AUGUST 27, 2025

CITY OF ELLIOT LAKE

2026 – 2035 ASSET MANAGEMENT PLAN

CHAD BUHLIN
BUHLIN ASSET MANAGEMENT

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1. Executive Summary

Purpose of the Plan

This Asset Management Plan (AMP) is the City's roadmap for looking after everything residents rely on every day—roads and sidewalks; drinking water, wastewater and stormwater systems; public buildings and recreation facilities; vehicle and equipment fleets; and park and cultural amenities. It explains the condition of those assets today, what service levels residents can expect, how risks are being managed, and what it will cost to maintain reliable service over the next decade. The plan aligns with Ontario Regulation 588/17 and consolidates all municipal assets into a single, repeatable framework so that budgeting, capital planning, and day-to-day operations are pulling in the same direction.

Elliot Lake has already completed the key regulatory steps—from the Strategic Asset Management Policy to a full inventory and valuation of core assets—and is now extending the approach to all classes. The Plan's objectives are simple: link service outcomes to asset condition and cost, invest at the right time (not too early or too late), and be transparent about trade-offs so Council and the community can make informed choices.

Community Context

Elliot Lake is a northern Ontario city with a stable, older population and a growing working population, shaped by its long-standing role as a retirement destination; with residents living both in a well-developed urban centre and in surrounding lakefront properties. Winter severity, freeze–thaw cycles, and hilly terrain place extra stress on pavements and drainage. The urban centre is home to a compact downtown core; with surrounding neighbourhoods and a network of civic buildings, recreation amenities, and emergency services, that support year-round living and tourism. Together, these demographic and environmental realities influence the condition of municipal assets and the service expectations for mobility, recreation, and safety.

What We Own and How It's Performing

Across all classes, the City maintains a substantial portfolio whose replacement cost runs into the hundreds of millions. Transportation alone (roads, ditches, shoulders) is valued at roughly $140.2 million; sidewalk valuation will be added in the next AMP refresh as unit rates are finalized. Buildings, water, wastewater, stormwater, fleet, parks and equipment inventories have been assembled and are being refined with better condition data and unit-rate costing so future forecasts can be even more precise.

Condition varies by class and by asset age. Road condition tends to drift downward without timely resurfacing; water/wastewater plants and lift stations can perform well for long periods with proper mechanical renewal; and buildings often hinge on the health of major systems (roofs, HVAC, electrical) rather than the shell alone. The AMP shifts the City from reactive fixes to planned interventions—using triggers such as pavement condition thresholds, equipment runtime hours, or system deficiency reports—to spend less over the life of an asset and reduce service disruptions.

About DOT and Scenario Planning

Decision Optimization Technology, a software developed by Infrastructure Solutions is the City's planning engine for asset management. It takes what we know about each asset—age, condition, how critical it is to service—and turns that into clear pictures of the future called scenarios. Each scenario shows what happens to condition, risk, and projected costs under different program choices (for example, to Maximize Network Performance versus Minimizing Network Risk or Maximize Network Condition). Instead of guessing, Council and staff can see side-by-side how options perform over time and choose the path that best balances service, risk, and deliverability.

DOT helps the City answer practical questions in plain terms: What should we fix first? What can be preserved with lower-cost work? Where are the true pressure points a few years out? It also helps organize work into consistent, manageable programs that fit our construction seasons and local capacity. As new projects move from idea to design to construction, DOT keeps the big picture up to date, so departments are working from the same playbook.

It's important to remember that DOT is a decision-support tool, not a crystal ball. It is only as good as the information we feed it. Some parts of this first plan rely on early estimates or anecdotal inputs where inspections or unit costs are still being refined. As we add better data—component-level building records, updated road and sidewalk condition, underground inspections, fleet and plant performance—the scenarios will be rerun, and the outlook may shift. That is a sign the tool is working: it reflects the latest evidence so we can time projects more precisely, avoid premature replacements, and focus dollars where they matter most.

Over time, DOT will become a vital tool for long-term planning. It will let the City test "what-ifs" quickly, show the impact of new information, and keep the conversation with Council and the public grounded in clear, comparable visuals. Each annual update will tighten the inputs and refresh the scenarios, so decisions stay aligned with the City's service goals and residents can see how today's work supports tomorrow's reliability.

Key Findings

1) Reliable service depends on steady, right-time investment—not peaks and valleys.
Work completed during this planning exercise shows that consistent programs outperform boom-and-bust spending. For example, in Transportation, a steady annual program was chosen to keep workloads manageable and predictable while arresting long-term decline; similar "glide-path" programs are being applied to buildings and linear utilities, paired with mid-life rehabilitation to defer full replacement where appropriate. The intent is to protect levels of service while smoothing annual budget impacts across the 10-year horizon.

2) Reserve capacity is uneven and shapes near-term choices.
The City maintains a number of reserves to facilitate capital upgrades and renewals. Some presently show capacity to stage large renewals whereas Buildings & Facilities has a $0 balance after 2025 approvals, which means near-term planning with respect to borrowing and careful attention on rebuilding. This AMP sets clear targets for each reserve (based on a percentage of a three-year rolling need) to ensure they can absorb timing swings without pushing unexpected pressure onto the levy or rates.

3) Operating budgets support the plan.
Operating dollars keep assets performing between capital events—winter control and patching on roads, preventative maintenance in facilities, and routine mechanical servicing at plants. The City's operating budget frameworks and accounting standards (PSAS) underpin how costs are tracked and reported, and how debt, reserves and tangible capital assets are treated. These practices support the AMP's life-cycle view and will be used to monitor plan execution each year.
4) Data quality is improving and will drive better decisions.
This version of the AMP integrates recent inventories, condition assessments, and cost work, but also acknowledges where estimates remain preliminary—for example, sidewalk unit rates or component-level building system costs. The City will continue to expand inspections, standardize condition scoring, and capture actuals from tenders and maintenance history. As data quality improves, scenarios will be re-run, so the capital program and reserve targets reflect the latest understanding.

Strategic Directions

Keep service steady, build capacity, and manage risk transparently.
Over the next decade, the City will focus on:

- **Smoothing capital programs** so crews and contractors can deliver consistent workloads, while bundling scope (e.g., water/main renewals timed with road resurfacing) to reduce life-cycle cost and disruption.
- **Prioritizing risk and criticality**, ensuring assets that affect safety, compliance, or essential services—like key road links, water treatment, and lift stations—receive attention first.
- **Rehabilitating mid-life assets** to defer full replacement where this makes sense, particularly in roads and buildings, stretching every dollar further without compromising service.
- **Strengthening data and accountability** by tracking performance, cost, and risk indicators and reporting progress publicly each year.

These directions align with the City's long-term vision to deliver dependable service, invest prudently, and adapt to climate and demographic pressures.

What It Means by Asset Class

Transportation (roads, sidewalks, stormwater).
The City will deliver a stable annual road program to manage pavement condition and risk, complemented by targeted drainage and culvert work. Sidewalks are fully inventoried and will have replacement costs in the next update so future plans integrate pedestrian renewals more precisely. Where water or wastewater pipe work is planned, road renewals will be coordinated to capture savings and limit disruptions.

Drinking Water and Wastewater.
Plants and linear networks require ongoing mechanical renewal and condition-based replacements. User-pay reserves currently have capacity after 2025 approvals, and some larger projects. Rate planning and capital program pacing will work together to maintain balances while delivering

compliance-critical projects. Performance will be tracked with risk and condition indicators tied to service reliability, regulatory compliance, and environmental protection.

Buildings & Facilities.
Major system renewals (roofs, HVAC, electrical, life-safety) will be sequenced using recent inspection and property assessment work. The reserve position is currently under a great degree of stress due to ongoing renewals at the Rogers Arena. Moving forward, the City will need to focus on staging renewals as well as componentizing assets and loading preventative maintenance programs into the asset management forecasting system for future planning. This approach will allow the City to keep facility serviceability high and will ensure that the City has the ability to plan for sufficient funding for capital projects.

Fleet & Equipment.
Service levels depend on reliable trucks, light vehicles, and heavy equipment. Elliot Lake is moving more light-duty replacements to leasing to smooth costs and keep units modern. Under certain conditions, leasing can shift some need from capital to operating, easing pressure on the fleet reserve. The AMP supports right-sizing, utilization checks, and mid-life overhauls where cost-effective.

Parks & Recreation and Cultural/Heritage.
These assets support community wellness and economic development. Programs will focus on component renewal (play structures, courts, lighting) and opportunities to bundle small works for delivery efficiency. Reserve tracking will be enhanced where parks-specific funds exist.

How We Will Pay for It

The Financial Strategy uses a mix of tax-supported, rate-supported, and reserve funding, supplemented by grants and debt where appropriate. Operating budgets cover routine activities that keep assets performing between capital events, while capital budgets renew or replace major components. Reserve targets are set as a percentage of three-year average needs so funds can absorb timing swings and emergencies without destabilizing the levy or rates. As of 2025, Buildings & Facilities shows reduced capacity whereas Public Works, Fleet, and User-Pay reserves, along with all others, have capacity for some renewal projects. These reserve levels need to be maintained annual contributions and careful pacing. Debt remains modest and is reserved for long-life, high-benefit projects.

The City's public-sector accounting framework governs how assets, reserves, and debt are recorded, providing a consistent base for annual AMP progress reporting and adjustments.

Managing Risk and Climate

Risk is managed by combining condition data with criticality. Assets that are very important to safety or service—like key arterial roads, treatment plants, or major building systems—receive higher priority, earlier interventions, and stronger contingency planning. Northern winters and intense rain events are factored into designs and renewal timing (e.g., winter-ready pavements, culvert upsizing or lining, building envelope upgrades). This reduces the likelihood and consequence of failure and makes each dollar go further.

Implementation, Monitoring, and Continuous Improvement

This Plan is a living document. Staff will report progress annually, highlighting what was delivered, how reserves moved relative to targets, and whether risk or condition indicators are trending as expected. Triggers will be used to re-forecast—such as major grant outcomes, unexpected construction cost changes, or new condition information—so the capital program remains achievable and prudent. Every five years, the AMP will be refreshed in full to capture new data, update levels of service, and reset the 10-year forecast.

In the near term, the focus is on strengthening data quality and confidence. Work is underway to componentize facilities, finalize sidewalk unit rates, expand field inspections, and capture actual costs from tenders and maintenance. As those data improvements land, scenarios will be re-run and the City will adjust programs and reserve targets accordingly keeping the focus on dependable service, value for money, and transparent trade-offs.

Asset Management Moving Forward

Over the next decade, Elliot Lake will use asset management as the common playbook that links service levels, risk, and dollars. Decision-makers get clearer trade-offs—what a project buys in condition and risk reduction, and what it costs against the affordability envelope—so budget choices are evidence-based. Administration benefits from predictable, right-sized programs, stronger reserve targets, and commercial choices (like leasing) that smooth cash flow. Staff gain clearer annual work plans and Preventative Maintenance schedules, better data from inspections and actuals, and coordinated corridor delivery that makes each construction season more productive.

For the public, the payoff is steady service and fewer surprises: roads treated on time, safe and reliable water and wastewater, buildings kept open and comfortable, and a capital curve without wild swings in taxes or rates. Transparent reporting—condition, risk, spending, and reserve positions—shows progress and flags when plans need to adjust for new costs, grants, or condition findings. In short, asset management turns a complex portfolio into a disciplined, shared process that keeps Elliot Lake's services dependable and affordable.

2. Introduction

Municipal Context

The City of Elliot Lake is located in the Algoma District of Northern Ontario, approximately 90 km West of the regional hub of Sudbury. Nestled approximately 20km North of the North Shore of Lake Huron's North Channel, Elliot Lake occupies a land area of 696.06 km^2 and, as of the 2021 Census, has a year-round population of 11,372, representing a 5.9 % increase over 2016 numbers.

Originally established in the 1950s as a uranium-mining town, Elliot Lake has since transitioned to a community centered on outdoor recreation, drawing new residents, retirees, and seasonal visitors for its affordable living, extensive trail systems, and proximity to provincial natural areas such as Mississagi Provincial Park.

Elliot Lake is a major hub in East Algoma and offers a full range of healthcare, financial, personal, and government services accordingly alongside a growing retail sector. The City is home to several light manufacturing industries, a growing range of service businesses, and several remote workers including those who telework, and those who commute to various mine sites, further north, for employment.

Elliot Lake began as an Improvement District, and subsequently was incorporated a town, and in 1992, as a City. The City's governance is directed by a Mayor and Council, supported by a professional administration that oversees municipal services, planning, and asset stewardship. Major settlement areas include the urban core, as well as residential lakefront clusters on the city's periphery. Key service assets encompass a road network, sidewalks, municipal water and wastewater treatment facilities; an airport; and public buildings such as, recreation facilities, and community emergency response facilities.

Asset Management Objectives

Elliot Lake's Asset Management Plan (AMP) is built on the principle of aligning infrastructure investments with community needs, service expectations, and regional growth trends. The objectives of this AMP are to:

1. **Establish a consistent framework** for managing and maintaining all municipal assets—roads, sidewalks, water, wastewater, stormwater, public buildings, parks, fleet, and IT—in a unified database.
2. **Enhance transparency and accountability** by linking service levels, condition assessments, and financial planning, thereby enabling Council and residents to understand trade-offs and funding requirements.
3. **Support prudent long-term financial planning** by forecasting capital renewal needs and operating costs in alignment with projected revenues and reserves.
4. **Prioritize infrastructure investments** based on risk, criticality, and benefit to the community—ensuring that high-priority assets are maintained or renewed before failure.
5. **Maintain core public services** (safe roads, clean water, reliable waste management) through proactive lifecycle interventions rather than reactive "run-to-failure" repairs.
6. **Promote environmental, social, and economic sustainability** by factoring in climate resilience, equity of access, and life-cycle cost minimization.

7. **Integrate asset management** with complementary municipal plans (Official Plan, Emergency Management Plan, Accessibility Plan) to guarantee consistency in decision-making and resource allocation.

Long-Term Vision

Elliot Lake's long-term vision for asset management is to:

- **Proactively maintain and renew** infrastructure so that it reliably meets the evolving needs of residents, seasonal property owners, and businesses.
- **Foster resilience** by incorporating climate adaptation and risk mitigation—such as winter-ready roads and flood-resistant stormwater systems—into all lifecycle decisions.
- **Maximize the return on public investments** by employing data-driven, risk-based prioritization, ensuring each dollar spent delivers the greatest possible benefit.
- **Build internal capacity** through staff training, improved condition assessments, and implementation of low-cost data management tools to support evidence-based decision-making.

Through this AMP, the City of Elliot Lake will strengthen its asset knowledge, enhance interdepartmental coordination, and establish a culture of continuous improvement—ultimately ensuring that infrastructure supports quality of life, economic opportunity, and public safety for decades to come.

Regulatory Requirements

Elliot Lake's AMP has been developed to comply with Ontario Regulation 588/17 ("Asset Management Planning for Municipal Infrastructure"), issued under the Infrastructure for Jobs and Prosperity Act, 2015. This regulation mandates a phased approach to AMP development, with specific content requirements and deadlines.

Requirement	Description	Deadline
Strategic Asset Management Policy	Formal adoption of a policy that outlines principles, roles, and objectives for asset management.	July 1, 2019 (Policy passed in June 2019)
Core Infrastructure AMP	Document current levels of service, asset condition, replacement costs, and lifecycle activities for core assets (roads, bridges, water, wastewater, stormwater).	July 1, 2022 (Requirements met in 2025 AMP)
Full AMP – All Assets	Expand AMP scope to include all municipal assets—facilities, fleet, parks, IT, etc.—with inventories, condition assessments, and replacement cost estimates.	July 1, 2024 (Requirements met in 2025 AMP)
Proposed Levels of Service & Financial Strategy	Define proposed service levels over a 10-year horizon, estimate costs required to maintain or improve those levels, and identify long-term funding strategies.	July 1, 2025 (Requirements met by Buhlin Asset Management)

Key Requirements of an AMP Under O. Reg. 588/17

- **Inventory & Valuation:** Complete listing and valuation of all assets owned by the City.

- **Current Levels of Service:** Qualitative and quantitative metrics illustrating how assets perform today.
- **Condition Assessments:** Evaluations (using PCI, FCI, or equivalent scales) for each asset category.
- **Lifecycle Activities:** Documentation of operations, maintenance, rehabilitation, and replacement activities.
- **Replacement Cost Estimates:** Current and future capital cost projections for all assets.
- **Proposed Levels of Service:** Target service levels over the next 10 years, including performance and risk targets.
- **Financial Strategy:** Funding plan to sustainably deliver proposed levels of service, incorporating operating budgets, reserves, grants, and debt.
- **Risk & Climate Change Considerations:** Integration of risk assessments and climate adaptation strategies into lifecycle decision-making.

Implications for the City of Elliot Lake

Structured Planning & Documentation

The City must document long-term asset sustainability strategies and tie them into annual budgeting and capital forecasts. This AMP functions as a living document to ensure continuous alignment with Council priorities and emerging risks.

Increased Transparency & Accountability

Public reporting and targeted stakeholder engagement (Council workshops, website dashboards, summary infographics) will clarify how service levels, condition, and funding needs intersect—empowering residents to provide meaningful input.

Lifecycle & Risk-Based Decision-Making

Moving beyond reactive maintenance, Elliot Lake will adopt clear intervention triggers (e.g., PCI thresholds for roads, pump runtime hours for lift stations) to optimize total life-cycle costs and minimize service disruptions.

Data Collection & System Development

High-quality, up-to-date asset data is essential. The City will continue investing in field inspections, condition scoring, and asset management software to support evidence-based capital planning.

Integration with Other Plans

Coordination among the Official Plan, Recreation and Culture Plan, Economic Development Plan and Accessibility Plan ensures infrastructure decisions reinforce broader community goals—such as aging in place and tourism development.

Resource & Capacity Needs

To meet regulatory deadlines and maintain momentum, the City will leverage consultants for technical analyses, while gradually building internal expertise through staff training and standardized procedures.

Looking Ahead

Elliot Lake has already fulfilled the Strategic Asset Management Policy and Core Infrastructure AMP requirements. This 2025 AMP expands to all municipal assets and initiates the process of defining proposed levels of service and corresponding financial strategies. By embracing O. Reg. 588/17 as more than a compliance exercise—viewing it instead as a roadmap toward resilient, cost-effective infrastructure—the City is laying the groundwork for sustainable service delivery and enhanced quality of life for all residents.

3. Transportation

Inventory

Elliot Lake's Transportation Department manages a diverse network of roadways and pedestrian facilities that together support safe, year-round mobility for residents, businesses, and emergency services. The table below summarizes the key asset types, quantities, cumulative lengths, installation periods, and their roles within the network.

Asset Type	Quantity	Length	Year Range	Notes
Gravel Roads	13	18 km	1977-2006	Primary surface type across rural and lower-traffic areas
Hot Mix Asphalt Roads	456	114.9 km	1958-2015	Paved sections in built-up or high-use zones
Surface Treated Roads	6	7.0 km	1992-2023	Common for rural collector routes
Sidewalk - Asphalt	14	1,596 m	1987-2000	Limited use in select areas; lengths very short
Sidewalk – Concrete	250	38,124 m	1977-2012	Standard sidewalks on local and collector streets
Sidewalk – Brick/Masonry	43	3,716 m	1987-2012	Decorative sections near civic and downtown areas
Bridges & Culverts	7	-	-	Bridge spans and culverts for safe drainage.

Valuation

As of the 2025 AMP update, the total replacement value of Elliot Lake's transportation infrastructure—comprising roads, ditches, and shoulders—is estimated at $140,226,843. This figure was developed by applying unit-rate costing (sourced from recent tender and contract records) to the recorded quantities and lengths of each asset class.

At the time of writing, sidewalk replacement cost data was not yet available for inclusion. While quantities and lengths of asphalt, concrete, and brick/masonry sidewalks have been fully inventoried, corresponding unit costs (per square metre or linear metre) have not been finalized. In the next iteration of this AMP, we will integrate sidewalk valuation by:

1. **Surveying Recent Projects:** Reviewing final costs from the City's last three sidewalk rehabilitation and installation contracts.

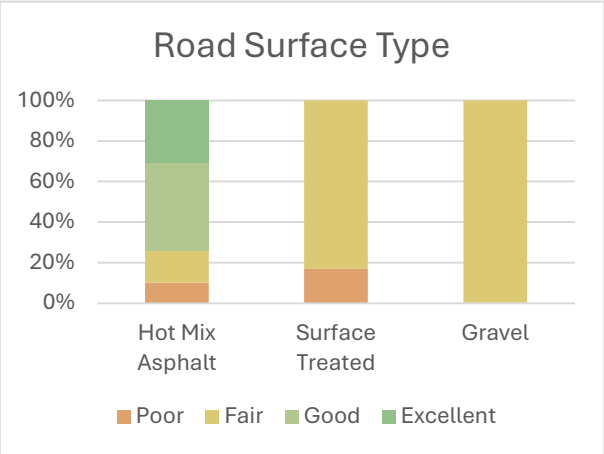
2. **Benchmarking:** Comparing municipal unit rates against those published in Ontario Public Works Association and Municipal Engineers' Association cost guides.
3. **Updating the Inventory Database:** Adding a "Replacement Cost" field to the sidewalk inventory so that unit rates can be automatically applied.

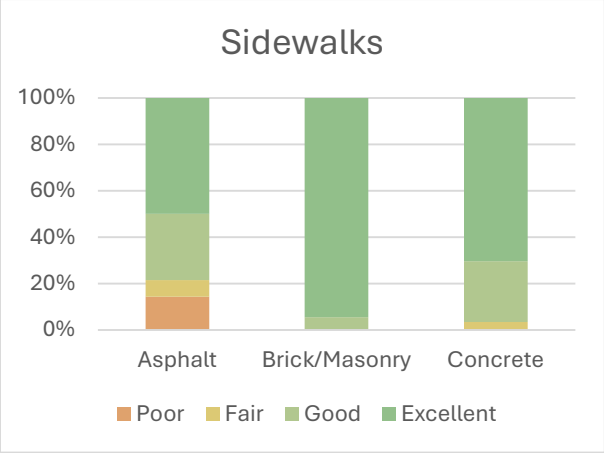
At the time of writing, bridge and major culvert replacement cost data are not yet available for inclusion. The inventory is complete—location, structure type, span/length, deck area (where applicable), material, OSIM ID and current condition—but unit rates and replacement formulas have not been finalized. In the next iteration of this AMP, we will integrate bridge/culvert valuation by:

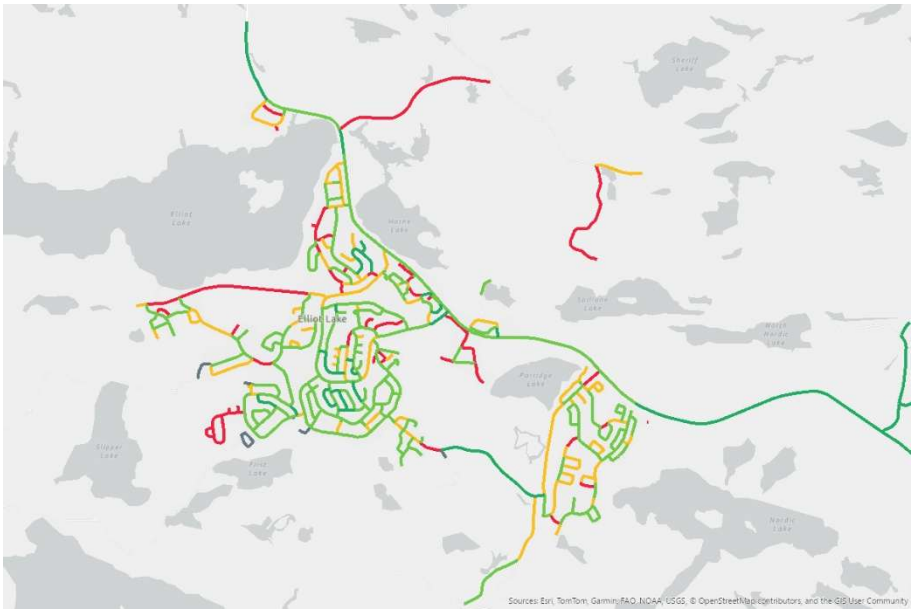
1. **Surveying recent projects:** Compile final costs from Elliot Lake and comparable Northern Ontario bridge/large-culvert jobs (replacements and major rehabs), including demolition, traffic control/detours, engineering, and environmental/permitting.
2. **Benchmarking unit rates:** Establish standard $\$/m^2$ deck-area rates by structure type (e.g., concrete slab, steel girder) and $/m rates for box/pipe culverts using provincial cost indices and municipal benchmarks; apply regional factors for mobilization and site access.
3. **Updating the inventory database:** Add "Deck Area," "Structure Type," and "Replacement Cost" fields and apply valuation rules (bridge = deck area × unit rate; culvert = length × unit rate), with allowances for design/engineering and contingencies. As OSIM data are refined, treatment selection (rehabilitation vs. full replacement) will be applied more precisely.

By capturing complete replacement cost data for all transportation assets—including sidewalks, bridges and culverts—future AMPs will provide a more comprehensive financial picture, improve life-cycle cost modelling, and support more accurate reserve fund planning.

Condition







Road Conditions

Levels of Service

Current LOS

As required under Ontario Regulation 588/17, the City of Elliot Lake's Transportation Department is committed to managing its road infrastructure in a way that supports sustainable service delivery, public safety, and long-term financial responsibility. This section outlines the current levels of service for the road network based on both community levels of service and technical metrics, reflecting the City's efforts to meet regulatory standards for asset management planning.

Elliot Lake's road network plays a vital role in ensuring mobility, economic activity, emergency response, and connectivity across the community. In line with the regulation, the City has assessed its road services across key characteristics including accessibility, reliability, safety, condition, performance, and cost-effectiveness. These characteristics are reported using measurable indicators and current performance benchmarks, enabling the City to identify gaps, prioritize investment, and support transparent communication with stakeholders. The harsh northern climate, aging infrastructure, and limited resources present ongoing challenges. Nevertheless, the Transportation Department continues to deliver consistent service levels through planned maintenance, inspection programs, and continuous improvement.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	Roads are passable year-round, except during extreme events	% of year with full access	Roads are accessible year-round with minor isolated issues	95–98% year-round access
Reliability	Gravel roads maintain drivability between grading cycles	Avg time between required grading (weeks)	Roads need grading every 2 weeks to remain usable	2-week grading cycle
Safety	Roads are maintained to ensure safe travel	# of safety-related incidents or complaints	Most roads meet basic safety expectations; signage is in place	≤ 2 complaints/year
Condition	Road surfaces are in Good condition or better	% of roads rated "Good" (PCI)	Some roads improved but still widespread deterioration	50–64% rated 72
Performance	Roads support all intended users (including emergency access)	% of routes accessible to emergency services	Roads are accessible with few limitations; turnaround and clearance sufficient	95–98% accessible
Cost Effectiveness	Average cost per km of road maintenance	$/km for grading, drainage, and upkeep	Moderate costs, but still frequent emergency repairs	$5,000–$6,000/km/year

Proposed Levels of Service

The road network in Elliot Lake is a critical component of the community's infrastructure, serving residents, businesses, and emergency services year-round. Currently, the City maintains roads that are accessible 95–98% of the year, with an emphasis on ensuring safety, reliability, and performance. Moving forward, the proposed level of service aims to extend the durability of gravel roads by increasing the interval between required grading cycles from every 2 weeks to at least 4 weeks, thereby reducing maintenance frequency and associated costs. Safety remains a top priority, with goals to proactively manage risks and reduce complaints to one or fewer per year. The condition of roads is also targeted for

improvement, with an objective to have 65–79% of road surfaces rated as "Good" or better, supporting all intended users, including emergency services. Cost effectiveness is key, with the aim to reduce the average maintenance cost per kilometer from $5,000–$6,000 to a more sustainable $3,000–$3,999 through efficient preventative maintenance. These strategic improvements acknowledge current staffing and budget limitations, harsh winter conditions, and public demand for higher service levels, while prioritizing safety and long-term asset sustainability.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	Roads are passable year-round, except extreme events	% of year with full access	Roads are accessible year-round with minor isolated issues	95–98% year-round access
Reliability	Gravel roads maintain drivability between grading cycles	Avg time between required grading (weeks)	Roads remain functional for 4+ weeks with minor surface issues	≥ 4 weeks
Safety	Roads are maintained to ensure safe travel	# of safety-related incidents or complaints	Safety proactively managed; very few complaints and no recorded incidents	≤ 1 complaint/year
Condition	Road surfaces are in Good condition or better	% of roads rated "Good" (PCI)	Most roads are in fair to good condition; some aging segments	65–79% rated ≥ 3/5
Performance	Roads support all intended users (including emergency access)	% of routes accessible to emergency services	Roads accessible with few limitations; turnaround and clearance sufficient	95–98% accessible
Cost Effectiveness	Average cost per km of road maintenance	$/km for grading, drainage, upkeep	Efficient preventative maintenance reduces long-term costs	$3,000–$3,999/km/year

Life Cycle Activities

Planning

Effective lifecycle management begins with early, data-driven planning. For transportation assets, Elliot Lake will refine its network inventory and condition profiles—incorporating PCI results and visual inspection grades—then establish clear intervention triggers tied to the proposed Levels of Service. Multi-year capital and operating plans will be stress-tested under alternative budget scenarios in DOT (e.g., $600 K/year vs. $800 K/year) to identify the optimal balance of preventive, corrective, and renewal investments needed to meet targets by 2035.

Procurement

Standardized specifications and pre-qualified vendor lists will streamline the purchasing of materials and services. The City will bundle similar treatments (e.g., crack sealing across contiguous segments) into single tenders, use term-contracts for routine supply (asphalt emulsions, aggregate, sealants), and leverage cooperative purchasing agreements with neighboring municipalities to secure competitive unit rates and ensure timely mobilization when seasonal windows open.

Operations

Day-to-day transportation operations keep roads and sidewalks safe, passable, and documented. Crews blend patrols, seasonal programs, and rapid response so work is prioritized to the highest-risk locations.

- **Road Patrol & Inspection:** Routine patrols to log hazards (potholes, debris, icing, signage issues) and trigger maintenance; PCI/defect notes captured for future renewal planning.
- **Winter Control (Oct–Apr):** Plowing, sanding/salting, and post-storm cleanup with route sequencing to maintain emergency access and arterial corridors first.
- **Gravel Road Operations:** Weekly grading to restore crown and drainage; spot re-shaping after rain events; integrate with shoulder work to minimize passes.
- **Pothole & Small-Patch Program:** As-needed cold/hot-mix repairs with traffic control; aim to transition to hot-mix and better compaction for longer-lived patches.
- **Seasonal Dust Control:** Programmed applications on gravel corridors; coordinate with grading and weather windows for best effectiveness.
- **Shoulder Operations:** Seasonal re-establishment of gravel shoulders and drop-off repair to protect pavement edges and improve run-off.
- **Drainage & Ditching:** Seasonal ditch clearing, culvert inlet/outlet cleaning, and spot re-grading to preserve hydraulic capacity and reduce spring damage.
- **Vegetation/Brushing:** Corridor brushing to maintain sightlines and keep ditches/shoulders functional; grouped geographically to optimize crew time.
- **Signs & Markings:** As-needed sign installs/repairs and seasonal remarking to maintain MUTCD/OTM conformity and wayfinding.
- **Sidewalk Operations:** Winter plowing/sanding of priority walks, trip-hazard sweeps, heave/settlement reporting, and rapid response to reported defects.
- **Contract Oversight:** Field QA for outsourced activities (e.g., dust control), ensuring materials, coverage, and timing meet City specs.
- **Emergency Response:** 24/7 call-out for washouts, fallen trees, major potholes, and collision-damaged assets; coordinate traffic control and utility locates.
- **Work-Order & Data Capture:** Every activity logged (location, quantity, crew hours, materials) to support LOS reporting, unit-cost tracking, and DOT scenario inputs.

Operational note: Staff and equipment constraints currently push some tasks toward a reactive, “band-aid” approach. The near-term objective is to stabilize these operations into documented cycles (patrol, grading, ditching, brushing, sidewalk sweeps) and modernize patching methods, reducing emergency work and supporting the proposed levels of service.

Maintenance

The following table summarizes the suite of lifecycle maintenance activities available for Elliot Lake's transportation assets. For each treatment, we indicate the typical condition range in which the intervention is most appropriate ensuring that assets receive the right preservation or renewal action at the right time to maximize service life and control overall costs.

Asset Type	Type of treatment	Treatment	Typical condition range for use
Roads	Routine Maintenance	**Grading** (reshaping gravel road surfaces to restore proper crown and drainage)	Poor – Fair
		New Drainage Maintenance (improving ditches and culverts to enhance water runoff management)	Poor – Fair
		New Dust Control (dust suppressant materials to reduce airborne particles and improve road conditions)	Poor – Fair
		Crack Sealing (filling cracks in asphalt with hot rubberized crack sealer)	Good – Very Good
		Patching (pothole repair and road segment repair/repaving using cold or hot mix asphalt)	Fair – Good
	Minor Rehabilitation	**Re-Gravelling** (placement of new gravel material at different thickness to restore road surface strength and profile)	Poor – Fair
	Major Rehabilitation	**Full Depth Asphalt Removal and Replacement** (removal of all existing asphalt layers followed by installation of new base and asphalt to restore surface integrity)	Poor – Fair
		Gravel Rehabilitation (rebuilding gravel roads by adding new aggregate and restoring base strength)	Poor
	Replacement / Reconstruction	**Full Depth Reconstruction** (complete removal and rebuilding of the pavement structure and base layers to restore full structural capacity)	Very poor – Poor
Sidewalks	Reconstruction	**Full Asset Replacement** (complete decommissioning and replacement of sidewalk with a new sidewalk)	Very poor
Bridges	-	**-**	-

Elliot Lake's lifecycle framework groups each maintenance treatment into a specific condition band to ensure interventions occur at the most cost-effective moment. Preventive actions—such as crack sealing and dust control—are deployed at the first signs of surface distress, halting deterioration and extending asset life before more costly work is required.

When moderate wear becomes evident, corrective repairs like patching and re-gravelling restore functionality and safety without the need for major capital investment. For assets that have progressed further down the deterioration curve, rehabilitative interventions—such as full-depth asphalt overlays or complete gravel rebuilds—are scheduled just before structural failure would occur, preserving the underlying base and avoiding emergency replacements.

Only those segments that have reached or surpassed the end of their designed service life are targeted for full reconstruction, delivering a completely rebuilt pavement or sidewalk section and resetting the condition clock. This hierarchy of treatments ensures that the City applies the least-cost option that still achieves the desired prolongation of service life.

With this structured matrix in place, Elliot Lake can proactively schedule interventions based on real-time condition data (PCI scores for roads or visual grades for sidewalks) rather than reacting to failures. Budget allocations are optimized by selecting the treatment that delivers the greatest extension of life

per dollar spent, and renewal needs can be forecast more accurately over a 10- to 20-year horizon by linking condition-decline curves to treatment triggers. Clear documentation of "when and why" each treatment is applied enhances decision transparency, giving Council and stakeholders full visibility into the asset management process.

Together with comprehensive condition assessments and a robust financial strategy, this lifecycle framework underpins Elliot Lake's shift toward a proactive, risk-based approach—maximizing the return on infrastructure investments while maintaining safe, reliable transportation services for all users.

Disposal

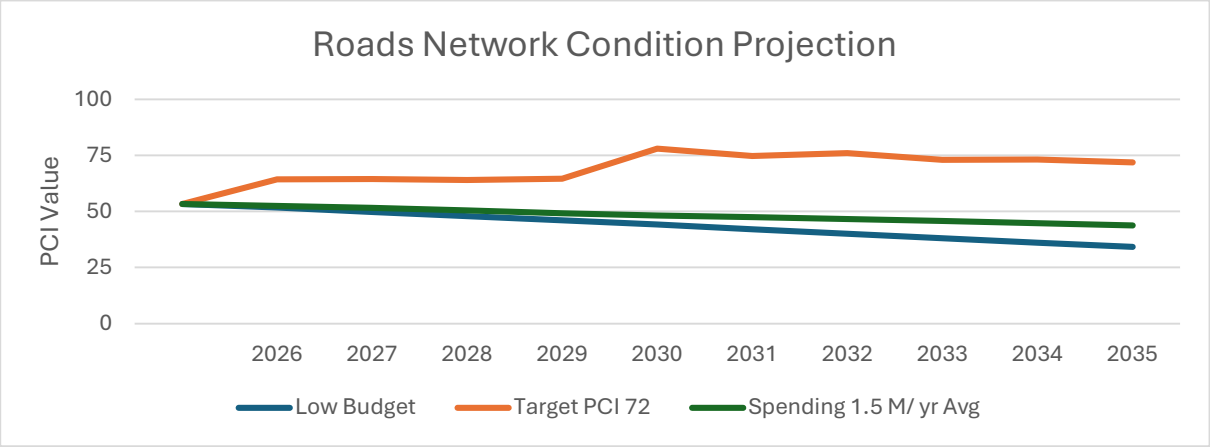
At end of life, full-reconstruction projects include safe disposal of removed materials:

- **Asphalt & Concrete Recycling:** Milling and crushing of pavement for use as base course in new construction.
- **Aggregate Salvage:** Screening and reuse of existing gravel in rural road rebuilds.
- **Environmental Remediation:** Proper disposal of contaminated soils or unknown buried materials uncovered during excavation.

By integrating recycling and salvage into disposal, the City reduces hauling costs and landfill impacts while recovering material value.

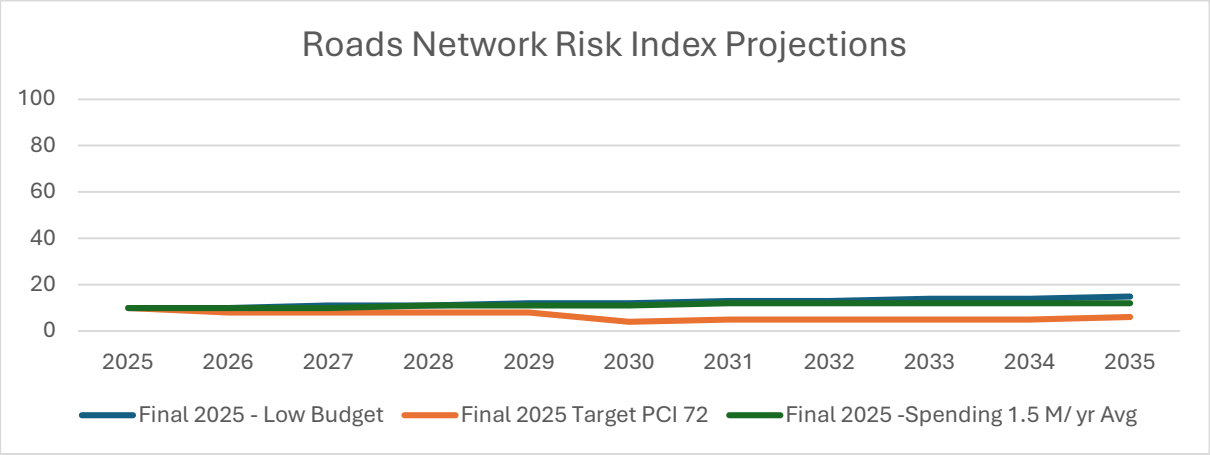
10 Year Projection of Life Cycle

Elliot Lake evaluated three funding approaches for roads and selected the Spending $1.5M/year program. It keeps annual work predictable and deliverable with existing staffing and the local contractor market, while coordinating corridor projects with water/wastewater to avoid reinstatement premiums. The approach trades the very high, early catch-up spend of the Target PCI scenario for a steady program that preserves serviceability and winter performance without overwhelming delivery capacity or the levy.

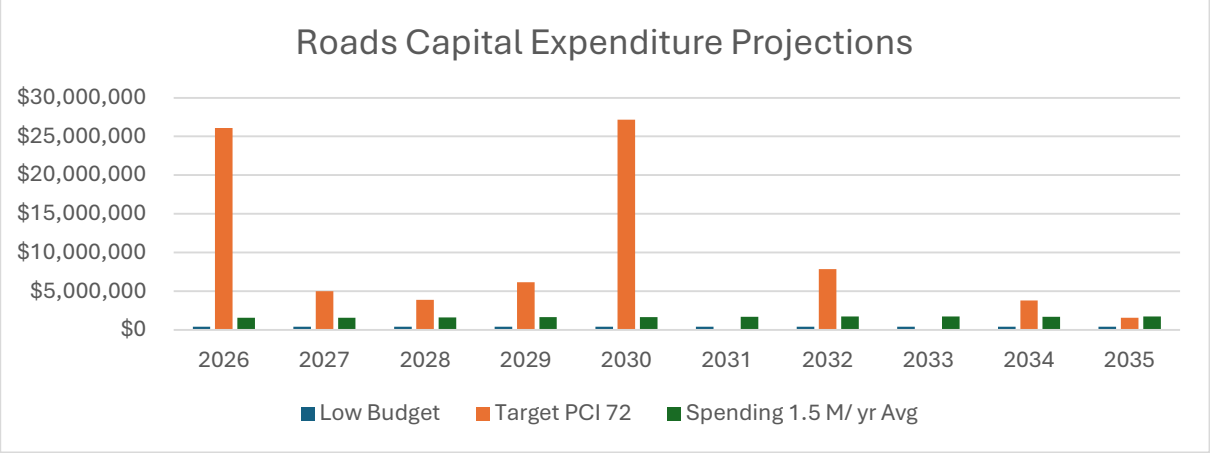


Condition under the selected program follows a controlled glide path: PCI starts near the low-50s and drifts into the mid-40s by the mid-2030s. This is materially better than the Low Budget path, which slides into the 30s by the end of the horizon and would drive widespread poor ride quality and higher

reactive costs. Achieving and holding a PCI near 72 is technically possible, as shown by the Target PCI line, but it requires large, front-loaded capital that is neither affordable nor practical to deliver in the near term.



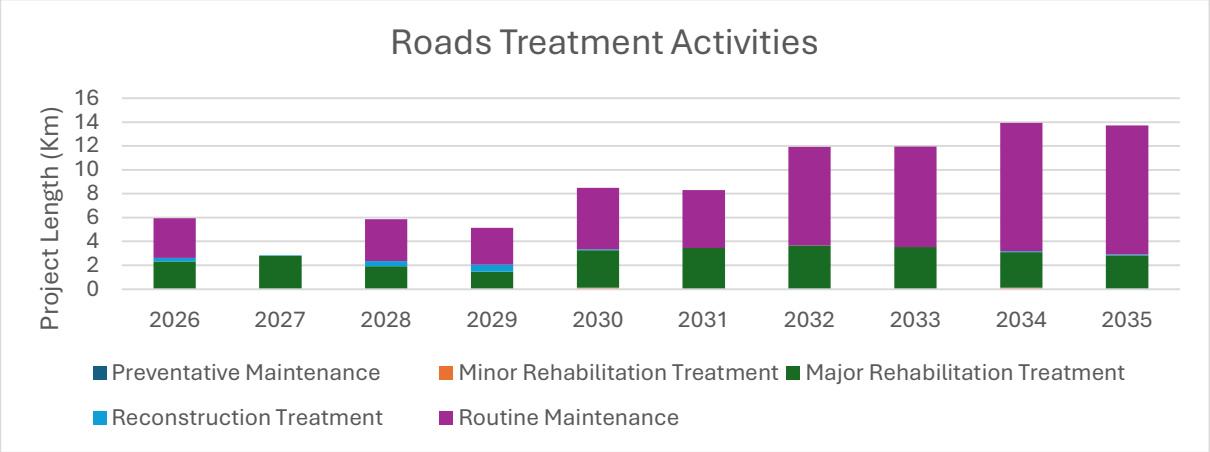
Risk remains manageable with $1.5M/year. The index rises modestly as assets age but tracks close to the Target PCI line by the end of the period, reflecting that steady resurfacing and spot reconstructions address the highest-consequence locations first. The Low Budget program shows a clearer upward trend, indicating more failure-prone segments and greater exposure to reactive maintenance. As condition data tightens and corridor bundling continues, we expect the selected program to hold risk near today's levels while avoiding sudden spikes.

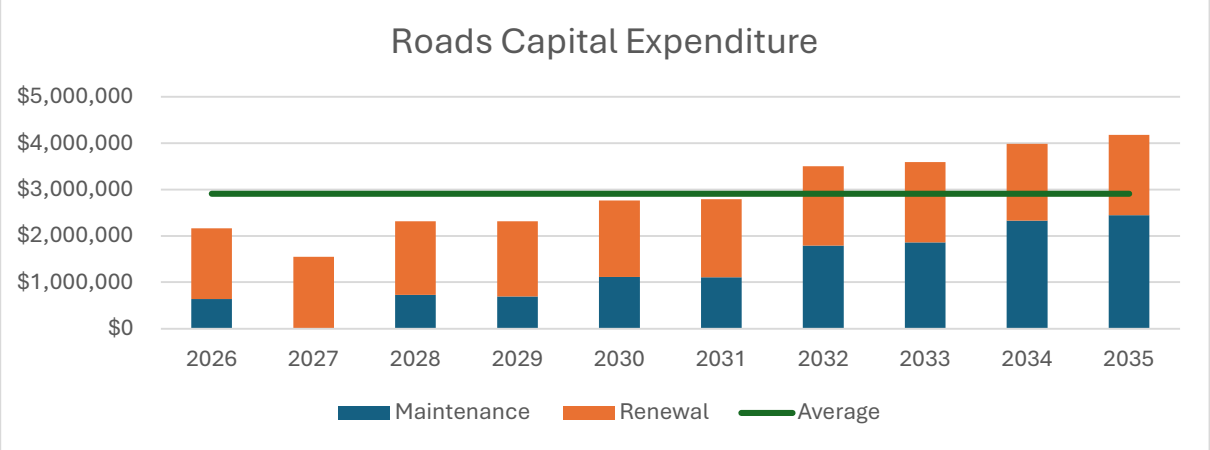


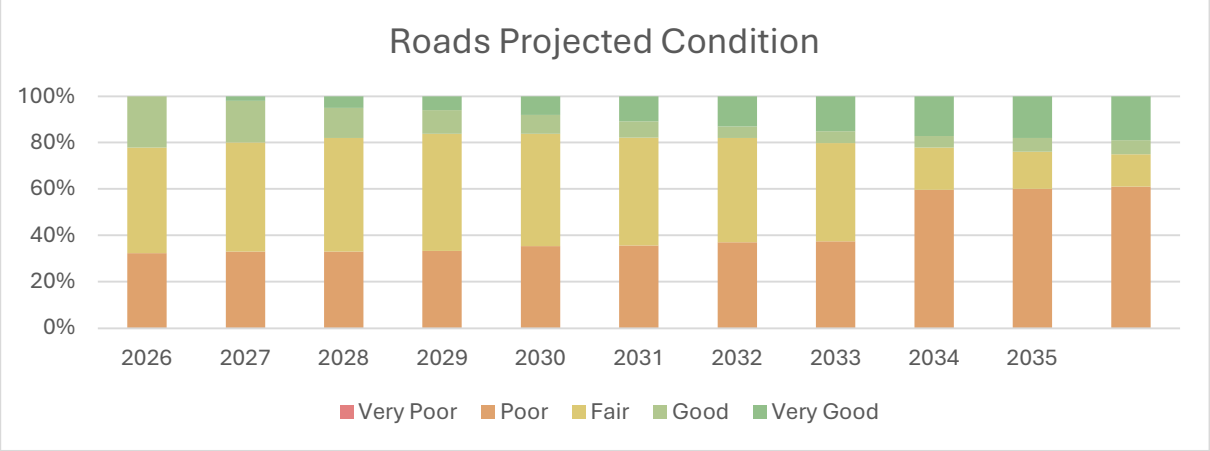
Capital needs to reach PCI 72 create unworkable peaks—well above $25M in the first half of the window and additional multi-million-dollar crests later—far beyond annual capacity and reserve strength. By contrast, the $1.5M/year program smooths spending into a consistent envelope, making it easier to schedule work, lock in unit prices, and coordinate with utility replacements. The program emphasizes timely surface preservation (crack seal, microsurfacing, single-lift overlays) and targeted reconstructions where base or drainage issues drive risk. We'll rerun scenarios as updated financials, PCI/condition data, and cross-asset schedules come in; if grants materialize, priority corridors can be advanced without disrupting the baseline program.

Roads

Below is a summary table of all cost streams—Planning, Procurement, Operations, Maintenance, Renewal and Disposal—for Elliot Lake's transportation assets. Costs are expressed as annual budgets, with a modest 2% inflationary increase applied to project anticipated 2035 figures.

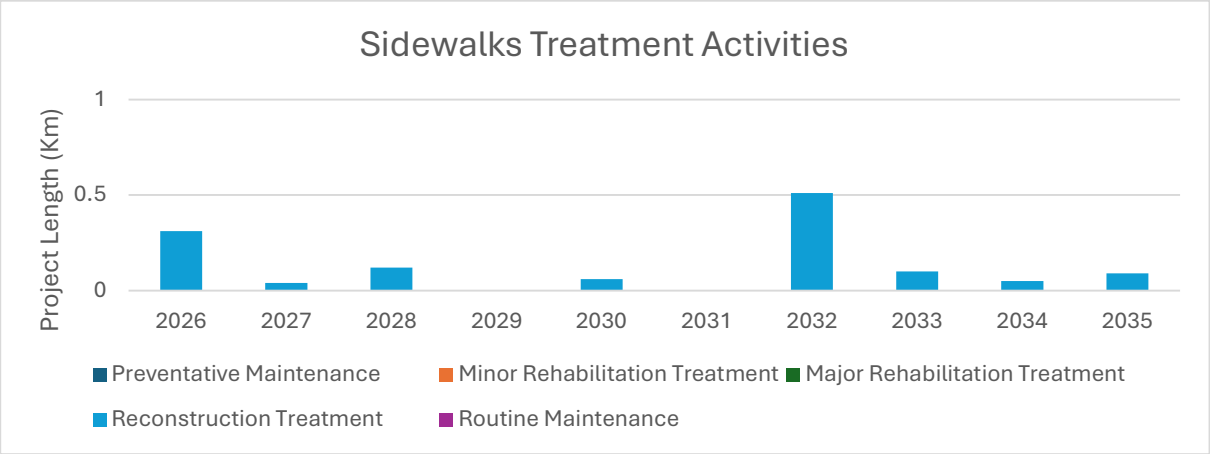




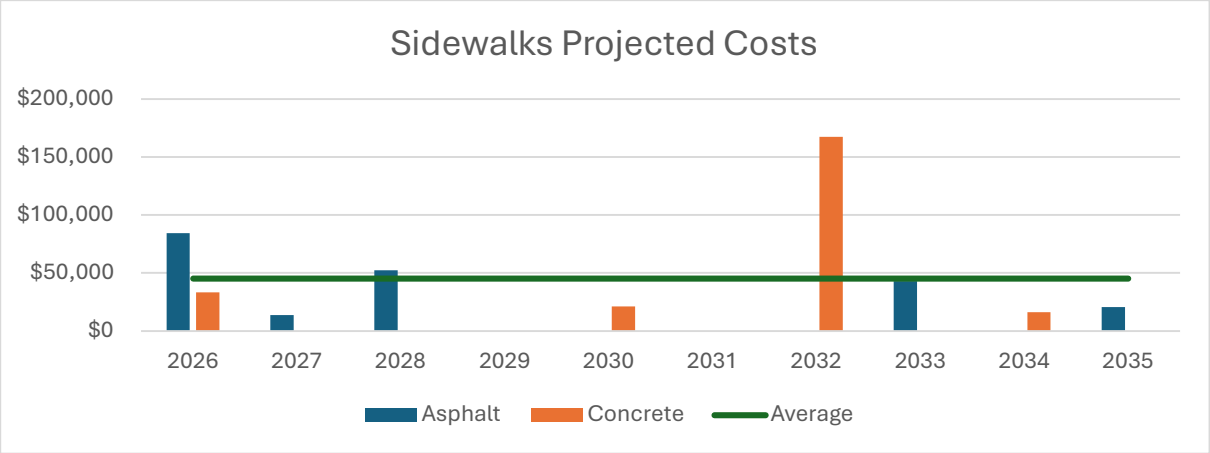


Sidewalks

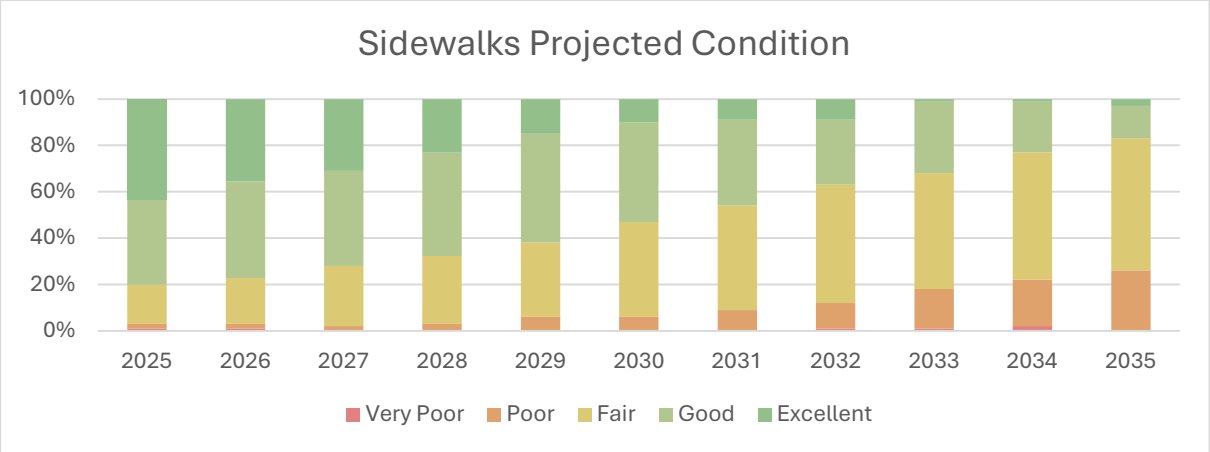
Sidewalks are managed with a “keep-safe, keep-open” philosophy that prioritizes trip-hazard removal, accessibility, and school/downtown connectivity. The ten-year program blends preventative treatments (panel lifting/grinding, joint sealing) with selective panel replacements, timed to coincide with adjacent road work so we minimize disruption and mobilization costs.



The treatment activity profile shows a punctuated pattern of preventative work rather than a steady, uniform program. That’s intentional: bundling short runs by neighbourhood creates efficient, block-by-block mobilizations and ties minor works to larger road projects. Spikes reflect years when whole corridors are tackled end-to-end (e.g., around schools or key pedestrian generators), while lighter years focus on spot hazards and warranty touch-ups.



Projected costs mirror the activity plan. Years with more concrete panel work drive higher spending; quieter years hold the line near the long-run average. This gives Council predictable funding needs across the decade while reserving headroom for urgent safety defects identified by inspections or winter freeze–thaw damage. As specifications and unit rates are refined, this profile will be updated to reflect actual bid results and any accessibility upgrades bundled with the work (ramps, landings, tactile plates).



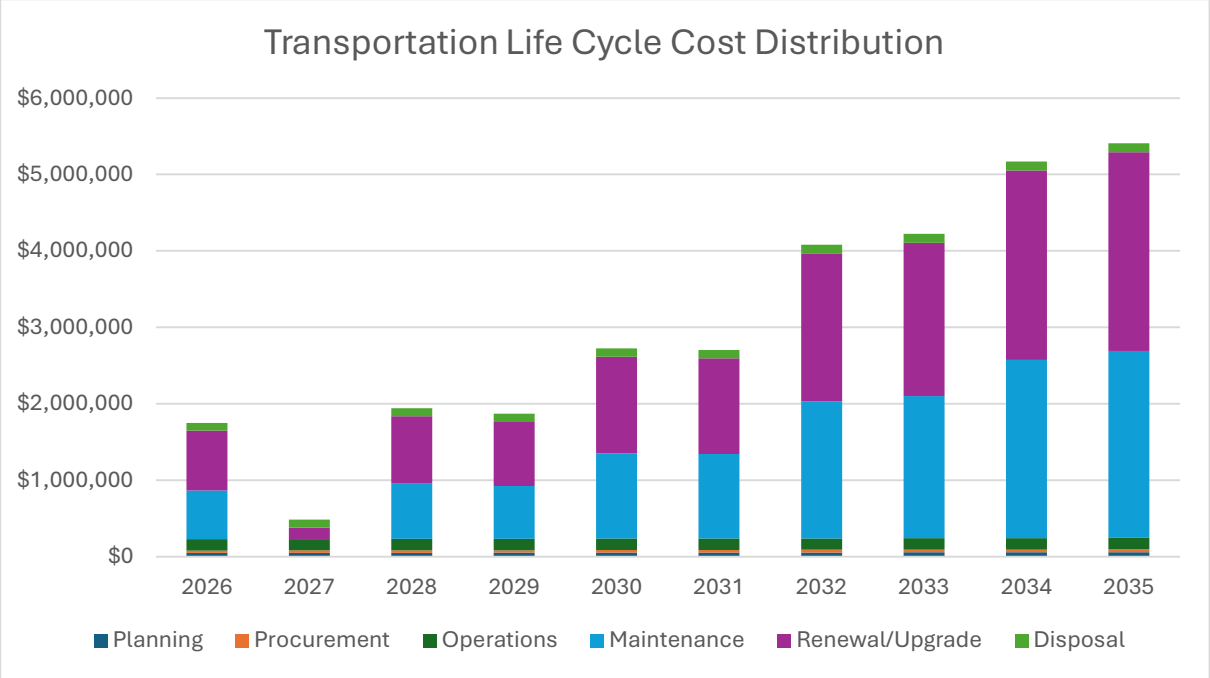
The condition outlook illustrates a gradual shift as older segments move from "Good" toward "Fair" without immediate failure. The preventative program slows, but doesn't eliminate, this aging trend—particularly where original base conditions or tree-root pressures accelerate distress. The plan's emphasis on hazard removal and targeted renewal keeps the network safe and functional while larger replacements are coordinated with road renewals and future funding windows.

Bridges & Culverts

Recent summary inspection information was collected by staff as part of the process to update Elliot Lake's infrastructure/asset data regarding the small bridge and culvert network. This data has helped summarize the general condition of various bridges and culverts inspected in Elliot Lake, under the preliminary but proactive program. The initial inventory has been uploaded to the City asset management system with plans for a more detailed Ontario Structural Inspection Manual (OSIM) method to further refine the inventory with condition indexes, update replacement costs estimates and other key information. This will facilitate long-term financial planning.

Overall based on the current state of data, most bridges and major culverts are in a fair to good state of repair except for the 2 small bridges on the trail along Horne Lake. For these structures an initial maintenance-based short-term action plan has been identified. The inspections also identified several deficiencies ranging from minor maintenance needs (debris removal, crack sealing, rail repair) to structural concerns (abutment undermining, settlement, inadequate hydraulic clearance). Short-term actions could focus on safety measures such as signage, railing repair, and patching of approaches with limited expected costs. Long-term capital improvements should address structural stability, proper bearing support, and raising approaches to provide adequate hydraulic capacity -- will be better quantified as part of the continual improvement process.

Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$ 50,000	$ 61,000	AM program updates, condition surveys, scenario modeling (grows 2%/yr)
Procurement	$ 30,000	$ 36,600	Tender preparation, RFPs, contract administration (grows 2%/yr)
Operations	$ 150,000	$ 183,000	Field data collection, inspections, GIS/CMMS support (grows 2%/yr)
Maintenance	$1,269,000 AVG/YR		Routine upkeep: grading, patching, crack sealing, winter control, signage
Renewal	$1,644,700 AVG/YR		Capital renewals: re-gravelling, overlays, panel replacements, reconstructions
Disposal	$ 100,000	$ 122,000	Material recycling, landfill fees, site remediation for reconstructions (2%/yr)



Key Assumptions & Next Steps

- Annual inflation rate of 2% is applied uniformly across all categories.
- Planning costs cover periodic network-wide studies, condition assessment program development, and AMP revisions.
- Procurement figures assume term contracts and cooperative purchasing agreements to contain growth.
- Operations budgets fund staff time, mobile-GIS subscriptions, and inspection equipment.

- Disposal costs reflect the expected tonnage of millings, soils, and debris from renewals—anchored to renewal volumes and adjusted for disposal-fee escalations.

These estimates will be refined as actual project scopes, unit-rate contracts, and disposal rates become available. In DOT, you can link these annual cost lines to your scenario runs—ensuring that the total lifecycle spend (Planning + Procurement + Maintenance + Renewal + Disposal) aligns with your budget envelopes and meets Levels of Service targets out to 2035.

Risk Management & Climate Change Considerations

Elliot Lake's transportation network is comprised of roads, bridges, culverts, and ancillary drainage, and faces significant risk from aging infrastructure and evolving environmental pressures. All components are considered critical to daily operations and public safety, with failure of any element potentially leading to service disruptions, safety hazards, and substantial financial costs. The predominant risk is surface failure due to pavement aging and subsurface deterioration. Based on staff feedback, these risks are rated High in likelihood over the next 5–10 years and carry High consequences if they materialize, including extended road closures, emergency repair expenses, and elevated liability exposure.

