



Core Asset Management Plans Council Workshop

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Department: Corporate Asset Management Office

Date: January 18, 2022

Council Involvement in Core AMPs

2014-2020

- ✓ Set Direction for staff on AM
- ✓ 2019 revised AM policy

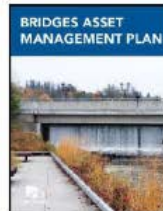
CORPORATE ASSET MANAGEMENT PLAN



Introduction
Executive Summary
Financial Strategy
Concepts & Framework

Dec. 6, 2021
Executive
Summary of
Plans Approved
by Council

CORE ASSET MANAGEMENT PLANS



Know Your Assets | Manage Service Delivery | Future Ready | Financial Strategy

Oct. 19, 2020
Report Cards
Presentation

May 17 2021,
Levels of Service
Council Workshop

Sept. 27, 2021
Financial Strategy
Workshop

Agenda

1. Review core asset services including big picture challenges and opportunities
2. Impact of Current Practices
3. Upcoming Challenges & Leveraging Opportunities



Review Core Asset Services



*Manager of
Operations,
Mark Gregory*



*Manager of
Capital
Engineering,
Rob Grech*



*Manager of
Water &
Wastewater,
Rob Gillis*



*Sr. Environmental
& Climate Change
Specialist,
Craig Schritt*

- Service area managers heavily involved in creating the AM plans, will implement aspects of the plans.
- Provide overview of services, achievements & plans for AM recommendations implementation.
- CAMO work with Management to apply the AM lens



Roads

- What We Provide (Services & Activities)
- Recent Milestones
- Asset Conditions
- 2022 Work Plan
- Future Recommendations



What We Provide

Regulatory Compliance

- Daily Road Patrols
- Maintenance and deficiencies.

Public Safety & Customer Service

- Winter operations

Operational Effectiveness

- Road markings, signs, crack sealing
- Street sweeping.
- Resurfacing and reconstruction



A safe transportation network
for all mobilities.



Recent Milestones & Achievements

Artificial Intelligence (ROVER) during road patrols identifying potholes

Maintained service levels within a pandemic

Lorne Avenue Phase 1

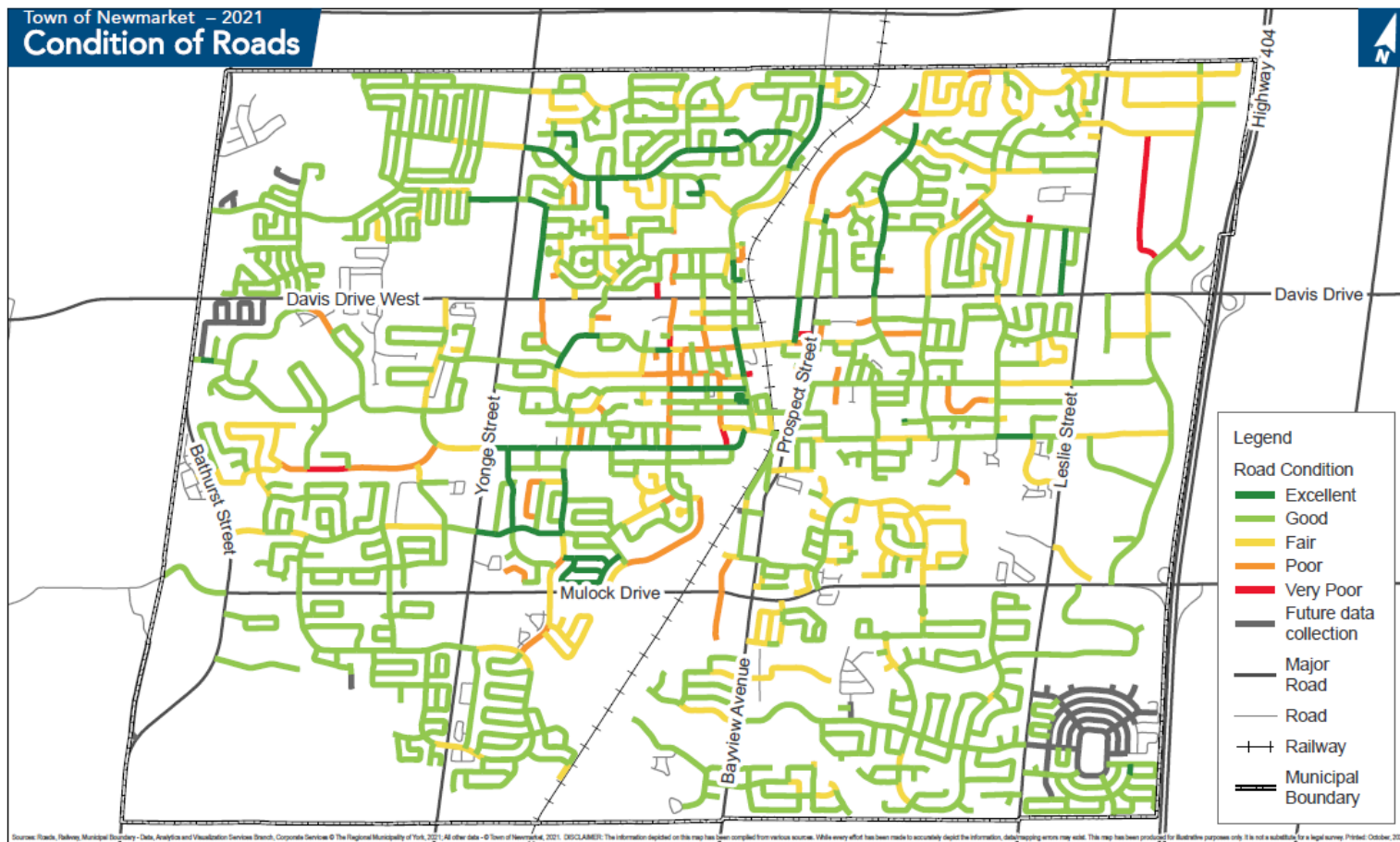
2021 Resurfacing of Leslie Valley, Huron Heights, Bayview Parkway & Heman Street

Cane Parkway Intersection Improvements





Current Condition (Roads)



Condition calculated prior to 2021 roadwork



2022 Work Plan

Improve GIS
& Data

Plan
seasonal
work

Initiate staff
discussions
to
continually
improve
service
delivery.

Continue to
use and add
technology

Crack
Sealing to
extend
asset life

McCaffrey Road
Reconstruction

Resurfacing of
Binns, Rhodes,
Doyle, Keith &
Eagle between
Yonge & Millard.



Future Recommendations in Plans

Recommendation Type	Count
Administrative	6
Strategic	3
Systems	3
Tactical	2
Total	14

Recommendations for Roads		
ID	Source	Recommendation
38	Know Your Assets	Centralize assembled roads datasets for inventory, pavement condition, age, maintenance history, and traffic in GIS with a relational data model and distribute to service area and support function users.
39	Know Your Assets	Address gaps in road data attributes such as missing road class, size measurements, roadside environment, etc.
40	Know Your Assets	Review historical design standards to classify roads based on characteristics pertinent to useful life of the assets, such as drainage/sub-drains.
41	Know Your Assets	Update record keeping methods to always use the Road Asset ID. Processes include Traffic counts/studies, road cut permits, tangible capital assets, records of crack sealing and resurfacing, planning of new roads, etc.
42	Know Your Assets	Develop a common system of road classifications to be used corporately based on levels of service, design standards, regulatory requirements, and other considerations.
43	Know Your Assets	Create a data management plan for storing, reporting, and analyzing multiple years of pavement condition data.
44	Future Ready	Establish an approximate timeline for the Urban Centers secondary plan.
45	Manage Service Delivery	Develop a road paint inventory.
46	Manage Service Delivery	Implement the RevItUp recommendations related to allocation of resources for winter control. A review of 2017-2019 actual work order charges by AM found that approximately 25% of staff time for winter control is attributable to non-roads staff.

- The focus by recommendation type is as follows:
 - Administrative: Update record keeping and create a **data management** plan.
 - Strategic: Better **coordinate** and manage **rehabilitation programs**
 - Systems: Develop a common road classification system, address data gaps and **centralize datasets**.
 - Tactical: Develop a method of **migrating traffic data** to the Roads GIS data.



Bridges

- What We Provide (Services & Activities)
- Recent Milestones
- Asset Conditions
- Key Issues in Asset Management Plans
- 2022 Work Plan
- Future Recommendations



What We Provide

Public Safety

- Railroad and watercourse crossings.
- Roadways and trails.

Drainage

- Hydraulic capacity.
- Watercourses, drainage systems.

Regulatory Compliance

- Biannual inspections by contracted engineers.
- Maintenance plans.



Safe bridge crossings for all mobilities.

