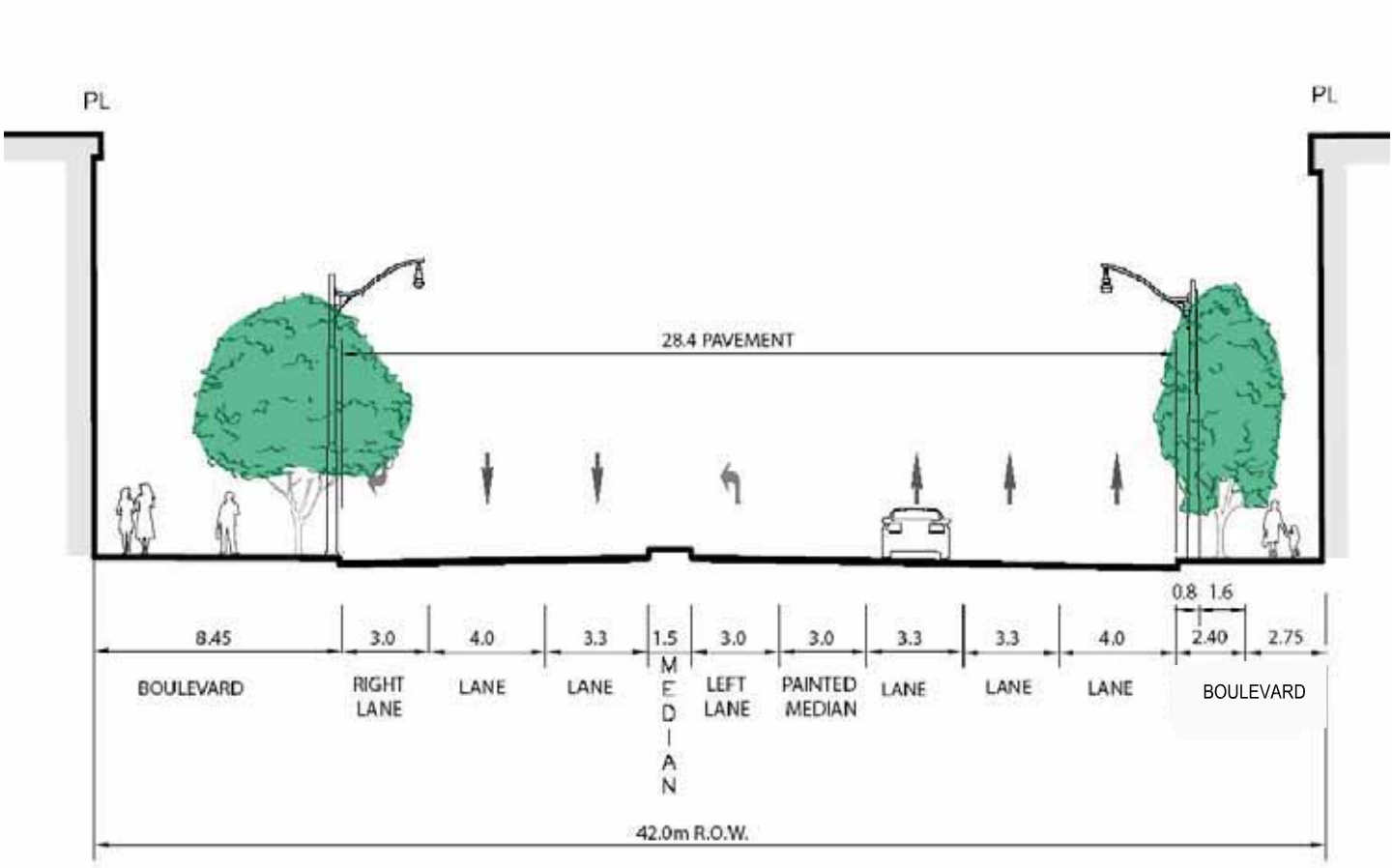
Scale 1:250



DUNDAS STREET AT KIPLING AVENUE
INTERSECTION - SECTION 3

Exhibit 6-5
Artistic Concept
Dundas Street at Kipling Avenue Intersection

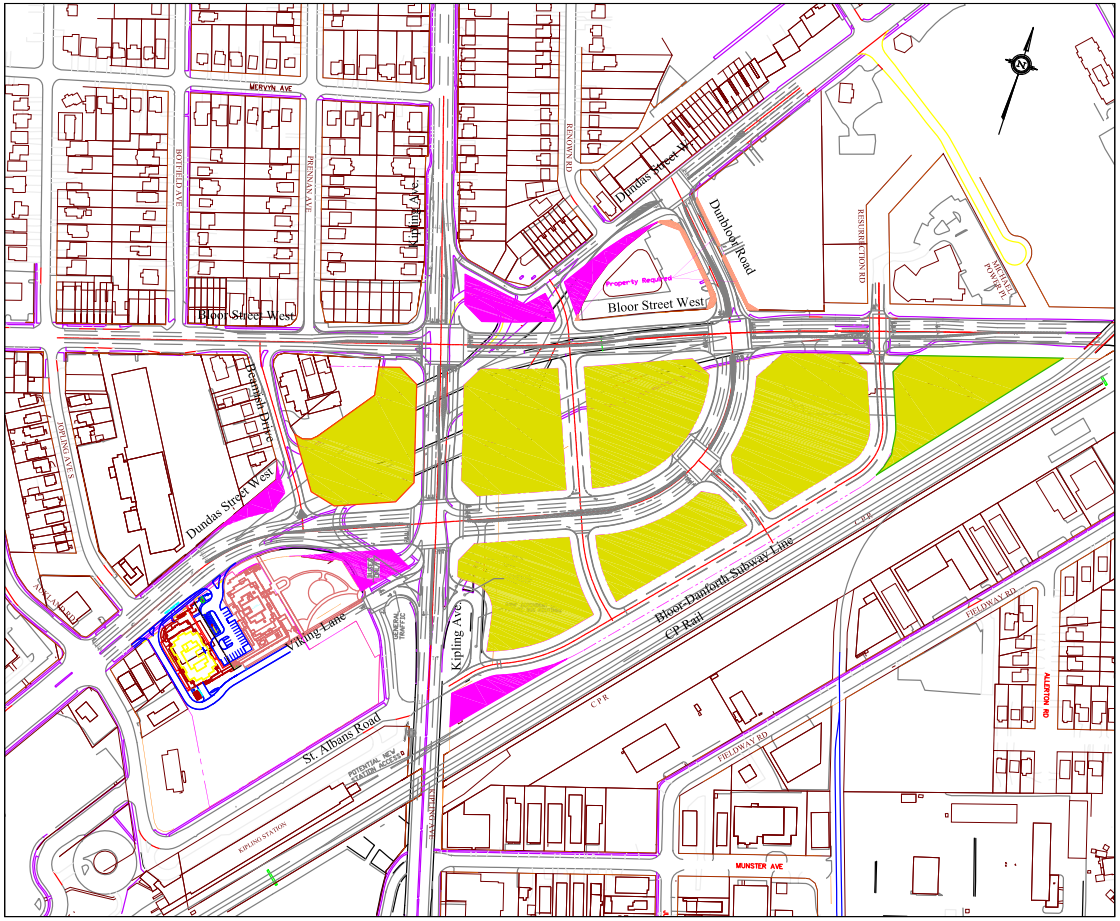
Scale 1:250

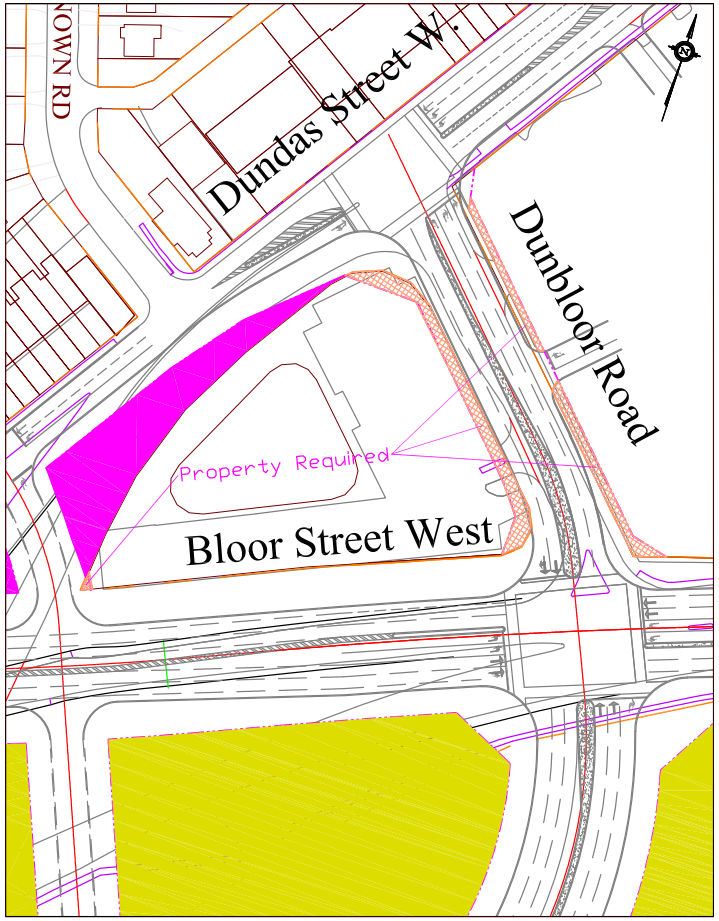


KIPLING AVENUE AT BLOOR STREET
INTERSECTION - SECTION 4

Exhibit 6-6
Artistic Concept
Kipling Avenue at Bloor Street Intersection

Scale 1:250





Scale 1:1250

LEGEND

- PROPERTY REQUIRED
- PROPOSED DEVELOPMENT BLOCKS
- SURPLUS LAND

Scale 1:5000

Exhibit 6-7

Proposed Development Blocks, Surplus Land and Property Requirements

6.1.5 Property Requirements

The functional design plan was prepared with the goal of minimizing the need for acquiring additional property. However, new property requirements have been identified for this project. The existing right-of-way width of Dunbloor Road is 20 m, but a 26 m right-of-way is proposed and being protected for. Building setbacks have been secured for a 26 m right-of-way on Dunbloor Road for proposed developments on the east side of Dunbloor Road (5145 Dundas Street West) and on the west side of Dunbloor Road (2 Dunbloor Road). As such, 1.5 m of property will be required along the east side of Dunbloor Road and 3.0 m of property will be required along the west side. The need for a sliver of property is also identified at the westerly corner of the 2 Dunbloor Road site. The property requirement is estimated to be approximately 230 m^2 on the east side of Dunbloor Road and 355 m^2 on the west side, for a total of approximately 585 m^2.

The approximate new property requirements are illustrated on **Exhibit 6-7**. The exact property requirements will be determined at detail design.

6.1.6 Illumination and Traffic Signals

It is anticipated that illumination will be required on both sides of the main roadways (Dundas Street West, Bloor Street West and Kipling Avenue). This is particularly true for Dundas Street West, which will have a 6-lane cross-section with exclusive left turn lanes at the appropriate intersections. The type of illumination is to be confirmed at the detail design stage, along with the relocation of existing illumination. All existing illumination on Kipling Avenue within the impacted areas will need to be relocated.

Full conventional illumination to City of Toronto standards is recommended, where appropriate, within the study limits. Should any of the existing light standards not be salvageable for reinstallation, new light standards should be installed to City of Toronto standards. Illumination should be directed towards the roadway and sidewalks and away from any adjacent residences.

Traffic signals are recommended at the following locations:
- Dundas Street West / Kipling Avenue
- Dundas Street West-Dunbloor Road / Bloor Street
- Dundas Street West / Dunbloor Road
- Dundas Street West / Mid-block Local Road (Location of the signal to be determined as development proceeds)

The traffic signals are to be installed to the City of Toronto Traffic Signal standards.

