

Subject: Stage 2 Light Rail Transit Project

File Number: ACS 2023-TSD-RCP-0016

**Report to Joint Meeting of Transit Commission and Light Rail Sub-Committee on
14 December 2023**

**Submitted on December 5, 2023 by Renée Amilcar, General Manager, Transit
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Ward: Citywide

Objet : Phase 2 du projet de train léger sur rail

Numéro de dossier : ACS-TSD-RCP-0016

**Rapport présenté à la réunion conjointe de la Commission du transport en
commun et du Sous-comité du train léger**

Rapport soumis le 14 décembre 2023

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Quartier : À l'échelle de la ville

REPORT RECOMMENDATION(S)

**That the Joint Meeting of Transit Commission and Light Rail Sub-Committee
receive this report for information.**

RECOMMANDATION(S) DU RAPPORT

**Que la réunion conjointe de la Commission du transport en commun et du Sous-
comité du train léger prenne connaissance du présent rapport à titre**

d'information.

EXECUTIVE SUMMARY

This report provides an update on the Trillium Line Extension Project and the Confederation Line East and West Project.

On the Trillium Line, final construction activity, testing and commissioning are well underway. The Signaling and Train Control System (S&TCS) is being tested daily, with a gradual ramp up of vehicle counts operating on both Line 2 (Trillium Line) and Line 4 (Airport Link). The testing of up to nine trains, with seven trains on Line 2 and two trains on Line 4 started in mid-November.

Construction of all 13 Trillium Line stations is progressing, with testing and commissioning (T&C) taking place. Trackwork, installation of gas-switch heaters, concrete pours, asphalt paving and works for the University Road pedestrian bridge are in progress. The Trillium Line Emergency Responder Full-Scale Exercise (FSX) took place at the Ottawa Macdonald-Cartier International Airport to bring together first responders, OC Transpo and the Airport Authority to test their preparedness for an emergency response. Tracking of critical project elements is done through the City's Rail Activation Management Program (RAMP) and a brief summary of that program is provided below.

Progress on the Confederation Line East and Confederation Line West (Line 1 and Line 3) is continuing with significant roadworks and detours ongoing.

In the east segment, the track installation is nearing completion with the progressing of the Overhead Contact System (OCS) between Blair and Jeanne d'Arc stations. Cable trough installation is ongoing and signal cable installation is completed between Blair and Montreal stations. Traction Power Substations (TPSS) buildings were delivered and installed at Jeanne d'Arc, Convent Glen, and Trim stations.

For Confederation Line West, construction of stations, guideway, and the cut and cover tunnel continue. Progress continues on the cut and cover tunnel along with rail work progressing at the LMSF and west of Moodie Station. A series of detours, lane closures, the Pinecrest Road westbound off-ramp closure continue to be necessary to enable various construction activities.

As the Light Rail Transit (LRT) project is moving at a rapid pace, Transit Services is committed to providing the most current information to Councillors and the public. Historically, quarterly memos were provided to Councillors with construction progress and financial updates from the previous quarter. This report outlines that, moving forward,

these quarterly updates will be provided to the LRSC through a report with accompanying presentation.

BACKGROUND

On March 6, 2019, Council approved the Contract Award of Ottawa's Stage 2 Light Rail Transit Projects and Related Matters report ([ACS2019-TSD-OTP-0001](#)).

TransitNEXT was awarded the contract to design, build, finance, and maintain the Trillium Line extension, including the Airport Link. The Trillium Line will operate from Bayview Station to Limebank Station (Line 2) and include the Airport Link (Line 4).

East/West Connectors (EWC) was awarded the contract to design, build, and finance the Confederation Line extensions. The project will extend Line 1 from Blair Station to Trim Station in the east and from Tunney's Pasture Station to Moodie Station (Line 1), and to Baseline Station (Line 3).

As part of the 2022-2026 Council Governance Review report, Council approved the following Motion 2022 - 03/06, moved by Councillor Desroches and seconded by Mayor Sutcliffe:

THEREFORE BE IT RESOLVED that City Council establish a Light Rail Sub-Committee of Council to provide oversight over non-operational matters related to the Confederation Line 1 and the construction of Confederation Stage 2 and Trillium Lines.

