

WaterNetwork

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150 years of Toronto Water: A place to grow

In our previous WaterNetwork, we launched our “150 years of Toronto Water” article series by telling Toronto Water’s origin story and its integral role in establishing Toronto and protecting the population’s health and safety.

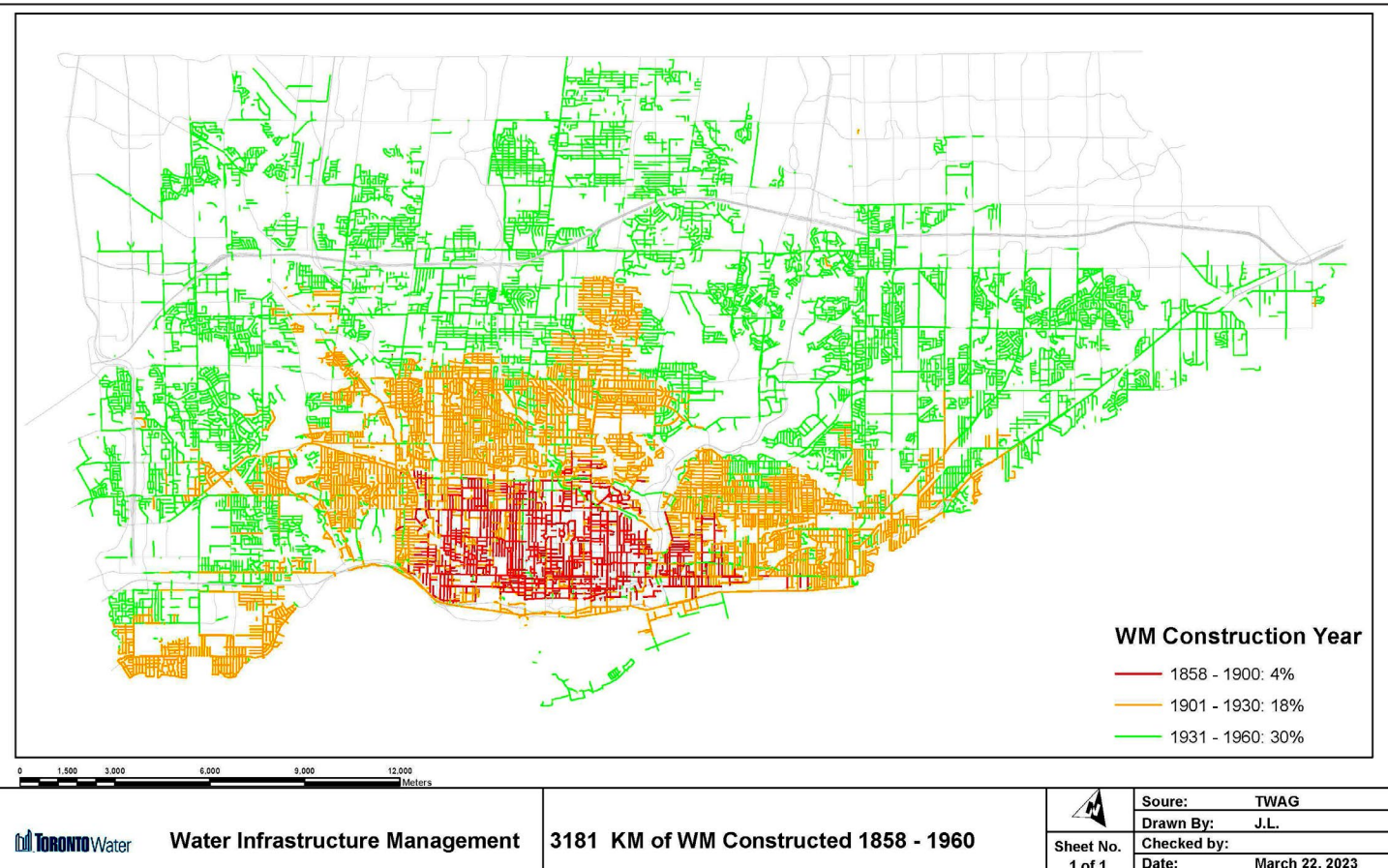
At the turn of the century, the connection between public health and sanitation was becoming clearer. The City continued to expand its water infrastructure to respond to Toronto’s ongoing growth and expansion. Roland Caldwell Harris (a.k.a. R.C. Harris) was appointed as the City

Engineer and Commissioner of Public Works in 1912, right at the outset of an important period of growth for the city that would continue through the first half of the 20th century.