6.1.7 Construction Staging and Detours

Given the role of the Six Points Interchange area as a main east-west and north-south road network in the western part of the City, the staging for reconfiguring the interchange which includes removal of three existing structures, must focus on retaining key traffic movements, and minimizing traffic congestion and disruption. The construction staging and detour plan presented in this section assumes a complete reconfiguration of the interchange as one project, rather than separate staged projects over a number of years. It is the objective to maintain existing traffic capacity on the roadways as feasible, minimize impacts on adjacent access roads, and minimize the duration of construction. Maintaining access to businesses and residents will also be an important requirement.

The proposed construction sequence is illustrated in **Exhibit 6-8** and summarized below. The staging and detour plan as shown does not require additional construction easements.

Stage 1

1. Relocate utilities prior to contract award to avoid constructor issues.
2. Construct Dundas Street from Kipling Avenue easterly through Westwood Lands.
3. Reconstruct Dunbloor Road to Dundas Street, Bloor Street east of Dunbloor Road, and the intersections of Dundas Street-Dunbloor Road / Bloor Street, and Dundas Street / Dunbloor Road.
4. Re-paint southbound Kipling Avenue from 2 through lanes and a right turn lane (southbound to eastbound loop ramp), to 2 through lanes and a left turn lane at the new Dundas Street intersection. Widen the west side of Kipling Avenue south of the new Dundas Street intersection to taper lanes back to existing.
5. Close the southbound Kipling Avenue to eastbound Dundas Street ramp, the northbound Kipling Avenue to eastbound Bloor Street ramp, and the northbound Kipling Avenue to eastbound Dundas Street ramp.
6. Reconstruct the Viking Lane / Kipling Avenue intersection.
7. Construct the proposed portion of the east-west local road (i.e. St. Albans Road extension, east of Kipling Avenue).

Stage 2

1. Construct Dundas Street from existing Dundas Street to Kipling Avenue, and intersection of Dundas Street / Kipling Avenue.
2. Close eastbound Dundas Street to southbound Kipling Avenue ramp.
3. Shift Dundas Street traffic onto new Dundas Street, and close the existing eastbound and westbound sections of Dundas Street through the interchange.
4. Close Bloor Street between Prennan Avenue and Dunbloor Road, and divert westbound Bloor Street traffic onto the new Dundas Street. Divert eastbound Bloor Street traffic onto the new Dundas Street via Aukland Road.

Stage 3

1. Construct Kipling Avenue detour utilizing the proposed alignment for the new north-south local road.
2. Provide temporary signals at the Kipling Avenue Detour / New Dundas Street intersection, and remove the Bloor Street westbound bridge.
3. Construct Bloor Street between Dunbloor Road and Kipling Avenue, and reconstruct section from Kipling Avenue to Prennan Avenue.