Based on this motion, Transit Services provides a regular Stage 2 Light Rail Transit Project presentation to Light Rail Sub-Committee (LRSC). The following report provides an update on the Trillium Line Emergency Responder Full Scale Exercise, the Stage 2 Rail Activation Management Program (RAMP) Scorecard Analysis and Project Schedule and Delivery Risks, followed by an overview of the Stage 2 O-Train East-West construction updates.

DISCUSSION

This report, and the presentation prepared for the December 14, 2023, joint meeting of Light Rail Sub-Committee (LRSC) and Transit Commission, delivers an update on progress of the Trillium Line Extension Project, as well as the O-Train Confederation East and West extensions.

The City of Ottawa has taken significant steps to apply lessons learned from the Stage 1 project and ensure their integration into the planning, procurement, and delivery of the Stage 2 project. Moreover, many of the recommendations stemming from the Ottawa

Light Rail Transit (OLRT) Public Inquiry have been embedded in the Stage 2 program and are being implemented as part of the works. The Inquiry recommendations and the City's response to complete the work is outlined in the Action Plan Status Update – Response to OLRT Public Inquiry Recommendations ([ACS2023-TSD-TS-0016](#))

The City of Ottawa continues to prioritize the implementation of lessons learned as the Stage 2 project progresses. City staff consistently apply the knowledge gained from previous experiences to improve the OLRT1 operations and the development of the Stage 2 project.

As the City progresses with the Stage 2 project, the team remains committed to integrating any further lessons learned into the planning, procurement, and delivery process.

Trillium Line Extension Construction

On the Trillium Line (Line 2 and Line 4), final construction activity, as well as testing and commissioning, is well underway. The Signaling and Train Control System (S&TCS) is being tested daily, with a gradual ramp up of vehicle counts operating on both the mainline and airport link. The testing of up to nine trains with seven trains on the mainline and two trains on the airport line started in mid-November. Additional testing is underway now as part of demonstrating the integrated functionality of the system and to verify correct operation of various functions of the train control system.

Critically, the plan going forward is to increase the number of operating hours of the trains in order to properly demonstrate sustainable reliability of the fleet and the systems. This period of additional running time, including through the winter, is critical to surfacing and correcting issues before the line opens for service.

Concurrently, the construction of all 13 Trillium Line stations is progressing with testing and commissioning (T&C) of various equipment, elevator installation, deficiencies closeout, and soft and hardscaping works taking place at all the stations. Ottawa Fire Service (OFS) has conducted water testing as part of the National Fire Protection Association (NFPA 130) process at most of the stations. Building Code Services (BCS) occupancy walk/ inspections are in progress at all stations.

Work has progressed at the new Albion (Walkley) Maintenance and Storage Facility (MSF), including T&C of Mechanical, HVAC and Electrical equipment and deficiencies closeout. A BCS final occupancy walk through was completed, and a conditional occupancy have been issued for the new MSF building.

Trackwork is mostly complete with deficiency closeout in progress. Installation of gas switch heaters are nearing completion and testing and commissioning and performance validation of these devices will be completed over the coming winter months.

Civil works at Leitrim Station and Bowesville Park and Ride continued with bus loop concrete pours and asphalt paving in progress. Works at Limebank Station bus loop and the future Main Street is progressing.

Bridge work is progressing at the University Road pedestrian bridge. The bridge is expected to open after the remaining construction activities are completed, including installation of handrails, final electrical work, and lighting.

Trillium Line Emergency Responder Full Scale Exercise

On October 31, 2023, the Rail Construction Program, in coordination with TransitNEXT, held the Trillium Line Emergency Responder Full-Scale Exercise (FSX) at the Ottawa Macdonald-Cartier International Airport. The objective of the FSX was to bring together the Ottawa's emergency agencies (Ottawa Police, Ottawa Paramedics, Ottawa Fire, Ottawa Airport Fire, and OC Transpo Constables) and members of OC Transpo's operations staff and the Airport Authority to test their preparedness for an emergency situation, while in a controlled environment. This exercise was preceded by five tabletops as part of the building block approach to training our City emergency responders.