Looking at the area that makes up the city today, the population rose by almost 370 per cent between 1901 and 1951 from 238,080 residents to 1,117,470. And the infrastructure, as you can see in the map below, grew with it.

The map also illustrates the other challenge of the time – sprawl.

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Between 1858 and 1900, much of the population was concentrated at the city's core and so was the infrastructure to support it. But as the first half of the 20th century progressed (1901 to 1930), infrastructure began stretching out from the core as the suburbs grew. Between 1931 and 1960, cars were more accessible, and the suburbs began to extend to the edges of the Toronto's current border. Employment remained centred in the core of the city, which helped drive this sprawl.

This was a period that saw the completion of key city infrastructure projects we still see in Toronto's landscape today. The Bloor Street Viaduct, the R.C. Harris Water Treatment Plant, the Winston Churchill [St. Clair] Reservoir, and the North Toronto Treatment Plant were all completed during this period when

Harris was Commissioner. Former Mayor John Sewell has said that the expansion of highways and roads in the first half of the 20th century enabled suburban growth, but "that growth does not actually occur until water and sewage services are in place."

In fact, in the 1940's a lack of water and sewer infrastructure was holding up suburban development and growth, and one in five homes were still using outhouses. Planning infrastructure to accommodate growth and service needs is a challenge we continue to face today.

The Victoria Park Filtration Plant, now known as the R.C. Harris Water Treatment Plant, was a key piece of water infrastructure constructed in the 1930s (opening in 1941) to help address the city's growing needs.



Toronto Star Photograph Archive: March 1931
"The new 50-million-gallon reservoir at St. Clair Avenue West and Spadina Road [now Winston Churchill Park] underwent a contractors' test last night and is now nearly ready for the city's use."

"Before the real city could be seen it had to be imagined, the way rumours and tall tales were a kind of charting."

– Michael Ondaatje

From 'In the Skin of a Lion', a fictional novel about the lives of immigrants whose contributions played a large role in building Toronto's infrastructure in the early 20th century.

Following a 2011 tour of the R.C. Harris as part of the annual Doors Open event, journalist and author John Lorinc noted "...the whole operation was scalable, down to the configuration of the pipe fixtures (T-joints instead of elbows) buried deep inside its elegant art-deco walls."

He felt this built-in scalability reflected Harris's excellent forethought – knowing an expanding city would lead to a growth in consumption in the future. And grow it did – a second wing opened in the 1950's to facilitate the city's growing consumption needs as it expanded.

The 1950's would kick off another massive growth period, starting with the City's amalgamation. "Metro," as it was known, was created on April 2, 1953, and merged the duties that were overseen by City departments or former municipalities – including the operation the plants and testing of drinking water and sewage effluent. By 1954, Toronto was the fastest growing city on the continent.

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Original 1932 Toronto Star caption - "Torontonians will drink from this - the last piece of pipe in the city's new water supply system at Victoria Park Avenue [now R.C. Harris WTP]. It's enroute to its last resting place somewhere out in Lake Ontario."

Toronto isn't showing signs of slowing down. According to the 2023 Crane Index from Rider Levett Bucknall (RLB), Toronto had 238 cranes in the sky in Q1 – the vast majority related to residential development. Comparatively, the second highest North American city on the index, Seattle, had only 51 cranes in the sky total (187 less than Toronto).

We know from history that water and sewer infrastructure are critical to successful growth and development. Toronto Water continues to form a critical part of the city's foundation and the work we do now will set the stage for what Toronto will look like in the next 150 years.