Current mitigation relies on regular visual inspections, routine maintenance (grading, crack sealing, culvert clearing), and scheduled replacement programs. However, financial planning for these activities is challenged by rising unit costs and limited capital reserves—highlighting the need for a more predictive, condition-based approach. To that end, Elliot Lake will transition from age-based estimates to actual condition assessments (leveraging PCI data and visual sidewalk grades) to better inform budgeting and prioritize interventions before failures occur. A formal Failure Modes & Effects Analysis (FMEA) for transportation assets will be completed in a future AMP iteration to identify specific failure triggers and refine mitigation strategies.

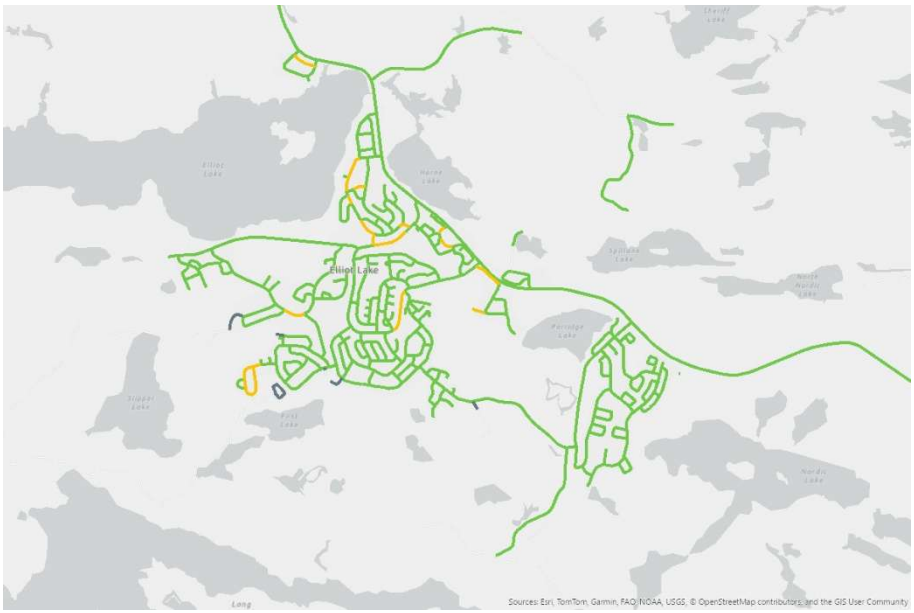
Criticality of Road Surfaces

The criticality map illustrates those sections of our network whose uninterrupted function is most vital to community access, emergency response and economic activity. Green corridors indicate lower-criticality local streets, where service interruptions would have minimal impact. In contrast, the yellow segments identify primary collectors and arterial routes whose closure or failure would significantly disrupt school buses, emergency vehicles and daily commerce. By visualizing criticality alongside our asset inventory, we can ensure that high-importance links receive priority in our preventative maintenance schedules and capital-works programming, safeguarding the backbone of municipal mobility.

Road Criticality Map

Risk of Road Surfaces

The risk map combines each pavement segment's likelihood of deterioration with the potential consequences of failure—accounting both for its current condition and its role within the network. Low-risk streets (green) exhibit both sound surface condition and limited community impact if repairs are delayed. Medium-risk segments (yellow) may show emerging surface distress or serve moderately important routes, warranting accelerated inspection and early-intervention treatments. The isolated blue segment highlights a section where condition has fallen below our acceptable threshold, and where both its functional importance and rapid deterioration demand immediate remediation. Together, these risk ratings guide us toward the most cost-effective repair and rehabilitation strategies and inform budgeting decisions over our ten-year capital plan.



Road Surface Risk Map

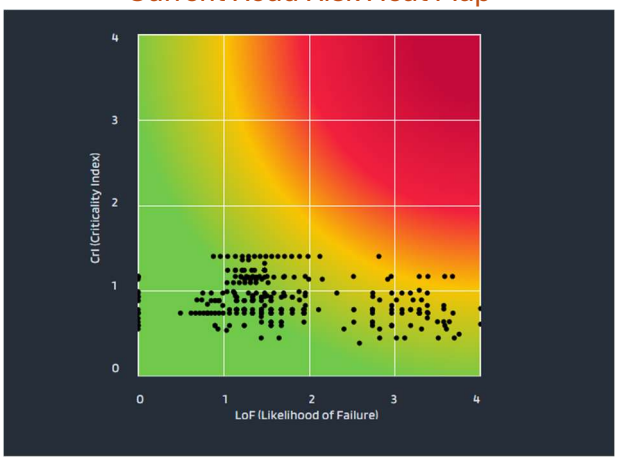
Current Road Risk Matrix

Most segments cluster in the low-to-moderate criticality band, with risk driven far more by *likelihood of failure* (aging surfaces and localized distress) than by consequence. Only a small subset is edging into the orange/red area—typically places where traffic importance and condition issues coincide. In practice, this means today's risk is largely manageable with preventative and light rehabilitation (crack sealing, patch/skim, thin overlays) targeted to the few corridors where condition is sliding fastest.

Projected Road Risk Matrix

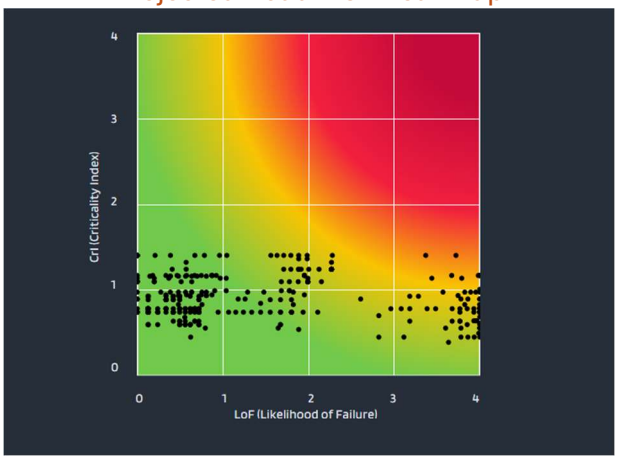
By 2035, the cloud of points drifts right—criticality stays broadly similar, but likelihood increases as pavements age—so more segments fall into the yellow/orange risk envelope. Without steady reinvestment, routine defects become structural and spread. The takeaway is not that roads become "high consequence," but that many more will *need* intervention to avoid crossing into costly reconstruction. The planned program should therefore focus on keeping the most important links out of the orange zone and using PCI-triggered work (seals/overlays) to hold likelihood down across the network.

Current Road Risk Heat Map



Risk Projection 2026

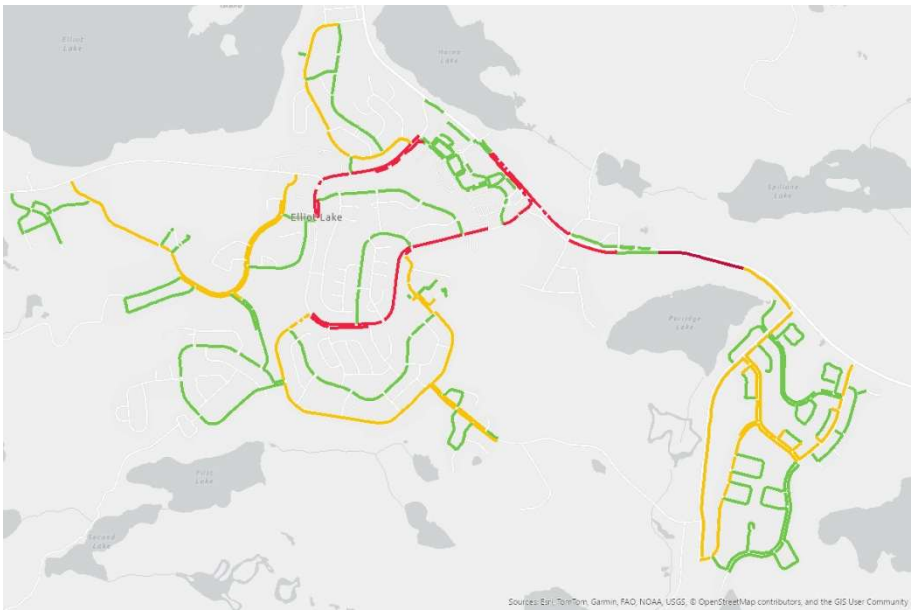
Projected Road Risk Heat Map



Risk Projection 2035

Sidewalk Criticality

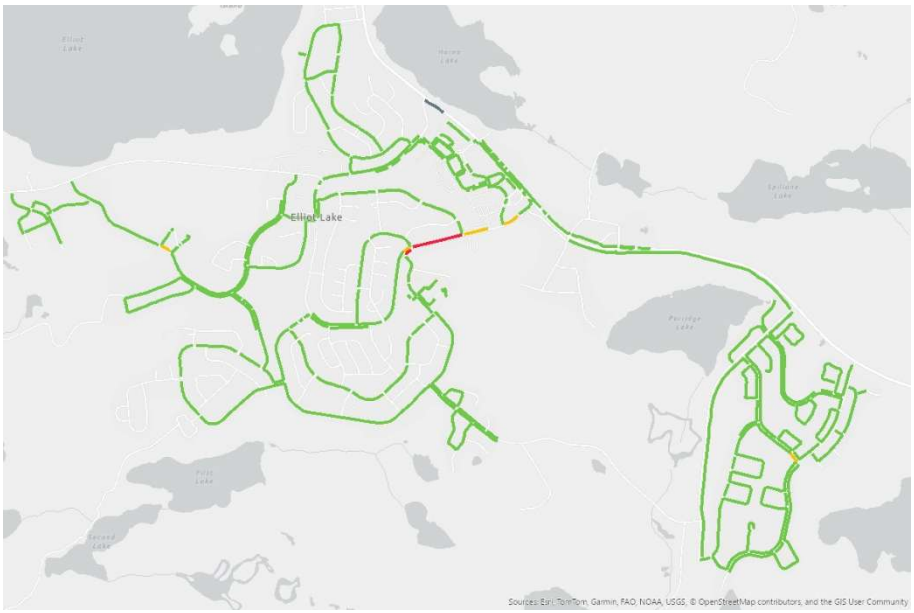
The sidewalk criticality map highlights the sections of our pedestrian network whose continuity is most essential for safe, all-season mobility. Green lines denote low-criticality sidewalks—typically quiet residential paths where a temporary closure or repair would inconvenience few users. Yellow segments identify moderately critical links, such as those connecting neighbourhoods to schools, parks, or local businesses, where detours could impact daily routines. The red sections represent our highest-criticality sidewalks—key corridors that serve as primary pedestrian arteries for commuting, school crossings, and access to transit stops. Prioritizing maintenance on these red-coded sidewalks ensures we maintain safe, direct routes for the largest number of pedestrians, including children, seniors, and those with mobility challenges.



Sidewalk Criticality Map

Risk of Sidewalk Surfaces

The risk map for sidewalks combines each segment's remaining service life with its functional importance, guiding us toward the most urgent remediation needs. Green segments reflect sidewalks in sound condition whose failure would pose minimal safety or access concerns. Yellow sections show moderate risk—either due to early surface deterioration (cracking, heaving) or their role in moderately trafficked pedestrian routes—suggesting these areas should be scheduled for inspection and preventive repairs. The single red segment indicates a high-risk sidewalk where surface distress has advanced past acceptable thresholds on a critical route, demanding expedited rehabilitation. The small blue highlight marks a segment with immediate safety hazards (e.g., large trip-or-fall defects) and should be addressed as soon as possible. By aligning risk with criticality, we can allocate our limited resources to the treatments that maximize network safety and reliability over the planning horizon.



Sidewalk Risk Map

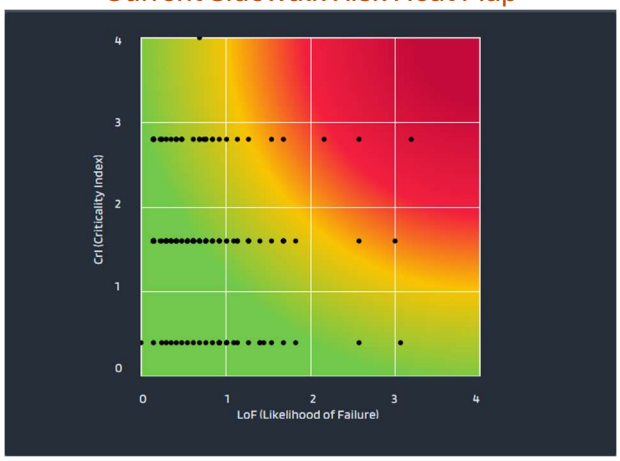
Current Sidewalk Risk Matrix

The current risk matrix shows that the majority of sidewalk segments cluster in the low-risk (green) zone—exhibiting both low likelihood of failure (LoF ≤ 1) and low criticality (Cri ≤ 1). A smaller subset of legs falls into moderate risk (yellow/orange) where wear and traffic volumes elevate failure probability or user impact. Only a handful of high-criticality segments (Cri ≥ 3) paired with moderate LoF approach the red zone, signaling priorities for near-term inspection and targeted repairs.

Projected Sidewalk Risk Matrix

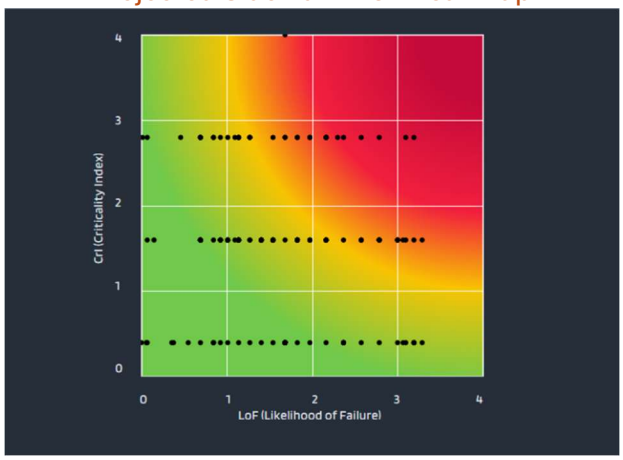
By 2035, aging and budget-constrained maintenance yield a noticeable rightward shift in LoF: more sidewalk sections enter the moderate-to-high likelihood bands (LoF ≥ 2), particularly those with high pedestrian use (Cri ≥ 2). The dispersion into the red zone increases—highlighting critical corridors that will benefit from early rehabilitation or full reconstruction. This projection underscores the need to integrate preventive treatments and condition assessments to curb risk escalation before reaching critical failure.

Current Sidewalk Risk Heat Map



Risk Projection – 2026

Projected Sidewalk Risk Heat Map



Risk Projection – 2035

Climate Change Impacts

Climate change is accelerating wear on Elliot Lake's roads through more frequent freeze-thaw cycles in winter and heavier summer rain events. These conditions exacerbate cracking, rutting, and potholing, driving up maintenance and repair costs. While extreme flood events remain uncommon, increased storm intensity poses localized flooding risks where drainage capacity is marginal. Staff anticipate **higher maintenance demands** and are already observing accelerated pavement distress in areas with poor runoff management.

Adaptation Strategies

To bolster resilience, Elliot Lake will:

- **Optimize Drainage Infrastructure:** Prioritize enhancements to ditches and culverts in flood-prone corridors to rapidly convey stormwater and reduce pavement saturation.
- **Adjust Maintenance Schedules:** Increase the frequency of crack sealing and surface

treatments ahead of winter to limit water infiltration, and schedule microsurfacing and similar treatments earlier in spring to protect against summer rains.

- **Strengthen Pavement Mix Designs:** Pilot modified asphalt binders with improved low-temperature flexibility and higher binder content to resist thermal cracking under freeze-thaw stresses.
- **Enhance Monitoring:** Expand the use of in-field sensors or periodic geotechnical inspections at key culvert crossings to detect early signs of erosion or undermining.

By integrating these risk- and climate-informed measures—alongside forthcoming FMEA insights—Elliot Lake will move toward a proactive, data-driven lifecycle management strategy that protects its transportation assets against both chronic deterioration and emerging environmental challenges.

4. Potable Water

Inventory

Elliot Lake's potable water system consists of an intricate network of roughly 69.3 km of water mains ranging from legacy cast-iron to modern PVC piping, supplemented by over 29.6 km of smaller service lines connecting individual properties. This network is fed by a treatment plant commissioned in 1982, with critical control assets (227 valves), emergency access points (443 hydrants), and storage facilities (two standpipes and one ground-level reservoir) ensuring reliable delivery and system resilience under varying demand and pressure conditions.

The inventory below details the material types, quantities, installation periods, and functional notes for each potable water asset class. Understanding the composition and age distribution of these facilities is essential for targeting maintenance, prioritizing replacements, and forecasting lifecycle costs.

Asset Type	Quantity	Length	Year Range	Notes
Water Main – Cast Iron	107	16.1 km	1958-1984	Older iron pipes for primary water distribution
Water Main - Concrete	19	2.9 km	1958-1978	Reinforced concrete pipes, used for large-diameter mains
Water Main – Ductile Iron	10	2.7 km	1980-1982	Flexible iron pipes, corrosion-resistant, common mains material
Water Main – Plastic	1	0.3 km	1977	Polyethylene pipes for corrosion-resistant water conveyance
Water Main – PVC	264	47.3 km	1977-2020	Polyvinyl chloride pipes, lightweight, smooth interior flow
Water Main – Unknown	52	5.3 km	1958-2007	Unclassified main pipes awaiting material confirmation
Water Service Line – Cast Iron	44	390 m	1983	Iron pipes connecting mains to property meters
Water Service Line – Ductile Iron	287	2,591.4 m	1977-2009	Durable iron service pipes with better flexibility
Water Service Line – PVC	2593	23,376.1m	1977-2012	Plastic service lines, corrosion-resistant, easy to install

Water Service Line – Unknown	345	3,206.1m	Unknown	Unclassified service pipes awaiting material confirmation
Water Treatment Plant Assets	39	--	1982-2020	Treatment tanks, filters, and pumping equipment
Water Valves	227	--	1958-2016	Control flow and isolate sections of water network
Hydrants	443	--	1952-2005	Fire suppression and emergency water access points
Water Tower	2	--	1958-1978	Elevated storage providing system pressure and reserve
Water Reservoirs	1	--	1982	Ground-level tanks for bulk water storage

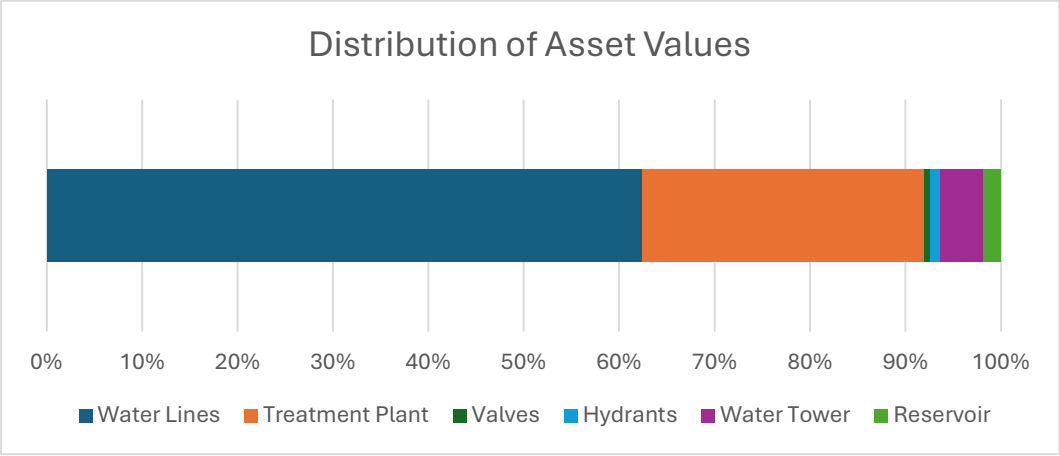
Valuation

Below is the detailed replacement-cost valuation for Elliot Lake's potable water assets, followed by a visual breakdown of each category's share of the total.

Replacement Cost Summary

The total current replacement value of the potable water system is **$114,282,879**, distributed across six major asset groups. Water mains represent the largest investment, accounting for over 60% of the total, followed by the treatment plant. Smaller—but still critical—assets like valves, hydrants, the water tower, and reservoirs comprise the remainder.

Asset Type	Current Replacement Costs
Water Lines	$71,350,706
Water Treatment Plant	$33,796,718
Water Valves	$655,904
Hydrants	$1,281,043
Water Tower	$5,050,668
Water Reservoirs	$2,147,840
Total Value	**$114,282,879**



As shown in the chart above, the majority of the potable water replacement cost is tied up in linear infrastructure (water mains) and the treatment facility. Valves, hydrants, towers, and reservoirs—while lower in individual value—are essential for system control, emergency response, and storage.

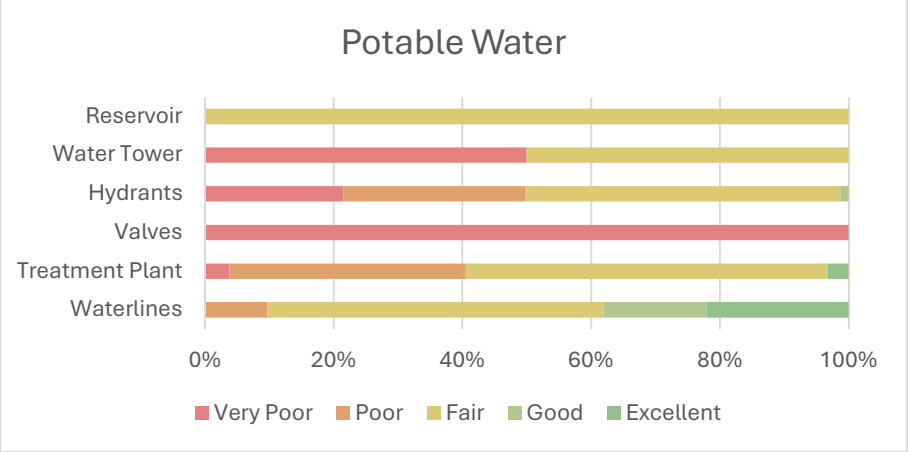
This valuation underpins our financial strategy by:

1. **Guiding Reserve Targets:** Ensuring that reserve contributions align with the anticipated renewal costs for each asset class.
2. **Prioritizing Investments:** Focusing capital budgets on the highest-value and most critical components to maintain service continuity.
3. **Forecasting Cash Flow Needs:** Mapping out a multi-year capital plan that smooths large expenditures (e.g., treatment plant upgrades) against more frequent, smaller replacements (e.g., hydrant renewals).

In future AMP updates we will refine these figures with updated unit costs, integrate lifecycle cost modeling, and align the replacement schedules with condition assessments to ensure funding adequacy over the coming decades.

Condition

The chart above presents the condition profile of Elliot Lake's potable water assets, categorized into five bands—Very Poor, Poor, Fair, Good, and Excellent—based on recent field inspections, SCADA performance data, and maintenance records. Linear assets (waterlines) display a broad spread from Poor through Good, reflecting sections that range from nearing end-of-life to recently rehabilitated. The treatment plant exhibits mostly Fair and Good condition, with isolated components approaching Poor due to age. Valves, which saw no Good or Excellent ratings, cluster heavily in the Very Poor and Poor bands, indicating urgent replacement needs. Hydrants and the water tower are predominantly Fair, while the reservoir had no provided condition information.

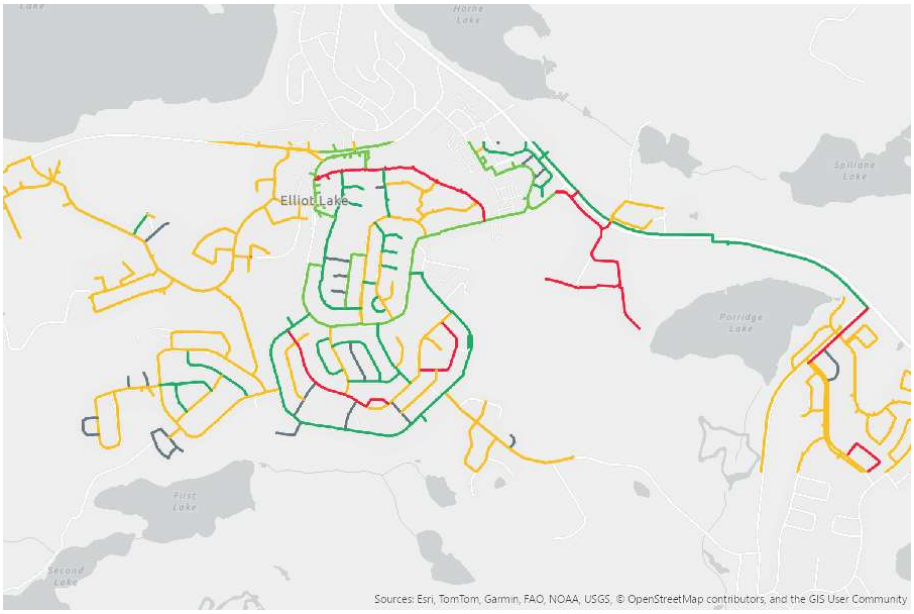


These condition insights guide our lifecycle approach by:

- **Targeting Immediate Repairs** on Very Poor valves to restore system control and minimize leak risk.

- **Scheduling Rehabilitations** for waterline segments in the Poor band through localized relining or spot repairs.
- **Planning Mid-Cycle Treatments** (e.g., pressure zone flushing, valve maintenance) for Fair-rated hydraulics to defer major renewals.
- **Maintaining Good- and Excellent-rated assets** with routine inspections and preventive maintenance to preserve their condition.

By aligning intervention types to each asset's condition band, Elliot Lake can optimize capital and operating expenditures—ensuring that budgeted funding addresses the most critical needs first while extending the service life of well-performing infrastructure.



Water Main Condition Map

Because only the water mains currently have georeferenced condition data, the Condition section is limited to the Water Main Condition Map. At this time, we lack the spatial and condition inputs needed to produce similar visualizations for treatment plants, valves, hydrants, the water tower, or reservoirs. As field inspections, SCADA diagnostics, and GPS-enabled condition surveys are completed for these assets, their location and performance data will be added to DOT—and the AMP will be updated with corresponding maps to provide a comprehensive, system-wide condition assessment.

Levels of Service

Current Levels of Service

As part of the City of Elliot Lake's compliance with Ontario Regulation 588/17, the potable water system has been evaluated based on key characteristics that align with both community levels of service and technical metrics. This evaluation is critical in ensuring that safe, reliable, and accessible drinking water is available to all residents while guiding future planning, budgeting, and risk mitigation strategies.

The potable water system is an essential service that directly impacts public health and quality of life. Elliot Lake's water treatment plant is currently in good condition, and the system meets regulatory standards. However, aging components within the distribution network are a growing concern due to the potential costs associated with their maintenance and replacement. This section outlines the current levels of service using measurable indicators related to accessibility, reliability, safety, condition, performance, and cost effectiveness. These metrics provide a clear view of how the system is functioning today and inform the City's strategy for maintaining or improving service levels in the future, with a strong focus on regulatory compliance, sustainability, and value for money.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	Customers have access to potable water 24/7	% of time service is available	Mostly continuous service with a few brief disruptions/year	95–97% availability
Reliability	Water system functions without frequent disruptions	# of unplanned service outages/year	High system reliability: outages are rare and resolved quickly	≤ 1 outage/year
Safety	Drinking water meets all regulatory safety standards	# of boil water advisories or violations	System meets all health standards with no exceedances	100% compliance
Condition	Water mains and infrastructure are in good condition	% of pipe network rated "Good" or better	System is aging but most assets are in fair or better condition	70–84% rated ≥ 3/5
Performance	Water system can meet normal and peak demands	Flow rate vs. peak demand	System meets peak and emergency flow needs with reserve capacity	95–99% of required flow
Cost Effectiveness	Cost to deliver water per connection	$/connection/year	Moderate cost but reactive repairs drive expenses	$750–$900/connection/year

Proposed Levels of Service

Water is essential to life, and in Elliot Lake, providing safe, clean, and reliable drinking water to every household and business is a top priority. Our community's water system is designed to be available around the clock, ensuring that residents can always count on access to potable water, except for rare, brief interruptions. We are committed to meeting all health and safety standards so that the water flowing from every tap is safe to drink. Although some parts of the system are aging, ongoing care and maintenance ensure the infrastructure remains dependable and capable of meeting the needs of the community, even during times of high demand. The City continues to focus on improving the water system's performance and managing costs responsibly, so that quality water service remains accessible and affordable for everyone. Protecting public health and the environment through sustainable water management is at the heart of our approach, reflecting the community's values and commitment to a healthy future.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	Customers have access to potable water 24/7	% of time service is available	Mostly continuous service with a few brief disruptions per year	95–97% availability
Reliability	Water system functions without frequent service disruptions	# of unplanned service outages/year	High system reliability; outages are rare and resolved quickly	≤ 1 outage/year
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Life Cycle Activities

Elliot Lake's asset management framework for potable water spans the full spectrum—from strategic planning through final disposal—to ensure infrastructure reliability, regulatory compliance, and cost-effective service delivery. By sequencing activities into six phases (Planning, Procurement, Operations, Maintenance, Renewal, and Disposal), the City can apply the right resources at the right time, extend asset life, and forecast long-term capital needs with confidence.

In the Planning phase, network data, demand forecasts, and Levels of Service inform scenario modeling to set intervention triggers and budget envelopes out to 2035. Procurement then translates these plans into standardized contracts and supplier agreements, securing competitive rates and reliable delivery of materials and services. Through Operations, daily monitoring, flushing, exercising, and condition assessments keep the system running and generate the data needed to prioritize work. The Maintenance tier—documented in DOT—focuses on preserving assets in poor-to-fair condition with routine servicing and minor rehabilitation. When assets degrade beyond maintenance's reach, Renewal activities (from targeted component upgrades to full replacements) restore functionality. Finally, Disposal practices ensure removed materials—pipe, valves, concrete, and metal—are recycled or managed responsibly, closing the loop on the asset lifecycle and minimizing environmental impact.

This comprehensive lifecycle approach underpins a shift from reactive repairs to proactive stewardship, enabling Elliot Lake to maintain high service levels, control lifecycle costs, and adapt dynamically to changing network needs.

Planning

Potable water lifecycle management begins with strategic network planning. Elliot Lake will refine its asset inventory—capturing up-to-date pipe material, age, and condition data—and establish clear intervention triggers tied to the proposed Levels of Service. Scenario modeling in DOT (e.g., varying annual budgets, proactive replacement vs. reactive repairs) will identify the most cost-effective mix of treatments needed to maintain 70–84% of the network at "Good" condition by 2035. Long-range flow

and demand forecasts will also guide capital projects, ensuring treatment plant, tower, and reservoir capacity aligns with projected population and peak-use scenarios.

Procurement

To deliver reliable water service, the City will standardize specifications for replacement pipes, valves, hydrants, and treatment equipment. Term supply contracts for common components (e.g., ductile-iron pipe, PVC service lines, valve assemblies) and pre-qualified vendor lists for specialized work (e.g., reservoir steel repairs, treatment plant retrofits) will streamline purchasing. Bulk ordering and cooperative purchasing agreements with nearby municipalities will secure competitive unit rates and minimize lead times for critical parts and services.

Operations

Daily operations ensure continuous water delivery, quality, and network reliability. Key activities include:

- **SCADA Monitoring & Control:** Real-time telemetry of flow, pressure, and treatment parameters to detect anomalies.
- **Pump Station & Tower Management:** Scheduled pumping sequences and level adjustments to balance distribution zones and maintain pressure reserves.
- **Water Quality Sampling:** Routine bacteriological and chemical tests at the plant, towers, and strategic distribution points, supporting regulatory compliance.
- **Water Main Flushing:** Scheduled seasonal flushing to remove sediment buildup and preserve pipe hydraulics.
- **Hydrant Exercising:** Regular cycling of hydrants to verify operability, clear obstructions, and prevent valve seizing.
- **Valve Exercising:** Periodic operation of isolation and pressure-control valves to maintain functionality and mitigate corrosion.
- **Condition Assessments:** Systematic visual inspections and instrumented surveys of mains, service lines, and appurtenances to inform maintenance and renewal priorities.
- **Emergency Response:** Rapid mobilization of crews for main breaks, valve failures, and hydrant damage to restore service with minimal downtime.

Maintenance

This table summarizes the formal maintenance treatments currently configured in DOT for potable water. At this stage, only the water treatment plants have defined routine and minor-rehabilitation activities (regular servicing of process equipment and targeted component upgrades). For the linear network and appurtenances—waterlines, valves, hydrants, standpipes, and the reservoir—ongoing tasks such as system flushing, hydrant and valve exercising, and inspections are managed under the Operations program rather than as capital-maintenance treatments, which is why those rows are blank here. In practice, some buried assets (especially underground isolation valves) have little to no mid-cycle maintenance beyond exercising; they are typically run-to-renewal or repaired case-by-case. As

Elliot Lake expands condition data and unit costs, we will consider adding cost-effective maintenance treatments (e.g., hydrant rebuild kits, small-diameter clamp repairs, cathodic protection/anode retrofits) so that more assets can be preserved before full replacement is required.

Asset Type	Type of Treatment	Treatment	Typical Condition Range for Use
Waterlines	-	-	-
Water Treatment Plants	Routine Maintenance	**Maintenance** (Inspect, clean, and service treatment equipment and piping)	Poor – Fair
	Minor Rehabilitation	**Rehabilitation** (Upgrade or replace deteriorated plant components and process systems)	Poor – Fair
Water Valves	-	-	-
Water Hydrants	-	-	-
Water Towers	-	-	-
Water Reservoir	-	-	-

With this structured lifecycle matrix in place, Elliot Lake can:

- **Prevent Failure-Driven Costs:** By reserving full replacements for assets in Poor condition, we avoid emergency repairs and unplanned shutdowns.
- **Prioritize Budgeting:** Focus capital funds on high-impact replacements while maintaining routinely serviced components.
- **Forecast Renewal Cycles:** Link condition assessments to specific treatment triggers, enabling accurate 10–20-year capital planning.
- **Enhance Reliability:** Ensure critical system components—like treatment plant units and storage facilities—receive timely interventions to uphold water quality and pressure standards.

This lifecycle framework, when integrated with real-time condition monitoring and the financial strategy, empowers the City to move from reactive repairs to a proactive, risk-based asset management approach—securing continuous, cost-effective potable water service for the community.

Renewal

The table below outlines the hierarchy of Capital lifecycle activities for Elliot Lake's potable water assets. Each treatment is mapped to the specific asset type and the condition band in which it is most effective, ensuring that interventions—whether minor servicing or full replacement—are applied at the optimal time to maximize service life and minimize total cost of ownership.

Asset Type	Type of treatment	Treatment	Typical condition range for use
Waterlines	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire water main segment)	Poor
Water Treatment Plants	Replacement / Reconstruction	**Full Asset Replacement** (Demolish and build new water treatment facility)	Poor
Water Valves	Replacement / Reconstruction	**Full Asset Replacement** (Remove and install new isolation and control valves)	Poor
Water Hydrants	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace complete hydrant assembly and valve)	Poor
Water Towers	Replacement / Reconstruction	**Full Asset Replacement** (Demolish and construct a new elevated storage tower)	Poor
Water Reservoir	Replacement / Reconstruction	**Full Asset Replacement** (Drain, replace, and reconstruct ground-level storage reservoir)	Poor

When potable water assets move beyond the effectiveness of routine and corrective maintenance, structured Capital Renewal and Upgrade activities restore system reliability and compliance:

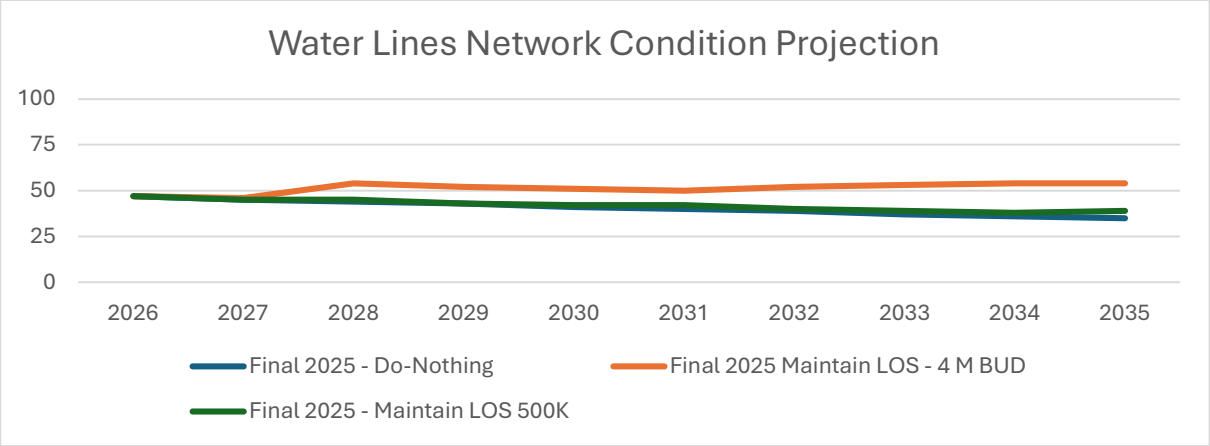
- **Water Main Replacement:** Complete excavation and replacement of aged or failing main segments to reestablish flow capacity and prevent leaks.
- **Valve & Hydrant Renewal:** Full removal and installation of new isolation and fire-service assemblies to guarantee operational reliability.
- **Treatment Plant Component Upgrades:** Targeted replacement of pumps, motors, and filtration units on Fair-condition equipment to extend service life without full facility rebuild.
- **Plant Reconstruction:** Demolition and construction of a new treatment facility when aging process systems can no longer meet regulatory or demand requirements.
- **Storage Asset Refurbishment:** Structural rehabilitation or full reconstruction of water towers and ground reservoirs to secure storage integrity and long-term pressure management.

These renewal interventions are triggered as assets enter the “Poor” or lower end of the “Fair” condition band—ensuring capital funds are directed toward assets on the verge of critical failure, and maximizing lifecycle value through timely upgrades.

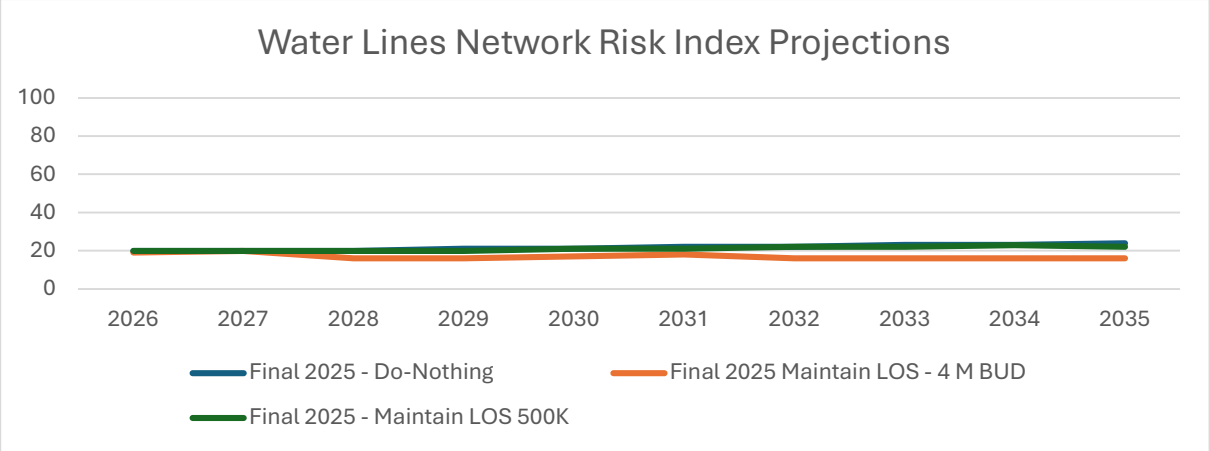
10 Year Projection of Life Cycle

Water Lines Scenario Selection

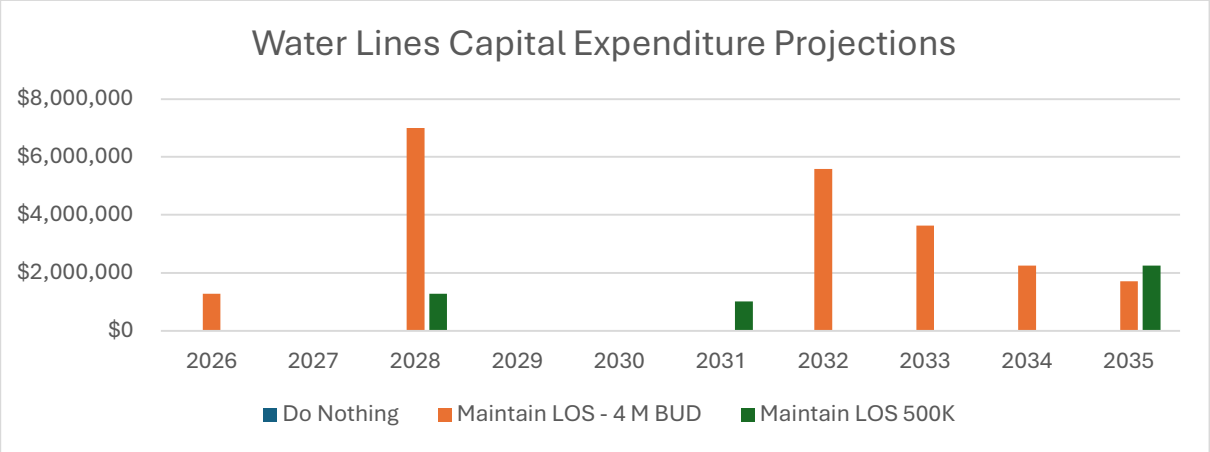
Elliot Lake evaluated three funding paths for the distribution network: *Do-Nothing*, *Maintain LOS – 500K*, and *Maintain LOS – $4M*. The first quickly erodes condition and increases long-term risk; the last would lift condition toward target sooner, but at a capital level that isn’t realistic for a small system that is already oversized for current demand. The middle path—*Maintain LOS – 500K*—keeps the network on a stable trajectory while we strengthen operations and build a defensible renewal queue.



From a risk perspective, the $4M program produces only a modest reduction relative to the 500K program because many mains are still serviceable and risk is driven more by data gaps (age/condition uncertainty, limited failure history) than imminent structural failure. Investing in better inspections, leak detection, and valve exercising narrows that uncertainty and supports smarter, surgical replacements.



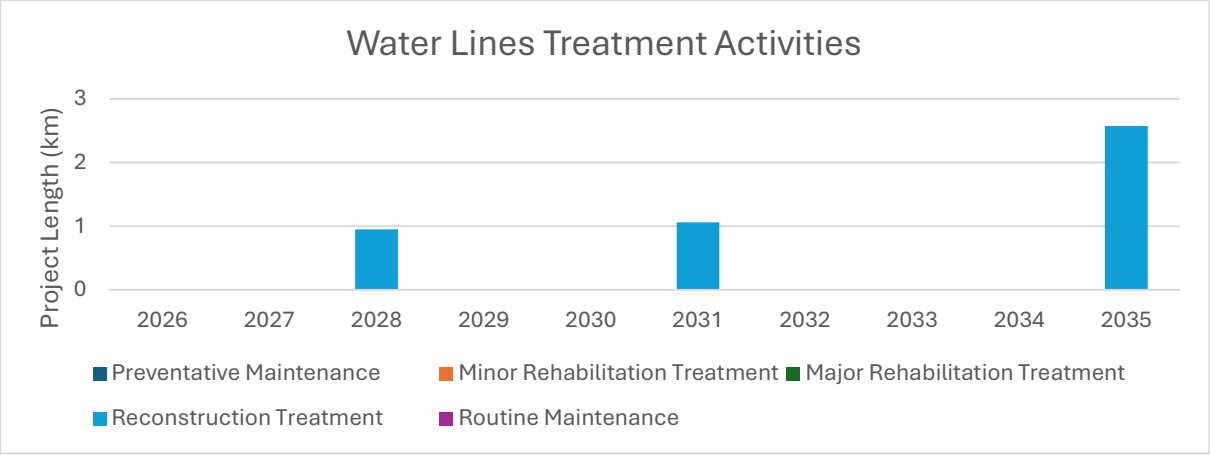
Affordability is the differentiator. The $4M option introduces large, episodic spikes that would crowd out other priorities; the 500K plan smooths spend, matches available funding, and is easier to coordinate with road programs and utility dig windows.



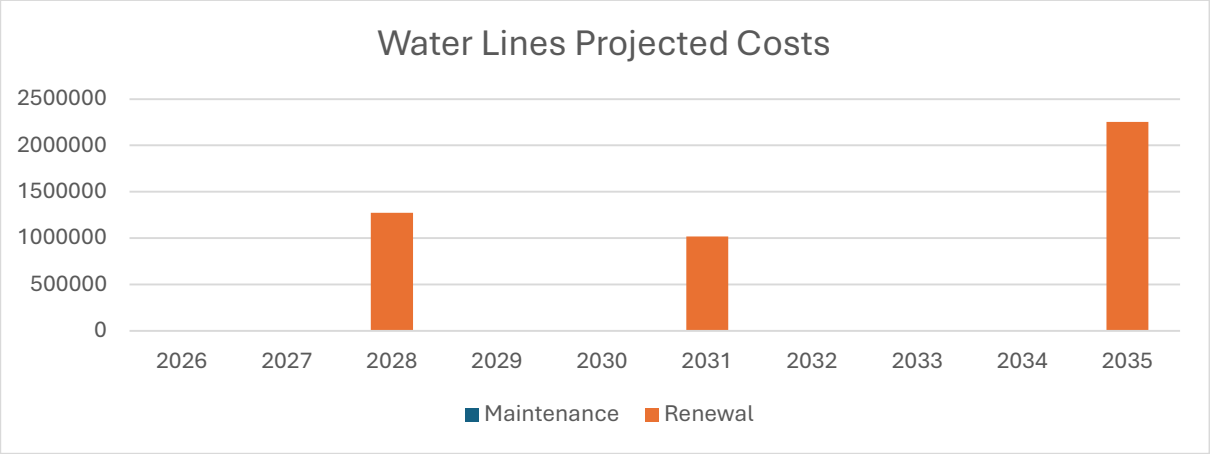
The selected *Maintain LOS – 500K* scenario is implemented through the accompanying capital plan (Maintain LOS 500K). It prioritizes short, high-return renewals on mains with poor material performance or chronic maintenance demand, sequences work to align with planned road projects and preserves capacity for emergent failures. As field condition data improves, DOT will be updated, and the plan will be re-optimized in the next AMP cycle—maintaining cost-effectiveness while protecting service reliability.

Water Lines Projection Activities

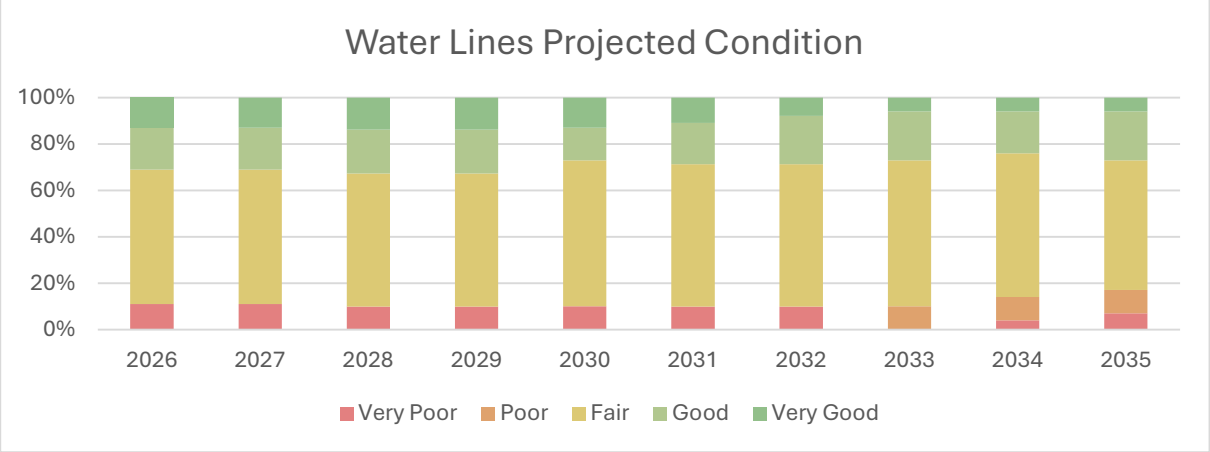
Under the Maintain LOS – $500K scenario, the program focuses on a steady cadence of full-segment replacements where break history and age converge, supplemented by bundled service-lateral work. The capital plan concentrates effort on a few larger corridor projects, followed by a cluster in 2035, with additional GS-Water Lateral renewals packaged alongside each street job. This timing balances need with affordability and leaves room to coordinate with road and wastewater work to avoid dig-once conflicts.



The treatment profile shows discreet years of replacement activity rather than continuous annual work. That “pulse” approach is deliberate: it allows the City to assemble multi-utility, multi-block projects so trenching, services, valves, and restoration are completed in one mobilization. Packaging the renewals as single contracts also improve unit pricing and construction efficiency.



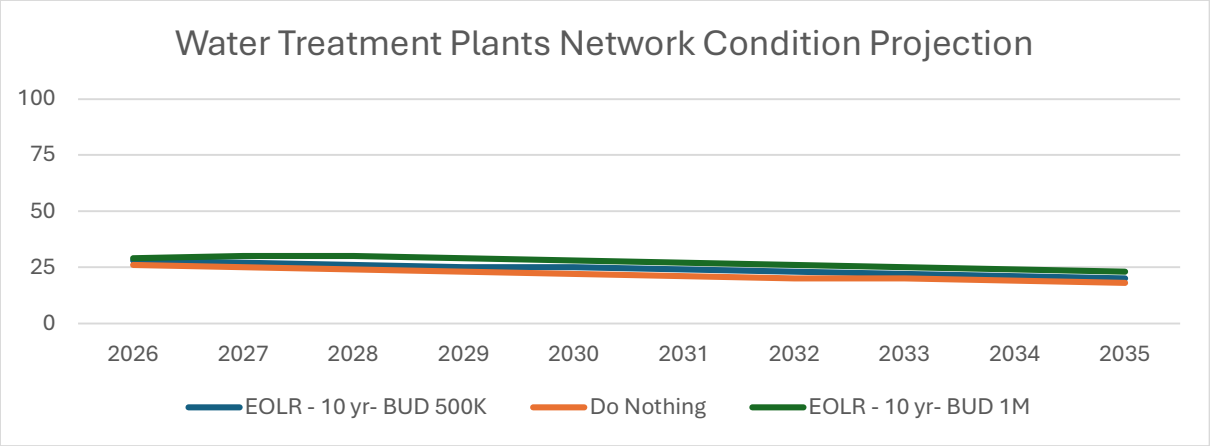
Costs rise in the years with those larger corridors, then taper, culminating in 2035 with the smaller street projects. Staging works this way keeps average annual spending near the $500k planning envelope while still delivering meaningful backlog reduction.



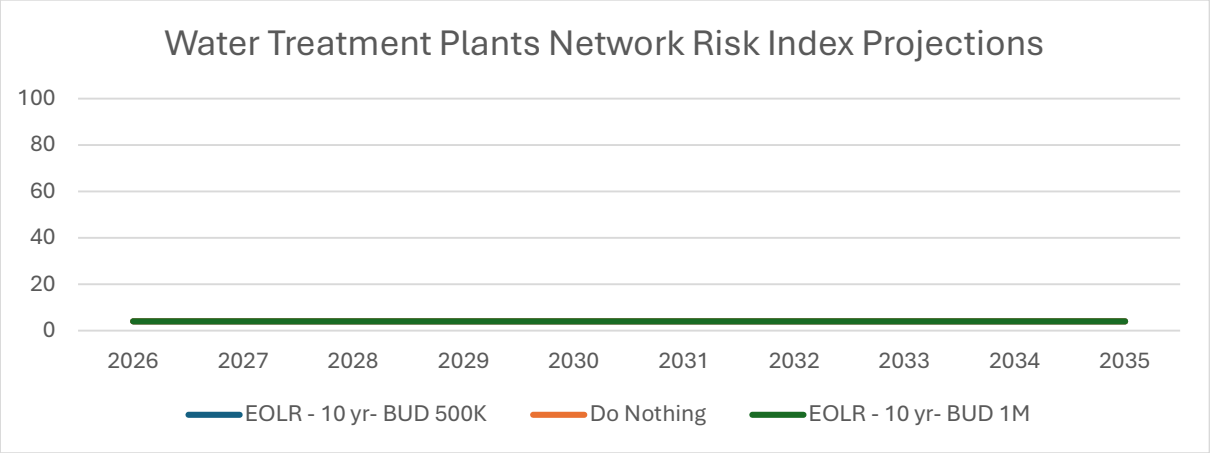
Each of the water jobs should be advanced as coordinated capital with roads, sidewalks, and (where applicable) wastewater on the same streets. Doing so minimizes reinstatement costs, reduces disruptions, and stretches the $500k/year program farther. Where a corridor is not yet ready for full roadway renewal, consider trenchless methods for short reaches and defer surface works to the next road cycle.

Treatment Plants Projection Selection

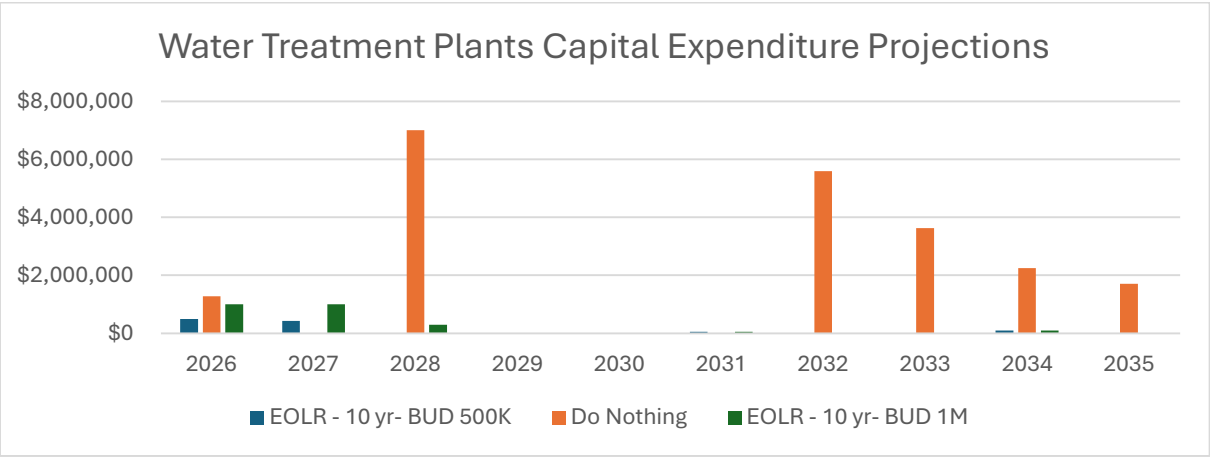
With the current data, none of the scenarios delivers a dramatic change in overall plant condition or system risk. The *Do Nothing* path defers work and then produces large, reactive spikes in spending when components fail, which is neither predictable nor affordable. The *EOLR – 10-Year – Budget $500K* scenario smooths investment, keeps core treatment functions compliant, and avoids those expensive spikes—matching Elliot Lake's financial reality while sustaining service.



All three lines trend gradually downward, with the $500K and $1M EOLR options slowing the decline compared to Do Nothing. This tells us that steady, planned renewals help hold condition but—given asset age and scale—won't rapidly lift it, even at $1M.



Risk remains low and relatively flat across scenarios. That stability supports a budget-conscious approach: we can maintain compliance and reliability without chasing marginal risk reductions at high cost.

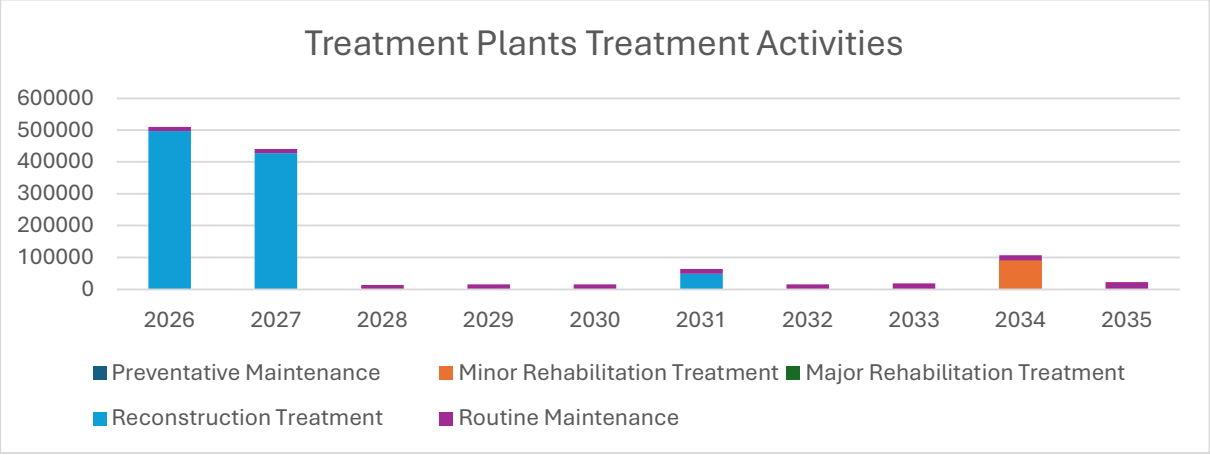


The Do Nothing scenario shows very large, reactionary spikes, while the $500K EOLR plan spreads smaller projects across the decade. The $1M option simply front-loads more work without meaningfully changing risk or condition trajectories.

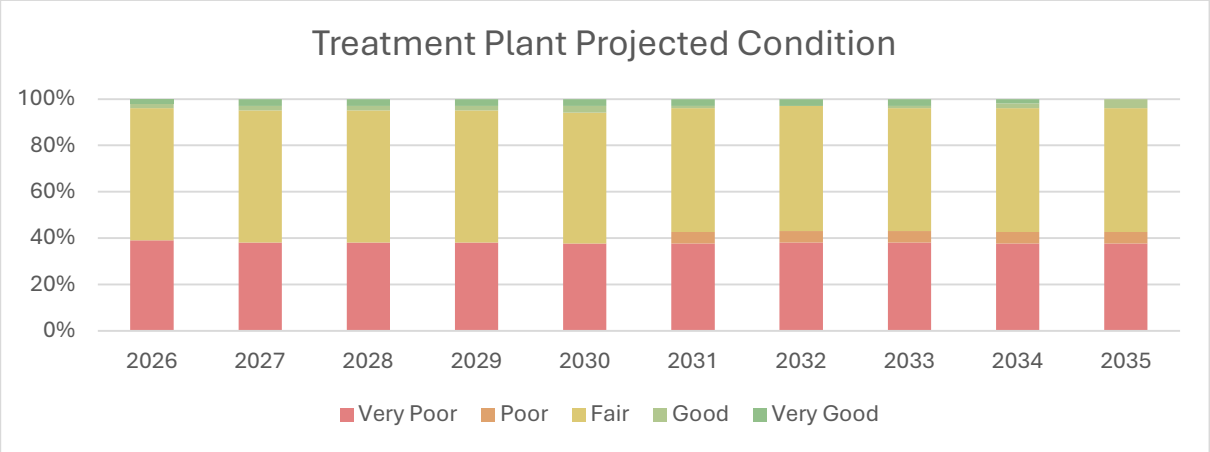
Some plant maintenance and renewal unit rates still need calibration; as we true-up costs (e.g., filter media cycles, pump/motor replacements, instrumentation upgrades), we'll re-run the model. For now, the $500K EOLR approach keeps essential maintenance moving, replaces end-of-life components before failure, and preserves financial capacity for other priority water and wastewater needs.

Treatment Plants Projection Activities

Elliot Lake's water treatment program is modeled on a steady, no-surprises approach that emphasizes routine care with targeted renewals when specific components reach end-of-life. The capital plan front-loads a few heavier interventions early in the horizon e.g., filter/media work, clearwell valve and actuator replacements, high-lift pump overhauls, and electrical/SCADA upgrades—followed by a long run of routine maintenance to protect process reliability and regulatory compliance. This mix is reflected in the activity profile below, where the first two years include reconstruction/rehab allowances and the remaining years focus on recurring plant upkeep.



