



Confederation Line  
La ligne de la Confédération



## Confederation Line Proximity Study Guidelines

October 23, 2013

[www.confederationline.ca](http://www.confederationline.ca)





## Our Mission

*Transformation through transportation.*

## Our Vision

*To leverage the power of transportation and community to create a modern, integrated capital city that is environmentally, socially, economically and culturally sustainable and a desirable place for living, working and visiting.*

*Light rail will shape how we grow our City.*



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## 1 Introduction

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The Confederation Line Light Rail Transit project extends approximately 12.5 km between Tunney's Pasture Station and Blair Station and includes a Downtown tunnel, 13 stations, and a Maintenance and Storage Facility (MSF). In February 2013, the City entered into a design-build-finance-maintain contract with the Rideau Transit Group for the Confederation Line project. Construction started in 2013, and the line is planned to be opened for revenue service in 2018.

The City may require an applicant to submit a Proximity Study in support of a site plan application or a plan of subdivision application proposed within the Confederation Line's Development Zone of Influence.

Development within the Development Zone of Influence for the Confederation Line Project presents significant opportunities for private sector development to integrate with and advance achievement of the City's broader objectives for transit supportive development. To capitalize on this opportunity, a Development Zone of Influence for the Confederation Line Project has been determined and has been identified in the Official Plan. For development proposed within this area, it is considered important that such development give consideration to the manner in which the development will support the City's transit focused development objectives for development in proximity to the Confederation Line and to support protection of the asset (properties and structures) and its current and future operations. The definition of the Development Zone of Influence for the Confederation Line Project has been determined by a combination of factors including the Confederation Line alignment, depth, geotechnical conditions, and sub surface development. The influence area fluctuates with tunnel depth, and is at its widest when the tunnel is at its deepest. It is noted that the Development Zone of Influence extends beyond the public transit right-of-way for the Confederation Line.

## 2 Scope

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The Proximity Study is to be undertaken by an applicant submitting a site plan application or a plan of subdivision application within the Development Zone of Influence when required at the discretion of the Chief, Development Review Services where opportunities have been identified for development to support achieving transit oriented development and/or where a need has been determined to ensure that development occur in a way that will support protection of the asset (properties and structures) and its current and future operations. The Study involves a comprehensive review of the development proposal and how it relates to the Confederation Line's assets, infrastructure, utilities and operations. The overall Confederation Line system includes:

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- Below grade and elevated running structures (tunnels, box structures and bridges);
- Track guideway, including below grade, at-grade and elevated segments;
- Stations including platforms, concourses, entrances, vertical circulation, public art installations, landscaping, and retail space at certain stations;
- Electrical substations;
- Emergency exit/service buildings;
- Station and tunnel ventilation shafts;
- Fire fighters' access shafts;
- Bus terminals, where integrated with Confederation Line stations;
- Passenger pick-up and drop-off facilities including on-street operations (i.e. bus stop locations and bus lay-up areas);
- Station signage and wayfinding;
- Maintenance and storage facility; and
- Other ancillary facilities.

The Proximity Study will be required to examine and assess the following:

- The manner in which development has been designed to support the transit infrastructure and support the realization of transit focused development
- The risk of structural settlement and/or damage to Confederation Line facilities;
- The risk of liability/litigation from damage to Confederation Line facilities;
- The potential impact on access to Confederation Line facilities for future maintenance of Confederation Line assets;
- The risk of operational impacts resulting from construction;
- Protection of current and future Confederation Line infrastructure needs, including: fire ventilation, station ventilation, additional exits, accessibility for persons with disabilities, and other operational requirements; and
- The risk of encroaching on a location required for future Confederation Line works or operational requirements.

The Proximity Study should comprehensively address these, and is in addition to any other studies required to support a development application. The Planning and Growth Management Department with OC Transpo and the Rail Implementation Office (RIO) will set the scope of the Proximity Study during the pre-consultation process for a site plan control or a plan of subdivision application. The scope of the Proximity Study will vary depending on the nature of the proposal and the vertical and horizontal spatial proximity to the Confederation Line's alignment. Some requirements of the Proximity Study may overlap with the requirements of other studies for a development application. Where this is the case, the applicant is to ensure that all studies are coordinated and that the relevant study conclusions are properly articulated, and cited, in the Proximity Study.