The final tabletop, which was a dry run for the Full-Scale Exercise, was conducted on October 3 and focused on ensuring processes, organizational structures and standard operating procedures (SOPs) were ready for the FSX. Shortly after this tabletop exercise, the Exercise Planning Team commenced the final FSX preparations. These preparations included coordinating communications and radios, preparing role players, organizing video and drone capture, and briefing the media relations teams from City and Airport stakeholders. Thirty-one role players were assigned positions with props and specific roles to make the exercise as realistic as possible. Moulage/makeup was used to ensure the burn victims would provide added realism.

On the day of the exercise, command centres were activated, the ramp to the Departures Lane at the airport was closed to all except emergency responder vehicles and evaluators/controllers for the exercise were deployed to track the exercise progress and capture lessons learned for the After-Action Review. Through the FSX, 144 participants were able to determine strengths and identify areas for improvement to effectively respond to and recover from an emergency given the pre-established procedures, plans and training. Following the FSX, the Exercise Planning Team is conducting an After-Action Review to capture all lessons learned and incorporate these lessons into emergency response operations to improve the effectiveness of the City response.

Emergency responder training has been progressively advancing in the lead up to launching Line 2 and Line 4. The training program has included in-class training, site visits, familiarization sessions, and table-top exercises. The culmination of all this work was put to the test on October 31.

Trillium Line Rail Activation Management Program (RAMP) Scorecard Analysis

The Rail Activation Management Program (RAMP) structure and reporting mechanisms ensure a comprehensive tracking and support for all activities and milestones leading up to the public launch of Line 2 and Line 4. Further information can be found in the report presented to Light Rail Sub-Committee on June 19, 2023 – Rail Operational Readiness – Trillium Line ([ACS2023-TSD-RCP-0012](#)).

Regularly scheduled RAMP meetings assemble key stakeholders, including RAMP leads, consultants, Stage 2 contractors, subject-matter experts (SMEs), and support staff. These meetings serve as a platform to exchange updates, coordinate upcoming activities, identify emerging issues, and assign responsibilities for resolution. Identification of critical activities are essential for a successful public launch. These activities take into consideration services that may have high-impact disruptions, form the basis of the RAMP Scorecard.

A progress summary of critical activities with areas of deviation for the Stage 2 Trillium Line RAMP Scorecard include:

1) System Installation, Testing and Commissioning

Schedule deviations with signal and train control, and some communication systems (cameras, building management systems, etc.), are progressing at a slower pace than initially anticipated.

Progress: TransitNEXT continues to work on system installation and testing and commissioning. Progress on this item continues but remains slow.

2) Operations and Maintenance Readiness

Overall, progress is satisfactory across multiple areas, including regulatory approvals, operating plans and procedures, safety and security certification, emergency preparedness, pre-launch coordination, live testing, Trial Run planning, and bus service readiness. Some areas of schedule deviation include:

Areas of schedule deviation include:

- a. Regulatory Approvals: Building Code Services Occupancy Permits and Technical Standards and Safety Authority (TSSA) approvals for elevators are

experiencing schedule deviation attributed to the wider system functionality and station readiness delays.

Progress: TransitNEXT continues to work on these items.

- b. Training Program, Staffing and Recruitment, and Maintenance Readiness: These areas are experiencing ongoing challenges due to the slower than anticipated commissioning progress for the signaling and train control system. Impacts on the training program are being assessed and the teams are working closely together to find ways to maximize training hours.

Progress: The City and TransitNEXT continue to progress these items.

- c. Maintenance Management Performance Reporting System (MMPRS): In order to support reporting of train and service availability, the maintainer is required to provide a performance reporting system. This system is still incomplete.

Progress: Progressive delivery of MMPRS is planned starting with a preliminary work order module planned for November/December with final delivery of all required software modules by January 2024.