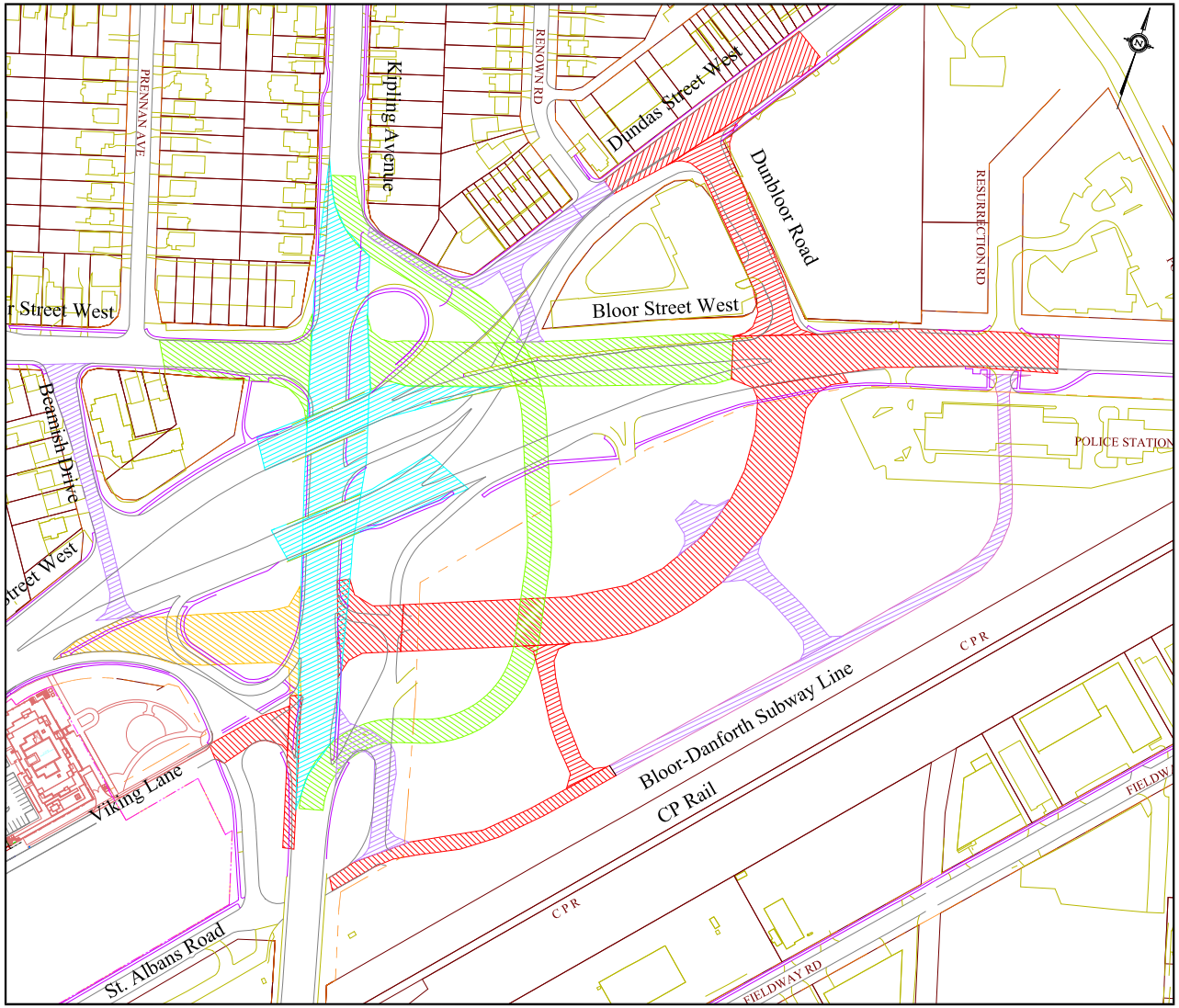
Stage 4

1. Shift traffic onto the Kipling Avenue detour.
2. Remove the eastbound and westbound Dundas Street bridges.
3. Reconstruct Kipling Avenue.

Stage 5

1. Shift traffic onto the Kipling Avenue, remove sections of detour not required, and open new section of Bloor Street.
2. Construct other connections, and other miscellaneous items.

The construction sequence may be modified during detail design to reflect refinements to the recommended preliminary design.



STAGE 1

1. Construct Dundas Loop from Kipling easterly through Westwood Lands
2. Reconstruct Dunbloor to Dundas, Bloor east of Dunbloor, and the intersections of Dundas/Bloor/Dunbloor, and Dundas/Dunbloor
3. Re-paint SB Kipling from 2 thru + Rt turn to 2 thru + Lt turn. Widen west side of Kipling south of the new Dundas Intersection to taper lanes back to existing (close SB Kipling to EB Dundas Ramp, NB Kipling to EB Bloor Ramp, and NB Kipling to EB Dundas Ramp)
4. Reconstruct Viking Lane/Kipling Intersection
5. Construct St. Albans Rd extension east of Kipling

STAGE 2

1. Construct Dundas Street from Existing Dundas to Kipling (Close EB Dundas to SB Kipling Ramp)
2. Shift Dundas Street traffic onto New Dundas Street (Close existing EB and WB Dundas through Interchange)
3. Close Bloor between Prennan Ave and Dunbloor. Divert WB Bloor traffic onto New Dundas Street & Divert EB Bloor Traffic onto new Dundas Street via Aukland Rd.

STAGE 3

1. Construct Kipling Detour, utilizing the ultimate New Road alignment, temporary signals at the Kipling Detour/New Dundas Intersection, and removing the Bloor Street WB Bridge
2. Construct Bloor St between Beamish and Dunbloor

STAGE 4

1. Shift Traffic onto Kipling detour
2. Remove the EB Dundas and WB Dundas Bridges
3. Reconstruct Kipling Ave

STAGE 5

1. Shift Traffic on to Kipling Ave, remove unused sections of detour, and open new section of Bloor
2. Construct other connections, and other miscellaneous items

LEGEND

- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- STAGE 5

Exhibit 6-8
Proposed Construction Staging

Scale 1:2500

October 2007

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6.1.8 Utilities

As noted in the existing conditions, several utilities are located within the study area. These include Enbridge, Bell Canada, Rogers Cable, and Toronto Hydro. The plan of the existing utilities with the preliminary preferred design overlaid is provided in **Appendix C**. A summary of the potential impact on each utility is provided below.

Enbridge Gas

The Enbridge Gas line (NPS 6 ST IP) through the Westwood Theatre site would need to be capped and rerouted along Kipling Avenue and the new Dundas Street to connect to existing services, as a result of the proposed new road network and development blocks. According to discussions with Enbridge Gas, capping this gas line and construction of a new facility should not pose any problems, particularly since this is not a high pressure gas line. Enbridge Gas estimated construction cost is approximately $50,000.

Sections of the gas line that are not currently underneath a roadway and would be with a reconfiguration of the interchange, such as on the west side of Dunbloor Road, would also not pose any particular concerns for Enbridge Gas, as long as the existing cover is not reduced. Enbridge Gas requires a minimum cover of 1.2 m for high pressure gas mains underneath roadways, which none of the impacted services are. Any valves that are impacted will need to be relocated. Test excavations, as required, should be completed during detail design to verify the existing depth of cover over the pipelines.

Bell Canada

The proposed new road network will have a significant impact on the Bell Canada services within the existing interchange, particularly to the fibre optic line that services west Etobicoke. This line would be located within the new section of Bloor Street West, west of Dunbloor Road. The impacts to this line as a result of profile / grade changes would require major relocation which would include rebuilding manholes, providing new manholes, new fibre and copper cables, and splicing and transferring the service. Bell Canada estimated construction cost ranges from $3.2 million to $4.5 million.