The purpose of the Proximity Study is to demonstrate that the proposed development will be undertaken to both advance the City's objectives for transit oriented development and provide for protecting the Confederation Line with respect to its alignment, its associated assets, and any existing or future operational requirements related to OC Transpo or the Confederation Line system, as well as OC Transpo's current and future bus system. Proponents should relate the contents of the Proximity Study to the Confederation Line's components, and risk factors, as articulated above. The City's review of the Proximity Study will focus on planning considerations as well as technical issues such as construction methodology, Confederation Line infrastructure and possible coordination of the project with future transit plans. Details of any mitigation required to address possible impacts during and after construction must be identified.

### 3 Agreements, Fees and Costs

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The City will require that the applicant and its agent(s) and consultant(s) involved with preparing the Proximity Study execute a Non-Disclosure Agreement prior to the City releasing drawing information for the proposed and/or existing Confederation Line facilities or infrastructure.

The City will charge the applicant a technical review fee to cover the City's review costs for the Proximity Study. The amount for the technical review fee will depend on the level of review required (see Section 4). The fee amount will be confirmed by the Planning and Growth Management Department at the pre-consultation stage of the development application process.

In addition to the above fees, the applicant or owner may be responsible for compensating the City for associated costs on a cost reimbursable basis including, but not limited to the following:

- Cost of power cuts;
- Flag duties for OC Transpo operations;
- OC Transpo safety/training requirements;
- Direct labour and/or supervisory staff costs for construction management/operations management;
- Cost of operation diversions or other impacts on OC Transpo operating costs;
- Equipment costs; and
- Other City incremental costs related to construction.

## 4 Level of Review

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At the pre-application consultation stage for a site plan application or a plan of subdivision application, City staff will categorize the level of review for the Proximity Study in one of three categories as shown in the table below. These levels correlate to the proximity of the proposed development to the Confederation Line system with the greatest level of review (Level 3) required for development that is proposed on top of or within approximately one metre of a Confederation Line structure. The initial classification of the level of review will be based on conceptual drawings to be provided by the applicant during the mandatory pre-application consultation process.

**Table 1. Level of Review for a Proximity Study.**

<b>Level of Review</b>	<b>Type of Review</b>
1	Development within Development Zone of Influence, minimal impact on Confederation Line structures anticipated
2	Development within Development Zone of Influence, substantial <sup>1</sup> impact on Confederation Line structures anticipated
3	On top of or within approximately 1 m of a Confederation Line structure

<sup>1</sup> Applies to developments that have the potential to change the loading conditions on a Confederation Line structure, to create unbalanced lateral earth pressure on a Confederation Line structure, or to undermine a Confederation Line structure.

## 5 Timing for Submission of a Proximity Study

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A Proximity Study will be required in support of a site plan application or a subdivision application for lands located within the Development Zone of Influence. The Planning and Growth Management Department, in consultation with RIO and OC Transpo, will advise the applicant during the development application pre-consultation process of the timing to submit the Proximity Study. The Study may be required prior to deeming the application complete, during the review of the application, or through a condition of approval.

The technical review of a Proximity Study will be integrated with the development review process. If a Proximity Study is required when a development application is submitted, the technical review of the study will occur concurrently with the review of the application and other supporting studies. In other cases, the review may occur later in the process or through a

condition of approval.

The Planning and Growth Management Department will be responsible for circulating the Proximity Study to OC Transpo and RIO for review and comments. OC Transpo and RIO will be responsible for reviewing the Proximity Study and providing comments to the Planning and Growth Management Department within the development review process timelines.

## **6 Technical Review – Documentation Requirements**

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Nine hard copies and one electronic version of the documents are required to be submitted. Some documents have specific submission requirements and are outlined below (e.g. Surveys). The Proximity Study must have its conclusions addressing technical engineering matters endorsed by the relevant Professional Engineer(s) as designated under the *Professional Engineers Act, 1990*.