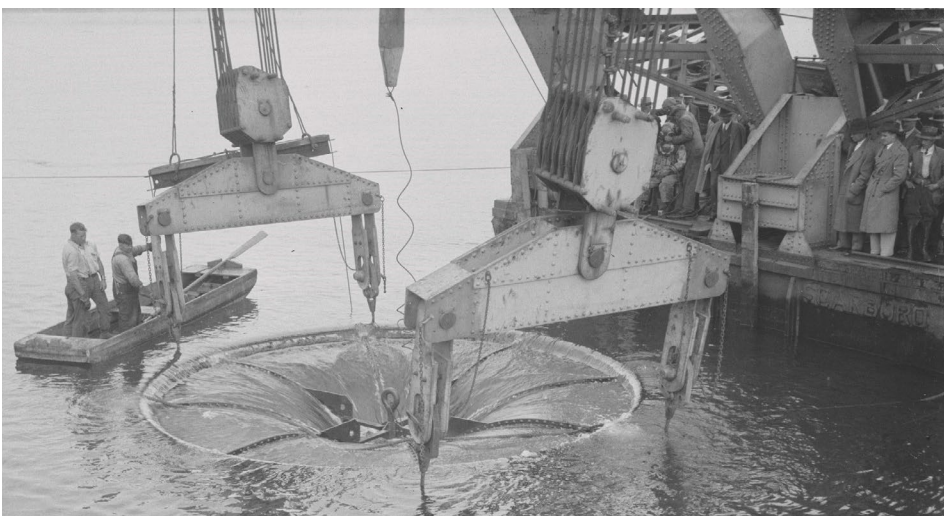


Image of a raw water intake being submerged at R.C. Harris.

Gordon Mitchell wins the Norman J. Howard award



Mike Brannon, Liza Ballantyne, William Fernandes, Gord Mitchell, Mauro Fabbro and Niall Robertson.

On Thursday, May 4, Gordon Mitchell, plant manager of the R.C. Harris Water Treatment Plant received the Norman J. Howard award from the Ontario Water Works Association (OWWA). The OWWA honours its members by recognizing excellence and achievements at an annual award ceremony.

The Norman J. Howard Award recognizes proficiency in one or more of the following areas of a municipal water supply – design, construction, operation, maintenance, management, regulation and research.

Gord's colleagues from Water Treatment and Supply were there to cheer him on as he was presented with the 2023 award and celebrated this well-deserved achievement.

Congratulations, Gord!

Toronto Water – Planning for Growth Strategy

On March 30, 2022, the Province announced the [More Homes for Everyone Plan](#) and introduced [Bill 109, More Homes for Everyone Act](#) to increase the supply of market housing in Ontario. The legislation contained new provisions requiring municipalities to refund – in part or in their entirety – fees for rezoning applications if a decision by the municipality is not made within the revised timelines prescribed in the [Planning Act](#). These changes are to take effect on July 1, 2023 and will impact the City and Toronto Water’s operations.

To meet the conditions of the new legislation, the City is creating a new [Development and Growth Service Area](#) to focus on the urgent need to get more housing built – in particular, affordable housing – as quickly as possible. The City investigated

and presented to Council a range of actions including changes to public meetings, elimination of preliminary reporting, expansion of pre-application requirements and right sizing staff resources.

Toronto Water also undertook its own review to ensure the necessary resources and supports were in place during development review, including accelerating projects and policies to accommodate new provincial provisions.

The creation of a new Development and Growth Transformation Project Office (“the Project Office”) within Approvals and Partnerships in Water Infrastructure Management (WIM), announced to the division in March, is meant to facilitate this transition and work collectively with the new

Three main objectives of the “Planning for Growth Strategy” strategy:

Objective 1: Develop an improved understanding of growth and sewer and water system constraints and opportunities.

Objective 2: Develop new tools, policies and processes to support improved processing of development applications.

Objective 3: Implement capital plans that are versatile to accommodate growth and change.

Development and Growth Service Area to lead, coordinate, monitor and track initiatives aimed at enhancing Toronto Water’s involvement with development approvals. Specifically, it will



