

Executive Summary

ES.1 Background

Ottawa's Transportation Master Plan (TMP) contains a vision for a transit network to be developed in the city by 2031. The 2008 TMP identified that for the first phase of development, the City of Ottawa invest in 20 km of new light rail transit (LRT), light rail vehicles (LRVs) to service these lines, as well as bus rapid transit technology and additional bus lanes.

Following construction of the initial Confederation Line project (Tunney's Pasture to Blair) in 2018, the West LRT project will serve to extend light rail service further west to Baseline and Bayshore stations. This extension of the Confederation Line will result in major bus/rail transfer points being located at Baseline and Bayshore Stations, which are both better positioned than Tunney's Pasture to accommodate future transfer activities. The West LRT will approximately double the capacity of the existing bus based system and result in the removal of approximately 450,000 annual bus trips.

The West LRT is a key component of the City of Ottawa's planned primary rapid transit network providing fast, reliable transit service to the west and southwest areas of the city. The areas that will be serviced by the West LRT are anticipated to grow substantially over the planning horizon. The City's population is forecasted to grow 23% from 2011 to 2031 with 79% of that growth predicted to occur in urban areas outside the Greenbelt. The number of jobs is projected to grow about 24% from 2011 to 2031, with 72% occurring in the inner suburbs and areas. This points to a need to move an increased number of people efficiently, reliably, and safely from outer areas into the Central Area, and vice-versa.

As such, the number of transit trips taken into the inner suburbs and areas is expected to rise substantially. The areas targeted for Transit Oriented Development (TOD) and intensification will see an increased demand for people wanting to live, shop, and work both in their neighbourhood and downtown. Higher rapid transit technology such as LRT supports these forecasted trends by fuelling growth and redevelopment.

Coinciding with this growth are the aggressive modal splits the City aims to achieve by 2031. By 2031, the City of Ottawa aims to have nearly 26% of all morning-peak period travel occur via public transit. This is an aggressive target considering that over the same period, the total number of transit trips taken is projected to grow by 32%. To achieve these splits, the West LRT will provide a more efficient and reliable level of transit service, as well as a vastly improved user experience.

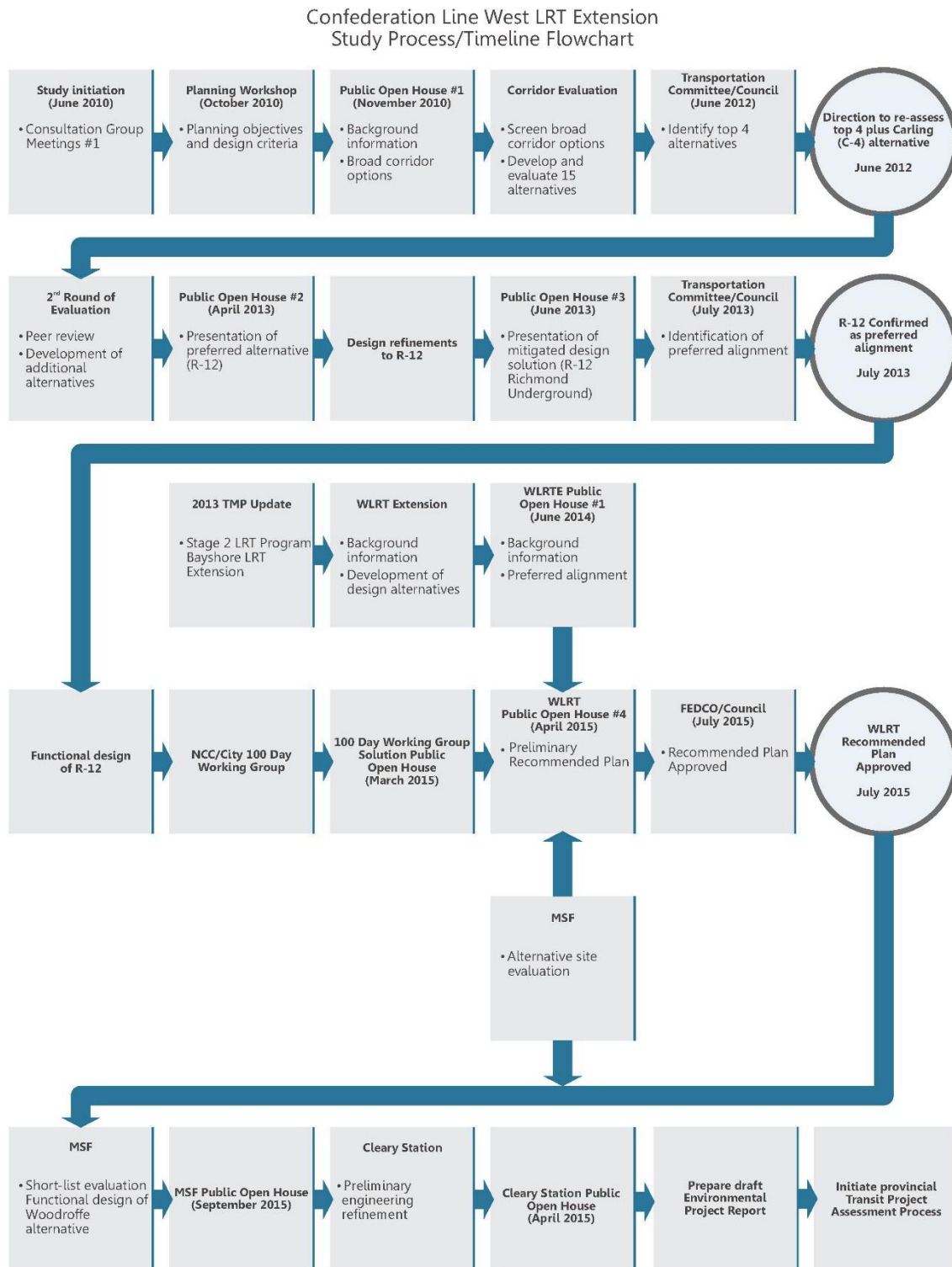
The further extension of LRT, to Bayshore station, was identified in the 2013 TMP Update and accelerates the construction of LRT technology between Lincoln Fields and Bayshore Station, replacing the previous plan to construct a new Bus Rapid Transit (BRT) connection in the western part of the study area. The Bayshore extension will include two new stations (at Pinecrest and Queensview) and a redesigned Bayshore Station to accommodate connections between LRT and buses to communities further west. As part of the 2013 TMP, the West LRT (along with the Confederation Line East LRT, and the Trillium Line LRT extension) is a part of Stage 2, an extensive expansion of Ottawa's LRT system. Stage 2 replaces the 2008 TMP's categorization of phased transit infrastructure projects that were planned over time to 2031.