### **a) Level 1 Projects**

#### **For all proposed developments within the Development Zone of Influence.**

The following drawings/documents are required for all proposed developments. All documents must be sealed by the appropriate design professional.

- A site plan of the development with the centreline or reference line of the Confederation Line structure and/or right-of-way located and the relevant distances between the Confederation Line and developer's structure shown clearly;
- Plan and cross-sections of the development locating the Confederation Line structure/right-of-way and founding elevations relative to the development, including any underground storage tanks and associated piping;
- A geotechnical investigation report showing up-to-date geotechnical conditions at the site of the development. The geotechnical investigation shall be prepared in accordance with the Geotechnical Investigation and Reporting Guidelines for Development Applications in the City;
- Structural, foundation, excavation, and shoring drawings; and
- Acknowledgement that the potential for noise, vibration, electro-magnetic interference and stray current from Confederation Line operations have been considered in the design of the project, and appropriate mitigation measures applied.

Depending upon the type of development, the following documents may also be required:

- Architectural, mechanical, electrical and utility drawings;
- A National Fire Prevention Association (NFPA) 130 Standard review to ensure design

- requirements in relation to Confederation Line infrastructure are met;
- Crane locations, loadings;
  - Up-to-date surveys, signed and sealed by an Ontario Land Surveyor, as follows:
    - A property survey of existing and proposed property lines prepared to Strata Reference Plan Standards;
    - A topographic survey of existing surface items, such as buildings, contours, roads, tracks;
    - A utility survey of existing building gridlines, including those of Confederation Line structures;
    - A preliminary gridline layout survey of proposed building gridlines on architectural and structural drawings;
  - Staging of operations; and
  - Traffic management plan, which shall include site access provisions during and after construction (ultimate), lane closures and staging of traffic management plan.

The surveys noted above shall consist of hard copies together with CAD files. The surveyor shall use identical geodetic benchmarks and MTM control points for all work, and publish the location of the same on the face of all signed documents together with the xyz co-ordinates used for each. MTM coordinates for all property corners, Confederation Line reference line intersections and major gridline intersections of buildings, both existing and proposed, shall also be published;

When a development is proposed on or adjacent to a proposed or existing Confederation Line structure, the City will provide as-designed or as-built horizontal and vertical alignment data for the Confederation Line structures to the applicant. It is the applicant's obligation to superimpose the Confederation Line's alignment on the applicant's structural drawings and to tie in the two structures together from a reference survey perspective to demonstrate that Confederation Line setback requirements and property boundaries have been respected. It is the applicant's responsibility to confirm, by survey if necessary, the actual as-built location of all relevant Confederation Line facilities.

**b) Level 2 Projects**

**For applications within the Confederation Line Development Zone of Influence, where substantial integration and impact on Confederation Line structures and facilities is anticipated.**

The following additional drawings/documents may be required, in addition to those listed in Section 6(a). All documents must be sealed by the appropriate design professional.

- A structural analysis or calculations of the effects of loadings, including construction loading, on the Confederation Line structure, and demonstrating that the Confederation

Line structure will not be adversely affected by the development, including solutions to mitigate any impact on the Confederation Line structure. The documentation must include identification of the “affected” Confederation Line structural units;