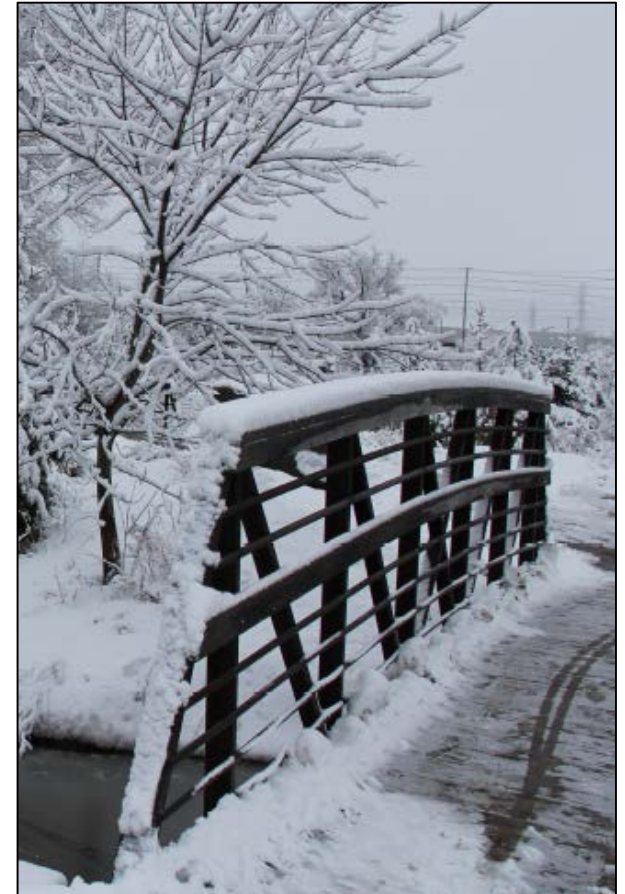


Recent Milestones & Achievements

Successful replacement of the Millard Avenue culvert.

Transition to a multi-year OSIM contract, providing efficiency.

Condition assessments and scoping of the Queen Street bridge replacement (portion over the railway)



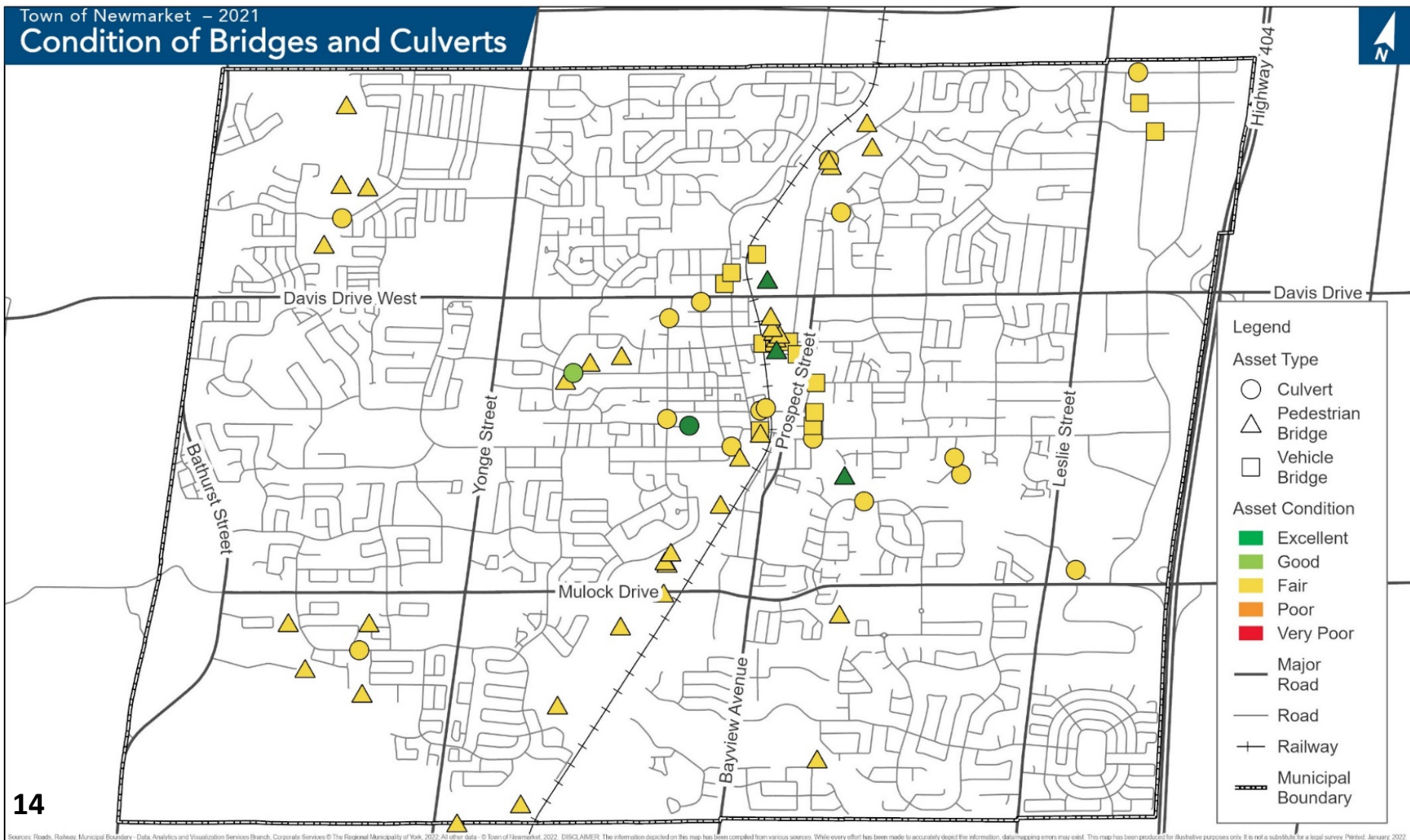


Current Condition (Bridges)

(prior to 2021 inspection)

Town of Newmarket – 2021

Condition of Bridges and Culverts





Key Issues in the Asset Management Plans



Maintenance: Development of a plan to increase preventative maintenance works and reduce reactive maintenance.



Capital: Upcoming / ongoing deck replacement of the Queen Street Bridge



2022 Work Plan

- ✓ Utility work in support of Queen Street bridge (over the CN railway) deck replacement.
- ✓ GIS & data improvements.
- ✓ Capital and maintenance planning based on 2021 OSIM results (not included in current AMP).





Future Recommendations

Recommendation Type	Count
Administrative	4
Strategic	1
Systems	5
Tactical	3
Total	13

Recommendations for Bridges

ID	Source	Recommendation
53	Know Your Assets	Develop a GIS distribution method for the newly assembled OSIM database for use and analysis by Engineering.
54	Know Your Assets	Develop a data schematic template for OSIM inspections using the newly developed OSIM database.
55	Know Your Assets	Develop a data update plan using opportunistic data collection during OSIM to get missing data like bridge measurements.
56	Know Your Assets	Develop a formal inventory of the ancillary structures associated with bridges that are not strictly defined as OSIM assets. Examples include the drainage structures at Fairy Lake or the retaining walls lining waterways at George Richardson Park.
57	Know Your Assets	Work with GIS department to expand data for bridges that capture project constraints using front-end studies to improve risk management and financial planning. Examples include overlap with private utilities.
58	Know Your Assets	Develop processes for reviewing and analyzing multiple years of OSIM data within the newly assembled OSIM database (e.g. 2019 vs 2021 vs 2023 results).
59	Know Your Assets	Complete an operating budget request for additional bridge investigations.
60	Know Your Assets	Develop a multi-year plan for managing older bridges through monitoring and condition assessment.
61	Manage Service Delivery	Formalize and create a checklist for non-structural spring safety inspections.

- The focus by recommendation type is as follows:
 - Administrative: Create a **dedicated asset replacement fund for bridges** and complete an operating budget request for special bridge investigations.
 - Strategic: Facilitate allocation of governance, **roles and responsibilities**, budget and processes.
 - Systems: Work with GIS on expanding data and developing a **data update plan**.
 - Tactical: Develop a multi-year plan for **managing older bridges**.



Water

- What We Provide (Services & Activities)
- Recent Milestones
- Asset Conditions
- Key Issues in Asset Management Plans
- 2022 Work Plan
- Future Recommendations



What We Provide

Regulatory Compliance

- DWQMS, Audits & Inspections

Safe Drinking Water

- Trained, Certified Operators

Operational Effectiveness

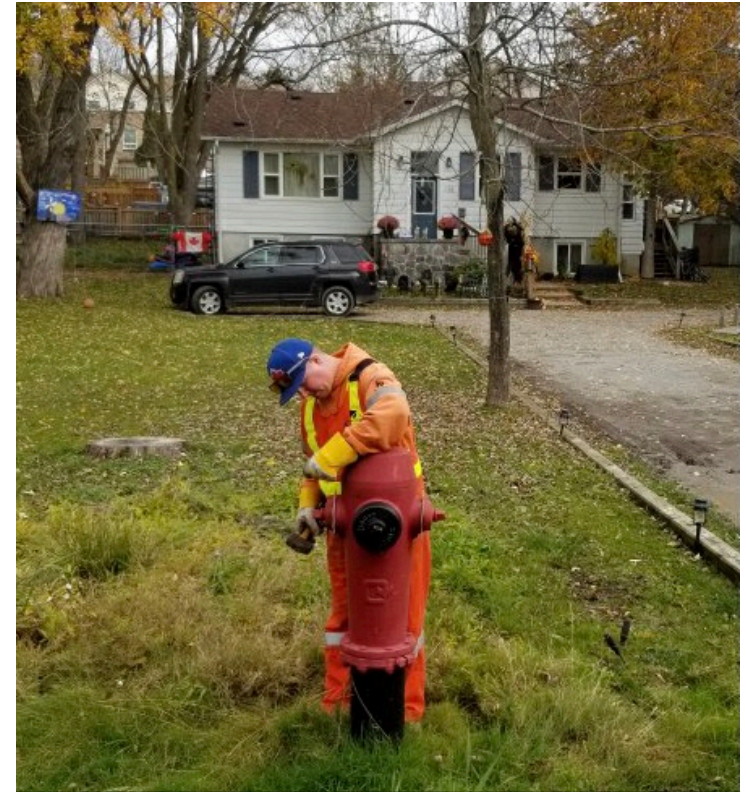
- Preventative Maintenance & Emergency Response

Reliable Fire protection

- Annual Inspection & Maintenance of all Fire Hydrants

Customer Service Excellence

- 24 x 7 response to customer emergencies.
- Maintenance programs to minimize outages.