In other areas where buried cable may not be as significantly impacted, a minimum cover of 1.0 m must be maintained. Test excavations should be completed during detail design to verify the existing depth of cover over the cables, where significant profile changes will not occur.

Rogers Cable

Rogers Cable has not identified any significant impacts on their services with the proposed new road network. The buried coax cables located within the existing interchange would essentially be within sections of roadways where the proposed grades are not being lowered. This includes on the west side of Kipling Avenue at Bloor Street, on the south side of Bloor

Street at Kipling Avenue, and along the west side of Beamish Drive. The majority of the other Rogers facilities are outside of the major impact zones.

For any service relocation, Rogers prefer the services to be located in the boulevard or underneath the sidewalk. Any relocation of aerial fibre optic lines will require at least 6 months of notice to businesses, since the service would need to be disconnected to carry out line splicing.

Toronto Hydro

The majority of the existing Toronto Hydro poles within the interchange will need to be relocated. Toronto Hydro has not identified any significant impacts on their services with the proposed new road network. It is not anticipated that pole relocation will pose a problem. It should be noted however, that Toronto Hydro requires a minimum setback of 1.0 m from the roadway property line to the centerline of a pole, to avoid overhang of overhead conductors or automated switches onto private property. Toronto Hydro also requires 3.0 m to accommodate the horizontal length of any anchored guy-wires.

Given the presence of underground hydro plants along Bloor Street west of Kipling Avenue, and an underground transformer on Beamish Drive, potential impacts of these facilities will need to be investigated at the detail design stage. Minimum cover of 1.0 m will need to be maintained.

Other Services

Other services within the existing interchange that will be impacted as a result of the proposed new road network and development blocks include a 450 mm diameter sanitary sewer, and two watermains (a 300 mm and a 900 mm diameter) that traverse through the Westwood Theatre lands. These services may need to be relocated.

Formal definition of impacts on services will be determined during detail design. All utility information should be updated prior to construction to ensure that the data is accurate and to finalize relocation requirements as necessary.

6.1.9 Cost Estimate

The preliminary estimated construction cost for the recommended Dundas Street Loop option is $36.1 million, including GST (6%), utility relocations, design fees and administrative costs. The fees do not include property costs which will be confirmed during negotiations with the two impacted properties. Detailed cost estimates are provided in **Appendix G**.

It is also anticipated that the City and the affected utility companies would enter into a cost sharing agreement for costs associated with the relocation of facilities.

6.2 Environmental Effects and Mitigation Measures

This section examines the anticipated environmental effects and mitigation measures for the proposed reconfiguration of the Six Points Interchange.

6.2.1 Drainage and Stormwater Management

This section provides a summarized discussion of the preliminary drainage and stormwater management associated with the proposed reconfiguration of the Six Points Interchange. Further details can be found in the ***Storm Water Management Analysis Report*** provide in **Appendix F.3**. The purpose of the analysis was to develop planning-level stormwater management concepts for the proposed reconfiguration of the interchange. Extensive discussions were held with the City's Toronto Water Division in developing the stormwater management analysis scope of work, which included taking into consideration the City's Wet Weather Flow Master Plan (WWFMP) criteria requirements.

The general scope of the analysis included the following:

1. Collect and review the Wet Weather Flow Master Plan (WWFMP) requirements for the study area.
2. Delineate the existing drainage boundary and estimate the existing capacity of sewers at the downstream.
3. Develop hydrologic models for existing and future conditions and estimate the peak flows for existing, future uncontrolled, and future controlled conditions for peak flow control analysis.
4. Estimate and compare water balance conditions for existing and future uncontrolled scenarios for water balance management analysis.
5. Identify a potentially feasible set of Best Management Practices (BMPs) for the study area, as per the WWFMP requirements for water quality management analysis.

6.2.1.1 Stormwater Management Plan

Storm drainage from the proposed new road network and developable lands will be managed using a storm water management plan that is based on the WWFMP criteria requirements. The plan will address the three issues of: (1) peak flow control, (2) water balance management, and (3) water quality management. The 'Hierarchical Principle' of the WWFMP will be followed starting with "source control", the "conveyance control", and "end-of-pipe control".

Under the existing condition, the runoff from the study area does not receive any water quality treatment within the study area. The runoff generated from the site is conveyed down stream. In the 1950's when the stormwater management was developed, the contemporary objective was to safely convey the runoff from the developed areas. This resulted in the implementation of a storm sewer system without any runoff quantity and quality control

measures. It is therefore expected that the implementation of a stormwater management plan for the study area will provide significant improvement over the existing conditions.
The scope of the stormwater analysis was limited to the planning-level evaluation. The specific points addressed at this level included:

- Whether the existing drainage system can accommodate the proposed new road network and developable lands.
- If the existing system cannot accommodate future conditions, what kinds of control measures are necessary to meet WWFMP requirements (e.g., peak flow control, and water quality control).

Peak Flow Control

The peak flow control analysis for the study area included the following:

- Estimating peak flows for the existing condition;
- Estimating peak flows for future uncontrolled conditions; and
- Estimating peak flows for future controlled conditions, including storage requirements.

From the analysis, it was found that on-site storage within the proposed future developable lands is not sufficient to meet the downstream allowable peak flows rates. This is due to an increase in the imperviousness under future conditions. One possible solution is to supplement on-site control measures by providing 'Super Pipe' storage in order to match with the downstream allowable rates in each subcatchment. **Table 6** shows the storage requirements for the future conditions.

Table 6: Storage Requirements for Future Drainage Conditions

Storage Location	Dundas Street West		Bloor Street West		Westwood Theatre Lands	
	Total Storage (m^3)	Storage per unit area (m^3/ha)	Total Storage (m^3)	Storage per unit area (m^3/ha)	Total Storage (m^3)	Storage per unit area (m^3/ha)
Developable Block Lands	280	125	80	83	210	41
Super Pipe Storage	340		280		250	

Under future conditions, peak flows from excess 5-year return period storms will be conveyed as overland flows through the road drainage system similar to the existing system. The preliminary analysis of the overland flow routes reveals that the overland flows from the Dundas Street West and Bloor Street West catchments follow the road pattern flows from west to east. The overland flows from Westwood Theatre lands move southwesterly. Overland flow paths are to be verified during detail design.

For the minor flow system, care was taken to minimize disturbance to the existing sewer system where possible. The alignment of the proposed sewers will follow the proposed road network, with storm sewers located under the roadways.

"Super Pipe" storage may be possible in each of the storm sewer systems prior to the downstream constrained sewer segment, subject to further detailed review of on-site storage constraints. The sizing of sewers will be conducted during the detail design level of analysis.

Exhibit 6-9 shows the proposed storm sewer system for the proposed new road network.

Water Balance Analysis

The objective of the water balance analysis for the study area is to evaluate the change in infiltration volume under existing and future development conditions. Urban developments traditionally result in reduced overall infiltration as land surfaces tend to be rendered impervious by buildings and paved surfaces. These imperious surfaces are connected directly to storm sewers. In this environment, the majority of runoff is in the form of stormwater and infiltration occurs only on any remaining small patches of grass and soil cover. However, modern stormwater technologies generally involve measures designed to retard or capture runoff encouraging infiltration and thereby improving water quality of runoff.