Planning for Growth Strategy

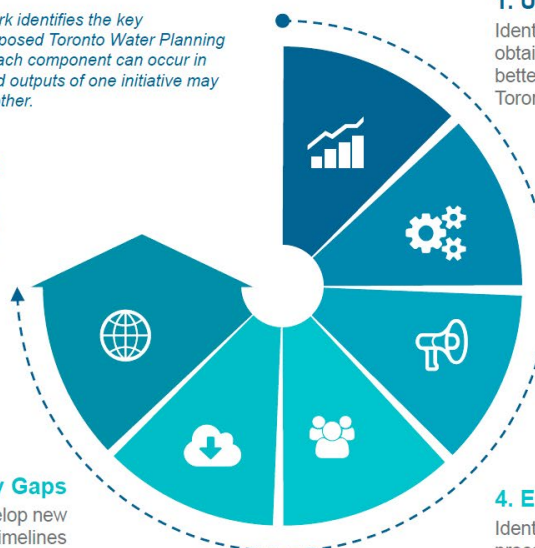
The following framework identifies the key components of the proposed Toronto Water Planning for Growth Strategy. Each component can occur in tandem with others and outputs of one initiative may serve as inputs for another.

6. Continuous Improvement

Identify internal improvements to the WIM intake process including formalizing new resources and tools to expedite the review process.

5. Address Policy Gaps

Revise existing and develop new policies to respond to the timelines and conditions outlined in Bill 109.



1. Understand Growth

Identify future growth nodes and obtain population projections to better understand the impacts to Toronto Water infrastructure.

2. Assess Capacity

Advise where there is capacity for growth and potential constraints through improved internal modelling and analysis.

3. Inform TW Planning

Undertake master planning to construct infrastructure to accommodate growth and identify interim solutions where feasible.

4. Engage Partners & Stakeholders

Identify opportunities to streamline internal processes through ongoing stakeholder engagement.

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focus on projects to improve pre-application touchpoints, site specific challenges and sewer capacity coordination. The Project Office will also improve Toronto Water's inquiry process, as well as represent the division at interdivisional and working group meetings to transform divisional procedures and practices. More information about what the division is doing to prepare was shared in a March Newswire, which can be found [here](#).

To compliment the work being undertaken by the new Project Office, WIM developed a "Planning for Growth Strategy" to lay the foundation and help monitor progress in facilitating sustainable growth, while ensuring appropriate use of and capacity within Toronto Water's infrastructure.

This multi-pronged strategy is meant to map critical initiatives that will enable the division to accommodate new growth targets while ensuring the future sustainability of Toronto Water infrastructure. Given the interrelated nature of these initiatives, each component area of this strategy is connected, providing a comprehensive overview of how we understand, plan for, and implement related policies and programs going forward in Toronto Water.

For more information about the Planning for Growth Strategy or the new Development and Growth Transformation Project Office, please contact Muaz Nasir at Muaz.Nasir@toronto.ca or Amy Winterhalt at Amy.Winterhalt@toronto.ca respectively.

Getting kudos!

Toronto Water continues to receive appreciation for top-notch customer service from the public. On April 28, the R.C. Harris Water Treatment Plant and Ashbridges Bay Wastewater Treatment Plant opened their doors and welcomed a group of Master students studying landscape architecture from the University of Toronto's Daniels Faculty of Architecture, Landscape and Design for a tour of the facilities.

This visit is part of a field studies course, where students are required to learn about urban ecology and infrastructure of the Toronto region. Toronto's water treatment infrastructure and process are of key interest, as the course explores the city's connection to the lake.

Jane Wolff, a professor at the Daniels Faculty of Architecture, Landscape and Design, has coordinated these tours for her students since 2016. However, with tours suspended from 2020 to 2022 due to COVID-19 protocols, this April 28 tour marked a return to this annual tradition.

In her post-tour communications with plant manager, Gordon Mitchell, Professor Wolff thanked



Master of Landscape Architecture students touring the R. C. Harris Treatment Plant.

him, Colin Marshall, Atul Mathare, Toronto Water and the staff at the R.C. Harris and Ashbridges Bay plants for organizing terrific facility tours that left the class "fascinated and inspired."

"The staff's expertise and insights spoke in unique ways to the course's investigation of urban ecology," she remarked.

Professor Wolff also relayed that the students were equally impressed with the tour and the efforts of staff at the R.C. Harris and Ashbridges Bay plants, who expanded their knowledge of Toronto's water and wastewater treatment processes.

Kudos to the staff at the R.C. Harris Water Treatment Plant and Ashbridges Bay Wastewater Treatment Plant for organizing another successful tour and delivering stellar customer service.