3) Customer-Facing Projects

There are some schedule deviations with the payphone installation (available for emergency and distress calls) installation and the readiness of some customer-facing systems.

Progress: The City continues to progress this item.

Project Schedule and Delivery Risks Update

The start of systemwide testing (Bayview Station through to Limebank Station, and South Keys Station through to Airport Station) began in summer 2023. Testing of the communications system, as well as signal and train control system, has progressed, although not at the pace that was originally scheduled. Following the successful completion of the dynamic commissioning of the signal and train control system, training for the diesel rail operators will significantly increase due to the availability of trains. Once the completion of training and various other system readiness prerequisites occurs, Trial Running will commence.

The City will then review and assess an opening date along with the required regulatory approvals. The final date selected will be heavily influenced by the safety, reliability, and

general performance of the system. TransitNEXT is focused on delivering the system infrastructure in 2023 and the City has identified a potential public launch timeline of 2024.

The project remains a construction site and there are remaining risks that can affect completion timelines. Project delivery risk factors that could further delay project works include:

a. Safety and Security Management

A significant safety incident during the remaining construction period, due to the complexity of the operation increasing during testing and commissioning of trains, would result in a significant delay. The rollout of TransitNEXT's Construction Safety Management Plan (CSMP) accompanied with City presence on-site will be used to help prevent the occurrence of a major safety incident.

Furthermore, systemwide testing is used as a final demonstration that the design, construction, and commissioning have been successful; however, this process has the potential to identify a critical safety issue in which case additional project time would be required to resolve the issue. To help mitigate this risk and assess the possibility as early as possible in the project, there has been a progressive ramp-up of testing activities from an individual component level to system integration testing level along with interface control documents to identify and manage the interfaces.

Update: The City will continue to manage this risk until project completion.

b. Systemwide Testing / Performance

In addition to safety issues that could emerge during testing, the testing process may identify additional technical, reliability, and/or performance issues that require additional time to resolve. Specifically, the process could identify issues with reliability of a specific vehicle system or infrastructure element that requires time to correct.

Update: The City continues to manage this risk until project completion

c. Training Completion

Training of Diesel Rail Operators and Diesel Rail Controllers is a critical final step in bringing the system into service. Delays to infrastructure readiness will delay training and will create a requirement for additional time to prepare for launch. Transit Services has been working diligently on this matter and has been leveraging tools to mitigate this risk including with the use of simulators and participation by staff in the testing

process. Timely completion of infrastructure and testing will be the primary driver for mitigation delays to training activities.

Update: The City and TransitNEXT continue to deliver training based on system availability.

d. Regulatory Requirements

Critical to the opening of Trillium Line (Line 2) and Airport Link (Line 4) are the rail regulatory approvals from Transport Canada. There are key risks emerging related to compliance with new regulations and some emerging requirements which are being triggered by issues on Stage 1. For example, a new requirement for wayside bearing detection emerged for the project. The original Trillium Line was never equipped with this technology and there is currently significant market pressure for these units given recent freight incidents. An implementation plan and interim agreement on mitigations will be an updated interpretation of operating rules for operators requiring more extensive and active monitoring of vehicles in service.

Update: City is closely monitoring and tracking these issues.

e. Construction Completion

Importantly, the City continues to track progress of the works against the overall project schedule. Notwithstanding completion of final commissioning, training, and achievement of regulatory approvals, final completion of construction is required to enable these follow-on activities. Key remaining works include the following:

- Station completion, including commissioning of electrical, mechanical, fire safety systems, and communication systems in order to achieve occupancy.
- Major civil works, including Bowesville Park and Ride, Leitrim Park and Ride, and Limebank Station bus platforms and road network.
- Signal system testing and commissioning.

As part of building on the collaborative approach to project delivery, the City is working with TransitNEXT to identify potential items that are not required for Substantial Completion. Items such as final landscaping, final electrical and mechanical works for the pedestrian bridge linked to future 900 Albert Street, and some roadway works, could potentially be deferred.

