

7



RECOMMENDED DESIGN





7.1 DESIGN DETAILS

The recommended design for the preferred alternative (**Option 2C**) consists of an east-west road connection with a multi-use path on the south side. **Figure 7-1** illustrates a conceptual drawing of the variable right-of-way (ROW) concept envisioned for the preferred alignment. **Figure 7-2** illustrates a plan drawing of the preferred alternative. For full drawings of the recommended design, refer to **Appendix L**. The design of the preferred alternative consists of the following features:

- A varying public right-of-way (ROW) ranging from 13.0 metres to 20.0 metres or more;
- A sidewalk on the north side with minimum width 2.1 metres;
- 3.3 metre wide traffic lanes to accommodate potential TTC bus services;
- 3.9 metre wide multi-use path on the south side; and,
- Remaining ROW area allocated to boulevard landscaping (including bioswales), and/or sidewalks where additional ROW is available.

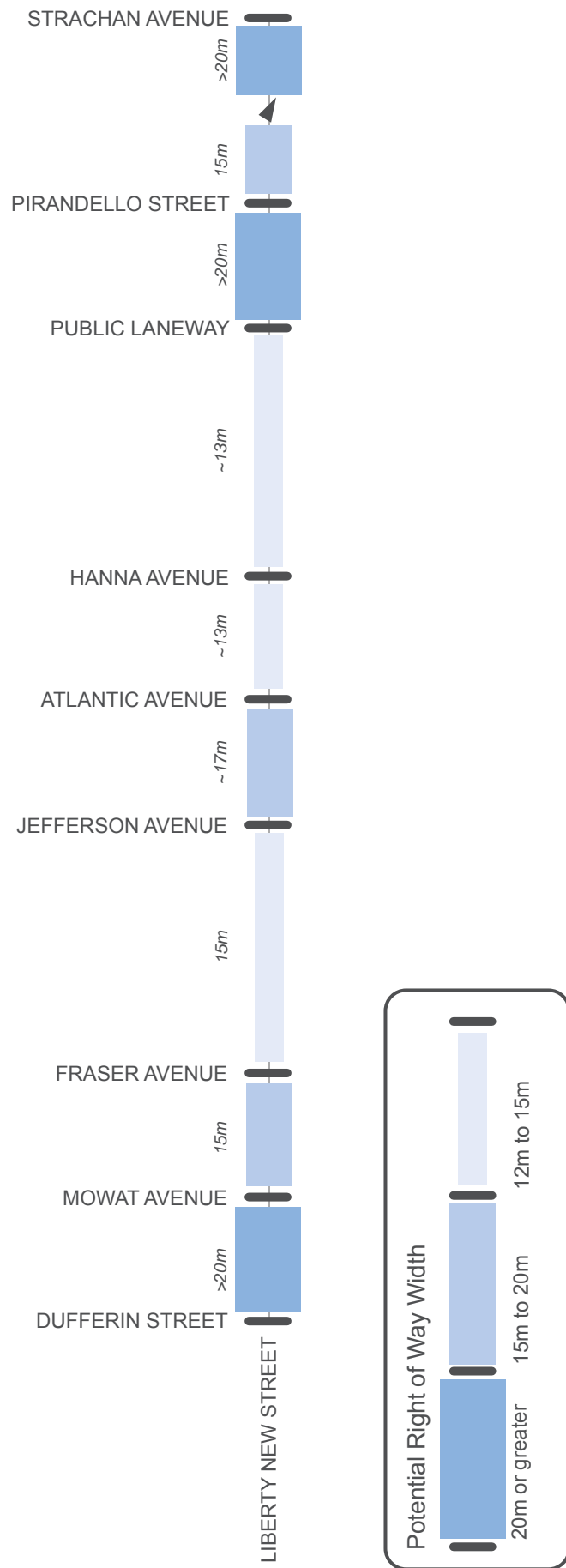


Figure 7-1 Variable ROW Concept

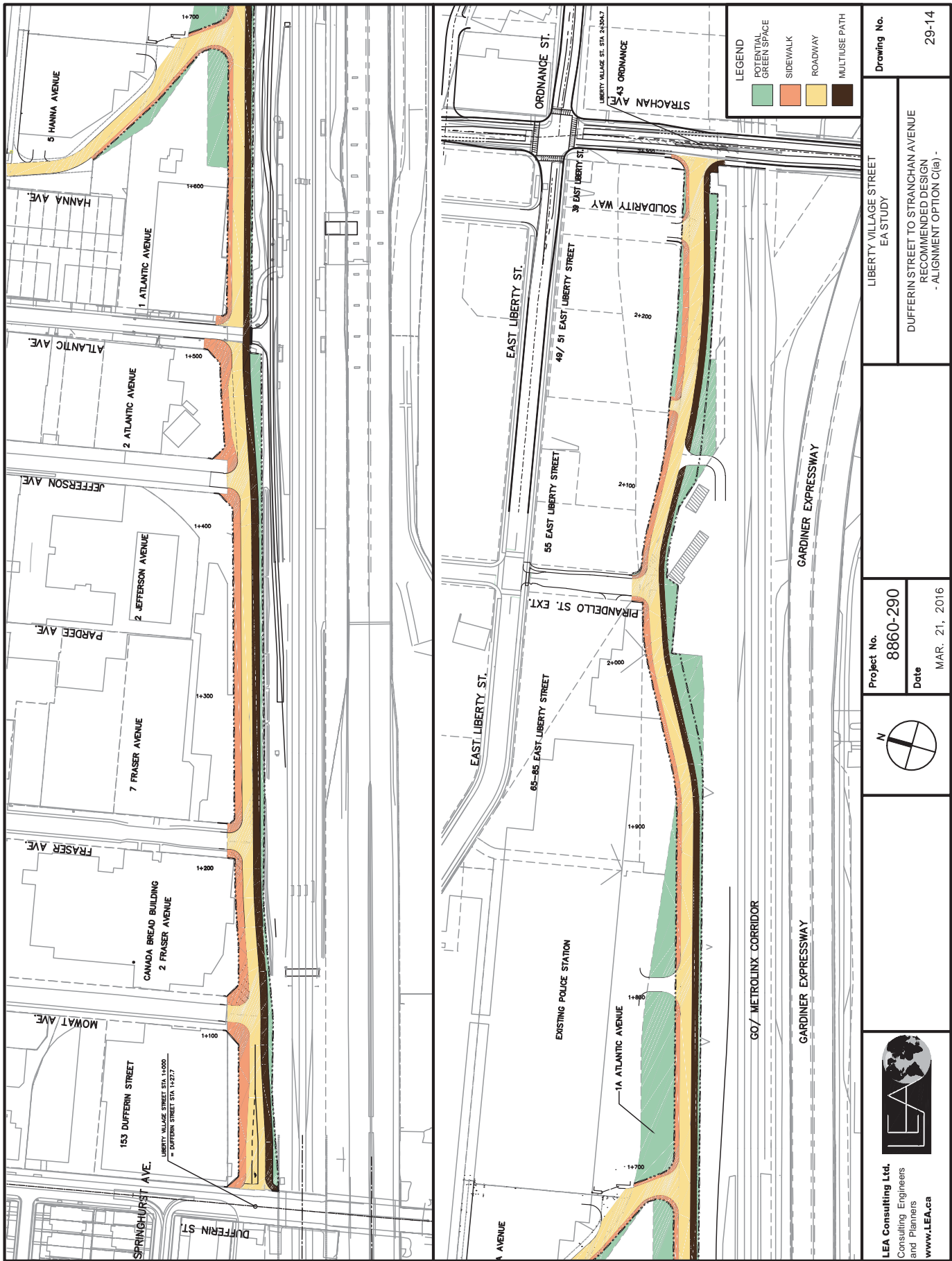


Figure 7-2 Option 2C – East-West Link with Multi-Use Path



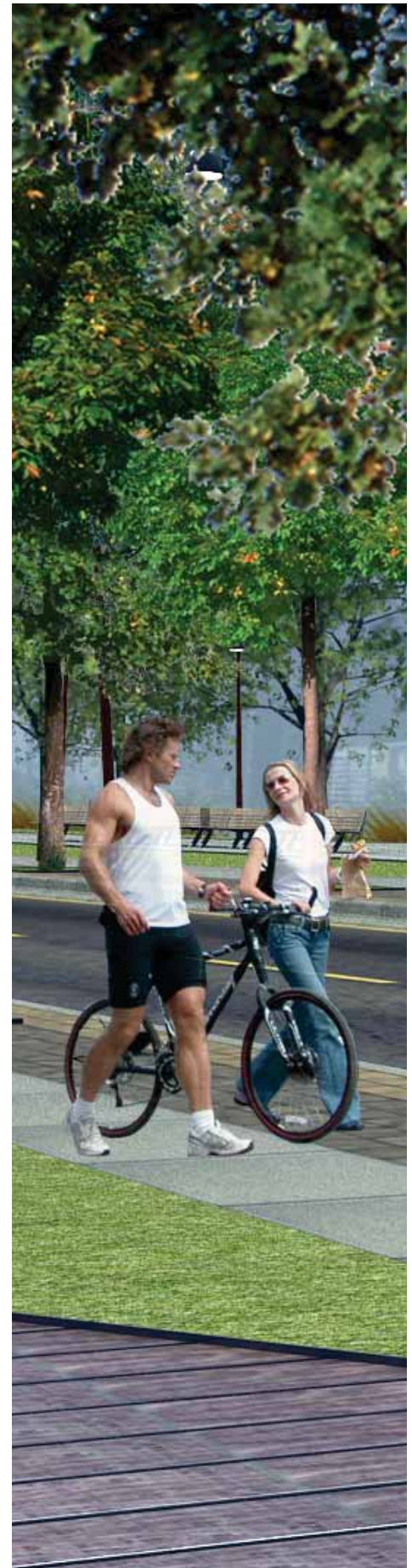
7.2 TYPICAL CROSS SECTIONS

Figure 7-3 illustrates typical roadway cross sections associated with Option 2C along sections where a 15.0 metre ROW is available. In sections that contain a ROW greater than 15.0 metres, additional landscaping and urban features can be provided.

7.3 URBAN DESIGN FEATURES

Illustrated in **Figure 7-4** is the recommended design of the preferred alignment between Dufferin Street and west of Pirandello Street. This figure was presented to the Design Review Panel (DRP), and at the time the preferred connection with Strachan Avenue had not yet been decided. Overall, the multi-use path provided on the south side of the proposed ROW will function as a **linear public open green space** between Dufferin Street to Strachan Avenue. This will be the continuation of the design depicted in **Figure 7-4** to the east of Pirandello Street. Potential paving materials that can be considered for the multi-use path include a boardwalk (black locust or white cedar) and alternately boardwalk permeable pavers, stone boardwalk pavers, and steel grate deck (**Figure 7-5**). Although the preferred alignment does not abut a water feature, the topographical difference between the western section of the proposed right-of-way on the embankment and the rail corridor creates a unique setting and offers a view corridor to Downtown Toronto (**Figure 7-6**). The boardwalk material considered for the multi-use path can allow users to experience it as a public open green space in addition to it functioning as a pedestrian and cyclist thoroughfare.

A **gateway feature** can be considered at the west end of the preferred alignment at Dufferin Street which would be an entry point into Liberty neighbourhood. The material and design implemented for this gateway feature can potentially consider the use of weathered steel to reminisce the industrial heritage of the study area. The use of sculptural Corten steel lighting standards (**Figure 7-7**) along the new street can also be considered to celebrate the industrial heritage of the area.