The alignment, technology and design of the West LRT has been planned to be compatible with Confederation Line technology and operations, and will be a completely segregated rapid transit system to avoid vehicular conflicts. The West LRT will allow for improved transit operations by separating transit from other traffic, and provide increased transit capacity needed to meet forecasted ridership on this segment of the City's rapid transit network to the year 2031 and beyond.

This Environmental Project Report (EPR) also assessed, as part of the West LRT alignment, potential sites for a Maintenance and Storage Facility (MSF). A Maintenance and Storage Facility is essential for the operation and safe running of any LRT system. As with bus transit, Light Rail Vehicles require regular and routine maintenance to ensure reliability of service, safety of operation, upkeep of warranty and day to day cleaning. The facility also acts as a holding area in which the LRV's can be stored during non-running hours and protected from vandalism or intrusion.

In accordance with the *Transit Project Assessment Process (TPAP)*, under *Ontario Regulation 231/08 (O.Reg. 231/08)* this EPR has been completed and made publicly available. As part of the assessment process, the EPR will be placed on public record for comment and review prior to Ministry of Environment and Climate Change (MOECC) approval. If there are concerns of provincial interest that cannot be resolved, a written objection may be made and sent to the Minister of the Environment and Climate Change for consideration. This EPR has developed through a rigorous and complex study process over an extended period of time, which is illustrated in Figure i.

Figure i: West LRT Process and Timeline



ES.2 Evaluation of Alternatives

Western Confederation Line Alignment

The West LRT from Bayview to Baseline was identified in the 2008 TMP as the next phase for LRT implementation following the completion of the Confederation Line from Blair Road to Tunney's Pasture. Following the evaluation of the long-list of alternative corridors, it was determined that the top four corridors were all located within the northern part of the study area, and that they should be carried forward for further analysis. It was determined that Carling Avenue, as a primary corridor, should not be considered due to its low score on the criteria established in accordance with the Environmental Assessment Process.

However, following Council direction, additional analysis of Carling was undertaken and the preferred West LRT alignment was informed by the long-range planning work of both the National Capital Commission (NCC) and the City of Ottawa. The study team revisited a number of issues, including the development of a lower cost Carling alignment, which was evaluated and found to still score well below the top four corridors. Based on feedback and further analysis, the Carling corridor was removed from further study.

The application of specific criteria of capital cost and public interest, led to the identification of alternate and more refined alignments, generating an additional three potential corridors. The refined alternatives were jointly evaluated and it was determined that the Richmond Underground (R-12) alternative scored the highest because it has significantly reduced impact on the greenspace along the Parkway Corridor and the Byron Linear Park, it fulfills the long-term rapid transit objectives by serving both regional and local needs, it fits into the long-term transit network, and it is considered financially affordable.

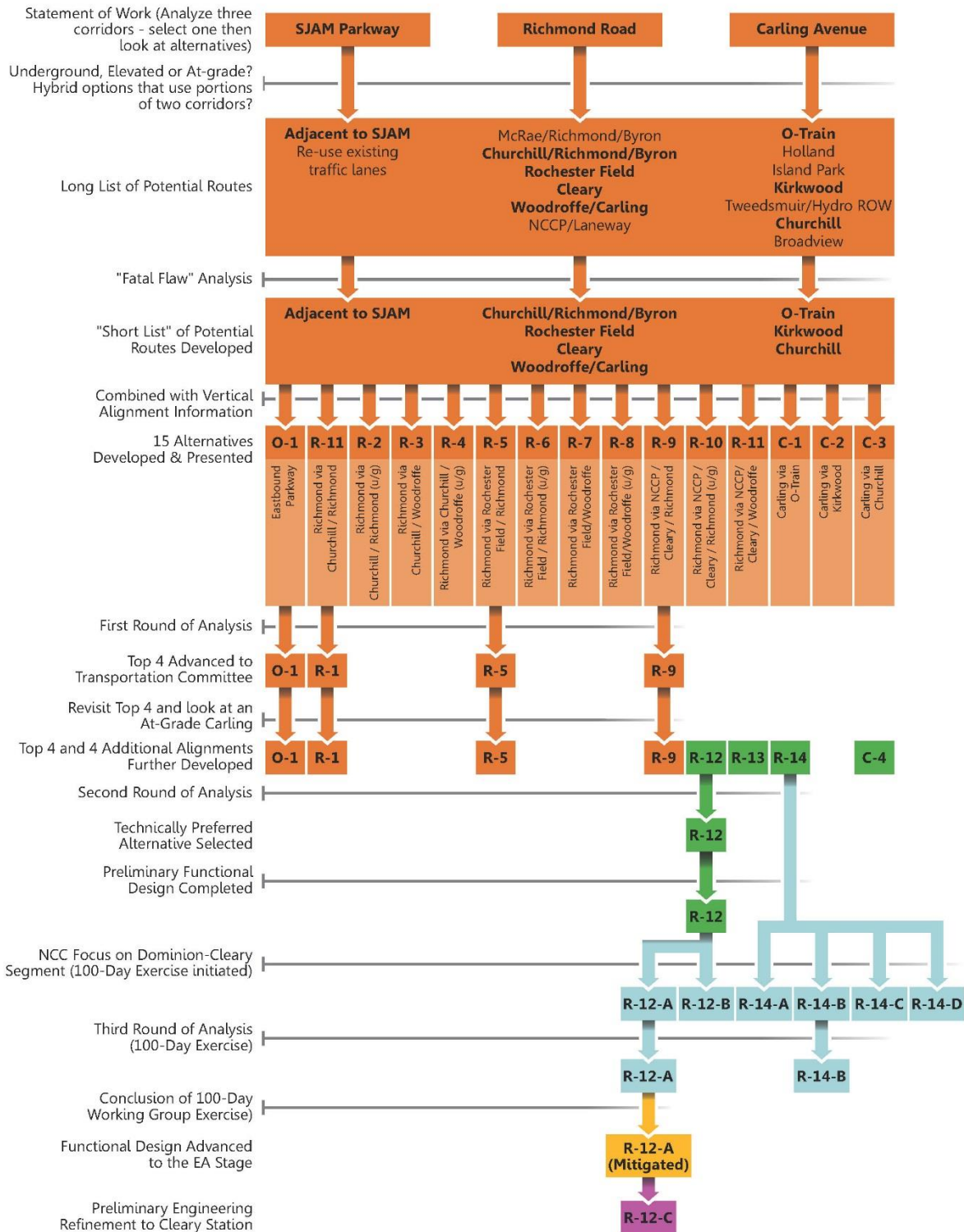
As part of the 2013 TMP, two additional elements were added to the project: an extension of the West LRT from Lincoln Fields to Bayshore station along the previously approved West Transitway Corridor and consideration of a site for a second Maintenance and Storage Facility (MSF) to support long term operation of the Stage 2 network. As the extension to Bayshore had been previously studied, alternatives consisted of refinements to the station location, minor changes to the alignment, and refinements to the Bayshore Station BRT/LRT configuration. A separate process was implemented to review 19 potential MSF sites, which after evaluation yielded a preferred site along the north side of the CN tracks between Merivale and Woodroffe, south of Baseline station.

