



Line 3 SRT Incident Investigation and Subway Track Continuous Improvement Initiatives

Date: April 11, 2024

To: TTC Board

From: Chief Operations and Infrastructure Officer

Summary

The purpose of this report is to highlight the consultants' findings and the TTC's review of the July 24, 2023 Scarborough Rapid Transit (SRT or Line 3 Scarborough) incident investigation. This report will also provide a high-level overview of the ongoing work over the past five years to modernize the business practices in the Subway Track workgroup, with a focus on better inspection, proactive asset maintenance, and improving the overall maturity of asset management throughout all existing subway lines (i.e. Lines 1, 2 and 4).

Recommendations

It is recommended that the TTC Board:

1. Receive this report for information.

Financial Summary

There are no financial impacts associated with this report.

The Chief Financial Officer has reviewed this report and agrees with the financial summary information.

Equity/Accessibility Matters

The TTC is dedicated to promoting and supporting diversity, accessibility and inclusion in its corporate policies, programs and services. A cornerstone of the TTC's current Corporate Plan is universal accessibility, and as a proud leader in providing accessible public transit to Toronto residents and beyond, we are committed to ensuring reliable, safe and inclusive transit services for all our customers.

Line 3 SRT was only partially accessible with elevators and other accessibility features provided at Kennedy and Scarborough Centre Stations, and limited step-free access to southbound trains at Lawrence East Station. Accessibility improvements for the Line 3 SRT stations were removed from the scope of the TTC's Easier Access (EA) program in

2014 due to the expectation at the time that Line 3 would be upgraded or replaced by the provincially legislated Accessibility for Ontarians with Disabilities Act (AODA) deadline of 2025.

Since the derailment incident, and the subsequent decision to terminate Line 3 SRT service on August 24, 2023, accessible bus service replaced the train service permanently. The bus service satisfies all applicable AODA requirements in terms of vehicles and accessible transit stops. Aside from this Bus Rapid Transit (BRT), which currently utilizes full transit priority measures, the TTC also extended other bus routes around the area to Kennedy Station to improve customer journeys. These service improvements will operate until the completion of the new fully accessible Line 2 East Extension (Scarborough Subway Extension project).

Decision History

At its meeting of February 2, 2015, the Board approved the 2015-2024 TTC Capital Budget, including the Scarborough Subway Extension (SSE) project estimate, with \$132 million to extend the life of the SRT until the SSE commences operations.

[2015-2024 TTC Capital Budget](#)

At its meeting of February 10, 2021, the Board approved a plan to end train service on Line 3 in 2023.

Report: [SRT Life Extension Project Options Analysis](#)

Decision: [SRT Life Extension Project Options Analysis](#)

At its meeting of September 26, 2023, the TTC Board was presented with the root cause analysis of the July 24, 2023 derailment incident.

Report: [Line 3 Bus Replacement Update](#)

Presentation: [Line 3 Bus Replacement Service: Derailment Incident Overview and Operational Improvements for Bus Replacement Service](#)

Issue Background

The TTC Line 3 SRT was a 6.4-kilometre at-grade and elevated intermediate capacity rapid transit line with six stations, and it opened in 1985. The system was designed with a life expectancy of 25 years – and after 38 years of continuous service – the line was taken out of operation in August 2023 at a point well past its designed life.

In 2014, a \$132-million SRT life extension capital project was initiated to add funding to extend the life expectancy of the SRT to 2026, in alignment with the Scarborough Subway Extension (SSE) one-stop subway extension scheduled to be completed in 2026 at the time.

In 2019, the Province assumed responsibility for the delivery of the SSE and revised the project scope to a three-stop subway extension with a tentative completion date of 2030.

In February 2021, the TTC Board approved the proposal to cease revenue train service on Line 3 in the fall of 2023 and directed staff to develop a plan to replace the line with an interim bus service, until the opening of the SSE.

On July 24, 2023, a southbound Line 3 service train departing Ellesmere Station had its trailing car derail. The root cause of the incident was presented to the TTC Board on September 26, 2023. The suspected failure of the reaction rail anchor bolts likely caused the unintentional lift of the reaction rail, which sits between the two running rails, causing the contact between the reaction rail and the train motor, leading to the derailment. The reaction rail is a specialized asset within the TTC and has been utilized at only two other transit companies in North America — Vancouver’s SkyTrain and Detroit Transit.