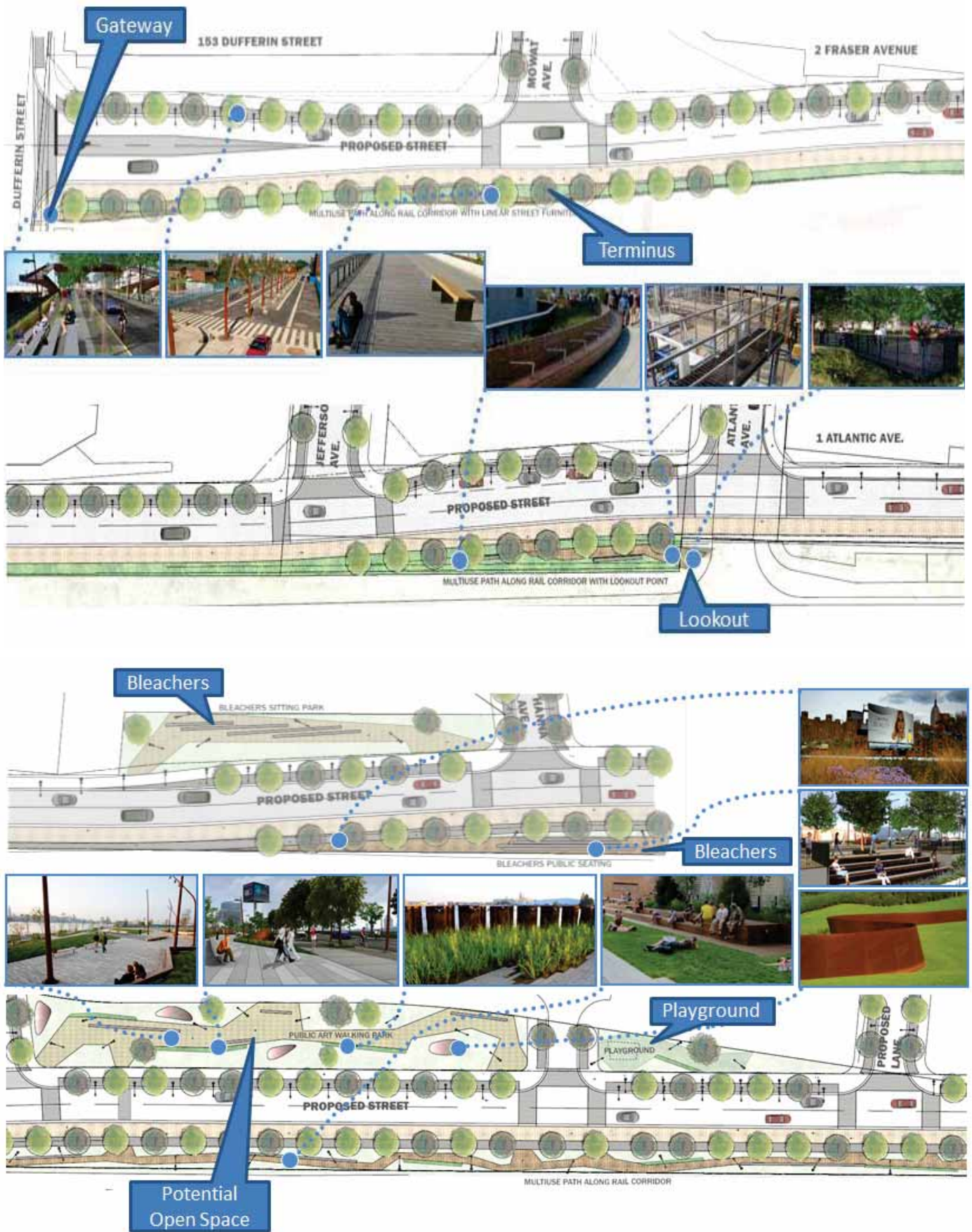


Figure 7-4 Option 2C Road + Multi-Use Path - Urban Design Concept



Figure 7-5 Potential Multi-Use Path Materials



Figure 7-6 View Corridor at Dufferin Street



Figure 7-7 Steel Light Standards



A **lookout point** proposed at the foot of Atlantic Avenue (**Figure 7-8**) allows users to retreat from the adjacent thoroughfare and appreciate a view of the rail corridor and the Downtown Toronto skyline. The lookout point out can potentially be constructed as a wood deck with steel gratings. Similarly, **bleachers** and public seating can be provided along the south side of the proposed right-of-way near Hanna Avenue to serve a similar function.

It is anticipated that remnant lands on the north side of the new street will be available between Hanna Avenue and the 9 Hanna Avenue public laneway in addition to the minimum ROW required for the roadway and multi-use path as a result of the private property acquisition. The remnant lands can be used to create a potential public open green space fronting the 9 Hanna Avenue police station which is central in location to the Liberty neighbourhood and serves as a transition area between the employment uses in the west side of the neighbourhood and residential uses in the east side.



Figure 7-8 Lookout Point Concept

Following the comments received at the March 2013 Design Review Panel meeting, the study team investigated design alternatives for the safety fence and/or noise barriers that would potentially be required at the southern edge of the new street ROW. Previous discussions held with Metrolinx during the TAC meetings did not identify the need for safety fences or noise walls along the southern edge of the new street corridor. It is anticipated that the main function of safety barriers along the new street and rail corridor would be to deter trespassing onto the rail property. However, the construction of the new street can be seen as an opportunity to provide noise mitigation measures between the Metrolinx/GO Lakeshore Rail Corridor and the Liberty neighbourhood, which are currently not provided.

The feasibility of constructing and maintaining green safety fences/noise barriers along the southern edge of the new street ROW should be reviewed in more detailed during the detailed design and construction stage of the study if such features are determined to be a requirement by Metrolinx. **Natural forms of safety barriers/noise walls** would support a context sensitive design for the new street which also functions as an important view corridor for the Liberty neighbourhood. Examples of such safety barrier/noise walls include the living willow wall technology, living PileByg and Deltalok (**Figure 7-9**).



Figure 7-9 Natural Safety Barriers and Noise Walls



Due to the constrained width of the new street ROW, safety fences and/or noise barriers that can be sustainable within the proposed landscape conditions and that require less width to install would be preferred over other designs. The safety barriers/noise walls implemented should be consistent with Metrolinx/GO's safety guidelines while the maintenance operations can be supported by Metrolinx/GO.

The above urban design concepts have been considered as part of the recommended design for the preferred alignment. The above serves as a basis for the implementation of the ultimate urban design scheme for Liberty New Street. Further details on the design and materials of these features will be determined at the detailed design stage.

7.4 NORTH-SOUTH CONNECTIONS

7.4.1 Dufferin Street

The preferred alignment at Dufferin Street will form a new signalized intersection. The Liberty New Street/Dufferin Street intersection has been designed to accommodate the proposed interim and ultimate designs of the Dufferin bridge identified in the City of Toronto's Dufferin Bridges Environment Assessment (EA) Study, June 2011. The Dufferin Street profile design is to be further studied in the Dufferin Bridge Preliminary Design Study now initiated by the City.

With respect to TTC transit operations, the preferred alignment will not impact the existing bus and streetcar operations at the Dufferin Loop. The proposed lane widths (3.3 metres) along Liberty New Street will accommodate future TTC bus operations while the intersection of Liberty New Street/Dufferin Street has been designed to accommodate bus movements to and from Dufferin Street. In addition, the potential alignments for the TTC Waterfront West Light Rail Transit would not be precluded by Liberty New Street or its intersection with Dufferin Street.



7.4.2 Pirandello Street

Telecommunications and Rail Corridor Infrastructure - The preferred alignment at Pirandello Street will require lands from the Metrolinx corridor and the relocation of the existing telecommunications tower located in the rail corridor at the south end of Pirandello Street. Throughout the study, the Project Team consulted with Metrolinx on the property requirements at this location. The City undertook a separate feasibility study in December 2013 which concluded that the relocation of the telecommunications towers to a point 27 metres southwest of its current location would be feasible to accommodate the preferred alignment of Liberty New Street. In addition to the relocation of the telecommunications tower and associated structures, a potential new service access to the rail corridor will be accommodated between Strachan Avenue and Pirandello Street.

Hydro Connection - Toronto Hydro Electric System (THES) is proposing a new north-south Hydro conduit connection from an existing Hydro substation located north of the immediate study area to a new substation proposed south of the GO/Metrolinx Rail corridor (**Figure 7-10**). The new conduit connection will run along Pirandello Street crossing the preferred alignment of Liberty New Street and will be tunneled below the railway tracks to reach the new substation south of the rail corridor.

Throughout the study, the Project Team reviewed drawings circulated by THES to comment on the compatibility of the proposed conduit connection and the preferred alignment. The initial conduit designs had shown a potential conflict with the conceptual storm, sanitary sewer and manhole locations at the intersection of Liberty New Street and Pirandello Street. The Project Team and City highlighted these concerns to THES and recommended that the conduit designs be revised. Subsequently, THES provided updated drawings in September 2014 to show a revised conduit design that takes into account the conceptual location of the storm, sanitary sewer and manholes at the subject intersection. **Figure 7-14** illustrates the updated THES conduit design between Pirandello Street and the proposed substation south of the railway corridor.

It can be noted that a storm sewer profile is currently not available for Liberty New Street as the current project focuses on identifying a conceptual alignment for the new connection. It is anticipated that details of the storm sewer profile associated with Liberty New Street will be developed during the detailed design of Liberty New Street and that the location of the storm, sanitary sewer and manholes be revisited in the future to avoid conflicts with the THES conduits.

7.4.3 Solidarity Way

The preferred alignment south of the 39-51 East Liberty Street development will tie into the proposed grades of Solidarity Way. The plan and profile of Solidarity Way has been approved by the City and is currently under construction. This has been done to minimize impacts to the approved development located at 39-51 East Liberty Street. East of Solidarity Way, Liberty New Street will connect to Strachan Avenue.





7.4.4 Strachan Avenue

Due to the constraints of the Strachan Avenue bridge and proximity to the East Liberty Street signalized intersection to the north, a signalized intersection or full movement was not considered feasible at Strachan Avenue. The eastern end of the preferred alignment will terminate at Strachan Avenue as an unsignalized right-in/right-out intersection. The existing centre median on Strachan Avenue will be extended northerly while the ultimate configuration of the northbound left-turn storage lane at the East Liberty Street/Strachan Avenue intersection post-Metrolinx construction will be reduced slightly to approximately 42 metres.

7.4.5 Hanna Avenue

Hanna Avenue north of Liberty Street is currently classified as a major local road and features a paved width of 9 metres and a ROW of 20 metres. South of Liberty Street, Hanna Avenue extends southeastward as a public laneway which provides access to the 5 and 9 Hanna Avenue properties.

There is the potential to widen the public laneway to 7 metres to facilitate an enhanced two-way flow of service vehicles to and from the New Street. As it is assumed that the 1A Atlantic property will be acquired in its entirety for the construction of the new street, the widening of the public laneway will not require the acquisition of this property. However, 57m² of the 1 Atlantic Avenue lands will be required to facilitate the turn path movements of service vehicles to and from the new street. Minor modifications to the western entrance of the 9 Hanna Avenue can be made to accommodate a potential gated access which can benefit the operations of the police station.

With the Hanna Avenue modifications, a direct driveway entrance from the new street to the 9 Hanna Avenue police station can be provided at the eastern portion of the property. An 8.5 metre wide driveway entrance can be considered to accommodate the turn paths of larger service vehicles accessing the police station. The provision of this eastern driveway access can increase the accessibility of the police station with direct vehicular connection to a public roadway. The alignment of Liberty New Street does not preclude the above public laneway and roadway connections to Hanna Avenue and driveway connection to the police station.