The NCC and City initiated a 100-Day working Group in late 2014 to review the preferred solution between Dominion and Cleary stations to respond to the NCC's concerns that the pre-conditions on use of the Sir John A. Macdonald Parkway (SJAM) had not been met. Fundamental assumptions were re-evaluated, and the process yielded a solution that bundles a realigned Parkway over top of the LRT facility, reducing local impacts and creating more space north of the Parkway lanes for an improved waterfront park.

A preferred concept has now emerged. Functional design work was then undertaken to refine this concept, and preliminary engineering has also been advanced. The results of this functional planning are included in Section 7 of this report. The City's preliminary engineering team have identified an additional improvement at Cleary station, which will place the station diagonally through the 747 Richmond Road plaza site. This refinement is captured in the final alignment documented in the report as R-12-C.

The following schematic diagram (Figure ii) provides an overview of the evaluation process used for the selection of a preferred alternative alignment, with greater detail provided in the full EPR.

Figure ii: Evaluation Process Schematic Diagram



Maintenance and Storage Facility

A Maintenance and Storage Facility (MSF) is essential for the operation and safe running of any LRT system. The MSF under construction along Belfast Road near the St. Laurent Bus Depot for the Confederation Line will have the capacity to service the initial fleet and early expansion. However as the fleet grows to accommodate Stage 2 and increased ridership forecasted in the TMP, another facility is required to service the additional trains.

Alternative locations for an MSF were identified along the entire Confederation Line corridor. Site evaluation criteria have been developed according to four main categories of site attributes: Site Characteristics; Facility Operations; System Operations; and Costs.

Nineteen (19) candidate sites were identified and subjected to a screening. Six (6) potential sites emerged from this screening and were subject to additional evaluation summarized in Table i below. The higher a site scored, the better suited it was for the placement of an MSF. As such, the Woodroffe and Expanded Belfast site scored highest.

Table i: Comparative Evaluation Summary

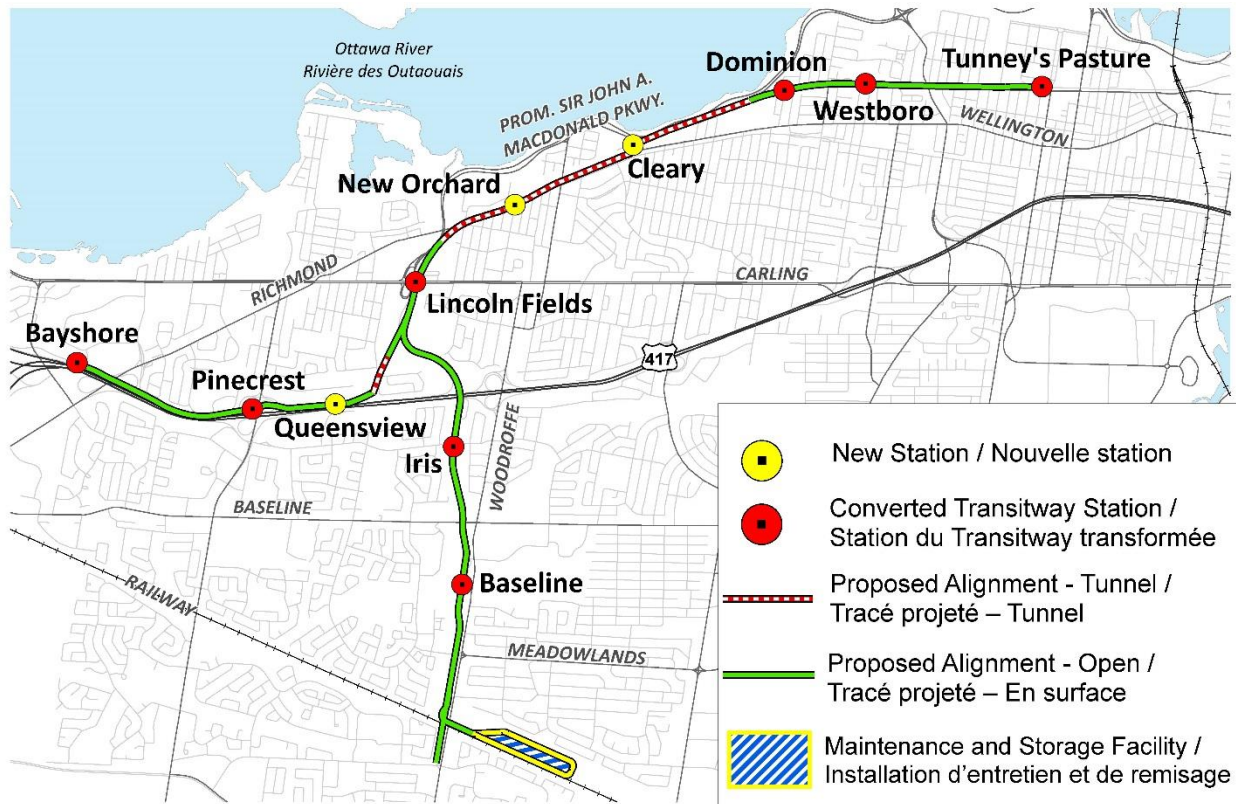
	Woodroffe	Holly Acres	Pineview	Belfast	Aviation Parkway	Jeanne d'Arc
Site Characteristics	15	12	8	14	9	11
Facility Operations	10	12	10	10	9	9
System Operations	7	2	4	8	6	2
Cost	7	3	6	5	5	5
Total	39	29	28	37	29	27

ES.3 Recommended Plan

Development of the Recommended Plan was based on the preferred design alternatives identified in Section 5.0 of this EPR, and consists of the following major elements as illustrated in Figure iii:

- 13 km of LRT alignment - 9 km from Tunney's Pasture to Baseline Station and 4 km from Pinecrest Junction to Bayshore Station. Pinecrest Junction is the divergence of the track into two branches south of Lincoln Field Station. Of this 13 km, 9 km is repurposing of an existing BRT facility and 4 km is new construction. The LRT alignment involves a combination of below-grade (trench or tunnel), at-grade and elevated guideway;
- Ten new or converted rapid transit stations;
- One modified rapid transit station (Tunney's Pasture);
- One decommissioned rapid transit station (Queensway); and,
- A maintenance and storage facility (MSF) located south of Baseline Station.