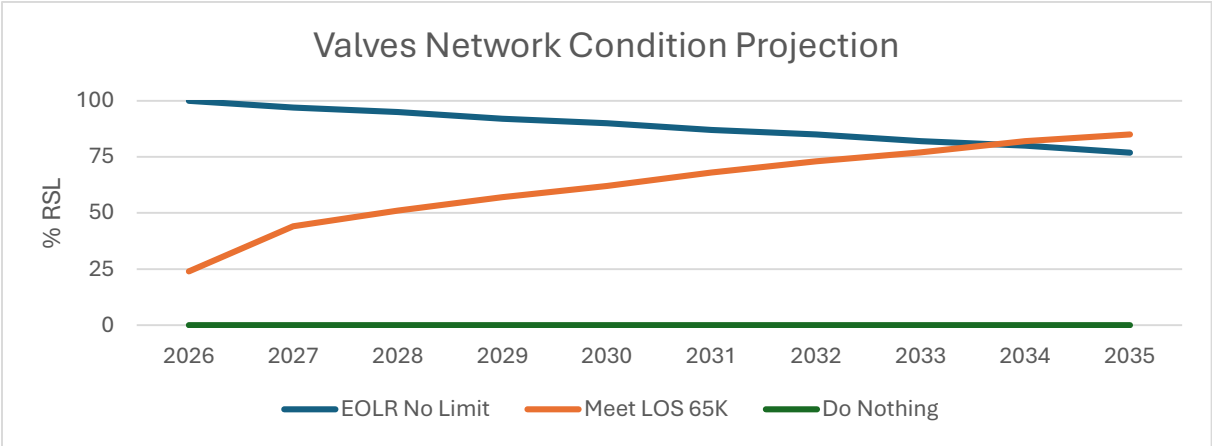
Costs follow the same pattern: a stable annual maintenance base for operators, sampling, calibrations, and minor parts, with periodic renewal spikes tied to discrete jobs listed in the capital plan (e.g., chemical feed system replacements, HVAC/roofing on process buildings, instrumentation refresh). These renewals are intentionally right sized to the plants' actual service demands and are scheduled to coincide with operational windows to minimize downtime.



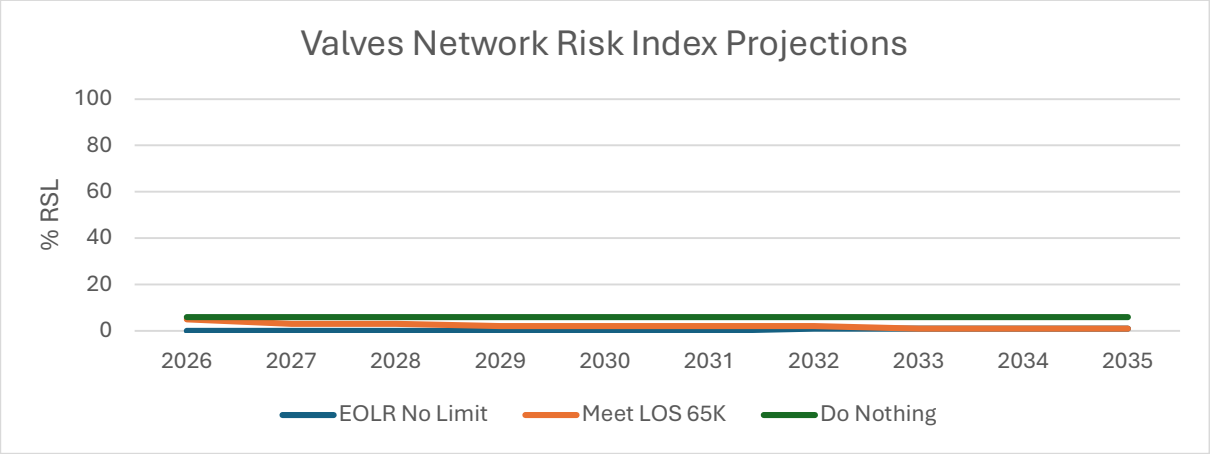
Because most treatment assets are long-lived and already mid-life, the condition outlook shows only modest improvement—essentially maintaining the fleet in the "Fair" band with incremental gains where renewals land. This is a deliberate, risk-aware choice: keep the plants safe, compliant, and reliable without over-capitalizing a system sized for a larger historical population. As more detailed, component-level data (e.g., pump hours, vibration trends, filter head loss, SCADA alarms) are captured and fed into DOT, these projections will be refined to mirror actual maintenance practice year-to-year and to reposition renewals to the most cost-effective timing.

Valves Projection Selection

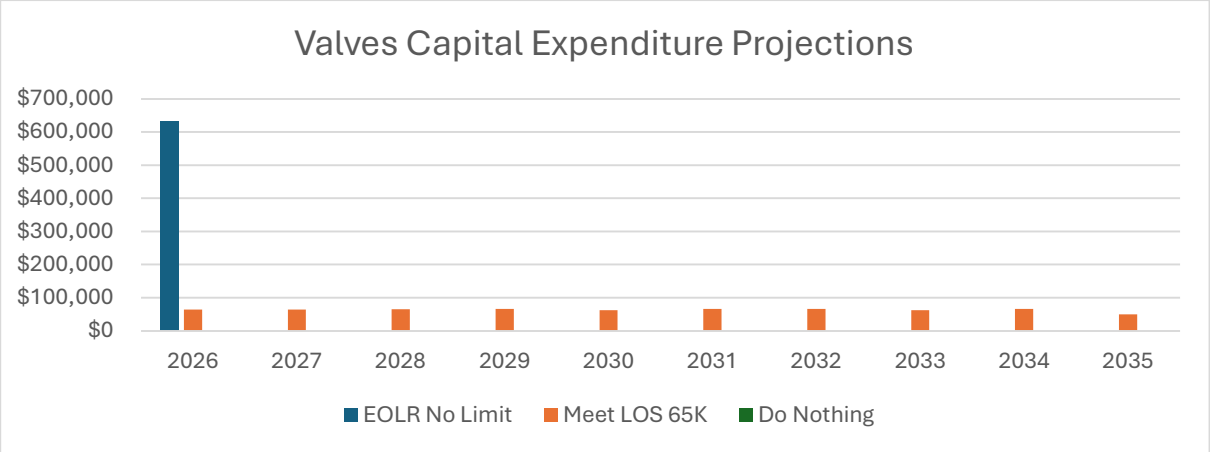
Elliot Lake selected the Meet LOS – $65K/year scenario for valves because it delivers a steady, affordable reinvestment that keeps the isolation network reliable without creating budget shocks. The Condition Projection shows a gradual improvement in remaining service life as the City replaces a small number of critical valves each year and continues exercising and locating, which restores operability across zones.



From a risk standpoint, all scenarios start low; however, Do Nothing allows small reliability issues (seizures, inoperable boxes) to accumulate, nudging risk upward over time. The chosen $65K program keeps the Risk Index essentially flat by addressing known problem valves before they impede shutdowns, fire flows, or main break response.

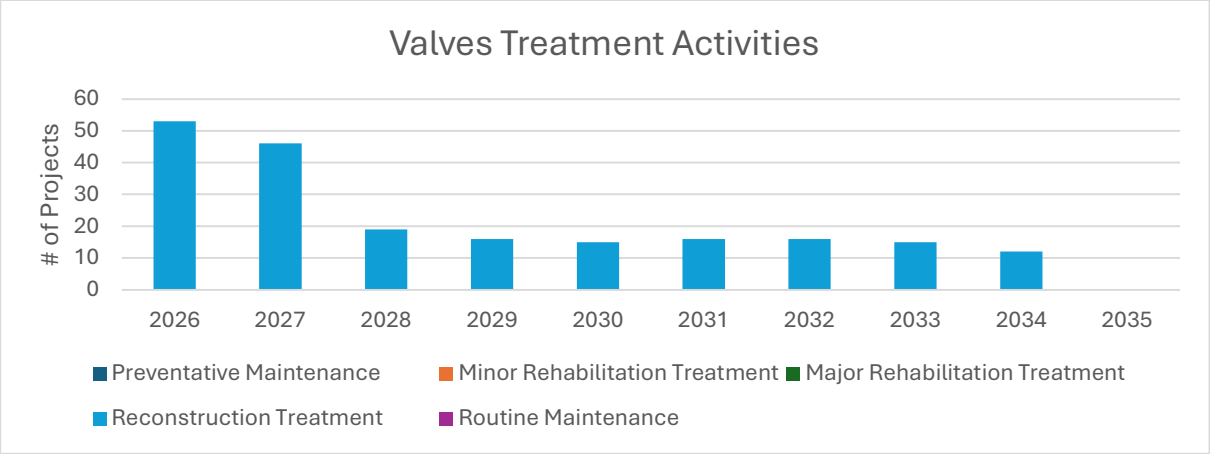


Financially, EOLR – No Limit front-loads a large replacement spike early in the period, which isn't necessary given today's risk profile and would crowd out higher priorities elsewhere in the water system. The $65K/year plan smooths capital outlays, matches staff capacity, and coordinates valve work with planned water-main and road projects to minimize cut-and-patch costs.

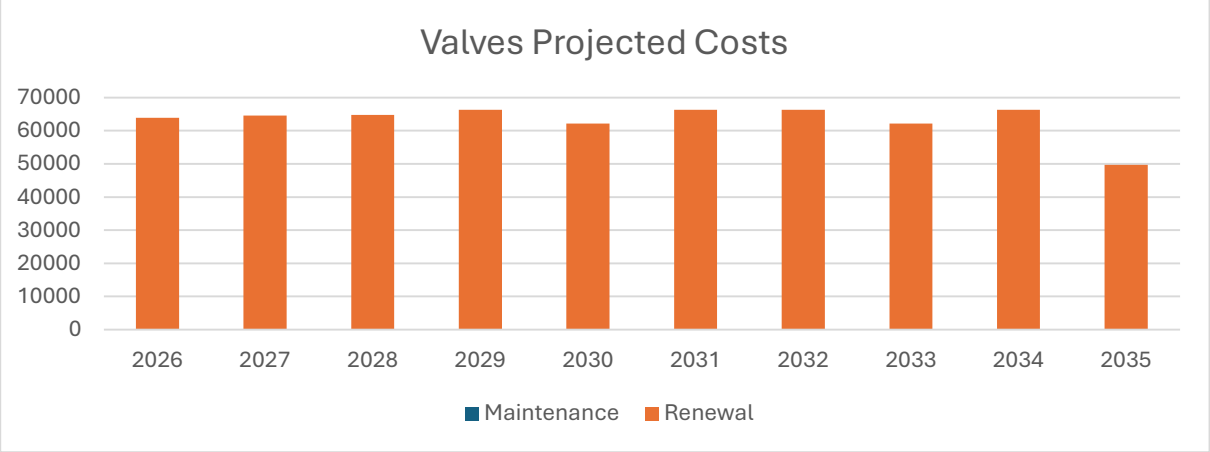


Valves Projection Activities

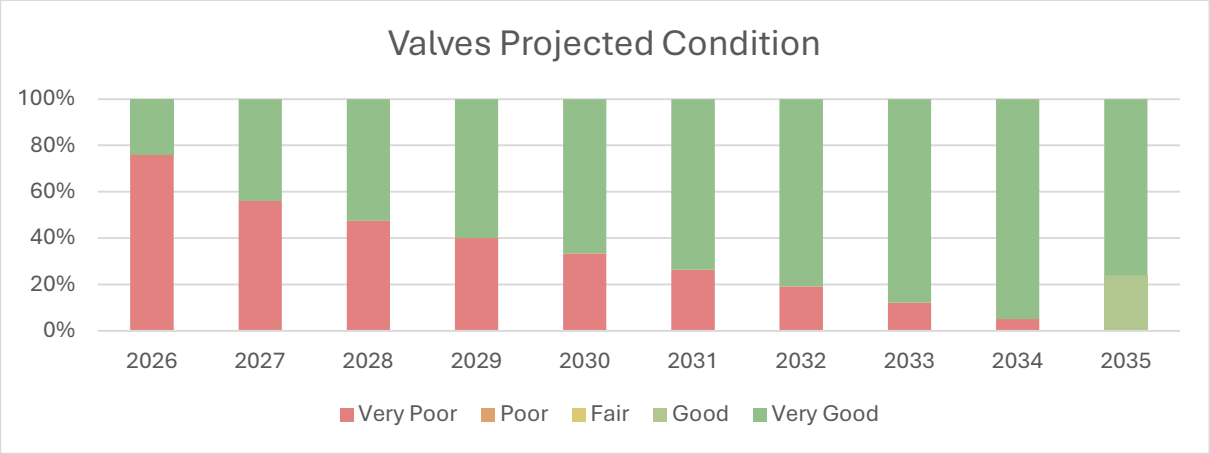
To raise system reliability without over-spending, Elliot Lake selected the Meet LOS – $65K/year program for valves. The capital plan concentrates small, repeatable valve renewals where they unlock better isolation of neighbourhood blocks and critical feeders. Per the plan, early years are front-loaded to clear the worst gaps—e.g., 2026 Downtown/Commercial core clusters and 2027 Lakeshore/Residential loops—followed by steady annual renewals such as the 2028–2032 subdivision isolation program and a 2034 feeder-main cluster before tapering in 2035. Wherever possible, valve work is bundled with water-main projects and hydrant swaps to minimize pavement cuts and traffic control.



This chart shows the front-loaded burst of valve work (large cluster programs in 2026–2027), then a consistent cadence (roughly a dozen valves per year) to finish out the decade. That pattern mirrors the capital plan's shift from catch-up clusters to ongoing, block-by-block infill.



Annual spending hovers around the $65k target, reflecting the program's emphasis on small packages bid or delivered in-house. Costs remain stable because scopes are standardized—pulling and replacing seized or undersized valves, adding missing isolation points, and addressing known "can't-isolate" locations called out in the capital plan.

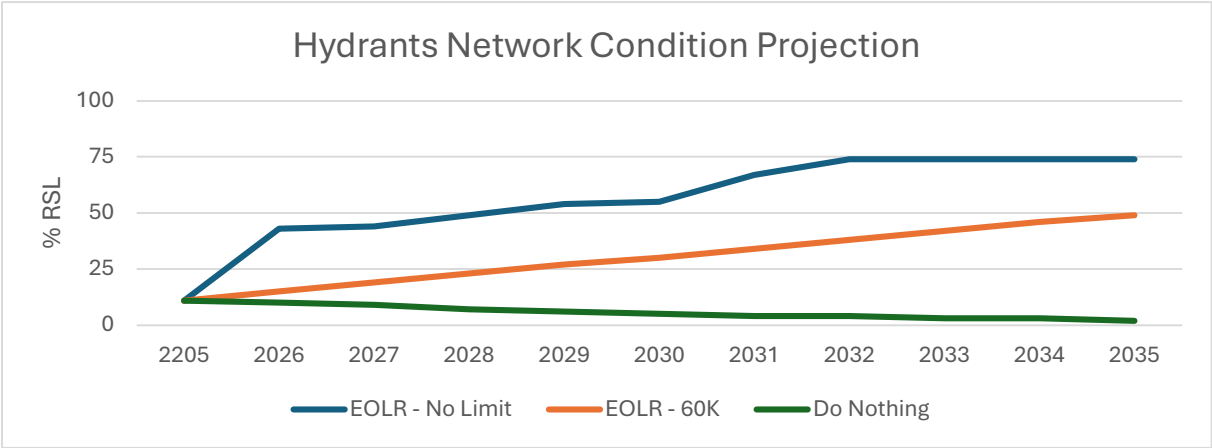


As clusters are renewed, the share of Very Poor/Poor valves steadily collapses and the system transitions to Good/Very Good by the early 2030s. That improvement isn't just a score—it reduces outage size during breaks, speeds repairs, and cuts water loss, all while keeping yearly cash flow predictable.

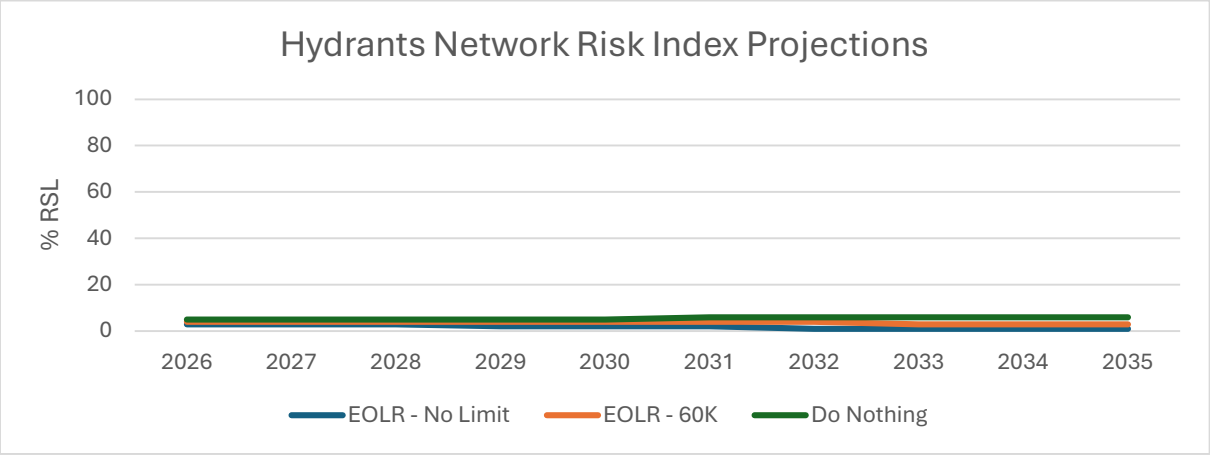
Overall, the chosen program replaces valves where they provide the biggest operational payoff first (downtown grids, feeder junctions, and cul-de-sac loops from the capital plan), then maintains that performance with a light, steady renewal stream—exactly the kind of pragmatic, right-sized approach an over-built system need.

Hydrants Projection Selection

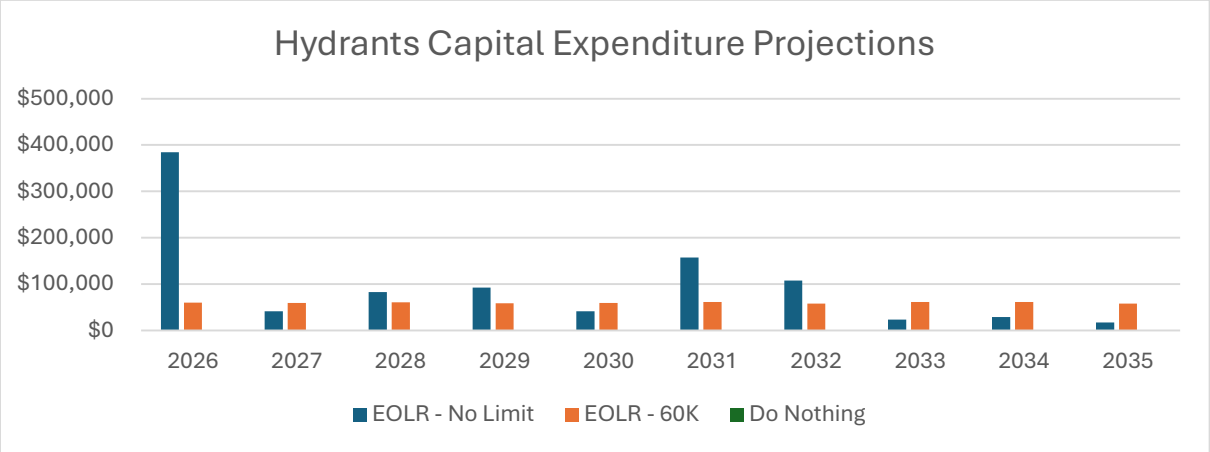
Elliot Lake evaluated three approaches: (1) Do-Nothing, (2) End-of-Life Replacement (EOLR) with no budget cap, and (3) EOLR – 60K (a steady annual program capped at ~$60k). The selected EOLR – 60K option creates a predictable, right-sized replacement rhythm that steadily refreshes the fleet without large spikes. It protects fire-flow reliability and keeps assets moving out of end-of-life status, while staying aligned with fiscal capacity and coordinating easily with planned water-main renewals to capture dig-once savings.



This figure shows that a small, consistent program outperforms doing nothing and approaches the outcome of an uncapped plan—without the volatility. It reflects an orderly lift in overall condition as targeted renewals work through the oldest units.



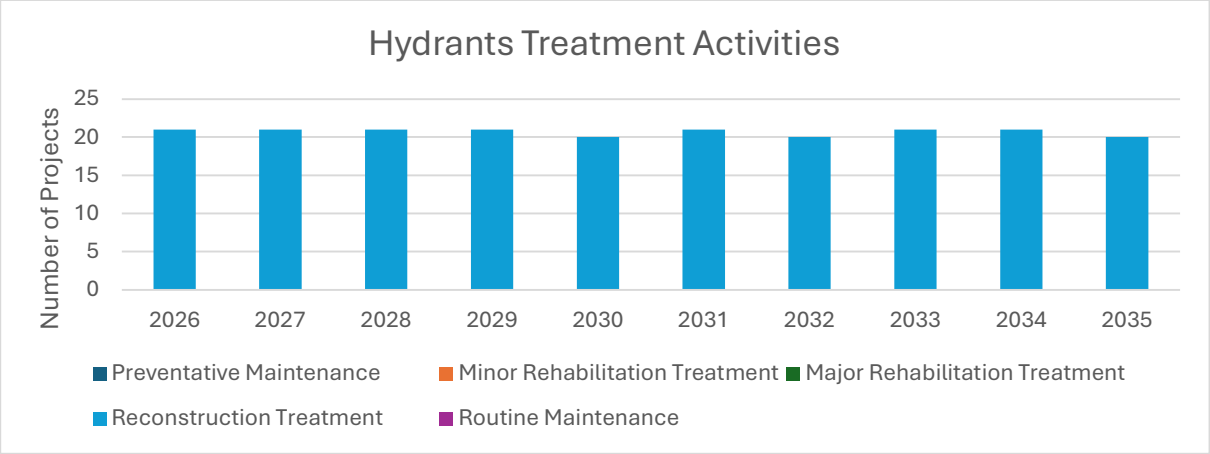
Risk remains low across all options; the value of EOLR – 60K is that it keeps risk flat while methodically retiring end-of-life hydrants, limiting exposure to isolated failures and service interruptions.



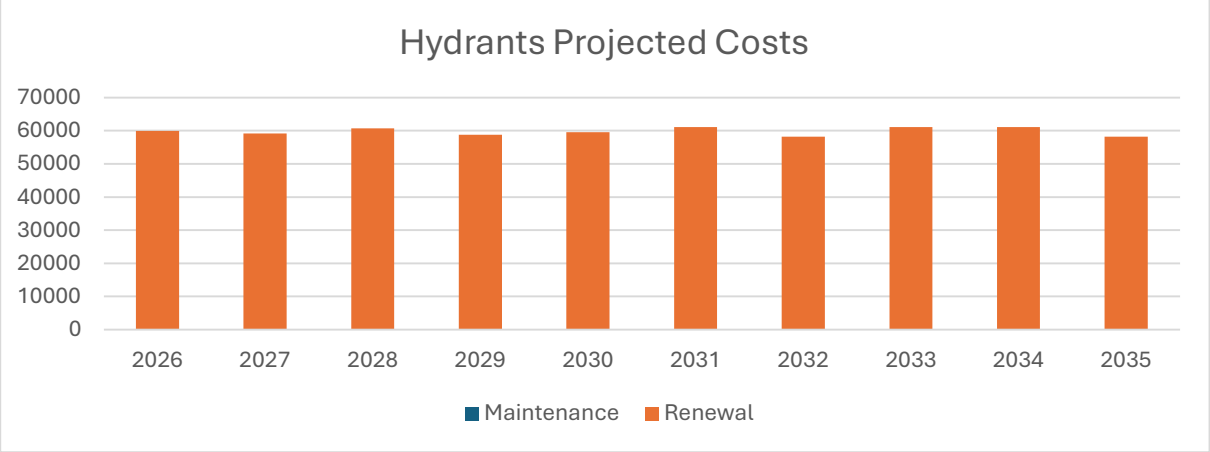
The cost profile is the clincher: the uncapped path front-loads large capital spikes, whereas EOLR – 60K delivers smooth, predictable spending year-over-year. Pairing annual hydrant renewals with scheduled water-main projects will further reduce unit costs (shared traffic control, excavation, and reinstatement), maximizing value within the fixed envelope.

Hydrant Projection Activities

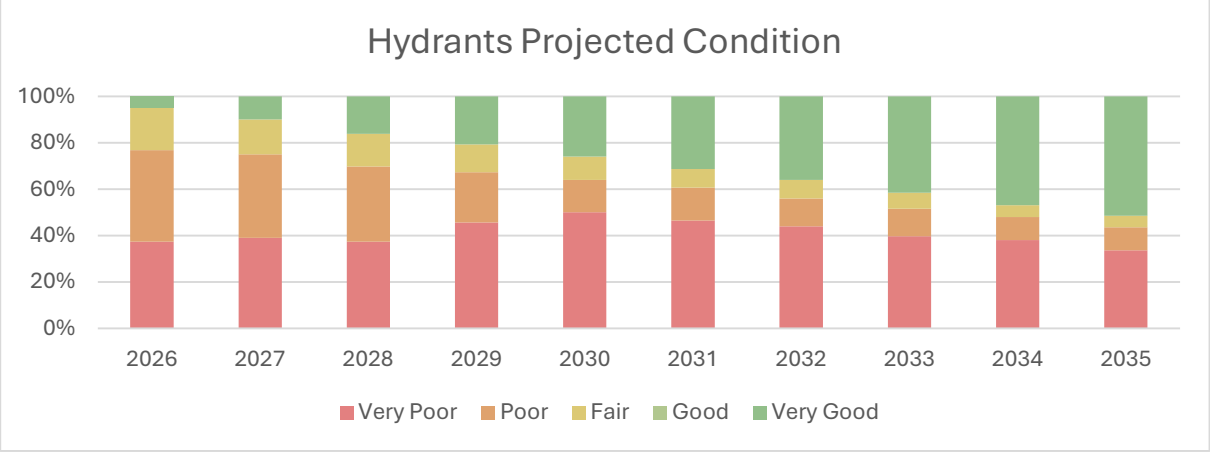
Under the selected EOLR – $60K program, hydrants are replaced steadily each year, keeping renewal predictable and allowing work to be bundled with nearby water-main projects for trench, traffic control, and mobilization savings. The capital plan shows a consistent stream of small replacements. This “little-and-often” schedule keeps the network young without spiking annual costs.



This chart shows the planned count of annual replacements holding near the 20–21-unit mark. It reflects the capital plan's year-over-year cadence and confirms scope stability that is easier to tender and resource.



Annual spending remains in a tight band around $58k–$61k, which aligns with the plan's unit-rate assumptions and the consistent project counts noted above. Keeping costs smooth also supports budget certainty and coordination with scheduled water-main work.

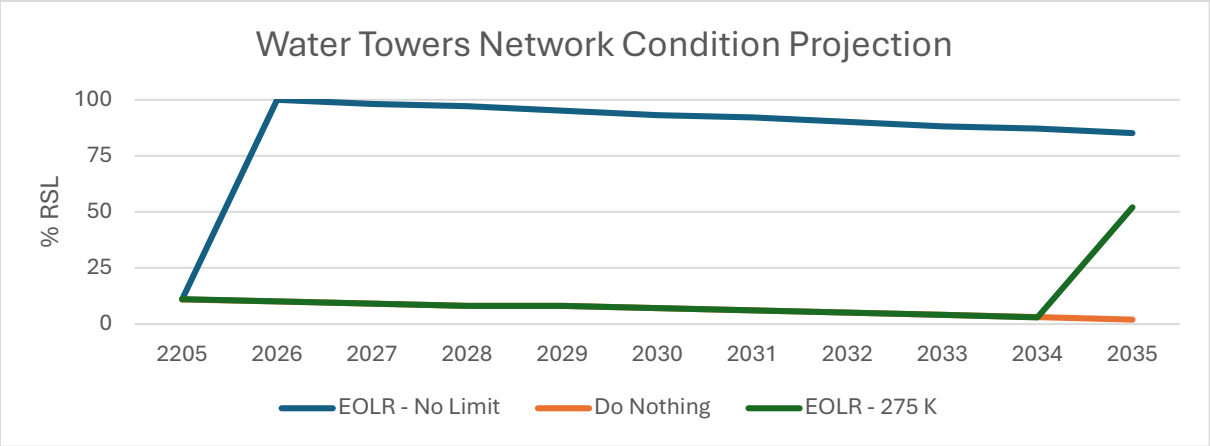


Condition gradually shifts out of “Very Poor/Poor” and into “Good/Very Good” as the rolling replacements retire the worst performers each year. That improvement is achieved without large one-time capital draws—an explicit objective of the EOLR-$60K strategy.

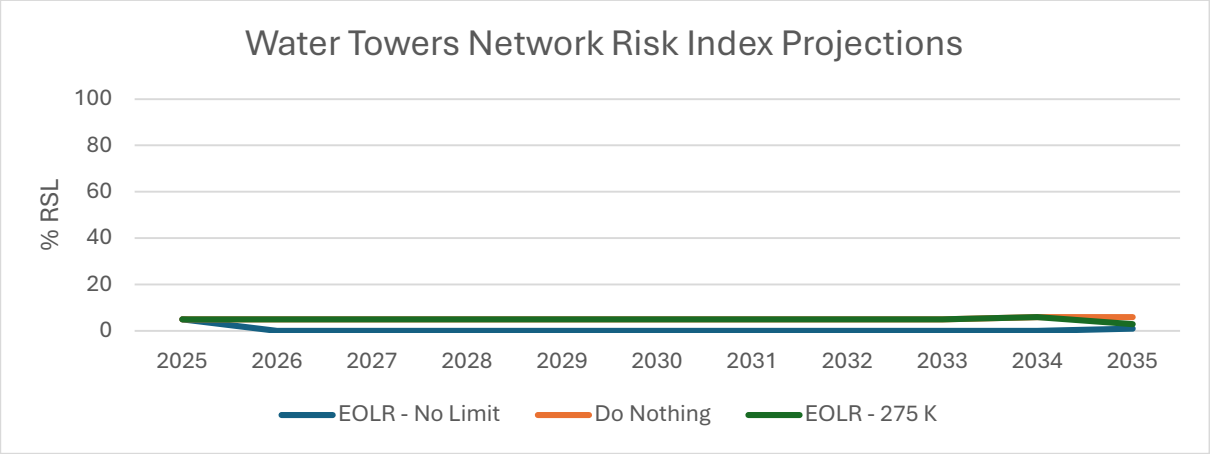
Whenever hydrant sites overlap with planned main renewals or valve clusters (e.g., along Mississauga Ave, Esten Dr, and Hillside Dr S), schedule hydrant work inside the same mobilization to cut pavement restoration and traffic control costs. Maintain annual flushing and exercising so new assets remain in warranty-compliant condition and so candidate sites for the next year’s list can be verified under load.

Water Towers Projection Selection

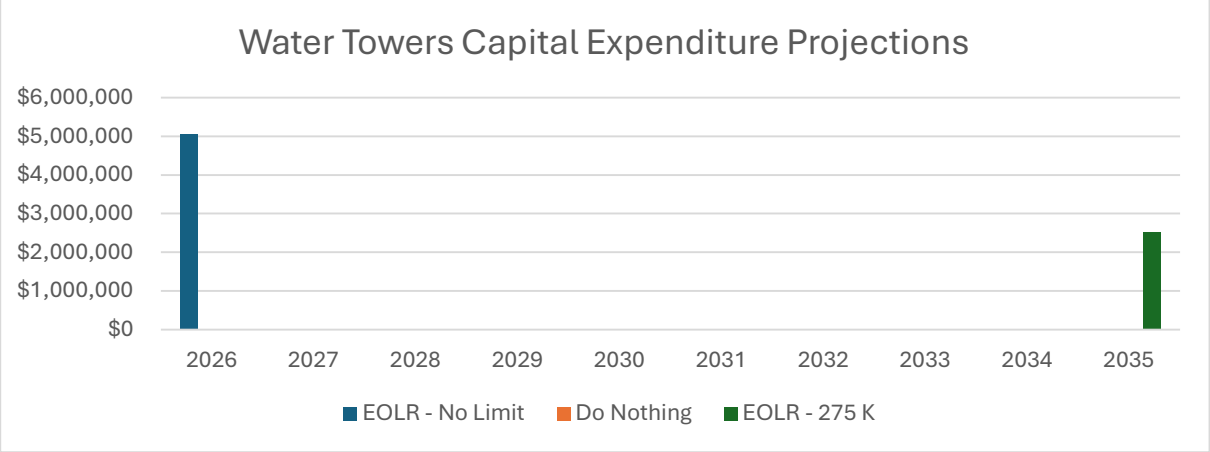
We evaluated three scenarios for Elliot Lake’s two elevated tanks: Do Nothing, EOLR – No Limit, and EOLR – 275K. The EOLR – 275K option is recommended because it deliberately stretches the remaining service life of at least one tower through targeted, lower-cost actions (inspections, safety upgrades, coatings, cathodic protection, valve pit work), while postponing a full replacement to the back end of the plan. This approach recognizes that both towers are presently in *Poor/Very Poor* condition and that an immediate twin replacement—what the No Limit scenario implies—would impose multi-million-dollar pressures that are misaligned with current affordability. Conversely, the Do Nothing path allows steady condition decline and compounds risk exposure without yielding savings later.



Under EOLR – 275K, condition stabilizes and trends upward into the medium range as life-extension work takes hold, while the risk profile stays low and controlled despite aging structures. This keeps a large capital event outside the near term, smoothing the City’s deficit trajectory and reserving funding capacity for more urgent watermain and hydrant renewals.

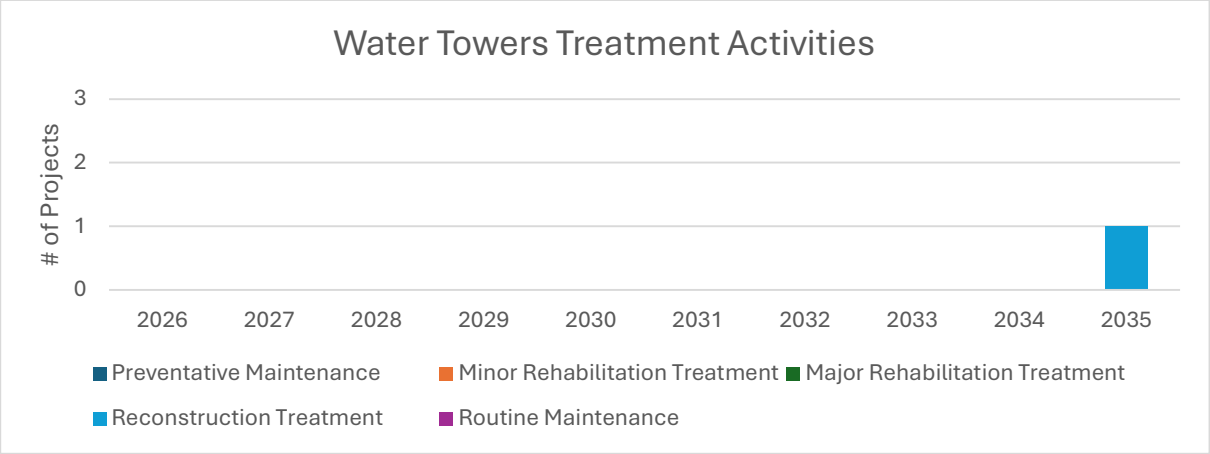


As the towers' detailed condition data improve (ultrasonic shell thickness, interior/exterior coating surveys, structural appurtenance checks), we'll refine the balance between minor/major rehabilitation and the timing of eventual replacement.

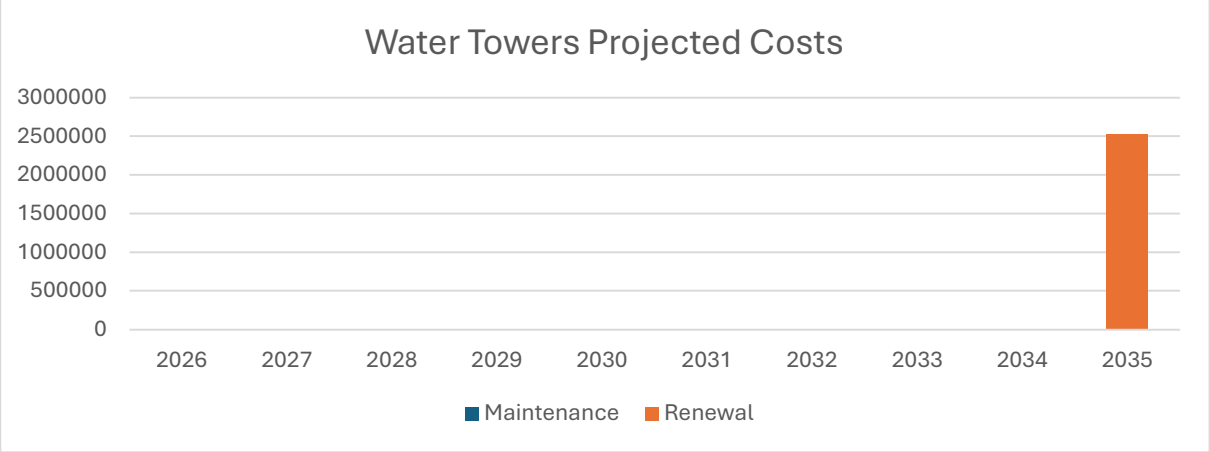


Water Towers Projection Activities

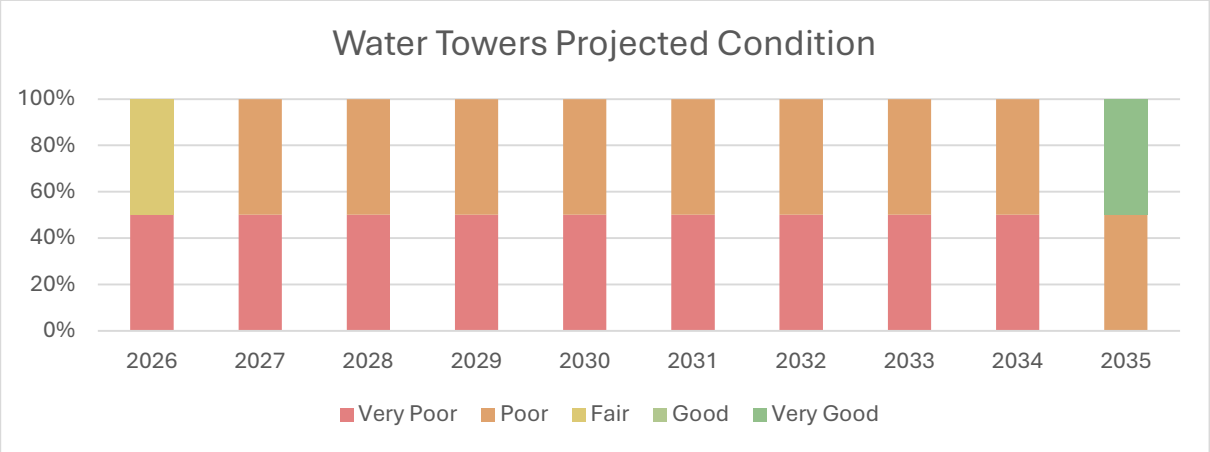
Under the selected EOLR – 275K outlook, the capital plan deliberately defers one tower replacement to the end of the window and focuses the next few years on keeping the system safe and compliant while building the reserve needed for that eventual renewal. This is why the program shows a quiet runway through the early 2030s, a single major project late in the decade, and a sharp post-project improvement in condition.



The Treatment Activities graphic illustrates that the only programmed capital action this cycle is a single end-of-life renewal near 2035. The absence of interim work underscores a current gap: Elliot Lake does not yet have a defined mid-life rehabilitation program for towers (e.g., interior/exterior re-coating, cathodic protection, safety retrofits, riser and vent upgrades, level instrumentation, mixers). Establishing those recurring activities will extend life, reduce the size of future replacements, and smooth out the spending curve.



Projected Costs show a flat profile followed by one large renewal spike at the back end of the period. That spike is the modeled replacement of the weaker of the two towers. Until the rehab program is formalized, the model doesn't yet capture the smaller—but important—coating and safety projects that typically occur every 10–15 years on elevated tanks.



The Condition chart stays largely in Poor/Very Poor while the tower continues to operate, then transitions to "Very Good" immediately after the planned end-of-life replacement. This pattern reinforces the need to add mid-cycle treatments to DOT so the model reflects how coatings and structural repairs can stabilize condition before full reconstruction is required.

What this means for funding and next steps

- Reserve strategy: Continue transferring ≈$275k per year (indexed for inflation) into the Water Reserve to align with the EOLR–275K path. This provides a predictable way to cash-flow the eventual replacement without creating a sudden budget shock.
- Program build-out: Develop a tower-specific O&M/rehab plan that includes NACE coating inspections (3–5 years), structural reviews (5–7 years), safety upgrades, cathodic protection checks, mixers/ice mitigation, hatch/vent replacements, and site drainage repairs—and load these as Routine/Preventive treatments in DOT.
- Reassess with better data: As inspection results and unit costs are added, re-run scenarios to test whether a rehab-heavy plan can safely defer replacement further and lower the end-of-period spike.

This approach recognizes that full replacement is financially onerous for the City today; building a robust maintenance/rehabilitation program and funding the reserve on a steady EOLR-275K track is the practical way to sustain service and keep risk acceptable over the next decade.

Water Reservoirs

The City's potable-water reservoir has not been in active use for some time. Before any renewals are planned, staff recommend completing a feasibility and regulatory compliance review to confirm what would be required—and what it would cost—to return the facility to service under current standards, and a parallel assessment of the feasibility, regulatory obligations, and cost of decommissioning the facility. Findings from this work should establish a decision point (reactivate vs. decommission) and frame the appropriate capital path.

Elliot Lake operates one potable-water reservoir (installed 1982) with an estimated 60-year service life. At an assessed ~30% Remaining Service Life (RSL), the facility has roughly 17–18 years before end-of-

life—placing its planning horizon in the early 2040s. If returned to service, as the City's only ground-level storage the reservoir would represent a single point of failure for peak demand, fire flows, and emergency supply; maintaining its integrity and water quality would therefore be critical. If decommissioned, alternative provisions for storage, fire-flow resilience, and emergency supply will need to be confirmed.

A scenario could not be run in the asset management software because key attributes are missing or incomplete (e.g., detailed condition grades by component, coating age/condition, cathodic protection status, mixing/aeration equipment, structural inspection findings, and unit rates for cleaning/recoating vs. reconstruction). As these data are captured, they will be loaded to DOT, and the AMP will be updated with modeled maintenance, rehabilitation, and renewal options.

In the near term, Staff will focus on decision support common to both paths, then proceed conditionally. This will involve undertaking a feasibility and regulatory gap analysis (reactivation requirements vs. decommissioning obligations and cost); develop order-of-magnitude estimates for both paths; confirm system-level implications for storage capacity, fire flow, emergency supply, and operational redundancy.

If reactivation is selected, Staff would address any critical deficiencies that affect sanitary integrity or monitoring and would plan targeted rehabilitation: interior/exterior recoating, localized steel/concrete repairs, cathodic protection checks or installation, hatch/vent replacements, and safety upgrades (fall protection, ladders, railings). These works typically extend service life and can shift the end-of-life date to the right at far lower cost than full replacement.

If decommissioning is found to be the most appropriate course of action, Staff would prepare a decommissioning plan covering regulatory approvals, environmental protection/closure requirements, disposition of residuals and materials, site restoration/reuse, and system-level mitigations for storage/fire-flow/emergency supply. Aligning this schedule and construction with other capital works would minimize service disruptions and costs.

This staged approach recognizes the reservoir's current offline status and today's data limitations while keeping options open: it documents what is needed to safely recommission the asset or to retire it, and positions the City to make a well-timed, value-for-money decision on major rehabilitation, replacement, or decommissioning in the next planning cycle.

Potable Water 10 Year Life Cycle Summary

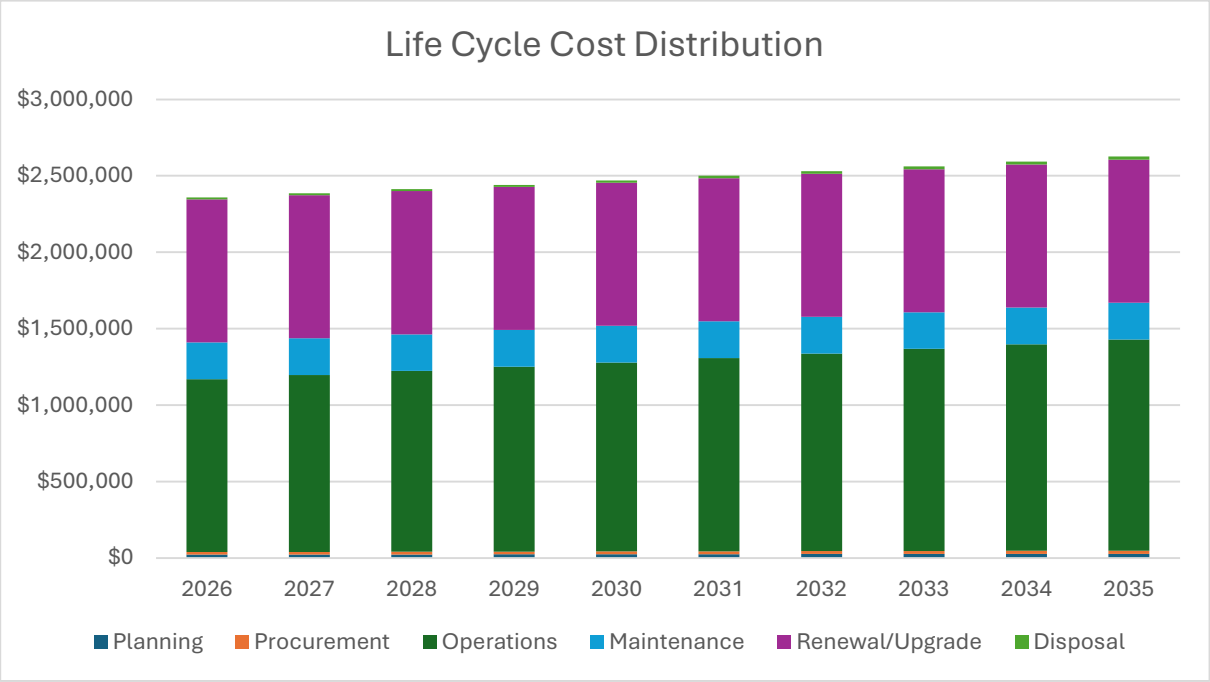
Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$22,600	$27,600	Studies, modeling, AMP updates, LoS reviews
Procurement	$17,000	$20,700	Tendering, vendor management, contract admin
Operations	$1,130,600	$1,378,200	Salaries, Materials, and Contracted Services lines.
Maintenance	$240,000 AVG / Year		Average of routine distribution upkeep, plus a water share of pump-station servicing Rounded to stay conservative and avoid double-counting operating items.

Renewal	$936,000 AVG / Year		
Disposal	$11,300	$20,700	Decommissioning/retirement allowance

Operations are anchored to the City's 2025 Water Treatment budget of $1,130,626, which provides the cleanest water-only line item in the adopted operating budget; projecting that line forward at ~2%/year yields ~$1.38M by 2035.

Planning and Procurement are modeled as small, percentage-of-Ops "program costs" so they scale with workload but don't crowd out field work. Maintenance sits outside those program costs as an average annual workload for distribution fixes (bursts, service-line repairs) and a water share of shared pump-station upkeep. The $240k/yr figure is a practical midpoint pulled from the Maintenance Staff Survey: pipe repair $135–150k, service-line repairs ~$65k, and a partial allocation of pump-station servicing from the combined $115k item (survey notes it includes wastewater, so we only take a portion on the water side).

Renewal averages ($936k/yr) align with the capital plans already chosen in the AMP (e.g., Water Lines Maintain-LOS-500K, Valves Meet-LOS, Hydrants EOLR-60K), leaving sufficient headroom for the wastewater renewal program we set earlier. Disposal is kept modest (1–1.5% of Ops) to cover retiring hydrants/valves and small structure removals without inflating the rate base unnecessarily.

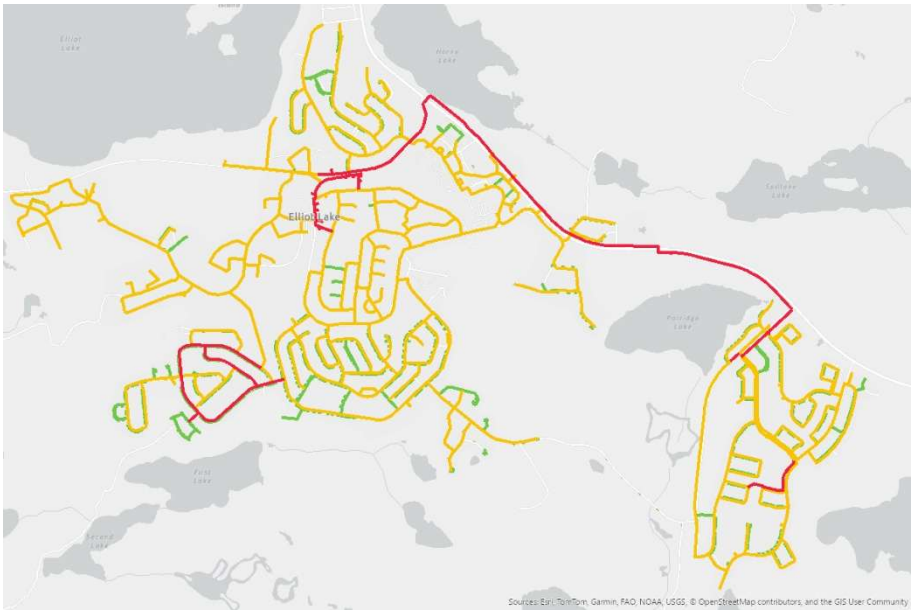


Risk Management and Climate Change Considerations

Water Main Criticality

This first map classifies each water main segment by its importance to the overall network. "Critical" mains—shown in red—include primary feed lines and looped mains that, if lost, would isolate large portions of the community or impact multiple pressure zones. "Moderate" lines (yellow) serve

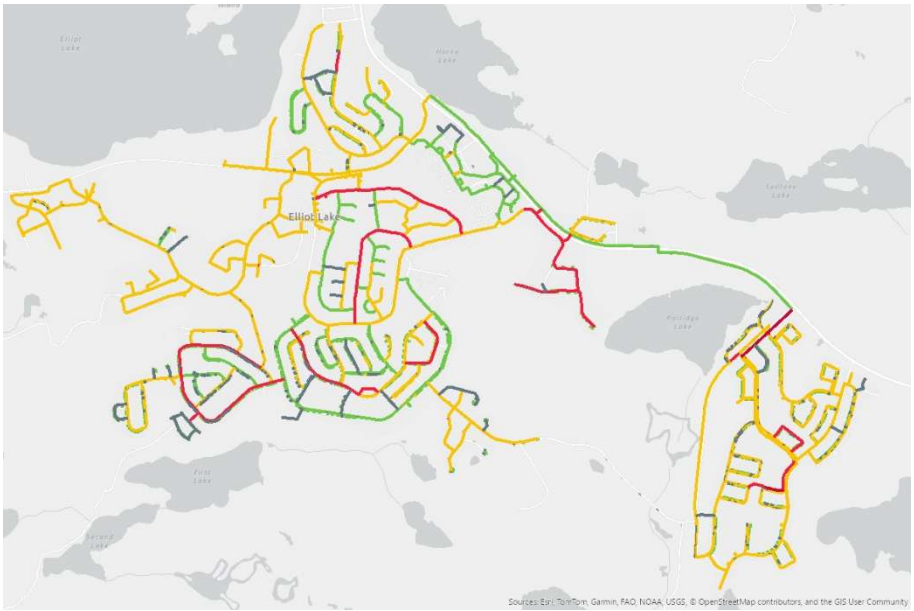
secondary distribution, while “Low” segments (green) are more peripheral and carry limited flow. By visualizing criticality, the City can direct spare-parts inventories, emergency response planning, and routine inspections to those pipes whose failure would have the greatest impact on service continuity.



Water Main Criticality Map

Water Main Risk

The second map overlays condition and failure-history data to quantify each segment’s likelihood of failure and potential consequences. High-risk pipes (red) exhibit low PCI scores, frequent break records, or challenging installation conditions (e.g., poor backfill or frost heave zones). Moderate-risk segments (gray) show some signs of distress but remain serviceable, while low-risk pipes (green) are in good condition with few past issues.



Water Main Risk Map

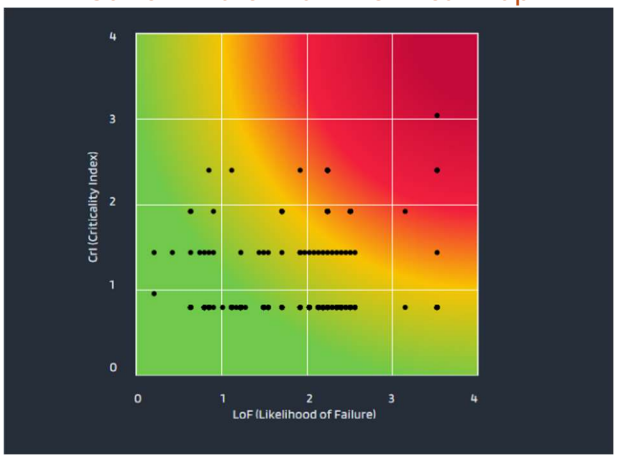
Current Water Main Risk Heat Map

Most segments cluster in the lower-left green zone, indicating low LoF and lower criticality—typically short, secondary loops or peripheral dead-ends in good condition. A handful of mains appear in the upper-right red zone (high LoF and criticality), representing older feed lines that are both vital to pressure zones and already showing signs of distress.

Projected Water Main Risk Heat Map

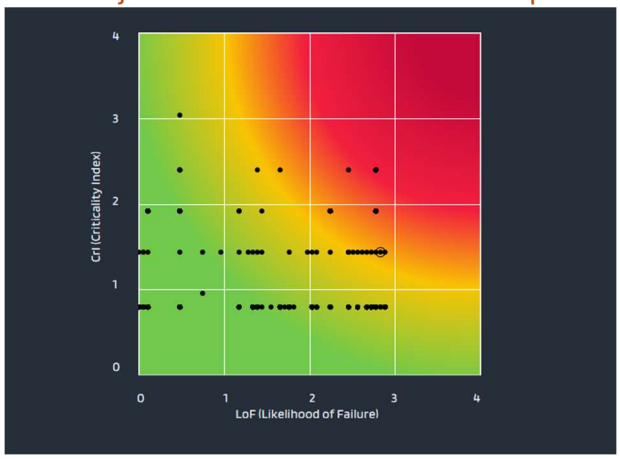
Ten years of asset aging shift many points rightward (higher LoF) and upward (greater criticality, as system modifications make some secondary lines more important). The red “high-high” quadrant roughly doubles in point count, signifying that if no targeted interventions occur, more mains will become both likely to fail and critical to system performance.

Current Water Main Risk Heat Map



Maintain Fair Condition Risk Map 2024

Projected Water Main Risk Heat Map



Maintain Fair Condition Risk Map 2034

Treatment Plant Criticality

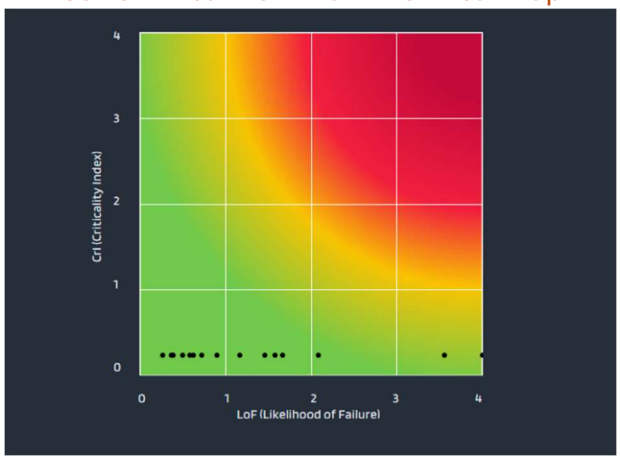
The heat maps show all treatment-plant assets plotting at the very low end of the Criticality Index (≈0–1). That reflects limited consequence data in DOT (e.g., customers served, redundancy, regulatory penalties, fire-flow dependence). In practice, the plant function is mission-critical: even short service

loss affects public health compliance and community resilience. As we refine the model, we'll capture real consequence drivers—treatment redundancy, storage buffering, boil-water advisory implications, and environmental/contractual penalties—so the criticality scores align with the service importance of the facilities.

Treatment Plant Risk

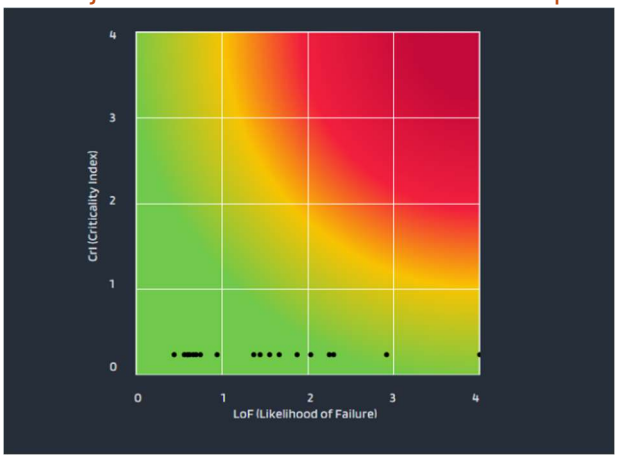
In 2025, several points carry moderate likelihoods of failure while remaining at low modeled criticality; by 2035 the cloud shifts left, indicating reduced LoF for most assets and fewer outliers, consistent with routine O&M and targeted component renewals. Because criticality stays low in the model, overall risk appears modest—even where individual assets have higher LoF. The practical takeaway is twofold: keep up the planned maintenance/renewal program that is lowering LoF, and improve the underlying consequence inputs so the risk matrix fully reflects the true operational stakes of the treatment process.

Current Treatment Plant Risk Heat Map



Treatment Plant Risk Projection 2025

Projected treatment Plant Risk Heat Map



Treatment Plant Risk Projection 2035

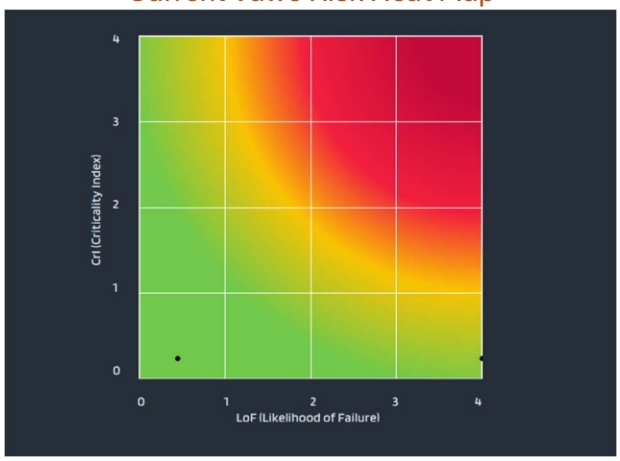
Valve Criticality

Most distribution valves in Elliot Lake score low on criticality because the water grid is generally looped and can be isolated in short segments without cutting service to large areas. A small subset—trunk main isolations, plant/tower inlet/outlet valves, and zone boundary valves—carry more consequence, but they are few compared with the overall inventory. The 2025 heat map reflects this, with nearly all points sitting at the lowest criticality band. As-built confirmation and criticality tagging (e.g., hospitals, schools, tower feeds) should continue so those few high-consequence locations are clearly flagged for priority exercising and renewal.

Valve Risk

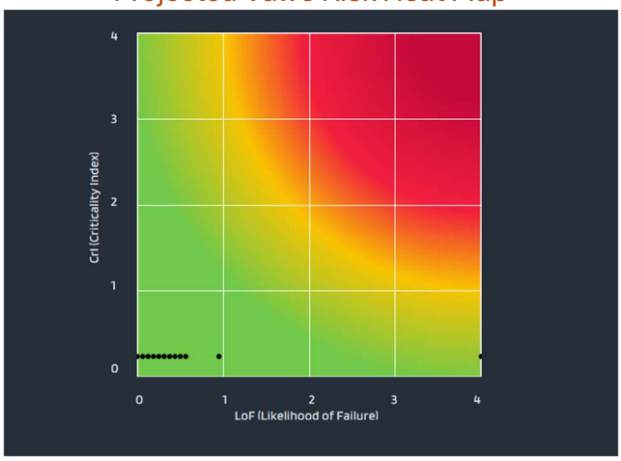
The risk profile is controlled and improving under the Meet-LOS (≈$65k/yr) program. In 2025, most valves cluster in the green (low likelihood of failure), with a single high-LoF outlier that warrants targeted inspection or near-term replacement. By 2035, the cluster shifts further left, evidence that steady replacements plus valve exercising are lowering failure likelihood while criticality remains low. To sustain this trajectory, keep up the annual batch renewals, document pass/fail from exercising, and focus diagnostics on any outliers that appear at higher LoF (corrosion, seized stems, buried/obstructed boxes).