Accessible, safe, and reliable drinking water.



Recent Milestones & Achievements

229 kms of the 308 kms of watermain flushed in 2021.

394 Anodes were installed in 2021, completing 100% of the scheduled program on time/in budget.

2,287 fire hydrants (100%) inspected and maintained in 2021.

Continued implementation of “Smart Meter” program updating the Towns 26,172 water meters.

The Water Operations group commissioned & readied the Town’s “Hydration Station” for public outreach events.

The Town received an 100% compliance rating through the annual MECP inspection.

The Water Operations group worked smartly and safely in 2021 with no Lost Time injuries and no Ministry of Labour orders issued.

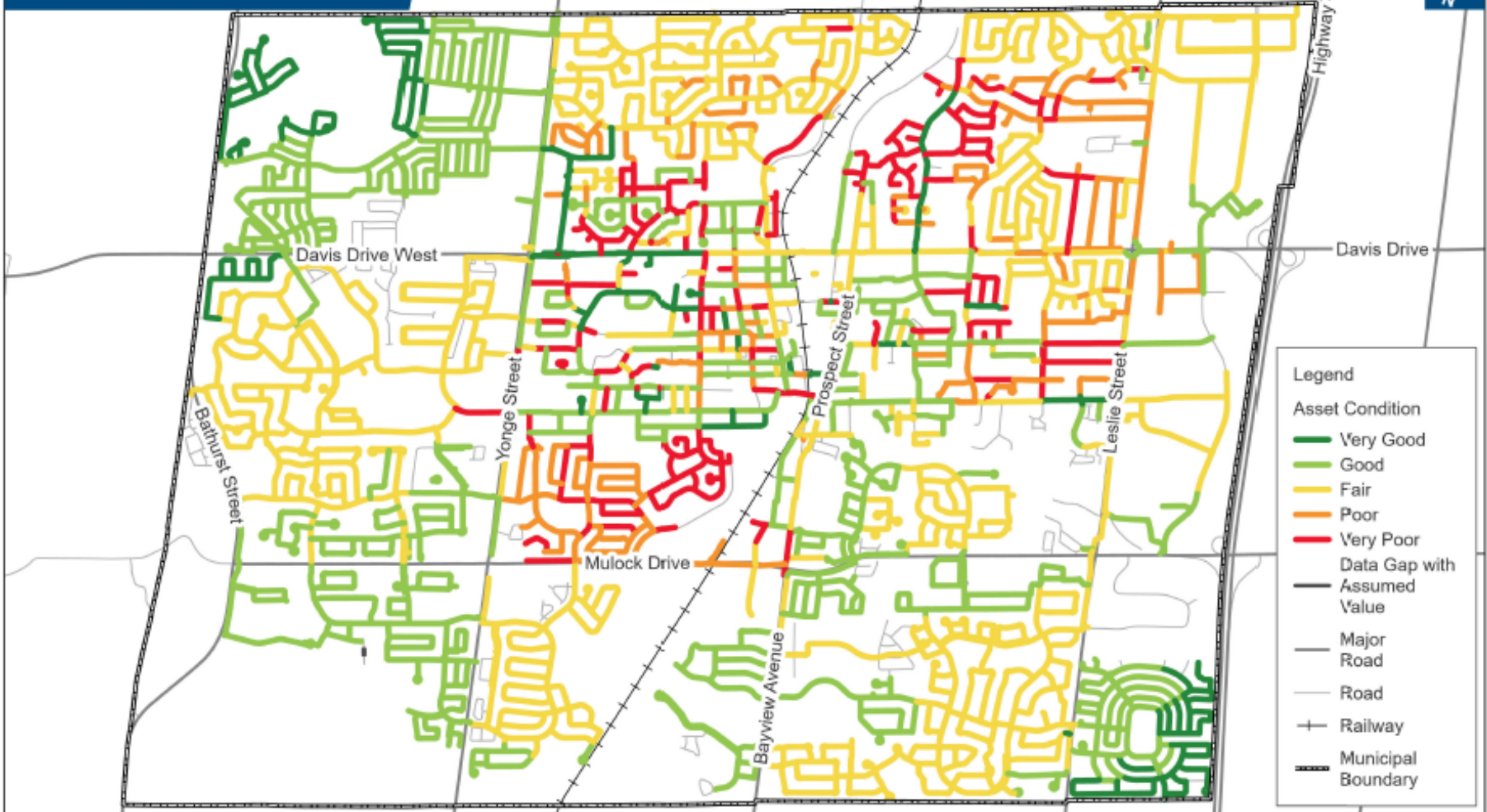
Lorne Avenue Phase 1 watermain replacement and Cody Crescent watermain replacement





Current Condition (Water)

Town of Newmarket – 2021
Condition of Watermains





Key Issues in Asset Management Plans

Water Quality issues

Non-Revenue Water

Capital program ensuring
timely replacement of assets

Meter Replacement





2022 Work Plan

Review
resourcing
and
contracting
needs.

Water /
Wastewater
Master Plan
Update

Develop
watermain
valve exercise
program

Capital
Projects:
Lorne Avenue
Phase 2
Replacement

Continued work
with York Region:

1. Seek water
quality
improvements.
2. Non-revenue
water reductions.



Future Recommendations

Recommendation Type	Count
Administrative	6
Strategic	5
Systems	2
Tactical	3
Total	16

Recommendations for Water		
ID	Source	Recommendation
65	Know Your Assets	Complete asset inventory GIS layers for autoflushers and bulk water stations.
66	Know Your Assets	Review and update the sample stations layer in GIS for use as an asset inventory.
67	Know Your Assets	Conduct a desktop analysis of watermain conditions by material type cohort, with the goal of presenting options for replacing the watermain under different time horizons with corresponding budgets and service outcomes.
68	Manage Service Delivery	Watermain Rehabilitation - Cathodic Protection and Lining. Create governance model and project management plan. Define roles & responsibilities. See recommendations about rehabilitation targets in "Condition Assessment Plan". Develop criteria for intervening with watermain lining rather than removal/replacement as part of a corridor management strategy (with AM support).
69	Manage Service Delivery	Valve Maintenance Programs: Formalize inspection programs and record condition observations. Develop multi-year plan and resource plan for sustainable valve operations.
70	Manage Service Delivery	Hydrant Inspections: Update contractor methodology to include a 5-point scale condition assessment. Establish a data management plan for annual hydrant inspections.
71	Manage Service Delivery	Building Application: Water Meters, Building Application: Include meter fees in building application to provide visibility to cost of meter and monthly fixed charges by meter size.

- The focus by recommendation type is as follows:
 - Administrative: Review various **program processes** to increase efficiencies
 - Strategic: Conduct a desktop analysis of **watermain replacement**
 - Systems: Update and complete asset inventory **GIS layers** for remaining assets.
 - Tactical: Review resourcing and budget requirements required for **AMI meter maintenance activities**.



Wastewater

- What We Provide
- Recent Milestones
- Asset Conditions
- Key Issues in Asset Management Plans
- 2022 Work Plan
- Future Recommendations



What We Provide

Customer Service Excellence

- Wastewater collection for all customers 24 hours a day, 7 days at week.
- Response to emergency sewer backups

Regulatory Compliance

- Meet/exceed standards to protect public health, the environment.
- Well trained, certified Operators maintaining the system.

Operational Effectiveness

- Inspection, maintenance and repair of the sewers, maintenance chambers, pumping stations and associated infrastructure.



Accessible, compliant,
and reliable collection.



Recent Milestones & Achievements

Sewage Pump Station repairs.

Maintenance chamber inspections.

CCTV inspection of sewers to assist development of Capital delivery program.