Figure iii: Western LRT Alignment



The proposed LRT corridor, station locations, and MSF are described in greater detail in Section 7.2. The Recommended Plan has been advanced to a functional level of design, which permits identification of infrastructure footprint, property requirements, broad impacts, and cost estimates which can be evaluated as part of the assessment of effects, with appropriate mitigation measures developed where necessary. It is anticipated that the project will be completed under a similar approach to the Confederation Line and that a private sector partner will be sought by the City of Ottawa to undertake more advanced design work, as well as construction and maintenance of

the project, with the City responsible for daily operation of the LRT system. The alignment is illustrated in greater detail in the functional design drawings provided in Section 11, and described below.

LRT Alignment

There are four major alignment segments within the project:

- Tunney's Pasture Station to east of Dominion Station, where the existing Transitway will be converted,
- Dominion Station to west of New Orchard Station, where a new right-of-way will be established,
- Pinecrest Creek Corridor, where the existing Transitway will be converted, and
- Bayshore Extension, constructing the planned Transitway corridor until Pinecrest Station, and converting the remaining portion to Bayshore Station.

Tunney's Pasture Station to east of Dominion Station

Starting immediately west of Tunney's Pasture Station (initial terminus of the Confederation Line), the LRT alignment will make use of an existing BRT corridor which runs in a trench parallel and to the north of Scott Street. One station (Westboro) will be converted to accommodate LRT platforms on the lower (Transitway) level, with local buses continuing to access the station via the existing upper level bus platforms. Temporary bus platforms at Tunney's Pasture will be decommissioned.

Dominion Station to west of New Orchard Station

Dominion Station, which is at the west end of the existing Transitway trench will be completely rebuilt, with the new station re-aligned and deeper than the existing station to permit LRT track geometry to enter into the NCC's Sir John A. Macdonald (SJAM) Parkway corridor. As the alignment leaves Dominion Station, the escarpment of land gives way and LRT runs through a short open trench before it enters a tunnel and runs beneath the re-aligned eastbound lanes of this roadway. The LRT alignment will run through the SJAM Parkway corridor for approximately 1.2 km in a cut and cover tunnel to just east of Cleary Avenue, where a new station (Cleary) will be located under the 747 Richmond Road plaza site, in the middle of the S-curve transition to Richmond Road. West of the transition the alignment continues to run under Richmond Road until west of Woodroffe Avenue. West of Woodroffe Avenue, the LRT alignment shifts to run under and through the Byron Linear Park, with a new station provided adjacent to the intersection of Richmond Road and New Orchard Avenue. West of New Orchard Avenue, the cut and cover LRT tunnel begins a gradual curve, passing under Richmond Road and a portion of McEwen Park before entering into the NCC's Pinecrest Creek Corridor just south of Richmond Road.

Pinecrest Creek Corridor

South of Richmond Road the LRT returns to grade and enters into a relocated and rebuilt Lincoln Fields Station, which will now be located beneath the existing Carling Avenue Bridge over the Pinecrest Creek corridor and adjacent to the ramps serving the western end of the Sir John A. Macdonald Parkway. South of Lincoln Fields Station, the LRT alignment splits at Pinecrest Junction, with one branch continuing via the Pinecrest Creek corridor along the existing

Southwest Transitway (to be converted from BRT to LRT), through a rebuilt Iris Station and into a previously constructed underground tunnel structure south of Baseline Road, where it will terminate at Baseline Station. Details on the layout of the junction are outlined below.

Bayshore Extension

Starting at Pinecrest Junction, the Bayshore extension crosses over Pinecrest Creek before entering into a tunnel which carries the LRT alignment beneath Connaught Avenue and around the existing OC Transpo bus garage. The LRT alignment returns to grade within the OC Transpo property and then runs along the north side of Highway 417 (The Queensway), with a new station located at the eastern end of Queensview Drive. Continuing along the north side of The Queensway, the alignment passes under existing highway on/off-ramps and Pinecrest Road before entering into a relocated and rebuilt Pinecrest Station, located on the west side of Pinecrest Road. West of Pinecrest Road, the LRT alignment makes use of an existing BRT corridor running along the north side of the Queensway, which will be converted to accommodate LRT. The LRT alignment ends at Bayshore Station, which is located west of Richmond Road.

Cut and Cover Tunnels

There are three cut and cover tunnel structures proposed as part of the project. Two of these structures are new and will be constructed as part of this project, while the third is a previously built structure which will be made use of for LRT.

The first tunnel runs from west of Dominion Station to a portal in the Pinecrest Creek corridor just south of Richmond Road. It will consist of box structures, most likely constructed by cut and cover, with intermediate stations at Cleary Avenue and New Orchard located below-grade.

The second tunnel is located at Baseline Station and has already been partially constructed as part of a separate project undertaken in conjunction with Algonquin College. This structure will be completed as part of this project.

The third cut and cover tunnel is on the Bayshore extension, and will run approximately 300 metres, from west of Pinecrest Creek to west of Connaught Avenue.

Stations

There will be ten new or reconstructed stations included as part of the West LRT project.

- Westboro – existing BRT station to be converted to accommodate LRT
- Dominion – existing BRT station to be relocated and rebuilt to accommodate LRT
- Cleary – new LRT station
- New Orchard – new LRT station
- Lincoln Fields – existing BRT station to be relocated and rebuilt to accommodate LRT
- Iris – existing BRT station to be relocated and rebuilt to accommodate LRT
- Baseline – existing BRT station to be relocated and rebuilt to accommodate LRT
- Queensview – new station
- Pinecrest – existing BRT station to be relocated and rebuilt to accommodate LRT

- Bayshore – existing BRT station to be converted to accommodate LRT

In addition, the temporary bus terminal located at Tunney's Pasture Station (terminus of the initial Confederation Line LRT) will remain in service until the West LRT is operational, at which point it will be decommissioned or redesigned to a more suitable size to accommodate north-south transfers, and any lands that are freed as a result will be re-instated. Modifications to the bus terminal at Tunney's Pasture will be informed by consultation with PWGSC and will reflect future transit demands. Another existing station (Queensway) will be decommissioned as part of this project, with the new Queensview and existing Iris Stations providing alternate access to LRT for the adjacent communities.

Station designs will:

- Carry common look and feel elements to those being built for the Confederation Line;
- Provide for safe, efficient and accessible access to rapid transit;
- Have convenient pedestrian and cycling connections to and from surrounding communities;
- Integrate with the character of existing residential and green space areas.
- Fulfill Accessibility for Ontarians with Disabilities Act (AODA), Building Code and City of Ottawa Accessibility design standards including the implementation of redundant accessibility.

Below is an example of station design along the Western Confederation Line, at Westboro Station.