Immediately upon the derailment incident, the TTC commenced a thorough investigation with a review of the vehicle, track and right-of-way infrastructure via industry-leading consultants and procured the services of a fourth consultant as a peer review, to validate the TTC and consultant findings. Eventually, four consultant reports were received and these reports were made public upon finalization.

In response to questions raised at the February 22, 2024, Board meeting surrounding the reduction in noted SRT reaction rail defects from 2021 to 2023, the TTC committed to provide a subsequent explanation for this sudden drop in defects.

Based on the review of all available records, the reason for the overall reduction in SRT reaction rail defects in 2022 is due to the increased reliability of refurbished track assets. This increase in reliability and availability is due to the successful execution of the SRT life extension program, performed between 2016 and 2021, along with ongoing corrective maintenance resulting from laser scans of the reaction rail geometry, coupled with continued time-based maintenance activities lasting right up until the date of the derailment. This time-based maintenance activities were conducted consistently on Line 3, as it was with the other subway lines.

Comments

SRT Incident Review: Summary of Consultants’ Findings

Three investigation reports involved subject matter experts associated with different elements of the derailment, namely the track maintenance process and record review, right-of-way infrastructure condition evaluation, and vehicle condition evaluation (respectively [Network Rail Consulting](#) (NRC), [Gannett Fleming](#), and [Hatch LTK](#)). The final reports of these consultants were publicly posted on November 16, 2023. Once Systra Canada Inc. reviewed the three reports, they also presented the TTC with [a report](#), which was made publicly available on December 15, 2023.

Hatch LTK was tasked to determine whether the vehicles’ conditions were contributing factors to the derailment, and they concluded that the vehicles and the running rails were in good condition and were not contributing factors to the derailment. The derailment was caused by a collision between the train motor and the reaction rail and was not the conventional interaction of the vehicle wheels and the running rail.

NRC was retained to review the TTC's track maintenance practices and made specific recommendations to continue to improve all objectives that are currently underway across the entire subway track maintenance workgroup over the past several years, including better inspection practices, enhanced training across all track technical positions and better overall defect management.

Gannett Fleming was responsible for conducting a forensic assessment of the infrastructure right-of-way. Their investigation concluded that several anchor bolts securing a segment of the reaction rail were loose and/or broken likely prior to the derailment incident and as such, this segment of the reaction rail was sufficiently loose to lift high enough by the magnetic force imparted on it from the train's linear induction motor to make the necessary contact with the train and cause the derailment.

As part of the validation and review process for the overall SRT derailment investigation, Systra Canada was assigned the review of the three aforementioned reports and analyzed the available TTC maintenance records, along with attempting to identify contributing factors to a reduction in SRT reaction rail defects reported in 2022 and 2023. Systra identified several possible contributing factors, which included a change in the defect management process, a new reaction rail anchor bolt design implemented in 2017, a decision to reduce maintenance as a result of the imminent closure of Line 3, skillset of existing Track Patrollers, interdepartmental communication gaps between maintenance and engineering teams, and the reaction rail height measurement process.

Three of the four consultants' reports contained recommendations on areas of improvement, some specific to the SRT assets and others more general to track maintenance practices to be considered on all other lines. The TTC has reviewed all the reports and conducted additional analysis based on the areas of improvement identified in the reports, including reviewing archived records on the life extension program and continuous maintenance activities with support from Systra Canada Inc. The results of the analysis are provided below.

Additional Analysis on Overall Decline in SRT Defects

While the consultant reports identified potential areas of improvement in track maintenance practices, the section below will summarize all efforts made by the TTC to improve the SRT track asset conditions between 2016 and 2023 – namely, the SRT Life Extension program, Reaction Rail Geometry Laser Scans and continued Preventative Maintenance activities. The TTC concludes that the overall decline in SRT defects reported in 2022-2023 was a result of more reliable SRT track assets as a direct benefit of the work performed under the life extension program.

A. SRT Life Extension Program (Condition and Predictive-based Maintenance)

The SRT Line 3 was originally scheduled to be decommissioned in 2015 after the Pan Am and Parapan Am Games in Toronto. However, upon learning that SRT service was required for an additional 10 years until the commencement of the original one-stop SSE operation in 2026, a life extension capital program was created, focused on extending the life of the SRT right-of-way infrastructure and vehicle assets.

A portion of the infrastructure life extension scope included track rehabilitation work encompassing the repair and replacement of power rails, power rail support assemblies, running rail fasteners, grout pads and reaction rails. The program also included major maintenance activities, such as track-side heating cable replacement, switch maintenance, drainage and rail grinding.