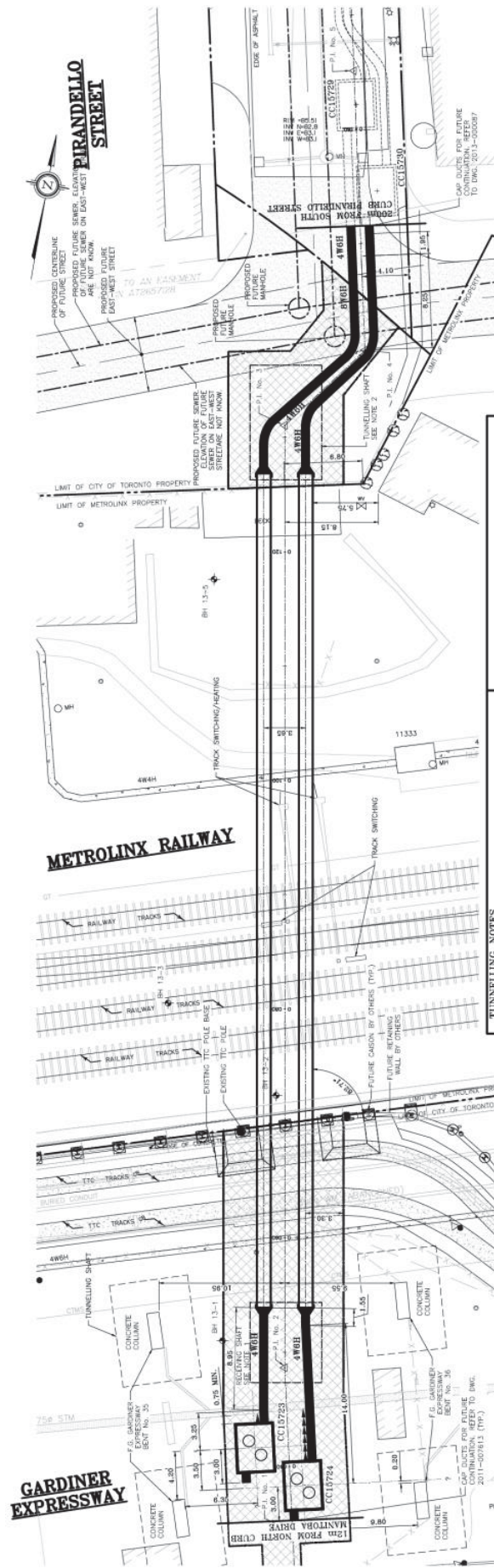


Figure 7-10 THES Conduit Design at Pirandello Street



7.5 PRELIMINARY COST ESTIMATE AND IMPLEMENTATION

7.5.1 Preliminary Cost Estimate

No provisions have been made for this project in the 2016 Capital Budget and the 2017-2025 Capital Plan for Transportation Services. As a result, the inclusion of this project and its ultimate timing will need to be considered as part of a future 10-year Capital Plan submission.

Preliminary road construction cost estimates are presented in **Table 7-1**. For the detailed cost estimates see **Appendix L**. A preliminary construction cost estimate for implementing the preferred alignment is \$12.65 million excluding costs required for utility relocation, property acquisition and costs that may be associated with injurious affection or business loss as a result of the proposed acquisition.

Since most of the right-of-way for the recommended road works requires the acquisition of private property, the City will need to work closely with property owners to acquire the necessary property. The City will need to acquire lands from a number of private properties:

- 153 Dufferin Street
- Roll # 1904041170000500000 (South of 153 Dufferin Street)
- 2 Fraser Avenue
- 7 Fraser Avenue

Activity	Cost
Excavation and grading	\$ 190,000
Underground services	\$ 610,000
Retaining walls / earth retention	\$ 4,480,000
Road base, curbs and sidewalks	\$ 1,360,000
Street lighting	\$ 200,000
Traffic signals	\$ 250,000
Landscaping	\$ 520,000
Sub-Total	\$ 7,630,000
Contingency (15%)	\$ 1,150,000
Engineering, approvals, etc... (20%)	\$ 1,710,000
Cell Tower Relocation	\$ 720,000
Soil Remediation	\$ 700,000
Utility Relocation	\$ 250,000
Public Realm Improvements	\$ 500,000
Total Cost	\$ 12,650,000

Table 7-1 Preliminary Construction Cost Estimate



- 2 Atlantic Avenue
- 1 Jefferson Avenue
- 1 Atlantic Avenue
- 1A Atlantic Avenue
- Metrolinx/GO

The property requirements will be finalized during detailed design. In addition to these property negotiations, technical studies such as a Geotechnical Investigation, Municipal Servicing Study, Subsurface Utility Engineering, Archaeological Stage II and Phase 1 Environmental Site Assessment would be required.

Preliminary property requirements were reviewed by the City's Real Estate Services. Based on current local market conditions a rate in the range of \$1,399 per square metre has been estimated as the cost of private property.

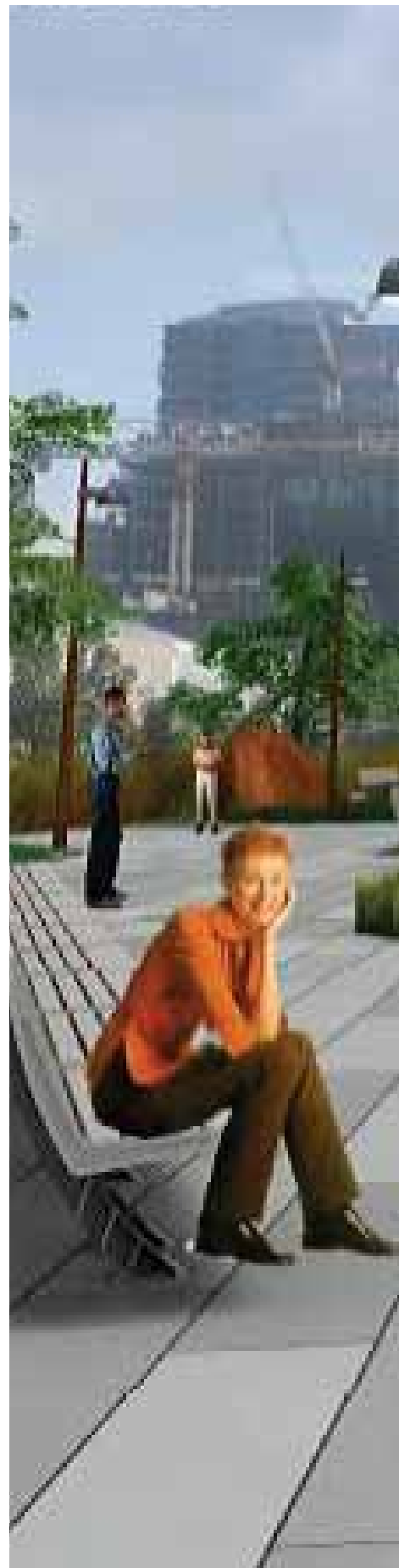
7.5.2 Implementation

It is recognized that given the number of properties required for acquisition to implement Liberty New Street, that a number of challenges will be met. These challenges include primarily:

- Cost of property acquisition;
- Property acquisition timing;
- Liberty New Street implementation timing
- Cycling connections; and,
- Stormwater drainage implementation.

Anticipated is a considerable cost introduced as a result of property acquisition. Additionally, timing of property acquisition may not be timely nor ideal, creating difficulty in securing the lands required for the construction of Liberty New Street. Subsequently, this will affect the implementation of Liberty New Street itself and the associated cycling connections and stormwater infrastructure.

To minimize the challenges associated with the implementation of Liberty New Street, an implementation plan has been created. This implementation plan will provide a phasing approach to the implementation of Liberty New Street, addressing potential challenges of timing and cost. While the advantage of implementing Liberty New Street at once is that all the public realm benefits and network improvements will be fully realized, disadvantages are the creation of a significant challenge in obtaining property in a timely manner in addition to incurring a large cost. Using a phasing approach will provide the advantage of reducing the pressure in needing to obtain all properties prior to implementation, and will incidentally, spread the cost of Liberty New Street over time, allowing for negotiation of a desirable price for property acquisition. The disadvantage is that the public realm benefits and network improvements will not be fully realized at once.



Implementation Plan



The implementation plan involves a phasing approach. **Figure 7-11** displays the phase segments. It is possible, although not required, to further break down the approach into two (2) primary phases. The first phase could be subdivided into three (3) sub-phases, where the second phase could be independent of the first phase. The second phase could occur at any time in relation to the first phase, whether it is before, during, or after.

The implementation plan phasing is summarized in **Table 7-2** below. **Table 7-1** presented above differs from **Table 7-2** as **Table 7-1** provides a preliminary cost estimate for constructing Liberty New Street at once. **Table 7-2** provides a cost breakdown if Liberty New Street is to be constructed in segments.

Phase	To Occur in Sequence			Could Occur Independently
	A	B	C	D
Segment	Dufferin St. - Fraser Ave.	Fraser Ave. - Atlantic Ave.	Atlantic Ave. - Pirandello St.	Pirandello St. - Strachan Ave.
Land Area Required (ha)	0.47	0.55	1.32	0.44
Construction	\$4,495,000	\$3,430,000	2,230,000	2,495,000

Table 7-2 Implementation Plan Phasing

Phases A, B, and C, are to occur in sequence, proceeding easterly from the Dufferin Street and New Liberty Street intersection. It is possible that Phase D could occur independently of all other phases, possibly being implemented prior to phases A, B, and C. The implementation plan created will allow for the two ends of the street to be initiated, allowing time to determine acquisition means of additional property in addition to an agreeable cost. This implementation phasing will put in place key infrastructure including cycling connections and stormwater drainage that will be built upon or connected to with each subsequently completed phase.

Furthermore, each phase will provide its respective benefit and importance to connectivity and network operations. This includes connecting dead-end roads, facilitating cyclist movement, and the creation of a public realm.

Phase A is the first phase of the sequenced phases, beginning at Dufferin Street, ending on the west side of the terminus of Fraser Avenue. While completing Liberty New Street at once would allow for the ideally placed stormwater drainage from west to east, the partial construction of Liberty New Street in phases would not complete this stormwater path. With the construction of Phase A, stormwater drainage should be constructed on the southern side of Liberty New Street, draining toward Dufferin Street in a westerly direction.

In terms of cycling infrastructure, with the construction of Phase A only, a cycling connection would connect the planned multi-use path between Dufferin Street and Fraser Avenue, to Fraser Avenue, and eventually to Liberty Street. This cycling connection would have limited utility due to its short distance, limited frontages, and lack of network continuity. As for the infrastructure and configuration possibilities present, they are as follows:

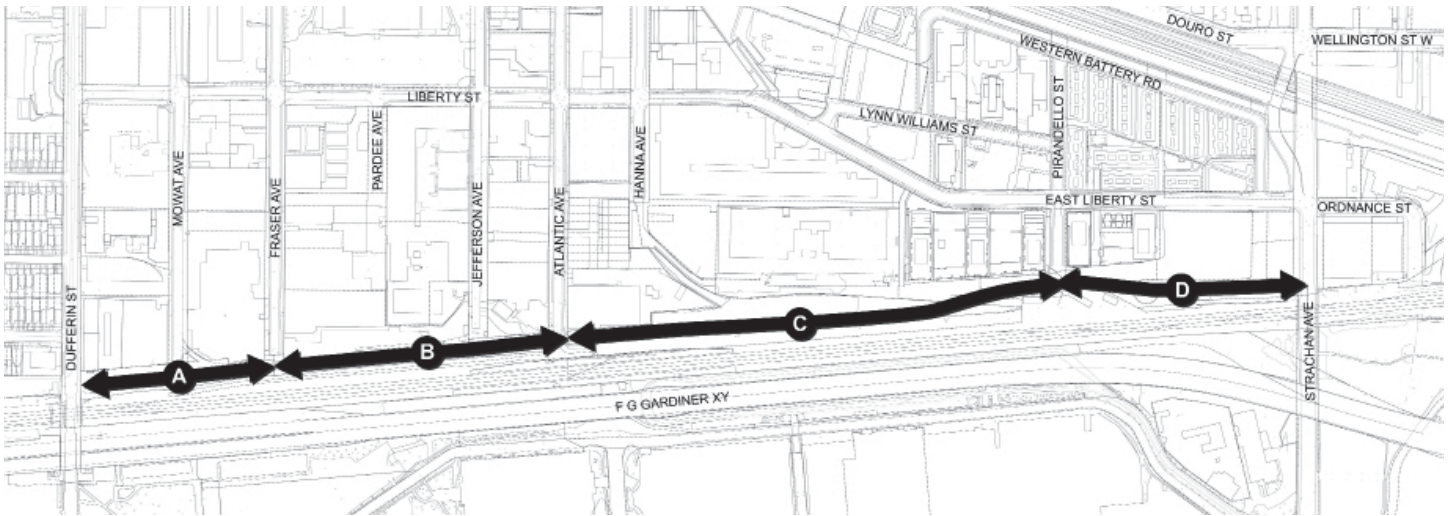


Figure 7-11 Liberty New Street Implementation Phasing

Fraser Avenue pavement width varies from 7.83 m and the narrowest to 9.95 m (with on-street parking) at the widest;