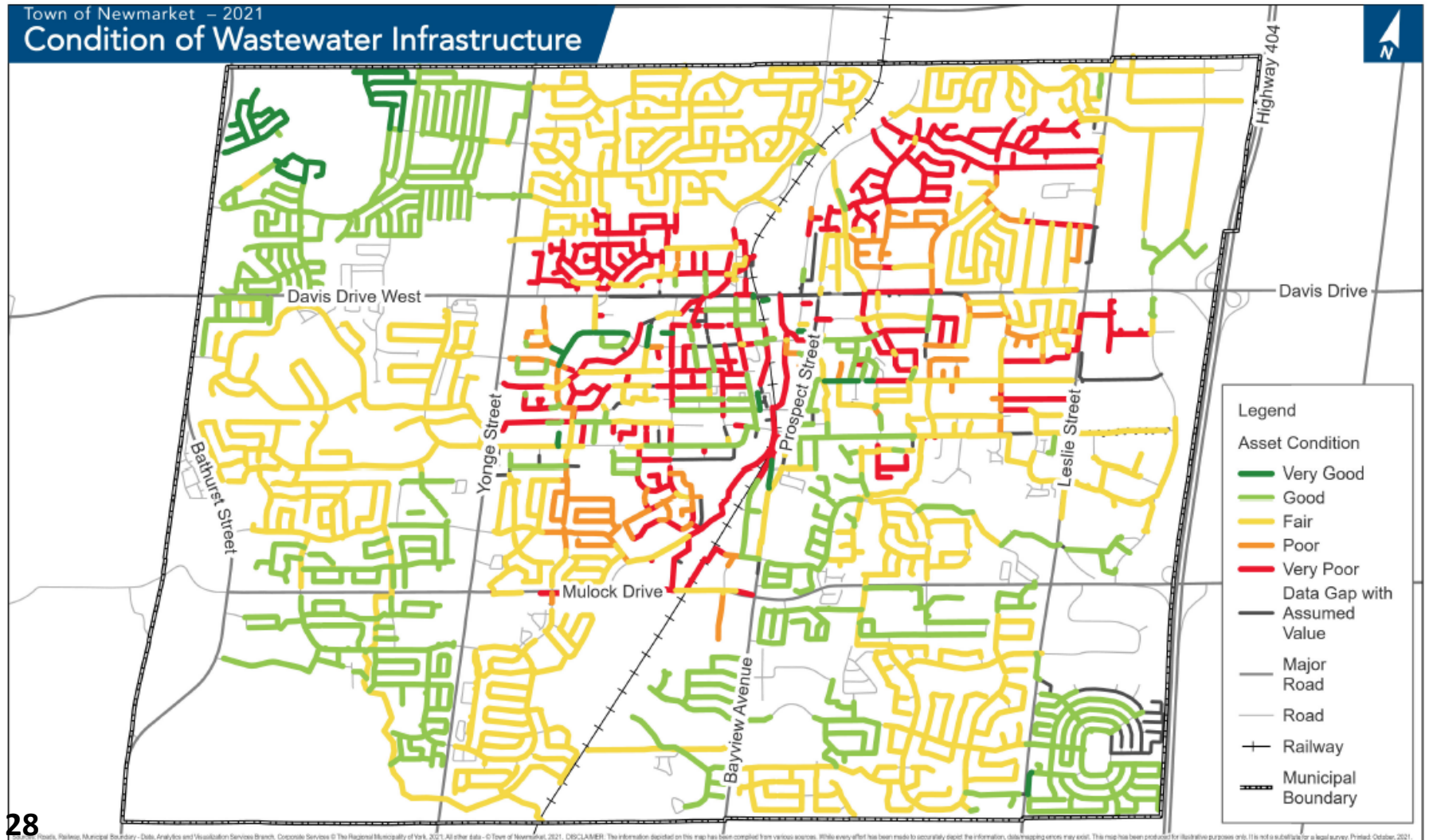
Purchase of Acoustic Inspection equipment to assist daily sewer maintenance program.

Lorne Avenue Phase 1 Sewer Replacement





Current Conditions (Wastewater)





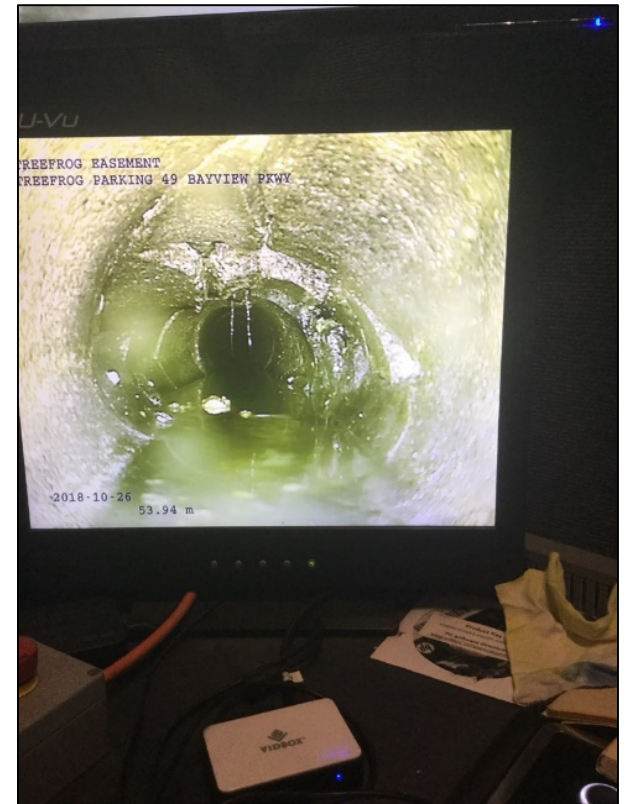
Key Issues in Asset Management Plans

CCTV program

Sewer pumping stations

Flushing & preventive
maintenance

Accommodate growth &
development





2022 Work Plan

CCTV and SL-
RAT

Pump Station
Maintenance

Wastewater
Master Plan
Update

Lorne
Avenue
Phase 2
Sewer
Replacement

Sanitary Sewer
Upgrades:
-Charles-Queen
-Penn-Amelia





Future Recommendations

Recommendation Type	Count
Administrative	3
Strategic	1
Systems	4
Tactical	5
Total	13

ID	Source	Recommendation
81	Know Your Assets	Incorporate addressing data gaps into any CCTV data collection plans.
82	Know Your Assets	Incorporate data generated by the 2017 Wastewater Master Plan into GIS.
83	Know Your Assets	Establish a process and data management plan for flow monitoring including the use of data collected by York Region.
84	Know Your Assets	Complete a pump station asset inventory and wastewater asset condition assessment. Update GIS pump station inventory.
85	Know Your Assets	Review forcemains and siphons and establish need for condition assessments or maintenance programs (e.g. draw-down tests, pigging, sonar, etc.).
86	Know Your Assets	Establish roles and responsibilities for CCTV and a plan for achieving a system-wide inspection program.
87	Know Your Assets	Complete a building condition assessment of pump station building elements (e.g. structure, electrical, etc.).
88	Know Your Assets	Expand condition assessments of sewers to include maintenance holes using the MACP protocol.
89	Manage Service Delivery	Secure funding for SL-RAT in 2022 budget process. Adopt SL-RAT as a new in-house technology. Develop a multi-year plan for identifying flushing needs with SL-RAT.

- The focus by recommendation type is as follows:
 - Administrative: Review various **rehabilitation** and inspection programs for **processes**, roles and responsibilities.
 - Strategic: Use **SL-RAT technology** to identify flushing needs.
 - Systems: Establish process and **data management plan** and address data gaps.
 - Tactical: Complete and expand **condition assessments**.



Stormwater

- What We Provide (Services & Activities)
- Recent Milestones
- Asset Conditions
- Key Issues in Asset Management Plans
- 2022 Work Plan
- Future Recommendations



What We Provide

Flood & Erosion Protection

- Provision of stormwater collection through inlets, sewers, drainage features.

Environmental Protection & Compliance

- Downstream water quality.
- Provincial regulations.
- Upkeep of facilities (ponds).

Operational Effectiveness

- Operations and maintenance of a sewer network including sweeping, vacuuming, hotspot monitoring, flood response.



Drainage and stormwater collection at design levels.



Recent Milestones & Achievements

2021 bathymetric surveys for all ponds.

Pond 74 slope stabilization project.