To develop the scope of this life extension program, TTC engineering teams procured the services of Bombardier Transportation to perform an asset condition assessment in 2015. Based on this review, the engineering team completed an initial baseline scope to formulate a track rehabilitation body of work. The TTC also engaged Amberg Technologies with geometry survey equipment to conduct a full geometry measurement of the line in 2016. Up until 2021, the TTC performed condition and predictive-based preventative maintenance work on the SRT along with the noted life extension program, resulting in \$9.5 million investment in track rehabilitation work as part of the aforementioned SRT Life Extension program.

A 2019-2020 infrastructure condition survey conducted by the track engineering group highlighted a significant improvement in the condition of the assets shown in Figure 1 below. The improvements pertained to all SRT infrastructure assets compared with the 2016 asset condition survey.

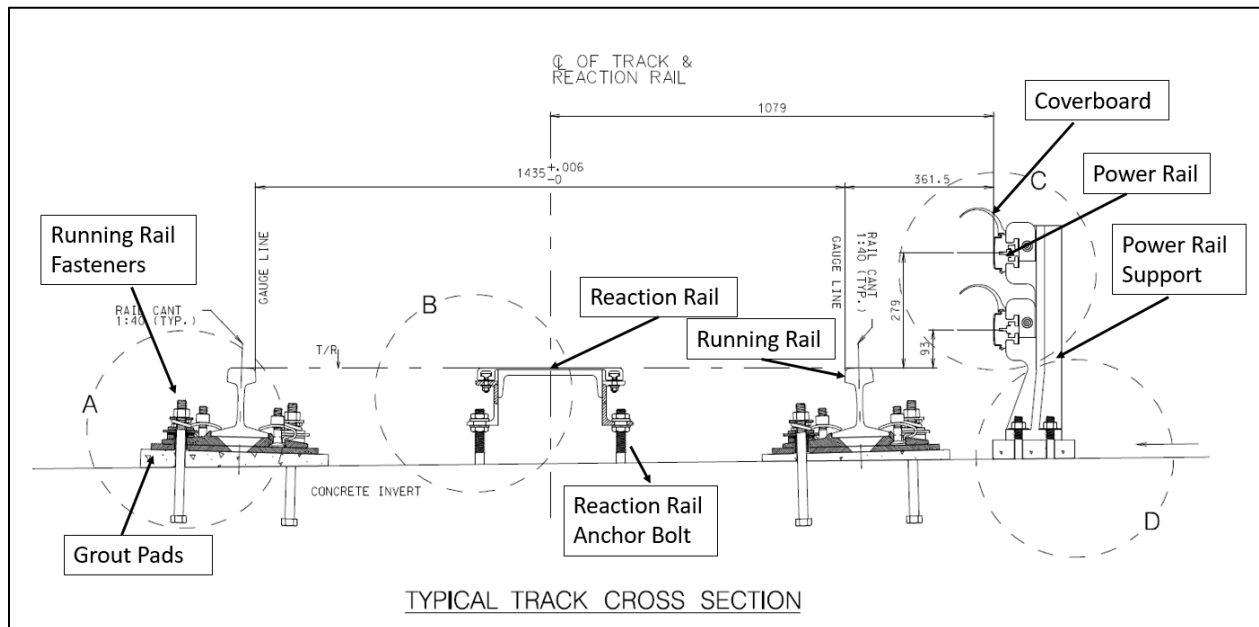


Figure 1

Specifically to the reaction rail, there were 17 areas identified as at or approaching end-of-life in 2016. Unfortunately, we have been unable to retrieve all detailed work or achievement reports on all facets of the life extension work completed on these assets during this period due to gaps with paper-based record-keeping practices, so we cannot detail specific assets that were replaced/refurbished. However, in comparing the 2016 and the 2019 survey results, there were only three areas that were identified as end-of-life condition in 2019, the conditions improved in all the other areas identified in the 2016 survey.

B. Reaction Rail Geometry Laser Scans (Condition-based Preventative Maintenance)

In 2012, the TTC identified some possible ongoing contacts between the motor and the reaction rail top cap on the SRT right-of-way. To supplement the ongoing 72-hour track inspections, the TTC proactively developed a method to survey the reaction rail height, similar to the technology utilized for the Vancouver SkyTrain system. At this time, a semi-annual reaction rail top cap height survey commenced with laser sensors mounted above the motor of the train allowing the TTC to collect data points on the top cap height while the railway was loaded with the weight of the train and passengers to ensure that the required clearance existed between the reaction rail and the vehicle motor(s).