Liberty Street pavement width varies from 7.40 m to 7.86 m; and,

Due to limited pavement widths, at most sharrows can be accommodated;

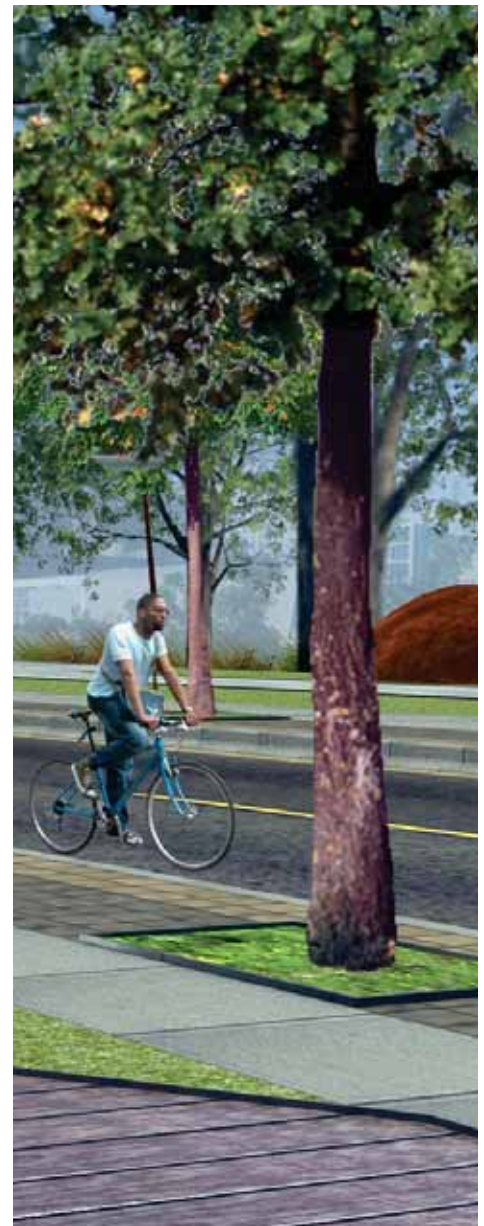
- This would require the removal of on-street parking (approximately 13 spaces);
- There is a 22.60 m section of Fraser Avenue that be below the minimum standard for sharrows, while all of Liberty Street between Fraser Avenue and Atlantic Avenue would be below minimum.

Phase A is estimated to have a total implementation cost of between \$15 and \$17 million.

Phase B will be the continuation of Phase A, involving the construction of Liberty New Street further east. The Phase A terminus of Liberty New Street at Fraser Avenue will be continued to the east side of Atlantic Avenue, completing Phase B. Since Phase B follows Phase A, Phase A's utilities will also be continued in the fashion initiated by Phase A. Stormwater drainage will be continued further east, facilitating the drainage of stormwater to the west toward Dufferin Street.

As for cycling infrastructure, the construction of Phase B will allow for a more complete cycling connection. A cycling connection can be implemented as the planned multi-use path between Dufferin Street and Atlantic Avenue, to sharrows on Atlantic Avenue, to Liberty Street. The infrastructure and configuration possibilities present are as follows:

Pavement width on Atlantic Avenue varies from 8.30 m to 8.72 m (with on-street parking);





Pavement width on Liberty Street, east of Atlantic Avenue, varies from 8.50 m to 11.35 m; and,

Bike lanes will not be feasible on Atlantic Avenue or Liberty Street, sharrows however are possible;

- The removal of on-street parking on Atlantic Avenue (approximately 24 spaces) would be required.

It is recommended that a cycling connection be implemented during Phase B and not Phase A if a phasing approach is to be selected.

Phase B is anticipated to have a total implementation cost of between \$18 and \$20 million.

Phase C will be the completion of the sequenced phases. Phase C will, similarly to Phase B, extend the terminus of Phase B further east, ending on the east side of Pirandello Street. Likewise, the utilities constructed as part of Phase A and Phase B will be continued, as will the directionality of stormwater drainage for this component of Liberty New Street.

Regarding cycling infrastructure, the implementation of Phase C will connect with Phase D to complete the multi-use trail.

The cost of implementing Phase C is estimated to be in the range of \$32 and \$35 million.

Phase D could occur independently of all other phases. This means Phase D construction can commence at any time in relation to the construction of the other phases. Phase D involves the constructing of Liberty New Street from Strachan Avenue, westward to the east side of Pirandello Avenue. Depending on timing, Phase D will either connect to Phase C, or Phase C will connect to Phase D. If Phase D is to be constructed independently, it will connect Pirandello Street to Strachan Avenue. Unlike the other sequenced phases, Phase D's stormwater drainage will be constructed to facilitate drainage in an easterly direction, toward Strachan Avenue.

The cycling infrastructure of Phase D is to connect the multi-use pathway of Phase A, B, and C to Strachan Avenue. This will then complete the multi-use pathway of Liberty New Street, and create a continuous east-west cycling connection to Strachan Avenue from Dufferin Street.

Phase D is estimated to have an implementation cost of \$3 million.

8



ANTICIPATED IMPACTS AND MITIGATION MEASURES





Phase 3 of the Class Environmental Assessment process requires identifying the potential impacts and determining appropriate mitigation measures.

Table 8-1 summarizes the anticipated impacts of the preferred alternative design and proposed mitigation measures. The remainder of this section provides greater detail of the anticipated impacts, recommended future commitments and monitoring activities as a result of the implementation.

Anticipated Impact	Response Mitigation Measure and Commitment to Future Work
<p><u>Socio-Economic Environment</u></p> <ul style="list-style-type: none"> Nearby properties and business affected by construction activities Part or all of twelve (12) private properties will need to be acquired 	<ul style="list-style-type: none"> The City will engage the nearby businesses in the development of a reasonable construction plan and endeavour to reduce the duration and severity of construction activities. Formal definition of the impacts on the utilities, specifically Toronto Hydro, Hydro One, Bell Canada, Enbridge Gas Distribution, TELUS and Rogers Cable Systems will be determined in detail design. Compensation to private property owners will be provided as part of property acquisition process
<p><u>Utilities and Infrastructure</u></p> <ul style="list-style-type: none"> Update utilities and legal land surveys Relocation of telecommunications tower and associated utilities near Pirandello Street within the rail corridor Relocation/removal of existing billboard signs within the new street corridor 	<ul style="list-style-type: none"> In preparation of the detailed design stage, updated utilities and legal land surveys within the expected construction limits will be required. A separate study is required to determine the detailed design and construction details of the relocation plan. A plan will need to be developed to outline the protocol required association with the relocation/removal of existing billboard signs.
<p><u>Transportation</u></p> <ul style="list-style-type: none"> Disruption of access to/from adjacent properties during the construction of Liberty New Street at its intersection with existing north-south streets 	<ul style="list-style-type: none"> A traffic management plan will be developed to consider staging of the construction efforts, as determined during detailed design, to maintain access for and mitigate impact on the adjacent properties. Traffic Operations will monitor the operations of these intersections and make the necessary improvements to traffic lane, intersection configurations and signal timing to optimize traffic movements in the area. Transportation Services monitor the level of traffic in the area through a monitoring programme including traffic counts, surveys and evaluation of development applications. Potential opportunity to increase economies of scale and to minimize traffic disruption through the simultaneous construction of: <ul style="list-style-type: none"> → The new Dufferin Street bridge and the Dufferin Street and Liberty New Street intersection → Strachan Avenue bridge rehabilitation with the Strachan Avenue and Liberty New Street intersection

Table 8-1 Anticipated Impacts and Proposed Mitigation Measures



Anticipated Impact	Response Mitigation Measure and Commitment to Future Work
<p><u>Archaeology</u></p> <ul style="list-style-type: none"> • Unanticipated discovery of archaeological and or human remains 	<ul style="list-style-type: none"> • If there is an unanticipated discovery of archaeological and or human remains, the City will immediately contact the Ontario Ministry of Culture and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Government Services.
<p><u>Natural Environment</u></p> <ul style="list-style-type: none"> • Minor loss of vegetation at existing vacant properties within the new street corridor 	<ul style="list-style-type: none"> • The minor loss of vegetation is not considered to be significant. To offset the identified disruption compensation in the form of tree plantings would be recommended to enhance the habitat of the wildlife and satisfy the requirements of the City of Toronto Urban Forestry Department.
<p><u>Air Quality & Noise</u></p> <ul style="list-style-type: none"> • Creation of dust during construction • Creation of noise during construction 	<ul style="list-style-type: none"> • The controlling of dust and debris from unpaved areas will be done through the application of water, calcium chloride or other means as recommended by the contractor and accepted by the City. • Construction activities will comply with the City of Toronto noise control by-law. Should exemptions to the noise by-law be required, the appropriate application should be made to City council.
<p><u>Build and Cultural Heritage</u></p> <ul style="list-style-type: none"> • Removal of heritage building and sign on top of structure 	<ul style="list-style-type: none"> • A single built heritage resource will need to be removed from the site as it lies within the alignment of the proposed road. • Some heritage properties will experience changes due to introduction of new elements. • Prepare Heritage Impact Assessments for affected properties. • Consider implementation of reversible alterations.
<p><u>Stormwater Management</u></p> <ul style="list-style-type: none"> • Increase in run-off volume, peak flow rates, need for water quality control and need for stormwater storage 	<ul style="list-style-type: none"> • Consider implementing stormwater retention measures within the landscape areas within the proposed right-of-way and the use of permeable pavements where possible to increase infiltration. • Include a combination of low impact development techniques such as source and conveyance controls, and end of pipe treatments (e.g. Oil-Grit Separator) to improve the quality of, and discharge flow rate for stormwater entering downstream conveyance systems such as the adjacent main trunk sewers.



8.1 PROPERTY IMPACTS

Before Liberty New Street can be implemented, a number of properties will need to be acquired by the City of Toronto. Liberty New Street will affect both private and remnant lands. In total, the study recommendations will depend on the acquisition of nine properties, or approximately 2.149 hectares of private property. Based on information received from City of Toronto Real Estate Services, a rate in the range of \$1,399 per square metre has been estimated. This amount however is subject to variation during the property acquisition process.

In addition, a total of 11 billboard signs are located within or adjacent to the right-of-way. It is anticipated that four billboards may be impacted. It may be possible to provide accommodation through structural modifications or easements for two, whereas two others will require removal and/or relocation. The need to remove or relocate any existing billboards will be determined at detail design.

The affected property owners were consulted once a preferred alignment was determined. Three of the four impacted property owners have made the City aware of a lack of support for the needed property takings. The City will continue to work with the impacted property owners through the detailed design phase. The recommended alignment reflects the City's best efforts at avoiding potential impacts to the Lake Shore West GO Transit rail corridor and minimizing impact to private property owners, while working within geometric and design constraints. The affected properties are illustrated in **Figure 8-1**.

An existing building located at 7 Fraser Avenue has been identified that will need to be removed. This is a tool shed on the southern edge of the property. It is expected that when the 7 Fraser Avenue property is acquired, this building can be removed without impact to the main building structure.

A summary of the affected properties is summarized below in **Table 8-2**.