Recognition of Enterprise Solutions Management projects

Toronto Water, in conjunction with other divisions, has been working to implement enterprise solutions for many years to help integrate systems across the City, improve internal coordination and the customer experience. These enterprise solutions also align with many of the goals in our [2020-30 Strategic Plan](#), particularly under the Operational Excellence and Customer-Centric Service guiding principles.

A new Enterprise Customer Relationship Management (ECRM) system, Salesforce, is being implemented with Toronto Water's support, and replaces 311's legacy Lagan system and a series of independent databases that exist across the division. Given its complex business requirements and areas of service relative to other divisions, Toronto Water was the first division to support getting Salesforce up and running as a prototype. In 2020, with 311 leading, Toronto Water's Enterprise Solutions Management (ESM) team worked with many sections and units in the division to further support the implementation of Salesforce, ensuring its integration with the division's works management system, Hansen.

In April, the broader corporate ECRM initiative won the 'Customer Experience' category [City Manager's Award of Excellence](#), given to teams demonstrating excellence in improving customer

experience through initiatives and programs that make it easier for customers and end users to access programs and services.

Toronto Water's ESM group is represented on this corporate team, and while recognition is important, it is crucial to highlight the tremendous efforts Toronto Water has made supporting this City-wide initiative. A whole team of people in the division have made essential contributions and efforts to implement ECRM. Led and coordinated by the ESM unit, many sections and units in the division made vital contributions in ensuring the successful implementation of ECRM. This work helps increase efficiency in delivering services, enhance information and data collection, and improve customer relationship management. The ECRM solution will also eventually tie into the ongoing efforts the ESM team and the division are making to implement an Enterprise Works Management System (EWMS), as Toronto Water shifts from Hansen to Maximo. Eventually, Maximo and Salesforce will work hand in hand to ensure integrated work management for the division, which will also create more seamless and responsive customer support across the City.



Toronto Water's ESM team at work!

Further work and improvement to the customer experience is needed, and Toronto Water has a role in seeing those improvements come to fruition. The City's broader [Customer Experience Transformation \(CET\)](#) project takes a City-wide approach to the development of integrated services, built with the customer in mind and is supported by the recently created Customer Experience Division. This new division brings together 311 Toronto, the Customer Experience Transformation program, and parts of the Customer Experience and Innovation team within Technology Services.

Toronto Water continues to work with its corporate project leads to gain more access to Salesforce to further improve the customer experience and meet our strategic goals. Congratulations to the ESM team for the recognition as part of the City Manager's Award for Customer Experience, and for the continued efforts to roll out these solutions across the division (no matter what challenges you face!).

Successes of the directional drilling method – Part one Emergency repair of a sanitary sewer via directional drilling

In March 2022, Toronto Water received reports of sewage backups in basements on Ridge Drive. In response, Operations Contract Services (OCS) conducted a CCTV (closed-circuit television) investigation and found that a section of the sewer main located within an easement between Ridge Drive and Carstowe Road had collapsed. To mitigate the situation, a temporary bypass system was installed, and Trisan Construction started sewer main repairs under OCS emergency repair contract.

The collapsed sewer main was located between two private

properties backing onto a sloped ravine, and property structures and mature trees restricted access to the collapse, so conventional dig and repair methods were not possible.

As a result, the directional drilling method was selected for its cost-effectiveness, minimal disruption, and compatibility with the challenging site conditions.