In 2021, in response to an increasing number of possible contacts between the train motor and reaction rail top caps, the TTC increased the frequency of the laser inspections, from semi-annual to seven, which resulted in 122 reaction rail geometry defects identified at 86 different locations across the SRT line. Based on these reports, 71% of the defects were remediated and resolved at the first opportunity (upon receiving the reports), 19% of the defects were remediated, but required additional adjustments upon the next measurement (improved, but not immediately resolved) and 10% of the defects were not remediated immediately due to resource and weather constraints, but were all eventually addressed by December 2021. Given the completion of this work, the TTC returned to perform semi-annual laser surveys in 2022, and these surveys identified 12 reaction rail adjustments required at six total locations, a marked improvement from 2021. In 2023, two surveys were conducted, and no locations were identified as requiring reaction rail adjustments.

C. SRT Preventative Maintenance Activities (Calendar-based Preventative Maintenance)

By the end of 2021, the TTC had rehabilitated and replaced the track assets previously identified in the 2016 asset condition survey. As well, throughout 2016 and 2021, the TTC continued to perform calendar, time-based inspection activities of the entire SRT line. As part of TTC's asset management practices, all TTC linear track assets were inspected and maintained over their entire lifespan as demonstrated in Figure 2 below. It summarizes the TTC's overall subway track life cycle management activities and specific activities that took place with the SRT asset life cycle. SRT maintenance records document continuous life cycle maintenance activity until the end of service in August 2023.

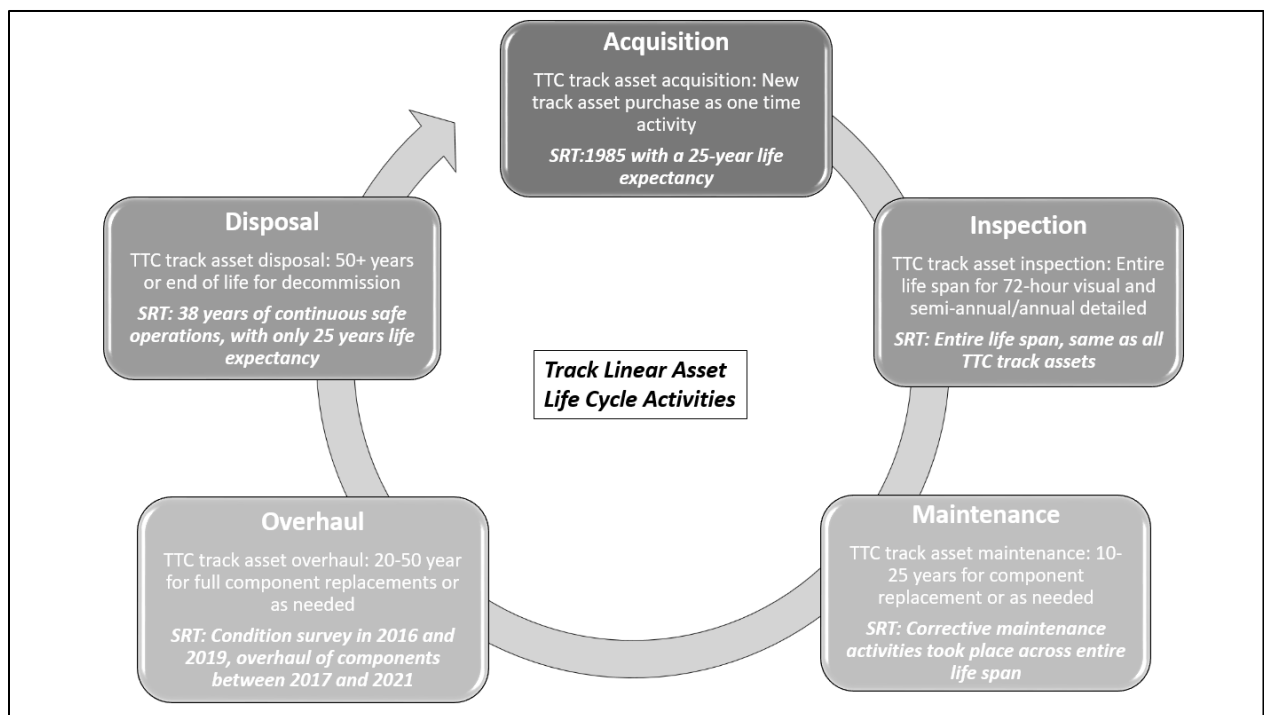


Figure 2

Between 2021 and 2023, calendar-based preventative maintenance continued to occur on all TTC lines, including the SRT line. These activities include routine inspections, cleaning, and resulting equipment adjustments. These inspections identify potential problems before they become serious and require costly repairs. Inspection activities on the SRT line included continued laser measurements for the reaction rail geometry, 72-hour track patrol inspections, Track senior staff annual condition inspections, monthly switch inspections and yearly non-destructive running rail testing. When compared to APTA Rail Transit Track Inspection and Maintenance Standards, the TTC is aligned with the best industry standards with its calendar-based preventive maintenance activities.