Current Valve Risk Heat Map



Water Valve Risk Projection 2025

Projected Valve Risk Heat Map



Water Valve Risk Projection 2035

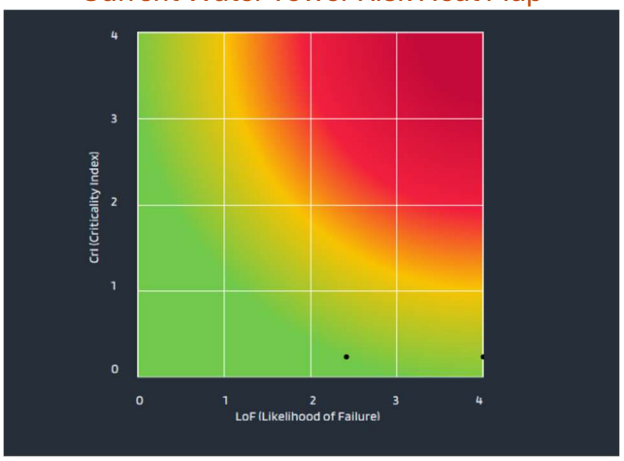
Water Tower Criticality

The heat maps place both towers at very low criticality, which reflects gaps in the current DOT consequence inputs rather than the true importance of these assets. In practice the towers provide system pressure, fire-flow and emergency storage; a prolonged outage would immediately constrain firefighting, reduce pressure reliability for high-elevation neighbourhoods, and increase the likelihood of advisories after power or treatment upsets. For the next AMP update, criticality should be recalibrated using zone dependence (population and institutions served), fire-flow deficits without each tower, available redundancy/interconnections, and safety/environmental impacts, so the towers' consequence of failure is represented appropriately.

Water Tower Risk

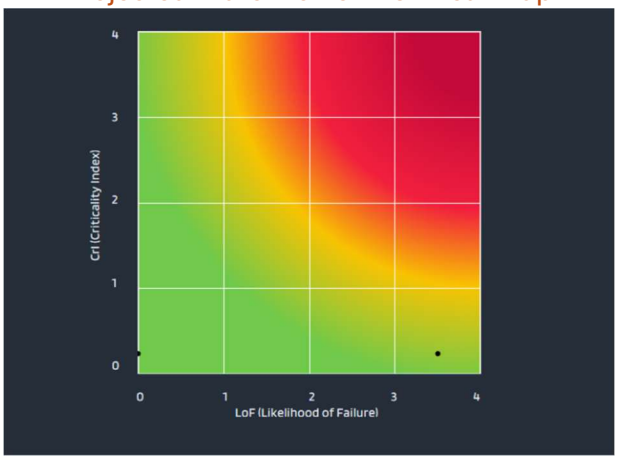
The 2025–2035 heat maps show one tower's likelihood of failure drifting higher over the decade while the other remains relatively stable—consistent with aging coatings/steel and deferred major work. Because criticality is under-scored today, overall plotted risk still appears low; however, operational vulnerability is understated. Under the selected EOLR – 275K approach, Elliot Lake defers full replacement about ten years while managing risk through targeted upkeep (coating repairs, mixer/level-control and telemetry upgrades, cathodic protection, safety retrofits) and by building reserves toward the eventual renewal. Trigger points to advance capital—e.g., verified shell/riser section loss, recurrent leaks, or demonstrated inability to meet pressure/fire-flow targets—will be tracked through enhanced inspections so that the City can intervene before risk becomes unacceptable.

Current Water Tower Risk Heat Map



Water Tower Risk Projection 2025

Projected Water Tower Risk Heat Map



Water Tower Risk Projection 2035

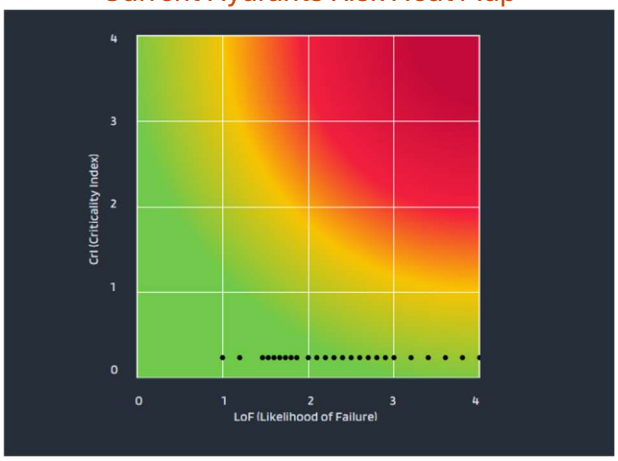
Hydrants Criticality

Hydrants are essential for fire suppression, but individual units rarely drive system-wide impact because spacing and redundancy let crews draw from the next nearest hydrant if one is out of service. That's why both heat maps sit along the low-criticality band. Exceptions exist, like hydrants fronting multi-residential buildings, care facilities, schools, or locations with limited spacing carry higher operational importance and should remain flagged for priority inspection and renewal even when their criticality score is modest.

Hydrants Risk

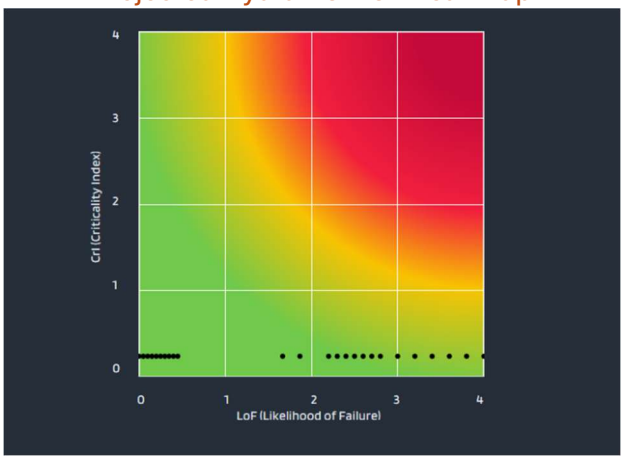
The 2025 map shows many assets with low criticality but a spread of likelihood-of-failure, reflecting age and uncertain condition across the fleet. By 2035 the points shift left—evidence that the EOLR-60K program, coupled with regular exercising/flow testing and coordinated replacements alongside water-main/valve work, steadily reduces failure likelihood without inflating capital needs. Continue annual batches of renewals and winterization/inspection to hold this lower risk profile and watch any outliers trending right for targeted replacement before the next cycle.

Current Hydrants Risk Heat Map



Hydrant Risk Projection 2025

Projected Hydrants Risk Heat Map



Hydrant Risk Projection 2035

Water Reservoirs Criticality

Elliot Lake's lone ground-level reservoir (built 1982) has not been in active use for some time. Before any renewals are planned, staff recommend analysis of feasibility, regulatory compliance requirements to return the facility to service, and the expense and obligations associated with decommissioning. Accordingly, criticality should be considered conditionally:

If recommissioning is found to be appropriate, the reservoir may be considered to be a single-point-of-service asset that stabilizes system pressure, supplies fire-flow reserve, and provides short-term continuity during plant or power interruptions. Because there is no parallel storage, its criticality may be found to be inherently high. Criticality may also heightened by interdependencies—intake/treatment output, reservoir valve-chamber reliability, telemetry/SCADA, and security—plus the role the tank plays in water quality (turnover, mixing, and disinfectant residual).

If decommissioning is found to be most appropriate, the system will need confirmed alternatives for storage, fire-flow resilience, and emergency supply to offset the loss of this function.

This plan assumes that the reservoir is to remain in service and is to be renewed accordingly.

Water Reservoir Risk

No heat map was produced for this cycle, but a qualitative view is possible. Because the facility is currently offline, immediate operational risk is limited, while decision risk (reinvest vs. retire) is elevated pending feasibility, compliance, and cost findings. If recommissioned, with \~30% remaining service life (\~2042 nominal end-of-life), the likelihood of failure is currently moderate absent evidence of coating failure, structural defects, or chronic leakage. The consequence of failure is high given the lack of redundancy. To manage risk, prioritize a Level II inspection and condition indexing (interior/exterior coating surveys, roof/structure, cathodic protection, foundation/settlement, mixer performance, overflow and vent screening), pair it with valve-chamber/SCADA reliability checks, and maintain rigorous water-quality monitoring (residuals, THMs, temperature stratification). Use these results to load DOT with condition and criticality scores, define near-term rehabilitation (e.g., interior recoating, roof/vent upgrades, mixer retrofit), and schedule a major refurbishment or replacement planning study in the late 2030s. If decommissioning is selected, Staff will prepare a decommissioning plan addressing regulatory approvals, environmental protection/closure requirements, disposition of residuals and materials, site restoration/reuse, and system-level mitigations for storage, fire-flow, and emergency supply.

Implications

Without proactive renewal, Elliot Lake will face a growing cohort of high-risk mains whose failure would cause major service disruptions. These matrices underscore the urgency of early interventions—prioritizing those few segments already in the red today, and staging rehabilitations on the yellow-zone pipes projected to enter high-risk territory by 2034. By aligning capital plans to these risk-based insights, the City can limit future emergency repairs and preserve reliable water service as the network ages.

Climate Change Considerations

Climate change is not currently driving water-supply shortages—Elliot Lake's source and reservoir capacity comfortably meet demand fluctuations. However, rising water temperatures and altered nutrient loads raise the low-probability risk of algal blooms in the lake intake. At present, the City does not anticipate increased maintenance costs or major operational changes due to climate impacts, nor are immediate adaptation measures planned.

Looking ahead, staff will monitor source-water quality trends and engage with upstream dam operators to mitigate contamination risks beyond municipal control. Should climate-driven water-quality events emerge, the City is prepared to augment filtration protocols and adjust pumping schedules to protect both asset longevity and public health.

Adaptation Strategies

To bolster the resilience of Elliot Lake's potable water system against evolving climate and risk exposures, the following adaptation strategies will be pursued:

- **Enhanced Source Water Monitoring:** Deploy remote sensors on intake structures to track temperature, turbidity, and dissolved oxygen in real time, enabling early detection of algal bloom conditions or sediment surges.

- **Redundant Pumping & Power:** Install a secondary backup pump and on-site generator at the treatment plant to ensure uninterrupted operation during extreme weather events or grid outages.
- **Intake & Reservoir Protection:** Add floating intake screens and improve reservoir cover seals to limit debris, ice formation, and evaporation losses under variable temperature and precipitation patterns.
- **Advanced Leak Detection & Pressure Management:** Expand acoustic leak detection programs and deploy zone pressure monitoring to rapidly identify and address pipe failures exacerbated by freeze–thaw cycles or soil movement.
- **Dynamic Pump Scheduling:** Utilize SCADA-driven pump control logic that adapts daily pumping schedules to source water levels and energy-cost signals, reducing stress on intake infrastructure and lowering operational emissions.

By layering these targeted measures onto existing maintenance and replacement programs—and refining actions through the planned FMEA analysis—Elliot Lake will maintain safe, reliable potable water service in the face of growing climate variability and infrastructure aging.

5. Wastewater

Inventory

Below is the inventory of Elliot Lake's wastewater assets, detailing quantities, extents, installation eras, and brief functional notes.

Asset Type	Quantity	Length	Year Range	Notes
Wastewater Main – Concrete	514	17.7 km	1958-1984	Durable concrete gravity sewer pipes
Wastewater Main – PVC	169	52.2 km	1977-2020	Corrosion-resistant plastic sewer lines
Wastewater Main – Vitrified Clay	26	6.3 km	1958-1982	Brittle clay pipes prone to cracking
Wastewater Main – Unknown	37	10.9 km	1976-2020	Material not recorded in inventory
Wastewater Service Line – Concrete	464	4,792.6 m	1958-1984	Lateral connects building to main
Wastewater Service Line – PVC	1730	18.6 km	1977-2012	Flexible, low-maintenance plastic laterals
Wastewater Service Line – Vitrified Clay	158	1,573.8 m	1958-1982	Aged clay laterals, often with leaks
Water Service Line – Unknown	339	2.9 km	1958-2012	Lateral material unclassified
Wastewater Treatment Plant Assets	48	--	1982-2012	Lagoons, clarifiers, screens, pumps
Manholes	920	--	1958-2012	Access points for inspection/maintenance
Pumping Station Assets	16	--	1978-2020	Pumps, controls, wet wells

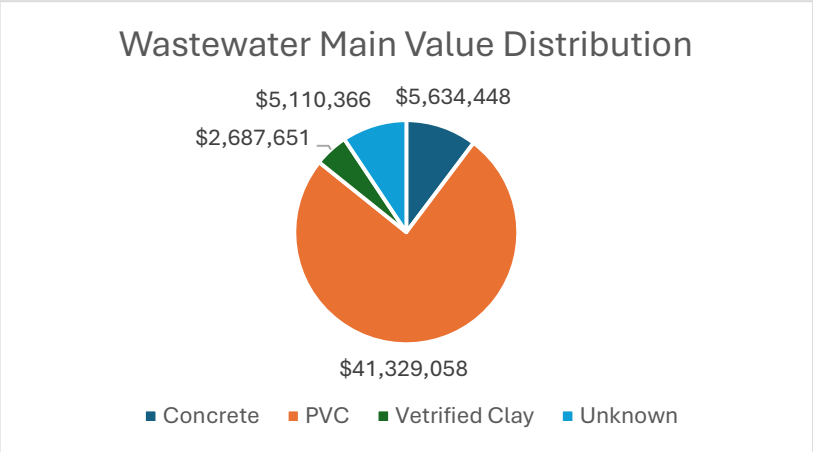
This inventory provides a comprehensive snapshot of Elliot Lake's wastewater collection and treatment infrastructure. With over **87 km** of gravity and force mains, nearly **25 km** of service laterals, and auxiliary assets including 48 treatment components, 16 pumping stations, and 920 manholes, the system spans multiple pipe materials and vintages. Understanding the material composition and age distribution is critical for targeting maintenance, prioritizing renewals, and mitigating failure risks.

By cataloguing asset types, lengths, and installation eras alongside concise functional notes, the City can:

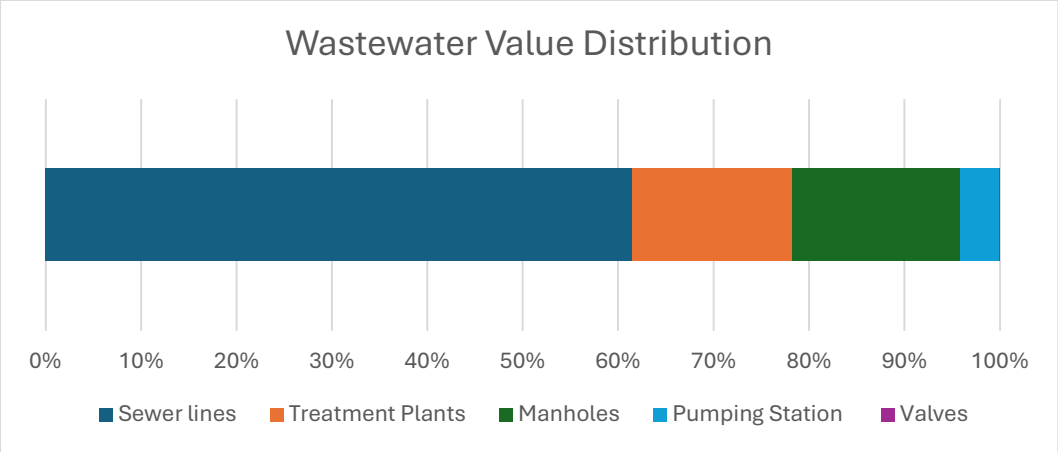
- **Prioritize Inspections & Repairs** for brittle or aging materials (e.g., clay mains, older concrete laterals).
- **Forecast Renewal Needs** by correlating pipe age and material with expected service life.
- **Allocate Budget Efficiently** to high-risk segments, such as force mains and treatment components.
- **Support Lifecycle Planning** by mapping asset condition to appropriate interventions (e.g., relining vs. replacement).
  This foundational inventory sets the stage for subsequent condition assessments, risk analyses, and lifecycle management strategies in the AMP.

Valuation

The total current replacement value of Elliot Lake's wastewater infrastructure is **$124,906,195**, distributed across gravity mains (by material), treatment plants, manholes, pumping stations, and valves. This valuation was calculated by applying unit-rate costs to the inventory quantities and lengths shown earlier, but several unit rates—particularly for PVC, concrete, and vitrified clay mains—are based on historical contract data and should be reviewed and updated with current market rates in the next AMP cycle.



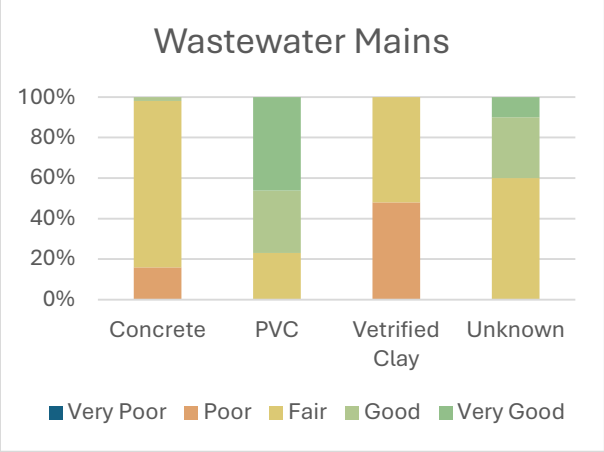
The pie chart underscores that the majority of the wastewater replacement budget is tied up in PVC mains, which alone account for nearly two-thirds of total value. Concrete mains, while substantial, represent less than one-tenth of the system's valuation, and older vitrified clay pipes contribute only a small fraction. A modest portion of the network remains classified under other or unknown materials. This distribution makes clear that future renewal funding will be heavily driven by PVC main replacement, and it emphasizes the need to verify and update unit-rate assumptions for each pipe material to ensure accurate planning.

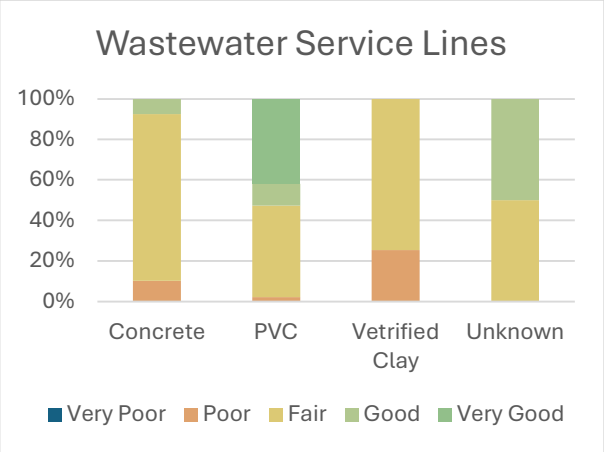


Moving forward, Elliot Lake will review and revise the unit-rate assumptions—especially for newer PVC pipe installations and treatment plant equipment—to ensure the replacement-cost model accurately reflects current construction and material markets. This refined valuation will underpin more precise reserve targets and capital forecasting in the financial strategy.

Condition

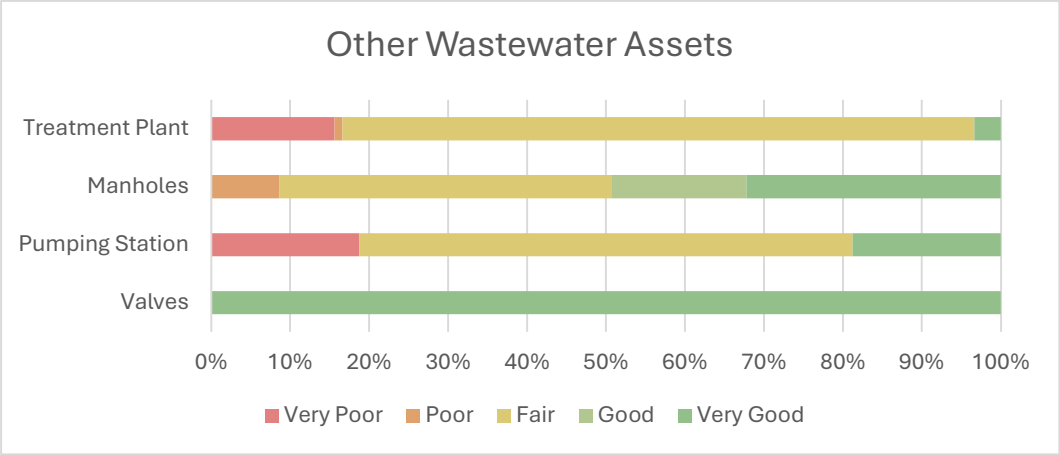
The condition snapshots show a system that's largely **serviceable but aging**, with deterioration concentrated in the oldest pipe materials and at select facilities. Condition bands are based on DOT data (age/%RSL with any available inspections), so they provide a network-wide view even where detailed CCTV is still limited.



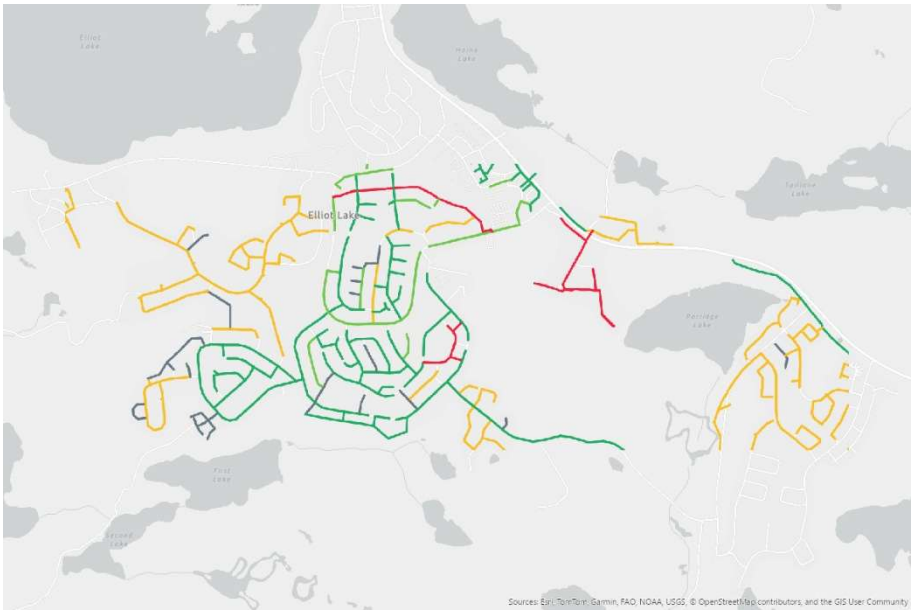


Concrete mains cluster in the *Fair* band, reflecting age and exposure rather than widespread structural failure. PVC mains perform best overall, skewing *Fair to Good/Very Good*, consistent with their newer vintages and smoother hydraulics. The weakest cohort is vitrified clay (VCP): a large share trends *Poor to Fair*, which aligns with known root intrusion, joint separation, and infiltration risks in clay. Segments with "Unknown" material sit mostly in *Fair* with some *Good*—a reminder that data completion could reveal hidden pockets of risk.

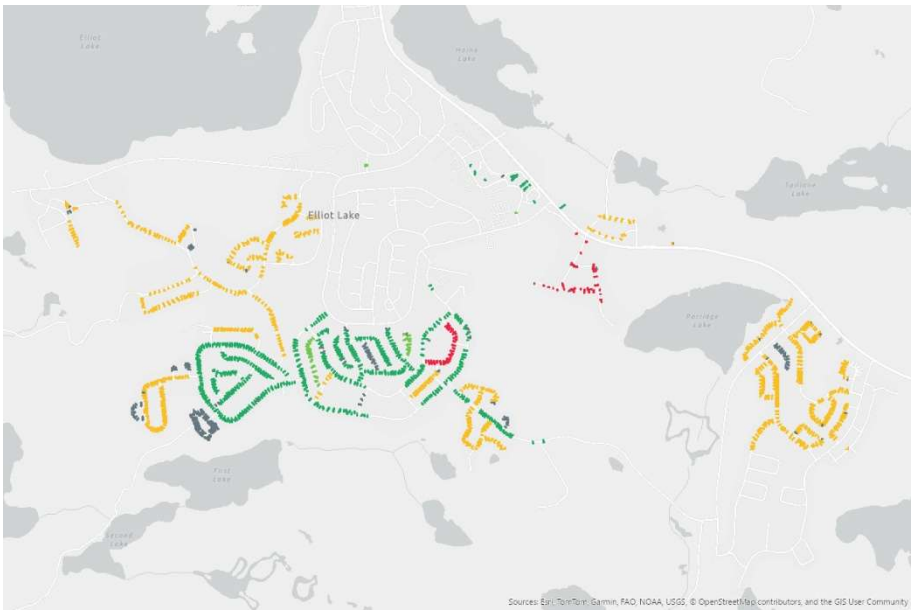
Lateral conditions generally mirror the mains: PVC laterals range *Fair to Very Good* and concrete laterals sit predominantly *Fair* with a thin *Poor* tail. VCP laterals are the outlier, carrying a noticeable *Poor* slice, which often shows up as repeat blockages and I&I at private interfaces. "Unknown" laterals lean *Fair/Very Good*, again highlighting the need to firm up attributes before locking in long-horizon plans.



Treatment plants read mostly *Fair* with a small *Poor/Very Poor* component—aging processes and controls rather than imminent failure—while pumping stations show a heavier footprint in *Fair* (and some *Very Poor* units), supporting the targeted renewal/controls work planned in the capital program. Manholes trend *Fair to Good*, consistent with age and freeze–thaw wear. Valves are overwhelmingly *Very Good*, reflecting recent replacements and low duty cycles.



Wastewater Main Condition Map



Wastewater Service Line Condition Map

The mains map highlights green corridors of *Good/Very Good* condition in newer subdivisions, with yellow–red clusters along older trunks and cul-de-sacs—typical candidates for CCTV plus spot repairs or segment renewals. The service-line map shows a finer-grained pattern: dotted strings of *Fair/Poor* laterals in older neighborhoods that correspond to the VCP cohort and known blockage calls. Together, the visuals point to a practical sequence: complete CCTV on red/yellow mains, pair lateral renewals where defects are concentrated, and time facility and pump-station projects to address the few units driving the "Very Poor/Poor" share.

> In short, the network is stable but tilted toward *mid-life stewardship*: finish the data, prioritize VCP corridors and flagged pump stations, and keep facilities from sliding by addressing process components before whole-of-plant work is needed.

Levels of Service

The City of Elliot Lake's Wastewater Division is committed to protecting public health and the environment by safely collecting and treating wastewater across the community. In accordance with Ontario Regulation 588/17, this section outlines the current levels of service using both community-focused indicators and technical performance metrics. These measures help the City assess how well wastewater services are being delivered and guide decision-making for long-term asset renewal and financial sustainability.

Current Levels of Service

Elliot Lake's wastewater infrastructure includes a lagoon treatment system and an extensive underground network of sewer mains. The system generally performs well, with rare overflows and good regulatory compliance. Most developed properties are connected to the system, and it has sufficient capacity even during peak demand. However, significant portions of the network and treatment

infrastructure are aging and approaching the end of their service life, contributing to rising maintenance costs and increased risk of failures.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	All developed properties have access to the sewer system	% of eligible properties connected	Almost full community access; unconnected areas are few and low demand	90–97% connected
Reliability	Sewer system collects and conveys without backups or overflows	# of backups/overflows per year	Rare issues, mostly prevented by maintenance	< 1 incident every 5 years
Safety	Lagoon/treatment system meets effluent standards	% of discharges within limits	Full compliance with provincial regulations	95–99% compliance
Condition	Pipes and treatment systems are in good condition	% of network rated "Good" or better	Many assets nearing end of life	50–69% rated ≥ 3/5
Performance	System handles peak flows effectively	% of time within capacity	Ample capacity even during extreme peak events	≥ 100% within design
Cost Effectiveness	Cost to treat and manage wastewater per connection	$/connection/year	Aging system creates frequent, costly repairs	$750–$900/connection/year

Proposed Levels of Service

In Elliot Lake, wastewater services play a vital role in protecting public health, preserving the environment, and supporting the quality of life for residents and businesses. The system collects and treats wastewater efficiently, ensuring that effluent is safely processed and discharged within provincial regulations. Most homes and buildings in developed areas are connected to the system, and the network is designed to handle both normal and peak flows without interruption. While some components of the system are aging and require investment, the City continues to take a proactive approach to maintenance and upgrades. Efforts are focused on minimizing overflows, preventing costly repairs, and maintaining consistent compliance with environmental standards. Looking ahead, major upgrades — including the replacement of aging treatment plant components — will help ensure that wastewater services remain reliable, effective, and environmentally responsible well into the future.

Characteristic	*Indicator*	*Metric*	*Proposed Level of Service*	*Proposed Metric*
Accessibility	All developed properties are connected to or have access to the sewer system	% of eligible properties connected	Almost full community access; unconnected areas are few and low demand	90–97% connected
Reliability	Sewer system collects and conveys wastewater without overflows	# of backups or overflows/year	Rare issues, mostly prevented by maintenance	< 1 incident every 5 years
Safety	Lagoon/treatment system meets effluent standards	% of discharges within limits	Full compliance with provincial regulations	95–99% compliance
Condition	Pipes and treatment systems in good condition	% of network rated "Good" or better	Many assets nearing end of life	50–69% rated ≥ 3/5
Performance	System handles peak flows effectively	% of time system is within capacity	Ample capacity even during extreme peak events	≥ 100% within design
Cost Effectiveness	Cost to treat and manage wastewater per connection	$/connection/year	Aging system creates frequent costly repairs	$750–$900/connection/year

Together, these current and proposed levels of service establish a clear roadmap for Elliot Lake's Wastewater Division—balancing high connection rates and regulatory compliance with targeted investments to address aging infrastructure. By maintaining rare overflow incidents, full effluent compliance, and robust peak-flow capacity, the City will safeguard public health and the environment. Continued focus on proactive condition improvements and cost-effective renewal strategies will ensure the wastewater system remains reliable, resilient, and sustainable well into the future.

Life Cycle Activities

Planning

Elliot Lake will plan wastewater investments around service risk, not growth pressure. The first priority is to complete a consistent data backbone—CCTV of priority mains, condition scoring for manholes and valves, and a simple inflow/infiltration (I/I) baseline—so renewal triggers are evidence-based. With capacity headroom at the plant and in many trunk sewers, the near-term focus is right sizing: reduce I/I, fix the few high-risk segments, and defer major expansion. Annual work programs will be bundled with road projects where possible, using a "dig once" approach. Planning deliverables each year include: an updated GIS inventory, a 3–5-year risk-ranked renewal list and targeted I/I projects (smoke testing or flow monitoring) to keep wet-weather peaks within comfortable margins. Climate resilience (backup power at lift stations, flood-safe controls) is baked into scoping but scaled to the City's resource reality.

Procurement

Procurement will favor repeatable, unit-rate contracts that keep Elliot Lake nimble. The City will:

- Pre-qualify contractors for CCTV/cleaning, trenchless renewal (CIPP/spot liners/pipe-bursting), and open-cut work, with standing offer rates to speed call-ups.
- Standardize specs for pipe materials, manhole frames/covers, pumps, and control panels to simplify spares and training.
- Use multi-year service agreements for lift-station servicing and emergency repairs (confined space, bypass pumping).
- Apply a trenchless/open-cut selection matrix (depth, utilities, traffic, groundwater) so the lowest life-cycle cost method is chosen every time.
- Leverage cooperative buying where practical and require basic warranties and post-construction CCTV for QA/QC.

Operations

Daily operations aim to keep the system quiet, compliant, and inexpensive to run—making the most of the existing capacity.

- Plant & Lift Stations: Routine rounds, SCADA monitoring/alarms, wet-well cleaning, pump rotation, and emergency generator exercising.
- Collection System: Blockage response, hot spots flushing, seasonal root control where needed, utility locates, and coordination with Road crews for reinstatement.
- Quality & Compliance: Effluent sampling and reporting, calibration of meters/samplers, and simple FOG education to limit blockages.

- System Health: Targeted flow monitoring to track I/I and confirm that high-risk basins are stable; seasonal checks at known surcharge locations.
- Records: Close-out of field work orders with updated GIS attributes to feed planning and renewal decisions.

Maintenance

The table below captures what is currently modeled (and what still needs to be added) for routine and minor rehabilitation. The City's philosophy is "prevent where cheap, repair where sensible, replace only when necessary"—practical for a small team and a network with spare capacity.

Asset Type	Type of treatment	Maintenance Treatment	Typical condition range for use
Wastewater Lines	-	**-**	-
Wastewater Treatment Plants	Routine Maintenance	**Maintenance** (Inspect, clean, and service treatment equipment and piping)	Poor – Fair
	Minor Rehabilitation	**Rehabilitation** (Upgrade or replace deteriorated plant components and process systems)	Poor – Fair
Manholes	-	**-**	-
Pumping Station Assets	Maintenance	**Maintenance** (Routine servicing and inspections)	Poor – Fair
	Minor Rehabilitation	**Rehabilitation** (Targeted component repairs and upgrades)	Very Poor
Wastewater Valves	-	**-**	-
Water Reservoir	-	**-**	-

Where dashes appear (wastewater lines, manholes, valves, reservoir), standardized maintenance routines are not yet configured in DOT; Elliot Lake will add CCTV/flush cycles for mains, visual/structural inspections for manholes, and valve exercising into the next AMP iteration so mid-cycle work is captured, and renewals can be deferred cost-effectively.

Minor rehabilitation (spot lining, point repairs, manhole chimney/bench repairs, pump rebuilds, VFD replacements) should be the default response for isolated defects—protecting capital by extending service life without full reconstruction.

Renewal

Full replacements remain the backstop when assets hit the end of useful life or pose unacceptable risk. In a system built for higher historic demand, renewal will be targeted and right-sized—favoring trenchless methods and component swaps over full rebuilds wherever feasible. Triggers will combine condition, failure history, and consequence (proximity to critical facilities, basements at risk, road classification). Projects will be packaged with road works or other underground utilities to minimize reinstatement costs, and designs will incorporate I/I reduction (tight joints, sealed laterals, manhole rehabilitation) to preserve plant capacity.

Asset Type	Type of treatment	Treatment	Typical condition range for use
Wastewater Lines	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire wastewater main segment)	Poor
Wastewater Treatment Plants	Replacement / Reconstruction	**Full Asset Replacement** (Demolish and build new wastewater treatment facility)	Poor
Manholes	Replacement / Reconstruction	**Full Asset Replacement** (Remove and install new manhole)	Poor
Pumping Station Assets	Replacement / Reconstruction	**Full Asset Replacement** (Complete station rebuild)	Poor
Wastewater Valves	Replacement / Reconstruction	**Full Asset Replacement** (Full valve assembly replacement)	Poor
Water Reservoir	Replacement / Reconstruction	**Full Asset Replacement** (Drain, replace, and reconstruct ground-level storage reservoir)	Poor

The table lists “full asset replacement” as the modeled treatment; in practice, Elliot Lake will evaluate trenchless renewal (CIPP, spiral wound, pipe-bursting) first, then open-cut where structure is lost or conflicts exist. For lift stations, “replacement” typically means a modernized wet-well, pumps, controls, standby power, and telemetry—often within the existing footprint.

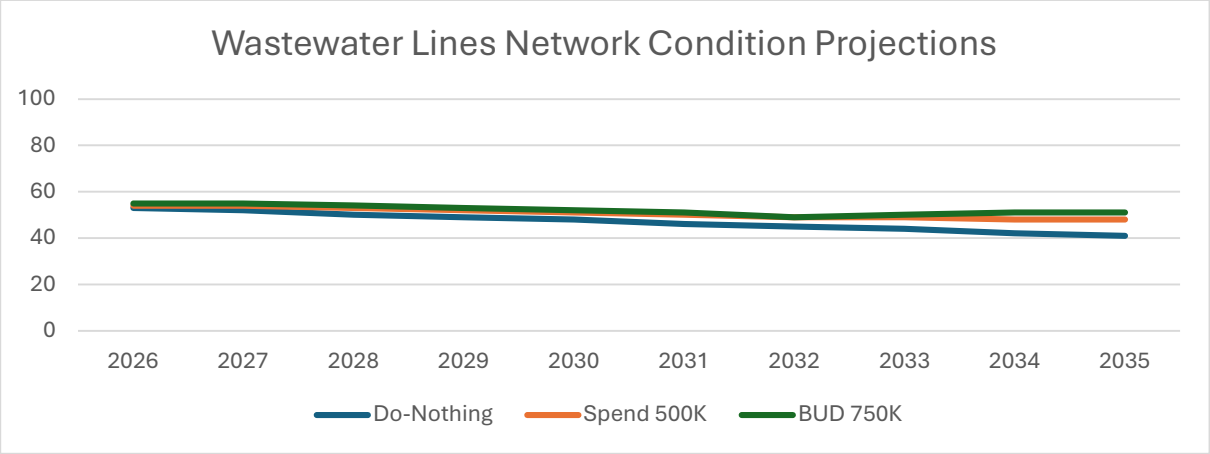
Disposal

When assets are truly surplus or replaced in place, the City will retire them deliberately and at low cost: isolate and grout-fill abandoned mains where required, plug defunct laterals, and remove or salvage surface hardware (frames/covers, valves) for reuse. Sites are restored to grade, contaminated materials handled per regulation, and records updated so future crews aren’t digging into dead infrastructure. Given the system’s legacy oversizing, selective decommissioning of redundant segments or small lift stations may occasionally be the most economical, risk-reducing choice—freeing operating dollars for the assets that matter.

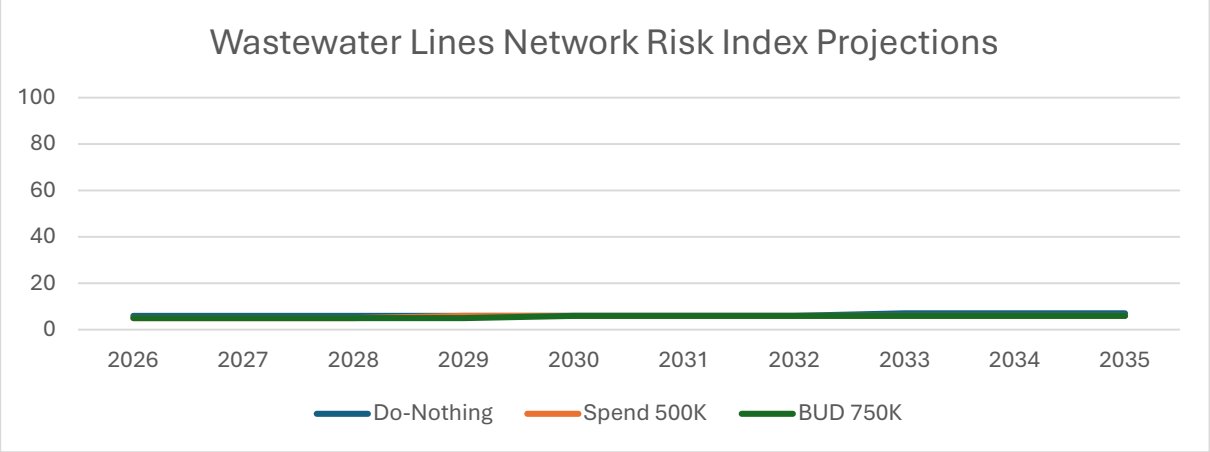
10 Year Projections of Life Cycle

Wastewater Lines Projection Selection

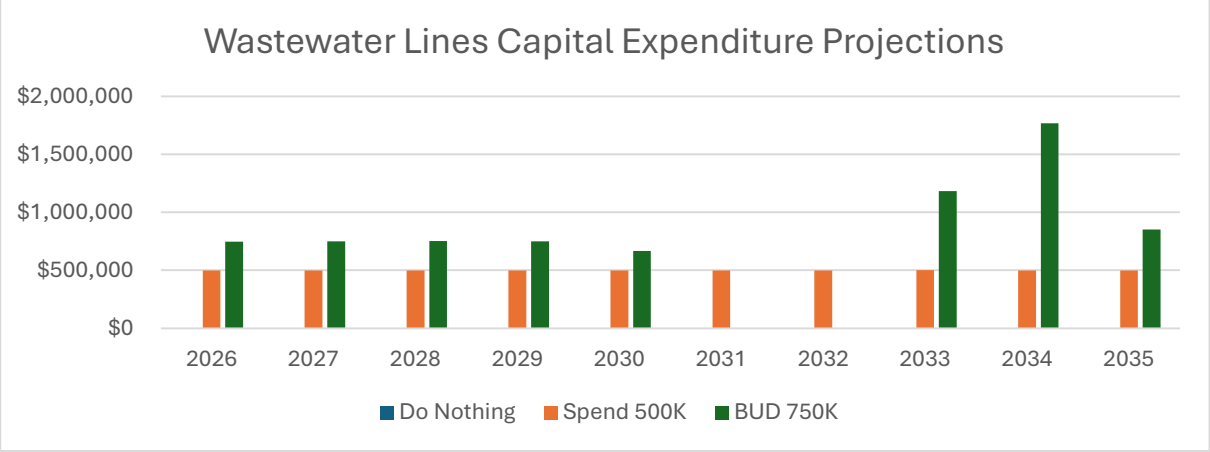
Using DOT, we compared three funding paths for the collection system—Do Nothing, Spend $500K/year, and Budget $750K/year—with the goal of holding service and risk steady without over-burdening ratepayers. Elliot Lake’s network was built for a larger population, so the practical target is to stabilize condition, not to chase marginal, expensive gains.



The condition trajectories show both funded programs outperform "Do Nothing," but the improvement from $750K/year over $500K/year is small. Risk tells the same story: once a consistent renewal program is in place, the difference in risk reduction between $500K and $750K is minimal over the decade.



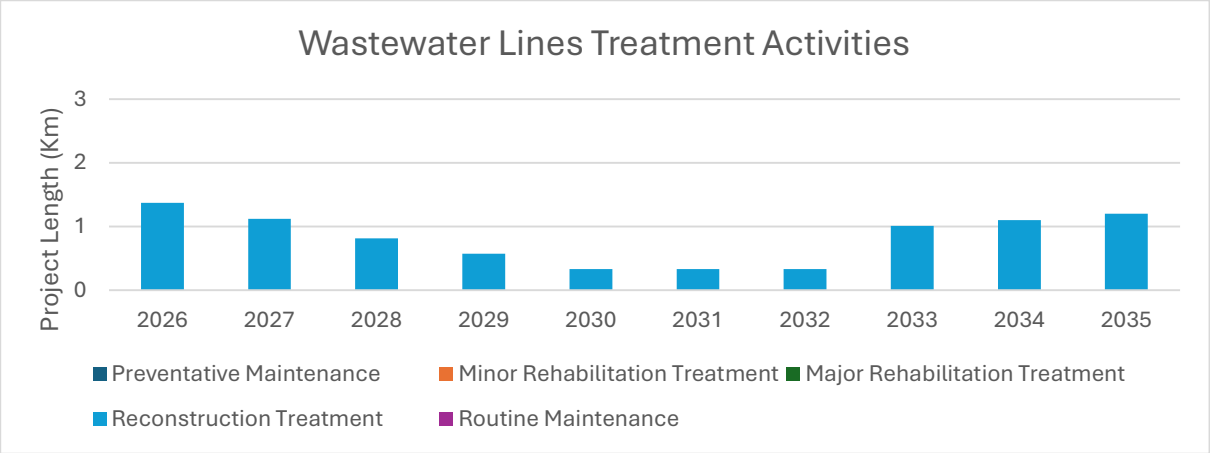
Affordability and deliverability tip the balance. A steady $500K/year program creates predictable cash flow and avoids the lumpy spikes that accompany a larger budget. It also leaves fiscal room for other priorities while the sewer network continues to receive targeted attention.



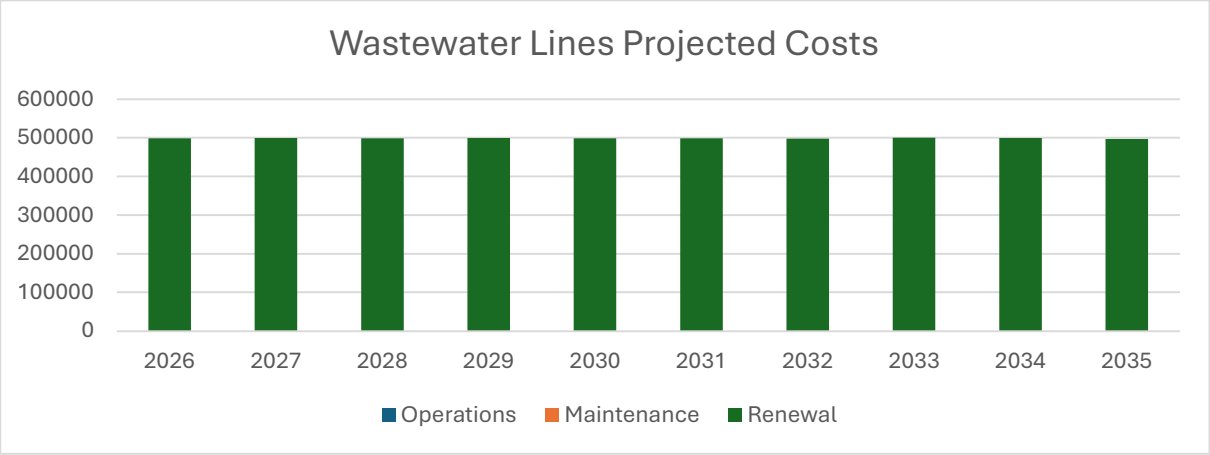
Accordingly, the City will proceed with Spend $500K/year. The program will focus on annual CCTV, point repairs, short CIPP liners, and selective segment replacements coordinated with road work. We will re-run DOT scenarios every 2–3 years as new condition and unit-rate data are collected, adjusting the program if higher-risk segments emerge.

Wastewater Lines Projection Activities

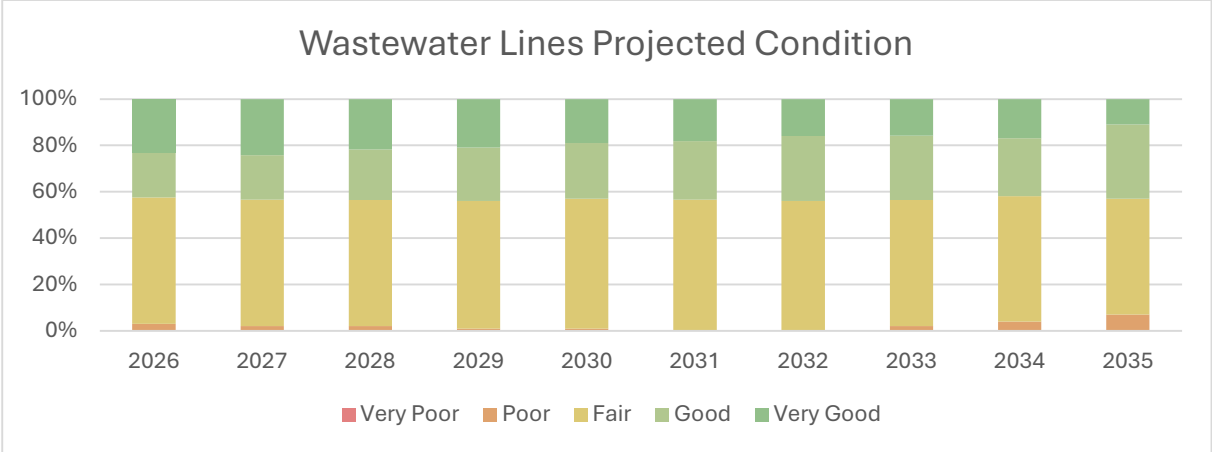
Below is the outlook for wastewater line renewal under the selected Spend 500K scenario. The intent is steady, programmatic main replacement that curbs deterioration without creating large year-to-year swings in funding or construction disruption. Mid-cycle treatments (e.g., lining) are not yet modeled in DOT; as inspection data improves, we'll layer those in to stretch asset life between full reconstructions.



This chart shows a consistent annual program of reconstruction work (expressed as project length). The ramp-down from 2026 to 2032 reflects clearing the most urgent segments first, then holding a sustainable, repeatable pace. A short ramp-up near the end of the window keeps backlog from rebuilding and aligns with known end-of-life cohorts.



Expenditures track tightly around the planned $500k per year, which is the key strength of this scenario—predictable budgeting and delivery. Keeping a flat annual profile also improves tender competitiveness and construction scheduling, reducing unit costs over time.

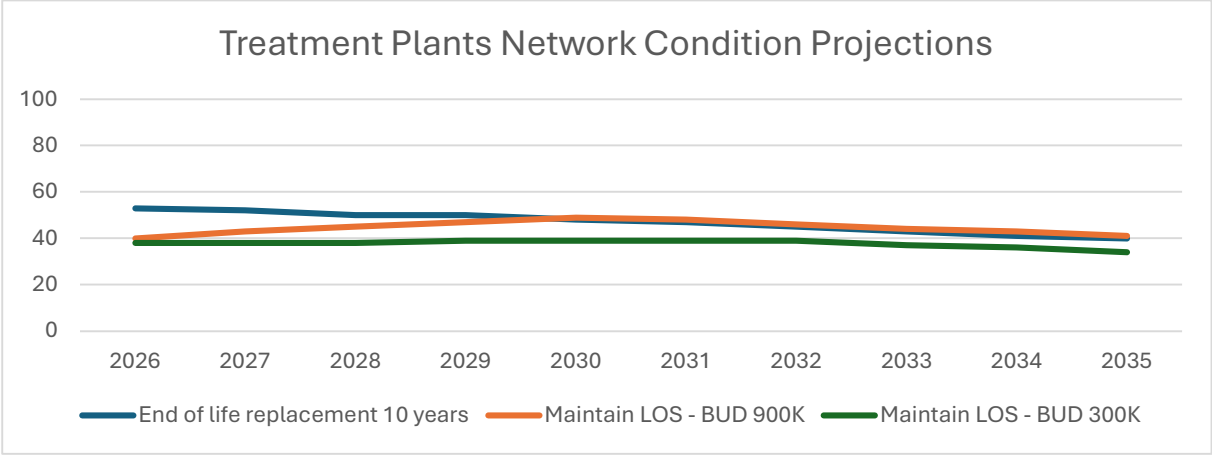


Condition distribution stays stable through the middle years and improves modestly toward the end as cumulative renewals take effect. The share of Good/Very Good segments grows while Very Poor remains contained, indicating the program is preventing failure-driven replacements and controlling risk.

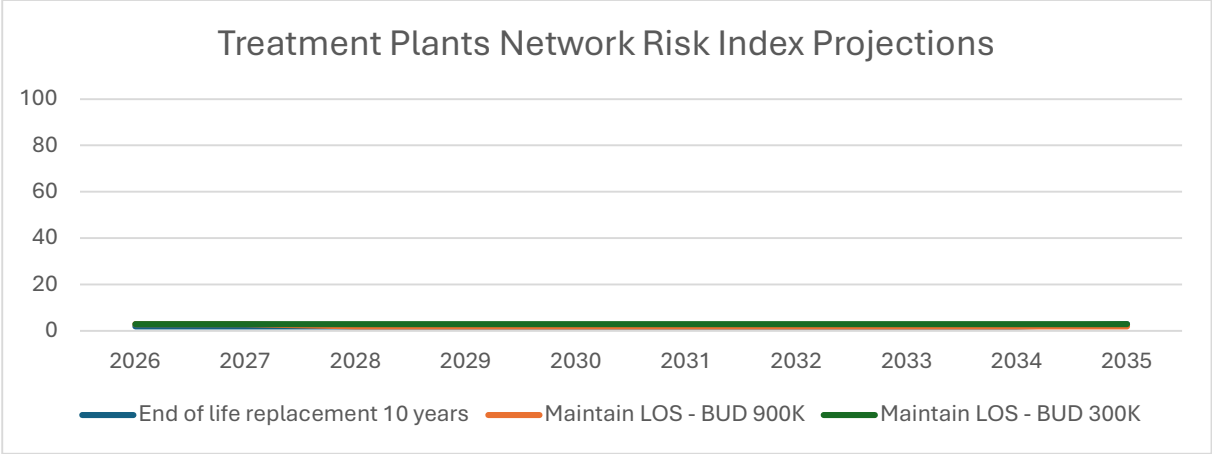
Together, these three views align with the Capital Plan (Wastewater Lines): a measured, affordable renewal cadence; stable cash flow; and gradual, durable condition improvement. As CCTV and risk scoring are expanded, we'll refine the package with targeted trenchless options (lining/spot repairs) to capture additional efficiency without increasing the budget envelope.

Treatment Plants Projection Selection

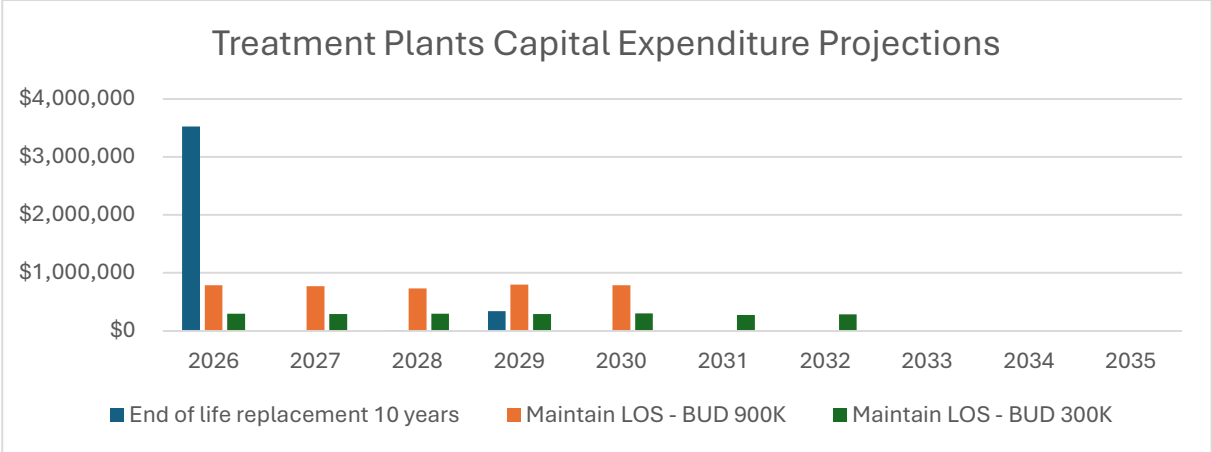
Elliot Lake's treatment plants are performing reliably today, and the scenario testing shows only marginal differences in network condition or risk across the alternatives. In that context, the **Maintain LOS – Budget $300K** path is the most balanced: it preserves regulatory compliance and day-to-day reliability while keeping annual capital outlays predictable and modest.



The condition trajectories across scenarios are relatively flat, indicating that targeted component renewals (pumps, motors, controls, instrumentation) are sufficient to hold service levels. The Maintain LOS option sustains acceptable condition without chasing diminishing returns from higher spending.



Risk remains low and stable under all options, reflecting built-in process redundancy and available capacity. With limited separation between scenarios, the prudent choice is to maintain risk at today's levels through focused replacements and preventative work rather than pursuing expensive upgrades that do little to shift the overall profile.



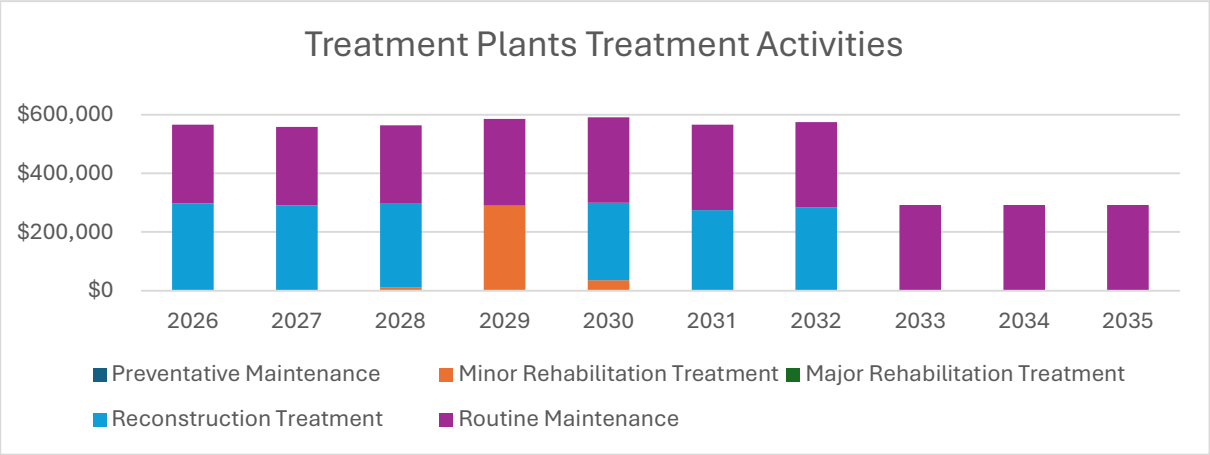
A steady $300K/year program smooths cash flow, avoids project spikes, and lets staff bundle work efficiently (e.g., annual pump/valve packages, PLC/SCADA replacements, safety upgrades). This approach also brings in some deficit heading into 2035, this will need to be monitored for any unplanned regulatory or safety-driven investments.

Looking ahead, the City will refine this program with better asset condition and performance data (SCADA trends, energy intensity, maintenance history) so that dollars continue to target the few components that drive compliance and reliability. In short, hold the line on service, control costs, and stay ready escalating only if new evidence shows a clear benefit.

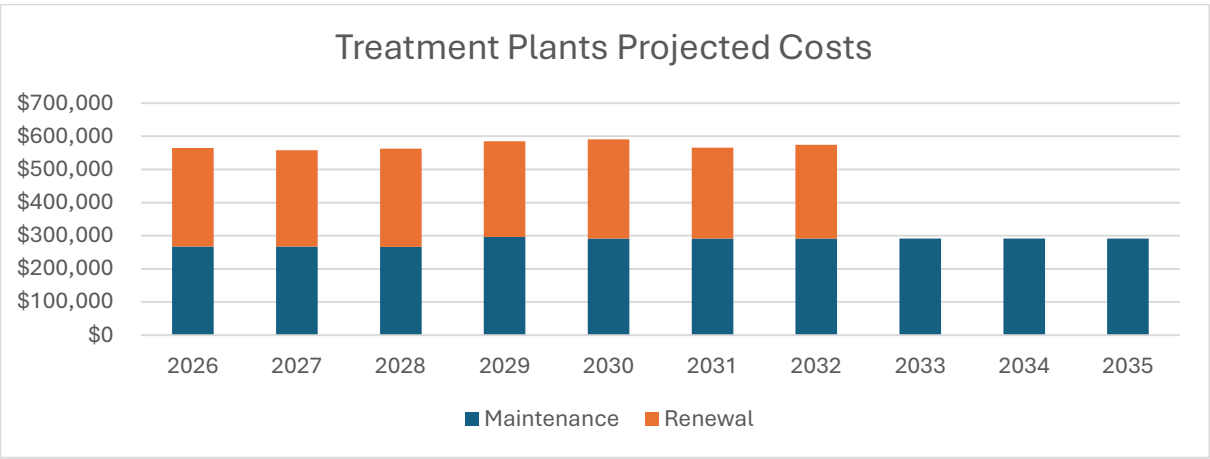
Treatment Plants Projection Activities

Elliot Lake's selected scenario focuses on holding reliability and regulatory compliance with a lean capital program. Through 2032 the plan mixes routine and preventive work with selective component renewals (e.g., pumps/blowers, clarifier drives, MCC/instrument replacements). From 2033–2035 the

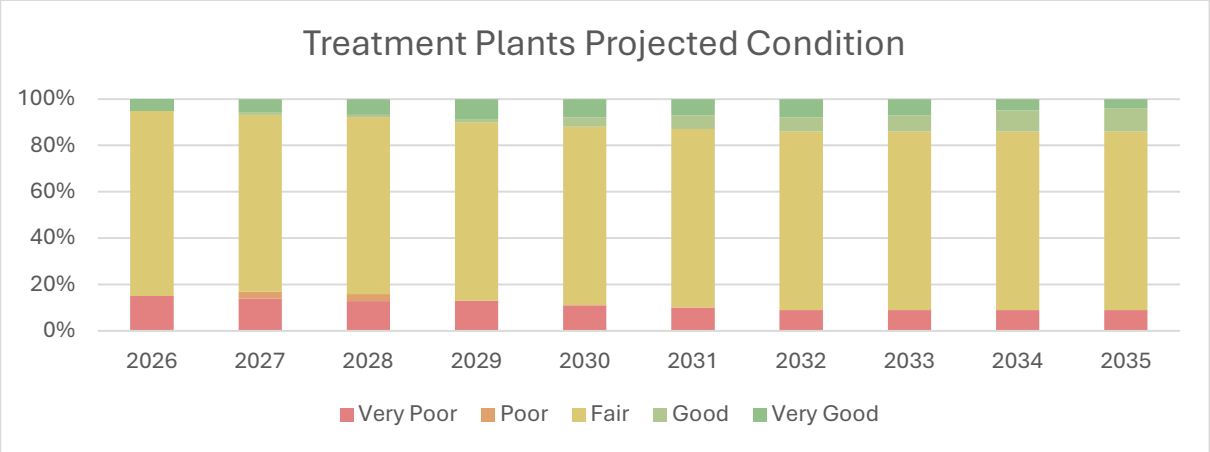
profile shifts almost entirely to operations and routine maintenance, deferring any major plant upgrades.