Address	Estimated Property Required (m ²)	Total Property Area (m ²)	Percentage of Total Property (%)	Mitigation Measures
153 Dufferin Street	0.59	6,862	0.01%	
Roll # 1904041170000500000 (South of 153 Dufferin Street)	2,262	2,797	81%	
2 Fraser Avenue	1,904	13,170	14%	
7 Fraser Avenue	3,564	12,850	28%	
2 Atlantic Avenue	265	4,844	5%	
1 Jefferson Avenue	1,662	1,662	100%	
1 Atlantic Avenue	48	7,190	1%	
1A Atlantic Avenue	11,516	11,516	100%	Potential for Remnant Areas to be Converted to New Public Spaces
Metrolinx/GO	271	52,289**	1%	
TOTAL	21,492.59m²			

* Further minor alignment modifications will be explored at the property negotiation and detail design stage which may alter these figures.

** Includes the Metrolinx/GO area of between Dufferin Street and Strachan Avenue.

Table 8-2 Property Impact Summary

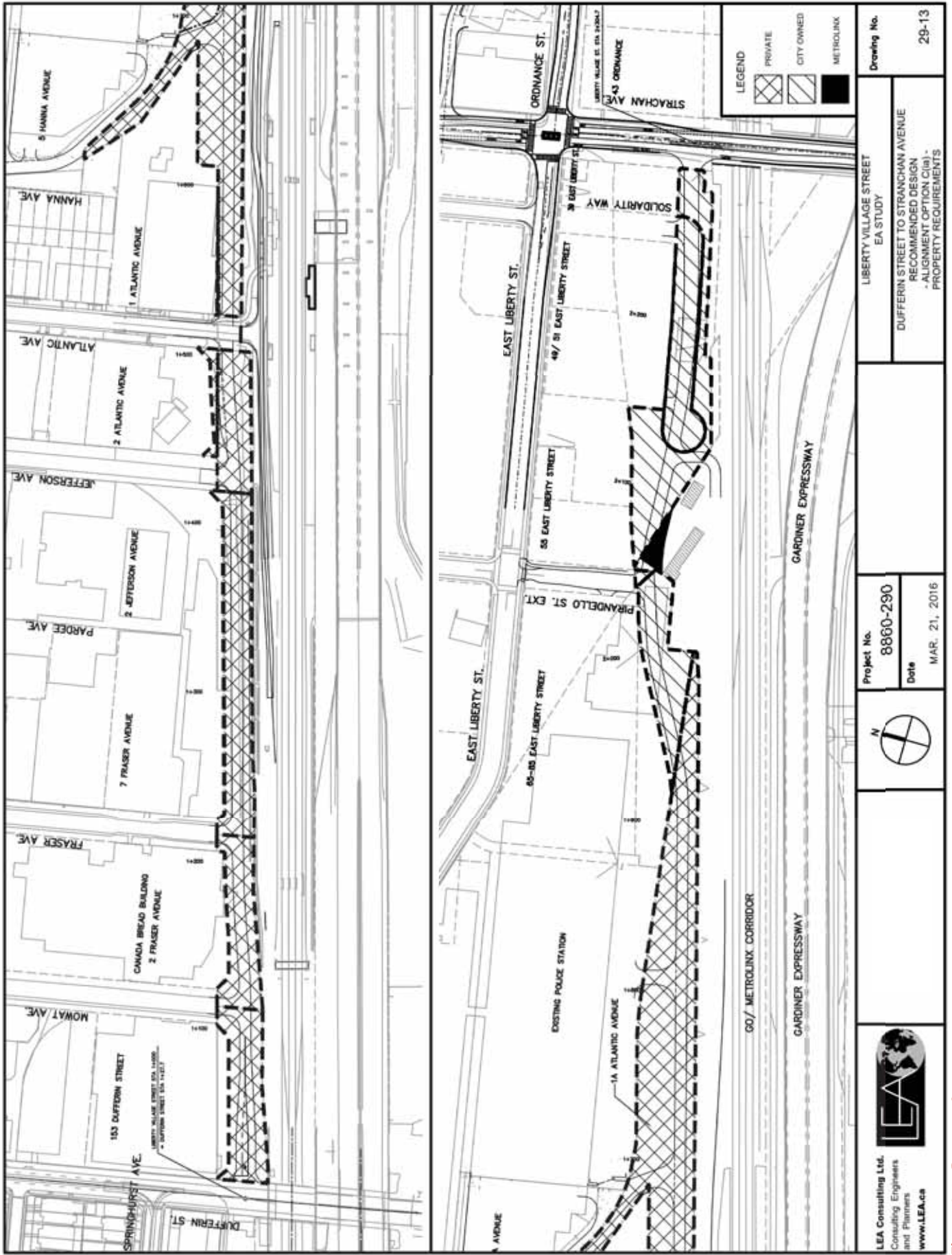


Figure 8-1 Property Impacts



Billboard Signs

A number of existing billboard signs will need to be removed or relocated through the construction of Liberty New Street. These billboard signs currently generate annually leasing revenue. Leasing revenue for these billboard signs are estimated to generate up to \$500,000 annually for private landowners. Given that these billboards are currently a revenue generator for private property owners and that a number of these signs have been constructed to take form as a permanent structure, it is expected that a significant level of expense and effort will be required to effect the removal and/or relocation of these signs. As such, these billboard signs would be a notable constraint within the study area. With regards to the removal/relocation of billboards currently within the Metrolinx/GO corridor (with revenue from these going to CN until 2018 as per corridor sale agreement), any future lost potential revenue will require consideration within the evaluation framework even if such potential revenue will not be receivable to Metrolinx/GO until 2018 and beyond.

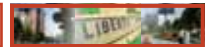
It should also be recognized that where a relocation of any billboard is contemplated, such relocations should consider the impact to all existing billboard inventory in the area and avoid any injury thereupon (i.e. blocked views.) Any construction should recognize and avoid damage/impairment to adjoining landowner (Metrolinx/GO) billboard structures that might be abutting the area to be developed and considered costs where such damage/impairment might occur.

8.2 TRANSPORTATION

The implementation of a full east-west connection at the south side of Liberty neighbourhood will increase network connectivity within the study area and divert some traffic from existing Liberty Street/East Liberty Street. Upon the construction of its full east-west connection between Dufferin Street and Strachan Avenue and the full build-out of the planned developments within Liberty neighbourhood, Liberty New Street is expected to carry approximately 450 to 500 vehicles two-way during the weekday peak hour.

The new east-west connection will also improve pedestrian and cyclist circulation within the study area as it will open up the southern part of Liberty neighbourhood which currently contains a series of north-south dead ended streets. In the event that a full east-west connection cannot be constructed due to the staging and timeline of required property acquisition and utility relocation efforts, it is anticipated that a partial connection can still improve traffic levels of service and enhance network connectivity within the study area. The future traffic conditions reviewed in this study considers the full build-out of the planned developments within the area per existing Official Plan designations and zoning provisions.

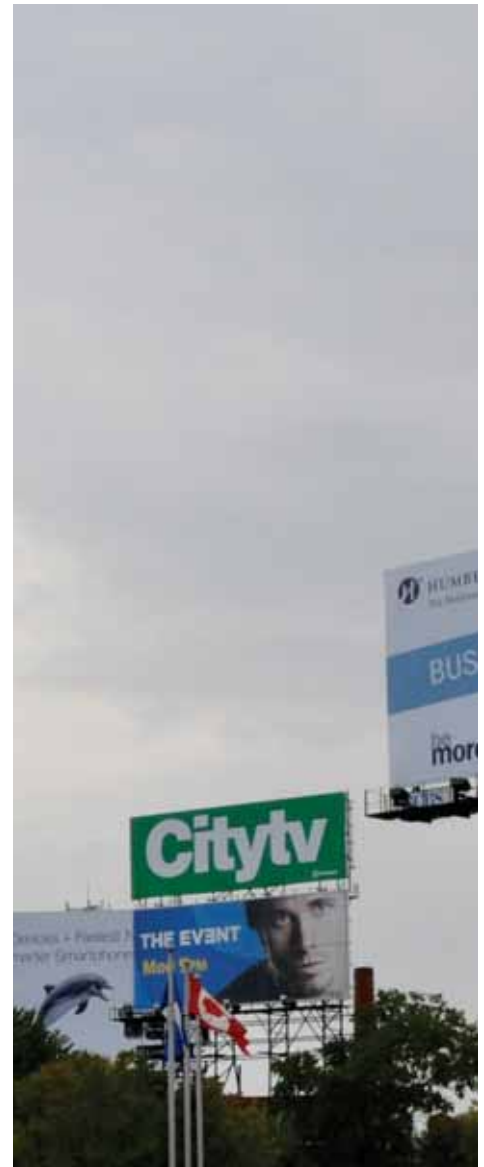
As development proceeds over time, the integration of these future developments within the existing and proposed transportation system, including mitigation measures, shall be reviewed and assessed to provide appropriate recommendations to the satisfaction of the City. One aspect of such is the transportation impact study, which must be submitted with each major development application. The submitted transportation impact studies should address the following:



- Assesses the impacts of the development on the transportation system and demonstrates that the development traffic will not significantly reduce the level of service of the public street network accounting for the existing and planned infrastructure in the study area;
- Evaluate the physical layout of the development site to enhance the pedestrian and cycling realms;
- Identify transportation improvements and mitigating measures to address the forecasted transportation impacts; and,
- Propose transportation demand management measures and strategies to assist in reducing vehicular trips made to and from the study area.

Beyond the specific transportation impact studies for the future development applications, it is recommended that the City monitor the level of traffic in the area through programme that could include:

- Recording traffic volumes on public streets into and out of the study area
- Travel behaviour surveys of employees, shoppers and residents including vehicle occupancy, mode split, and peak periods of travel;
- Reviewing transit ridership in coordination with the TTC;
- Evaluation of existing, planned and proposed developments; and,
- Assessing traffic infiltration through the private properties.



Site #	Resource Type	Location	Description
1	Industrial	153 Dufferin Street	Industrial Building
2	Industrial	2 Fraser Avenue	Former Canada Bread Factory
3	Industrial	7 Fraser Avenue	Industrial- Former Expanded Metal and Fireproofing Company Factory
4	Industrial	2 Jefferson Avenue	Industrial
5	Commercial	1 Atlantic Avenue	Office Building
6	Commercial	2 Atlantic Avenue	Office- Joe Fresh Head Office
7	Industrial	No address-- immediately south of 14 Strachan Avenue on railway Corridor	The John Inglis Co. Limited Site- Industrial building and sign

Table 8-3 Identified Cultural Landscapes (CHL) and Built Heritage Resources (BHR) Within and Adjacent to the Preferred Alternative for the Liberty New Street



8.3 UTILITIES AND INFRASTRUCTURE

Utilities within road allowance

Design of Liberty New Street shall avoid potential encroachment of proposed significant surface features (such as trees) over existing or proposed sewer or watermain infrastructure, or develop appropriate design and mitigation strategies.

Utilities within Rail Corridor

The construction of Liberty New Street at Pirandello Street will require the relocation of the existing telecommunications tower and associated rail infrastructure to a new location within the rail corridor. A feasibility study led by the City concluded that the tower can be relocated 27 metres southwest of its current location within the rail corridor. As the existing telecommunications tower was constructed in 1996, the new tower infrastructure will need to be constructed with upgraded specifications to meet current industry standards. The preliminary cost estimate for relocating the tower and associated infrastructure to the preferred location is \$720,000. This cost does not include extras that may be incurred in the case of the treatment of contaminated soil, septic bed, dewatering, and associated Hydro service fees.

It is anticipated that the relocation costs will be shared by associated parties including Metrolinx, City of Toronto and TELUS. The City will be responsible for costs associated for the infrastructure required to replace the existing function of the telecommunications tower while the other parties will incur the costs associated with upgrading the tower specifications. A separate study outlining the detailed design, construction plan and cost estimates for the utility relocation will be required prior to the construction of Liberty New Street at Pirandello Street.