D. Results of SRT Maintenance Efforts: Reduction In Defects

One of the concerns pointed out by the aforementioned Systra’s validation report was a reduction in defect reporting on the SRT reaction rail, from 2021 to 2023, citing a decrease in preventative maintenance. The TTC acknowledges that there was a decline in reported defects on the overall SRT line. However, there is no evidence to suggest that the TTC ever reduced any maintenance activities on the SRT due to the February 2021 announcement of the line closure. On the contrary, as previously demonstrated, after the announcement, the TTC continued to increase the reaction rail height survey throughout 2021 to address any reaction rail geometry issues.

Figure 3 below summarizes the overall reduction in reported SRT track defects in 2022/2023, not only with the reaction rail but also throughout the entire line. The percentage of the reaction rail defects compared to all SRT defects, year by year, had not changed significantly over the past six years. This is also aligned with the reduction in reaction rail defects found by the laser survey.

Year	Reaction Rail Defects	All SRT Defects	%of Reaction Rail Defects
2018	159	432	37%
2019	99	399	25%
2020	77	467	16%
2021	65	211	31%
2022	14	99	14%
2023	13	64	20%
Total	427	1672	26%

Figure 3

E. Result of SRT Maintenance Efforts: Increased Service Availability and Track Asset Reliability

Given the above and the data indicating that the track asset conditions improved over the years, the failure of SRT track assets was also reduced. Figure 4 below demonstrates that both incidents and delay minutes related to track component asset failures during revenue service hours decreased over the six years. Consequently, track assets were more reliable in later years resulting in fewer service delays. This is the result of the work performed under the life extension project, continued/increased vehicle laser scans, and the ongoing calendar-based maintenance.

SRT Track Asset Related Delays		
Year	# of Incidents	Delay Minutes
2018	7	204
2019	9	318
2020	1	5
2021	0	0
2022	1	33
2023	1	22

Figure 4

F. SRT Track Level Maintenance Activities (2020-2021 versus 2022-2023)

To further confirm that the reduction in noted defects has no direct correlation to any sort of reduction in SRT maintenance activities, the TTC reviewed all track-level activities between 2020 to 2023. Figure 5 below demonstrates the track-level access counts from all maintenance groups on the SRT, in turn presenting a very consistent number of track-level maintenance activities performed, year-over-year.

Since the line was closed in August 2023, the extrapolated numbers for 2023 indicate a slight increase in forecasted track-level activities in 2023, relative to 2021 and 2022. This supports the TTC’s conclusion that there was never any reduction in SRT maintenance activities after the February 2021 announcement. It is, therefore, the TTC’s conclusion that the decline in defects reported was not in any way associated with a planned reduction in maintenance activities.

SRT Track Level Activities				
Month	2020	2021	2022	2023
Jan.	151	149	114	167
Feb.	135	144	125	138
Mar.	135	171	148	159
Apr.	138	151	140	151
May	176	154	170	171
Jun.	153	152	176	161
Jul.	159	158	151	141
Aug.	153	144	156	
Sept.	164	147	156	
Oct.	189	147	150	
Nov.	172	136	144	
Dec.	135	133	128	
Totals	1860	1786	1758	1839 (extrapolated)

Figure 5

Conclusions on SRT Incident Review and Additional Analysis

With the review of all available records, the reason for the overall reduction in SRT reaction rail defects in 2022 is very much related to the improved reliability of the system assets and under no circumstances did the TTC decide to reduce maintenance on the SRT.

The consultants' reports highlighted some notable effectiveness in our business practices, and all consultants identified that the running rail and the fasteners were in good condition, especially considering their age.

Also, NRC identified that TTC Track Patrollers were diligent in reporting track defects and implementing restricted speed zones, where required. This was also echoed by Systra when they stated that the TTC staff are fully aware of their roles, tasks, and commitments. It is worth noting that although NRC identified some new Patrollers who graduated in 2021, all TTC Track Patrollers who were fully certified met the APTA definition of a qualified person, which highlights that the Patrollers are considered competent as they all had at least two years of related experience.