Based on the analysis, it was found that the future condition groundwater infiltration decreased compared to existing condition infiltration. The decrease in infiltration volume under future conditions is due to an increase in paved areas (i.e., conversion of open land into roads and higher imperviousness of future land use). This decrease can be mitigated by implementing new technologies such as clean water collections systems and green roof systems on new development or development that can be retrofitted. Rerouting parking lot runoff to grassed area in each of the developable areas can also enhance the infiltration volume under future conditions.

Water Quality Analysis

The objective of the water quality management analysis is to identify the appropriate Best Management Practices (BMPs) for the proposed new road network that would meet the WWFMP requirements. Water quality issues were addressed for the study area as a whole, rather than for each subcatchment area. The preliminary analysis shows that currently, road runoff does not receive any treatment. This should be verified during the detail design phase of the study.

The future road right-of-way areas will constitute approximately 37% of the total area. In order to identify suitable BMPs that can be applied to the study area, a screening table was developed and recommendations of the WWFMP considered. From this analysis, it appears that Oil Grit Separators (OGSs) and storage tanks are suitable for treating runoff from the road area. "Super Pipes" have been recommended for peak flow control in each of the subcatchment areas which would also provide water quality control. The Total Suspended

Solids (TSS) removal within the "Super Pipes" can be equivalent to storage tanks. A "Super Pipe", is a length of pipe with an oversized diameter designed to store stormwater and control peak flows. This flow control is accomplished by restricting the flows with an orifice. The stormwater backs-up into the "Super Pipe" and is stored temporarily as the orifice discharges the flows at a lower rate than the incoming flow. The water quality performance should be verified at the detail design phase of the study.

Approximately 42% of the total area constitutes future developable lands. The runoff from these lands can be treated with various source and end-of-pipe control measures. The implementation of effective water quality measures such as wet ponds may not be suitable because of the smaller size of some developable blocks. However, underground storage tanks and off-line wet ponds can be implemented. These would provide peak flow control, as well as water quality control.

A number of new technologies have been developed in recent years. One is the concept of the clean water collector. The purpose of the clean water collector is to collect roof runoff through a specially designed sewer that would allow infiltration and attenuate peak flow. Applying this technology in future development areas should be explored. This technology will enhance ground water infiltration, which would minimize the impacts of imperviousness on water balance and would provide runoff quantity and quality control.

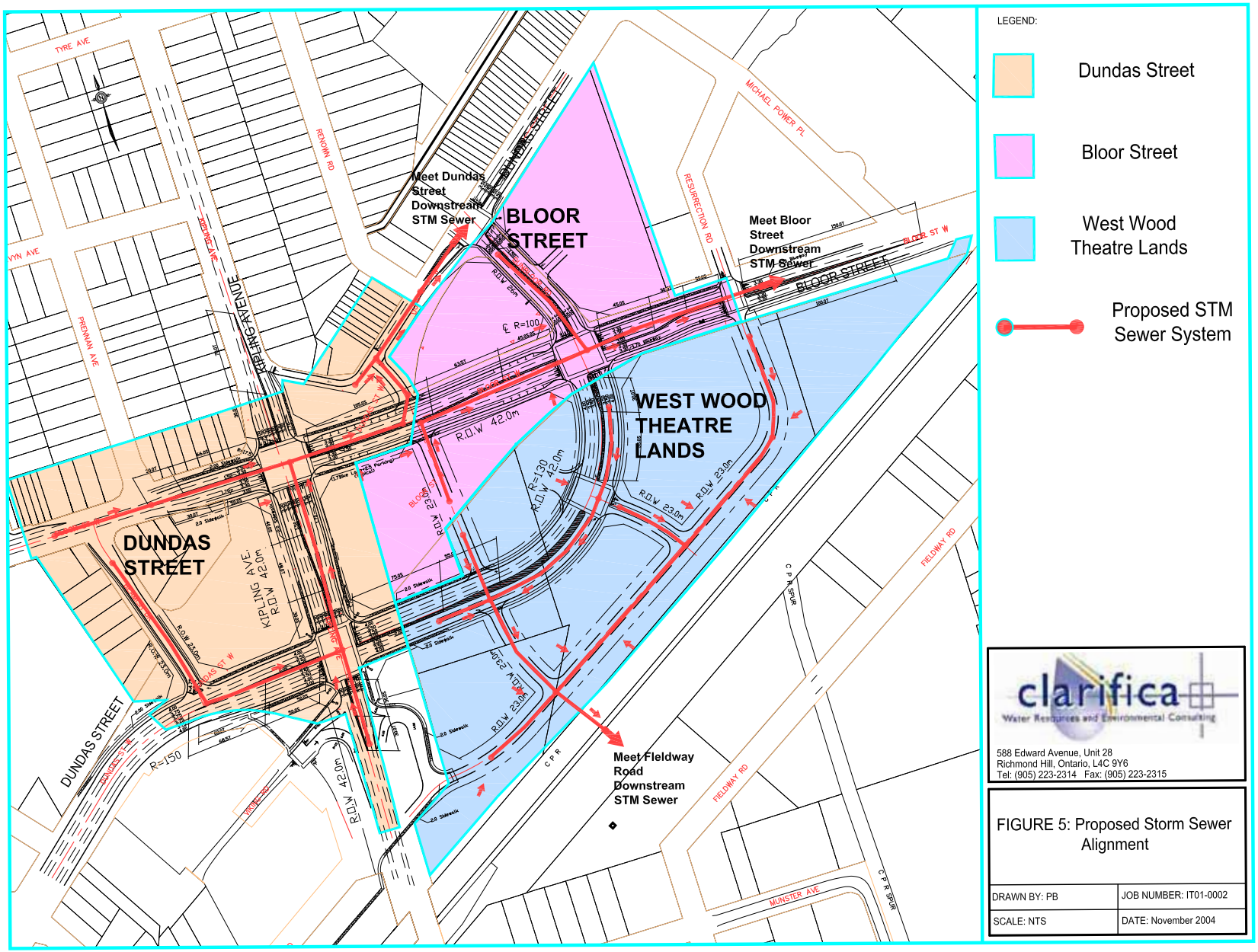

Exhibit 6-9
Proposed Storm Sewer System

Not To Scale

6.2.1.2 Conclusions and Recommendations

A planning-level stormwater management analysis was conducted to assess potential stormwater impacts with a reconfiguration of the Six Points Interchange. Notwithstanding, the results of the analysis undertaken herein are subject to review and confirmation through future detailed servicing studies and in accordance but not necessarily limited to the latest version of the ***Wet Weather Flow Management Guidelines*** and ***Draft Guideline of Stormwater Management Options for Roadway Reconstruction Projects***. The following conclusions and recommendations have resulted from the analysis:

- The proposed interchange reconfiguration and future land uses will have effects on the Wet Weather Flows (WWFs) generating from the study area. The effects include increase in runoff volume and peak flows, decrease in infiltration, and an increase in Total Suspended Solids (TSS).

- The WWF impacts can be mitigated by implementing peak flow controls such as on-site detentions within the developable block lands and through "Super Pipe" storages within the storm sewer systems. Water quality control for the developable areas can be achieved through various on-site source and end-of-pipe control measures or equivalent measures such as underground storage tanks and off-line wet ponds, and with Oil Grit Separators (OGSs) for the roadway runoff. The existing developed areas should be retrofitted with source control measures such as downspout disconnections in residential areas and porous pavements in commercial areas.