2021 inspections and maintenance activities completed

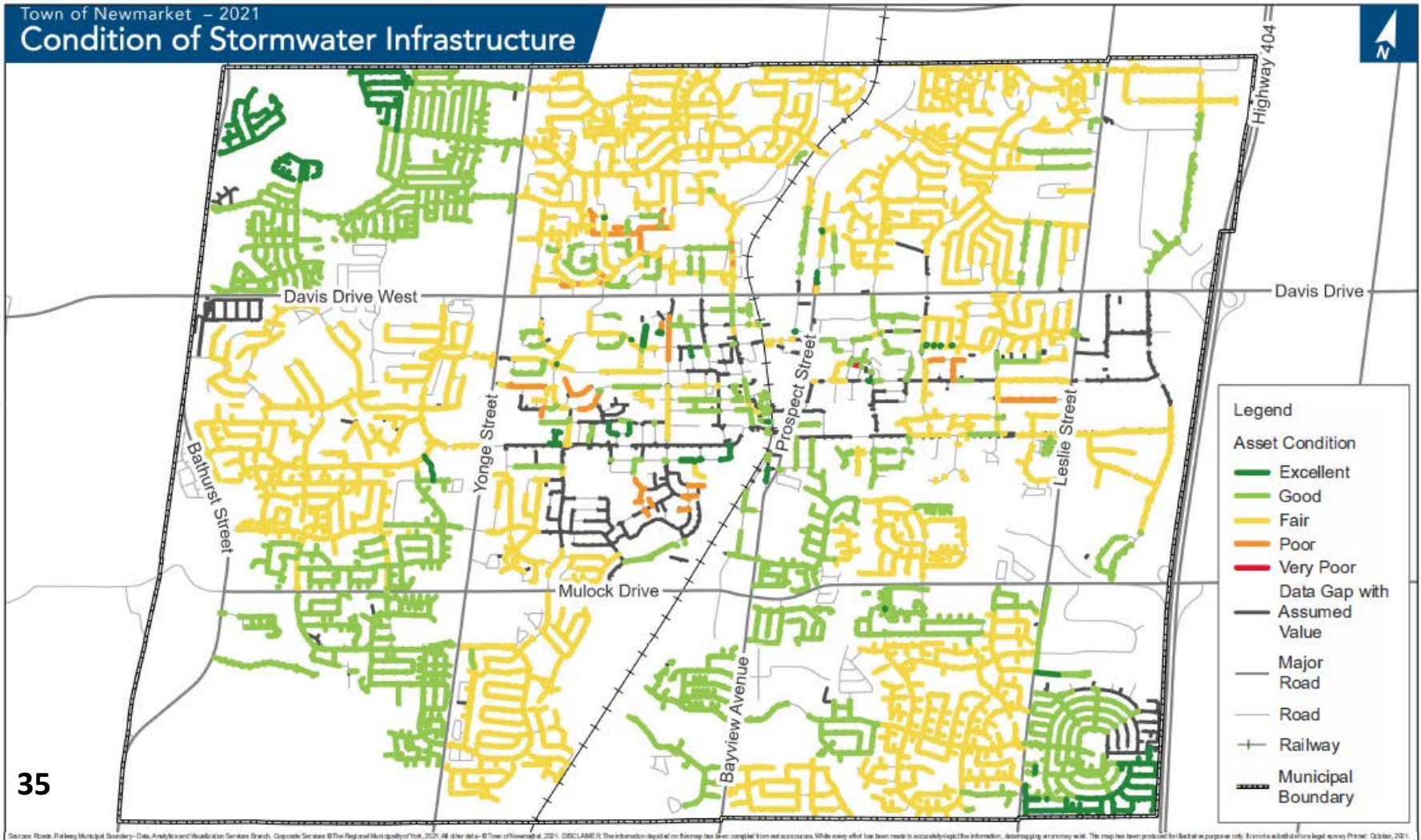
Inspected 100% of all oil grit separators for maintenance needs

Partnered with LSRCA on training for staff and external municipalities on pond O&M.





Current Conditions (Stormwater Sewers)





Key Issues in Asset Management Plans



Pond sediment



Pond safety



*Climate change
preparation*



Regulatory changes



2022 Work Plan

Pond
dredging

CLI-ECA
application
(Ontario
Ministry of
Environment)

Climate Change &
Environmental
Sustainability
Working Group

2022 pond
inspections
and
maintenance





Future Recommendations

Recommendation Type	Count
Administrative	12
Strategic	3
Systems	3
Tactical	8
Total	26

Recommendations for Stormwater		
ID	Source	Recommendation
94	Know Your Assets	Incorporate addressing data gaps into any CCTV data collection plans.
95	Know Your Assets	Continue the significant ongoing data update as part of the stormwater CLI-ECA application. Expected benefits include new datasets for ditches, improved data for inlets, outfalls and ponds, and new data about stormwater catchments.
96	Know Your Assets	Develop an inventory of the assets inside ponds including fences, signs, retaining walls, baffles, valves, weirs, etc.
97	Know Your Assets	Clean up the non-structural culverts information shared by OSIM culverts and stormwater sewers and create a new GIS layer for this asset.
98	Know Your Assets	Complete an asset inventory of the assets located at creeks that are regularly inspected by PWS.
99	Know Your Assets	Create a data collection plan for headwall structures located at inlets and outfalls.
100	Know Your Assets	Assign responsibility for stormwater CCTV.
101	Know Your Assets	Implement recommended data collection and condition assessment processes for wastewater (see wastewater AMP) for stormwater.
102	Know Your Assets	Continue progress of building data management processes for pond inspections including sediment basin volumes and condition of assets within ponds.
103	Know Your Assets	Formalize data management of assets inside ponds. Current progress includes the development of an SOP and GIS data collection form.

- The focus by recommendation type is as follows:
 - Administrative: Review various rehabilitation and inspection programs and define **roles and responsibilities**.
 - Strategic: Create **governance** model and implement new LID assets.
 - Systems: Address **data gaps** and continue CLI-ECA data update.
 - Tactical: Continue to **formalize** inspection and maintenance programs

Current Practice

Current Progress & Business Risks

- ✓ Asset management practices in services areas are still in early phases of adoption.
- ✓ Good success stories and next steps identified by service area leaders.

Challenges experienced by service areas:

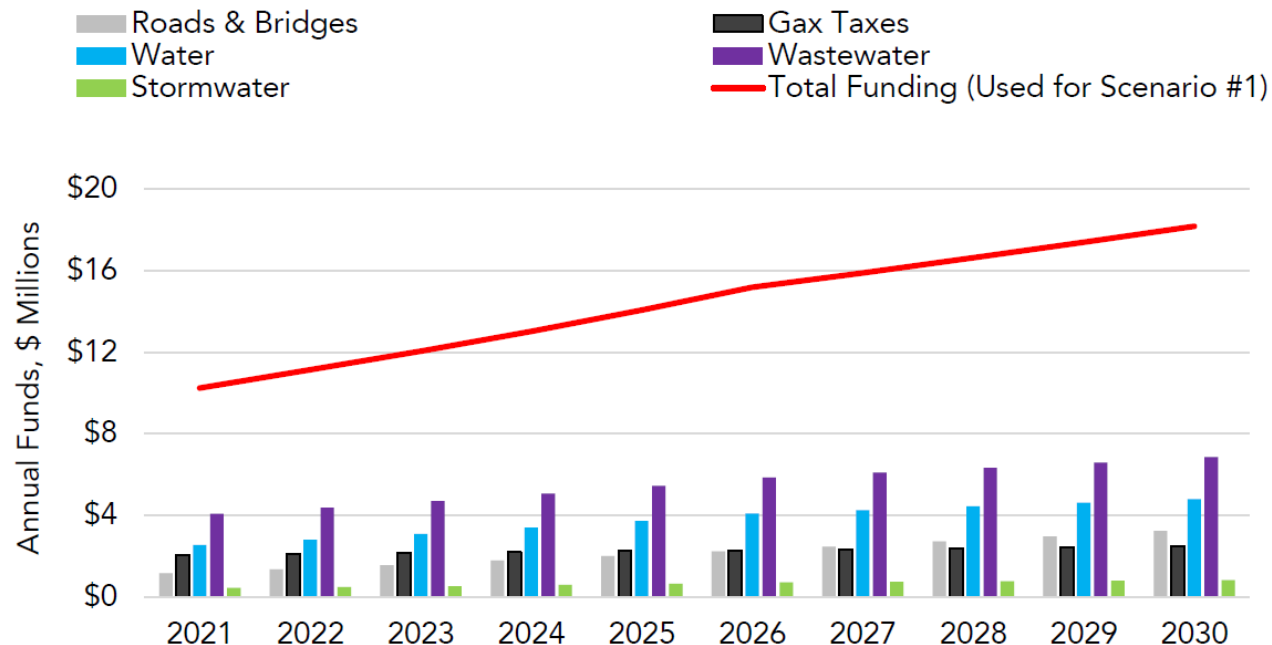
- Covid restrictions
- Technology
- Data collection and management
- Resources – equipment and staffing
- Growth
- Continued use of reactive maintenance (efficiency)