8.4 BUILT AND CULTURAL HERITAGE

The development of the preferred alternative option is expected to cause both direct and indirect impacts to cultural heritage resources situated within the study area. These impacts are connected to the development of the new street as well as the acquisition of the new rights-of-way for the road. **Table 8-3** shows a complete list of identified cultural heritage landscapes and built heritage resources within and adjacent to the preferred alternative for the Liberty New Street.

Direct Impacts

There will be one (1) direct impact attributed to the development of the preferred alternative, namely, the only remaining building on what used to be The John Inglis Co. Limited site. Both this building as well as the billboard located on top of its structure will need to be removed due to their proximity to the new road. It should be noted that while this building will be displaced, it is not currently listed in the city's heritage properties inventory.



Indirect Impacts

The remaining six (6) heritage resources identified in **Table 8-3** will experience indirect impacts on account of the development of the preferred alternative due to an introduction of new elements as a direct result of property acquisition along the northern side of the new street right-of-way.

Mitigation Recommendations

Potential mitigation measures for the development of the new street require that all identified resources and landscapes in **Table 8-3** include:

- Alternative development approaches;
- Allowing only compatible infill and additions; and,
- Reversible alteration.

For each of the seven (7) resources, a Heritage Impact Assessment (HIA) must be prepared according to the City of Toronto guidelines and to the satisfaction of the Manager of Heritage Preservation Services. Salvage of elements for reuse and full recording and documentation of the displaced and disrupted properties should be conducted prior to the construction of a new street.

The full Built and Cultural Heritage Assessment report can be found in **Appendix C**.

8.5 ARCHAEOLOGICAL

There are no known areas of archaeological interest or archaeological features that would be affected by the recommended design. The proposed alignment of the recommended design mostly impacts already-disturbed areas. The City of Toronto does not consider any portion of this area as having archaeological potential. Furthermore, a review of historical aerial imagery shows that as late as the 1990s, the recommended design corridor encompassed rail lines, which were eventually removed in the 2000s. Property inspection confirmed the presence of extensive disturbances which would have removed archaeological potential, such as paved areas, structures, cut slopes, and artificial embankments throughout the affected area of construction.

Should the proposed construction and/or staging area associated with the recommended design encompass portions of the park lands surrounding the Allan A. Lamport Stadium and the undisturbed grass lawn within the 1155 King Street West property (a listed heritage structure), these areas should be subjected to Stage 2 field assessment, employing test pit survey at 5-metre intervals. The balance of the study area, including the corridor associated with Liberty New Street, all of which background research and property inspection confirmed to have been subjected to deep and extensive disturbance, are considered to have no more archaeological potential. It is therefore recommended that these areas be exempt from Stage 2 AA.

The above recommendations are subject to MTCS approval. No excavation activities shall take place within the study area prior to the MTCS (Heritage Operations Unit) confirming in writing that all archaeological licensing and technical review requirements have been satisfied.





8.6 AIR QUALITY/NOISE

Air Quality

The Liberty neighborhood project area is mainly an urban commercial hub with a pocket of residences at the southeast corner of the study area surrounded by Strachan Avenue on the east, Pirandello Street on the west, East Liberty Street on the north and the new street on the south. The residences at this area are mostly comprised of townhouses and apartment buildings. Eighteen (18) receptors from this residential area were considered for the dispersion modelling. Some of the receptors were placed in the same locations but at different heights to capture the concentrations at different floor levels of the apartment building.

There are some residences outside of the project area near Dufferin Street and the proposed new street intersection, which were not considered for further analysis since the traffic volumes will not increase near these residences due to the addition of the new street; rather, they will be benefitted from a slight reduction of the traffic on the north of the new street.

The cumulative maximum predicted concentrations for all contaminants, for all averaging periods, were less than or equal to their respective criteria. Although the maximum predicted PM₁₀ concentration was at its respective criteria, the portion due to the proposed undertaking was much less than the ambient background concentration which was estimated from the published PM_{2.5}/PM₁₀ due to the unavailability of actual monitoring data.

The predicted concentrations indicate a decline in concentration with an increase in receptor height for all pollutants. Thus, residences on higher floors will see lower concentrations than those at lower levels. Overall, it is predicted that the local air quality emission due to the addition of the new connecting street will be within the applicable criteria.

The maximum predicted concentration from the project is dominated by the following road sections: East Liberty Street between Strachan Avenue and Western Battery Road (93%), and Strachan Avenue near the new street (5%). For these roads, the future no-build traffic volumes are higher than those in the future build configuration and therefore, the maximum predicted concentrations for these roads are expected to be higher as well. In this context, the effect of the new street improves the local air quality for these sections of roads.

Construction phase impacts were not included in the dispersion modelling analysis, but were addressed qualitatively in the assessment. It is recommended that in order to minimize potential air quality impacts during construction, the construction tendering process should include requirements for implementation of an emissions management plan.

Overall, it is expected that the proposed project will not cause any air quality criteria to be exceeded and will improve the air quality slightly at sensitive uses in the area.

The full Air Quality Assessment Report can be found in **Appendix F**.



Noise

For the purposes of the future road traffic noise impact assessment the area of investigation was established as 30 m on either side of the proposed east-west road (from edge of pavement). For transportation projects, operation and maintenance noise, following project completion, are of primary importance. Under MTO/MOE Joint Protocol changes greater than 5dB above future “no-build” ambient noise levels will require noise mitigation effort.

Transportation noise effects are evaluated based on the level of noise sensitive land uses in the area of investigation. Noise sensitive areas generally include, but are not limited to residential land uses, hospitals, and educational facilities. Located adjacent to and partially within the area of investigation, there are two areas of existing/future residential apartment buildings and one area of existing residential townhomes. These areas were used to illustrate noise impacts at sensitive locations near the project.

Road traffic noise levels were modelled based on future “build” and “no-build” traffic volumes for the year 2031 for the proposed new road and for the surrounding roadway network. The results show that there is no anticipated increase in road traffic sound exposures resulting from the project. Operational noise impacts resulting from Liberty New Street do not trigger investigation of mitigation procedures under the MTO/MOE Joint Protocol. Changes in sound levels resulting from the project will be less than 5 dBA at all noise sensitive areas of concern. Noise mitigation is not required.

Construction noise impacts were also evaluated for the duration of the proposed street construction period. Construction noise impacts are temporary in nature, and largely unavoidable. With adequate controls, impacts can be minimized. However, for some periods of time and types of work, construction noise will be noticeable. During these periods guidelines and Construction Code of Practice Requirements can minimize noise impacts.

Anticipated construction activities for the proposed new street include construction and rehabilitation of the base course, construction of new bridges and overpass structures (including pile driving) and paving of the roadway surface. Construction activities will vary temporally and spatially as the project progresses. Noise levels from construction at the identified noise sensitive areas will also vary over time as different activities take place, and as those activities change location within the right-of-way. At this time, detailed construction noise plans are not available. An analysis of potential worst-case construction noise levels has been conducted based on generic data (equipment types and activities).

Guidelines specifying maximum sound levels as a result of construction do not exist. However, anticipated construction sound levels can be compared to “typical” sound levels. The highest expected sound level at the receptor closest to construction is approximately 79 dBA. This sound level is approximately what would be expected standing 1.5 m from a vacuum cleaner. On a scale rating of human perception, a sound level of 79 dBA would be perceived as “loud”.

To minimize the potential for effects from construction, it is recommended that provisions be written into the contract documentation for the contractor, as outlined below:



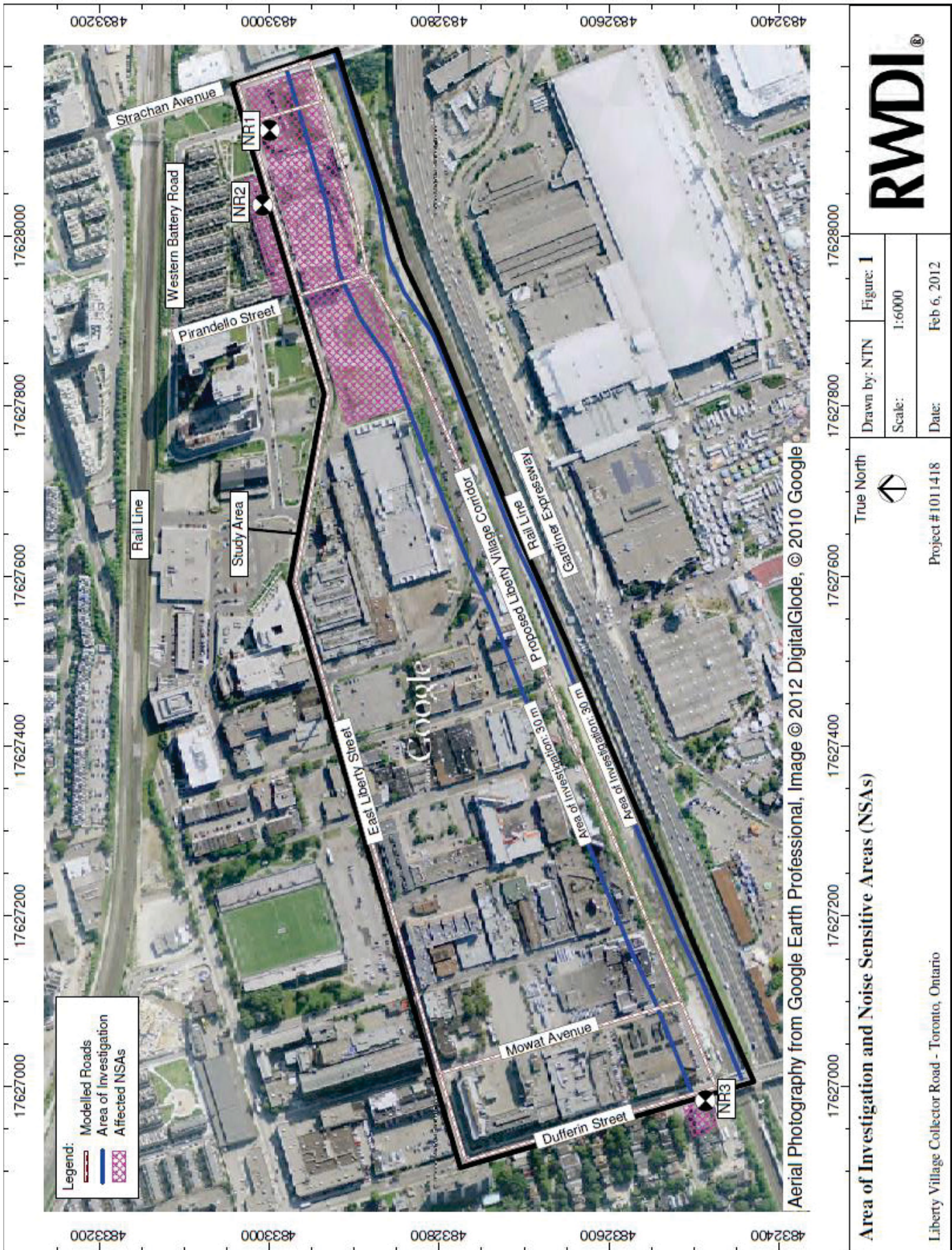


Figure 8-2 Noise Receptors near the Recommended Design



- Construction should be limited to the time periods allowed by the and local noise by-laws (i.e., 0700h to 1900h Monday to Friday and 0900h to 1900h Saturdays, Sundays, and statutory holidays);
- There should be explicit indication that Contractors are expected to comply with all applicable requirements of the contract and local noise by-laws. Enforcement of noise control by-laws is the responsibility of the Municipality for all work done by Contractors.
- All equipment should be properly maintained to limit noise emissions. As such, all construction equipment should be operated with effective muffling devices that are in good working order.
- The Contract documents should contain a provision that any initial noise complaint will trigger verification that the general noise control measures agreed to be in effect.
- In the presence of persistent noise complaints, all construction equipment should be verified to comply with MOE NPC-115 guidelines, as outlined in Section 3.
- In the presence of persistent complaints and subject to the results of a field investigation, alternative noise control measures may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, consideration should be given to the technical and administrative feasibility of the various alternatives.