- The drainage area delineation and downstream sewer locations were based on available drainage maps. A detailed inventory of the major and minor storm sewer system should be carried out during the detailed design stage. This inventory should include, but not be limited to the following: collection of storm sewer and major system network from City databases, collection of plan and profile drawings, data gap analysis and database correction, physical verification of relevant storm sewer invert elevations, and major and minor system capacity analysis for design storm events.

- A detailed water balance analysis should be conducted with in-situ soil conditions and future controlled conditions. The feasibility for using infiltration Best Management Practices (BMPs) will require more site-specific hydrogeologic and soil data.

- A screening-level analysis was conducted to address water quality. A detailed water quality analysis should be undertaken to verify the applicability and performance of quality control measures in the study area.

- It is recommended that an assessment is conducted during detail design for a number of residential buildings and their associated downspout disconnection possibilities. Similarly, an assessment of existing water quality measures within commercial/institutional areas should be conducted.

- It is recommended that the feasibility of off-line Storm Water Management (SWM) facilities for large blocks be assessed. This assessment will need grading and detailed land-use information.

- The feasibility of implementing clean water collector systems within future development lands should be explored, since this new technology will enhance infiltration and control runoff quantity and quality.

6.2.2 Natural Environment

This section provides a summarized discussion of the potential impacts to the natural environment and mitigation measures associated with the proposed reconfiguration of the Six Points Interchange. Further details can be found in the ***Natural Sciences Report***, provided in **Appendix F.4**.

6.2.2.1 Vegetation and Vegetation Communities

A reconfiguration of the Six Points Interchange has the potential to result in the displacement of and disturbance to vegetation and vegetation communities. Effects on vegetation related to the reconfiguration may include:
- displacement of vegetation and vegetation communities; and,
- drainage modifications and salt spray

Displacement of Vegetation

Effects would be most prominent in areas that have not been previously disturbed. Minor clearing will be required, primarily within the existing right-of-way, for a reconfiguration of the Six Points Interchange. The right-of-way vegetation is primarily ornamental plantings and hedgerows. However, this urban vegetation provides habitat for birds and small mammals, shade, soil stabilization, and carbon cycling through respiration. Efforts should therefore be made to protect urban vegetation that does not need to be removed.

Encroachment on existing vegetation communities located adjacent to the right-of-way will occur in one location – the Dry-Moist Old Field Cultural Meadow (CUM1-1) located just north of the CPR tracks, and east of Kipling Avenue. The proposed reconfiguration of the interchange will result in the removal of approximately 0.5 ha of this community. However, since this area will ultimately be redeveloped, this CUM1-1 will be lost regardless of whether the interchange is reconfigured or not.

A number of planted / ornamental trees will also be affected by a reconfiguration of the interchange. A list of trees that could potentially be affected by a reconfiguration of interchange is presented in Appendix B of the ***Natural Sciences Report***, provided in **Appendix F.4**. Approximate locations are shown in **Exhibit 2-3**.

The following environmental protection measures designed to reduce vegetation removals should be considered on a site-specific basis during detail design:

- reduce the area of the footprint to the extent possible through the use of retaining walls, urban cross-sections, and other road design elements;
- reduce grading requirements to the extent possible to maintain existing drainage patterns;
- provide local tree protection including guiderails, retaining walls and ditches where warranted;
- identify and protect trees to be retained during construction using a temporary tree protection barrier in accordance with OPSS 565; and,
- plant new native vegetation to compensate for vegetation removals.

Drainage Modification and Salt Spray

Disturbance to vegetation as a result a reconfiguration of the interchange is considered negligible since the majority of the vegetation located adjacent to the right-of-way has been previously disturbed by urban development. Impacts on vegetation communities will likely be due to grading activities rather than the need to clear portions of or entire communities.

The effects of salt spray on vegetation are considered minor. However, measures to reduce potential impacts of road salt include:

- managing the application of road salt through judicious timing, improved spreader machinery, pre-wetting methods, pavement temperature monitoring, and other techniques; and,
- using alternative substances to de-icing salt including other chloride salts, and acetate-based substances, where appropriate.

These measures will keep vegetation dieback to a minimum.

Rare, Threatened and Endangered Vegetation

There are no rare, threatened or endangered vegetation or significant vegetation communities within the study limits. Therefore, this project will not affect any of these communities.

6.2.2.2 Wildlife and Wildlife Habitat

Displacement of Wildlife

Reconfiguration of the Six Points Interchange will be done primarily within the existing right-of-way. The right-of-way consists primarily of previously modified / disturbed terrestrial wildlife habitat with low habitat structure and diversity, and limited habitat capability. As a result, a reconfiguration of the interchange will not have a significant effect on wildlife and wildlife habitat.

However, numerous bird species located within the project limits are listed under the Migratory Birds Convention Act (MBCA). The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round (migratory game birds are only protected from March 10 to September 1), permits are seldom secured and the Act is seldom enforced for removal of wildlife habitat outside of the nesting season. To meet the requirements of the MBCA, no vegetation removals should occur during the nesting season. With several exceptions, this includes the period from April 1 to July 31. If vegetation clearing is required during this period, a nesting survey should be carried out by a qualified avian biologist prior to construction. If active nests are found, a site-specific mitigation plan should be prepared in consultation with the Canadian Wildlife Service.

Barrier Effect on Wildlife Passage

No new barriers to wildlife passage will be created as a result of a reconfiguration of the Six Points Interchange. Given the urban nature of the study area, the reconfiguration will not have any significant impact on wildlife passage.

Rare, Threatened or Endangered Wildlife, or Significant Wildlife Habitat

There are no rare, threatened or endangered wildlife or significant wildlife habitat within the study limits. Therefore, this project will not affect any of these habitats.

6.2.2.3 Fisheries and Aquatic Habitat

There are no watercourses located within the study limits. Therefore, this project is not anticipated to affect any fisheries or aquatic habitat.

6.2.2.4 Erosion and Sediment Control Measures

Clay loam soils within the project limits have slight susceptibility to erosion. However, soil disturbance associated with excavations, cut and fill, drainage alterations, etc., may result in erosion of, and sedimentation to sensitive receiving watercourses. Site-specific erosion and

sedimentation control measures to be implemented prior to construction should be identified during detail design. Erosion and sedimentation control measures should include:

- limiting the geographical extent and duration that soils are exposed to the elements;
- implementing standard erosion and sedimentation control measures in accordance with Ontario Provincial Standard Specification (OPSS) 577 including,
- straw bale and/or rock flow checks placed at regular intervals in ditches down gradient from areas of soil disturbance;
- silt fence placed within ditches and around catch basins in areas of soil disturbance;
- applying conventional seed and mulch, tackifiers and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; etc.
- managing surface water outside of work areas to prevent surface water from coming in contact with exposed soils.

Monitoring of erosion and sedimentation control measures during construction should be implemented to ensure their effectiveness. These environmental protection measures will greatly reduce the potential for soil erosion and impairment of water quality.

6.2.3 Social and Economic Environment

6.2.3.1 Impacts on Businesses and Residents

A reconfiguration of the Six Points Interchange is key to the redevelopment of the Etobicoke Centre. As previously mentioned, the City intends to enhance the concentration of employment and housing in the Etobicoke Centre to better utilize the substantial public transit and other urban infrastructure that currently exists, and to serve to further protect the area's many low density residential neighbourhoods by accommodating new growth. A vibrant mix of employment and housing will present opportunities for residents to walk or use public transit to work. A reconfiguration of the interchange will allow for a hub of cultural, social, administrative and recreation uses, which will facilitate social interaction and foster a sense of community and identity for the area.