Current “Practice” – 10 Year View

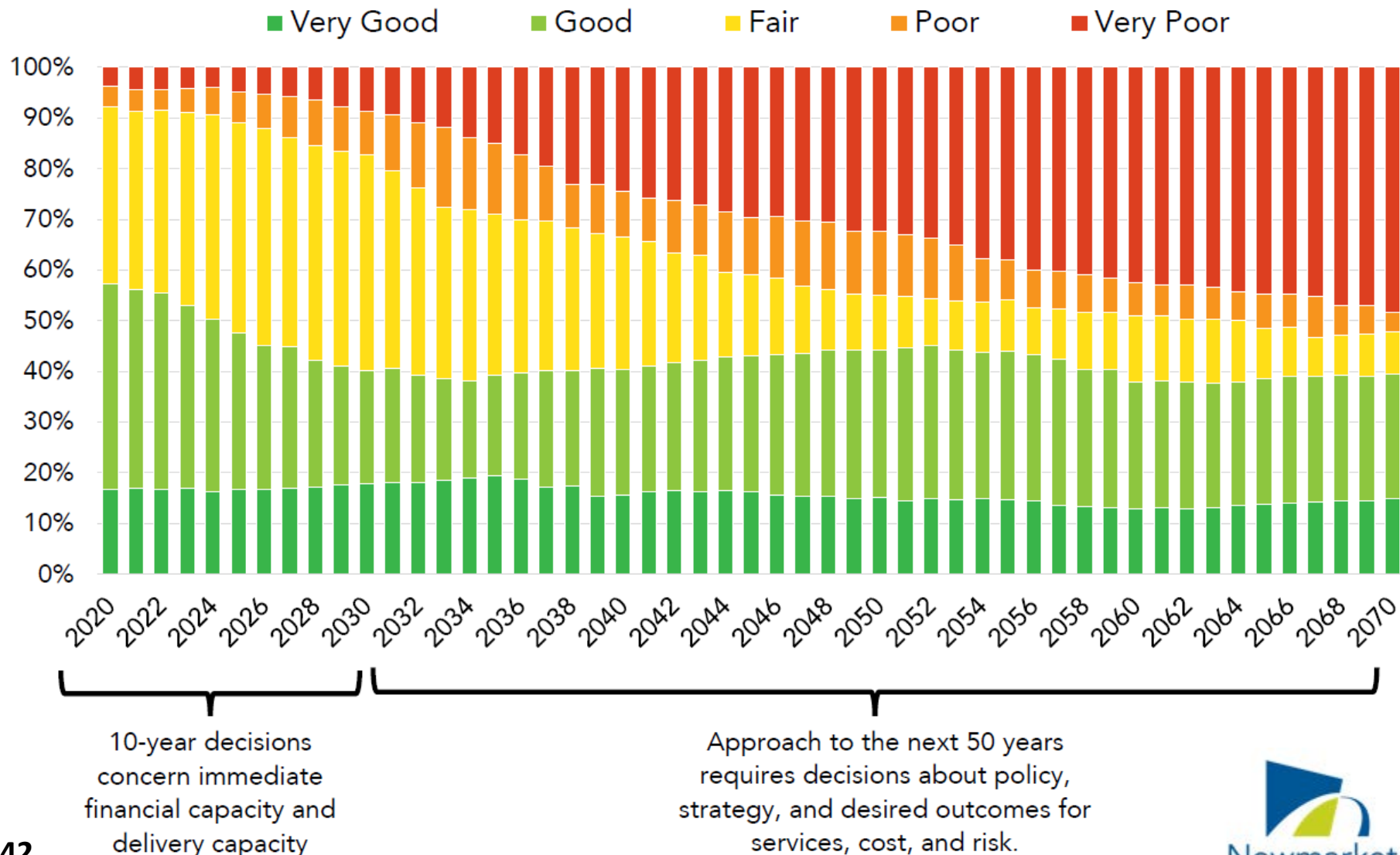
- ✓ 1% tax increase shared by core + non-core.
- ✓ Rate supported financial plans with 7.5% - 10% annual ARF increases.