- Documentation showing that the excavation support system and permanent structure adjacent to the Confederation Line property are designated for at-rest earth pressures. Unless otherwise proven through mutually accepted geotechnical analysis, At-rest pressures shall be determined using a pressure coefficient of 0.5 ( $K_0 = 0.5$ );
- Structural drawings, including caisson/foundation plans, sections and details, floor plans, column and wall schedules and loads on foundation for the development. The relationship of the development to the Confederation Line structure should be depicted in both plan and section;
- Shoring design criteria and description of excavation and shoring method;
- Ground water control plan, including the determination of the short-term (during construction) and long-term effects of dewatering on the Confederation Line structure, and provision of assurances that the influences of dewatering will have no impact on the Confederation Line structure;
- Proposal to replace/repair waterproofing system of the affected Confederation Line structure, including the Confederation Line expansion joint;
- Identification of utility installations proposed through or adjacent to Confederation Line property. Where known, show Confederation Line utility connections where associated municipal connections are to be modified;
- Identification of the exhaust air quality and relationship of air in-take/discharge to the Confederation Line at-grade vent shaft openings and station entrance openings. Confederation Line shaft openings would typically be located a minimum of 12 metres from entrances or exits because vent shaft openings are used as emergency ventilation in-take or exhaust vents for high temperature smoke in the event of a fire. Any new development must ensure that air intakes, exhausts, entrances or other similar features within the development are not located within 12 metres of the Confederation Line’s ventilation structures.
- Proposal for a pre-construction condition survey of the Confederation Line structure, including a survey to confirm locations of existing walls and foundations; and
- Monitoring Plan for movement of the shoring and Confederation Line structure prior to and during construction of the development, including an Action Protocol.

**c) Level 3 Projects**

**For developments connecting to a Confederation Line station/facility, or located on top of or within approximately one metre of a Confederation Line structure or right-of-way.**

In addition to the Level 1 and Level 2 submission requirements, the following additional drawings/documents may be required. Actual requirements will be determined by meeting with OC Transpo and RIO staff at time of pre-consultation. All documents must be sealed by the appropriate design professional.

- A general Ontario Building Code (OBC) compliance review, specifically including Section 3.12 Rapid Transit Stations, and including a plan depicting egress routes from the station.
- Wind and snow load analyses;
- Drawings/documentation of construction method, hoarding, construction access, and haul routes;
- Details of remedial work to municipal structures to support roof at wall openings, including structural loads, and calculations;
- Details of stairs, doors, sprinklers and ventilation for the development connection.
- Provision of architectural finish material selection, including samples;
- Wayfinding and signage plans;
- Landscape plans;
- Drawings of collector booth, CCTV, intercom, fire alarm, easier access elevator, all designated in conformance with the relevant OC Transpo Design Guidelines, including accessibility requirements; and
- Provision of construction record (as-built) reproducible drawings and electronic files for municipal documentation records. The electronic file and the drawings are to be in Microstation (.dgn) format.

## **7 Conditions of Approval**

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The City may include a condition(s) of approval of a site plan application or a plan of subdivision application requiring the owner to submit a Proximity Study to the satisfaction of the City. The specific timing to submit the Study will be determined on a case-by-case basis.

The City's Rail Implementation Office may include conditions of approval that relate to general protection measures to protect the Confederation Line against the potential impacts of the construction and/or operation of developments. The conditions of approval may relate to a range of general protective measures including, but not limited to the following:

- The applicant/owner must develop and obtain City approval of monitoring plans and protocols for construction that may impact Confederation Line structures, including pre-

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- and post-construction surveys, of Confederation Line infrastructure and assets;
- Development structures will generally not be permitted within the Confederation Line's right-of-way and its associated lands. City staff will consider applications to utilize 'air rights' on a case-by-case basis;
  - Proposed buildings other than an entrance connection shall be set back a minimum of 3 metres from the outside wall of Confederation Line structures and no development structures are permitted within 3 metres of the roof of a structure to ensure that the City can access the structure for maintenance and future reconstruction;
  - Developments are not permitted to structurally bear on or place unbalanced loads on Confederation Line structures for any purpose at any time;
  - The applicant/owner must undertake and obtain City approval of the necessary fire/smoke dispersion analysis to demonstrate that cross contamination of smoke/particulate matter generated by emergency Confederation Line events does not affect adjacent developments;
  - The applicant/owner must comply with City restrictions with respect to crane swing and lifting of loads over top of Confederation Line infrastructure and assets; and
  - Insurance requirements for large developments over Confederation Line infrastructure and assets.

The City may also add conditions of approval to reflect the conclusions and recommendations of the Proximity Study.

It will be the responsibility of the applicant/owner to undertake the necessary studies and protection measures, at no cost to the City.

Appendix A - Development Zone of Influence