Cash flow is therefore dominated by steady O&M: operators and on-call coverage; power for aeration and pumping; chemicals and consumables; lab sampling and compliance reporting; SCADA support; preventive servicing of mechanical/electrical assets; winterization and residuals handling. Limited renewal dollars in the early–mid decade address highest-risk components, then taper off—keeping annual costs predictable and aligned with the $300K envelope.



Because the emphasis is on upkeep rather than large capital replacements, condition improves only marginally over ten years. The scenario effectively stabilizes assets in the “Fair” band, trims the “Poor/Very Poor” share, and nudges more plant elements into “Good”—a sensible outcome while the City refines component-level data and prioritizes larger works.



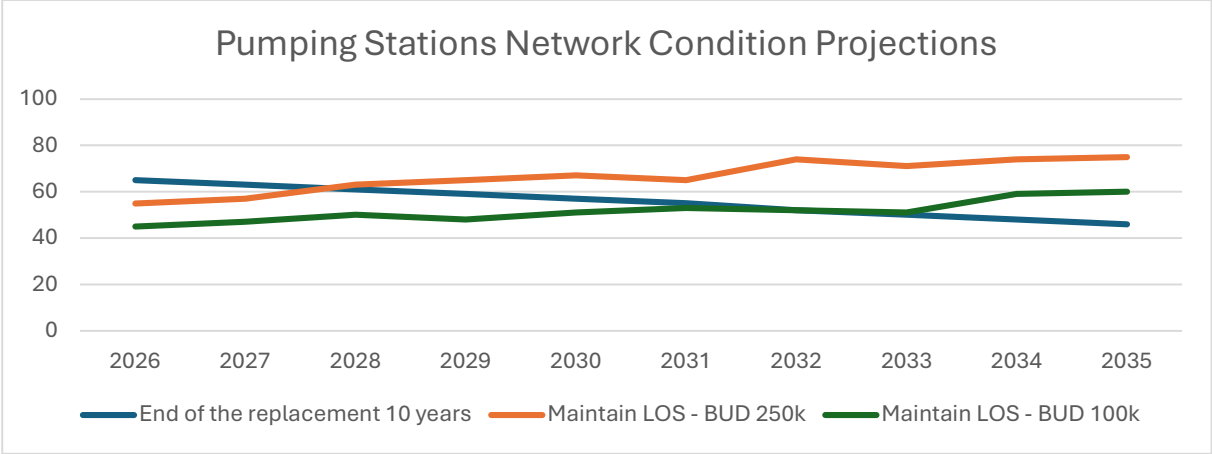
This approach balances risk and affordability: it preserves process performance and compliance, limits year-to-year volatility, and avoids committing to major upgrades until clearer component condition, unit costs, and long-term growth needs are confirmed. As the asset registry matures (component ratings, failure histories, and energy/operations benchmarking), Elliot Lake can test targeted capital packages to convert modest condition gains into step-changes where they matter most.

Manholes

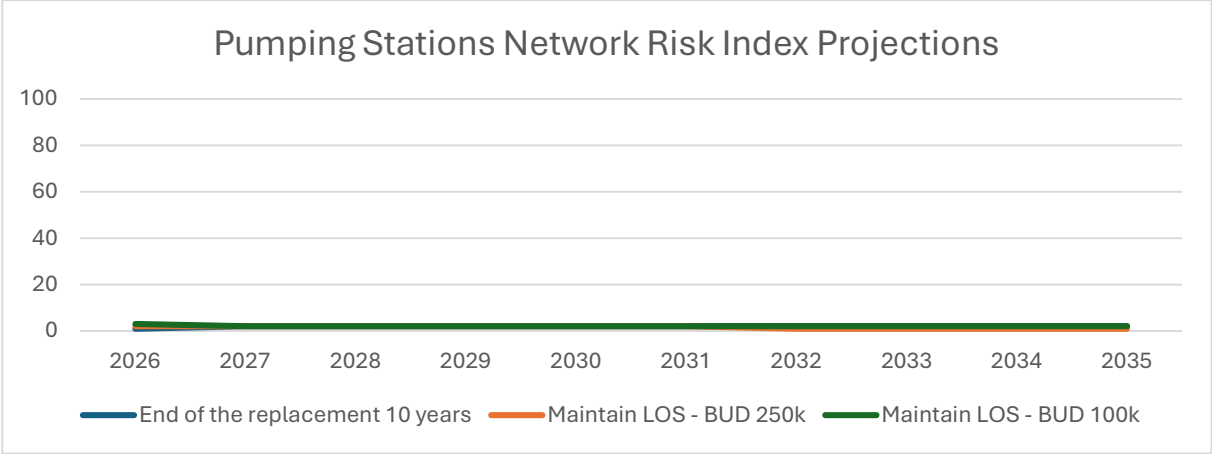
A scenario could not be run for **manholes** in DOT because the dataset is incomplete. Key fields such as installation year, condition/LoF, criticality (service impact), and unit replacement costs are missing or inconsistent across the inventory, preventing deterioration modelling and cost scheduling. To enable scenarios in the next AMP iteration, the City should complete a GIS-based field inventory (confirm locations, material, size, and depth), carry out basic condition ratings during inspections (frame/lid, barrel, bench, infiltration), assign criticality based on roadway class and downstream consequences, and load standard unit rates for renewal and typical maintenance (frame/lid resets, chimney repairs, infiltration sealing). Once these attributes are in DOT, manhole maintenance and renewal needs can be modelled alongside the rest of the stormwater system.

Pumping Stations Projection Selection

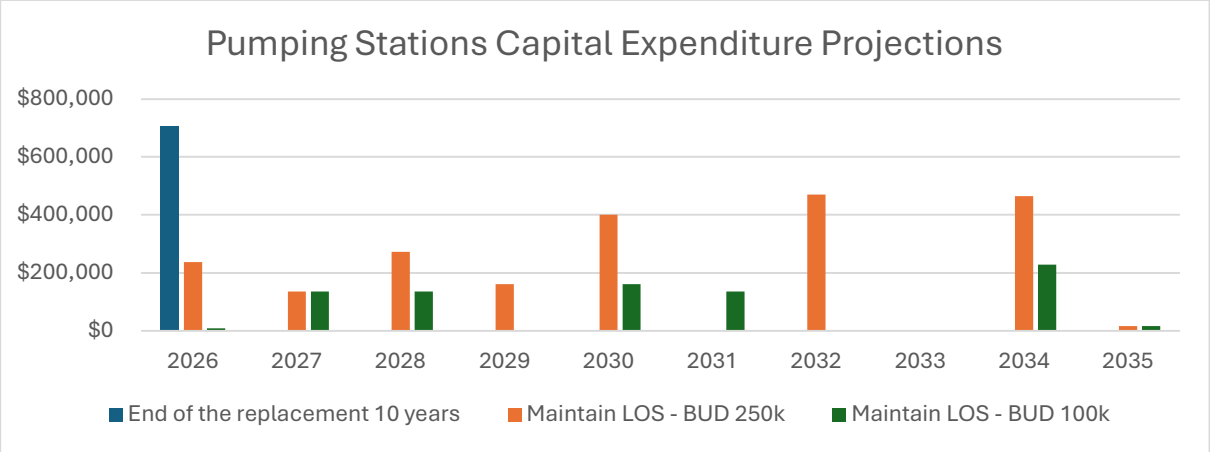
To test a sustainable path for Elliot Lake's pumping stations, three scenarios were modeled: (1) defer major replacements for a decade ("End of the replacement 10 years"), (2) Maintain LOS with a $250k annual budget, and (3) Maintain LOS with a $100k annual budget. Our objective was to protect service reliability, keep risk low, and avoid an outsized infrastructure deficit.



The condition trajectories show that $100k/year steadily lifts performance through the period, while $250k/year improves condition a little faster early on but delivers only marginal additional benefit by the mid-2030s. Deferring replacements would allow condition to slide, creating backlog pressure and higher future costs.



Modeled risk remains low in all cases, reflecting the small number of stations and the stabilizing effect of routine servicing. The gap between the $100k and $250k options is modest, indicating that disciplined maintenance and targeted component renewals can control risk without heavy annual spending. (We will refine risk separation as more failure-history and condition data are added.)

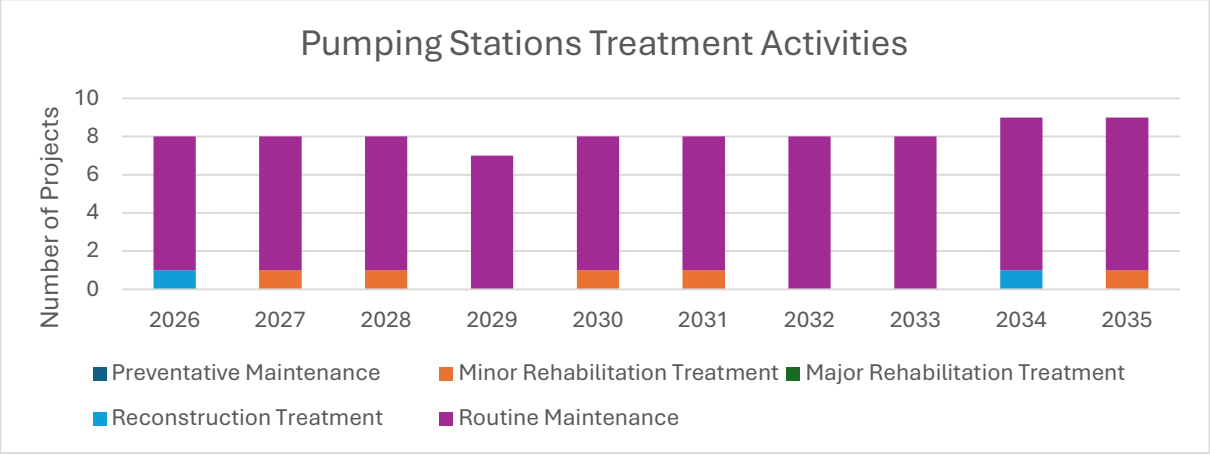


The $250k pathway front-loads several high-cost years, while the $100k plan spreads smaller, predictable projects across the decade—easier to cash-flow and more consistent with the City's affordability goals.

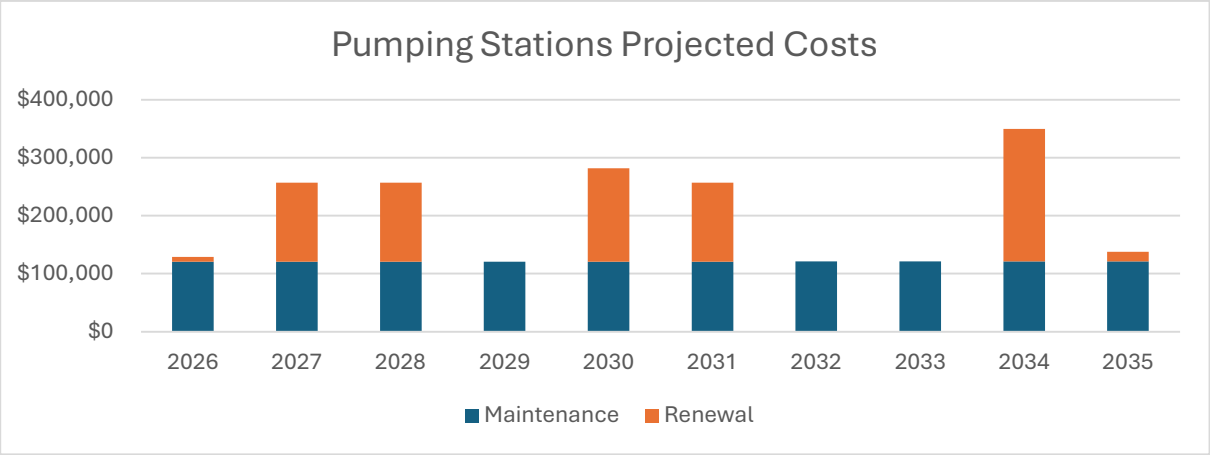
Elliot Lake is choosing **Maintain LOS – BUD $100k**. This option nearly achieves our condition targets, keeps modeled risk low, and launches the most critical works (pump/motor replacements, controls/SCADA upgrades, standby power, wet-well and valve repairs) without over-burdening rates or reserves. It also carries forward only a **manageable** deficit, preserving flexibility for other wastewater priorities. We will revisit the scenario at the next AMP update or sooner if inspections flag accelerated deterioration, with a trigger to increase investment if the average condition index trends below the mid-50s or reliability alarms rise.

Pumping Station Projection Activities

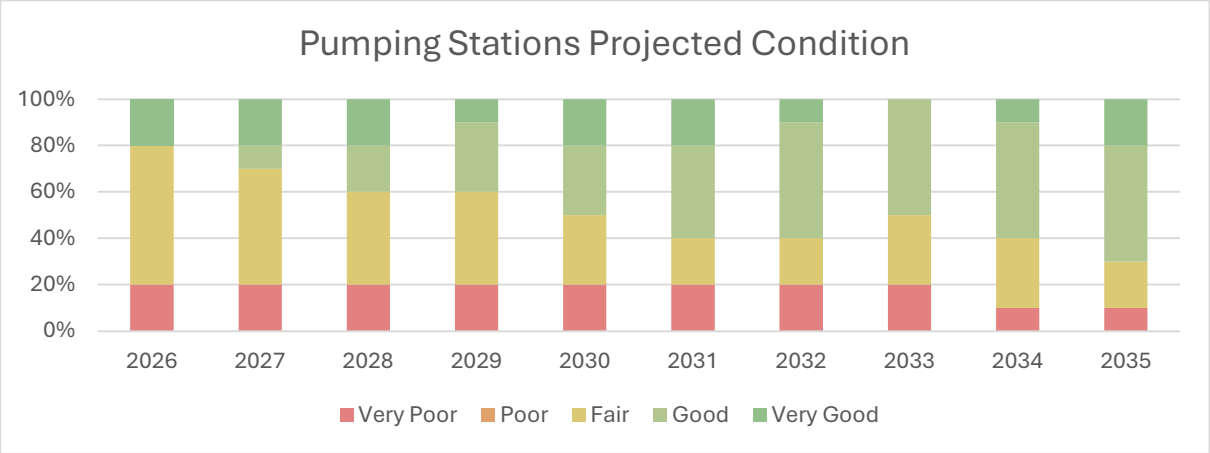
Elliot Lake's pumping-station program is built around many small, repeatable renewals backed by disciplined routine maintenance. Under the selected Maintain LOS – BUD $100k scenario, the City focuses on keeping stations reliable and code-compliant while spreading capital peaks. This approach fits a system with ample installed capacity: targeted component renewals (rather than full rebuilds) preserve redundancy without over-investing.



This chart shows the operating model as a steady cadence of routine maintenance every year, with one small minor-rehabilitation package most years (typical items include pump rebuild kits, check-valve replacements, MCC/VFD repairs, level-control upgrades, and wet-well coating touch-ups). Occasional reconstruction spikes appear early and again near 2034–2035, representing contingency allowances for a single end-of-life structure or major electrical replacement if a station crosses a failure threshold.



Costs mirror that pattern. The base maintenance line (inspections, cleaning, electrical servicing, SCADA tuning, standby-power testing) is relatively flat, while renewal costs rise in specific years to deliver grouped packages of work—e.g., replacing the highest-run pumps and motors together, modernizing obsolete control panels, or lining a wet well to arrest concrete loss. A larger spike in 2034 reflects a planned bundle at the most critical stations to lock in reliability heading into the mid-2030s.

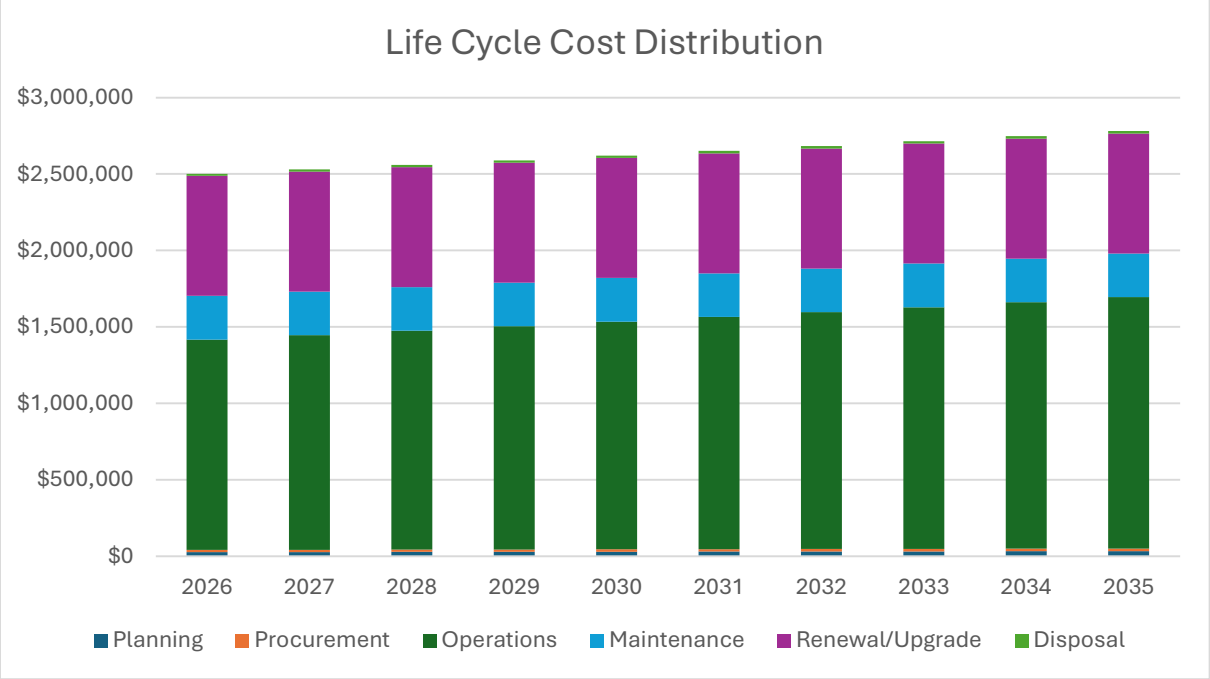


Condition improves steadily as these programs take hold. The proportion of Good/Very Good assets grows through the decade, while Poor/Very Poor shrinks to a small residual by 2035. That outcome is achieved without wholesale rebuilds; instead, right-sized renewals address the components that limit performance (pumps, valves, controls, coatings, and standby power).

The accompanying capital plan sequences small, high-value projects such as pump/motor replacements at the highest-duty stations, new check valves and isolation valves to improve maintainability, MCC/VFD and level-instrument upgrades for energy and process stability,

SCADA/telemetry improvements for alarms and remote diagnostics, wet-well concrete repairs and protective lining, and periodic generator refurbishments to sustain backup power. Packaging these works by station and discipline reduces downtime and contractor mobilization costs, helping the City meet its level-of-service targets within a modest annual envelope.

Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$27,500	$33,600	Program management, CCTV programs, AMP/LOS updates
Procurement	$14,000	$16,800	RFQs/tenders, contract admin for CCTV/lining/etc.
Operations	$1,376,000	$1,678,000	Staffing, utilities, chemicals, lab, routine compliance.
Maintenance	$285,000 AVG / Year		Preventive & corrective work orders across plants, collection system, stations
Renewal	$785,000 AVG / Year		Capital replacements/rehabs (lines, plants, stations) averaged across the plan
Disposal	$14,000	$16,800	Decommissioning/haulage/disposal, minor site restoration



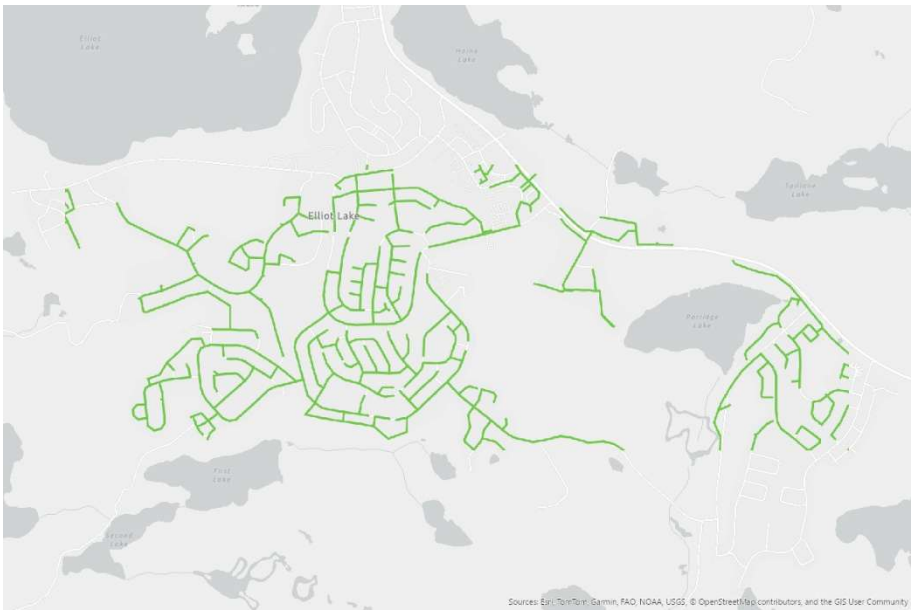
Risk Management & Climate Considerations

Elliot Lake's wastewater collection and treatment system—comprising gravity mains, service laterals, lift stations, and a treatment plant—faces key risks from aging pipes, mechanical failures, and surcharged flows. Gravity sewers installed in the 1950s–1980s are prone to cracks and joint leaks, increasing inflow and infiltration (I/I) that can overwhelm capacity during wet weather. Pump station

assets, some nearing four decades of service, present failure risks that could lead to backups or untreated discharges. While no formal FMEA has yet been conducted, asset age identifies I/I, pump downtime, and structure corrosion as high-priority risks requiring proactive mitigation.

Wastewater Main Criticality

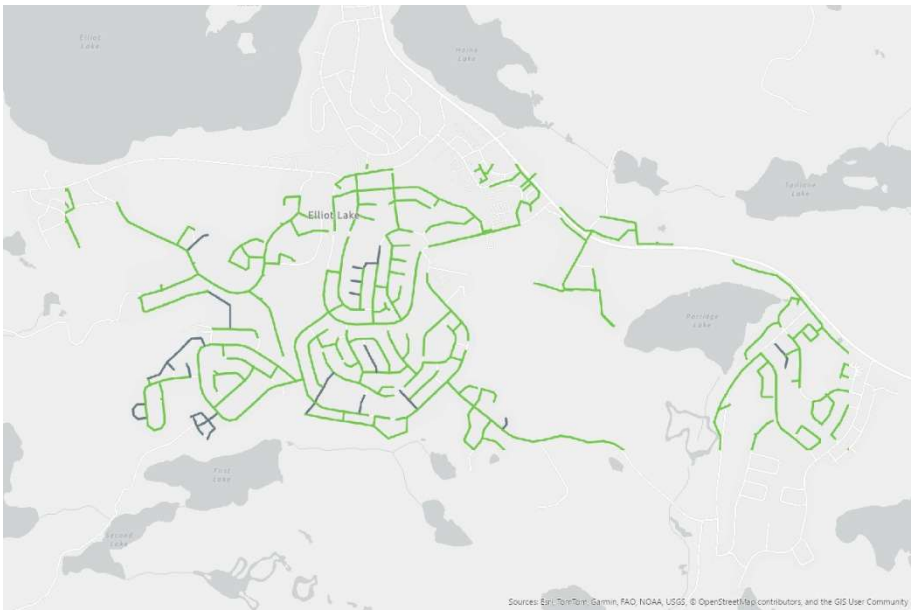
This map classifies each sewer main by its importance to network performance and public health protection. “Critical” lines (shown in darker shades) include the primary force mains between lift stations and the lagoons, as well as key gravity mains that carry flows from large residential areas. “Moderate” segments convey smaller basins or act as alternate flow paths, while “Low” segments serve minor dead-end branches. Prioritizing inspections, preventive maintenance, and emergency response planning around these critical trunks ensures that any failure has minimal system-wide impact.



Wastewater Main Criticality Map

Wastewater Main Risk

Overlaying condition and historical failure data, the risk map highlights mains most likely to fail and those whose failure would have significant consequences. High-risk pipes (darker tones) often coincide with aging vitrified clay or early-generation concrete mains, or sections with known infiltration issues. Moderate-risk sections show early distress signs, such as root intrusion or small joint leaks, while low-risk segments remain in good condition with few past incidents.



Wastewater Main Risk Map

Wastewater Laterals Criticality

The lateral criticality map illustrates the relative importance of each service connection line feeding the wastewater network. Most laterals appear in green, indicating low criticality—these lines serve individual residences or small clusters and, if interrupted, affect only a limited number of properties. A small number of laterals in darker tones represent higher-critical connections, such as multi-unit developments or lines that tie into multiple blocks; their failure would disrupt service to a broader customer base. By visualizing lateral criticality, the City can efficiently prioritize condition assessments and targeted renewals—focusing limited resources first on those service lines whose downtime would have the greatest community impact.

Wastewater Laterals Criticality Map

Wastewater Laterals Risk Map

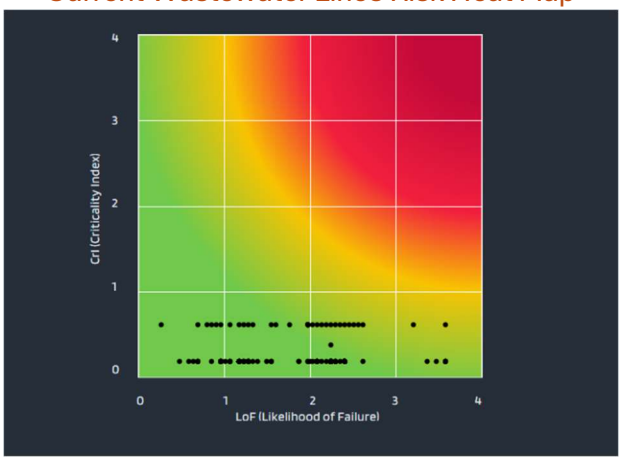
The risk-based lateral map highlights segments most susceptible to failure based on condition and age data. Nearly all laterals are shown in green, indicating low failure likelihood and minimal impact on surrounding properties. A handful of laterals appear in gray, signaling moderate risk; these tend to be older clay or concrete connections with histories of joint leaks or root intrusion. By overlaying risk onto lateral criticality, Elliot Lake can target CCTV inspections, prioritize relining projects, and deploy leak detection resources where they'll most effectively prevent service interruptions and protect public health.

Wastewater Laterals Risk Map

Wastewater Lines Risk Projection Heat Maps

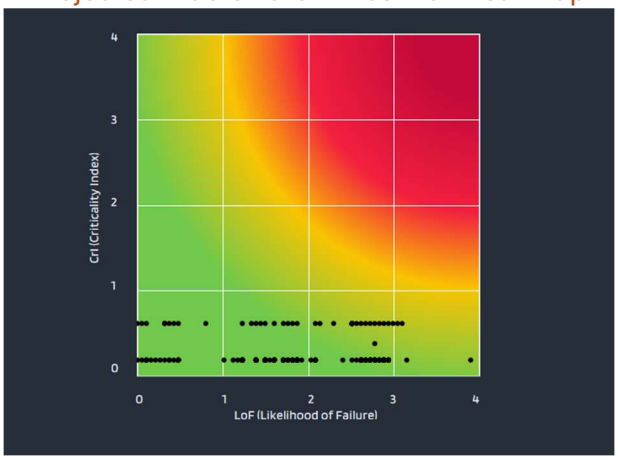
The wastewater line risk heat maps (2025 and 2035) show most assets clustered in the low-criticality band (CrI ≈0–1), with risk driven primarily by likelihood of failure rather than consequence. In 2035, points shift modestly to the right, indicating a gradual increase in LoF for some segments, but the majority remain in the green–yellow zone, suggesting manageable system-wide risk with targeted renewals for the few outliers trending into orange. These maps currently aggregate mains and service laterals; future AMP updates will separate them to sharpen priorities and treatment triggers as more condition data (CCTV, break history) is collected.

Current Wastewater Lines Risk Heat Map



Wastewater Lines Risk Projection 2025

Projected Wastewater Lines Risk Heat Map



Wastewater Lines Risk Projection 2035

Treatment Plant Criticality

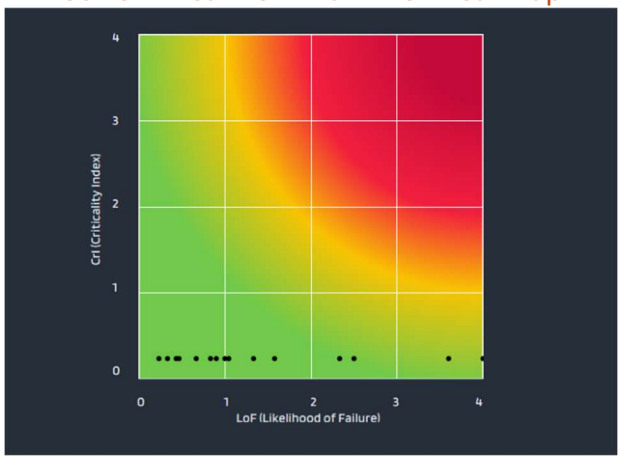
The heat maps show almost all plant assets clustered at very low criticality, reflecting the process redundancy built into Elliot Lake's facility (duty/standby pumps, parallel trains, and bypass options). Only a few points approach moderate consequence—typically elements that are harder to backstop, such as headworks screening, primary clarification, disinfection, power, and controls. This pattern suggests the plant can absorb single-asset failures without immediate service loss, but it also highlights the need to refine criticality scoring at the component level (e.g., differentiating compliance-critical units from general auxiliaries) so that consequence of failure captures environmental, regulatory, and health/safety impacts more explicitly.

Treatment Plant Risk

Risk positions remain concentrated in the low zone today and shift slightly lower by 2035, indicating that the selected "Maintain LOS – BUD 300k" program is sufficient to keep likelihood of failure in check through routine servicing and targeted renewals. Residual risk is dominated less by age than by single-point vulnerabilities—backup power, SCADA/communications, chemical storage and dosing, and any

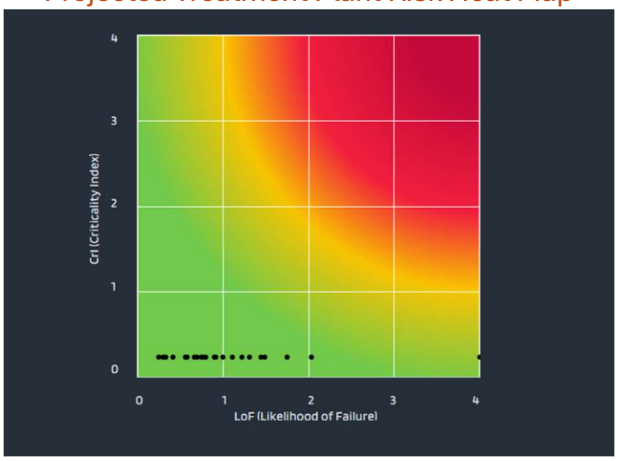
unit processes without full redundancy. Priority actions are to continue preventive maintenance on rotating equipment, sustain condition monitoring on process trains, and verify contingency measures (spares, standby capacity, and emergency power), ensuring that the observed low-risk profile translates into reliable regulatory compliance over the planning horizon.

Current Treatment Plant Risk Heat Map



Wastewater Treatment Plant Risk Projection 2025

Projected Treatment Plant Risk Heat Map



Wastewater Treatment Plant Risk Projection 2035

Manholes Criticality

Although scenarios weren't run, manhole criticality can be gauged from their role in the network. Nodes on trunk sewers, near pumping stations, at river/creek or highway crossings, and in front of hospitals, schools, or dense residential blocks carry higher consequence if they fail (public safety, traffic disruption, environmental release, and wet-weather overflows). Depth, downstream capacity, and the number of tributary laterals also raise consequence, as do locations with known surcharge. As an interim step, assign provisional tiers in GIS (High/Medium/Low) using these context flags, then refine with field verification as data are collected.

Manholes Risk

In the absence of modelled scores, risk should combine simple likelihood proxies—age/material (e.g., older brick or cast-in-place), evidence of H_2S corrosion, infiltration/inflow, frame and cover condition, traffic loading, freeze–thaw exposure, and past failure history—with the consequence tiers above. Highest near-term risk typically occurs where older or corroded structures sit on busy routes or wet-weather hotspots. Near-term controls include targeted inspections (adopting MACP or equivalent), focused cleaning where surcharge is observed, chimney seals and watertight lids to cut inflow, sectional lining of barrels, frame/cover resets, and documenting surcharge events. This approach manages risk now and creates the dataset needed to produce full heat maps in the next AMP.

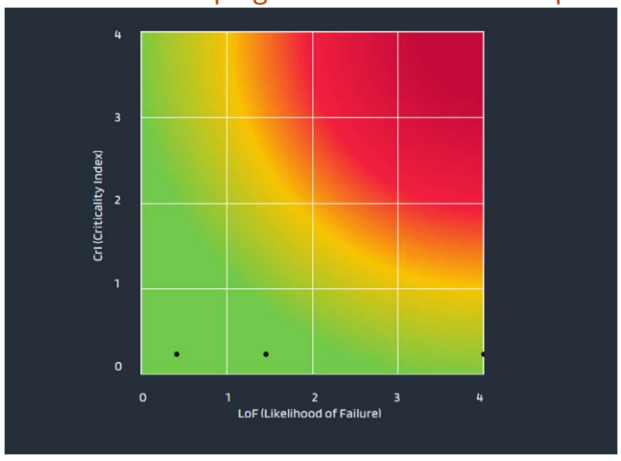
Pumping Stations Criticality

Criticality for Elliot Lake's wastewater pumping stations is driven by who they serve, how easily flow can be diverted or stored if a station is offline, and the consequence of an overflow near lakes or creeks. Most stations are small neighborhood units with some upstream storage and workable bypass options, so they plot in the low-criticality band of the heat map. A handful of sites that lift large basins or sit close to sensitive receptors trend a bit higher; the capital plan addresses these by adding/maintaining backup power, permanent bypass connections, and SCADA alarm redundancy. Those measures don't just lower failure likelihood—they mute the consequence of an outage, keeping criticality effectively low across the portfolio.

Pumping Stations Risk

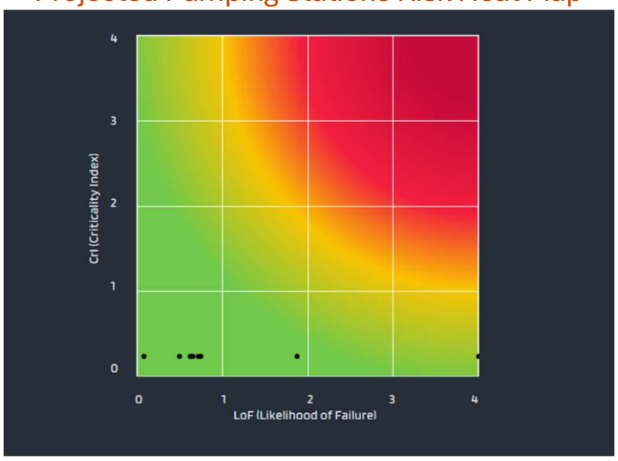
The 2025 risk heat map shows points clustered in the green zone (low likelihood, low consequence), with only a few drifting toward amber. By 2035, the cluster tightens further left and low, reflecting how the selected "Maintain LOS – BUD 100K" program keeps risk contained. The plan's cadence—annual routine tasks with targeted renewals in the late-2020s/early-2030s (e.g., control panel/VFD replacements, pump swaps, wet-well coatings) and a larger generator/standby-power refresh around 2034—systematically removes the outliers that drive risk. In short, steady O&M plus periodic electrical, mechanical, and standby-power upgrades holds the fleet in a low-risk state without over-investing.

Current Pumping Stations Risk Heat Map



Wastewater Pumping Station Risk Projection 2025

Projected Pumping Stations Risk Heat Map



Wastewater Pumping Station Risk Projection 2035

Climate Change Considerations

Climate projections for Northern Ontario indicate more frequent high-intensity rainfall events and rapid snowmelt periods. These shifts will exacerbate I/I issues, as saturated soils and heavier precipitation drive excess water into the collection network. Although overflows have been rare under historical conditions, this emerging trend raises the likelihood of basement backups and untreated discharges. The increased intensity and variability, to rising and falling temperatures, also alters lagoon treatment dynamics, potentially reducing settling efficiency and increasing odors during warm spells.

Adaptation Strategies

To address these emerging climate and risk pressures, Elliot Lake will implement a combination of source-control measures, enhanced storage capacity, and real-time monitoring to manage wet-weather flows and protect critical assets. Backup power upgrades and green infrastructure will further bolster system resilience, ensuring continuous operation during extreme events. Together, these strategies provide a proactive, cost-effective approach to safeguarding the wastewater network against climate-driven stresses.

1. **Inflow & Infiltration Reduction**
   Conduct CCTV investigation to locate and seal stormwater entry points in gravity sewers, reducing peak wet-weather flows and overflow risk.
2. **Surge Management**
   Install a small wet-weather surge tank or inline storage at critical lift stations to buffer short-duration flow spikes during heavy rain.
3. **Real-Time Monitoring & Controls**
   Deploy level sensors and remote-control valves at lift stations and key manholes to detect rapid flow increases and enable pre-emptive flow diversion.
4. **Backup Power Enhancements**
   Ensure all pumping stations have on-site generators or quick-connect portable power hookups to maintain operations during extended power outages.

5. **Green Infrastructure Integration**
   Encourage rain gardens and permeable surfaces in new developments to reduce stormwater entering the sewer network, easing stress on collection and treatment systems.

6. Stormwater

Inventory

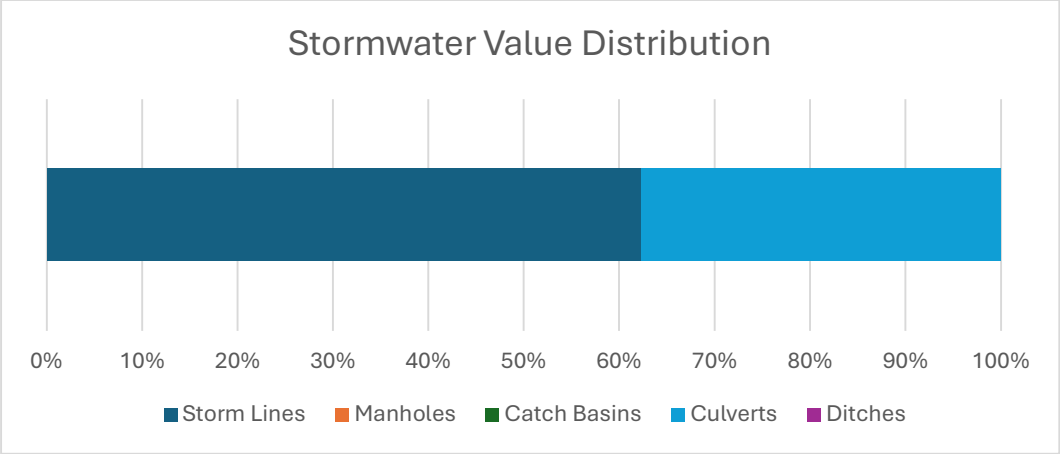
Elliot Lake's stormwater infrastructure is an extensive, multi-component system designed to manage runoff across urban and rural areas. It includes a network of underground pipes of various materials, connected through a series of manholes and catch basins, complemented by culverts and open ditches that convey water to natural drainage courses. This variety of assets—spanning vintage installations through recent upgrades—forms the backbone of the City's flood protection and erosion control program, and serves as the foundation for targeted inspection and maintenance planning.

Asset Type	Quantity	Length	Year Range	Notes
Stormwater Main – Unknown	1715	43.1 km	1958-2012	Subsurface drainage pipes; material unspecified; convey neighbourhood runoff.
Stormwater Manhole	561	--	--	Access structures for inspection, junctions, and maintenance of mains.
Stormwater Catch Basin	1166	--	--	Roadway inlets capturing runoff; sump traps debris and sediment.
Culverts	413	12,390 m	2000-2014	Cross-drainage under roads/driveways; convey streams and stormflow.
Ditches	2871	--	--	Roadside open channels conveying runoff and relieving ponding.

Valuation

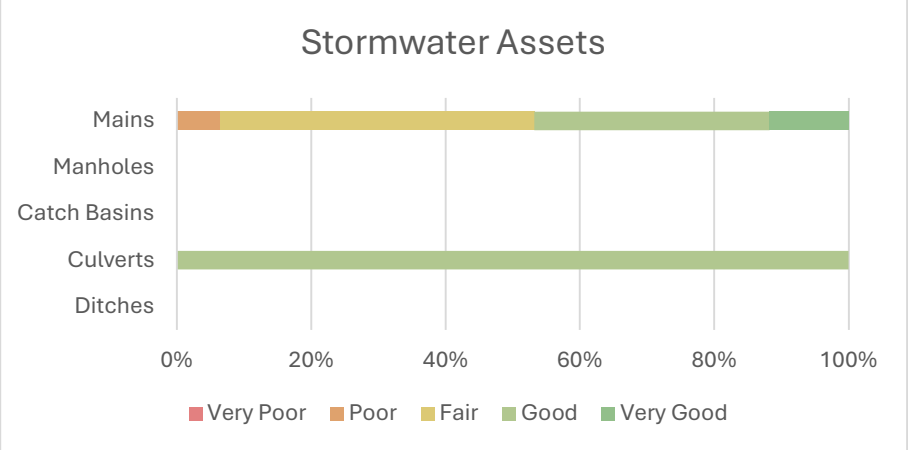
The replacement value of Elliot Lake's stormwater collection system is dominated by the underground conveyance assets—storm mains and culverts—while unit costs for manholes, catch basins, and ditches are still being developed and are not reflected in the chart below.

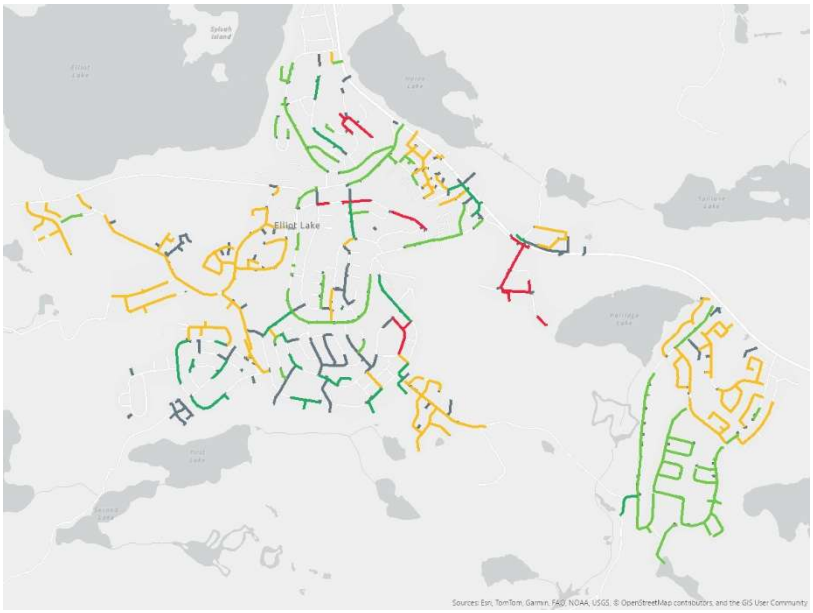
Asset Type	Current Replacement Costs
Stormwater Lines	$17,800,257
Culverts	$10,738,000
Manholes	Cost Data Pending
Catch Basins	Cost Data Pending
Ditches	Cost Data Pending
Total Value	**$28,538,257**



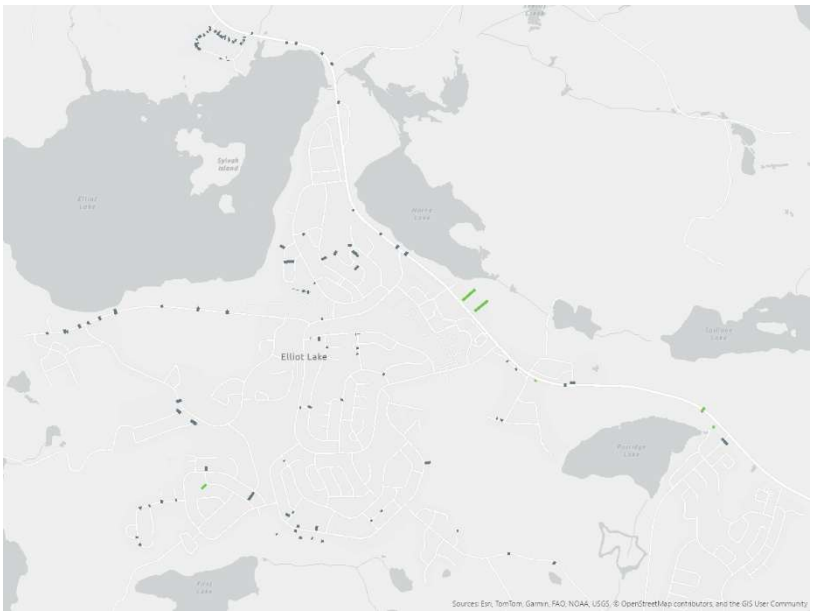
Condition

At present, Elliot Lake does not have quantified condition data for some components of its stormwater network—catch basins, manholes, or ditches. There is information for the storm mains and very limited condition data for culverts. To build a robust understanding of asset health and prioritize interventions, the City will develop a standardized condition assessment program that enables repeatable, data-driven evaluations across all stormwater assets.





Stormwater Main Condition Map



Culvert Condition Map

Levels of Service

The City of Elliot Lake manages a stormwater system composed primarily of ditches, culverts, and natural drainage features, which collectively protect public infrastructure and properties during rainfall and snowmelt events. As required under Ontario Regulation 588/17, the City has assessed its stormwater program using both technical and community-facing indicators to better understand current performance and guide asset management decisions.

Current Level of Service

Overall, the stormwater system performs adequately under most weather conditions, with near-complete drainage coverage of developed roadways and public areas. The system typically handles small to moderate storm events with minimal flooding or standing water issues. However, aging culverts and open drains, combined with incomplete inspections in some areas, leave the system vulnerable during higher-intensity rainfall or rapid melt conditions.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	System provides drainage for roads and public spaces	% of road network with conveyance	Nearly complete coverage, with only minor gaps in low-risk areas	85–94% drained
Reliability	Stormwater flows are managed without localized flooding	# of flood events/complaints per year	System manages most storms well; rare surface flooding	≤ 1 complaint/year
Safety	System prevents standing water and associated health risks	# of standing water complaints	Efficient drainage; very rare issues	≤ 1 complaint/year
Condition	Culverts and open drains are structurally sound	% of assets rated "Good"	Some assets showing deterioration; limited inspection data	50–69% rated ≥ 3/5
Performance	System performs as designed in a 1-in-5-year rainfall event	% of events managed without flooding	Handles typical storms but struggles with larger ones	85–94% success
Cost Effectiveness	Maintenance cost per km of ditch or culvert	$/km/year	Balanced maintenance with known hotspots	$1,600–$1,799/km/year

Proposed Levels of Service

In Elliot Lake, the stormwater system plays an important role in protecting roads, public spaces, and properties from the impacts of heavy rain and surface runoff. By managing the flow of water during storm events, this system helps reduce localized flooding and prevents standing water that can pose health and safety concerns. Most of the road network is supported by effective drainage, with only minor gaps in low-risk areas. While the system performs well under typical storm conditions, it can be challenged during more extreme weather events — a concern that is being addressed through careful maintenance and planning. Although some infrastructure is showing signs of wear, regular inspections and repairs are helping to extend its service life. Elliot Lake's topography provides a natural advantage in managing drainage, but continued investment is needed to ensure the system remains effective, especially as rainfall patterns evolve.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	System provides drainage for roads and public spaces	% of road network with stormwater conveyance	Nearly complete coverage, with only minor gaps in low-risk areas	85–94% drained
Reliability	Stormwater flows are managed without localized flooding	# of flood events/year	System manages most storm events well; rare surface flooding	≤ 1 complaint/year
Safety	System prevents standing water and associated health risks	# of standing water complaints	Drainage is efficient; very rare standing water issues	≤ 1 complaint/year
Condition	Culverts and open drains are structurally sound	% of assets rated Good	Some assets showing deterioration; limited inspection data	50–69% rated ≥ 3/5
Performance	System performs as designed in 1:5 year rainfall event	% of rainfall events managed without flooding	System handles typical storms but struggles with larger ones	85–94% success
Cost Effectiveness	Maintenance cost per km of ditch or culvert	$/km/year	Balanced maintenance with known hotspots	$1,600–$1,799/km/year

Life Cycle Activities

Planning

Stormwater planning focuses on keeping water moving safely while minimizing lifecycle cost. Over the next cycle Elliot Lake will look to finish the GIS inventory for pipes, manholes, catch basins, culverts, ditches and outfalls (material, size, inverts, install year, connectivity). They will also look into at formalize inspection frequencies by asset type and criticality, and to set treatment triggers that align with the City's levels of service. Planning will also coordinate renewals with road projects (replace pipes and adjust frames/grates when streets are resurfaced), establish a CCTV cycle for mains, and create a rolling 5- to 10-year program that blends cleaning, spot repairs, and replacements. All projects will require as-built updates back to the GIS system, so DOT scenarios steadily improve.

Procurement

Procurement will standardize how stormwater work is bought and delivered. The City will use:

- Standing offers for annual CCTV/flushing, catch-basin cleaning, ditching, and culvert steaming.
- Pre-qualified contractors for trenchless repairs (point repair, CIPP, short-liner) and open-cut replacements.
- Multi-year unit-price contracts for culvert renewals and structure adjustments tied to the road program.
- Specifications that require erosion and sediment control, traffic control, winter thaw response, and digital as-builts (GIS-ready).
  Bid documents will encourage alternatives (e.g., trenchless vs. open cut) where feasible, include warranty/defect-liability provisions, and set emergency call-out rates so the City can respond quickly during storm events.

Operations

Day-to-day operations keep capacity available and risks low. Core activities include:

- **Seasonal patrols & pre-storm checks:** open inlets at low points, notch snow berms, place temporary inlet flags/racks, and ready pumps/sandbags before major rain or thaw.
- **Catch-basin & structure care:** scheduled basin vacuuming, grate cleaning, and frame adjustments in concert with paving; track debris volumes to target hotspots.
- **Culvert stewardship:** clear ends and debris racks, thaw/steam during freeze-thaw, monitor erosion at inlets/outlets, and verify end treatments.
- **Ditch conveyance:** vegetation management, sediment removal, and re-establishing side slopes where minor sloughing occurs.
- **Pipe operations:** risk-based CCTV and flushing routes (targeting problem basins first); spot repairs where defects are localized.
- **Outfall & watercourse checks:** look for erosion, icing, backwater, and any illicit discharges; implement small armouring where needed.
- **Work management & records:** create work orders, capture photos/condition notes, and update GIS so maintenance history informs DOT scenarios and capital timing.
- **Coordination with roads:** align structure raises/lowers and culvert work with resurfacing to avoid re-digging new pavements.

Maintenance

Below is the expanded lifecycle matrix incorporating the maintenance activities identified by staff. These treatments will be added as Routine Maintenance or Preventative Maintenance in DOT for future AMP iterations, providing the necessary mid-cycle interventions to keep assets in serviceable condition.

Asset Type	Type of Treatment	Treatment Description	Typical Condition Range for Use
Stormwater Lines	Routine Maintenance	Camera inspection (CCTV) and flushing to clear sediment	Fair – Good
	Preventative Maintenance	Pipe spot repairs (joint sealing, small relines)	Poor – Fair
Manholes	Routine Maintenance	Visual safety inspections and frame/grate cleaning	Fair – Good
	Preventative Maintenance	Seal cracking, replace damaged covers and steps	Poor – Fair
Catch Basins	Routine Maintenance	Annual debris removal and sediment vacuuming	Poor – Fair
	Preventative Maintenance	Inlet grate replacement and structure patching	Poor – Fair

Culverts	Routine Maintenance	Bi-annual visual inspections and end-clearance	Fair – Good
	Preventative Maintenance	Minor joint resealing and erosion repair around inlets/outlets	Poor – Fair
Ditches	Routine Maintenance	Seasonal vegetation control and sediment clearing	Fair – Good
	Preventative Maintenance	Re-establish channel grade and small bank stabilization works	Poor – Fair

By embedding these newer maintenance treatments into DOT, Elliot Lake will be able to:

- **Prevent Early Deterioration:** Using frequent inspections and cleaning to stop minor defects from escalating.
- **Optimize Capital Budgets:** Deferring full replacements until absolutely necessary, thereby smoothing long-term expenditures.
- **Improve Service Reliability:** Ensuring hydraulic capacity and structural integrity year-round, especially ahead of peak storm events.

This dual-table lifecycle strategy—combining DOT's existing full-replacement treatments with survey-informed maintenance activities—lays the groundwork for a truly proactive, risk-based stormwater management program.

Renewal

The following lifecycle matrix outlines the primary renewal intervention for each stormwater asset type, mapped to the condition band in which full replacement becomes necessary. At this stage, routine maintenance activities—such as sediment removal from catch basins, spot repairs to culvert joints, or ditch vegetation control—have not yet been formalized into the AMP's planning framework. Future updates will introduce preventive and routine maintenance tiers to complement these replacement strategies.

Asset Type	Type of treatment	Treatment	Typical condition range for use
Stormwater Lines	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire stormwater line segment)	Poor
Manholes	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire manhole)	Poor – Fair
Catch Basins	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire catch basin)	Poor – Fair
Culverts	Replacement / Reconstruction	**Full Asset Replacement** (Excavate and replace entire culvert)	Poor
Ditches	Replacement / Reconstruction	**Full Asset Replacement** (Regrade Ditch and reset all culverts)	Poor

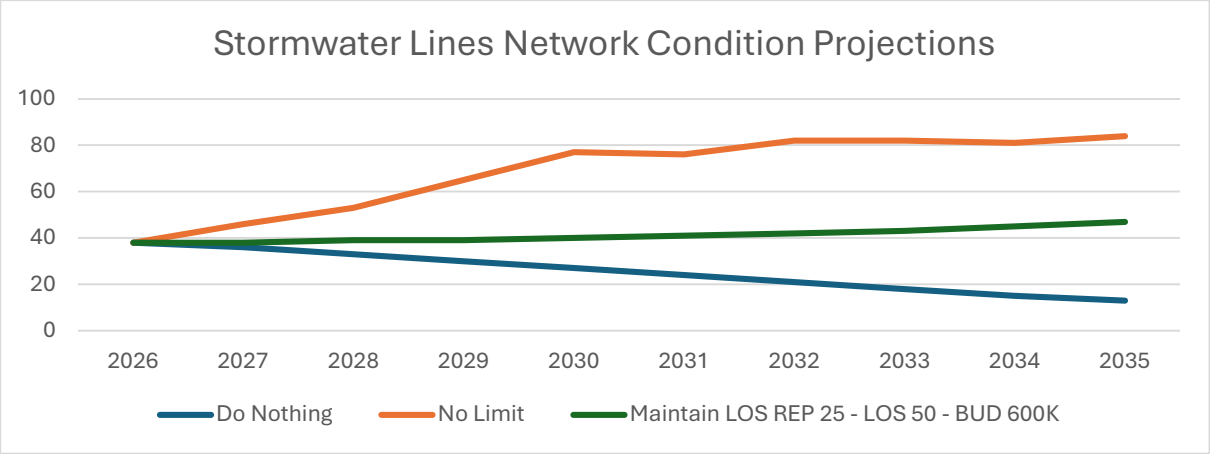
Disposal

When assets are replaced or retired, disposal will prioritize compliance, recycling, and restoration. Crews/contractors will segregate wastes (concrete, steel, HDPE/PVC), manage and test excavated

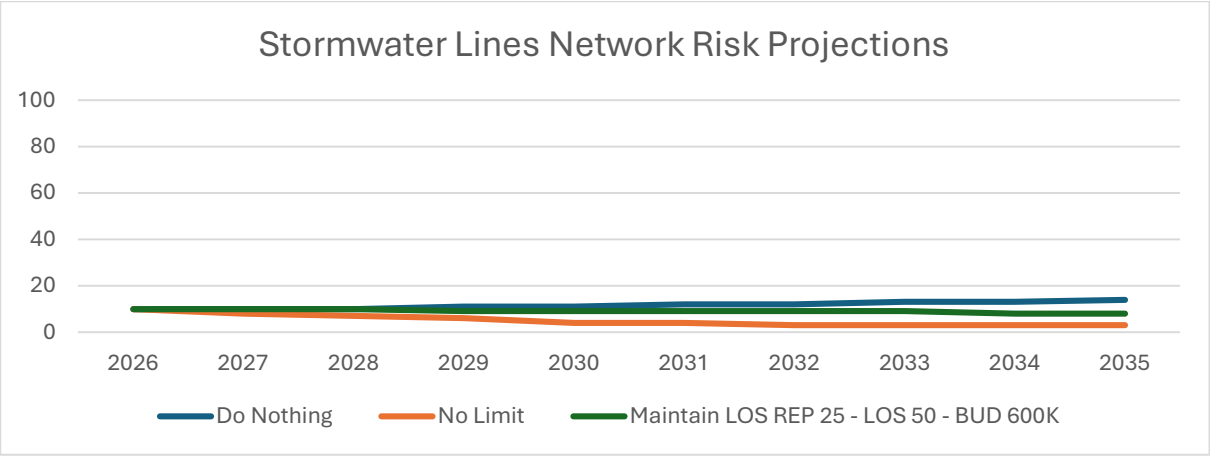
sediments if contamination is suspected, dewater responsibly, and backfill/restore with erosion controls and seed. Any temporary diversions will be removed, disturbed channels re-graded, and vegetation re-established. As-builts will capture what was removed and installed, and GIS will be updated to retire old asset IDs and record final quantities for audit and future planning.

10 Year Projections of Life Cycle Activities

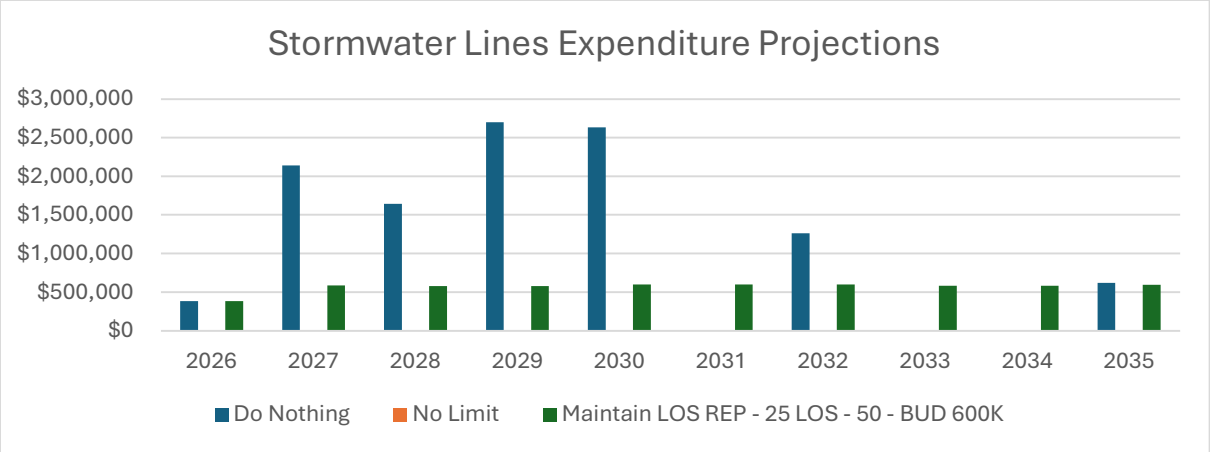
Projection Selection



Running the models with today's DOT data, *Do Nothing* steadily erodes the pipe network's remaining service life, building a backlog and pushing more assets toward failure. *No Limit* produces a rapid jump to a high state of repair, but only by assuming unconstrained capital—an unrealistic premise for Elliot Lake. *Maintain LOS (budgeted)* charts a middle course: steady, affordable gains that stop the decline and gradually lift condition over the decade.



Risk trends mirror condition. *Do Nothing* lets likelihood of failure creep up; *No Limit* suppresses risk fastest, but at a price point that isn't feasible. *Maintain LOS* keeps risk controlled and trending down modestly, acknowledging data limits for some storm assets while still avoiding the sharp rise in outages and emergency digs that typically follow deferred work.



No Limit front-loads very large spikes that would crowd out other municipal priorities and strain delivery capacity. *Do Nothing* looks cheap upfront but simply shifts costs to break-fix emergencies later. *Maintain LOS* smooths spending to a manageable annual program (about the modeled $600k), which is easier to tender, staff, and deliver—while still moving the network in the right direction.

Maintain LOS balances outcomes and realism: measurable condition improvement, controlled risk, predictable cash flow, and a deliverable work plan for a small team. As better condition and risk data are collected for manholes, catch basins, culverts, and ditches, we'll re-run the scenarios to fine-tune the budget and sequencing—but this path lets Elliot Lake act now without overcommitting.