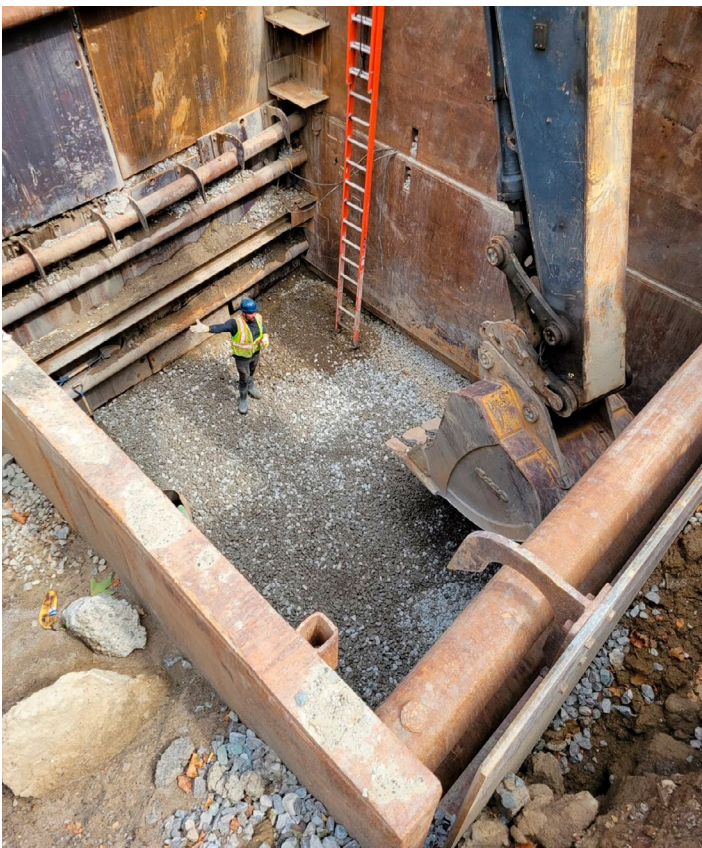
The project was executed in two phases: site preparation and sewer replacement.

In order to minimize disruption to the community, the site was extensively prepared in advance

of construction by replacing the temporary bypass hoses with over 200 meters of recessed bypass equipment, excavating two pits for directional drilling, installing of a retaining wall, and bypassing the adjacent watermain.

In the sewer replacement phase, directional drilling and receiving pits were excavated on Ridge Drive and Carstowe Road, and the 300 mm high-density polyethylene (HDPE) pipe was drilled and installed by a subcontractor YORK1.

Then the OCS contractor installed 2400 mm and 1200 mm maintenance holes at both ends



Excavation of the 8-meter-deep drilling pit on Ridge Drive in progress.



Transportation of the steel shoring box assembly to be installed at Ridge Drive excavation pit.

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of the HDPE pipe once the directional drilling was completed. These maintenance holes, eight metres deep on Ridge Drive and two metres deep on Carstowe Road, represented a significant effort in excavation, site safety, and backfill.

The newly installed sewer main was then reconnected to the maintenance holes, the bypass system was shut down, and buried hoses and pumps were dismantled.

The contractor then moved forward with the reinstatement and disinfection of the bypassed watermain, removal of the watermain bypass, site cleanup and demobilization of the equipment.

During the project, OCS faced several challenges including limited workspace due to the Ridge Drive being a dead end and accommodating local residential traffic. The close proximity of utilities to the excavation site and the deep location of the sewer also presented challenges.

Usually during repairs of this magnitude, the entire intersection would have been closed completely. To maintain vehicle access to Ridge Drive, the bypass hoses had to be buried and the work area in the intersection had to be smaller than usual.

Utilities such as telecommunications cables from Bell and Rogers had to be relocated, and overhead hydro wires had to be insulated. In addition, a small section of watermain within the excavation had to be cut out, and a



HDPE pipe to prior to installation.

temporary surface watermain bypass system had to be installed to maintain water service to all properties on Ridge Drive.

The project took seven months to complete due to these challenges and was far beyond a typical sewer main repair scope, costing \$3.45 million.

WaterNetwork

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WaterNetwork publication: November 1

Successes of the directional drilling method – Part two

Repair of a sludge forcemain via directional drilling

In August 2022, a sludge spill was discovered on the south side of the Queensway, extending from Parkside Drive to Colbourne Lodge Drive. The source of the spill was soon found to be a compromised forcemain located under the Queensway.

The failed forcemain was a critical component in the sewage treatment process, as it is responsible for transferring sludge from the Humber Treatment Plant to the Ashbridges Bay Treatment Plant via the Mid-Toronto Interceptor (MTI) for further treatment and disposal.