Figure iv: Example of Station Design



Maintenance and Storage Facility

The proposed Maintenance and Storage Facility is an integral part of the project, as it will:

- House and service some of the trains needed to operate the Confederation Line (in conjunction with the facility constructed at Belfast Road as part of the initial Confederation Line project)
- Provide a second light maintenance and cleaning facility to augment the Belfast Facility
- Allow the Belfast Facility to be the primary heavy maintenance facility for the LRT network

Maintenance of the trains is crucial to maintain vehicle manufacturer's warranties, minimize long term operating costs and provide for system safety and reliability. The Maintenance and Storage Facility will accommodate the following elements on-site:

- Main facility building housing offices, roster areas, meeting rooms and control equipment
- Enclosed, weather-tempered storage yard
- Repair areas for light maintenance areas for vehicles
- Workshop area with a suite of tools and equipment tailored for vehicle types
- Cleaning area for interior cleaning of vehicles
- Train wash for exterior washing of vehicles
- Electrical substation to local power supply for facility and trains
- Turnaround loops providing the ability to work vehicles from either end and equalize wear and tear

Track redundancy within the facility will be provided to maintain the ability to move trains under vehicle or system failure conditions.

The preferred site for the Maintenance and Storage Facility has been determined based on the following criteria:

- Site Characteristics (topography, grade, land use compatibility, expansion capability and environmental considerations)
- Facility Operations (turnaround loops, track redundancy, layout efficiency and municipal services)
- System Operations (connectivity to the line, efficiency and access to freight rail), and
- Relative Costs (capital, operating, maintenance and property ownership and acquisition)

The selected MSF site, as illustrated in Figure V on the subsequent page, occupies the western portion of the vacant lands immediately north of the CN tracks between Woodroffe and Merivale. The facility will be located at the western, Woodroffe, end of the lands with track connections over Woodroffe Road, turning north to connect to the south end of Baseline Station, and pedestrian and auto access from Woodroffe. The facility will provide for the daily cleaning, light maintenance and storage of LRT vehicles, including facilities for staff parking and training. The site will also provide a second Maintenance of Way facility, used to maintain the tracks, signals, overhead catenary, power, communications and structures associated with the Confederation Line. Of these activities, the track and track bed materials storage and handling will be the most obvious component. Stockpiles of rails, ties, track ballast and supporting materials along with specialized vehicles used to remove and install the materials will be maintained on site.

The site will house a facility for cleaning and light maintenance. This will include daily cleaning of the interior and exterior of the vehicles, small repairs, and minor component maintenance. Heavy maintenance such as repainting of the vehicles, maintenance of the motors, heating and air conditioning systems, and wheel truing replacement and repair will be handled at the Belfast Facility.

The site will be buffered from the local community through the design and location of buildings and exterior activities as well as the implementation of a landscaped berm and noise wall. The buffer will isolate the facility from the adjacent communities and provide space for an east-west pathway connection along the north side of the MSF. This connection is identified as part of the City's 2013 Cycling Plan.

Figure v: Eastward View of the Maintenance and Storage Facility



Finance and Economic Development Committee

On Monday, June 29, 2015, the Finance and Economic Development Committee approved the proposed Stage 2 plans, including the full West LRT alignment from Tunney's Pasture to Baseline and Bayshore Stations, the preferred location for the maintenance and storage facility, the East LRT alignment extending from Blair to Trim Road station, as well as extending the Trillium Line further south. Thirty delegates addressed the committee with various messages of concern and support. Of these 30 delegates, 15 spoke specifically to the West LRT with various concerns, inquiries, and support. Formal submissions can be observed in Appendix B alongside committee materials.

Amongst several other recommendations detailed in Appendix B, the Finance and Economic Development Committee recommended that Council:

- Approve the functional design for the Stage 2 Light Rail Transit (LRT) project;

- Delegate authority to the City Manager and Mayor to engage with the Federal and Provincial Governments on funding for the Stage 2 LRT Project; and
- Direct staff to complete the Stage 2 LRT Environmental Assessment process and documentation based on the functional design and file the respective Environmental Study Reports in accordance with the Ontario Transit Regulation 231/08.

City Council

On Wednesday, July 8, 2015 Ottawa City Council unanimously approved the Stage 2 plans, including the West LRT alignment. Committee recommendations and agenda are detailed in Appendix B, but some of the highlights include:

- Approve the functional design for the Stage 2 Light Rail Transit (LRT) project;
- Delegate authority to the City Manager and Mayor to engage with the Federal and Provincial Governments on funding for the Stage 2 LRT Project; and
- Complete the Environmental Assessment process and documentation based on the functional design and file the respective Environmental Study Reports in accordance with the Ontario Transit Regulation 231/08; regarding the functional design for the Stage 2 Light Rail Transit (LRT) project.

Property Requirements

Most of the LRT alignment and stations are located within the existing Transitway right-of-way, or under public road rights-of-way. At several locations, federal property is required for new alignments, stations, or temporary facilities. Private properties are also required to enable construction of the project. Of particular interest are a number of private properties not currently within City ownership and of which part of, or the entire parcel, are required to complete project:

- Two properties just east of Cleary (where the alignment transitions from the Sir John A. Macdonald Parkway to Richmond Road. These addresses are:
 - 727 Richmond Road (0.01 Ha, no relocation of structures required), and
 - 747 Richmond Road (0.24 Ha, existing plaza will be removed).
- One property at Richmond Road and McEwen Avenue where the alignment swings away from Richmond Road to transition into the Pinecrest Creek Corridor (1181 Richmond, 0.09 Ha, complete parcel/structure required); and
- Four properties located on the south side of Queensview Drive, between Pinecrest Road and the OC Transpo Pinecrest bus garage. These properties are:
 - 2680 Queensview Drive (0.12 Ha),
 - 2670 Queensview Drive (0.16 Ha) (city ownership),
 - 2650 Queensview Drive (0.22 Ha), and
 - 2600 Queensview Drive (0.53 Ha).

The alignment does not appear to necessitate any business relocation, but rather partial property acquisition. These lands were previously identified in the 1996 West Transitway Extension EA, although changes necessary to support LRT technology may require adjustments to property requirements.

- Some property is required from Bayshore Shopping Centre at the terminus station. A total of 0.21 Ha is required – which does not appear to conflict with any of the shopping centre infrastructure, but rather partial property acquisition.

Three properties on Connaught Avenue were previously been acquired by the City for the West Transitway to allow for an efficient tunnel connection between the Pinecrest Creek Corridor and the northern edge of Highway 417 adjacent to the Pinecrest Bus Garage.

On the Bayshore extension, Ministry of Transportation Ontario (MTO) lands are required through the Pinecrest/Highway 417 interchange. Information on the alignment and impacts to MTO lands have been discussed and land transfer will proceed as deign progresses.