Projection Activities

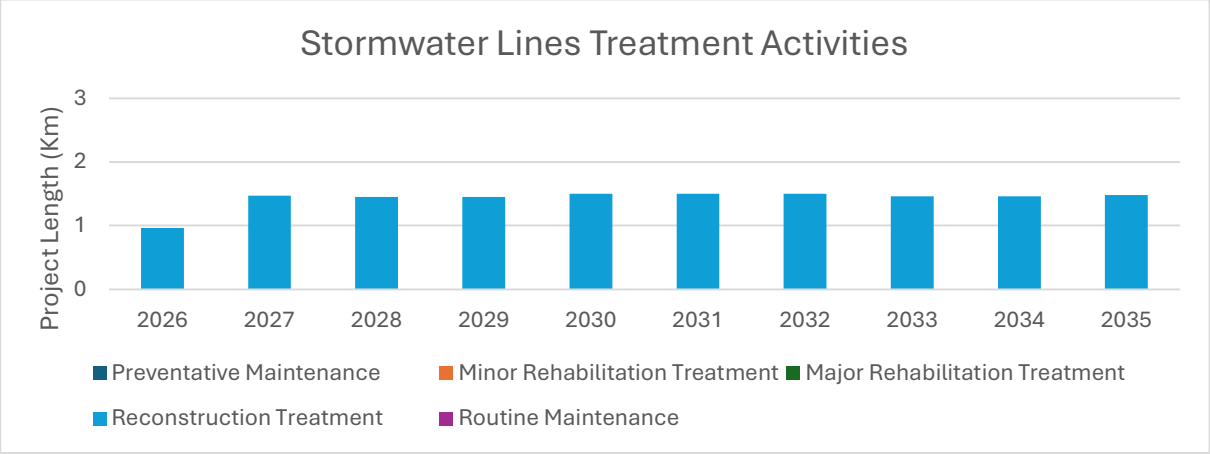
To forecast the next decade of stormwater work, Elliot Lake modeled a Maintain LOS program in DOT using the best available data. For this cycle, only stormwater lines have complete inputs, so renewal projections reflect mainline replacements while other asset types are held conservative. Planning, procurement, operations, and disposal figures are anchored to recent budgets and trended forward. As new inspections and unit rates are added (manholes, catch basins, culverts, ditches), these placeholders will be replaced with scenario-driven values.

\

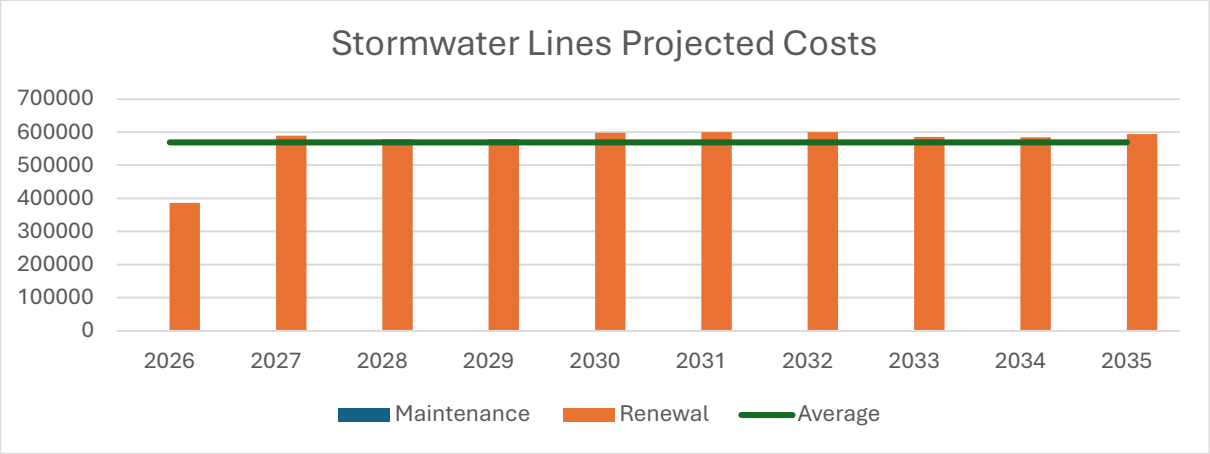
Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$20,000	$24,400	Asset inventory upkeep, CCTV planning, LOS reporting (≈2%/yr growth).
Procurement	$12,000	$14,600	RFQs/tenders for CCTV, flushing, spot lining; contract admin (≈2%/yr).
Operations	$120,000	$146,000	Field inspections, mapping/GIS updates, call-outs, minor traffic control; conservative share of Public Works "storm/drainage" activity allocated to stormwater.
Maintenance	$0 AVG / Year		Lines only in DOT this cycle (no scheduled mid-cycle work); manhole/catch basin/culvert/ditch maintenance to be added when data are available.
Renewal	$569,000 AVG / Year		Lines only from DOT scenario (full segment replacements). Other asset types pending condition & unit-rate confirmation.
Disposal	$20,000	$24,400	Haulage, disposal/recycling of pipe/structure debris, site restoration (≈2%/yr).

Stormwater Lines

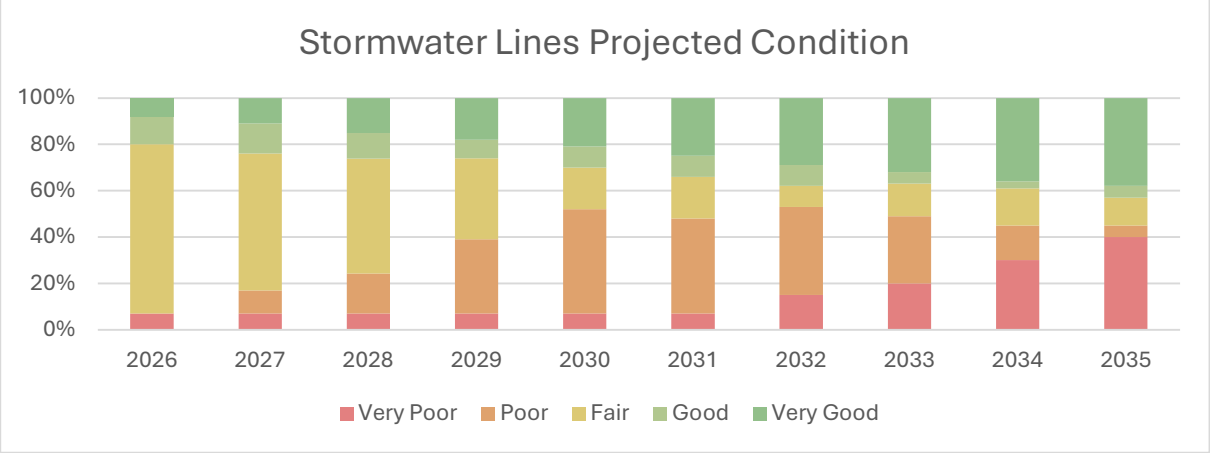
The program intentionally spreads line work so annual delivery is manageable for crews and vendors, keeping year-to-year variability low and avoiding "boom–bust" project cycles.



Because mid-cycle maintenance is not yet scheduled in DOT for lines, the lines program is renewal-heavy. Costs stabilize around a steady annual replacement rhythm rather than surging in single years—useful for budget predictability and contractor market interest.



With steady renewals, the distribution shifts from a Fair-heavy network toward larger shares in Good/Very Good by the early 2030s. This trajectory reflects replacing the weakest segments first and then maintaining improved levels as the program matures. This also shows the increase in poor condition asset increasing. This will need to be addressed in the long term to keep the deficit to a minimum.



Stormwater Manholes

Manholes cannot yet be modeled because DOT lacks decision/degradation classes, condition ratings, and reliable unit costs. The immediate priority is to confirm the inventory, apply a simple visual 1–5 condition grade, and load standard repair/replace unit rates—this unlocks scenario runs and lets routine rehabilitation (e.g., cover/ladder replacements, chimney seals) defer full rebuilds.

Catch Basins

Scenarios are also blocked for catch basins due to missing installation years, condition/criticality ratings, and unit rates. Establishing age or an age proxy, recording annual cleanout results, and adding repair/replace costs will allow DOT to schedule targeted structure repairs and grate replacements, reducing localized flooding and smoothing capital needs.

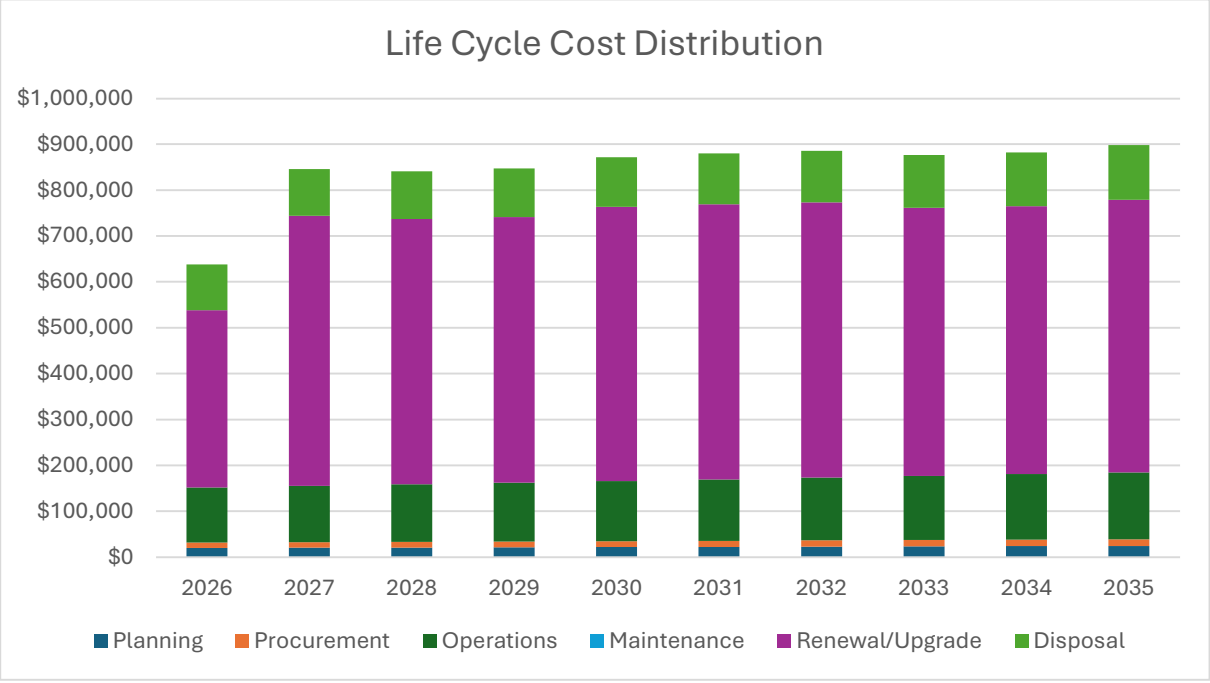
Culverts

While installation years and replacement costs exist, condition, risk, and criticality are absent, so renewals can't be prioritized by consequence of failure. Adding inlet/outlet condition, material/size, blockage and erosion risk, and the dependency of the overlying road will enable risk-based programming—shifting projects from reactive replacements to planned relines or renewals.

Ditches

Ditch data are largely present, but DOT currently only holds a "replacement" action, which isn't practical for open channels. Defining maintenance treatments—routine ditching, reshaping to restore grade, sediment removal, and localized bank stabilization—will let Elliot Lake model low-cost, high-impact work that preserves hydraulic capacity and reduces the need for costly downstream renewals.

The combined picture—planning, procurement, operations, line renewals, and conservative allowances for disposal—shows where stormwater dollars are expected to land over the decade. Renewal dominates until additional maintenance treatments for ditches, basins, manholes, and culverts are formalized and loaded into DOT.



Risk Management & Climate Considerations

Elliot Lake's stormwater network—including storm drains, catch basins, and culverts—is essential for preventing urban flooding and protecting public safety. The primary risks identified are flooding during heavy rainfall, blocked inlets, culvert failures, and ditch erosion. While the likelihood of these events over the next 5–10 years is rated medium—reflecting the city's moderate rainfall patterns and existing drainage capacity—the potential consequences (property damage, infrastructure loss, safety hazards,

and environmental impacts) are significant. Contributing factors include aging pipes and structures that were installed between the late 1950s and early 2000s and have seen limited replacement.

To date, mitigation relies on regular visual inspections, routine cleaning of catch basins and storm drains, and a targeted culvert replacement and rehabilitation program. Moving forward, Elliot Lake will enhance its risk management by expanding debris-removal frequency, formalizing maintenance frequencies in a centralized work-order system and incorporating debris-screen installations at high-risk inlets.

Stormwater Main Criticality

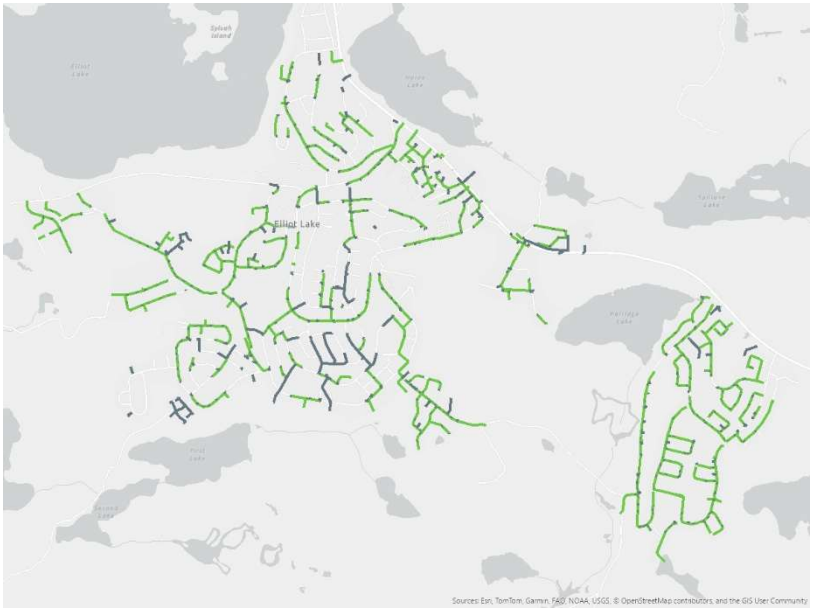
The stormwater main criticality map classifies each sub-surface conduit by its role in conveying runoff during routine and extreme events. Most pipes are shown in green, denoting lower criticality segments—typically smaller local drains that serve limited catchment areas. Yellow segments represent secondary trunks that support larger drainage basins, while red lines highlight primary mains where failure or blockage could cause significant flooding or road overtopping. By overlaying criticality onto the pipe network, Elliot Lake can direct regular inspections and preventive maintenance to the highest-impact corridors, ensuring that resources focus first on assets whose impairment would pose the greatest public safety and infrastructure risk.

Stormwater Main Criticality Map

Stormwater Main Risk

The stormwater risk map highlights segments based on their assessed likelihood of failure and potential impact. Pipes shown in green are confirmed low risk—these conduits are in good condition with no significant blockage or structural issues. Segments in red would signify high-risk mains requiring immediate attention, though none are currently classified at that level. Gray lines represent pipes whose risk status is still undefined, pending condition inspections or data updates. As the City

completes its condition assessment program, these undefined segments will be evaluated and categorized, allowing maintenance and rehabilitation efforts to focus on the highest-risk mains first.



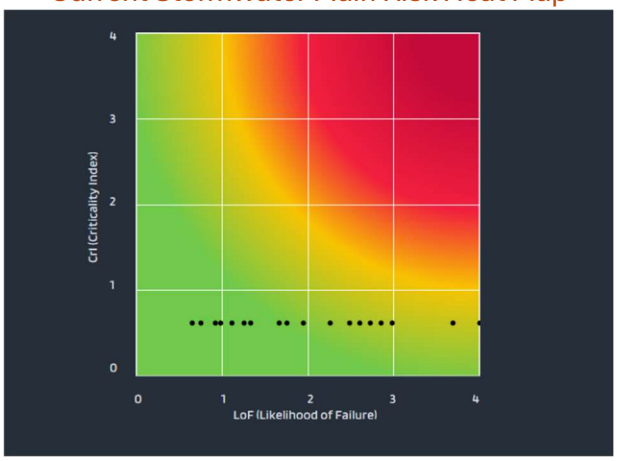
Stormwater Main Risk Map

Stormwater Lines Risk and Criticality Heat Maps

The 2025 heat map shows almost all storm-sewer segments concentrated in the lowest criticality bands (CrI ≈0.5–1), with very few assets plotting above CrI 2. This pattern reflects a network dominated by short local laterals where a failure would typically cause localized ponding rather than system-wide flooding. The 2035 view is essentially unchanged—criticality is largely structural (land use, redundancy, and downstream sensitivity) and doesn't "age." Over the next cycle we'll refine CrI by adding factors such as catchment size, proximity to critical roads and buildings, flood pathways, and dependency on single crossings. Any trunk segments that score higher once those factors are applied will be flagged for more frequent inspection and earlier renewal triggers.

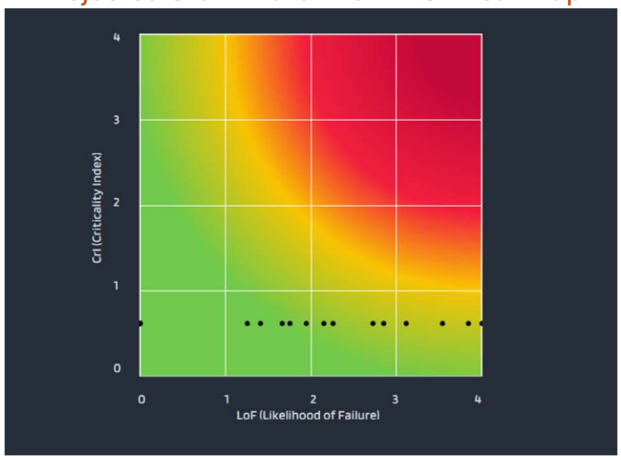
Risk is driven here more by likelihood of failure (LoF) than consequence. In 2025, most segments plot in the green/yellow fields with LoF values spread from low to moderate; a handful push toward the orange band, signalling assets with emerging structural or hydraulic issues. By 2035 the cloud shifts slightly to the right (aging), but remains mostly in low-to-moderate risk because criticality stays low. The Maintain-LOS program (steady annual renewal plus targeted cleaning/CCTV) is intended to hold those right-tail outliers in check. As we build a fuller CCTV record and add condition scores for more segments, LoF estimates will sharpen and any assets trending into orange/red will be advanced for lining or replacement ahead of failure.

Current Stormwater Main Risk Heat Map



Stormwater Risk Projection 2025

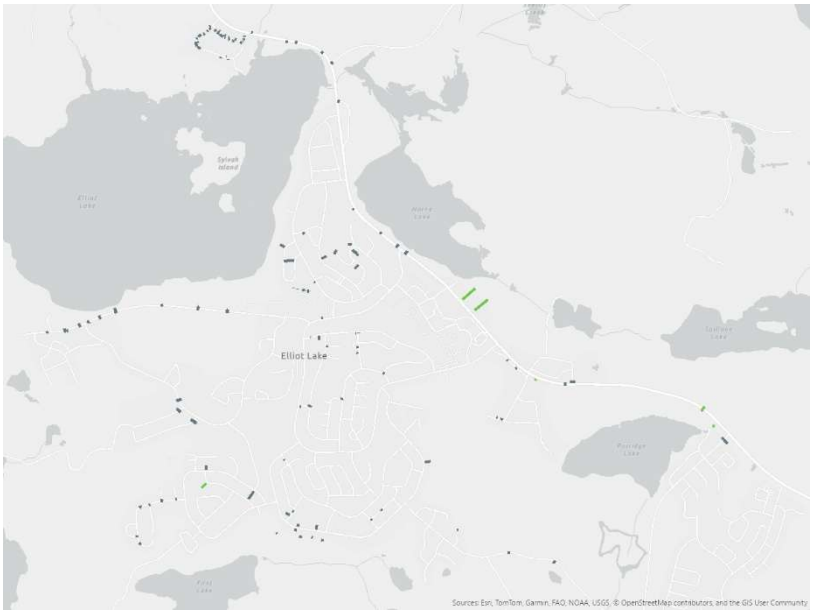
Projected Stormwater Main Risk Heat Map



Stormwater Risk Projection 2035

Stormwater Culverts Criticality

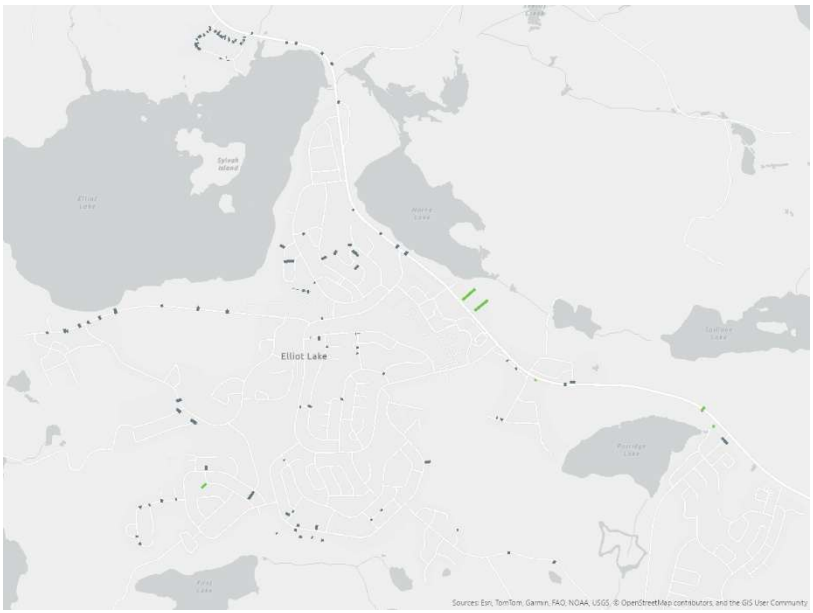
The culvert criticality map visualizes each crossing structure by its importance to roadway and drainage continuity. Green symbols mark defined culverts of lower criticality—typically those serving minor ditches or single-lane roads—where a failure would have limited impact. Gray symbols indicate culverts whose criticality has not yet been classified, often due to incomplete GIS attributes or awaiting field verification. Prioritizing review of these undefined assets will be an early step in completing the risk framework, ensuring that all culverts receive a level-of-service rating and that high-impact crossings are identified for routine inspection and risk mitigation.



Culvert Criticality Map

Stormwater Culverts Risk

The culvert risk map distinguishes crossings by their assessed likelihood of failure and downstream impact. Segments shown in green are confirmed low risk—these culverts have adequate capacity, good structural condition, and no history of blockage or undermining. A small number of culverts appear in red, indicating high-risk structures that exhibit signs of corrosion, deformation, or approach erosion and thus warrant immediate inspection and potential reinforcement. Gray symbols denote culverts whose risk status remains undefined, pending detailed condition assessments and hydraulic analyses. As the City completes its inspection program, each culvert will be evaluated and reclassified, allowing maintenance and rehabilitation to focus first on those pipes most likely to fail.



Stormwater Culverts Risk Map

Manholes

At present, manholes have limited attribute data and no formal risk scores in DOT, so we treat them as "unknown" from a likelihood-of-failure standpoint. Their consequence of failure is typically moderate: a collapsed frame or leaking chimney can create traffic hazards, allow inflow/infiltration (I/I), and accelerate downstream surcharging. Over the next cycle, risk will be profiled using a simple screening set—location (road class, traffic, proximity to schools/hospitals), structure type (precast vs. brick), age/material (where known), evidence of I/I, frame/grate condition, and history of surcharge. A walk-by inspection each spring/fall, plus a rolling 5–7-year detailed inspection using a MACP-style grade, will tighten the likelihood estimates. Quick mitigation includes resetting frames, sealing chimneys, replacing damaged covers/steps, and grouting active leaks.

Catch Basins

Catch basins currently lack installation year, condition, and criticality in DOT, meaning risk is inferred only from location and complaints. The highest near-term risk is localized flooding and winter icing from plugged inlets—events with low structural consequence but meaningful safety and property-damage implications. The City will establish an annual clean-out program (pre-spring and pre-fall), track percent cleaned per year, and flag "frequent fillers." Inventory will capture inlet type, grate style, sump depth, outlet size, and links to upstream gutters/ditches. Criticality will be based on ponding potential (low spots), adjacent land use, and proximity to critical roads. Where debris loading is chronic, low-cost screens, curb cuts, and targeted leaf pick-up will be used to reduce blockage risk.

Culverts

Culverts pose the most severe consequence within minor stormwater assets because failure can wash out roads and isolate neighbourhoods. While installation years and unit costs exist, condition, risk, and criticality are not yet populated in DOT. Short-term risk will be stratified by road classification, detour length, outlet to watercourse, and observed hydraulic restrictions; high-exposure sites (arterials, single access routes, steep grades) will be inspected first. A lightweight inspection standard (photolog of inlet/barrel/outlet, corrosion/ovalization checks, headwall/wingwall condition, and erosion) on a 2–3-year cycle will support a simple LoF score. Where capacity is marginal, add armouring, end-protection, or larger barrels during programmed works. Climate-informed checks (spring freshet and post-cloudburst drive-bys) will be formalized to catch emerging risks between cycles.

Ditches

Ditches carry lower structural consequence but materially affect flooding, icing, and roadbed stability. The main risk driver is loss of hydraulic capacity from sediment/vegetation build-up, compounded by driveway culvert blockages. Because DOT presently lists only "replacement," the City will baseline ditch condition using repeatable patrol photos, slope/invert notes, and a simple grade for bank stability and freeboard. Priority segments include sag points, school zones, and roadside ditches tied to known basement-flood complaints. Routine grading, spot re-establishment of cross-fall, and vegetation control will be scheduled on a 3–5-year cycle, coordinated with culvert inlet/outlet maintenance so conveyance is restored system-wide rather than piecemeal.

Cross-Asset Protocols and Next Steps

Across all four asset types, the immediate goal is to move unknowns into “known, low-risk” or “known, watch-list” categories. The City will (1) assign unique IDs and GPS every structure, (2) adopt concise field sheets with photo capture, (3) load basic attributes to DOT, (4) apply a common 0–3 LoF/CrI scale, and (5) generate a small “top-20” list of sites for early action. As data mature, likelihood scores will shift from age/location proxies to condition-based grades (MACP for manholes, visual/cleaning history for catch basins, culvert inspection sheets, and ditch capacity checks). This staged approach keeps the program simple now, defensible in audits, and scalable for full risk-based planning in the next AMP update.

Climate Change Considerations

Although capacity constraints are not immediately pressing, climate projections for Northern Ontario—featuring more intense storm events and rapid snowmelt—could test the system’s resilience. Increased runoff from heavy downpours and changing freeze-thaw cycles may accelerate erosion in ditches and stress older culverts. At present, the City does not anticipate a significant rise in maintenance costs due to climate change, but recognizes that incremental strain on aging infrastructure warrants closer monitoring.

Adaptation Strategies

To strengthen the stormwater network against both aging and emerging climate pressures, Elliot Lake will:

- **Reinforce Culverts:** Upgrade vulnerable culvert segments with corrosion- and load-resistant materials.
- **Optimize Maintenance Schedules:** Increase the frequency of inlet and ditch cleanings ahead of seasonal peak flows.
- **Enhance Inspection Protocols:** Deploy targeted CCTV inspections for critical culverts and drains to identify distress early.
- **Standardize Work Orders:** Implement a GIS-linked maintenance schedule to ensure no asset goes unchecked.

These measures leverage existing capacity and focus on low-cost, high-impact actions—ensuring the stormwater system remains reliable even as weather patterns evolve.

7. Fleet & Equipment

Inventory

Elliot Lake’s fleet and equipment inventory comprises 121 units across core service areas and community amenities. Public Works (45 units) is the largest share, supporting road maintenance and winter control, followed by Parks (27) for grounds care and seasonal amenities, and Fire (12) for emergency response. Smaller but important groups include Transit (5), Plants (10), Airport (3), Arena (2), Ski Hill (2), and event support assets. Specialized, high-impact equipment includes the Caterpillar

grader, Olympia ice resurfacer, excavator, and the airport fuel truck, which drive a disproportionate share of operational risk and capital need.

The fleet spans model/install years 1989–2024. This spread suggests staggered renewals in Public Works, aging cohorts in Parks and Events, and relatively modern Transit units. Near-term priorities are to (1) verify any future-dated or missing year fields, (2) group heavy/specialty equipment for targeted condition inspections and lead-time aware replacement planning, and (3) align replacements with seasonal operations (e.g., arena and off-season equipment) to minimize service disruption.

Asset Type	Quantity	Year Range	Notes
Airport	3	1989-2012	John Deere riding mower 318, International Fuel Truck
Arena	2	2004-2021	Olympia Ice Resurfacer
Building	2	2019-2021	Ford F150
Admin	2	2024	CHEV EQUINOX, Dodge RPC
City Hall	1	2019	Dodge CAR Van
ELRDC	2	1999-2020	Ski-doo
Events	7	1991-2019	SHOR 12 Special Events Trailer, EASY ST8 Special Events Trailer
Fire	12	1997-2042	SPTN CUD Fire Truck Pumper, FRHT FM2 fire pumper
Golf	1	2007	Chevy
Parks	27	1989-2022	Kubota Tractor, Kubota Tractor w/72" Mower Deck
Plants	10	1994-2024	Chev, EXP, Ford COF
Public Works	45	1992-2024	Valve Maintenance Trailer, Caterpillar grader
Ski Hill	2	2001-2018	Pisten Bully PB200 Groomer, Piston Bully 400 T4 Groomer
Transit	5	2017-2023	RAM Handi-Lift, CHEV, ETV Handi-Lift

Valuation

Elliot Lake's fleet is valued at $9.144M across 121 units, with capital exposure heavily concentrated in a few groups. Public Works carries the largest share at $4.252M (46.5%), followed by Fire at $2.018M (22.1%). Specialized assets also represent significant value: Ski Hill equipment totals $0.690M (7.5%) despite only two units, and both Transit and Parks are each about $0.62M–$0.62M (6.8% each). Together, these five categories account for ~90% of total replacement value, indicating where reliability, parts strategy, and funding certainty matter most.

From a planning standpoint, prioritize detailed condition assessment and lead-time-aware replacement planning for Fire apparatus and Ski Hill equipment, and stage Public Works renewals to avoid cost spikes. Smaller categories—Admin, Building, City Hall, Airport, Events, ELRDC, Golf, Plants—represent a modest portion of value and are good candidates for life-extension tactics (targeted maintenance, utilization management) while capital is focused on the high-impact groups.

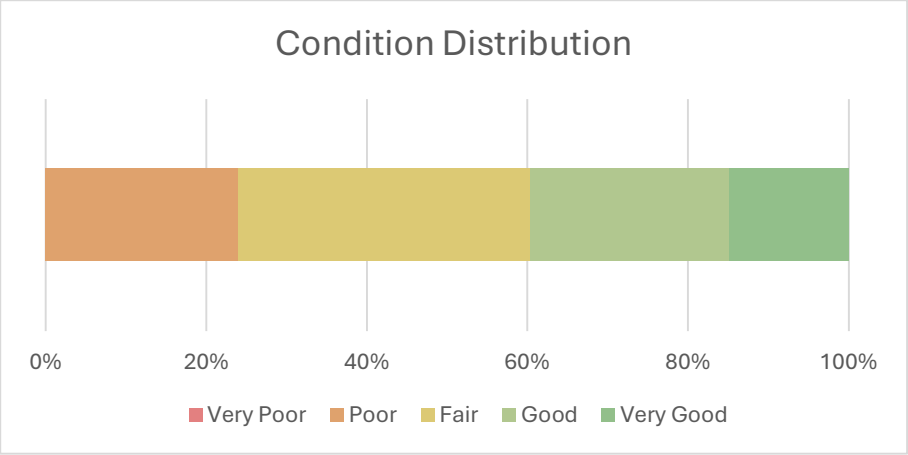
Asset Type	Quantity	Replacement Cost
Airport	3	$150,500
Arena	2	$170,200
Building	2	$80,400
Admin	2	$65,300
City Hall	1	$40,000
ELRDC	2	$10,800
Events	7	$61,010
Fire	12	$2,018,300
Golf	1	$12,700
Parks	27	$617,700
Plants	10	$352,700
Public Works	45	$4,252,100
Ski Hill	2	$689,600
Transit	5	$622,700
Total	121	$9,144,010

Condition

The condition profile shows most of the fleet sitting in the middle bands, with a clear concentration in Fair to Good and comparatively small tails at the extremes. Roughly a quarter of assets fall into Poor/Very Poor, indicating pockets of backlog and reliability risk, about a third are Fair (serviceable but aging), and the remaining share are Good to Very Good, reflecting recent renewals and well-maintained units.

Planning implications are straightforward:

- Poor/Very Poor → confirm condition, prioritize safety-critical units, and schedule near-term renewal or major repair.
- Fair → pursue life-extension (targeted PM, minor rehab, parts strategies) to defer capital and smooth the 10-year spend.
- Good/Very Good → stay the course with routine maintenance and utilization management to preserve value.



Levels of Service

The City of Elliot Lake maintains a fleet of vehicles and equipment essential for municipal operations—from road maintenance and winter control to parks upkeep and emergency response. In alignment with Ontario Regulation 588/17, this section evaluates fleet performance using both technical indicators and operational measures, reflecting availability, reliability, safety, condition, performance, and cost-effectiveness.

Current Level of Service

Fleet assets demonstrate strong availability and functionality, with most units ready when scheduled and only a handful of unplanned breakdowns annually. Preventive maintenance and life-cycle planning efforts keep hourly operating costs moderate, ensuring the fleet supports seasonal demands without significant service interruptions.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	Equipment is available when needed during seasonal operations	% of time equipment is available as scheduled	Most equipment is available; minor scheduling delays	90–94% availability
Reliability	Equipment operates without unplanned breakdowns	# of major breakdowns per year	Unplanned downtime occurs but is managed without major disruption	3–4/year
Safety	Equipment meets operator safety standards and passes inspections	# of failed inspections or incidents	Zero safety-related failures or inspection issues	0 issues/year
Condition	Equipment is in Good or better condition	Condition rating (1–5 scale)	Generally maintained in Good condition	Avg rating 3.6–4.5
Performance	Equipment performs intended tasks effectively	% of completed jobs without performance issues	Consistently completes tasks successfully	95–98%
Cost Effectiveness	Operating cost per hour of use	$/hour for core fleet (fuel, maintenance)	Preventive maintenance keeps costs balanced	$55–$64/hour

Proposed Levels of Service

The fleet and equipment used by the City of Elliot Lake are essential to delivering core services such as snow removal, road maintenance, infrastructure repair, and seasonal operations. These assets support frontline work that residents depend on daily, particularly during critical times of year like winter. The City strives to ensure that equipment is available, safe, and reliable whenever needed. While unplanned breakdowns occasionally occur, regular maintenance and lifecycle planning help minimize disruption. Equipment is generally in good condition and performs effectively for its intended use. The City continues to manage operating costs through preventative maintenance strategies and thoughtful

scheduling. Overall, the fleet remains a dependable backbone of municipal service delivery, with ongoing attention paid to preserving performance, safety, and value for money.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	Equipment is available when needed during seasonal operations	% of time equipment is available as scheduled	Most equipment is available when needed; minor scheduling issues	90–94% availability
Reliability	Equipment operates without unplanned breakdowns	Number of major breakdowns per year	Unplanned downtime occurs regularly but is managed	3–4/year
Safety	Equipment meets operator safety standards and passes seasonal inspections	# of failed inspections or incidents reported	Equipment passes inspections with no safety-related failures	0 issues/year
Condition	Equipment is in Good or better condition	Condition rating (1–5 scale)	Equipment is maintained in Good or better condition	Avg rating 3.6–4.5
Performance	Equipment performs the intended task effectively	% of completed jobs without performance issues	Equipment consistently completes tasks without concern	95–98%
Cost Effectiveness	Operating cost per hour of use	$/hour for core fleet (fuel, maintenance, etc.)	Preventative maintenance and lifecycle planning control costs	$55–64/hour

Life Cycle Activities

Planning

Use the asset register to keep counts, age/model year, condition, criticality, utilization, and CRC current for every unit (Public Works, Fire, Transit, Parks, Arena, Ski Hill, Airport, Plants). Build a 10-year glidepath that sequences replacements where risk and service impact are highest (e.g., fire apparatus, grader, arena resurfacer, ski-hill groomers), with lead-time flags for long-procurement assets. Standardize where practical (e.g., pickups, light equipment) to reduce parts variety and training load, and right-size low-use admin/corporate units. Planning outputs: annual renewal list, PM schedules by class, funding envelopes, and a cross-season delivery plan (e.g., arena/ski hill off-season, roads outside peak winter).

Procurement

Elliot Lake will source most light-duty fleet (pickups, vans, admin units) through competitive operating leases using standardized specs and a master agreement(s). RFPs will state duty cycle, annual kilometer/hour bands, winter use, and upfitting needs (e.g., racks, lighting, plows) in a single monthly rate. Lease terms will be staggered to smooth cash flow and refresh cycles; de-fleeted units will be

returned or bought out based on the lowest net present cost. All awards will comply with municipal procurement rules and update the asset register with lease term, costs, and service inclusions.

For specialized/heavy equipment (grader, fire apparatus, ice resurfacers, ski-hill groomers, airport fuel truck), the City will evaluate capital purchase vs. capital/long-term lease using life-cycle economics, lead times, and residual risk. Where leasing is used, specifications will include OEM training, parts kits, extended coverage, and guaranteed service response; where purchase is favored, warranties and financing will be bid alongside. In both cases, procurement will align delivery/commissioning with seasonal windows (e.g., post-ice season, off-winter for PW) and link to the Renewal plan so that replacements triggered at Very Poor condition can be fulfilled without service disruption.

Operations

Elliot Lake operates a mixed portfolio of leased light-duty fleet (pickups, vans, admin units) and owned heavy/specialty equipment (grader, fire apparatus, arena resurfacers, groomers, airport fuel truck, parks/plant equipment). Operations focus on safe service delivery, uptime, and lease compliance, with seasonal readiness across Public Works, Fire, Transit, Parks, and Plants.

Maintenance

Elliot Lake follows OEM-aligned maintenance for leased light-duty units and owned heavy/specialty equipment, escalating to corrective work only when it's cheaper and faster than replacement. We will also develop a structured mid-life rehabilitation program to extend useful life on high-value units and smooth future capital spikes.

Asset Type	Type of Treatment	Treatment Description	Typical Condition Range for Use
Fleet Vehicles	**Routine Maintenance**	Oil and fluid changes, daily safety and operator inspections	Poor – Fair
		Seasonal tire inspection/rotation, changeover attachments	Poor – Fair
Equipment	**Routine Maintenance**	Lube and fluids, filters; inspections, adjust/replace wear components.	Poor – Fair

This framework ensures that:

- Seasonal Service & Corrosion Control: Winter tire changeovers, plow/sander and mower attachment checks, electrical/lighting verifications, salt wash-downs, and underbody protection.
- Condition Monitoring: Telematics fault codes, DVIR defects, targeted inspections, and periodic fluid analysis to trigger early fixes before failures.
- Mid-Life Rehabilitation (Program Build-Out): Define class-specific rehab packages (e.g., grader undercarriage/engine refresh, ice resurfacer auger/drive, groomer tracks/hydraulics, fire pumper pump/foam systems), with triggers by hours/condition/cost, target 5–7 years of added life, and pre-budgeted kits/labor.
- Corrective Repairs & Spares: Standard repair limits (parts + downtime thresholds), red-tag unsafe units, keep critical spares and vendor SLAs for high-impact assets (grader, pumpers, resurfacer).

- Decision Rules & KPIs: When Very Poor or economics fail, move to Renewal. Track PM compliance ≥90%, defects/1,000 hrs, MTBF, cost per hr/km, and rehab ROI to refine the program annually.

By aligning treatments to condition bands, Elliot Lake can optimize shop scheduling, budget more accurately for parts versus new acquisitions, and continually refine its fleet renewal plan as condition data becomes available.

Renewal

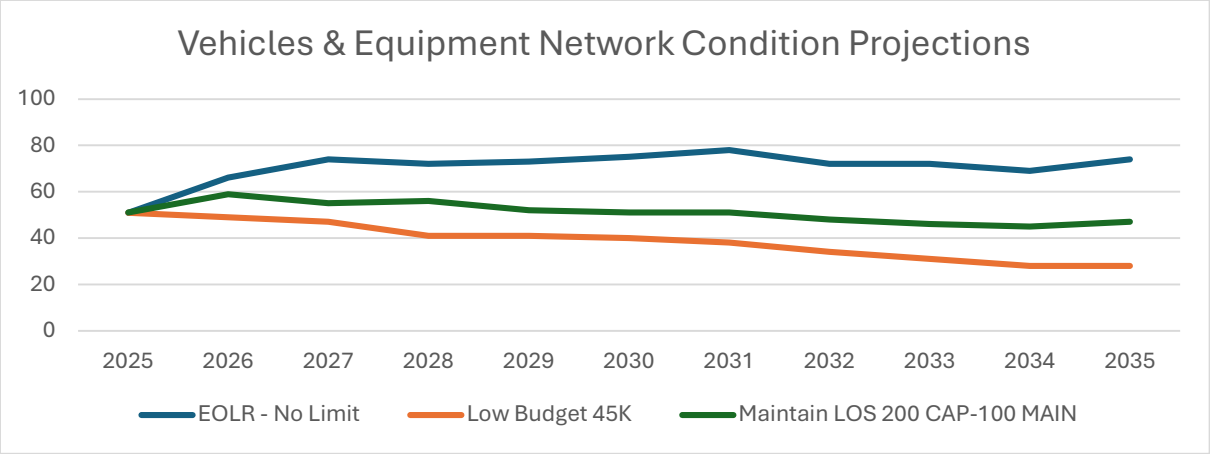
When units reach Very Poor or fail economic tests (e.g., annual repair + downtime cost > replacement financing window, safety or compliance risk, or parts obsolescence), decommission and replace the vehicle or major component. For heavy equipment, consider mid-life overhauls (engine/transmission/undercarriage rebuilds, body/refinish) if they extend life at a materially lower cost than new and maintain serviceability. Plan renewals with lead-time buffers, schedule commissioning/training, dispose of the retired asset, and update the register (age, CRC, residuals) so the next 10-year glidepath and funding plan remain current.

Asset Type	Type of Treatment	Treatment Description	Typical Condition Range for Use
Fleet Vehicles	**Replacement**	Decommission and replace vehicle or major component	Very Poor
Equipment	**Replacement**	Retire unit, procure replacement; commission and dispose old.	Very Poor

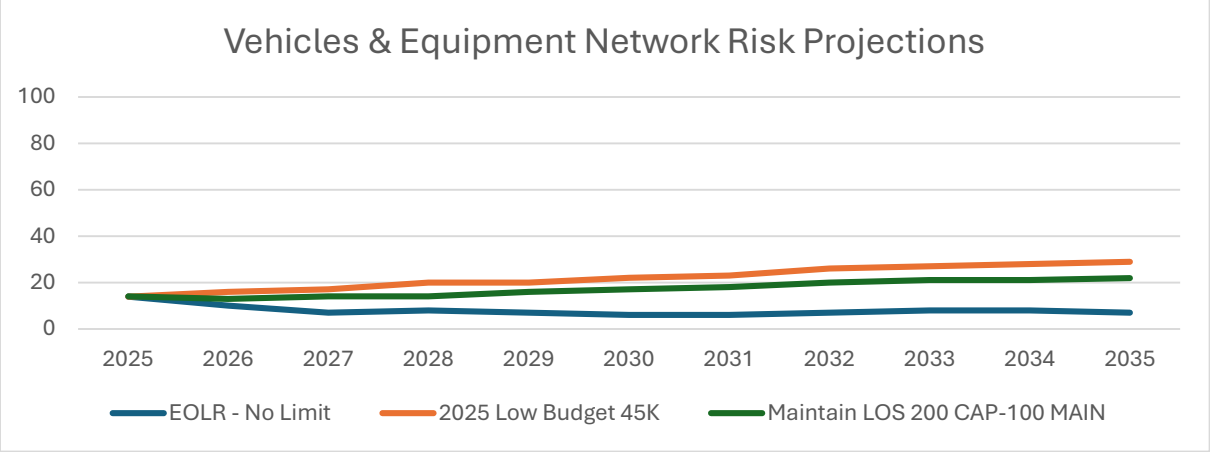
10 Year Projections of Life Cycle Activities

Vehicles & Equipment Projection Selection

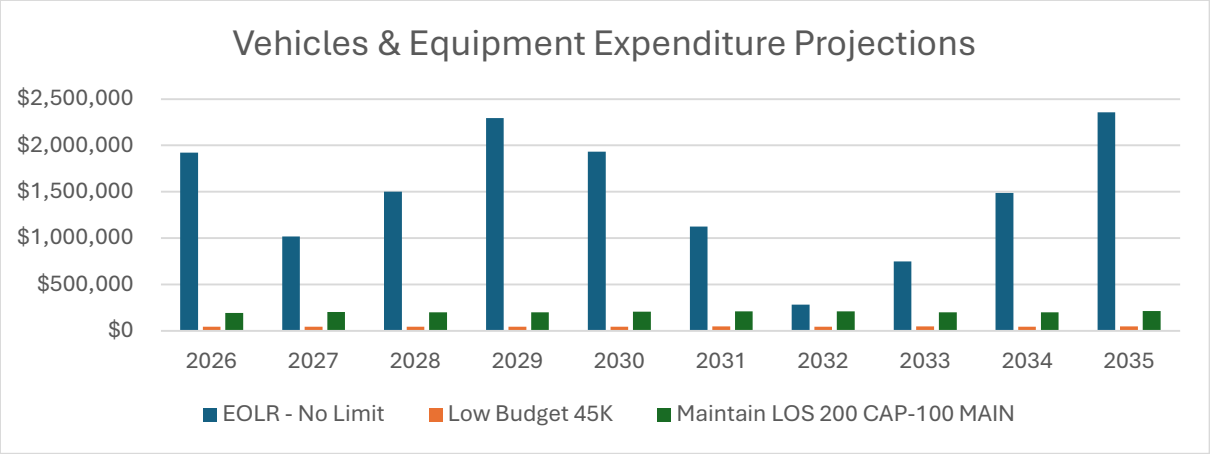
Elliot Lake modeled three funding approaches for Fleet & Equipment to understand the trade-offs between condition, risk, and spending. The results reflect a portfolio that is gradually shifting trucks and other light-duty units to leasing, which will move a portion of future replacements from capital to operating costs. Under these assumptions, the Maintain LOS 200 CAP – 100 MAIN program was selected because it holds the network in the mid condition band without large capital spikes, while the EOLR – No Limit benchmark shows the full need (and associated peaks) if every unit were replaced at end-of-life, and the Low Budget 45K case illustrates the deterioration that follows sustained underfunding.



Risk trends mirror these dynamics. The selected program keeps risk relatively level over the planning horizon by addressing the highest-impact units on time, even though it does not clear all age-based replacements. In contrast, the constrained scenario steadily increases risk as deferrals compound, while the no-limit benchmark minimizes risk but is not financially practical.

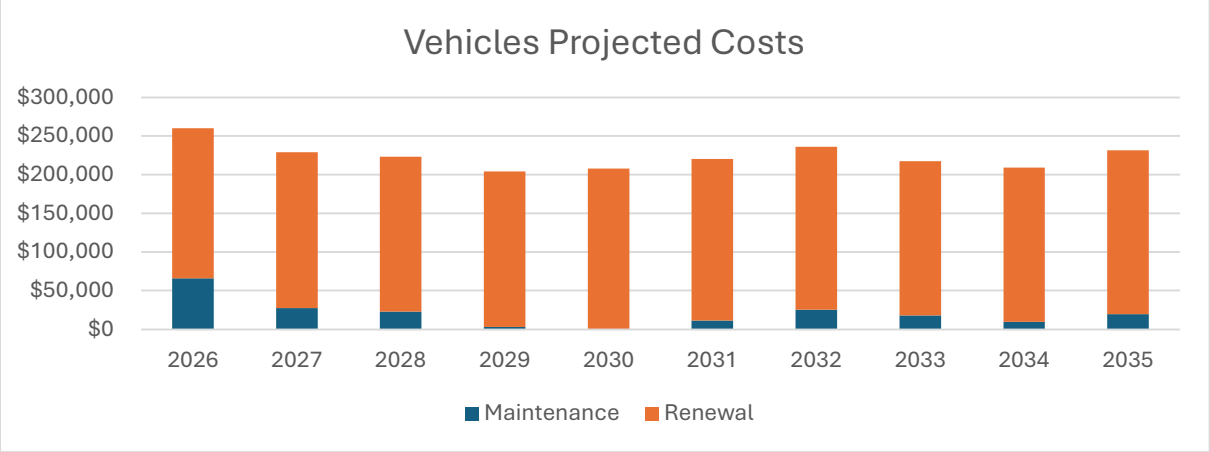


Financially, the chosen program smooths expenditures and is compatible with the move to leasing, which will increasingly shift light-duty replacements out of CAPEX and into predictable OPEX. Acknowledging this, the selection does build a managed deficit because funding at this level is not sufficient to replace every older unit that the age/CRC “by the numbers” would flag; that backlog will be actively managed with targeted renewals and mid-life rehabilitation on heavy/specialty equipment. As better condition assessments are completed, Service Life and %RSL values in DOT are refined, timing will improve, unnecessary early replacements will be avoided, and the projections will be re-run to confirm the program stays on track.

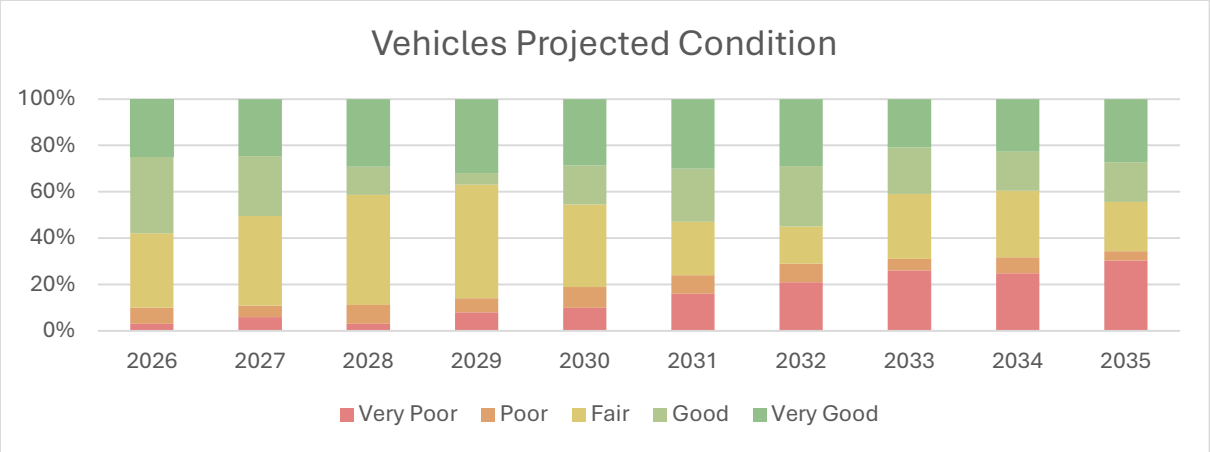


Vehicles and Equipment Projection Activities

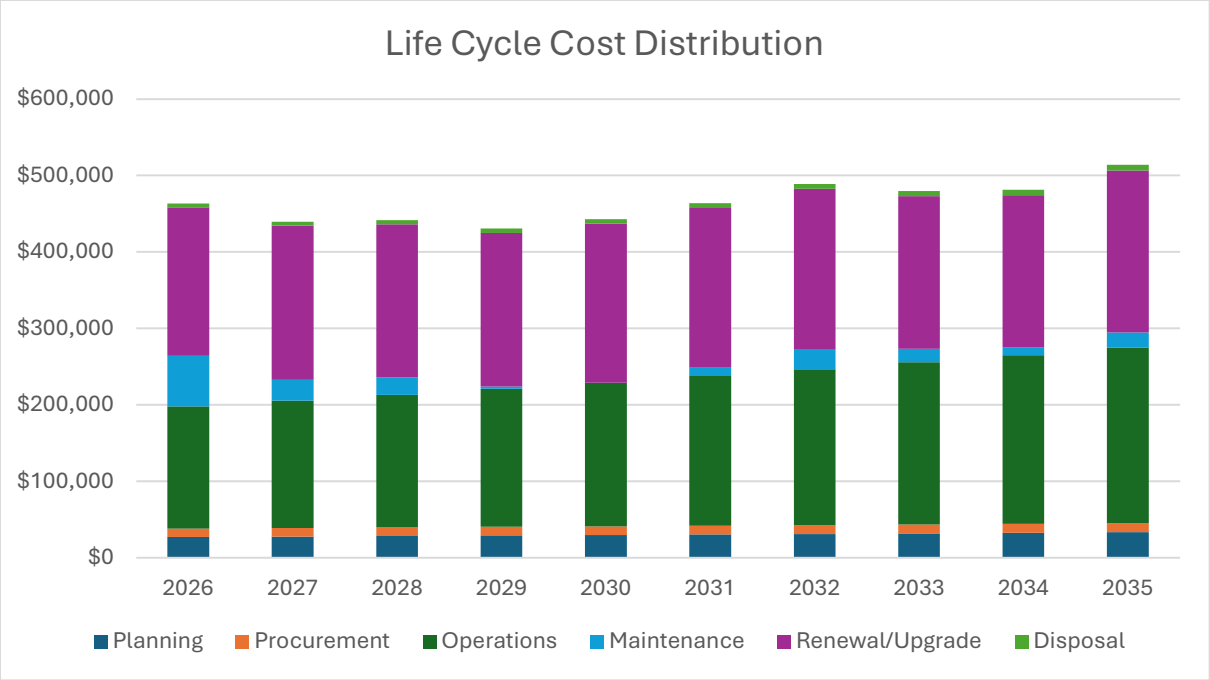
The selected Maintain LOS 200 CAP – 100 MAIN program concentrates spend on renewals while keeping routine maintenance as a small, steady share. Annual costs are smoothed across the horizon, clearing near-term priorities without creating spikes. This pacing is reflected in a few anchor projects that set the tone for the program while many lighter units are timed to avoid bunching and to align with seasonal operations.



Condition projections remain centered in the Fair–Good bands, with a managed rise in Poor/Very Poor where older, low-criticality vehicles are strategically deferred to protect service reliability. As trucks and other light-duty units transition to leasing, a portion of future replacements will move from capital to operating budgets, improving flexibility without undermining readiness; the charts here still show capital effects for planning clarity and will be updated as lease conversions are finalized. Continued condition assessments and improved %RSL inputs in DOT will let Elliot Lake retime specific items and expand mid-life rehabilitation on heavy/specialty equipment, tightening the curve and reducing the small backlog implied by this funding envelope.



Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$27,000	$33,000	Program admin, asset register upkeep, inspections coordination, reporting
Procurement	$11,000	$12,000	Spec, tendering, PDI/commissioning admin
Operations	$160,000	$230,000	Fuel, insurance/licensing, and lease OPEX for light-duty units
Maintenance	$20,300 AVG / Year		Includes OEM PM, fluids/filters, seasonal tire/changeovers, wear components, corrosion control; lease-included services reduce this line accordingly
Renewal	$203,500		Capital replacements and major component overhauls
Disposal	$5,000	$7,500	Auction/hauling/admin net of typical proceeds; small annual allowance scaled for volume



Risk Management & Climate Considerations

Criticality and Risk Scores

All fleet assets share a uniformly low criticality rating, reflecting that while each unit is important, service can continue if any one is unavailable. Individual risk scores vary slightly—most units fall into the low-risk category, with only one vehicle assessed as minimal risk due to its newer age and lighter use. This spread confirms that mechanical failures and breakdowns are unlikely under current maintenance regimes, and any impacts can be managed through temporary reassignments and spare-parts inventory.

Current mitigation relies on a structured preventive maintenance schedule—regular oil changes, brake inspections, and seasonal safety checks—backed by a small stock of critical spare components. Breakdowns are addressed promptly with in-house technicians or local service providers to minimize downtime and ensure continuous service delivery.

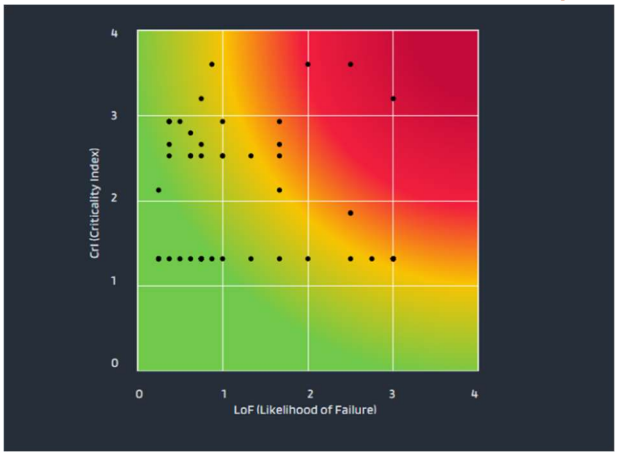
Vehicles Criticality

Criticality skews highest for units that directly protect life-safety or keep the city moving in winter—e.g., a Fire pumper, the Caterpillar grader used for snow control, the Olympia ice resurfacer when the arena is operating, and Handi-Lift transit buses that maintain accessibility; the airport fuel truck also carries elevated consequence because a failure strands airfield operations. Lower-consequence assets such as admin pool vehicles, events trailers, and many of the Park's mowers sit at the bottom of the scale. The 2025 plot reflects this: most dots cluster at CII 1–2, with distinct points at CII 3–4 corresponding to emergency response, winter control, and other single-point-of-failure roles.

Vehicles Risk

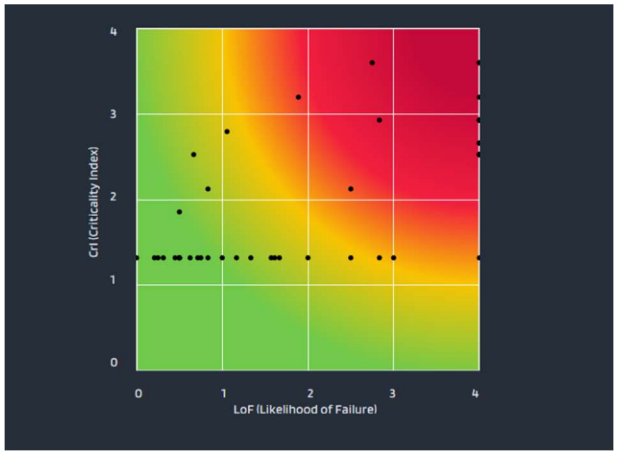
The heat maps show a fleet risk profile that stays broadly low to moderate over the horizon. In 2025 most units sit in the green–yellow bands (LoF ≤1.5, Crit 1–2), with a small cluster of higher-critical assets—such as a frontline fire pumper, a mainline grader/snowplows, and a Handi-Lift bus—pushing into orange where age and utilization raise failure likelihood. By 2035, under the selected program, the high-criticality cohort is kept in check through targeted replacements and mid-life overhauls, so the top-right "red" quadrant remains sparse; the shift you do see is a gentle move to the right among low-criticality units as they run to mid-life. Expanding light-duty leasing helps cap LoF and improve uptime, while planned mid-life packages (powertrain/hydraulics/electrical) for heavy and specialty gear—e.g., graders and the arena resurfacers—pull risk back toward yellow. Ongoing inspections and telematics will flag any units trending upward so they can be swapped, overhauled, or advanced for renewal without service disruption.

Current Vehicles Risk Heat Map



Vehicle Risk Projection 2025

Projected Vehicles Risk Heat Map



Vehicle Risk Projection 2035

Climate Change Considerations

Shifting winter conditions—milder temperatures and mixed precipitation—have increased demands on sanding and plowing equipment, accelerating wear on chassis, hydraulics, and undercarriage components. Warmer summers also intensify lawn tractor usage for turf care, raising engine hours and maintenance frequency. While these trends do not threaten fleet capacity in the near term, they will incrementally raise operating and repair costs if unaddressed.

Adaptation Strategies

To enhance resilience in the face of evolving climate stresses, Elliot Lake will:

- **Strengthen Corrosion Protection:** Apply enhanced undercoating and rust inhibitors before and during winter to combat increased salt and moisture exposure.
- **Adjust Service Intervals:** Align preventive maintenance schedules with seasonal usage peaks—shortening intervals for oil, filter, and hydraulic fluid changes during high-stress months.
- **Upgrade Storage Facilities:** Improve drainage and install climate control in vehicle bays to reduce idle-time exposure to temperature extremes and moisture.
- **Mutual Aid Agreements:** Formalize equipment-sharing arrangements with neighboring municipalities to ensure backup capacity during extraordinary weather events or extended repairs.