Emergency repair work was immediately undertaken by

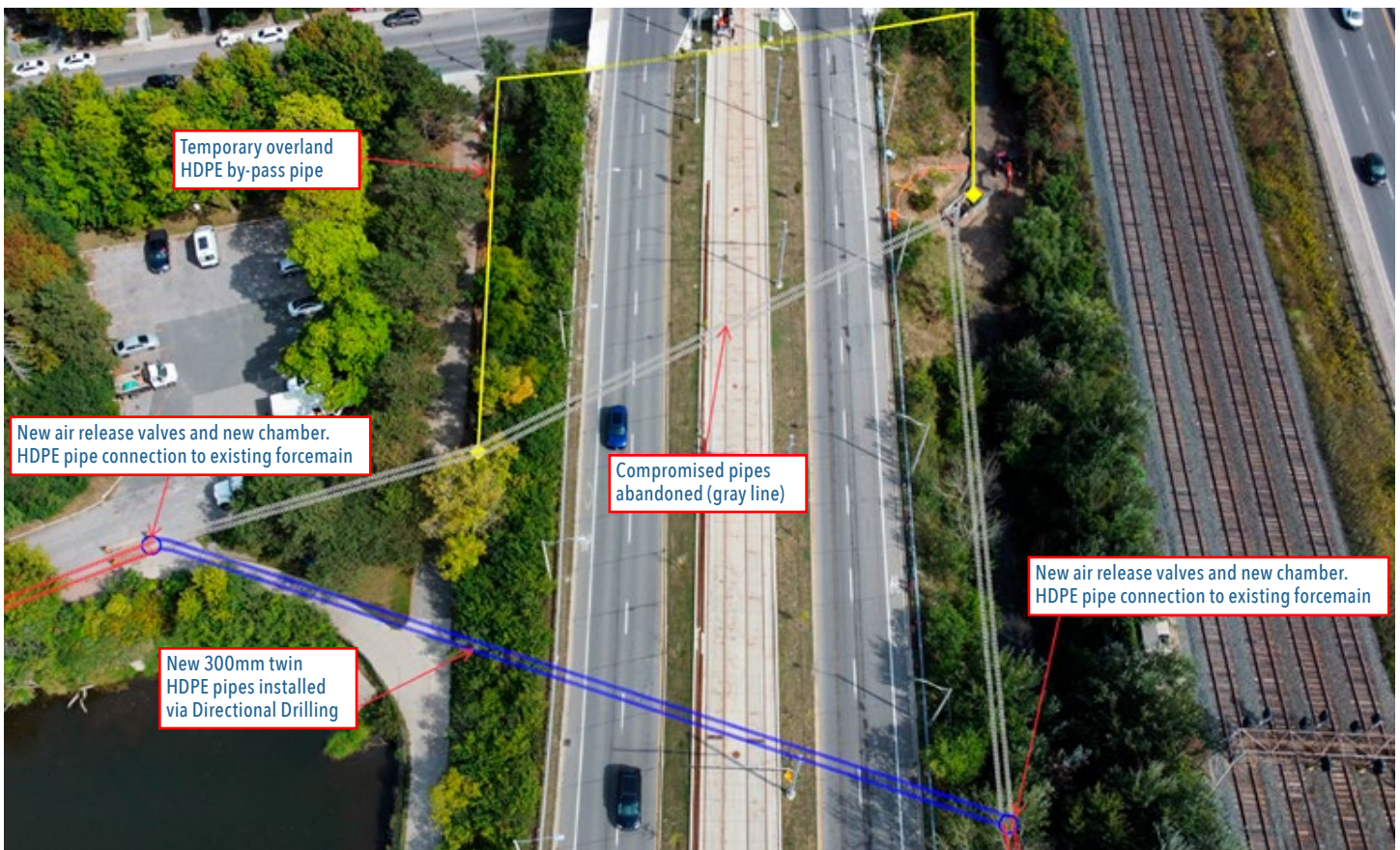
Operations Contract Services (OCS). The failed section of the forcemain was temporarily bypassed with an overland high-density polyethylene (HDPE) pipe that was installed from the excavation site on the south side of the Queensway to the forcemain pipe on the north side.

Since the failed pipe was located under the Queensway, and conventional dig and repair approach was not a feasible option, it was determined that the repair would be performed through directional drilling method. The scope involved drilling approximately 80 metres of new 300 mm HDPE

twin forcemain pipes under the Queensway, connecting them to the existing forcemain.