Figure 8-3 Study Area Extent and Survey Boundary



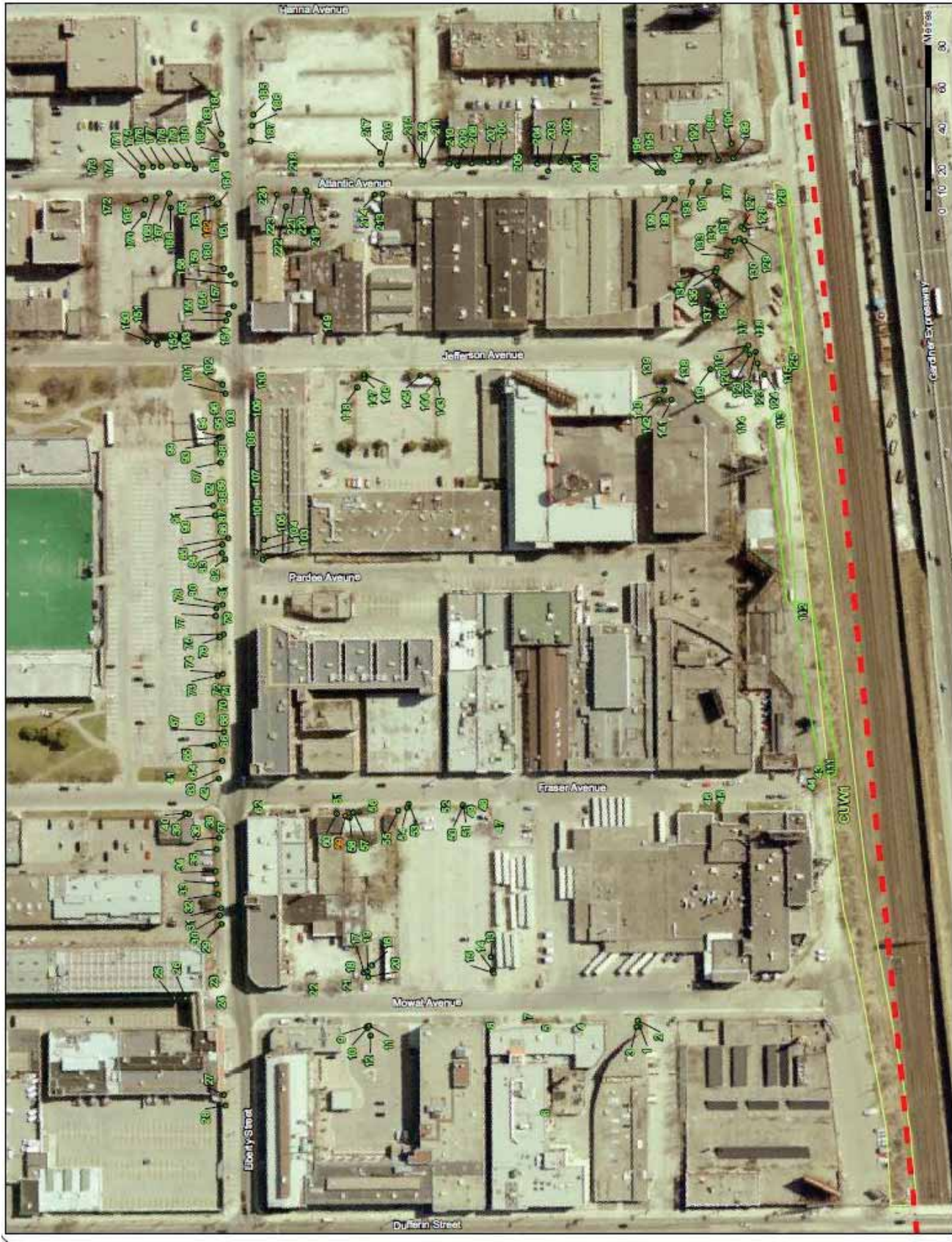


Figure 8-4 Survey Vegetation Locations



Construction noise impacts are temporary in nature but will be noticeable at times in residential noise sensitive areas. Noise related to pile driving activities associated with bridge construction will be substantial in some noise sensitive areas, and it is recommended that pile driving be restricted to daytime hours. Methods to minimize construction noise impacts should be included in the Construction Code of Practice, as outlined in **Appendix F**.

8.7 NATURAL ENVIRONMENT

The implementation of the recommended design is expected to affect the vegetation currently situated within the alignment. A survey was undertaken in order to capture the magnitude of the impact of implementing the recommended option on various environmental factors within the corridor. However due to entrance permissions, LGL limited was limited to a study area identified in **Figure 8-3**. As such, all conclusions and analyses are restricted by knowledge on this area alone.

The frontage of the Metrolinx/GO rail line is covered by a cultural woodland canopy. This canopy is directly within the alignment of the proposed new street. It is indicated by "CUW1" in **Figure 8-4**. The implementation of the recommended option will require the removal of the cultural woodland. A total of 16 surveyed trees of 10cm DBH and greater and five tree groupings located in the railway frontage removed as a result of the proposed construction. In CUW1 as with all of the liberty neighborhood study area, no species that have accounted for are recognised as endangered, threatened, or special concern under the *Ontario Endangered Species Act* or *Canada Species at Risk Act*. Two (2) species have however been identified as 13 species of conservation concern. They are namely *White Spruce* and *Ninebark*. These two (2) species are not naturally occurring in the area and should not be considered significant within the study area. Neither of these species are located within the CUW1 canopy.

There are no outstanding vegetation impacts the recommended plan will create. Many of the vegetation species that fall within the alignment will face only a minor loss and can therefore be offset by the planting of new trees within the row corridors, or by compensation.

The full Natural Environment Report can be found in **Appendix E**.

8.8 STORMWATER

The City of Toronto Wet Weather Flow Management Guidelines and the Toronto and Regional Conservation Authority (TRCA) established the criteria for governing stormwater management impacts of the recommended design. The stormwater management criteria consideration includes water balance, water quality, and water quantity. Details of the stormwater management evaluation are included in **Appendix I**.

The City of Toronto requirements for water balance are as follows:

- Retain stormwater on-site, to the extent practicable, to achieve the same level of annual volume of overland runoff allowable from the development site under pre-development conditions.





- The minimum on-site runoff retention requires the proponent to retain all runoff from a small design rainfall event – typically 5 mm (In Toronto, storms with 24-hour volumes of 5 mm or less contribute about 50% of the total average annual rainfall volume) through infiltration, evaporation and rainwater reuse.

Water Balance

The preferred design for Option 2 has 1.66 ha of landscaped area and 1.01 ha of paved area. Initial abstraction calculations indicate that 6.57 mm of water can be expected to be retained on site, which meets the requirement set by the City of Toronto. The narrow right-of-way constrains the potential for the design to include additional landscape space in the western part of the new street corridor. However, in the eastern part of the corridor, there are potentially remnant parcels of property that can be acquired by the City beyond the minimum required street right-of-way to accommodate stormwater retention areas. **Table 8-4** summarizes the study area's water balance.

Water Quantity

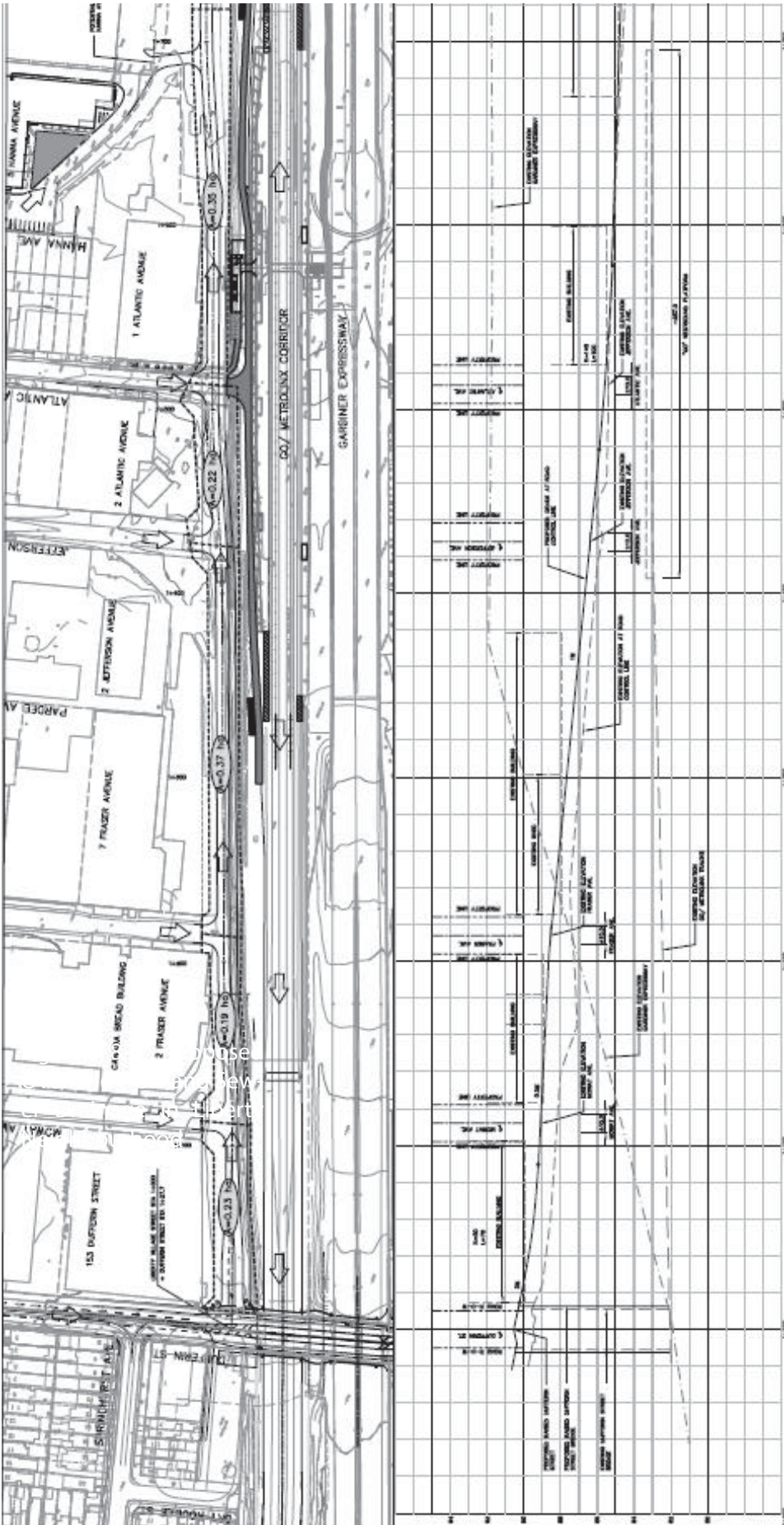
Under existing conditions the study area discharges in an uncontrolled manner into the GO/Metrolinx corridor through the right-of-way proposed in Option 2. Analyzed was rainfall for 2 year, 5 year, 10 year, 25 year, 50 year, and 100 year storm events to determine the maximum volume of storage required. **Table 8-5** summarizes the flow rates for the existing conditions / Do Nothing, and Options 1 and 2.

Liberty New Street requires 172.32 m³ of storage volume to accommodate a 100-year storm. It is recommended that the sizing of stormwater management controls, storm sewers, and connections into the existing system be done during the detailed design process. The storm sewer pipes shall be sized to sufficiently accommodate the stormwater flow demand. Other stormwater retention measures include the use of bioswales and super pipes or combinations thereof. Emphasis should be placed on investigating and maximizing the use of 'Green Street' infrastructure, such as bioswales, wherever possible and feasible, in order to reduce the cost of oil/grit separators, storm sewer pipes, super pipes, etc.