Through these targeted measures—alongside the existing preventive maintenance program—Elliot Lake will sustain reliable and cost-effective fleet performance, even as winter and summer climate patterns place new demands on municipal vehicles.

8. Buildings & Facilities

Inventory

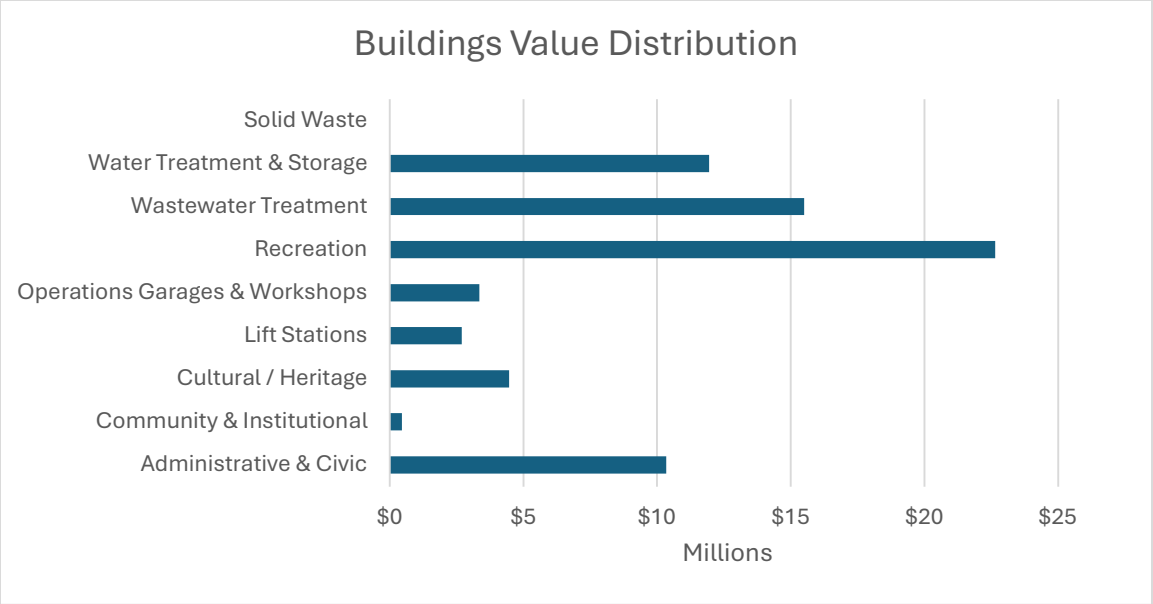
Elliot Lake owns a diverse portfolio of civic, recreational, and utility facilities that support day-to-day service delivery and regulatory compliance. The portfolio spans heritage-age assets from the late 1950s through modern builds, with the largest concentration constructed in the late-1970s to mid-1980s. In addition to public-facing buildings (City Hall, Library, arenas, pool, emergency services), the City operates critical water and wastewater process structures (treatment plant units, storage, and lift stations) and a works yard with garages and workshops. This age profile points to growing needs for renewal, energy efficiency upgrades, and accessibility improvements, and underscores the value of coordinated condition assessments across building groups.

Asset Type	Quantity	Year Range	Notes
Lift Stations (Wastewater)	5	1977–1983	Angel, Horne, Lakeside, Poridge, Washington; pump stations serving collection system.
Wastewater Treatment Plant Structures	6	1977–1990*	Aeration tanks, digesters, primary/secondary clarifiers, screening, sludge pump house; core process assets. *One clarifier year not recorded.
Water Treatment & Storage	2	1978–1982	Water Treatment Facility and Water Tower Complex.
Administrative & Civic Buildings	8	1977–2016	City Hall, Library, Police, Fire, EMS, Admin, Public Works office/site, Airport Terminal.
Operations Garages & Workshops	3	1975–1980	Fleet storage, maintenance shops, and works facilities.
Recreation Facilities	4	1975–1978	Pool, WH Collins Centre, Rio Deb Arena, Centennial Arena.
Cultural / Heritage Facilities	2	1958–1963	Arts Centre and United Church (municipally owned/managed).
Community / Institutional Facility	1	1980	"CI Facility" – function to be confirmed in future inventories.
Solid Waste	1	1982	Scott Road Landfill

Valuation

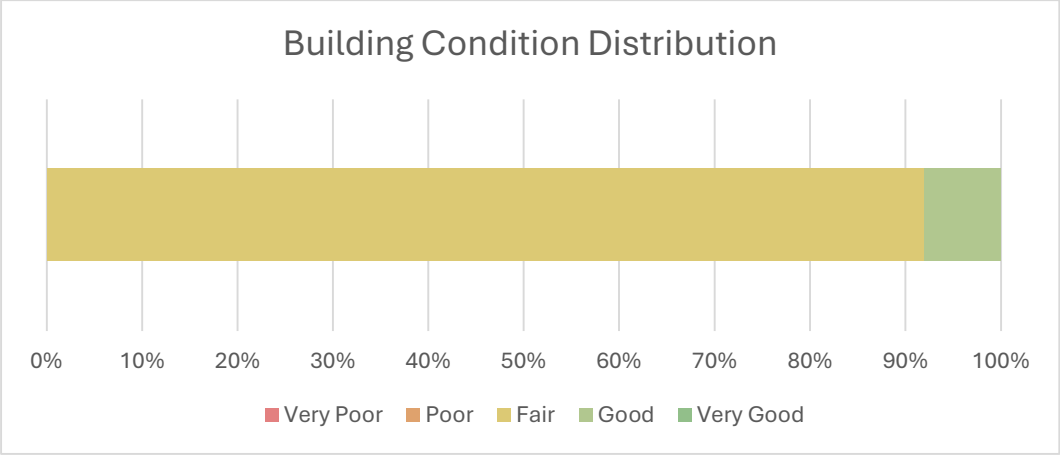
Elliot Lake's building portfolio is valued at roughly $71.4M. The distribution is not uniform: Recreation facilities are the single largest block at about 32% of total value, reflecting arena and multi-use amenities with complex systems and higher renewal costs per square foot. The next largest cluster is core utility infrastructure—Wastewater Treatment and Water Treatment & Storage together account for about 38%—where assets are fewer in number but capital-intensive, code-driven, and highly consequential for service continuity. Administrative & Civic facilities contribute a further ~15%, with the balance spread across Operations Garages & Workshops, Cultural/Heritage, Lift Stations, and Community Institutional spaces.

Category	Current Valuation
Administrative & Civic	$10,340,000
Cultural / Heritage	$4,460,000
Lift Stations	$2,700,000
Operations Garages & Workshops	$3,350,000
Recreation	$22,650,000
Wastewater Treatment	$15,500,000
Water Treatment & Storage	$11,950.000
Community Institutional	$460,000
Solid Waste	-



Condition

The condition profile for Buildings & Facilities is dominated by assets in the Fair band, with a small portion trending Good/Very Good—a pattern consistent with an aging portfolio that is being kept serviceable but will need targeted renewal to avoid slippage. For this AMP, condition has been estimated using Percent Remaining Service Life (%RSL) based on installation year and typical lifespans; it's a reliable screening tool, but it does not yet reflect component-level realities. As data improves, the City will move to componentized assessments (e.g., roof, envelope, HVAC, electrical, interiors, structure) using standardized inspections and work-order evidence. Presenting condition by component will sharpen project scoping, align timing with actual failure risk, and make capital forecasts more precise.



Levels of Service

Elliot Lake's public buildings—from recreation centres to administrative offices—are foundational to community well-being and service delivery. Under O. Reg. 588/17, the City assesses facility availability,

reliability, safety, condition, performance, and cost-effectiveness to ensure spaces are safe, functional, and accessible.

Current Levels of Service

While most facilities meet minimum safety codes and basic operational needs, aging systems have led to frequent unplanned closures and maintenance interventions. Integrating maintenance findings into capital renewal planning is critical to reducing emergency repairs and ensuring buildings remain open and reliable.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	Facilities are open during posted hours	% of scheduled operating hours open	Frequent equipment or staffing-related closures	< 85% of posted hours
Reliability	Facilities remain operational without unscheduled closures	# of unscheduled closures per year	Multiple unplanned closures due to infrastructure failures	> 5/year
Safety	Facilities meet building code and health & safety standards	# of safety deficiencies or incidents	Meets minimum safety expectations; isolated issues	1 issue/year
Condition	Facilities are in Good or better condition (FCI-based)	Facility Condition Index (FCI)	Signs of deterioration with major upgrades required	FCI 0.31–0.40
Performance	Facilities support intended use and user experience	% of users satisfied or reporting functional concerns	Core expectations met with minor usability concerns	90–94% satisfaction
Cost Effectiveness	Annual operating cost per square foot	$/sq ft (utilities, maintenance, insurance)	Balanced costs; older systems performing adequately	$6.51–$8.00

Proposed Levels of Service

The City of Elliot Lake's public facilities play an important role in the quality of life for residents. These spaces provide essential services, promote community engagement, and support a wide range of programs for all ages. Ensuring that facilities remain safe, open, and functional is a top priority for the City. While some infrastructure is aging and in need of attention, efforts are being made to maintain these buildings in good condition through preventative maintenance and strategic upgrades. With community expectations high and usage remaining strong, Elliot Lake is focused on keeping facilities accessible, compliant with safety regulations, and cost-effective to operate.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	Facilities are available and open during posted hours	% of scheduled operating hours open	Facilities generally operate as scheduled with minor downtime	90–94% open
Reliability	Facilities remain operational without unscheduled closures	# of unscheduled closures per year	Occasional issues, but resolved quickly	1–2/year
Safety	Facilities meet building code and health & safety standards	# of safety deficiencies or incidents	Safety checks completed; no active deficiencies	0 issues/year
Condition	Facilities are in Good or better condition (FCI-based)	Facility Condition Index (FCI)	Facilities in good condition, some aging systems	FCI 0.11–0.20
Performance	Facilities are suitable for intended use and user experience	% of users satisfied or reporting functional concerns	Facility meets core expectations with minor usability concerns	90–94% satisfaction
Cost Effectiveness	Annual operating cost per square foot	$/sq ft (utilities, maintenance, insurance)	Efficient operation through upgraded systems and practices	$5.01–$6.50

Life Cycle Activities

Planning

Planning focuses on knowing what we own, how it's performing, and when action is required. Key activities include establishing a complete building register (with component breakdowns for roofs, structure, envelope, HVAC, electrical, interior finishes, safety systems), confirming service objectives (safety, availability, accessibility, energy), and running rolling Facility Condition Assessments (FCAs) every 3–5 years. Each site receives a criticality score (public use, emergency function, occupancy, heritage), an FCI/RSL profile, and climate-resilience screening (roof drainage, freeze–thaw exposure, backup power). Results feed a 10-year capital plan that bundles like work (e.g., "roof program," "boiler replacements") to reduce disruption and unit costs. Planning also captures code and AODA compliance gaps, energy/audit opportunities, and identifies candidates for reuse, consolidation, or disposal.

Procurement

Procurement standardizes *how* work is delivered so that projects arrive commissioned, documented, and maintainable. Activities include: prequalifying trades and consultants (roofing, electrical, HVAC, structural), using standing offers for small works and emergency call-outs, and choosing the right delivery model (RFQ/ITT for prescriptive renewals; RFP/Design-Build for performance upgrades). Specifications emphasize durability, energy performance, and compatibility with existing systems (controls, filtration, fire alarm panels). Every award requires: shop drawings, commissioning plans, training for City staff, asset tags, and digital O&M/as-built packages formatted for the City's CMMS/GIS. Multi-year term contracts are used for recurrent services (sprinkler testing, fire alarms, elevators) to ensure compliance and predictable response times.

Operations

Operations keep buildings open, safe, and efficient day-to-day. Core activities include:

- **Access & Use Management:** Opening/closing routines, security checks, keys/fobs, and after-hours support for community facilities.
- **Environmental Control:** Monitoring indoor air quality and temperatures; adjusting schedules on building automation systems to balance comfort and energy.
- **Regulatory Rounds:** Monthly fire alarm/extinguisher checks, eyewash/shower inspections, emergency lighting tests, and documented egress/housekeeping checks.
- **Seasonal Changeovers:** Winterization of perimeter heating, doors, and roof drains; spring start-ups for cooling and humidity control; arena/seasonal facility transitions.
- **Housekeeping & Waste:** Routine cleaning calibrated to building use, plus safe storage/disposal practices for chemicals and sharps in specific facilities.
- **Service Request Triage:** Logging occupant requests, prioritizing by safety/criticality, and routing to maintenance or capital planning when issues indicate end-of-life.
- **Roof & Envelope Watch:** Annual roof walks and after-storm checks for drains, flashings, and penetrations; quick patching to prevent water damage and mold.
- **Utilities & Energy Tracking:** Meter reads, exception alerts for leaks or spikes, and simple retro-commissioning (schedules, setbacks) to control operating costs.

Maintenance

Day-to-day care focuses on simple, repeatable tasks that keep buildings safe and usable while stretching service life. Until a work-order system is in place, crews can use paper or spreadsheet checklists and seasonal schedules.

- **HVAC:** change filters, clean coils, lube moving parts, check belts and thermostats (monthly/seasonal).
- **Heating/Boilers:** test safeties, flush and treat water, inspect vents and relief valves (seasonal/annual).

- **Electrical:** test emergency lights, replace lamps, tighten panel covers, run standby generators per schedule (monthly/annual).
- **Life-safety:** inspect fire extinguishers, test alarms/sprinklers with licensed contractors, verify exits and signage (monthly/annual).
- **Plumbing:** check for leaks, exercise isolation valves, test backflow devices, service sump/effluent pumps (quarterly/annual).
- **Roofs & Building Envelope:** clear roof drains, patch membrane and flashing, reseal joints, clean eaves (after storms/seasonal).
- **Structure & Interiors:** repair doors/locks, glazing, flooring, handrails; touch up paint where needed (as needed/seasonal).
- **Site & Grounds:** patch walkways, minor asphalt repairs, maintain drainage around foundations, manage snow/ice (seasonal).
- **Water Intrusion & IAQ:** respond quickly to leaks, dry affected areas, replace damaged finishes, improve ventilation where feasible (as needed).
- **Emergency Response:** 24/7 call-out for burst pipes, roof leaks, power issues; stabilize, make safe, and record what was done.

Keep simple logs (date, location, task, observations). Repeating issues or safety concerns should be flagged for the Renewal program rather than repeatedly patching.

Renewal

Renewal restores reliability when components reach the end of their useful life or no longer meet code/efficiency expectations. Typical activities: roof replacements; exterior envelope repairs (masonry repointing, window/door systems); boiler/chiller/RTU replacements and control upgrades; electrical service/panel renewals; life-safety system upgrades (alarms, sprinklers, emergency power); elevator modernizations; interior refreshes in high-use spaces; and targeted structural repairs. Triggers include FCAs showing FCI rising into the *Fair* band, repeated failures flagged by the CMMS, obsolescence of parts, or energy/greenhouse-gas reductions available through equipment upgrades. Bundling work by program (e.g., "HVAC 2027–2029") limits downtime and improves procurement leverage. All renewals are commissioned and handed over with training and updated asset data.

Asset Type	Type of Treatment	Treatment Description	Typical Condition Range for Use
Buildings	Replacement	Full Asset Replacement	Fair

Disposal

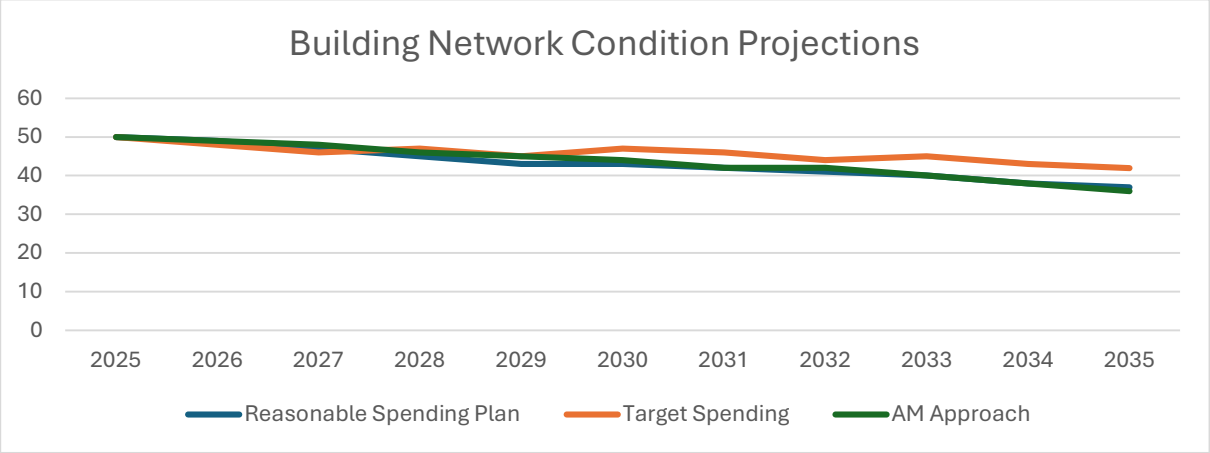
When a facility is under-utilized, high-risk, or uneconomic to renew, the City follows a structured off-ramp: business case (consolidation or repurpose options), hazardous-materials survey, utility disconnections, salvage and recycling plan, secure decommissioning, and site restoration. Heritage status and community impacts are considered, along with potential interim "mothballing" standards to

protect remaining value. Final records—drawings, photos, and lessons learned—are archived to inform future projects.

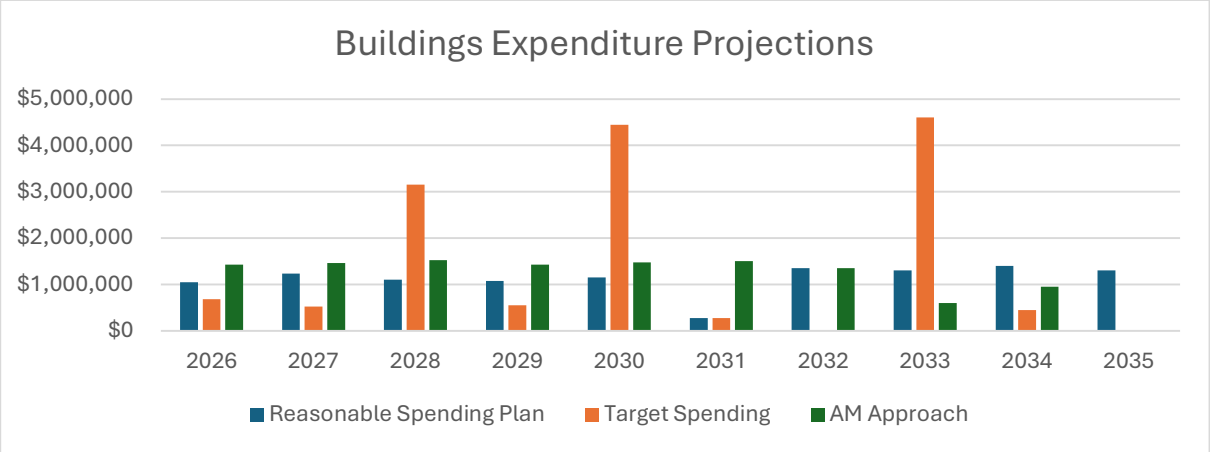
10 Year Projections of Life Cycle

Projection Selection

Elliot Lake compared three building funding approaches and selected the Reasonable Spending Plan as the operating program. It maintains the portfolio in the mid-condition band without the large peaks seen in the Target Spending option and stays closer to annual affordability than the AM Approach. Under this selection, condition declines gradually through the 2030s, with key renewals timed to protect service continuity and aligned, where feasible, to the Property Condition Assessment sequencing. In parallel, the 2024 Landfill Closure Report provides useful insight into the long-horizon cost of financing the landfill; however, its figures are not broken into components or timing bands that could be applied in this AMP cycle. As the report's costs are mapped to asset components and year-by-year schedules, future AMP iterations will incorporate them into scenarios and reserve planning.

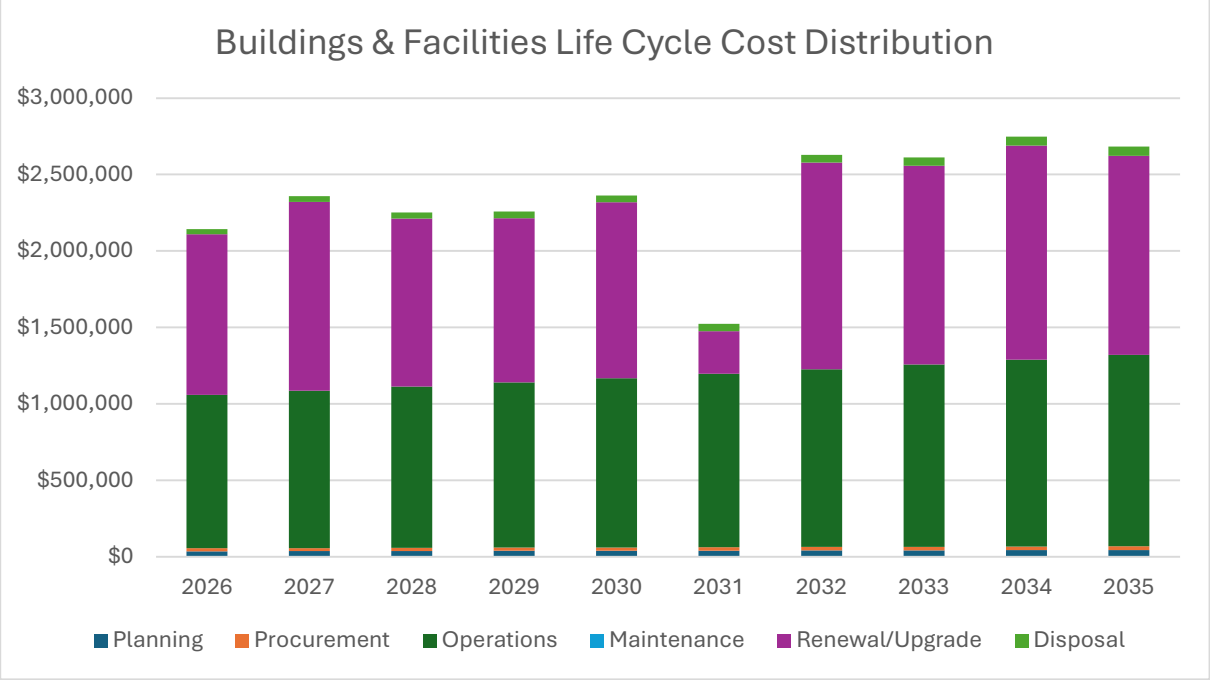


The expenditure profile is deliberately even from year to year, with mid-horizon work anchored by a small number of larger projects from the capital plan. This pacing smooths cash flow while still addressing the highest risk building components on time. Maintenance activities are not yet loaded into DOT; as buildings are broken into envelope, roof, HVAC, electrical, and life-safety components and preventive tasks are added, future runs will separate routine maintenance from capital renewal more clearly and are expected to moderate the longer-term condition drift.



Projection Activities

Under the Reasonable Spending Plan, Buildings & Facilities costs are driven primarily by renewal/upgrade work, with a steady operating base for utilities, custodial, and grounds. Planning and procurement remain small but essential program enablers, while disposal rises modestly later in the horizon as older facilities or components are retired. Maintenance costs are not yet loaded in DOT—once buildings are componentized (envelope, roof, HVAC, electrical, life-safety), a portion of dollars currently sitting in renewal will shift to preventive and minor rehab, which should further stabilize condition and reduce capital spikes.

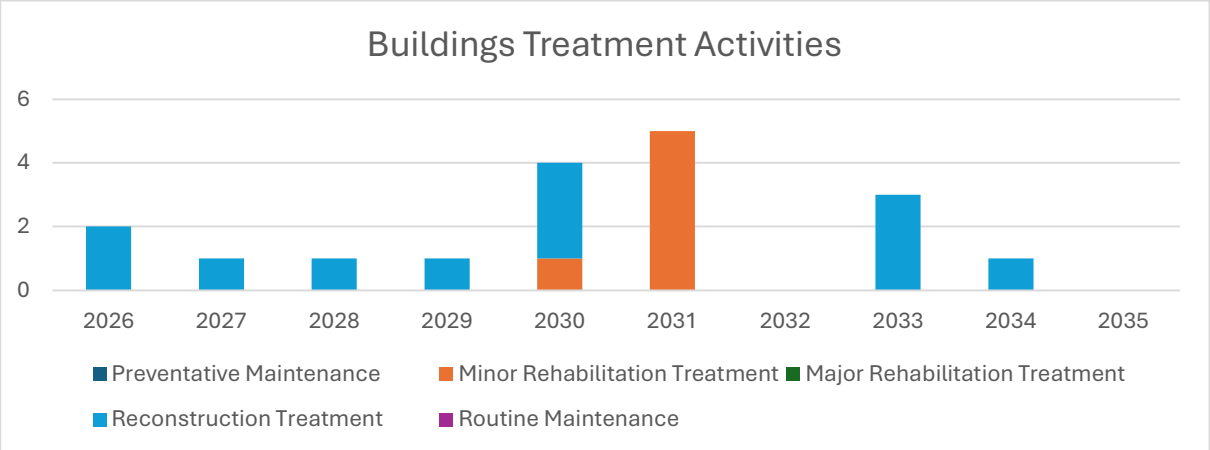


The distribution-of-expenditure table anchors the program assumptions used in the charts. It shows a stable operations base (about $1.0M in 2025 rising toward $1.22M by 2035), light planning and procurement overheads consistent with municipal practice, a placeholder of $0 for maintenance until

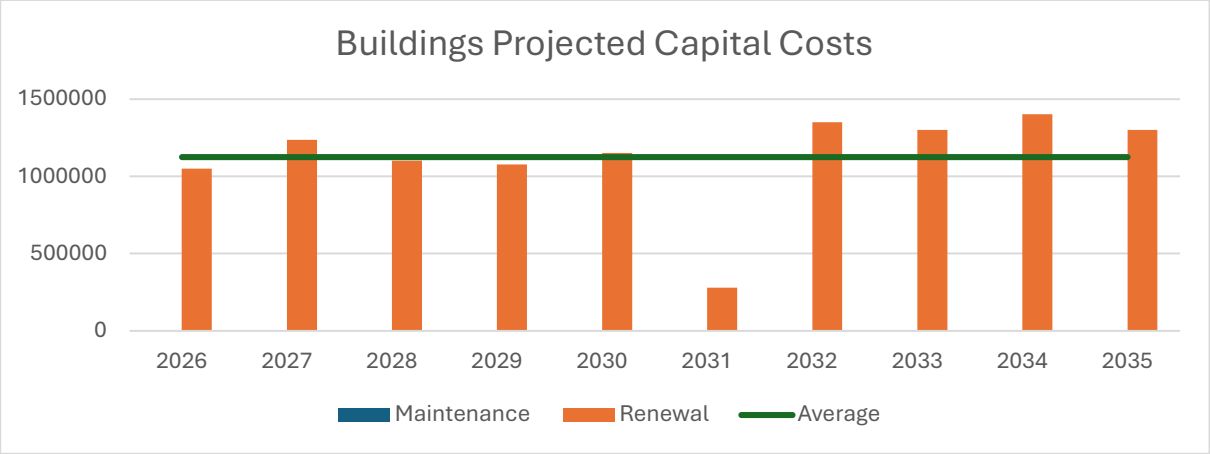
component-level PM is entered, average annual renewal on the order of $1.47M, and a small allowance for disposal that grows as the stock ages.

Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$35,000	$43,000	Program management, facility planning, condition tracking, AMP updates (≈2% of Ops).
Procurement	$20,000	$24,000	Tendering/contract admin, vendor management, compliance (≈2% of Ops).
Operations	$1,003,000	$1,222,000	Utilities, custodial, snow/grounds, security for civic, recreation, protective and public-works facilities.
Maintenance	$0 AVG / YR		Preventive & corrective building/system repairs.
Renewal	$1,470,000 AVG / YR		Component replacements, major system upgrades, life-cycle capital.
Disposal	#35,000	$60,000	Decommissioning, appraisals, environmental screening; modelled as ~1% of Ops in 2025, rising to 1.5% by 2035 given aging stock.

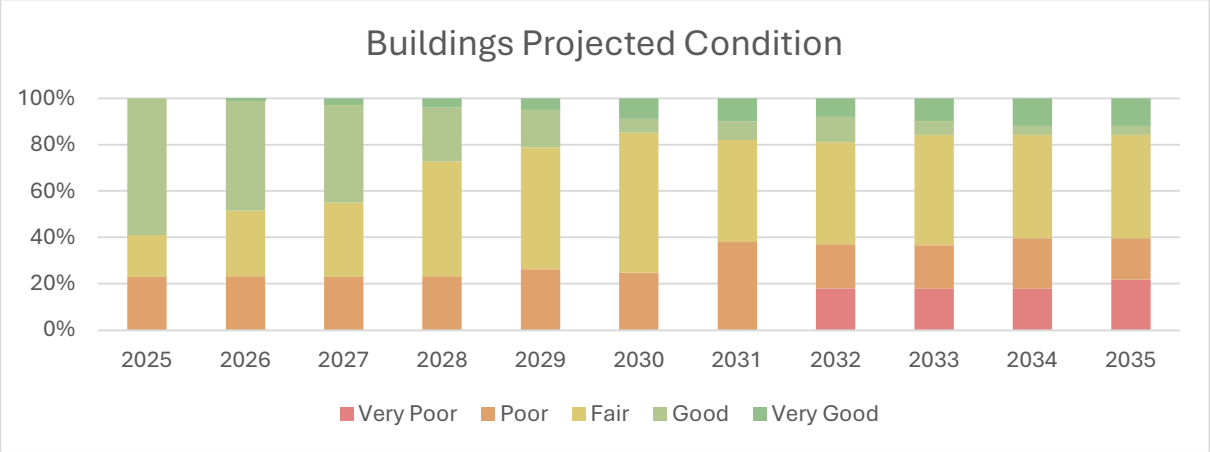
Treatment activity counts highlight when work happens even if some costs are not yet modeled. Preventive maintenance is concentrated early and again around 2030–2033, and there is a visible bump in minor rehabilitation in 2031—capturing mid-life packages that reduce risk without full replacement. This cadence aligns with the capital plan's sequencing and will be converted into explicit maintenance dollars as component-level PM schedules are finalized.



Projected capital costs hover near the long-run average with a soft dip around 2031 and renewed activity through 2032–2035. That mid-horizon shape reflects the timing of a few anchors from the capital plan. As maintenance is added and mid-life rehabs are formalized, we expect some of the late-horizon bars to migrate from renewal into lower-cost treatments.



Condition projections remain dominated by the Fair–Good bands with a managed drift toward lower states as assets age through the 2030s. Loading preventive maintenance and minor rehabilitation into DOT at the component level should slow that drift, particularly for roofs, HVAC, and electrical systems where targeted mid-life work yields the highest payoff. We will re-run the projections after componentization to confirm the condition trajectory tightens around the target band.



Risk Management & Climate Considerations

Risk Management

Elliot Lake's highest-priority facilities are those that enable essential services and public safety—municipal administration spaces, community venues, arenas and pool, and emergency-service buildings (fire, police, EMS). These are treated as critical because disruption would immediately affect service delivery and community well-being.

Recent risk screening points to two dominant technical threats: (i) known structural concerns at the arena (now being addressed), and (ii) HVAC failures across multiple buildings. Given age and condition, staff rate the likelihood over the next 5–10 years as high, with potential consequences including service shutdowns, safety hazards, and cost escalation from reactive repairs. Contributing factors are familiar: aging infrastructure, outdated systems, water ingress, and historic gaps in preventative maintenance.

Current mitigation focuses on building condition assessments with 2-, 5-, and 10-year horizons to stage work systematically, complemented by improved inspection/monitoring and a push to better connect field reporting to financial planning. Over the next AMP cycle, staff will continue formalizing inspection frequencies by facility, track defects to closure, and use the results to sequence renewals within capital forecasts.

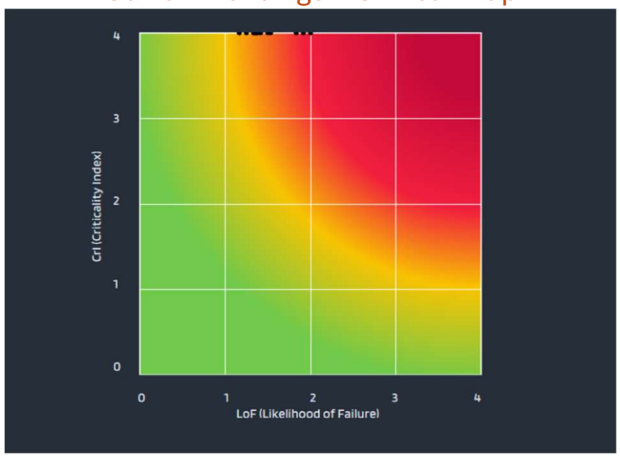
Buildings Criticality

The current heat map shows most facilities clustered in the high criticality bands, because they support life-safety or essential services (e.g., fire/EMS, lift stations, arenas, City Hall, water assets). In practice, these high-critical sites can appear in the red/orange zones even when their likelihood of failure is modest, because interruption would jeopardize health, safety, or core municipal functions. Over 2025–2035 the criticality framework will be validated with facility owners and emergency planning staff by factoring occupancy, service dependency (what else fails if this building is offline), and regulatory obligations; this ensures capital dollars first protect high-consequence buildings.

Buildings Risk

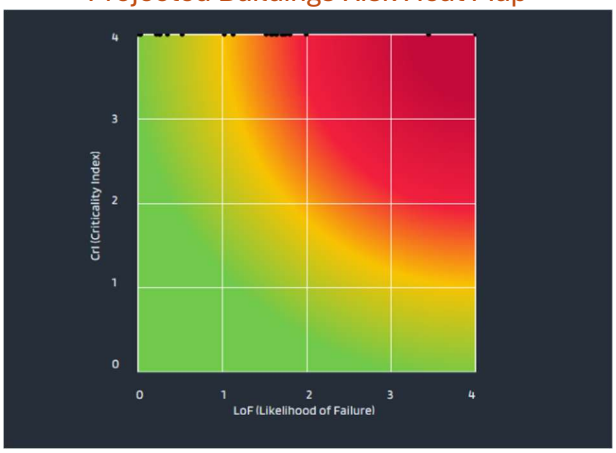
The current risk heat map is dominated by points in the green/yellow fields—reflecting generally low likelihoods with some aging-related concerns—while the 2035 projection shows a gentle rightward drift (higher LoF) as roofs, envelopes, HVAC and code-driven systems continue to age without renewal. The implication is straightforward: targeted projects that arrest deterioration (roofing, HVAC, fire/life-safety and accessibility upgrades) will keep the portfolio anchored in green and prevent assets from encroaching into the orange/red zones. As component-level condition data (FCI/BCA) is added, the LoF scores will be refined and the heat maps updated, giving Council a clear before/after view of how renewal work reduces portfolio risk.

Current Buildings Risk Heat Map



Risk Projection 2026

Projected Buildings Risk Heat Map



Risk Projection 2035

Climate Change Considerations

Climate pressures identified for the portfolio are mainly indirect: higher summer temperatures and longer warm seasons reduce energy efficiency and increase HVAC load. While extreme events are becoming more frequent, staff note limited direct impacts to date—aside from elevated regional wildfire risk that can affect air quality and operations. Overall, no material increases to building maintenance costs is anticipated at this time, but the City will keep this under review as data improves.

Adaptation Strategies

The City has engaged an Energy Service Company (ESCO) to evaluate efficiency and resilience upgrades; however, the portfolio's baseline renewal needs are significant, so near-term emphasis is on low-cost, high-return actions. Practical measures selected for early rollout include lighting/control upgrades and weather-sealing improvements to curb energy use and reduce HVAC strain, while larger retrofits are bundled with planned capital renewals to control lifecycle cost.

Next Steps & Data Improvements

The Property Condition Assessments (PCAs) are a strong foundation, but the next phase is to componentize each facility (structure, envelope/roof, HVAC, electrical, plumbing, life-safety, interiors, site works) so that condition, cost, and risk are captured at the system level. This step will let us assign consistent condition scores and %RSL, apply calibrated unit rates for renewals and mid-life rehabilitation, and calculate risk using component-specific LoF/CoF factors (e.g., occupancy, regulatory exposure, service disruption, lead times). As this detail is added, DOT scenarios will reflect timed interventions rather than building-level placeholders, improving the accuracy of spend profiles and condition projections.

For this draft, outputs represent the best available picture from the PCAs, supplemented where necessary by anecdotal information from staff to complete scenarios. We will now replace those assumptions with measured data by validating PCA findings with site walkthroughs, loading preventive maintenance tasks for major systems, integrating actual O&M costs (utilities, custodial, minor repairs), and reconciling any scope gaps with vendor quotes for near-term projects. Completing this loop will produce a stronger AMP with higher confidence in the timing and scale of renewals, clearer separation

between maintenance and capital, and a defensible, component-level risk profile to guide budgets and priorities.

9. Parks & Recreation

Inventory

Elliot Lake's Parks & Recreation portfolio encompasses a diverse array of neighborhood greenspaces, sports fields, waterfront beach areas, playgrounds, and commemorative monuments. These 25 distinct sites—from urban pocket parks to trail systems and beachfronts—provide venues for passive and active recreation, community gatherings, and heritage appreciation. A comprehensive inventory—including park acreage, installation year, and amenity inventories—is in development and will be added in future AMP updates. formalized, we expect some of the late-horizon bars to migrate from renewal into lower-cost treatments.

Asset Type	Quantity	Area (ha)	Year Range	Notes
Neighbourhood Parks	22	TBD	1958–2020	Small greenspaces serving adjacent residential areas
Beach & Waterfront Parks	2	TBD	1960–2010	Spruce Beach, Spine Beach
Sports Fields & Courts	6	TBD	1977–2015	Ball fields, soccer field, multi-use recreation areas
Playgrounds & Playfields	10	TBD	2005	e.g. Burley Playground
Monuments & Special Sites	1	TBD	2000	Miner's Monument

Valuation

Parks & Recreation assets often sit outside traditional engineering inventories, so their data tends to be sparse and inconsistent. That pattern shows up here: a recent, structured playground inspection program produced complete valuations for play structures, while large portions of the "soft" landscape (grass areas) and field/court amenities still lack replacement cost information. As a result, the current valuation understates the real value of the parks system and can bias funding toward the few assets with good data.

Category	# of Asset with CRC	Current Valuation
Grass Areas	1/25	$30,000
Playgrounds	10/10	$1,145,000
Sports Fields & Courts	0/10	$0

To close the gap, Elliot Lake will standardize what counts as an asset (e.g., turf areas by m^2, backstops and fencing by linear metre, lighting standards, benches, bleachers, irrigation, pathways) and assign unit-rate replacement costs to each. A light-touch inventory sweep can capture locations and quantities, followed by condition spot checks aligned to safety and accessibility standards (e.g., CSA Z614 for playgrounds). As this information is added, the AMP will be updated to reflect a truer lifecycle liability for grassed areas and sports fields/courts, enabling risk-based prioritization and more balanced capital planning across the whole Parks & Recreation portfolio.

Condition

At present, Elliot Lake does not maintain a quantified condition rating for its Parks & Recreation assets. No systematic inspections or condition surveys have been completed for parkland, playground equipment, sports fields, or monuments, leaving a gap in performance data and renewal prioritization.

To close this gap in future AMP iterations, the City will launch a Parks & Recreation condition assessment program that will:

- **Establish Standard Rating Criteria:** Define a simple 1–5 scale for elements such as turf health, play–structure safety, pathway integrity, amenity cleanliness, and monument preservation.
- **Deploy Mobile Data Collection:** Equip maintenance crews with GIS-enabled tablets and photo-capture templates to record condition scores and comments during routine patrols.
- **Schedule Regular Audits:** Conduct full park walkthroughs on a three-year cycle, with interim spot checks annually, to identify emerging deficiencies early.
- **Integrate with Work-Order System:** Automatically generate maintenance or renewal work orders when an asset's condition falls below defined thresholds.

By embedding these inspections into daily operations and feeding results into a centralized asset management database, Elliot Lake will gain the quantitative insight needed to allocate maintenance budgets effectively, plan timely renewals, and ensure its parks continue to provide safe, high-quality recreation experiences.

Levels of Service

Elliot Lake's parks and recreation assets—including parks, trails, playgrounds, and sporting fields—provide essential recreational opportunities and community gathering spaces. In accordance with O. Reg. 588/17, the City evaluates these assets across accessibility, reliability, safety, condition, performance, and cost-effectiveness to guide maintenance and capital planning.

Current Levels of Service

Though overall user satisfaction is high, intensive wear during peak seasons and aging infrastructure create maintenance challenges that must be addressed proactively.

Characteristic	Indicator	Metric	Current Level of Service	Current Metric
Accessibility	Parks and facilities are usable during posted hours	% of operating hours open	Hours occasionally reduced due to maintenance or weather	90–94% of scheduled hours
Reliability	Facilities remain functional without unexpected closures	# of unscheduled closures per year	Minor closures occur during peak wear periods	2–3 closures/year
Safety	Play areas and equipment meet safety standards	# of safety incidents or repair orders	Few minor incidents; prompt repairs managed	≤ 2 incidents/year
Condition	Asset condition rated "Good" or better	% of assets rated ≥ 3/5 (condition scale)	Some playground and trail components showing wear	55–70% rated ≥ 3/5
Performance	Spaces support programmed activities and informal use	% of scheduled events executed without issues	Most events proceed without cancellations due to asset failure	95–98%
Cost Effectiveness	Maintenance cost per acre of parkland	$/acre/year	Seasonal peaks drive higher costs, but overall budget balanced	$1,200–$1,400/acre/year

Proposed Levels of Service

Parks, playgrounds, and green spaces are deeply valued in the community of Elliot Lake. These outdoor spaces contribute to residents' well-being, encourage physical activity, and offer places for connection, recreation, and relaxation. The City maintains a wide variety of these assets across its neighborhoods — from large parks and trails to smaller play areas. Public expectations for park access, appearance, and safety are high, and any service interruptions or closures are quickly noticed. Elliot Lake is committed to keeping them clean, safe, and available throughout the season. Strategic partnerships and careful resource planning help maintain a strong level of service, even as operational demands and seasonal challenges continue to grow.

Characteristic	Indicator	Metric	Proposed Level of Service	Proposed Metric
Accessibility	Parks and green spaces are open and usable during summer season	% of planned open days parks are usable	Parks generally open with occasional interruptions	90–94% usable days
Reliability	Grass is cut and play areas are maintained on a regular schedule	% of scheduled maintenance completed on time	Maintenance completed regularly with minor delays	85–94% on-time
Safety	Playground structures are safe and compliant with inspection standards	% of structures rated "Good" or better	Equipment is safe and maintained in good condition	90–95% rated Good+
Condition	Grounds, benches, and features are in good condition and functional	% of features in "Fair" or better condition	Most features are functional and well maintained	80–89% rated ≥ 3/5
Performance	Parks meet the recreational needs of the community	% of public feedback rated as positive or neutral	Parks offer general satisfaction for most age groups	85–89% satisfied
Cost Effectiveness	Cost per acre for maintenance activities	$/acre for mowing, garbage, upkeep	Balanced seasonal costs and acceptable service levels	$3,000–3,499

Life Cycle Activities

Planning

Parks and recreation planning will focus on a current, GIS-based inventory of all sites (parks, trails, beaches, sports fields, courts, playgrounds, washrooms, signage, furnishings, and landscaped areas) with standardized attributes (age, material, compliance status, accessibility, safety notes). Annual work plans will be built from that inventory, prioritizing safety and code compliance first (e.g., play equipment and washroom facilities), then functionality (e.g., field drainage, court surfacing), then amenity and aesthetics (e.g., plantings). Target service levels will reflect seasonality—higher frequencies in May–October—and clear inspection routes to reduce travel time. Where practical, introduce small pilots for automation (smart locks, remote facility checks, robotic mowing) to relieve routine workload and redeploy staff to higher-value tasks.

Procurement

Procurement will standardize specifications for play equipment, safety surfacing, site furnishings, fencing, and horticultural supplies to ensure compatibility, durability, and easier replacement. Preferred vendor lists will be maintained for: certified playground inspectors, arborist services, irrigation/field drainage, surfacing contractors, and washroom fixture trades. For recurring items

(mulch, safety surfacing top-ups, nets, lines, signage, plants), use term contracts to stabilize pricing and shorten lead times. Pre-season ordering (late winter) will ensure materials are on hand before the spring ramp-up.

Operations

Operations keep sites open, clean, and safe—especially during the high-use season. Core activities include:

- **Daily site servicing (in season):** litter collection, washroom cleaning, and minor repairs; route-based to maximize coverage.
- **Turf care:** programmed mowing cycles May–September, with edge trimming and weed control weekly; adjust frequencies during drought or slow growth.
- **Tree care:** scheduled pruning where feasible, plus as-needed removals for safety; track problem locations for future capital planting or replacement.
- **Sports field preparation:** routine dragging, lining, net set-up, and infield/top-up as needed to meet booking schedules.
- **Playground safety checks:** weekly documented inspections during the season, with immediate hazard mitigation and work orders for defects.
- **Seasonal programs:** flower planting and bed maintenance (spring/summer), fall clean-up and winterization (equipment removal, signage change-outs), and winter trail/park access as defined by service levels.
- **Access and security:** open/close routines, with a plan to pilot smart locks and timed access to reduce staff travel and after-hours call-outs.
- **Issue triage:** simple in-field fixes where safe (tighten hardware, replace boards, re-secure signs) and prompt escalation for larger defects.

Maintenance

Maintenance preserves asset condition and extends useful life through scheduled care and small repairs:

- **Playgrounds:** tighten/replace hardware, lubricate moving parts, repair/replace worn components, top-up safety surfacing, repaint or seal wood/steel as needed.
- **Fields & courts:** infield material additions, minor grading and drainage touch-ups, turf aeration/overseeding, net and post repairs, crack sealing on hard courts.
- **Site furnishings & paths:** repair benches/tables, replace boards or slats, re-anchor loose items, spot patch asphalt walks, reset heaved pavers.
- **Amenities & buildings (park washrooms, kiosks, shelters):** minor plumbing and fixture repairs, door and lock maintenance, paint touch-ups, vandalism repairs.

- **Vegetation & edges:** brush back encroachments, maintain sightlines at intersections, and clear growth around play zones and signage.
  Maintenance frequencies will be season-weighted (higher in spring/summer) and coordinated with operations routes to minimize repeat visits.

Renewal

At this time, DOT scenarios could not be run for **any** Parks & Recreation asset classes. Until the dataset is complete, Elliot Lake will define renewal/upgrade programs conceptually and add project-level details to DOT as inspections, quantities, and unit rates are finalized. Renewal will be triggered by safety and regulatory non-compliance (e.g., CSA/AODA), recurring defects, or assets trending into the lower end of **Fair** condition.

Candidate renewal activities by asset type

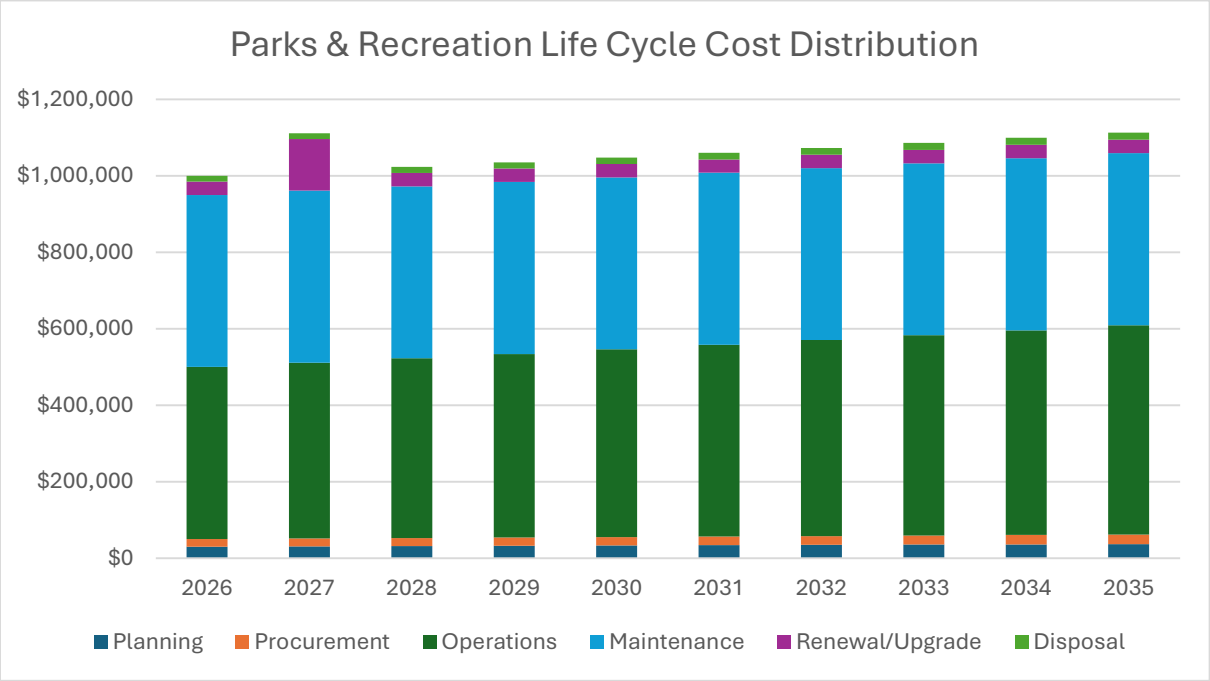
- **Playgrounds:** replace full structures; swap out worn components; renew CSA-approved safety surfacing; upgrade borders, drainage, and accessible routes.
- **Sports fields:** regrade and rebuild infields; topdress/overseed and drainage improvements; install/renew backstops, fencing, lighting, and irrigation.
- **Courts (tennis/pickleball/basketball):** crack sealing and color coat; partial patch/overlay; full resurfacing; net posts and fencing replacements.
- **Trails & paths:** asphalt/paver rehabilitation; base reconstruction; accessibility improvements at grades/ramps; drainage swales and culvert renewals.
- **Park buildings & shelters:** roof, siding, and door replacements; fixture and plumbing upgrades in washrooms; structural repairs; LED lighting retrofits.
- **Waterfronts & beaches:** slope stabilization, accessible boardwalks, stairs and guardrails; buoy/marker systems; sand nourishment and drainage fixes.
- **Site furnishings & signage:** wholesale replacement of benches, tables, waste/recycling stations, bike racks, kiosks, and wayfinding packages.
- **Trees & landscaping:** succession planting; stump removals; planter/irrigation renewals; windbreak and shade planting for comfort/resilience.

Disposal

When assets reach the end of their useful life and no longer meet safety or program needs, the City will remove and dispose of them in a controlled manner. Disposal plans will include: public communication (especially for popular amenities), safe decommissioning, material separation for recycling (metals, concrete/asphalt, wood), and site restoration (grade, seed, make-safe). Where an amenity is no longer required, the default is to remove and restore rather than replace—concentrating resources at higher-use locations and aligning with evolving recreation demand.

10 Year Projections of Life Cycle Activities

The 10-year projections for Parks & Recreation are based on budget history and 2025 estimates, not DOT scenarios, because current asset data is incomplete. The stacked bars illustrate a steady, inflation-level rise in baseline activities (planning, procurement, operations), while maintenance carries the largest recurring burden and renewal remains modest pending fuller inventories and condition results.



Operations and maintenance dominate the spend profile, reflecting the labour- and service-intensive nature of park care (seasonal staffing, utilities, inspections, and day-to-day fixes). A one-time bump in early-term renewal is assumed to cover a priority playground replacement, then renewal holds at a conservative annual allowance until asset-level data justifies a fuller program. Planning and procurement stay small but stable, funding inventory upkeep, LOS reviews, and light tendering. Disposal is minor throughout (haulage and decommissioning of small features) and is treated separately to avoid double-counting with renewal.

Activity	2025 Annual Cost	2035 Projected Cost	Notes
Planning	$30,000	$36,600	Asset inventory upkeep, inspections planning, AMP updates, LOS reviews.
Procurement	$20,000	$24,400	Specs, small tenders/RFQs, contract admin for minor park works.
Operations	$450,000	$549,000	Daily park opening/closing, utilities, seasonal staffing, routine inspections (excludes maintenance/renewal work orders).
Maintenance	$450,000 AVG / Year		Seasonal upkeep: staffing, materials, trails and amenities repairs/inspections.
Renewal	$35,000 AVG / Year		Averaged playground replacement, trail reserves, minor amenity renewals.
Disposal	$15,000	$18,300	Haulage, recycling/disposal fees, decommissioning small features.

As field inventories and condition assessments mature (e.g., play structures, courts, trails, furniture, lighting), these placeholders will be replaced by DOT-derived scenarios with treatment triggers and timing, shifting dollars from “steady allowances” toward targeted, evidence-based renewals. Until then, the estimates provide budgeting guidance without overstating needs.

Risk Management & Climate Considerations

Elliot Lake’s Parks & Recreation assets—including Collins Hall, the outdoor pool, arena, playgrounds, sports fields, beaches, Westview Park, and Kiwanis Park facilities—are vital for community health, safety, and recreation. According to recent staff feedback, the most significant risk across these assets is infrastructure aging combined with limited maintenance budgets, which is rated as high likelihood over the next 5–10 years and carries high consequence for public safety (injury), service loss, and liability exposure. Current mitigation relies largely on reactive repairs and unplanned renewals once facilities fail. To move toward a more proactive posture, Elliot Lake will:

- Develop a formalized inspection and condition-assessment schedule for all parks and facilities.
- Embed preventive maintenance tasks (e.g., monthly safety audits of playgrounds and rink surfacing checks) into the work-order system.
- Establish a strategic renewal fund to smooth capital spending, reducing reliance on emergency decommissioning.

Climate Change Considerations

While topography and relatively mild summers mean flooding and drought are not pressing threats, increasing variability in weather can disrupt seasonal operations. Staff do not anticipate a material increase in overall maintenance costs due solely to climate change but recognize that adapting schedules and materials will be important to preserving service levels.

Adaptation Strategies

To bolster resilience with minimal cost, the Parks & Recreation Department will:

- **Adjust Maintenance Calendars:** Shift mowing, painting, and rink-prep schedules to match evolving seasonal windows.
- **Install Climate-Resilient Surfaces:** Pilot synthetic rink liners and drought-tolerant turf in high-use areas.
- **Enhance Shade & Drainage:** Plant native shade trees around playgrounds and ensure grills and park drains remain clear to prevent localized flooding.

By formalizing risk assessments, embedding preventive maintenance, and implementing low-cost climate adaptations, Elliot Lake will safeguard its Parks & Recreation assets—ensuring safe, reliable recreation opportunities even as infrastructure ages and weather patterns shift.

10. Financial Strategy

Purpose, Scope & LOS Link

This Financial Strategy converts Elliot Lake's target service outcomes into an affordable, time-phased funding plan for all municipal assets over 2025–2035. It shows what it costs to keep services safe, reliable, and compliant; how those costs split across operations, maintenance, and renewal; and how they will be financed through levies/rates, reserves, grants, debt, and commercial models (e.g., leasing).

The strategy covers the full portfolio, Transportation (roads, sidewalks), Drinking Water (treatment, storage, distribution), Wastewater (collection, lift stations, treatment), Stormwater (pipelines, culverts), Buildings & Facilities (administrative/civic, recreation, cultural/heritage, operations garages/workshops, community institutional), Fleet & Equipment, Parks & Recreation. Current forecasts draw on DOT modeling, asset registers, GIS, PCA results for buildings, and utility/fleet records; where datasets are still maturing, reasonable placeholders and staff inputs have been used and will be replaced as new data is verified.

Funding levels are anchored to the City's target Levels of Service, not just asset age. For Transportation, the plan prioritizes mobility and safety (surface condition/criticality, winter service). For Drinking Water, it targets water quality, supply reliability, and firefighting support. For Wastewater, it emphasizes regulatory compliance, overflow prevention, and lift-station reliability. For Stormwater, it focuses on drainage capacity and flood risk reduction. For Buildings & Facilities, it sustains facility availability, life-safety systems, and energy performance. For Fleet & Equipment, it maintains uptime and seasonal readiness while reflecting the shift of light-duty replacements to leasing (moving some needs from CAPEX to OPEX). For Parks & Recreation, it maintains safe, useable amenities.

As component-level condition, cost, and risk (e.g., building systems; water/wastewater process units) are finalized and preventive programs are loaded, the financial plan will be re-baselined, so dollars

increasingly track timed interventions (PM, rehabilitation, renewal) that keep LOS on target while smoothing year-to-year affordability.

Financial Baseline & Methods

Baseline and Currency.

All values are in 2025 dollars. Current Replacement Cost (CRC) is maintained in the asset register and summarized in the AMP Annex for every class: Transportation (roads/sidewalks/structures), Drinking Water (treatment, storage, distribution), Wastewater (collection, lift stations, treatment), Stormwater (culverts/pipes/ponds), Buildings & Facilities, Fleet & Equipment, Parks & Recreation. Where CRC is based on provisional quantities or rates, it is flagged with a data-quality note and queued for verification in the next update.

Asset Class	CRC Value
Transportation	$140,227,000
Potable Water	$114,283,000
Wastewater	$124,906,000
Stormwater	$28,538,000
Fleet & Equipment	$9,144,000
Buildings & Facilities	$71,400,000
Parks & Recreation	$1,175,000

Forecast Engine and Calibration.

Ten-year forecasts are produced in **DOT** for each class using class-appropriate deterioration and timing logic:

- **Transportation:** surface age/PCI (where available), traffic class, winter impacts, and cross-asset coordination with underground works.
- **Drinking Water / Wastewater:** pipe age/material/diameter, process-unit duty, regulatory triggers, and lift-station reliability.
- **Stormwater:** culvert inventory (span/material), hydraulic risk points, road dependency.
- **Buildings & Facilities:** PCA projects now, moving to **component-level** (envelope/roof/HVAC/electrical/life-safety/interiors/site) as records are finalized.
- **Fleet & Equipment:** hours/km, criticality, and the **shift of light-duty replacements to leasing** (CAPEX→OPEX).
- **Parks & Recreation:** play structures, fields, lighting and amenities on standard lifecycles.

Backlog/Deficit Definition

For each class, the “infrastructure deficit” is required funding at target LOS (from DOT) minus sustainable funding (recurring levy/rates + planned grants + prudent reserve use). Where Council chooses a managed backlog (e.g., deferring low-criticality items to protect high-impact renewals), its magnitude and risk are disclosed and tracked annually.

Unit-Rate Provenance (by class)

Transportation/Stormwater: recent resurfacing and culvert tender results, DOT rates for classes without bids.

Water/Wastewater: pipe supply/install by diameter/material, pump/controls packages from vendor quotes, historical plant project costs

Buildings: PCA quantities and market-tested unit costs for envelope/roof/HVAC/electrical; contractor quotes for near-term items.

Fleet: OEM pricing and **lease quotes** for light-duty; overhaul kits for heavy/specialty; upfit vendor pricing.

Parks: vendor catalogs, peer municipal purchases, and lifecycle standards (accessibility/aviation/cyber).
Any rate that departs materially from history is annotated with the rationale (market shift, code upgrade, scope change).

Key Planning Assumptions (this draft)

Leasing: increasing penetration for light-duty Fleet moves cost from **CAPEX to OPEX**; DOT reflects bundles for tires/PM where included.

Buildings componentization: maintenance is a placeholder until component-level PM is loaded, after which some dollars will shift from renewal to maintenance.

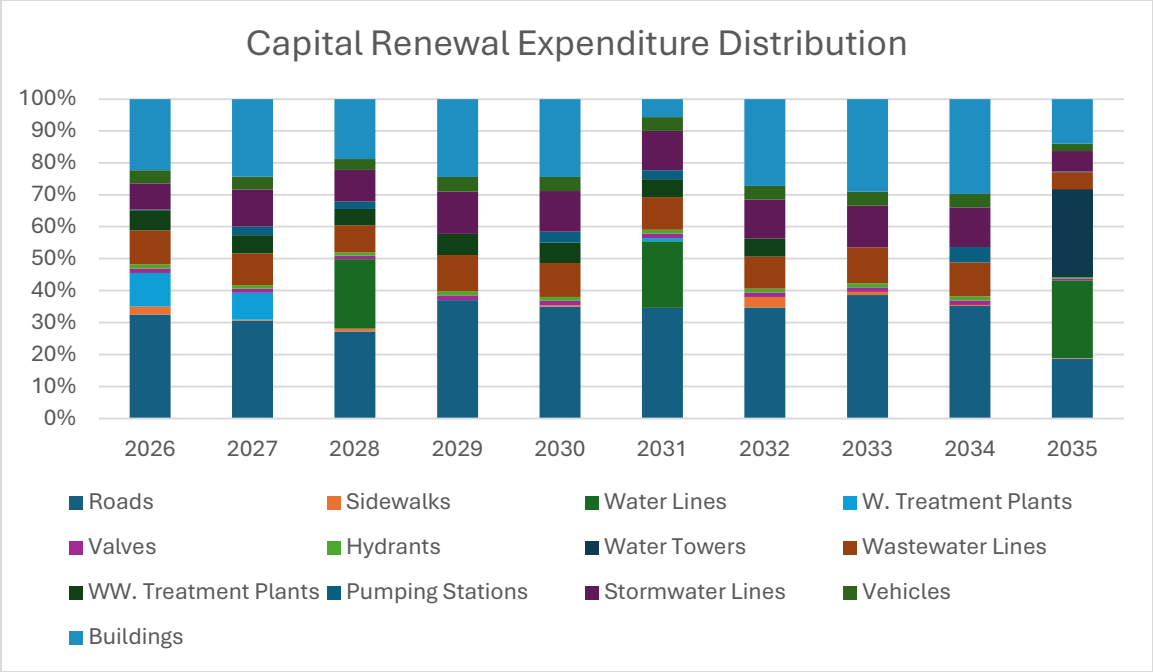
Cross-asset coordination: underground renewals are timed with road programs; stormwater culverts aligned with road corridors; building/plant outages scheduled outside peak service seasons.