The preferred design for reconfiguring the interchange does not significantly affect any existing accesses to the area road network, after construction. The design will improve access to the City-owned Westwood Theatre lands, and will provide accommodation for pedestrians, cyclists, and transit.

Approximately 585 m^2 of property will be required from two property owners, which is minimal, given the extent of the project. Property impacts are discussed in **Section 0**. Property impacts will be minimized during detail design.

The nature of the work required to reconfigure the interchange is such that traffic disruption and delays cannot be avoided. Existing businesses and residents will therefore be impacted while construction is taking place, mainly from traffic detours, restricted movements, etc. Timing of construction activities can be coordinated to minimize some of these impacts. It is

the objective to maintain existing traffic on the area road network, minimize impacts on accesses (access to existing properties should be maintained at all times), and minimize the duration of construction. Also to minimize impacts on residents and businesses within the immediate impact zone, notification should be provided prior to construction and in advance of any work related to property access.

6.2.3.2 Noise Impact Assessment and Road Construction Noise

Noise Impact Assessment

As noted in Section **2.1.2**, the Ministry of the Environment (MOE) does not have noise guidelines specifically relating to the construction or roadway widening. However, the MOE does have a protocol with the Ministry of Transportation (MTO) relating to Provincial Highway Expansions. The protocol states that the primary objective is to achieve 55 dBA or the preconstruction ambient sound exposure, whichever is higher, at outdoor amenity areas. The MOE/MTO protocol indicates that for sound exposure increases greater than 5 dBA, an investigation into the administrative, economic, and technical feasibility of noise mitigation is required.

The results of the noise impact assessment indicate that a proposed reconfiguration of the interchange will result in lower sound exposures at most of the noise sensitive areas. This is essentially as a result of Dundas Street West being relocated further south away from most of the noise sensitive receptors. However, a minor increase of 1 decibel is predicted for the Tridel complex located south of Dundas Street West and west of Kipling Avenue.

Table 7 summarizes the resultant sound exposures through the corridor.

Table 7: Predicted Sound Exposure and Noise Impact

Receptor		Existing Leq 24-Hour (dBA)	Future Without Reconfiguration Leq 24-Hour (dBA)	Future With Reconfiguration Leq 24-Hour (dBA)	Noise Impact (dBA)
R1	northwest corner of Dundas and Beamish	61	62	56	-6
R2	southwest corner of Bloor and Beamish	57	59	57	-2
R3	north of Bloor, west of Prennan	54	55	55	0
R4	southeast corner of Bloor and Beamish	60	61	57	-4
R5	northwest corner of Kipling and Bloor	57	58	56	-2
R6	northeast corner of Kipling and Bloor	60	61	59	-2
R7	northwest corner of Dundas and Renown	64	64	61	-3
R8	Tridel Complex	61	63	64	1

Note: Receptor locations are shown on Figure 1 in the Noise Assessment Report found in **Appendix F.1**.

In summary, a reconfiguration of the Six Points Interchange will have none to negligible noise impact on noise sensitive receptor locations. As per the MTO/MOE guidelines, noise mitigation is not required for the proposed works.

Road Construction Noise

Construction of the proposed new road network has the potential to result in noise and dust. Construction noise is however temporary noise and depends on the type of work required. The impact of construction noise depends on the type of equipment used, number of pieces of equipment, time and duration of operation, and the proximity to noise sensitive receivers in question. Construction noise should be kept to a minimum through the use of well maintained equipment with appropriate noise controls and the application of dust suppressants as necessary. Construction activities are to comply with the requirements of the municipal noise by-laws.

Further details on the noise impact assessment can be found in the ***Environmental Noise Assessment Report***, provided in **Appendix F.1**.

6.2.3.3 Air Quality Impact Assessment

A screening level assessment of the potential impacts on local air quality from a reconfiguration of the Six Points Interchange was undertaken. This section provides a summarized discussion of the results of the assessment. Further details can be found in the ***Screening Level Air Quality Assessment Report*** provide in **Appendix F.2**.

Carbon monoxide (CO), nitrogen dioxide (NO_2), and inhalable particulate matter (PM_{10}) were considered, using screening level modelling techniques with projected AM and PM peak hour traffic volumes.

The air quality assessment involved two primary tasks:
- A review of historical ambient air quality conditions in the study area; and
- An assessment of potential local air quality impacts, attributable to vehicular emissions from projected, future-build, peak-hour traffic volumes, relative to applicable government guidelines.

The screening level modelling results are presented graphically in the form of concentration contours in the Air Quality Assessment Report. Contour plots were generated for CO, NO_2, and PM_{10}, for the years 2015 and 2030. NO_2 was estimated from the predicted hourly NO_X results using the Ozone Limiting Method. The key modelling results are presented below:
- Future predicted concentrations (2015 and 2030) of CO and NO_2 are well below their respective 1-hour Ambient Air Quality Criterions (AAQCs) at the residences adjacent to the reconfigured Six Points Interchange;
- Future predicted concentrations (2015 and 2030) of PM_{10} are below the1-hour average "level of concern" (50 g/m^3) at the residences adjacent to the reconfigured Six Points Interchange;
- For CO and NO_2, even if the highest 1-hour ambient measurement from the MOE's Etobicoke Monitoring Station is added to the highest predicted concentration, the combined impacts remain below each of their respective AAQCs; and
- For PM_{10}, ambient measurements from the MOE's Etobicoke Monitoring Station indicate that background levels occasionally exceed the interim 24-hour average AAQC (1-hour "level of concern" was also exceeded). However, since the MOE's Etobicoke Monitoring Station is located relatively close to the Gardiner Expressway and the Mimico GO Train Station, it is likely that the measured ambient levels from this station are higher than ambient levels in the area near the reconfigured Six Points Interchange.

A comparison between the 2015 and the 2030 results indicate the following:
- Predicted CO impacts are lower for the year 2030. This is expected to occur as a result of continuing improvements in motor vehicle tailpipe emissions, due to stricter new vehicle emission regulations;
- Predicted NO_2 impacts are lower for the year 2030. The decrease in total NO_X emissions between 2015 and 2030 is greater than the decrease in NO_2 impacts because the level of ozone is assumed to limit the conversion of NO_X to NO_2; and
- Predicted PM_{10} impacts are about the same in both scenarios. Although the tailpipe emissions of PM_{10} are expected to decrease between 2015 and 2030, the re-entrained road dust emissions are not technology dependant. Re-entrained dust from the roadway surface accounted for about 90% of the total PM_{10} emissions.

Regulations governing emissions from vehicles and the composition of gasoline and diesel fuels are important factors for roadway air quality assessments. Regulations are typically developed and adopted in the United States before they are adopted in Canada. The lag time

between these events is shrinking and is also becoming less significant because of the high level of integration of the automotive sector across North America. New regulations bring new requirements for fuel quality, contributing to significant emission reductions. Cleaner fuels will be required in addition to advanced emission control technology.

Conclusions

The review of historical ambient air quality levels indicates that levels of CO and NO_2 are well below their respective guidelines at the MOE's Etobicoke Monitoring Station. However, occasionally there are measured levels above the guidelines for particulate matter and ground level ozone, which are not uncommon to many points of Southern Ontario.

The dispersion modelling results (without background) indicate that local air quality impacts attributable to vehicular emissions from projected, future-build, peak-hour traffic volumes within the proposed new road network, are less than applicable government guidelines at the adjacent residences for all modeled scenarios.