The remnant lands at 1A Atlantic Avenue, 65-85 East Liberty Street and 39-51 Strachan Avenue can potentially be used to provide stormwater retention areas if the proposed grading and drainage system permits. The opportunity to provide retention areas at these properties should be further explored during the detailed design stage.

Water Quality

The water quality requirement includes the capture of 80% of Total Suspended Solids (TSS) within the study on an annual loading basis. In construction for the recommended design, the use of LID techniques (including those related to the concept of 'Green Streets'); or source, conveyance and end-of-pipe stormwater management controls as part of a treatment train approach, including an oil / grit separator is recommended for Liberty New Street. The sizing of the quality control device shall be determined during the detailed design process.



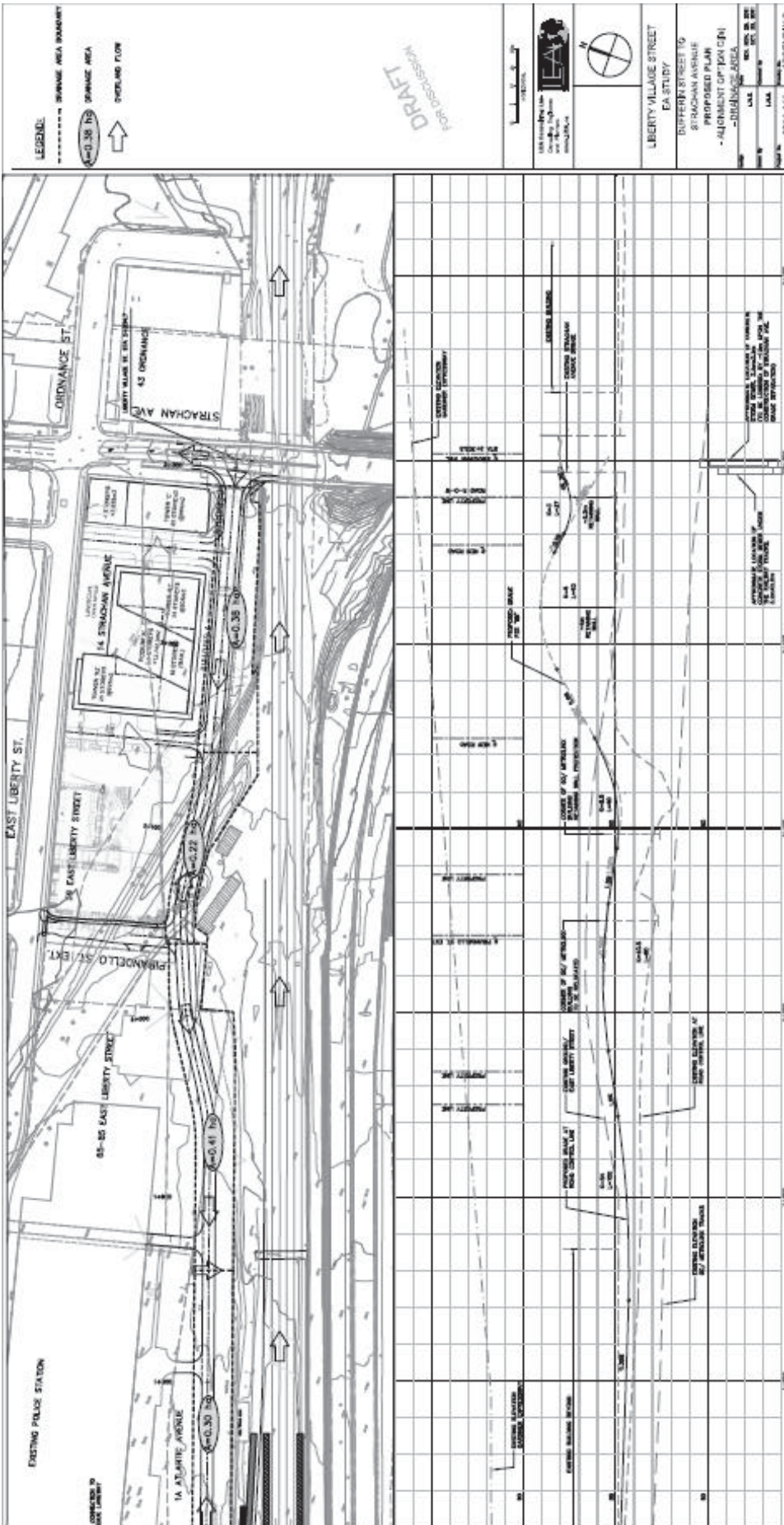


Figure 8-5 Proposed Overland Flow and Sewer Drainage in Liberty Neighbourhood



Land Use	Area (ha)	Initial Abstraction (mm)	Overall Initial Abstraction (mm)	Water Balance Unit Process
Landscape	1.66	10	6.20	Infiltration, Evaporation, Transpiration
Pavement	1.01	1	0.37	Evaporation
Total	2.67		6.57	

Table 8-4 Water Balance Plan – Option 2

Design Storm (Year)	Existing Conditions, Do Nothing Scenario, and Option 1 Flow (m ³ /s)	Option 2 Flow (m ³ /s)	Option 2 Required Storage Volume (m ³)
2	0.236	0.337	60.71
5	0.352	0.503	90.73
10	0.433	0.620	111.71
25	0.506	0.724	130.47
50	0.599	0.857	154.42
100	0.669	0.956	172.32

Table 8-5 Pre-Development and Post-Development Flow Rate



9



REVISIONS AND ADDENDA TO THE ESR





This section will delineate minor adjustments that have been contemplated in the proposed design and major changes that would necessitate a formal addendum to the ESR. Any addenda required shall be led with the Environmental Study Report and the Notice of Filing of Addendum shall be given immediately to all potentially affected members of the public and review agencies as well as those who were notified in the preparation of the original Environmental Study Report. The Environmental Study Report addendum will be placed on the public record with the City of Toronto for a 30-day review period. A person or party with concern regarding the addendum may make a written request to the Minister of the Environment for a “Part II Order” within this 30-day review period. Provided that no Part II Orders are received, the City of Toronto may proceed to Phase 5 of the Class EA process, design and construction.

9.1 LAPSE OF TIME

According to the MCEA process, “If the period of time from the filing of the Notice of Completion of Environmental Study Report in the public record or the MOE’s denial of a Part II Order request(s), to the proposed commencement of construction for the project exceeds ten (10) years, the proponent shall review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning context. The review shall be recorded in an addendum to the Environmental Study Report which shall be placed on the public record.”

9.2 CHANGE IN PROJECT OR PLANNING CONTEXT

Subsequent to the filing of the Environmental Study Report, any modification to the project or change in the environmental setting for the project shall be reviewed by the proponent. Should the change be considered significant, it should be documented as an addendum to the Environmental Study Report detailing the circumstances necessitating the change, the environmental implications of the change, and the mitigating measures. Minor change to the undertaking can proceed without an addendum.

As described in Section 7.0, the recommended design details the protection corridor and required ROW within which the proposed east-west connection is contemplated to travel. Minor variations to this road, the final property limits of the proposed public ROW, its intersection at Hanna Avenue, Solidarity Way and Strachan Avenue, and the cross-section of the road, have all been contemplated in the recommended design. As such, minor changes determined to be preferable in the course of detailed design, will not require an addendum to the EA.

9.3 LAND ACQUISITION

The cost of the land required in order to construct the preferred alternative was estimated for both public and private properties. As the property value is greatly dependent on the level of activity therein, changes in the usage of properties to be purchased can cause significant changes in the estimated cost for the development of the Liberty New Street. Should the cost of lands to be purchased too far exceed the initial estimate, an altered alignment of the ROW may be required or, perhaps, another alternative may be preferable. In such a scenario, an addendum would be required to address such changes and re-evaluate the cost of the construction of the road connection.



Similarly, as the purchase of these private lands is extremely vital to the success of the project, negotiations play a vital part in the direction the project proceeds. Lands must be purchased from a total of seven landowners, negotiations with each of these owners will vary and therefore depending on the results, the preferred option alignment may be slightly altered in order to require less or more land from the landowners. Any significant changes in the cost of land purchases will influence the overall score of the preferred alternative's cost weighting. This can potentially lead to major changes in the project in which case an addendum will be required.

The construction regarding the connection of Hanna Avenue to the Liberty New Street depends largely on the amount of land acquired from 1A Atlantic Avenue. Should the public laneway option be chosen rather than the preferred, an addendum to the EA will be required.

9.4 ARCHAEOLOGY STAGE II

As described in **Section 8.4**, an Archaeological Stage II test pit assessment must be conducted prior to any construction activities. In the event features of archaeological interest are found, an Archaeology Stage III assessment would be required. Proceeding further would require an addendum to this Environmental Assessment that would directly address these findings. This may include revised mitigation measures up to, an altered alignment.

9.5 GEOTECHNICAL INVESTIGATION

As described in **Section 7.5**, a Geotechnical Investigation must be undertaken. It is expected that this investigation will review the suitability of the soil in terms of its stability and be coordinated with an Environmental Site Assessment and chemical analysis in order to evaluate potential contamination. It is understood that due to the previous industrial uses within the study area, it is likely required that portions within the new street alignment will require remediation. Depending on the extent of possible contaminants and remediation required, the new street's alignment may be required to be altered. If the level of remediation required is found to be extensive, this could represent a significant cost that could change the relative preference of the alternative designs, or possibly recommend the Do Nothing alternative solution over the creating a new road connection. In the event that such conditions are found, an addendum would be needed to address those findings.

9.6 PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

As mentioned in **Section 7.5**, a Phase 1 Environmental Site Assessment (ESA) must be conducted prior to construction. It is expected that the ESA will assess the risk of potential environmental liabilities of properties within the study area based on the current and historical uses therein. In the event that the ESA yields results indicating a large release of pollutants from the historic or current uses of the site, a Phase 2 ESA may be required in order to determine the degree of contamination within the soil, groundwater and other materials on the site that will be affected during construction of the new street. If the Phase 1 ESA yields no such results, there is no need for an addendum.





9.7 SUBSURFACE UTILITY ENGINEERING

Based on the initial utilities circulation conducted, the study area was identified to contain a number of public and private utility plant/conduits such as sewers, water mains, hydro conduits, gas mains and telecommunication conduits. The locations for these utilities have been identified through a utilities circulation; however the exact location and depths will need to be confirmed as part of a detailed design. The purpose of this study is to ensure that the construction of the new street and its relative right-of-ways do not create conflicts with the existing utility infrastructure within the study area. Utility conflicts that are deemed minor and can be accommodated with a marginal adjustment and/or relocation of the utility in question is not considered to be significant and can be addressed without the need for an addendum. If construction of the new street would require an extensive adjustment to existing utility infrastructures, this could represent a significant cost that could change the relative preference of the alternative designs or require an altered alignment. In the event that such conditions are found, addendum would be needed to address those findings.

9.8 MUNICIPAL SERVICING STUDY

As mentioned in **Section 7.5**, a comprehensive municipal servicing study will be required before construction of the recommended option. The study is expected to identify necessary watermain, sewer, and storm sewer systems within the road alignment. Based on the findings in this study, the alignment of the recommended plan may require some minor alterations. Should any of the aforementioned features be situated within the alignment, slight shift in the alignment may be implemented as the need arises without an addendum. In the event that the study identifies any significant changes that would require the alignment to drastically be altered or require an excessive amount of funds in order to relocate, the preferred alternative may change. In such a scenario, an addendum will be required to assess the changes and its impact on the project.

9.9 TRAFFIC OPERATIONS

There are currently no recommendations on the traffic control measures along the Liberty New Street. This must be completed prior to construction as the results influence the control measures at the intersection of Pirandello Street. Based on the results, different signalised or unsignalised traffic control measures may be implemented to the design and would require an addendum to the Environmental Assessment.