Risk & compliance: treatment assets, lift stations, fire/life-safety systems, and core winter operations receive priority timing.

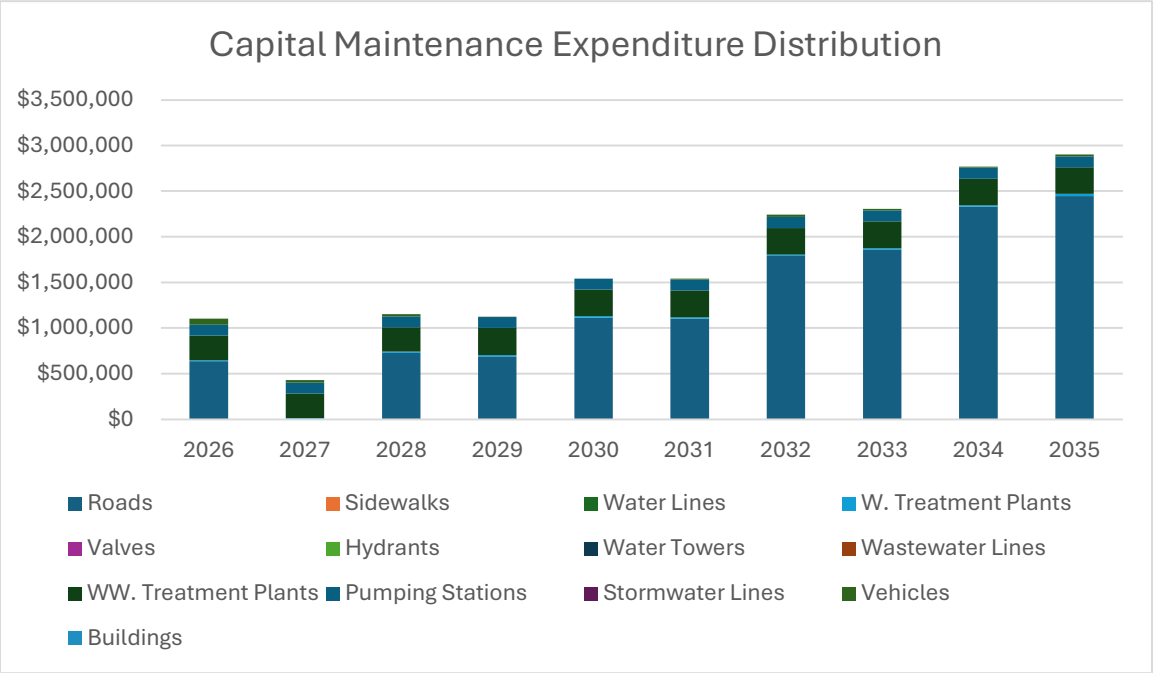
Grants & reserves: only programs with realistic pathways are assumed; reserve targets and draw rules are applied consistently across classes.

Expenditure Plan

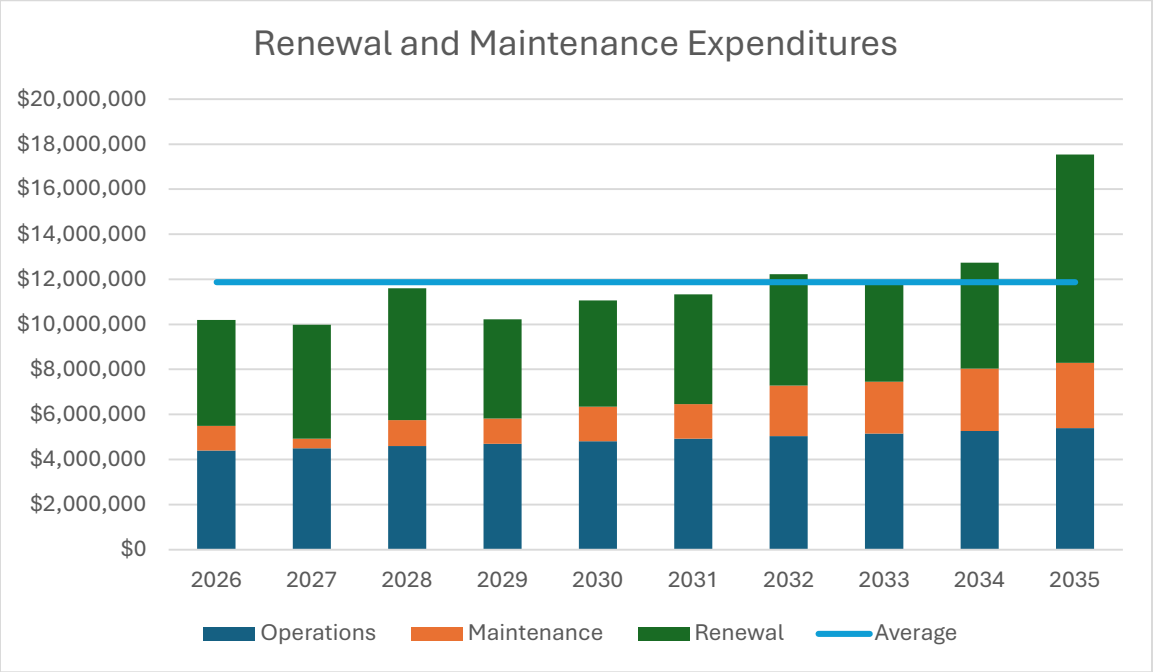
Elliot Lake's 10-year expenditure plan balances day-to-day service delivery with targeted renewals. Renewal dollars are paced to protect service and compliance while avoiding large, unmanageable spikes; maintenance grows through the horizon as component-level programs mature, particularly on roads and buildings; operations remain a stable base that supports availability across all services.



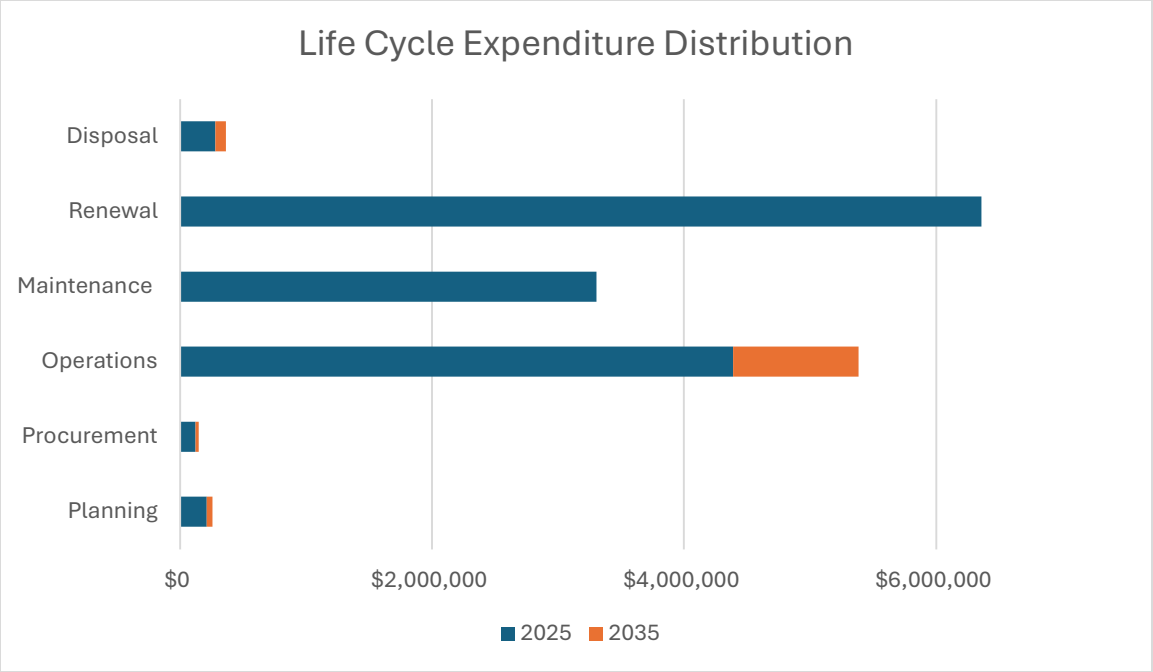
Renewal spending is widely distributed but remains corridor-focused, with roads consistently the largest share and underground work timed to those corridors to reduce reinstatement costs. Buildings and treatment assets form the next tier of renewal intensity. The capital plan anchors several visible projects in the first half of the window. Later in the horizon, community facility works contribute to a modest crest before the program returns toward the long-run run-rate. Road/utility bundles are used wherever possible—for example, pairing water/wastewater line replacements with paving—to smooth delivery and minimize rework.



Capital maintenance is dominated by roads throughout the period, reflecting surface preservation and spot repairs that defer full reconstruction. A smaller but growing portion of maintenance is directed to vehicles (as mid-life rehabilitation packages are formalized) and buildings (roofing, HVAC, electrical interventions). This ramp in maintenance is deliberate: moving appropriate work from renewal to planned maintenance stabilizes condition and reduces capital spikes, especially as buildings are broken into components in DOT.

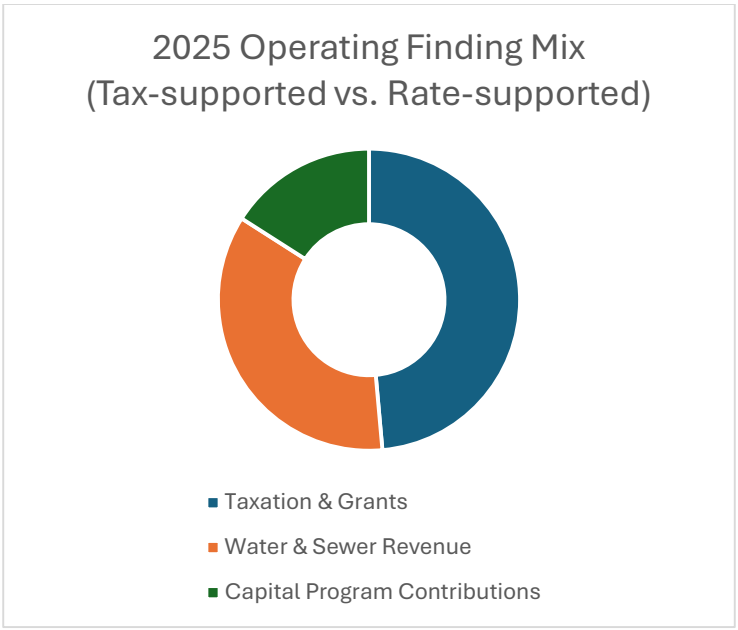


Total portfolio spending shows a steady operational base with maintenance and renewal layered on top. The line of best-fit/average illustrates the program's long-run affordability target; years that sit above the line are driven by a handful of planned anchors—principally the building projects noted above plus corridor bundles where roads, water, and wastewater are delivered together. Smoothing is achieved by staging multi-year contracts, bundling utility work under road programs, and shifting lower-criticality items by one budget cycle when needed to stay within the envelope.



The life-cycle view confirms the intended mix shift by 2035: operations remain stable in absolute terms, maintenance has a larger role as component-level programs mature, and renewal is focused on the high-impact projects that most influence risk and LOS. Taken together, these charts show how the plan funds essential service delivery today, invests in the right renewals at the right time, and uses maintenance and bundling to keep the curve smooth and predictable.

Funding Strategy



Elliot Lake funds municipal services through a blend of tax-supported and rate-supported revenues. The operating mix shows three pillars: the tax levy and grants that sustain tax-supported services (roads,

buildings, parks, fleet); water & sewer user rates that support utility operations; and Capital Program Contributions transferred from user rates to the utilities' capital program. Treat Capital Program Contributions as a rate-funded source for renewal, not a third operating revenue stream.

Reserve	Balance if Capital Budget Approved (2025$)	"With Debt" (if shown)
Fleet	-$1,645,003	-$1,645,003
Information Technology	-$181,917	-$181,917
Public Works	-$1,109,540	-$1,109,540
Buildings & Facilities	$7,463,500	$0
Water/Wastewater (User-Pay)	-$8,383,384	-$8,383,384
Federal Gas Tax (Obligatory)	-$113,227	-$113,227
Provincial Gas Tax (Obligatory)	$0	$0

* Reserve capacity is shown as a negative number.

Across the portfolio, transportation, stormwater, buildings/facilities, parks, fleet are tax-funded and typically paired with reserves and eligible grants for capital. Drinking Water and Wastewater are rate-funded (user pay), with operating needs met from rates and capital supported by rate transfers to capital, grants when available, and the user-pay reserve. Recreation programs have modest user-fee offsets but remain primarily tax-supported. This split is important for affordability modeling and for how risks are shared between the levy and user rates.

Asset class	Primary funding source	Secondary / conditional sources	Notes
Transportation (roads, sidewalks, bridges/culverts)	Tax-supported operating levy	Reserves (Public Works), provincial/federal grants (incl. Gas Tax where eligible)	Tax-supported operations are funded from Taxation & Grants in the operating budget; capital often draws on the Public Works reserve and applicable grants.
Stormwater (culverts, drainage)	Tax-supported	Public Works reserve; grants when available	Managed within Infrastructure Services and capitalized through the Public Works reserve/annual levy.
Drinking Water (treatment, storage, distribution)	Rate-supported (user fees)	Capital Program Contributions from rates; Water/Wastewater user-pay reserve; grants	Operating funded by Water & Sewer Revenue; capital receives Capital Program Contributions and uses the User-Pay reserve.

Wastewater (collection, lift stations, treatment)	Rate-supported (user fees)	Capital Program Contributions; User-Pay reserve; grants	Same user-pay framework as water; reserve position reported in the capital budget schedules.
Buildings & Facilities (civic, recreation, operations, cultural)	Tax-supported	Buildings & Facilities reserve; grants (e.g., infrastructure programs)	Reserve balance shown in the capital budget schedules.
Fleet & Equipment	Tax-supported	Fleet reserve; grants (program-specific)	The City maintains a Fleet reserve for capital; light-duty leasing shifts some replacements from CAPEX to OPEX (operating budget impact).
Parks & Recreation assets	Tax-supported	Grants; donations; reserves where available	Included within Recreation & Culture in the tax-supported operating budget.

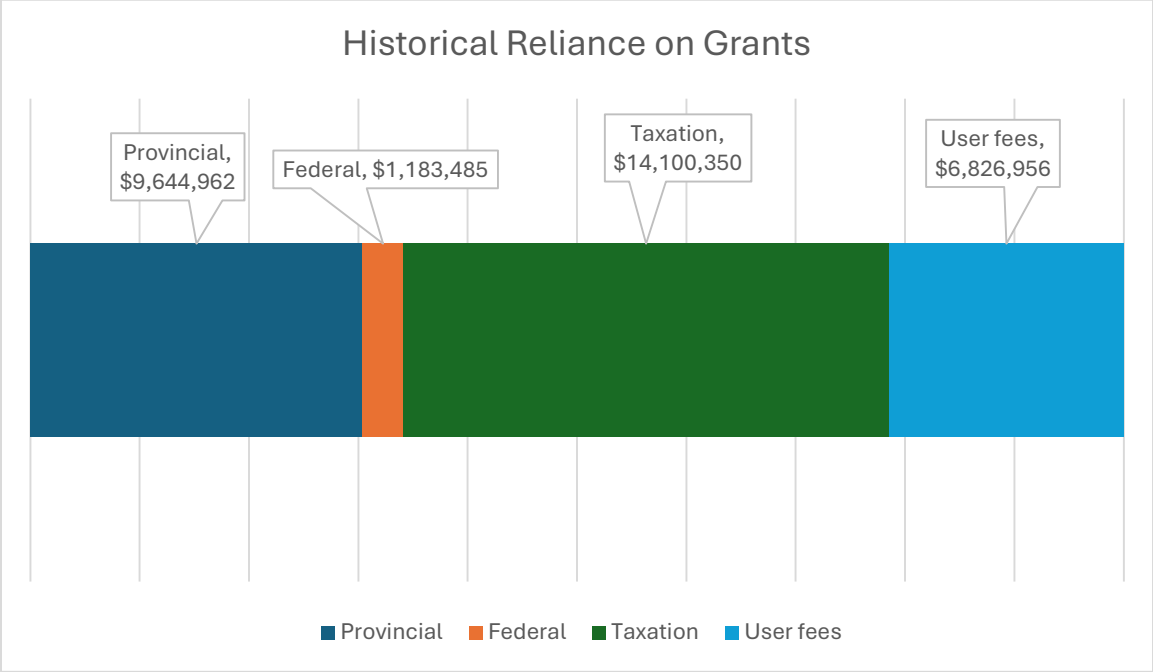
Reserve balances have increased substantially in the past few years for the City. After 2025 capital budget approvals, anticipated amounts include:

- Working funds: $5.3MM
- Fleet: $1.645MM
- Information Technology: $181K
- Public Works: $1.1MM
- Library: $285K
- Economic Development: $287K
- Building & Facilities: $0
- Miners Memorial Care Fund: $33K
- Protection $1.5MM
- Physician Recruitment: $205K
- Mount Dufour: $240K
- Legislative Requirements: $140K
- Wireless Towers: $171K
- Community Services Capital: $61K
- Community Improvement Plan: $147K
- Land Sales: $37K

Plus directed-special purpose:

- Elections: $121K
- Landfill: $2.2MM
- Water/Wastewater: $8.38M
- Accessibility: $25K
- Waterfront Development: $2.6MM
- Building Controls: $27K
- Arts & Culture: $0
- Cemetery: $4K

Plus $113,227 in federal gas tax funds remaining.



Historically, provincial grants have been a material part of the funding picture relative to federal grants and user fees. Grants remain essential—especially for treatment plants, roads/culvert corridors, and accessibility projects—but they are conditional and competitive. The financial plan assumes only programs with realistic pathways and maintains a “shovel-ready” shelf of scoped, permit-aware projects so the City can capitalize on funding windows without distorting annual affordability.

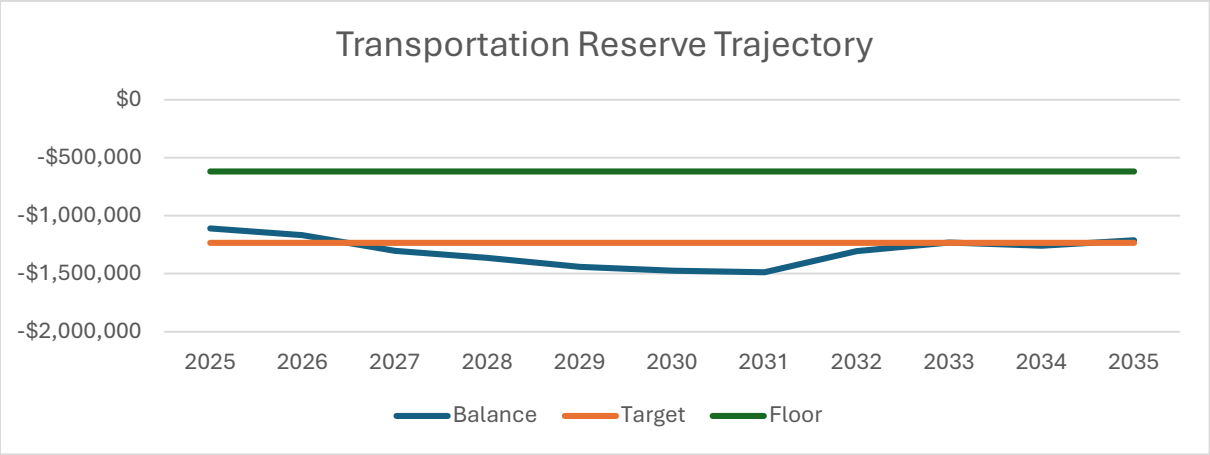
Fleet policy continues to shift light-duty replacements from CAPEX to OPEX via leasing. This reduces draws on the Fleet reserve, increases predictability in the operating budget, and smooths capital peaks. Heavy/specialty units (e.g., graders, fire apparatus) will still be funded through capital and reserves or debt where warranted, with mid-life rehabilitation used to stretch service life and bridge to replacement.

Putting these pieces together, the funding strategy pairs recurring sources (levy, rates, planned reserve contributions) with conditional sources (grants) and selective debt to match asset life and intergenerational equity. Annual reserve contributions rebuild capacity where balances are negative, utilities restore the user-pay reserve through rate-supported transfers while meeting compliance obligations, and corridor bundling plus leasing keeps the overall curve stable and affordable over the 10-year horizon.

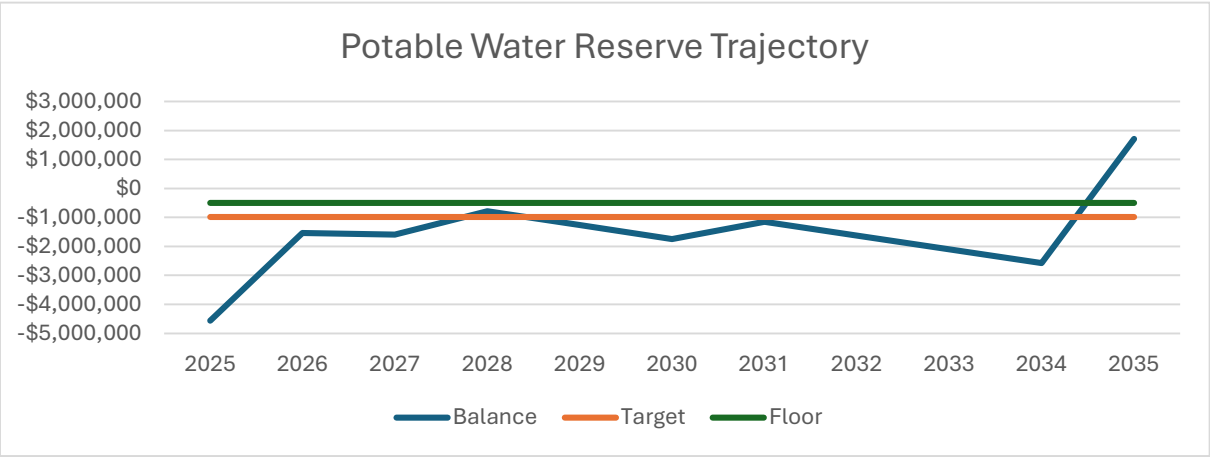
Capital Reserve Projections

Elliot Lake will use class-specific capital reserves to absorb timing swings, smooth annual budgets, and keep risk within acceptable bounds. Each reserve carries a target balance sized to the next three years of renewal needs for that class and a floor at half of that target. Targets differ by class to reflect risk and volatility (e.g., 35% for utilities, 25% for roads/storm, 30% for buildings, 15% for fleet, 20% for parks).

The reserve projections show how each fund is expected to move within its target band (orange line) and floor (green line) over the next decade. In these charts a negative number indicates available reserve capacity; the goal is to keep each balance within the band so the City can absorb timing swings without destabilizing the budget. No grants or debt are assumed in these projections; balances move on the strength of planned annual contributions and expected capital activity.

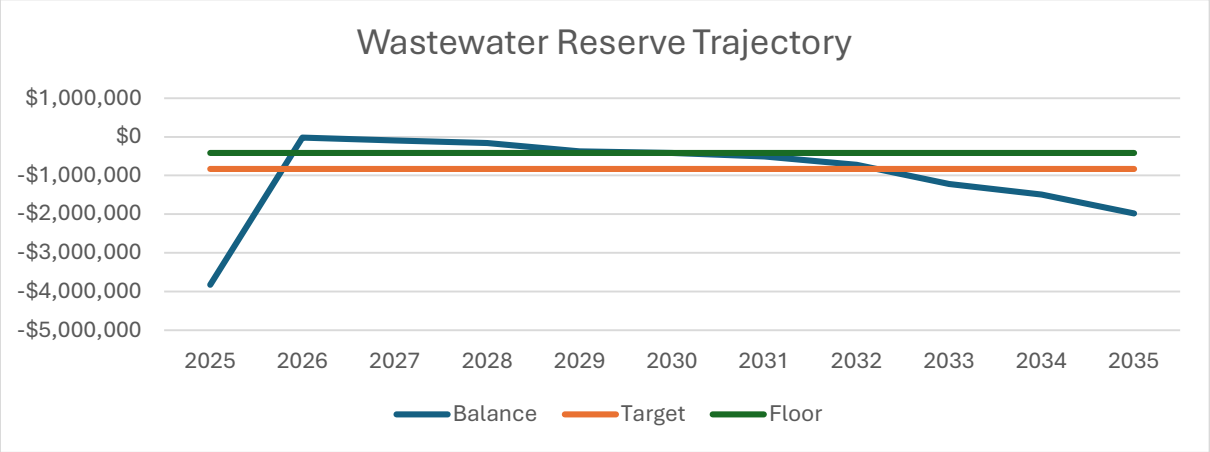


Transportation tracks just below the target band through the middle years and recovers toward it by the end of the horizon, consistent with a steady roads program. To sustain this path, contributions need to move closer to the required $1.70M/yr; current contributions of $0.265M/yr leave a $1.435M/yr shortfall that would otherwise pull the balance toward the floor and reduce tolerance for timing swings.

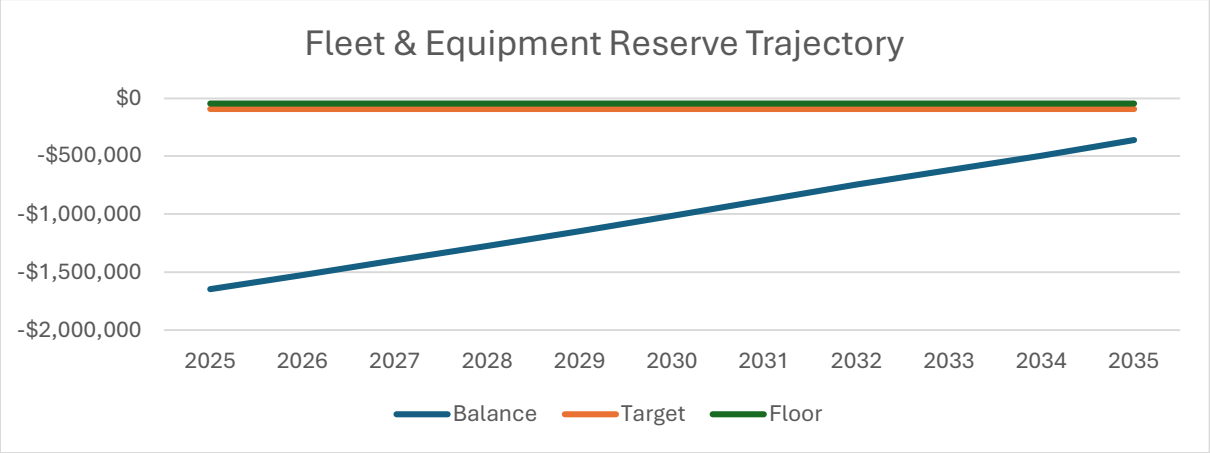


Potable Water reflects the $3.0M standpipe repair in 2026. That front-loaded project pulls the balance toward zero in 2026–2027, the reserve briefly touches the target band around 2028, and then gradual plant/linear renewals pull it down again before the line flips above zero in 2035—which, under our convention, would imply a debt position. Given that current contributions (≈$1.642M/yr) exceed the modeled requirement ($0.600M/yr), we can re-profile contributions—holding the higher amount through the late 2020s to absorb the standpipe work and then tapering more slowly in 2030–2035—to keep the balance within the negative target band and avoid debt in 2035 while still delivering compliance-critical

projects.

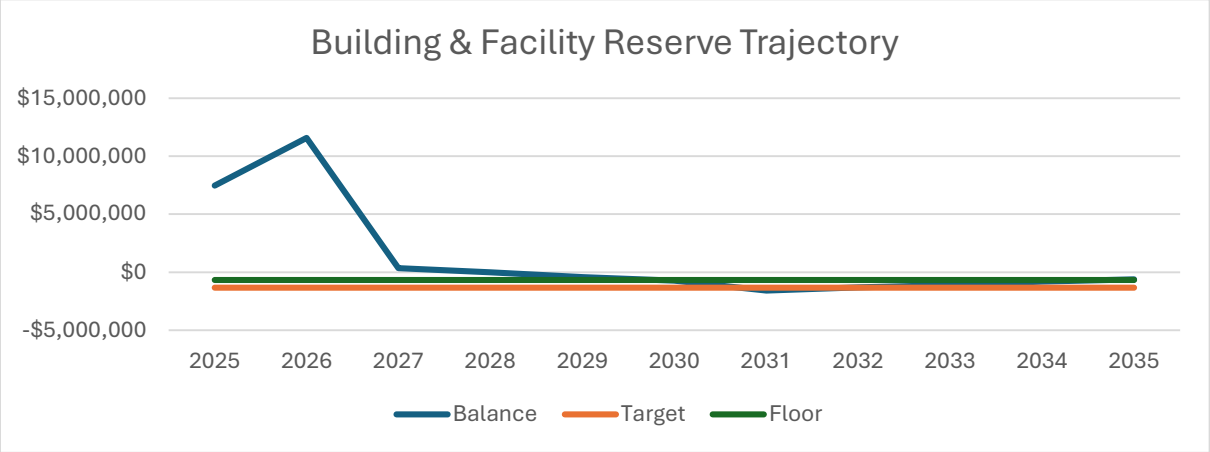


Wastewater reflects the $8.0M digester replacement. A one-time uplift to contributions in 2026 brings the balance up near zero to stage cash before tender. As construction draws proceed, the reserve trends downward from 2027 onward and slips below the target band through the early 2030s, reaching roughly –$2.0M by 2035. Given that current contributions (≈$1.344M/yr) are higher than the modeled requirement ($0.500M/yr), we'll re-profile and extend those higher contributions after 2026—and, if needed, defer lower-priority collection work—so the balance stays within the negative target band and capacity is rebuilt over the horizon.



Fleet recovers on a gentle slope and remains within guardrails. With $0.535M/yr currently contributed against a $0.075M/yr requirement (surplus $0.460M/yr), the reserve has ample capacity to handle heavy

unit mid-life rehabilitations and unforeseen replacements without breaching the floor.

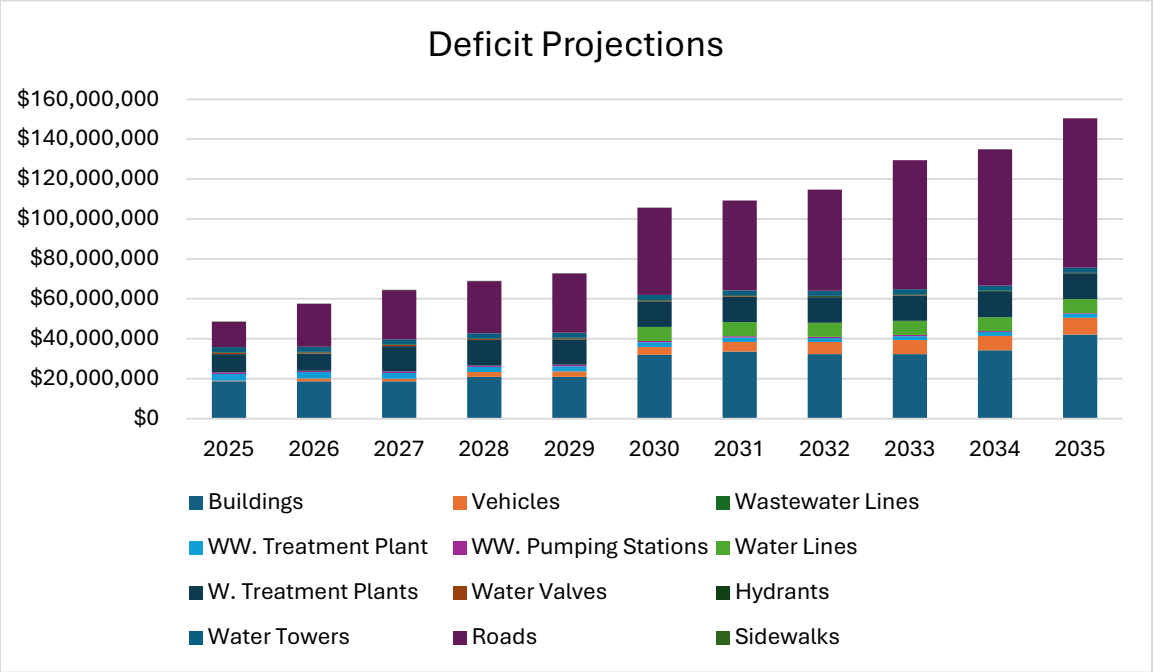


Buildings & Facilities reflects three key events captured in the trajectory. In 2026 the balance spikes upward as the current debt is retired and a one-time $11M financing package (debt, donations, grants, fundraising) is booked to stage the $12M Arena project. The reserve then normalizes to roughly $0 in 2027 and dips below the target band through the mid-period as PCA-driven renewals and arena delivery proceed, reaching its low point around 2031 before trending back toward the band by 2035. The mid-period dip is explained by the contribution gap: $0.330M/yr currently versus $1.470M/yr required in Years 1–5 and $1.100M/yr in Years 6–10. Gradually stepping up contributions toward the required profile—or deferring lower-priority facility work—would reduce time below the band and preserve reserve flexibility while the arena project advances.

Class / Reserve	10-yr Avg Renewal Need (2025$/yr)	Amortization (yrs)	Secured Funding (2025$/yr)	Planned Debt (2025$/yr)	Required Contribution (2025$/yr)	Current Reserve Contributions from Operating (2025$/yr)
Buildings & Facilities	1,470,000	10	0	0	**Year 1 – 5 1,470,000/yr Year 6 – 10 1,100,000/yr**	**330,000**
Transportation (Roads/Storm)	1,644,700	10	0	0	**Year 1 – 10 1,700,00/yr**	**265,000**
Drinking Water (User-Pay)	936,000	10	0	0	**Year 1 – 10 600,000/yr**	**1,642,335**
Wastewater (User-Pay)	785,000	10	0	0	**Year 1 – 10 1,000,000/yr**	**1,343,728**
Fleet & Equipment	203,500	10	0	0	**Year 1 – 10 75,000/yr**	**535,000**
Parks & Recreation	35,000	10	0	0	-	

Together, the trajectories and the table show where contribution increases (Buildings, Transportation) or right-sizing (Water, Wastewater, Fleet) would best support program delivery while keeping each reserve comfortably between its target and floor. As unit rates, condition, and project timing are updated, these profiles can be re-run to keep the funds aligned with the plan.

Infrastructure Deficit & Backlog Plan



In this AMP, the infrastructure deficit is defined as required funding at target LOS minus sustainable funding (recurring levy/rates, prudent reserve use, and only those grants that are realistically available). The chart shows a portfolio-wide deficit that rises from roughly the mid-$40M range in 2025 to about $150M by 2035, driven primarily by roads, with buildings the next largest contributor and water/wastewater adding steady but smaller shares. Vehicles remain a minor slice as light-duty replacements migrate to leases. In short, Elliot Lake is underspending capital relative to modeled need, so unaddressed renewals accumulate year over year.

This is not accidental; some backlog is managed risk. Council's selected programs smooth peaks and protect service by prioritizing safety/compliance (plants, lift stations, life-safety systems, winter control) while intentionally deferring lower-criticality items (e.g., portions of local roads, non-critical building interiors). To keep that risk in bounds, the City will apply class-specific backlog guardrails: target road backlog at ≤1.0× its average annual renewal, utilities at ≤0.5×, and buildings at ≤0.3×. If a class trends beyond its guardrail, projects are re-sequenced, additional funding options are brought forward, or scope is adjusted.

The backlog reduction plan leans on three levers. First, the Capital Reserve Policy emphasizes rebalancing contributions and pacing projects within each reserve's target band so more renewals are funded inside the yearly envelope without one-time top-ups or spending spikes. Second, bundling and staging—for example, aligning water/wastewater work with road corridors—cuts reinstatement costs and delivers more renewal per dollar. Third, expanded mid-life rehabilitation and preventive programs

slow backlog growth by extending asset life: road surface preservation to defer reconstruction, building component PM (roofs/HVAC/electrical) to avoid premature capital, plant unit rehabs (pumps, blowers, controls) to push full replacements, and heavy-equipment mid-life packages for graders, groomers, and fire apparatus.

These projections will change as better data lands. Updating financials (actuals, indices), condition and %RSL (especially as buildings are componentized), and program assumptions (lease penetration, confirmed grants, or debt for specific projects) will move both the annual need and the sustainable funding line. We will re-run scenarios annually and after any major update; the goal is to flatten the curve by 2028 as reserves recover, then hold the deficit roughly level while targeted renewals and mid-life work chip away at high-risk elements. As those improvements take effect, the City can reset the guardrails and, if affordability allows, accelerate backlog draw-down without compromising the smooth, predictable capital plan.

Procurement & Commercial Model

Elliot Lake will choose the buy vs. lease path using a simple total-cost-of-ownership (TCO) test applied at project initiation. For each candidate asset we compare the discounted cost of purchase (price + upfit + delivery + non-warranty maintenance + risk of obsolescence − resale) with the discounted cost of leasing (payments + included maintenance/tires + excess-km/hour charges + estimated turn-in costs). Use a standard discount rate from Finance and the expected service life from DOT. As a rule of thumb, lease light-duty fleet and rapidly evolving equipment where utilization is seasonal/variable or technology changes faster than seven years; buy heavy/specialty units (grader, fire apparatus, plant process equipment) and long-life building systems where life exceeds 10 years or where customization drives high residual value risk.

All competitively sourced purchases and leases will favour cooperative purchasing (provincial buying groups, standing offers, vendor-of-record arrangements) to compress timelines and reduce unit prices. Specifications should be performance-based and include warranty and uptime expectations: minimum 3-year bumper-to-bumper for light fleet (with corrosion coverage), vendor-backed uptime SLAs for heavy equipment (e.g., parts availability within 48–72 hours; loaners for critical assets), commissioning/acceptance testing for building systems and plant units, and clear responsibilities for software/firmware updates on controls.

Commercial choices must be reflected correctly in the budget: capital purchases draw on reserves/grants/debt and appear in CAPEX; operating leases and service contracts appear in OPEX (with any capitalizable components—e.g., initial upfit—separately recorded). For multi-year lease programs, Finance will maintain a schedule of annual operating impacts and any embedded maintenance, so AMP forecasts stay aligned with the operating budget.

Governance & Reporting

Council sets service targets and approves the multi-year capital plan; the CAO ensures delivery capacity; Finance owns the reserve policy, funding mix, affordability analysis, and reporting; the Asset Management Committee (AMC) runs DOT, keeps inventories/condition current, and prepares the annual AMP refresh; Department Leads own project scopes, procurement, and execution.

Reporting cadence is quarterly and annual. The quarterly report shows capex execution (planned vs. actual), change-order drivers, reserve balances against targets/floors, funding mix used (levy/rate, reserves, grants, debt, leases), and risk exceptions. The annual AMP refresh updates 10-year needs, scenario results, and affordability, and resets contributions under the Capital Reserve Policy.

We will re-forecast when any trigger is hit grant award/denial; tender results ±10–15% vs. estimate; construction or CPI indices moving outside the budget band; material condition change (inspection/PCA/CCTV/SCADA); failure of a critical asset; or Council policy changes (e.g., lease expansion). Delegation limits follow the procurement by-law: routine change orders under a defined threshold and within approved budgets may be approved by Department Leads/CAO; draws that would breach a reserve floor require Council direction (stage scope, add debt, or authorize a short inter-fund loan). The AMP calendar aligns to the City's budgeting cycle: spring data collection and condition updates, summer forecast run and funding options, fall budget recommendations.

Data Quality & Improvement Plan

What's solid now.

PCA summaries for buildings and the building capital plan; fleet inventory and valuation (with a shift to leasing reflected); DOT valuation for vehicles and building CRC; high-level renewal/maintenance projections across classes.

What's provisional

Some building items still at the **facility** level (maintenance placeholders); portions of underground asset condition where CCTV/inspection is incomplete; unit-rate assumptions for a few specialty items; parts of the financial model that relied on **anecdotal inputs** to complete scenarios.

Actions and milestones.

1. **Componentize Buildings** in DOT (envelope/roof/HVAC/electrical/life-safety/interiors/site works) and load **PM task lists** with frequencies and unit costs; convert applicable renewals to mid-life rehab/PM where appropriate.
2. **Refine %RSL and LoF/CoF**: load recent inspections, PCA details, and utilization hours; adopt consequence factors for occupancy/regulatory exposure and redundancy at plants, lift stations, and arenas.
3. **Underground Programs**: schedule CCTV for priority wastewater segments; confirm water main critical corridors; integrate break history, valve/hydrant condition, and culvert inspections.
4. **Fleet Telemetry & Leasing Actuals**: ingest telematics for utilization/idle time/faults; capture actual lease costs (included PM/tires) to tighten OPEX forecasts and reduce CAPEX draws.
5. **Unit-Rate Library**: log tender results and vendor quotes by asset type; update DOT unit rates each quarter; document variances and reasons (market, scope, code).
6. **Financial Actuals Loop**: reconcile year-end O&M by class; update reserve contributions/draws; roll forward targets/floors using the latest 10-year needs.

7. **Post-Project Reviews**: for top projects, record final quantities, change-order causes, and schedule adherence to improve future estimates and bundling strategies.

As these steps land, the next scenario run will have **tighter condition and cost inputs**, more maintenance moved from renewal to PM, and a clearer OPEX/CAPEX split where leasing or service contracts are used. Confidence in outputs will rise, and the City can revisit affordability choices, backlog guardrails, and reserve contributions with stronger evidence.

11. Growth and Demand Forecast

The City of Elliot Lake has experienced modest but consistent population growth over the past two census periods, with 11,372 residents recorded in 2021. The current population is 12,246 (2025) and is anticipated to grow to 13,652 by 2035. https://www.elliotlake.ca/en/invest-and-grow/resources/Elliot-Lake-Community-Profile_2025-update_Final-V3.pdf The median income in 2024 for Elliot Lake is $33,230 on the household level, considerably below the Ontario average. The median household income in Elliot Lake is $56,883 which is below the Ontario median of $99,999.00.

Importantly, Elliot Lake's infrastructure—including its water treatment plant, lagoon system, and road network—was originally designed to serve a significantly larger population. As a result, many systems today retain considerable excess capacity and can accommodate forecast growth without immediate expansion.

This built-in reserve means not all assets must grow in lockstep with population. This coupled with excess capacity at the plants allows the City to prioritize targeted renewals and proactive maintenance over costly capacity projects.

Economically, Elliot Lake's outlook remains cautiously optimistic. In 2021, healthcare, retail, and service sectors anchored the local economy. Over the next decade, modest diversification through tourism, retirement services, and small business development is expected—supported by the City's spare infrastructure capacity, which reduces barriers to growth and encourages investment in new ventures without overstretching municipal systems.

Population Growth Trends

Elliot Lake's current population of 11,372 (2021) reflects a stable community well below its mid-20th-century mining peak of over 25,000 residents. Over the next 15 years, modest growth is projected—reaching roughly 11,900 by 2026 as seen in the table below—driven primarily by retirees, lifestyle migrants, and small-scale in-migration. This gradual increase will allow the City to leverage its legacy infrastructure capacity while carefully planning for incremental service and facility enhancements.

Census Year	2021 Census	2026 Projection	2031 Projection	2036 Projection
Population	11,372	~11,900	~12,200	~12,600

Economic Growth Trends

Elliot Lake's economy in 2021 remains anchored by healthcare, retail, and essential services—sectors that support its sizable retiree population and year-round residents. Over the next decade, modest growth is expected as the City capitalizes on its natural and recreational assets to boost tourism and retirement-oriented services, while fostering small business development. By the early 2030s, the local economy is likely to diversify further, with remote workers and niche tourism ventures adding new revenue streams. Entering the mid-2030s, Elliot Lake can anticipate a stable economic base that leverages its ample infrastructure capacity to sustain an aging-in-place demographic alongside continued visitor spending.

Census Year	2021 Census	2026 Projection	2031 Projection	2036 Projection
Economic Growth	Modest economic activity; driven by healthcare, retail, and services.	Potential modest growth with focus on tourism, retirement services and small business	Gradual diversification; possibly more local tourism and remote work sectors.	Stable economy with emphasis on tourism, services and aging-in-place industries

Housing Demand Projections

Elliot Lake's housing market in 2021 saw minimal new construction, with infill projects outpacing actual demand and resulting in elevated vacancy rates. Looking toward 2026, single-family home construction is expected to balance demand, tightening the rental market to near full occupancy. Through the 2030s, the City may see a gradual shift toward more multi-unit developments and estate-lot subdivisions to accommodate diverse household types, before reaching a housing plateau as population growth levels off.

Census Year	2021 Census	2026 Projection	2031 Projection	2036 Projection
Housing Demand	Limited new housing starts, mostly infill. Supply outpaced demand.	Regular supply of single-family homes; near zero rental availability.	Gradual development of multi-unit residential and estate lots.	Potential plateau as population growth stabilizes.

Utility Demand Projections

Water and wastewater systems are currently operating at approximately 30% of their capacity. Despite population increases, utilization is projected to remain stable over the next decade. This stability is due in part to the city's proactive infrastructure planning and the availability of existing capacity within current systems. However, aging components of the systems may require upgrades to maintain efficiency and compliance with regulations.

Category	Current Utilization	Future Utilization (1-5 years)	Future Utilization (6-10 years)

Water Systems	~30%	~30%	~30%
Wastewater Systems	~30%	~30%	~30%

Transportation Capacity Expectations

Transportation networks are currently utilized at 50% to 60% of capacity. With increasing traffic from population growth and tourism, road usage is expected to remain at similar levels in the short term but may trend upward as new residential and commercial areas develop. While current capacity is sufficient, investments in intersection upgrades, road resurfacing, and maintenance will be necessary to accommodate gradual increases in vehicular and pedestrian traffic. Public transportation remains limited but could see increased demand, especially among seniors, necessitating potential enhancements to service frequency or coverage.

Category	Current Utilization	Future Utilization (1-5 years)	Future Utilization (6-10 years)
Road Networks	~50%-60%	~50%-60%	~50%-60%

Public Recreation Utilization

Parks and recreational facilities are actively used by the community, with current utilization estimated at 50% for parks and 70% for recreational facilities. As the city attracts more retirees and young families, recreational infrastructure will need to be maintained and potentially expanded. This includes new playgrounds, sports fields, and community spaces to ensure a high quality of life and promote active living.

Category	Current Utilization	Future Utilization (1-5 years)	Future Utilization (6-10 years)
Parks	~50%	~50%	~50%
Outdoor Recreational Facilities	~70%	~70%	~70%

Demand for Fleet Services

The City's municipal fleet and equipment are currently operating at full capacity. Given the projected increases in service demands—such as snow removal, road maintenance, and utility servicing—the municipality will need to plan for additional vehicles and heavy equipment within the next 5 to 10 years.

Strategic procurement and lifecycle replacement planning will be essential to maintaining operational reliability.

Category	Current Utilization	Future Utilization (1-5 years)	Future Utilization (6-10 years)
Fleet (Public Works Vehicles)	100%	100%	100%
Heavy Equipment	100%	100%	100%

Future Building and Indoor Facilities Demand

Public buildings, including administrative offices and community centers, are estimated to be at approximately 80% utilization. As community activities and municipal services expand, pressure on existing buildings will increase. Future demands may necessitate renovations, space optimization, or the construction of new facilities to support public service delivery. Recreational facilities, already at 70% utilization, will also require strategic investment to ensure they remain accessible and responsive to community needs.

Category	Current Utilization	Future Utilization (1-5 years)	Future Utilization (6-10 years)
Public Buildings	~80%	~80%	~80%
Indoor Recreational Facilities	~70%	~70%	~70%

By capitalizing on the City's existing housing and utility capacity, Elliot Lake can accommodate rising demand without the need for extensive new infrastructure. Planned infill and gradual expansion into multi-unit and estate-lot developments will utilize available services—such as water, wastewater, and road capacity—ensuring cost-effective delivery. Aligning housing growth projections with this built-in reserve capacity will support sustainable development, stabilize market pressures, and maintain service quality as the community evolves.

12. Continuous Improvement and Monitoring

Performance Monitoring

To gauge progress in embedding asset management across the organization, Elliot Lake will track eight core performance metrics—spanning data quality through stakeholder engagement—using a four-level maturity scale. This dashboard will be updated annually, with full assessments every three years, to illustrate growth from "Initial" practices toward an "Optimized" state.

Characteristic	Indicator	Initial (Level 1)	Developing (Level 2)	Mature (Level 3)	Optimized (Level 4)
Quality of Data	% of asset data complete, accurate, and up-to-date	< 50% complete; significant inaccuracies	50–75% complete; some inaccuracies	75–95% complete; minimal inaccuracies	≥ 95% complete, accurate, and current
Goal Alignment	% of LOS metrics aligned with community and regulatory goals	No LOS metrics defined	Some LOS defined; inconsistent alignment	Most LOS aligned and actively monitored	All LOS fully aligned and monitored
Risk Mitigation	% of high-priority risks with formal mitigation strategies	Risks unmanaged; no AM integration	Some risks identified; mitigation inconsistent	Most risks identified and addressed via formal strategies	All risks identified, managed, and embedded in AM decision-making
Operational Efficiency	Time and resources required to complete AM activities	Inconsistent processes; heavy manual effort	Partially standardized; still resource-intensive	Well-defined processes; moderately efficient	Fully streamlined; minimal time/resources; high-quality outputs
Workforce Capability	% of staff trained in AM practices and actively participating	< 25% staff trained or engaged	25–50% trained; occasional participation	50–75% trained; actively involved	> 75% fully trained and engaged
Financial Sustainability	Extent to which AM data informs budget and long-term planning	Financial planning independent of AM data	Some AM data used for short-term budgeting	AM data informs most budget decisions; some long-term alignment	AM data fully integrated into short- and long-term financial strategies
Community Alignment	Level of public and stakeholder involvement in AM planning	No public/stakeholder engagement	Limited engagement; occasional input	Regular engagement; feedback incorporated	Active, consistent collaboration; decisions reflect stakeholder input
Transparency	Frequency and quality of AM progress reports to Council and stakeholders	Reports are rare or ad hoc; lack actionable insights	Reports produced occasionally; inconsistent depth	Reports regularly produced; actionable insights	Reports timely, detailed, and integrated into strategic planning and stakeholder communication

Review Cycles

Elliot Lake will undertake a comprehensive AMP update every three years, refreshing inventories, condition assessments, lifecycle strategies, and the financial forecast. In the interim, annual progress reviews will reassess KPIs, update risk registers, and recalibrate treatment triggers. This two-tiered cadence balances robust strategic planning with the agility to respond to emerging issues or funding opportunities.

Improvement Plan (2025–2029)

Over the next five years, the City will execute a phased program to elevate its asset management maturity. Each year targets specific capabilities, engaging cross-functional teams to embed AM in daily operations.

Year	Key Actions	Participants	Deliverable / Milestone
2025	Launch GIS mobile data-capture; data audit and cleanup	AM Steering Committee; IT; Public Works	Mobile app deployed; 2025 Data Completeness Report

2026	Pilot condition assessment protocols for roads, water, wastewater	Public Works crews; Contracted inspectors	Condition Rating Guide; Pilot Inspection Report
2027	Integrate condition data into CMMS; develop automated KPI dashboards	IT; Finance; AM Coordinator	Live AM Dashboard; Monthly KPI Reports
2028	Facilitate FMEA workshops across asset classes; finalize risk-mitigation action plans	AM Steering Committee; Department Heads	Published Risk Register; Mitigation Strategy Documents
2029	Embed AM decision-rules in budget cycles; implement lifecycle costing and renewal forecasting	Finance; AM Coordinator; Department Managers	10-Year Capital Forecast; AM-driven Budget Approval

Training & Development Program (2025–2029)

A robust training regimen will build AM expertise across Council, staff, and contractors, ensuring sustainable adoption.

Year	**Activity/Event**	**Participants**	**Expected Outcomes**
2025	AM Fundamentals Workshop	Public Works; Finance; IT; AM Steering	Shared understanding of AM principles; alignment
2026	Field Inspection & Data-Capture Training	Public Works crews; Inspectors	Consistent, accurate condition data collection
2027	CMMS & Dashboard Hands-On Sessions	IT staff; AM Coordinator; Managers	Self-service reporting; real-time decision support
2028	FMEA & Risk-Management Course	Department Heads; Steering Committee	Formal risk identification; proactive mitigation planning
2029	Council & Community AM Forum	City Council; community stakeholders	Transparency; collective feedback; strengthened public trust

Advantages of Trained Personnel

Well-trained staff will deliver more consistent and accurate asset data, reducing reliance on external consultants and accelerating decision-making. Enhanced operational efficiency and risk mitigation capabilities lower long-term costs, while transparent reporting and stakeholder engagement build public confidence and ensure that AM principles guide every budget and capital decision.

13. Appendix A: Definitions

Asset

A physical component of an infrastructure system that contributes to service delivery (e.g., roads, water mains, pumps, parks).

Asset Management Plan (AMP)

A tactical document that outlines how an organization will manage its assets over their full lifecycle to meet service objectives, regulatory requirements, and financial constraints.

Capital Reserve Fund
A financial account set aside over time to accumulate the necessary resources for future asset renewals and replacements, smoothing budget impacts and ensuring funding availability when major capital expenditures are due.

Condition Assessment
A systematic inspection and evaluation process that determines the physical state of an asset, often using ratings or scores to guide maintenance and renewal decisions.

Condition Rating
A numeric or qualitative score assigned to an asset based on observed defects, performance data, or inspection results; commonly on a 1–5 or PCI (0–100) scale.

Criticality
An index reflecting an asset's importance to overall system performance and the consequences of its failure (e.g., isolating large service areas or disrupting critical services).

Disposal
The end-of-life activity involving safe removal, recycling, or disposal of asset materials once replacement or reconstruction has occurred.

Failure Modes & Effects Analysis (FMEA)
A structured risk-assessment methodology that identifies potential failure points, assesses their likelihood and consequence, and prioritizes mitigation actions.

Lifecycle Cost
The total cost of owning, operating, maintaining, renewing, and disposing of an asset over its entire useful life.

Level of Service (LOS)
The defined standard or target for how an asset or service should perform, expressed via community-focused indicators (e.g., accessibility, safety) and technical metrics (e.g., PCI thresholds, response times).

Maintenance
Routine and corrective activities undertaken to preserve asset condition and functionality (e.g., crack sealing, mowing, valve exercising).

Optimization Scenario
A modeled projection in DOT (or similar software) that balances funding constraints, intervention timing, and target LOS to identify the most cost-effective treatment strategy over time.

Operating Cost
Expenses associated with day-to-day use of an asset, including labor, energy, consumables, and minor repairs.

Preventive Maintenance
Scheduled, proactive maintenance tasks designed to prevent asset deterioration (e.g., seal coating, flushing, inspections).

Procurement
The process of acquiring goods and services—through tendering, RFPs, or term contracts—necessary to deliver maintenance, renewal, and new-asset activities.

Remaining Service Life (RSL)
An estimate of the time (usually in years or as a percentage) an asset is expected to function before requiring major rehabilitation or replacement.

Replacement Cost
The current estimated expense to replace an asset at today's market rates, including materials, labor, and disposal of old assets.

Rehabilitation
A treatment category that restores an asset to satisfactory condition without full reconstruction (e.g., overlaying, relining, component upgrades).

Renewal
Capital activities that restore an asset to its original function and capacity, typically including full-depth reconstruction or component replacement.

Risk
A function of the likelihood of an asset's failure and the consequences of that failure, used to prioritize interventions and allocate resources.

Risk Matrix
A two-dimensional grid that plots likelihood (x-axis) against consequence (y-axis) to categorize overall risk levels (e.g., low, medium, high).

Scenario Modeling
Running alternative "what-if" analyses in asset-management software to explore the impacts of different funding levels, treatment mixes, or timing on asset condition and service levels.

Service Level
The measurable performance threshold an asset must meet to satisfy customer expectations and regulatory requirements, often expressed as a percentage or frequency (e.g., 95% compliance, one incident per five years).

Spare Capacity
Built-in excess asset capability—such as water-treatment capacity or road network redundancy—that can accommodate growth or absorb disruptions without immediate upgrades.

Total Cost of Ownership (TCO)
The aggregate of all lifecycle costs (planning, procurement, operations, maintenance, renewal, disposal) associated with an asset over its life.

Work Order Management System (WOMS)
A software tool for tracking and scheduling maintenance, inspection, and renewal activities, often integrated with GIS and CMMS platforms.

14. Appendix B – Asset Data Gap Information

Data Gap - Network

Client Name	City of Elliot Lake		
Data Completion	Score		
Asset Type	Essential Only	Essential and	All Attributes
Roads	95%	86%	71%
Sidewalks	99%	82%	87%
Sewerlines	80%	81%	86%
Manholes (Sewer)	86%	81%	87%
Manholes (Storm)	25%	25%	50%
Treatment Plants	100%	100%	100%
Pumping Station	87%	90%	92%
Waterlines	96%	94%	66%
Treatment Plants	100%	100%	100%
Valves (Water)	99%	92%	91%
Hydrants	87%	82%	79%
Water Towers	100%	92%	95%
Water Reservoirs	100%	91%	95%
Stormlines	60%	47%	63%
Catch Basins	50%	33%	47%
Culverts	55%	60%	77%
Ditches	12%	7%	36%
Buildings_old	100%	100%	100%
Vehicles	100%	92%	76%
Playgrounds	62%	38%	65%
Valves (Sewer)	77%	76%	84%
Buildings	31%	29%	50%

Below is a high-level summary of where Elliot Lake has the largest data gaps and the sequence in which those gaps should be filled to support robust scenario modeling in DOT:

Asset Class	Essential Only Completeness	All Attributes Completeness	Priority for Data Completion
SW – Ditches	12 %	36 %	**Highest**
SW – Manholes	25 %	50 %	**Highest**
B&F – Buildings	31 %	50 %	**High**
SW – Catch Basins	50 %	47 %	**High**
P&R – Playgrounds	62 %	65 %	**High**
SW – Stormlines	60 %	63 %	**Medium**
WW – Valves (Sewer)	77 %	84 %	**Medium**
WW – Sewerlines	80 %	86 %	**Medium**

TRA – Roads	95 %	71 %	**Lower**
PW – Waterlines	96 %	66 %	**Lower**
Others (≥87% EO)	≥87 %	≥76 %	**Lowest**

Recommended Data-Collection Roadmap

1. **Capture Missing Essentials for Stormwater & Parks**
   Begin by populating **installation year**, **material/type**, and **location geometry** for the stormwater ditches, manholes, catch basins, and playgrounds. Without accurate age and spatial data, DOT cannot correctly calculate deterioration curves or network extents.
2. **Add "All Attributes" for Critical Classes**
   Next, gather **condition scores** (via CCTV or visual audits), **replacement cost** estimates, and **planned maintenance frequencies** for those same stormwater assets, plus Buildings & Facilities and Playgrounds. This will elevate "All Attributes" completeness above 80 %—enabling realistic life-cycle and risk scenarios.
3. **Enrich Mid-Tier Classes with Risk & Criticality**
   For sewer valves, sewer mains, and storm lines, supplement the existing inventory with **failure history** (break logs, blockage events) and **criticality ratings** (GIS-driven flow-path analysis). These inputs will transform today's near-zero risk scores into actionable risk curves in DOT.
4. **Fill Gaps in High-EO but Low-"All" Assets**
   Although roads and water mains have excellent "Essential Only" completeness, their "All Attributes" scores lag due to missing **remaining service life**, **FMEA findings**, or **historic capital costs**. Adding those fields will let you refine capital-forecast scenarios without re-surveying geometry.
5. **Validate & Standardize Data Across All Classes**
   Finally, institute a quarterly data-governance cycle: audit random samples, enforce attribute-mandatory rules in DOT, and train staff on the updated data-capture workflows (GIS field tools, work-order integration).

By following this roadmap—starting with the lowest "Essential Only" scores, then progressively filling in recommended and risk-related fields—Elliot Lake will unlock DOT's full scenario-modeling power. You'll gain confidence in condition forecasts, risk prioritization, and budget-impact projections, enabling a truly data-driven, lifecycle-based AMP.