Update: Based on the new project schedule outlined during the September 29, 2023, Light Rail Sub-Committee meeting, the quantity of deferred works will be significantly reduced. This will be revisited at handover.

f. Third-Party Interfaces

Independent developments and/or critical third-party construction works near the Trillium Line have the potential to cause impacts to the projects. There are a variety of planned and in progress works in and around the Trillium Line.

For example, the proposed New Campus Development (NCD) sites for the Ottawa Hospital are bisected by City-owned railway property. The hospital parking garage is being constructed over part of Line 2. The City, TransitNEXT, and The Ottawa Hospital are closely engaged to coordinate construction activities.

Update: The City continues to engage with the Ottawa Hospital project team to ensure there are no impacts to the project delivery of Line 2 and Line 4.

Confederation Line East Extension

In the east segment, the track installation is nearing completion, addressing deficiencies, conducting thermite welding, and performing distressing. The Overhead Contact System (OCS) progresses with Messenger Wire and contact wire installation between Blair and Jeanne d'Arc stations. OCS poles and cantilever arms installation started between Trim and Convent Glen stations and will continue through to Spring 2024.

Cable trough installation is ongoing, mostly completed, with the remainder by year-end. Signal cable installation is finished between Blair and Montreal Station. Work includes racks and cabinets installation, cable pulling in east stations, and ongoing progress in Signal equipment rooms. Traction Power Substations (TPSS) buildings were delivered and installed at Jeanne d'Arc, Convent Glen, and Trim stations.

Montreal Station advanced in building envelope work and elevator installations. Finishes/envelope, electrical finishes, ceiling finish installation, and communication cable pulling work progressed at Jeanne d'Arc Station. Convent Glen station progressed in electrical/mechanical rough-ins, building envelope framing, drywall, and glazing. Place d'Orléans station saw progress in electrical/mechanical rough-ins, elevator installations, building envelope, snow melt/topping slab installation, new bus operator building topping slab, interior partition work, and ped bridge curtain wall system installation. At Trim Station, work in interior electrical/mechanical rough-ins, building envelope, glazing, interior wall tapping, fireproofing spraying, and exterior cladding installation continued.

Confederation Line West Extension

For Confederation Line West, construction of stations, guideway and the cut and cover tunnel continue. A series of detours and the Pinecrest Road westbound off-ramp closure continue to be necessary to enable various construction activities. Current schedule shows opening of the Pinecrest ramp before the end of the year.

Progress continues on the Parkway Tunnel, with recent completion of all excavation. Completion of the tunnel along the Kichi Zibi Parkway and all remaining tunnel inverts is expected before the end of the year. Backfilling is ongoing where the tunnel is complete. All stations are under construction, with principally structural work ongoing at Westboro, Kichi Sibi, Sherbourne, New Orchard and Queensview stations. The stations further along are working on interior finishes and testing and commissioning.

Guideway preparation work is ongoing for rail in Segment 3 (Lincoln Fields to Algonquin stations) and between Bayshore and Pinecrest stations. Rail work is going at the LMSF and near Moodie Station. Plinth construction is complete for the Holly Acres bridge, and ongoing between Westboro and Tunney's Pasture.

New Reporting Mechanism

As the Light Rail Transit (LRT) project is moving at a rapid pace, Transit Services is committed to providing the most current information to Councillors and the public.

Currently Council receives information through a variety of channels, including:

- Quarterly memo updates;
- Quarterly presentations and reports to the Light Rail Subcommittee (LRSC);
- Biweekly construction updates;
- Stakeholder relations engagement;
- Updates through newsletters and notifications; and
- Memos on project progress and project milestones.

A review of these channels identified some duplication of information, particularly between the quarterly memo updates and the recent presentations to LRSC. Eliminating the quarterly memo updates would minimize the potential confusion of outdated information. This proposed change would continue to be guided by the following principles

identified in the 2022-2026 Council Governance Review (ACS2022-OCC-GEN-0030) and maintain that:

- the governance structure and related processes remain transparent and accountable to the community at large;
- changes contribute to an efficient and effective decision-making process; and
- the governance structure and related processes are focused and aligned with identified City priorities.