Lastly, Systra also indicated that corrective maintenance was carried out efficiently and on time, while safe practices were always observed when any track work was carried out.

That said, there are several areas of continuous improvement identified by the consultants. The TTC is committed to continue to work on the improvement areas, including the recommendations made by NRC which identified the following areas:

- **Track inspection process** – Conduct a full review of inspection hierarchy and frequency.

- **Track inspection training** – Continue to review and update training material.
- **Defect management** – Continue to work with the EAM group to better utilize technology to manage asset defects more proactively.
- **Track maintenance documentation** – Continue to work on reviewing and updating maintenance documents, such as standards, procedures and work instructions.

Systra Canada Inc. also identified similar areas of improvement as well as the engineering review process improvement. All of this work is already underway.

During this review process, the TTC also recognized that since 2018, the Subway Track team has been working on modernizing its business practices in response to previous reviews and benchmarking exercises. The aforementioned notable effectiveness evidenced today is the result of this continuous improvement journey that commenced in 2018 and is ongoing. The TTC will continue to advance work on the areas that we have already made progress on as our employees and customers begin to realize the benefit of these efforts.

Subway Track Modernization: Continuous Improvement (2018-2024)

While it is recognized that more work is required to fully modernize subway track maintenance, the TTC is proud of the progress that the Subway Track team has made since 2018 as shown in Figure 6 below. This modernization program aligned with our 5-Year Corporate Plan, supports the TTC’s transforming for financial sustainability, enabling our employees to succeed, innovating for the long-term, all with safety and security as the cornerstone of all of our goals. Below is a summary of the journey.

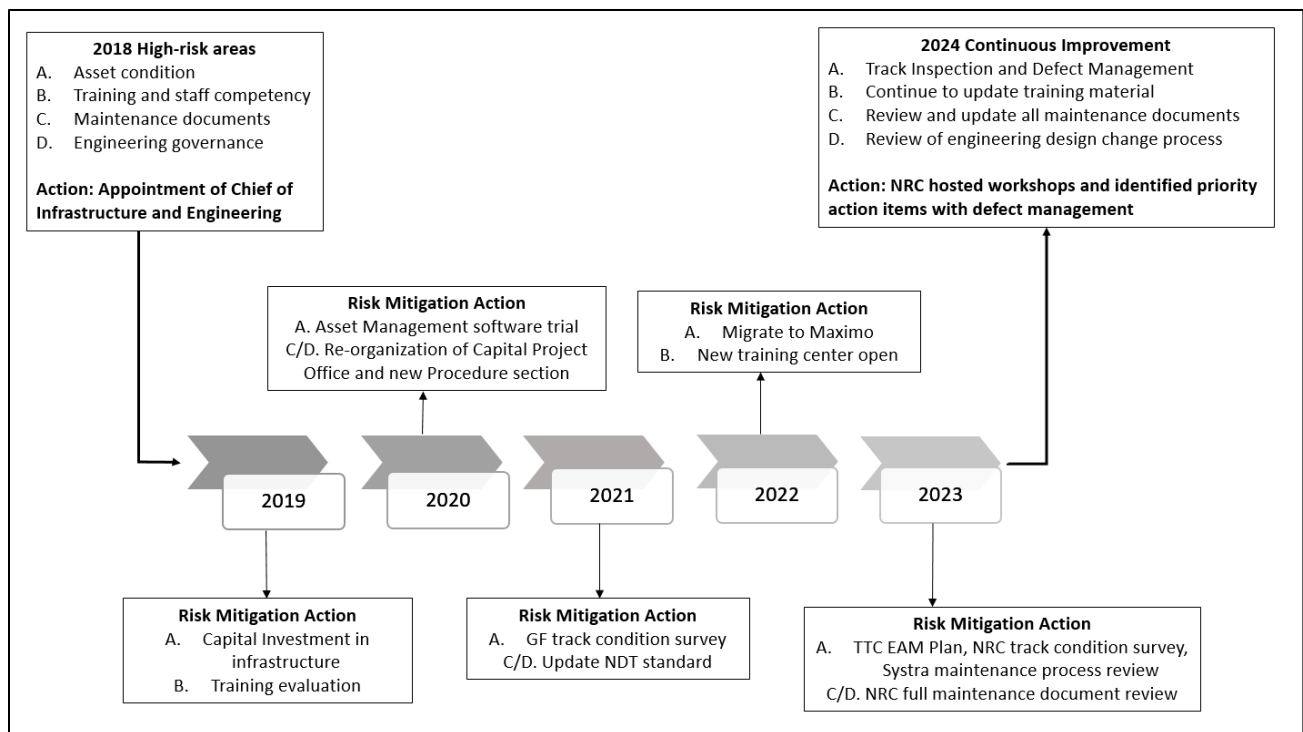


Figure 6

In March 2018, the TTC engaged NRC to perform a functional review of our track maintenance practices across Line 1 Yonge-University and perform a condition survey as a benchmarking exercise to identify areas of needed improvements.