To complete the repairs, drilling and receiving pits were excavated on either side of the Queensway. Since the forcemain operation had to be maintained at all times, the new pipes were drilled and connected one at a time to maintain a continuous flow. The entire project was performed by OCS emergency repair contractor Finch Contracting and their drilling subcontractor, Avertex.

The repair work was not without its challenges. The construction area was located in a regulated area, on the north side of the



Project Scope Map.

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Receiving of the directionally drilled twin forcemain pipes.



Connection of the overland HDPE by-pass pipe at the south side of the Queensway in progress.

Queensway within High Park under the jurisdiction of the Toronto and Region Conservation Authority (TRCA), and the south side within the Metrolinx corridor. Emergency permits and agreements were obtained from the relevant parties to proceed with the work.

In addition to the location challenges, the repair also required a reconsideration of the original layout of the forcemain. The original design, dating back to 1980, used an old, abandoned

sewer pipe to cross under the Queensway that included a 145-degree bend. The new design eliminated this bend and used a more efficient alignment of the pipe.

Despite these challenges, the installation of the bypass system was simple with no utilities interference or space constraints, keeping the costs down. The total cost of the emergency repairs came to \$875,000 and took four months to complete. The successful repair of the forcemain

prevented further accumulation of sludge and ensured the proper functioning of the sewage treatment system.

When is a light bulb more than a light bulb?

Parkdale Pumping Station, an important and historic facility in the water supply system, underwent a life-cycle building rehabilitation ending in 2019. As part of the rehabilitation, the lighting was upgraded with the latest technologies.

The pump gallery is located on the lowest level and houses the water pumps and associated equipment. The legacy overhead incandescent lighting provided illumination at the pump level for facility operation and maintenance activities, but the high ceilings posed challenges for the maintenance of the light fixtures.

The design concept included:

- Increasing light distribution at the pump level based on industry guidelines for industrial applications.
- Replacing the existing incandescent lighting with LED lighting; using the existing circuits and wiring to reduce disturbance within the heritage structure.

- Providing local access points for lighting controls within each functional area of the pumping station.

In the pump gallery, the new, high-bay LED lighting fixtures, which require less regular maintenance, are mounted approximately 14.5 m above the basement floor. Replacing the existing incandescent features, the ceiling pendant, high-output lumen LED lighting fixtures are mounted at the intermediate level, at a height of around 8.18 m. These LED lighting fixtures provide the general light for the pump gallery and the intermediate level and have a lighting power density of around 6.86 W/m². In the electrical control room, energy-efficient LED fixtures replaced the T12 fluorescent lighting fixtures.



With some delays due to the pandemic, the project was submitted to the Toronto Section of the Illuminating Engineering Society and was awarded the 2022 Interior Design Award as recognition for commendable achievement in Lighting Design. Water Supply thanks the Toronto Water project team, Engineering and Construction Services, and Jacobs/CH2M Hill for their diligence and dedication to the cause. Rehabilitation can mean more than just repair and replace.



LED lights in the pump gallery, mounted approximately 14.5 m above the basement floor.



A wide view of the high-bay LED lighting fixtures in the pump gallery, part of the award-winning lighting project at Parkdale Pumping Station.

Toronto Water Social Committee hosted Ski Day!



Peter Marto, son, Paul Menard, Paul Petryshyn, and Hassan Mahdi.



Peter Marto, son, Richard Noehammer, and son.

On Friday February 24, the Toronto Water Social Committee (TWSC) partnered with Ontario Water Works Association to host the very first Ski Day event. The event was such a success, the TWSC anticipates that this will be first of many more!

The event was held at the beautiful Devil's Glen Country

Club, where attending Toronto Water staff were greeted with a fresh blanket of powder from the snowfall the night before that continued throughout the day.

Participants could not have asked for better conditions for the inaugural Ski Day. The club, trails, lunch, and company were fantastic and the TWSC is looking forward

to organizing Ski Day 2024 with ample notice to ensure all staff will have time to plan for another great day.

We want to hear from you!

Have a comment, suggestion or story idea? Send it to Magda.Stec@toronto.ca



Ski slopes at the Devil's Glen Country Club.



Paul Petryshyn enjoying the slopes.

The WaterNetwork aims to keep Toronto Water staff informed about programs, projects, achievements and events.

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