Estimated Future Funding with Current Position and Plans

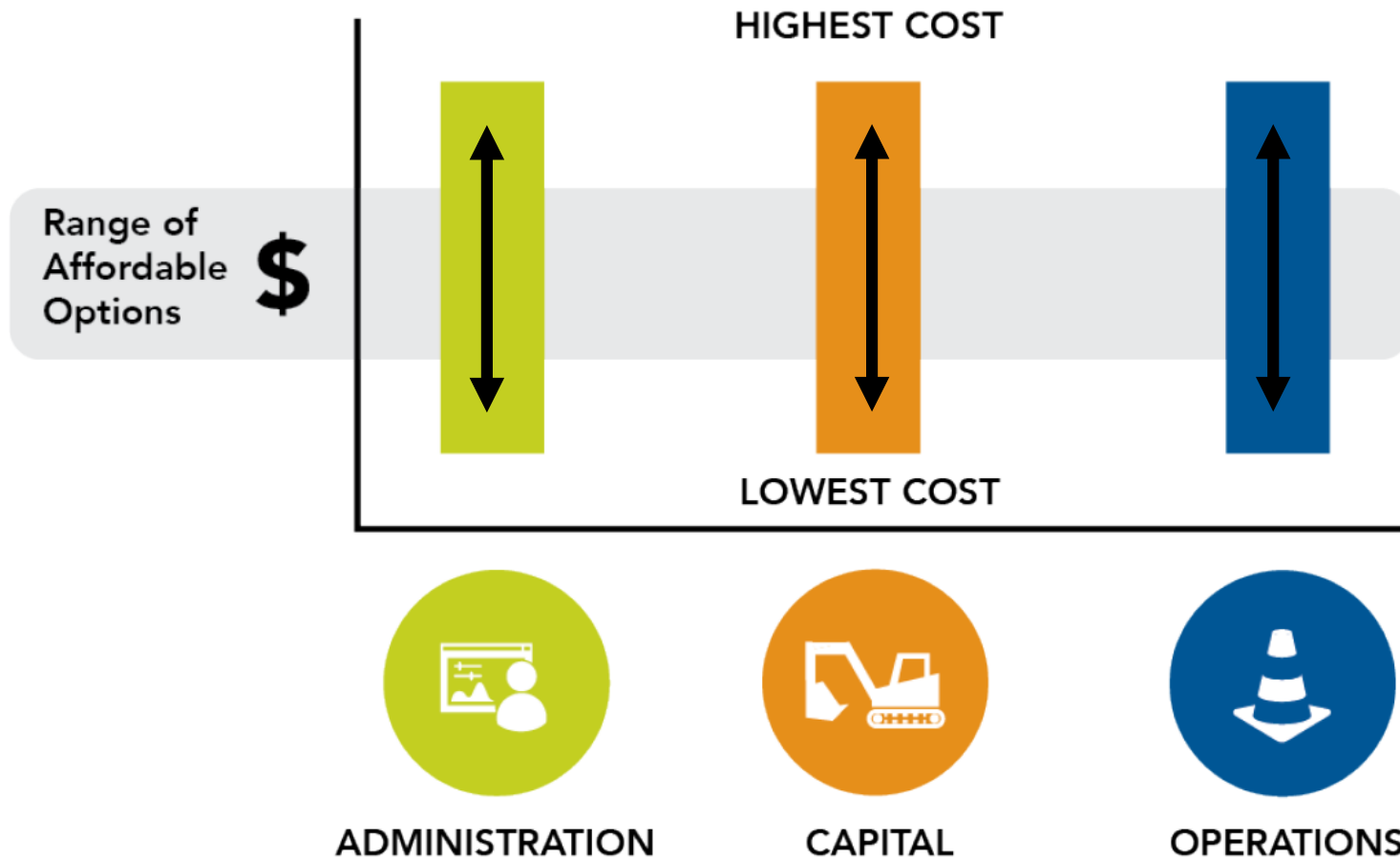


Prior to financial plan updates in 2021

Levels of Service – Current Practice



Levels of Service Targets



Upcoming Challenges & Leveraging Opportunities

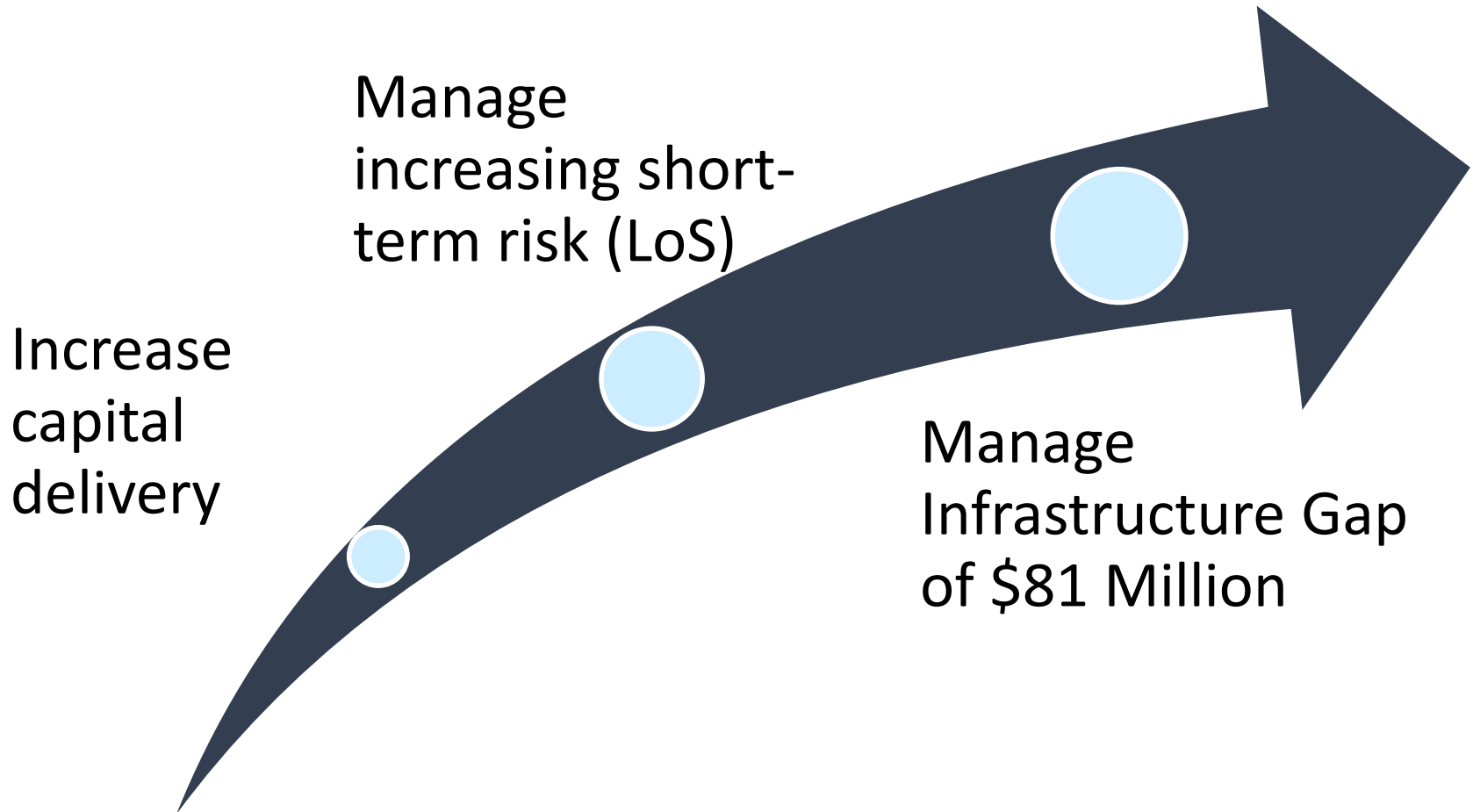


10 Years (Short-term)



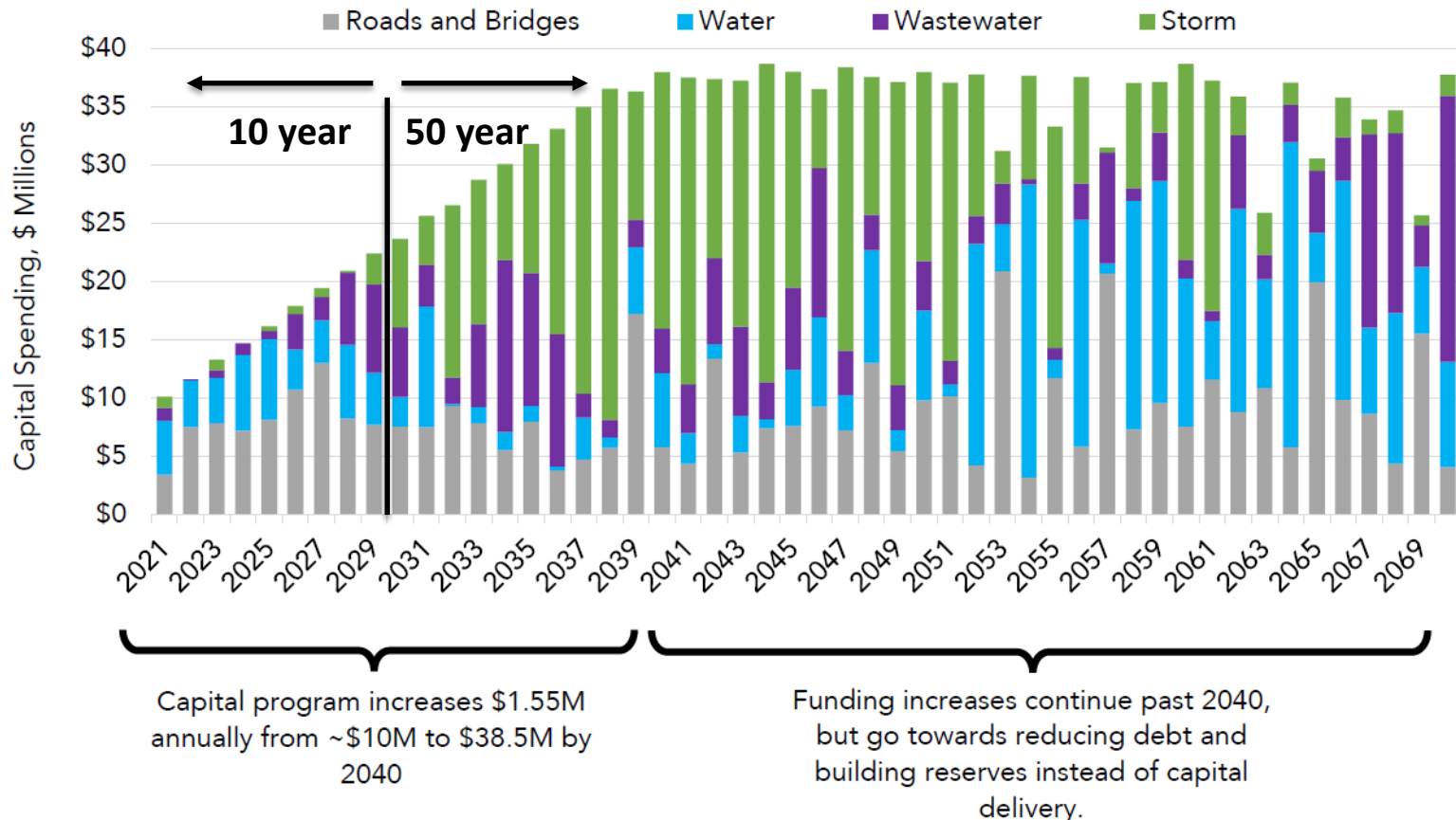
50 Years (Long-term)

Upcoming Operational Challenges





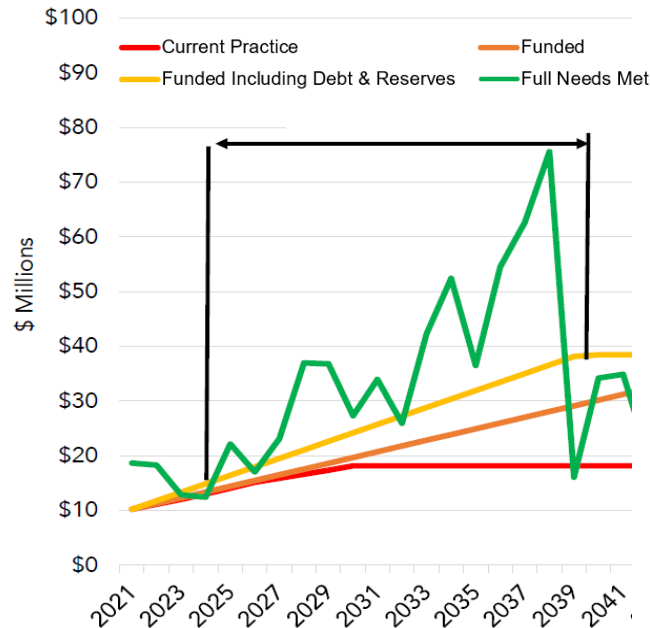
Increasing Capital Delivery



- Forecasted level of service assumes we spend 100% of funds
- 2015-2020 core assets: 61% of available core asset funds spent.



Manage Short Term Risk



How does Scenario #2 close the \$27 Million gap?

- 21% - Increased revenue from taxes, rates, etc.
- 79% - Draw reserves and issue debt.

\$144M

10 Year Projection of
Available Funds for
Core Assets
(Scenario #1)

\$170M (-\$27M)

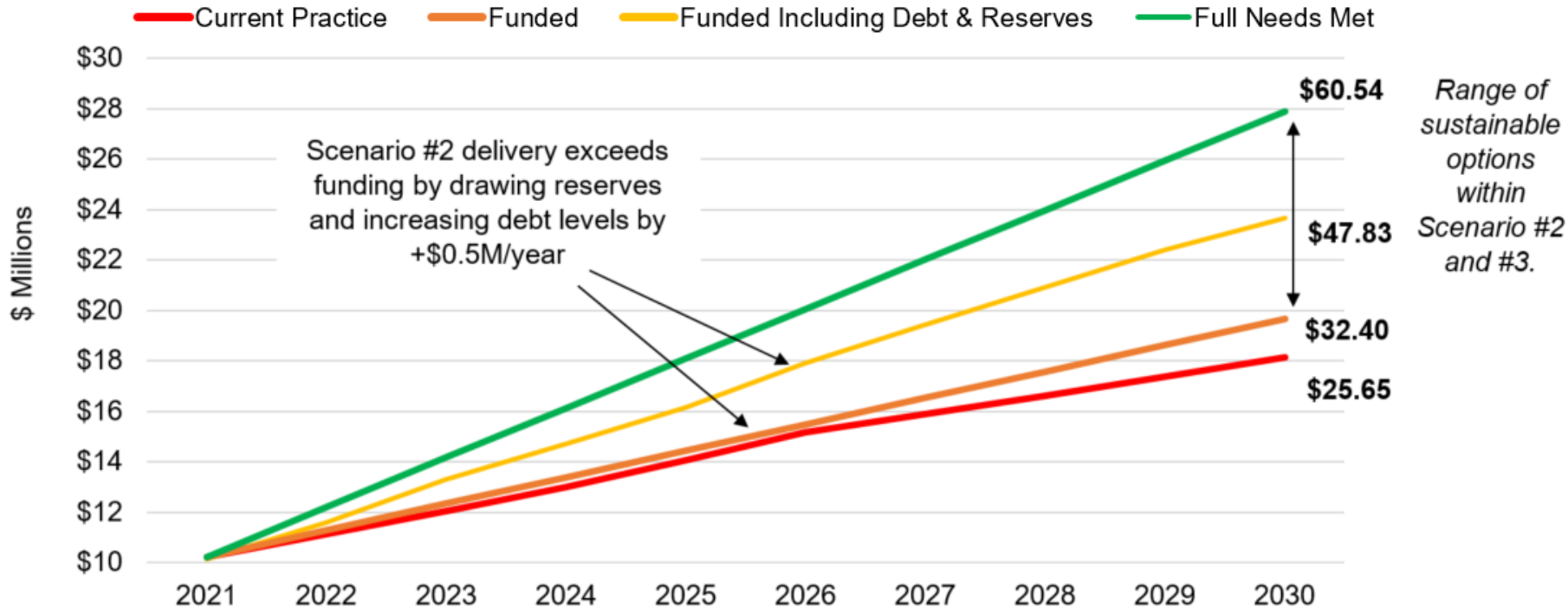
10 Year Investment
Required Under the
Constrained Scenario
(Scenario #2)