Also small pieces of private land may be needed at Bayshore Station to provide for bus circulation. These lands have previously been identified as part of the West Transitway Extension (Bayshore – Moodie) EA Study.

Significant lands are required from the NCC for the alignment segments along the Sir John A. Macdonald Parkway and within the Pinecrest Creek Corridor. The Memorandum of Understanding developed at the end of the 100-Day alignment review, completed in March 2015, lays out the framework for the property discussion. Further NCC land requirements for a Maintenance and Storage Facility has also been identified and is further discussed below. As details are developed during the preliminary engineering the property plans, potential land transfers and property values will be assessed.

The proposed site for the maintenance and storage facility occupies approximately 16.2 hectares of land in the western section of the current vacant land between Merivale and Woodroffe, north of the CN railway corridor. The land is currently owned by the NCC however they have identified the site as not essential to their mandate. The alignment approaching the MSF will primarily be located on City-owned land retained for use as part of the future transit system expansion to Barrhaven or the municipally-owned woodlot west of Woodroffe and south of Tallwood.

ES.5 Analysis of Environmental Effects

Professional judgment and experience, as well as best planning practices formed the basis for identifying environmental effects and mitigation measures. The analysis was based primarily on comparing changes to the existing environment, prior to, during, and after construction. Experts were consulted in the field of the natural environment, noise, air quality, and vibration, archaeology, built heritage, environmental contamination, and geotechnical sciences.

The scope of the factors to be considered in the assessment includes the environmental conditions and indicators summarized in Table ii.

Table ii: Existing Conditions Considerations

Existing Condition	Consideration
Social Environment	<ul style="list-style-type: none"> Planning policies Land use Land ownership Cultural heritage resources (built heritage and archaeological resources) Landscape character Air quality, noise, and vibration Views and vistas (where protected)
Transportation Environment	<ul style="list-style-type: none"> Existing road network/transit networks Existing pedestrian/cycling networks
Infrastructure and Utilities	<ul style="list-style-type: none"> Water distribution system Sanitary and combined sewers Storm drainage Structures Hydro One and Ottawa Hydro Natural gas
Economic Environment	<ul style="list-style-type: none"> Business and other land uses City budgeting
Natural Environment	<ul style="list-style-type: none"> Surface water Aquatic environment Terrestrial environment Natural Heritage Features Wildlife Species at risk
Physical Environment	<ul style="list-style-type: none"> Geophysical conditions Slopes and ravines Hydrogeology Contamination and hazardous materials Well records

Built In Mitigation Measures

In this assessment, “built-in mitigation” is defined as actions or design features incorporated into the pre-construction, construction, and operational phases that have the specific objective of lessening the significance or severity of environmental effects that may be caused by the project. These can manifest as monitoring plans prepared before construction commences, design elements, or general site recommendations.

Built in Mitigation Measures include:

- Emergency Response Plan
- Construction Waste Management Plan
- Public Communications Plan
- Lighting Treatment Plan
- Management of Contaminated Materials
- Occupational Health and Safety Plan
- Spills Response and Action Plan
- Geotechnical Investigations

Preliminary geotechnical investigations have been completed for the preferred alignment, as well as the MSF approach and site. Additional geotechnical investigations in the detailed design stage will be required to confirm groundwater and subsurface conditions and the potential impacts as the alignment is refined and finalized. Foundation investigation will be required for structural design of new structures and any possible extension of culverts.

- Construction Timing Considerations

All activities related to the construction should avoid certain timing windows dependent on the wildlife that is present. Below presents an outline of timing windows that will be avoided.

- Breeding Birds (Migratory Birds Convention Act)
- In-Water Works and Fish Relocation (Fisheries Act)
- Bat Breeding Season (Endangered Species Act)
- Fisheries Self-Assessments

Site Specific Mitigation Measures

After potential effects were predicted, site specific mitigation measures were identified. Often, these mitigation measures are sufficient to reduce potential negative effects to an insignificant or negligible status. Mitigation included environmental rehabilitation and replacement of disturbed areas.

Site specific mitigation measures include:

- Heritage Impact Assessment
- Traffic Management Plan
- Transit Operations
- Environmental Protection Plan
- Ecological Site Assessment
- Tree Conservation Report
- Fisheries Compensation Plan for the Realignment of Pinecrest Creek
- Butternut Tree Survey
- Additional Archaeological Assessment and Monitoring
- Landscaping plan in consultation with NCC, with consideration of Cultural Landscapes
- Erosion and Sediment Control Plan
- Phase 2 Environmental Site Assessment
- Landscape Plan
- Pre-condition Survey for Vibration
- Further Fluvial Geomorphology Investigation
- Stormwater Management Plan
- Property Impact and Acquisition

- Noise

The contractor will be required to develop a strategy for mitigating noise, as feasible, with consideration for the noise limits specified in MOECC NPC-115 and NPC-118 and City of Ottawa By-laws for Noise. As per the Air Quality, Noise and Vibration Impact Assessment (Appendix H, Annex II), future assessments for stationary sources of noise, specifically the MSF and bus transfer stations, must be completed to determine the requirement and extent of any possible mitigation.

No major noise implications emerged in the impact assessment of the preferred alternative. Stationary noise impacts will be conducted in subsequent stages of design for any stationary sources of noise such as transfer stations and the MSF. Practises consistent with the Confederation Line (currently under construction) will be implemented in keeping with good planning, such as isolated slabs and continuously welded rails.

- Vibration

The contractor will be required to develop a strategy to satisfy, as feasible, MOECC NPC-119 and NPC-207 for ground vibrations.

Although the Vibration Impact Assessment did not identify any significant impact from vibration, future surveys should be done to confirm this upon detailed design, and to ensure keeping with best practises. A vibration survey will be required before construction to confirm where the impacts of vibration from the LRT will occur. Typical measures (sub-ballast blast mats or isolation slabs) to isolate the track will be implemented to reduce the vibration impact where necessary - near receivers identified in the vibration assessment, and nearby sensitive receivers such as 75 Cleary, 727 Richmond, Unitarian Campus, Ben Franklin Theatre, and the Haddon Health Centre.

- Air Quality

The contractor will be required to develop a strategy to satisfy, as feasible, the fugitive dust limits specified in O. Reg. 419 during construction.

- Geotechnical Considerations

Given the variability of the subsurface conditions encountered in the study area, an extensive program for further subsurface investigation should be carried out and more specific geotechnical guidelines provided, specifically for the Dominion to Cleary section of the preferred “Richmond Underground” alignment.

ES.6 Consultation

The Western Confederation Line Extension project has had an extensive consultation program, spanning from the inception of the project in 2009, and continuing into the TPAP process. Below is a summary of the consultation events that have occurred to date.