- Between March and May 2018, NRC performed an inspection on a segment of Line 1 and conducted a review of our maintenance practices. The review concluded that there were areas concerning asset condition requiring immediate action, improvement in the training of staff and unionized employees, enhancements of maintenance documentation, and engineering governance.
- In December 2018, partly due to the NRC recommendations, the TTC recognized the need to appoint its first-ever Chief Infrastructure and Engineering Officer (I&E) to focus exclusively on maintenance and state-of-good-repair (SOGR) improvements across the organization. During this time, a two-year improvement plan was proposed and developed to address asset condition management and staff training as remedial actions to the risk identified by NRC.

In 2019, the TTC continued to partner with NRC to work on improving employee competency to enable the employees to succeed in their tasks as well as reinforcing a safe working environment.

- In October 2019, NRC returned for a three-month exercise via two full-time embedded consultants to provide recommendations on switch inspections, to improve the competency of TTC staff and improve documentation of such critical assets. Recommendations and actions taken included the confirmation of visual inspections by staff, joint inspections, and providing on-the-job learning opportunities for our Track Inspection team on effective methods of inspecting track assets.
- In December 2019, after a comprehensive review of the TTC's overall state-of-good-repair needs, the TTC introduced its first 15-year Capital Investment Plan that laid out its capital needs and the state of funding to address these requirements. As a result, the TTC benefitted with increased funding, enabling the TTC to increase the state-of-good-repair work. The Subway Track budget was part of the steady-state funding in the 10-year Capital Plan, providing more predictability and capacity for ongoing state-of-good-repair for the TTC's subway track capital program.
- As part of the aforementioned two-year improvement plan from December 2018, the TTC conducted a staff competency assessment to commence the review and update of all subway track training curriculums. The TTC also began construction of an Infrastructure Hands-on Training facility to provide practical training to not only Subway Track teams, but also to Signals and Electrical maintenance teams.

In 2020, the TTC continued working with external experts to work through the two-year plan that was developed to focus on improving asset condition management, including exploring new asset management technologies and introducing a more disciplined approach to maintenance, including constructing asset registries, performing asset condition assessments and improved documentation of all maintenance activities.

- In 2020, the TTC Safety and Environment Department introduced Track Safety Inspection Officers to commence track-level safety observations during night shift operations to monitor work zone compliance.
- In July 2020, the I&E Capital Project Delivery Office was reorganized to better support Infrastructure and Engineering projects. In addition, a new Procedures Section was launched to centralize Infrastructure Standard Operating Procedures.
- In August 2020, I&E retained an external Asset Management expert to work with the TTC on modernizing its infrastructure asset management practices. As part of the work delivery task, the Subway Track team was selected as the first TTC work group to consider implementing the MAXIMO Linear Asset Management (LAM) Enterprise Asset Management (EAM) software system, along with the commencement of the asset hierarchies in all maintenance work groups. As part of this MAXIMO LAM strategy, Subway Track would decommission the existing MOWIS defect database.
- From late 2020 to spring 2021, the TTC capitalized on the reduced ridership during the pandemic to complete four 10-day closures to accelerate critical SOGR and modernization projects, with work focused on station modernization and asbestos abatement on Line 1, along with significant track and switch rehabilitation/modernization work in and around Wilson Yard.

In 2021, the TTC continued with external consultants to identify opportunities to improve asset conditions.