Historically, quarterly memos were provided to Councillors with construction progress and financial updates from the previous quarter. Currently, these memos are being released as close as possible to the publication of reports and presentations to LRSC; however, due to the fact that they capture information from the previous quarter, these memos inevitably provide information that lags behind what is provided in the report and presentation.

This report proposes that, moving forward, quarterly updates will be provided to the LRSC through a report and presentation. The construction and financial updates from the memo will be integrated into the report and presentation. This proposed change will ensure continued transparency with Council's governance structure and will align with the principles identified above. This change would allow for a focused review of up-to-date information by Council to support the oversight provided by the LRSC and enhance public accountability and transparency with regard the LRT projects.

This new mechanism will provide greater transparency as Councillors will be able to address the information in a public forum and ask questions of staff directly. Additionally, having the information presented to LRSC as a report provides greater visibility to members of the public and the media.

Moving forward, the quarterly reports would be synchronized with the timing of financial data and would be brought to the LRSC meeting scheduled the month following the end of each quarter.

If there is a need for staff to inform Council outside of the scheduled quarterly reports, an appropriate memo or briefing will be provided. As noted above, Council will still continue to receive information about LRT construction from a variety of sources.

FINANCIAL IMPLICATIONS

Delays could have implications on the project's budget. Staff will report to Committee and Council on any adjustments to the contingency budget as and when required.

LEGAL IMPLICATIONS

There are no legal impediments to receiving this report for information.

ACCESSIBILITY IMPACTS

All components of the Stage 2 LRT project adhere to the *Accessibility for Ontarians with Disabilities Act (AODA)*.

Any policy or procedural development, as well as customer communications and public engagement identified in the report's recommendations will include the application of the City's Equity and Inclusion Lens.

Staff will continue to engage persons with disabilities and accessibility stakeholders to ensure that their perspectives are considered and incorporated, and to promote inclusion. Staff will also ensure that any applicable accessibility legislation, standards and guidelines are adhered to during the execution of the projects and initiatives identified in this report.

ASSET MANAGEMENT IMPLICATIONS

The City of Ottawa' Comprehensive Asset Management program uses widely accepted asset management practices and long-range financial planning, in compliance with provincial asset management regulations, to manage the City's infrastructure portfolio worth over \$70 billion to provide for the safe delivery of reliable and affordable services to the community.

Asset management is an internationally recognized and implemented practice that supports informed, transparent decision making, giving Council a framework to provide direction on the appropriate balance of service delivery, cost, and risk, through a process of optimizing the lifecycle management of the City's assets which support the services it delivers.

The implementation of the Comprehensive Asset Management program enables the City to effectively manage existing and new infrastructure to maximize benefits, reduce risk, and provide safe and reliable levels of service to community users. The report identifies potential improvements to the Business Case and Project Management Policy

and Project Management Framework. These are guiding documents to the Comprehensive Asset Management program, and as such, any changes to these core documents will be reviewed and reflected in the program.

RURAL IMPLICATIONS

The City's transportation network, including light rail transit, is designed to provide options for all residents. Once completed, Stage 2 LRT will span from Trim Rd. to Moodie Dr. and south all the way to Riverside South. Rural residents will have access to Park and Ride lots at various stations which will allow them to easily use public transit. For Line 2 specifically, there will be Park and Ride lots at Bowesville Station, Leitrim Station, and Greenboro Station.

TERM OF COUNCIL PRIORITIES

The 2023-2026 Term of Council Priorities include:

- A city that is more connected with reliable, safe and accessible mobility options.
- A city that it is green and resilient.

SUPPORTING DOCUMENTATION

Document 1 – O-Train Stage 2 Light Rail Transit Project Quarterly Update (Q3 2023)

DISPOSITION

Transit Services will provide regular updates on Trillium Line testing and trial running. As detailed in the report, TSD will provide a quarterly report and presentation to Light Rail Sub-Committee, which will provide a construction update of Trillium Line and Confederation Line.