Consultation Group Meetings

Three separate consultation groups have been consulted throughout the process: agencies, business and public stakeholders. Each group has been presented with the opportunity to provide direct input and feedback into the planning process. As per Table iii, total of 9 meetings occurred with each group. This does not including separate correspondence outside consultation events.

Table iii: Consultation Group Meetings

Meeting	Date	Main Agenda Topics
1	21 June 2010	Introductions; Study Overview; Confirmation of Roles and Responsibilities; Study Design and Schedule; Next Steps
2	4 October 2010	Joint Consultation Group – Planning Objectives and Design Criteria Workshop
3	9 November 2010	Project Update – Existing Conditions Report and Planning Objectives with Supporting Criteria; Need and Justification; Identification of Alternative Corridors; Corridor Evaluation Methodology; Public Open House and Presentation #1; Next Steps
4	22 March 2011	Joint Consultation Group - Project Update; Corridor Evaluation Process; Weighting and Ranking of Planning Objectives and Design Criteria by Consultation Group Members
5	27 April 2011	Corridor Review; Criteria Weighting Results; Next Steps
6	13 June 2012	Study Update; Corridor Alignments; Evaluation Process and Results; Next Steps
7	1 May 2013	Background and Study Area; Transportation Network Perspective; City-Building Perspective; Transportation Performance Perspective; Proposed Rapid Transit Network; Community and NCC Concerns; Summary and Next Steps
8	16-17 June 2014	Bayshore Extension: Overview, Process and Schedule, Consultation, Context, Opportunities and Objectives and Next Steps
9	21-22 April 2015	Overview, Preferred Alternative for Entire Line, Consultation, Construction Staging, Detours, Maintenance and Storage Facility, and Next Steps.

National Capital Commission

The NCC is a major agency stakeholder in the West LRT project and has been involved with the EA study from the early planning stages. The West LRT between Dominion, Lincoln Fields and Baseline cannot be completed without travelling on federally owned NCC land. As such, NCC participation in this project began with the development of the study’s Statement of Work.

Over 28 formal meetings between the City of Ottawa and the NCC management and staff have taken place throughout the study. This does not include informal discussion outside meeting events. These meetings took place to develop design principles and criteria for the portions of the LRT that runs on NCC land, to provide project updates, to present various motions to the NCC Board, to tour the proposed corridor, to review evaluation methods, to solidify NCC and City of Ottawa commitments, and ultimately to approve the preferred alignment.

On 21 November 2014, the Board of the National Capital Commission (NCC) announced that it had concluded that the partially buried “Richmond Underground” option in the Sir John A. Macdonald Parkway (SJAM), put forward by the City for the environmental assessment study, could not meet the two conditions set by the NCC’s Board of Directors:

- Unimpeded continuous access to the corridor lands and Ottawa River shorelines, and
- Minimal visual impact on the corridor landscape quality and the user experience of this corridor.

As a result, the NCC and City of Ottawa created the 100-Day Working Group, composed of NCC Board Members, City Councillors, and executive staff from both organizations. The group was tasked with developing a mutually acceptable solution for the future Confederation Line west extension alignment between Dominion and Cleary stations.

The 100-Day Working Group developed a mutually-acceptable solution for the segment, which was introduced to the public on March 6, 2015. The 100-Day Solution recommends running a portion of the Confederation Line West extension under rebuilt and realigned lanes of the Sir John A. Macdonald Parkway between Dominion and Cleary stations. The resulting solution and Memorandum of Understanding was posted, for public information, by the NCC and the City of Ottawa and is available in Appendix B.

This solution was presented at a public open house, as detailed below.

Table iv: 100-Day Consultation Program

POH	Date	Forum	Purpose of the Open House
100-Day Solution	30 March 2015	Public Open House, 5:00 to 8:00 pm;	Overview of the West LRT 100-Day solution developed in partnership between the City of Ottawa and the NCC; addressing concerns raised by both the public and the NCC following the three previous open house sessions.

Public Open Houses and Information Sessions

A key component of the EA process is the coordination of public consultation. The planning and coordination of the infrastructure and the environmental mitigation requirements for the project, in consultation with the community, has helped to ensure that the objectives of the City, the community, other approval authorities and stakeholders have been fulfilled.

Table v: Public Consultation Program

POH	Date	Forum	Purpose of the Open House
1	29 November 2010	Public Open House, 5:30 to 8:30 pm	Review the project need and existing conditions; consult on the planning objectives and supporting criteria; review and comment on the proposed alternative corridors and the evaluation of the corridors; and provide the public an opportunity to ask questions and discuss the project with members of the study team.
2	25 April 2013	Public Open House, 5:30 to 8:30 pm	The material presented included information on the study overview; study context, development and evaluation of alternative corridors; shortlist evaluations; station evaluations and next steps.
3	27 June 2013	Public Open House, 3:00 to 8:00 pm	This open house and drop-in consultation session provided an overview of the West LRT study progress to date and addressed concerns raised by both the public and the NCC following the April 2013 release of the preliminary preferred alignment – Richmond Underground.
4	19 June 2014	Public Open House, 6:00 to 8:30 pm;	Focus on the expansion to Bayshore; Introduce the expanded study area; outline the study process and schedule, study context, study purpose and relationship with other studies and projects; highlight the 2013 TMP changes and previous rapid transit studies; provide an overview of existing conditions, LRT technology background and considerations; reiterate planning and design principles; introduce the corridor alignment and station locations overview and design issues; and outline next steps.
5	29 April 2015	Public Open House, 6:00 to 9:00 pm;	Provide an overview of the preferred plan along the entire LRT West Extension; focus on design recommendations for the segment from Lincoln Fields Station to Bayshore and Baseline Stations; introduce construction staging and the search for potential sites for an LRT vehicle maintenance and storage facility; and outline next steps.

POH	Date	Forum	Purpose of the Open House
6	21 September 2015	Community Information Session 5:30 to 7:30 pm;	Provide an overview of the justification and recommendation for the proposed MSF along the Woodroffe-Merivale Corridor; focus on design recommendations for the MSF, the connecting track to Baseline Station, and the supporting infrastructure; propose mitigation measures for the adjacent residential communities; and to summarize the process and next steps.
7	14 April 2016	Community Information Session 6:00 to 9:00.	Review the change to Cleary Station proposed by the Stage 2 Office, which will relocate the station closer to Richmond Road and place the station on a diagonal alignment through the 747 Richmond Road plaza site. This alignment provides for more direct access from Richmond Road and reduces impact on the Unitarian Campus.