- In June 2021, NRC was retained to review our Non-Destructive Testing (NDT) standards and rail-base corrosion concerns in an attempt to reduce the number of restricted speed zones that these two categories caused. Recommendations and actions taken included the development of a TTC-specific NDT manual/standard, which is currently in circulation for final sign-off.
- During this period, the TTC also developed a Rail-Base Corrosion Working Committee, which includes Track and Structure and other maintenance stakeholders. The committee meets bi-weekly to review annual and five-year goals given the ongoing challenges associated with track access and planning/scheduling. The focus is proactively addressing tunnel water leaks before the rail corrodes to unacceptable levels to our standards.
- Between July and October 2021, the TTC engaged Gannet Fleming to survey the entire TTC subway track network as a re-baseline of the 2018 NRC study recommendations. The survey found only six areas that required restricted speed zones across all mainline tracks due to track conditions, and made several recommendations on continued improvements of track maintenance and inspection practices. This study's conclusion showed a marked improvement from the 2018 survey, indicating that the TTC was making strides in improving its business practices, even in light of the ongoing pandemic.

In 2022, the TTC continued to see an evolution of its infrastructure asset condition, competency, and inspection practices due to continued work over the past several years.

- In February 2022, the TTC implemented MAXIMO LAM in Subway Track after the trial period that began in 2020, with Track Patrollers being a key area of focus. This was a key recommendation made in the 2018 NRC list of recommendations. With this evolution to industry-recognized technology, the track defects database migrated from the old MOWIS system to the more advanced MAXIMO software as a key step in introducing the EAM concept to the Subway Track team. Training was provided to all frontline employees to ensure better utilization of asset management technology as a step towards the EAM mindset.
- In May 2022, after three years of design, development, and construction, the I&E team proudly opened the Wilson Yard Hands-on Training Centre (HOTC) at Wilson Complex for the Subway Track, Signals, and Electrical workgroups. This is also a major milestone in response to the 2018 recommendation on improving the competency of both our staff and unionized employees. In addition, a dedicated subject matter expert training team was created to facilitate and continue to update all Track Maintenance training materials, including, but not limited to the Track Patroller handbook and training curriculum.
- In November 2022, an NRC track maintenance specialist was embedded into the Subway Track maintenance team on a one-year contract to ensure we continued moving forward on our Subway Track development plans, in alignment with industry best practice. The goal is to continue the improvements of asset conditions and staff training, while identifying remedial actions with maintenance documentation. Recommendations and actions taken included the development of an enhanced switch inspection process, trialling new inspection/repair equipment, and the commencement of a defect manual.

In 2023, the TTC continued to work on asset condition management and training of staff improvement actions, while taking a deeper dive into the maintenance documentation recommendation and engineering governance, as the two are closely related.

- In April 2023, the TTC retained Atkins Realis to commence an EAM program evaluation throughout the TTC. The TTC has now developed its first-ever Asset Management Plan (AMP) in compliance with Provincial infrastructure regulation O. Reg. 588/17. The TTC has developed a high-level EAM program schedule, conducted its preliminary asset condition review, and levels of service, and conducted its first-ever asset management maturity assessment.
- In May 2023, the TTC Safety and Environment Department retained Systra Canada to conduct a review and benchmark of the Track Maintenance practices in a three-phase process. Recommendations made are in the areas of Subway Track organization, maintenance documentation, preventive maintenance and corrective maintenance planning. Systra Canada is currently working on finalizing the final report.

- In October 2023, the NRC consultant embedded in track maintenance conducted a visual inspection of Lines 1, 2, and 4 and found that track assets, including switches, are generally in good condition, with some concerns in the open-cut areas as well as track frogs showing signs of fatigue. This confirms the improvement that the TTC has made in the past five years since the first NRC survey and the implementation of the SOGR program.
- In November 2023, NRC provided recommendations to the TTC to continue to improve in areas of defect prioritization, inspection hierarchy and frequency, with a strong focus on reviewing and updating maintenance documentation.
- In December 2023, an additional NRC consultant specializing in standards and documentation was procured over eight weeks, and in turn, NRC provided recommendations on actions required to improve maintenance documentation (i.e. procedures, standards, training documentation, and overall documentation hierarchy), as part of our goal to align ourselves to industry best practice. A plan was developed to improve organizing documentation, reviewing team structure to clearly outline responsibility in areas, such as document ownership and management, and reviewing and updating all maintenance documents to eliminate duplication and incomplete information.

In January 2024, an additional NRC consultant conducted a series of workshops to review our preventative maintenance and corrective maintenance planning, and developed a recommended series of plans. The plan addresses strategies to better prioritize track defects as a step towards evolving to a more proactive rather than reactive maintenance approach. Implementation of these actions will provide our customers with more reliable transit service. The final report and recommendation is expected by April 30, 2024.

The focus has not been entirely on Subway Track, but on many other maintenance areas at the TTC (i.e. Overhead Maintenance, Signals Maintenance) to revamp our business practices as it pertains to training, technology and co-ordination of works.

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