6.2.4 Summary of Identified Concerns and Proposed Mitigation Measures

A summary of the potential impacts to the natural, social and economic environments, together with recommended mitigation measures is provided in **Table 8**.

Table 8: Potential Impacts and Proposed Mitigation Measures

Factor	Potential Impact	Proposed Mitigation
Natural Environment		
Vegetation	▪ Reduction of vegetation within the interchange area	▪ The right-of-way vegetation is primarily ornamental plantings and hedgerows. However, this urban vegetation provides habitat for birds and small mammals, shade, soil stabilization, and carbon cycling through respiration. Efforts should therefore be made to protect urban vegetation that does not need to be removed. ▪ Environmental protection measures designed to reduce vegetation removals, and to reduce potential impacts of road salt should be considered on a site-specific basis during detail design. Some of these measures are provided in **Section 6.2.2.1.** ▪ There are no rare, threatened or endangered vegetation or significant vegetation communities within the study limits. Therefore, this project will not affect any of these communities.
Wildlife	▪ Displacement of wildlife	▪ The right-of-way consists primarily of previously modified/disturbed terrestrial wildlife habitat with low habitat structure and diversity, and limited habitat capability. As are result, a reconfiguration of the interchange will not have a significant effect on wildlife and wildlife habitat. ▪ However, numerous bird species located within the project limits are listed under the Migratory Birds Convention Act (MBCA). To meet the requirements of the MBCA, no vegetation removals should occur during the nesting season (April 1 to July 31). If vegetation clearing is required during this period, a nesting survey should be carried out by a qualified avian biologist prior to construction. If active nests are found, a site-specific mitigation plan should be prepared in consultation with the Canadian Wildlife Service. ▪ There are no rare, threatened or endangered wildlife or significant wildlife habitat within the study limits. Therefore, this project will not affect any of these habitats.

Factor	Potential Impact	Proposed Mitigation
Natural Environment		
Fisheries and Aquatic Habitat	▪ Direct impact on fisheries and aquatic habitat	▪ There are no watercourses located within the study limits. Therefore, the proposed reconfiguration is not anticipated to affect any fisheries or aquatic habitat. ▪ During construction however, measures as described in **Section 6.2.2.4 -** erosion and sediment control, should be taken to minimize the potential for downstream impacts to fisheries and aquatic habitat.
Surface Water Quantity	▪ Increase in runoff volume and peak flows	▪ Maximize runoff volume and peak flow controls on developable lands ▪ Provide additional storage through "Super Pipes" in each of the storm sewer systems prior to the downstream constrained sewer segment, in order to match with the downstream allowable rates in each subcatchment area. ▪ The sizing of sewers to be conducted during the detail design stage.
Surface Water Quality	▪ Increase in Total Suspended Solids (TSS)	▪ Oil Grit Separators (OGSs) and storage tanks are potentially suitable for treating runoff from the road area. This is to be confirmed through more detailed water balance analysis with more site-specific hydrogeologic and soil data. ▪ "Super Pipes", recommended for peak flow control in each of the subcatchment areas, can also provide water quality control. The Total Solids (TSS) removal within the "Super Pipes" can be equivalent to storage tanks. However, the water quality performance should be verified at the detail design phase of the study. ▪ Runoff from developable lands can be treated with various source and end-of-pipe control measures, such as underground storage tanks and off-line wet ponds. These would provide peak flow control, as well as water quality control. ▪ Applying clean water collector systems technology in future development areas should be explored. This new technology will enhance ground water infiltration, and would provide runoff quantity and quality control. ▪ Existing developed areas should be retrofitted with source control measures such as downspout disconnections in residential areas and porous pavements in commercial areas.
Surface Water Infiltration	▪ Decrease in infiltration	▪ This decrease can be mitigated by implementing new technologies such as clean water collections systems and green roof systems. Rerouting parking lot runoff to grassed area in each of the developable areas can also enhance the infiltration volume under future conditions.

Factor	Potential Impact	Proposed Mitigation
Natural Environment		
Soil Removal, and Contaminants	▪ Potential for removal of contaminated soils	▪ Any soils that are removed during construction should be tested for contaminants. If the soils are contaminated, the City is to notify the MOE and have a contingency plan for how and where the soils will be disposed of or remediated. ▪ The City is to develop a contingency plan for how any gas tanks or petroleum storage sites encountered during construction will be handled, to ensure groundwater and soil contamination does not occur.
Social and Economic Environment		
Socio-Economic	▪ Impacts on businesses and residents	▪ Overall, a reconfiguration of the Six Points Interchange will provide for a vibrant mix of employment and housing which will present opportunities for residents to walk or use public transit to work. A reconfiguration will also allow for a hub of cultural, social, administrative and recreation uses, which will facilitate social interaction and foster a sense of community and identity for the area. ▪ In the short-term, the nature of the work required to reconfigure the interchange is such that traffic disruption and delays cannot be avoided. Existing businesses and residents will therefore be impacted while construction is taking place, mainly from traffic detours, restricted movements, etc. Timing of construction activities can be coordinated to minimize some of these impacts.
Noise and Road Construction	▪ Increase in existing noise levels.	▪ A reconfiguration of the Six Points Interchange will have none to negligible noise impact on noise sensitive receptor locations. As per the MTO/MOE guidelines, noise mitigation is not required for the proposed works. ▪ Construction activities are to comply with the requirements of the municipal noise by-laws.
Air Quality	▪ Degradation in ambient air quality conditions	▪ Local air quality impacts attributable to vehicular emissions from projected, future-build, peak-hour traffic volumes within the proposed new road network, are less than applicable government guidelines at the adjacent residences for all modeled scenarios. Air quality is therefore not a concern.
Property Requirements	▪ Requirement for additional property	▪ Approximately 585 m^2 of property will be required from two property owners. Formal definition of property requirements will be determined during detail design.
Streetscaping	▪ Reduced aesthetics	▪ Streetscaping is an important element in establishing an urban centre to help in increasing the enjoyment of area residents, businesses, and visitors, and to provide some definition and character of the area. As such, extensive streetscaping is proposed to be provided with a reconfiguration of the interchange. ▪ Streetscaping details will be determined during detail design, and will meet the City of Toronto (***Etobicoke Centre Secondary Plan***) streetscaping and urban design guidelines.

Factor	Potential Impact	Proposed Mitigation
Social and Economic Environment		
Archaeology, and Cultural Resources	▪ Identification of precontact and historic archaeological sites in undisturbed areas.	▪ In the event that deeply buried archaeological remains are encountered during construction, the Office of the Regulatory and Operations Group, Ministry of Tourism, Culture and Recreation should be contacted, and standard procedures should be adhered to during construction, in accordance with the Cemeteries Act.
Utilities	▪ Relocation of existing utilities (above ground and underground)	▪ Relocation of existing utilities will be significant. Formal definition of impacts on utilities, specifically Toronto Hydro, Enbridge Gas, Bell Canada and Rogers Cable, will be determined during detail design.
Other Services	▪ Relocation of existing water & wastewater services	▪ Relocation of existing water & wastewater services will be significant. Formal definition of impacts will be determined during detail design.
Illumination	▪ Need for illumination	▪ The need for and type of illumination will be confirmed during detail design. Illumination is to be provided as appropriate.
Construction Detours	▪ Inconvenience during construction.	▪ During detail design, a detailed construction staging and traffic management plan similar to that described in **Section 6.1.7** should be developed to determine how traffic will be accommodated during construction and how access to properties will be maintained. ▪ The City will attempt to mitigate impacts as much as possible.