Bayshore Extension Sessions

The local Councillor hosted two community information sessions regarding the environmental assessment for the Stage 2 western extension of the Confederation Line LRT. The event was promoted by the Ward Councillor through such measures as e-mail blasts, on the Ward web pages and in the Ward activities column in the local community newspaper. Materials from these information sessions can be found in Appendix B.

The first event was on June, 22, 2015. The focus of the questions and area of interest was around the recommended plan for the conversion of the existing Bayshore Transitway Station into an interchange station where the West Transitway from Kanata would terminate and the LRT would start and continue east to the downtown and destinations beyond.

The second event was on June 24, 2015. The focus of the discussion and questions was the treatment of the LRT in the Pinecrest Creek Corridor and in particular the visual impacts of the Pinecrest Junction.

Consultation with Impacted Landowners

Throughout the planning process, specific meetings were held with impacted landowners. These meetings helped in the refinement of the design as work progressed. Over a dozen meetings were held with multiple stakeholders throughout the process, including the property owners of each property that requires full acquisition.

After approval of the project at the Council meeting of July 8, 2015, all property discussions have been dealt with through the Stage 2 Office as part of the preliminary engineering exercise.

Unitarian Campus

Although consulted throughout the process, City staff hosted an individual information session for the residents and stakeholders of the Unitarian Campus on November 17, 2015, regarding the impacts of the preferred alignment on their campus, and potential mitigation measures. A presentation was given to provide details about the buried segment that will travel through the Unitarian Campus – regarding the cut-and-cover construction technique that is likely to be used, construction timelines and schedules, and features of design that can be used to mitigate the impacts of the trains in regards to noise and vibration.

Aboriginal Consultation

The Ministry of Environment and Climate Change (MOECC) Environmental Approvals Branch provided guidance regarding consultation with Aboriginal Communities. On the advice of the MOECC, Aboriginal Affairs and Northern Development Canada (AANDC), and the Ontario Ministry of Aboriginal Affairs (MAA), were contacted to request a list of Aboriginal communities that may have an interest in the project.

A search of Aboriginal and Treaty Rights Information System (ATRIS) for the general Ottawa area, as well as a 50 km buffer encompassing Gatineau and the communities surrounding Ottawa, such as Kanata, Stittsville, Carp, Manotick, Metcalfe and Orleans identified the following aboriginal groups:

- Algonquins of Ontario Consultation Office
- Algonquins of Pikwakangan
- Kitigan Zibi Anishinabeg First Nation
- Métis Nation of Ontario

Aboriginal groups identified and contacted as part of the Stage 1 Confederation Line, currently under construction, were contacted for Stage 2 projects under the direction of the City manager's office for Infrastructure Planning.

Identified aboriginal groups have been invited to public open houses, as well as consultation group meetings. All aboriginal contacts were offered to take part in a preliminary review of the EPR ahead of commencing the TPAP process, and were circulated the digital document and all appendices.

Identified aboriginal groups will be circulated a copy of the Notice of Commencement at the time of publication, and at that time will be requested to advise the proponent in writing of the nature of any interest they may have in the transit project, as well as given a chance to provide comment on the findings of the EPR. Following the Notice of Commencement all identified aboriginal groups will additionally be circulated notices for subsequent consultation, and circulated the Notice of Completion. Consultation with Aboriginal groups will continue following TPAP approval into the Federal Approval process, and detailed design.

ES.7 Summary and Conclusions

The City's OP, TMP and future development plans all indicate an increasing level of transit demand on key corridors in the city. The existing Transitway has served the City well and developed the highest per capita ridership of any North American city of comparable size, however the downtown portion is beyond capacity and is being replaced with the Confederation Line. The West LRT will play a major role in meeting these demands, and foster a more compact urban form, increase transit mode share, and reduce harmful emissions.

Predicted growth in ridership can be more effectively managed with LRT, the primary driver in the decision to convert the existing system from BRT to LRT. This conversion also has added benefits in helping shape the form of urban development by supporting TOD opportunities, reducing greenhouse gas and other criteria contaminants through the shift to electrically-powered transit, and reductions in noise, vibration and salt contamination in the local environment.

Ridership levels in the study area are expected to grow from 4,000-5,000 people per hour on each branch west of Lincoln Fields, and 12,000 people per hour eastbound at Bayview Station to 6,200-7,100 on each branch and more than 18,000 people per hour eastbound at Bayview. This 67% increase in ridership is best served by a well-integrated LRT system. The justification for the project is well established in the TMP and the studies for the other Stage 2 project elements. A larger network of LRT, supported by BRT and other transit priority corridors will increase the attractiveness of transit and help the city achieve many of its key objectives.

Transit Project Assessment Process (TPAP)

The West LRT is being undertaken under the Transit Project Assessment Process (TPAP). During the Preliminary Planning and Transit Project Assessment phase of the process, the City of Ottawa worked closely with Technical Agencies to address any environmental concerns and issues. The potential impacts, mitigation measures and the associated net impacts have been identified, evaluated and assessed as documented in the previous sections. The ensuing implementation and design process will need to be implemented in accordance with the conditions as noted in this EPR. In addition, there is additional work that will need to be undertaken during both preliminary design and detailed design.

In support of the preparation of the detailed design several additional investigations have been recommended, which are typical for projects of this nature. The EA investigations determined that there were no effects from this project that could not be remedied with built-in, site-specific mitigation, or further design.

Approvals

Approval of the EPR under the *Ontario Environmental Assessment Act* does not constitute approval under other legislation required to construct the project. Specific approvals will be required for many components of the project. The City of Ottawa will be required to obtain approvals and permits that may be required during the design and construction of the project from all levels of governments, typical of similar projects.

Statement of Completion

The Transit Project Assessment Process (TPAP) is completed when the proponent submits a Statement of Completion to the Regional Director and Director of the Environmental Assessment and Approvals Branch of the Ministry of the Environment and Climate Change, excluding any unforeseen circumstances that may require a change to the transit project.

The proponent will submit the Statement of Completion under one of the following circumstances:

1. The Minister gives a notice allowing the proponent to proceed with the project in accordance with the EPR;
2. The Minister gives a notice allowing the proponent to proceed with the project in accordance with the EPR, subject to conditions;
3. The Minister gives a notice requiring further consideration of the transit project and subsequently gives a notice allowing the proponent to proceed with the project in accordance with a Revised EPR; or
4. The Minister gives no notice within 65 days of the proponent giving the Notice of Completion. The Statement of Completion must indicate that the proponent intends to proceed with the transit project in accordance with either:
 - The EPR;
 - The EPR subject to conditions set out by the Minister; or
 - The Revised EPR.

The proponent will also post the Statement of Completion on its project website. Construction or installation of the transit project subject to the TPAP cannot begin until the requirements of the TPAP have been met. Subject to these requirements, the transit project may proceed subject to any other required approvals.