\$224M (-\$81M)

10 Year Investment
Required to Achieve
Service Levels
(Scenario #3)



Managing the Infrastructure Gap



Scenario	#1 – Current Practice		#2 – Constrained		#3 – Needs Based
Legend	Funding & Investment		Funding	Investment	Funding & Investment
Outcome	LoS is not achieved, high risk of service failure.		LoS partially achieved, periods of service risk failure. Moderate debt (\$61.9M).		LoS achieved. Low debt (\$30.9M).
Cost per Household Per Year	+\$25.65		+\$32.40 plus debt	+ \$47.83 for debt free	+\$60.54
Equivalent (Not Actual) 2021 Tax Impact	+ 1.16%		+1.46%	+2.16%	+2.73%

Upcoming Challenges & Leveraging Opportunities

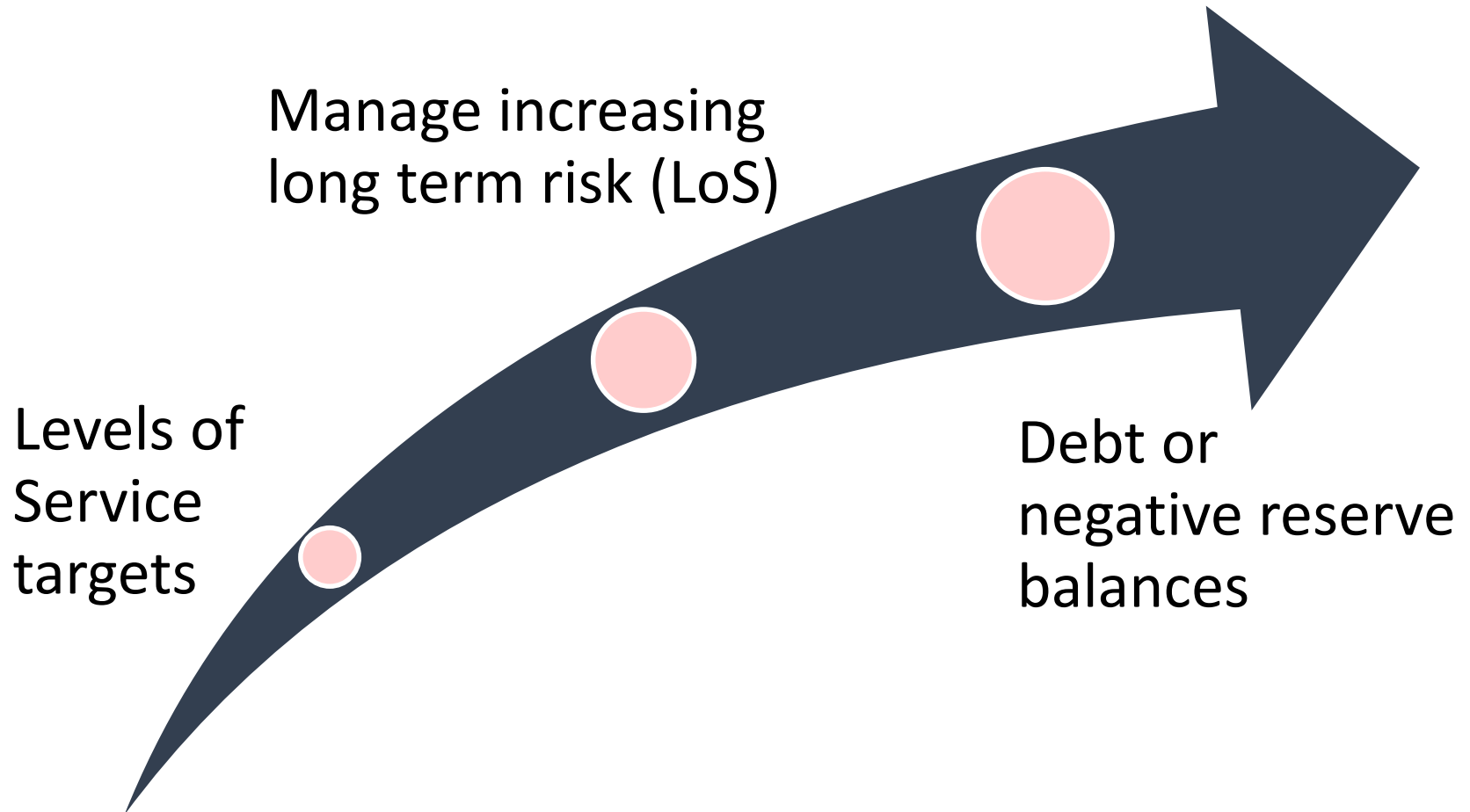


10 Years (Short-term)



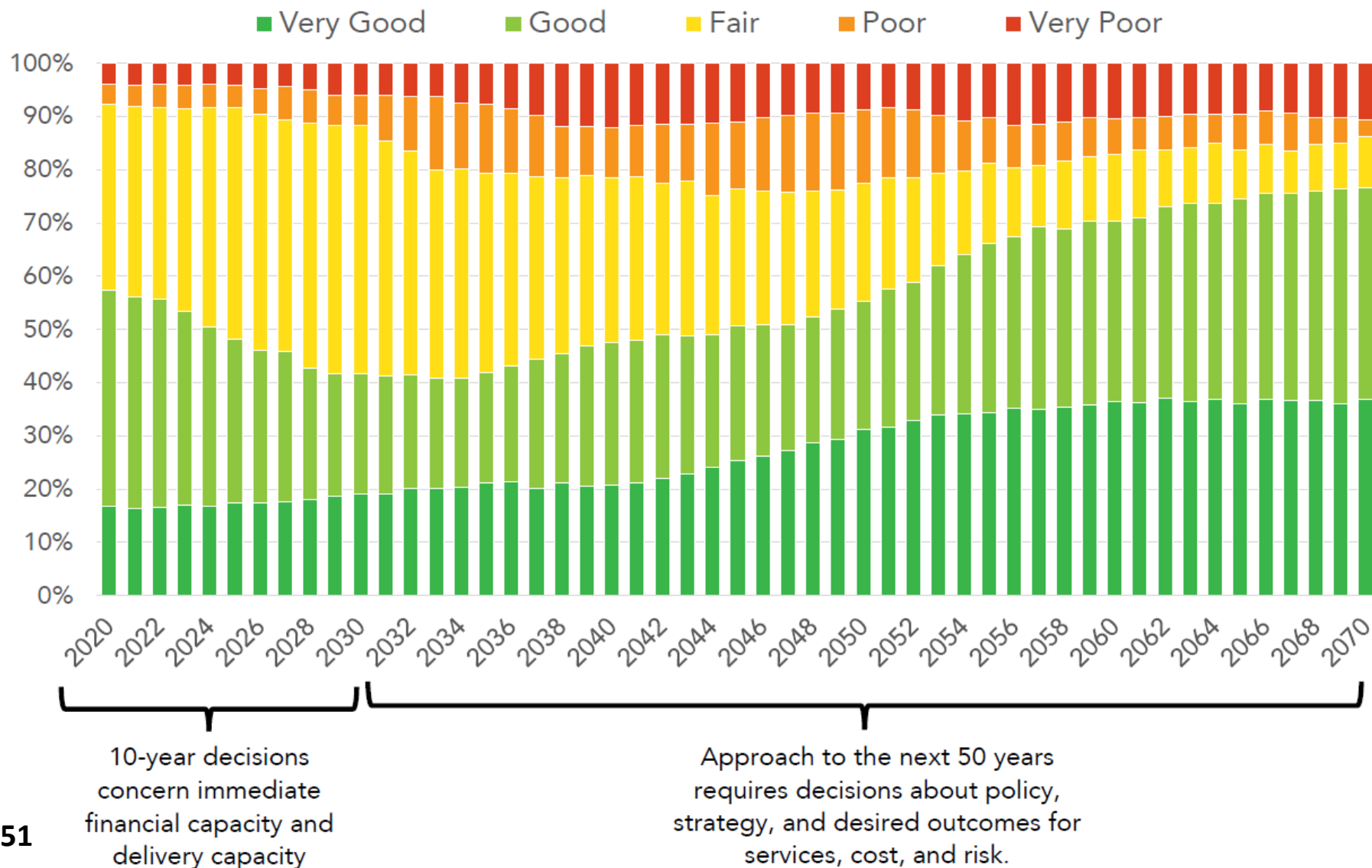
50 Years (Long-term)

Upcoming Strategic Challenges



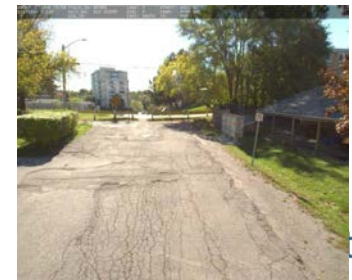
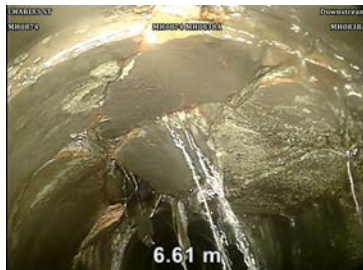
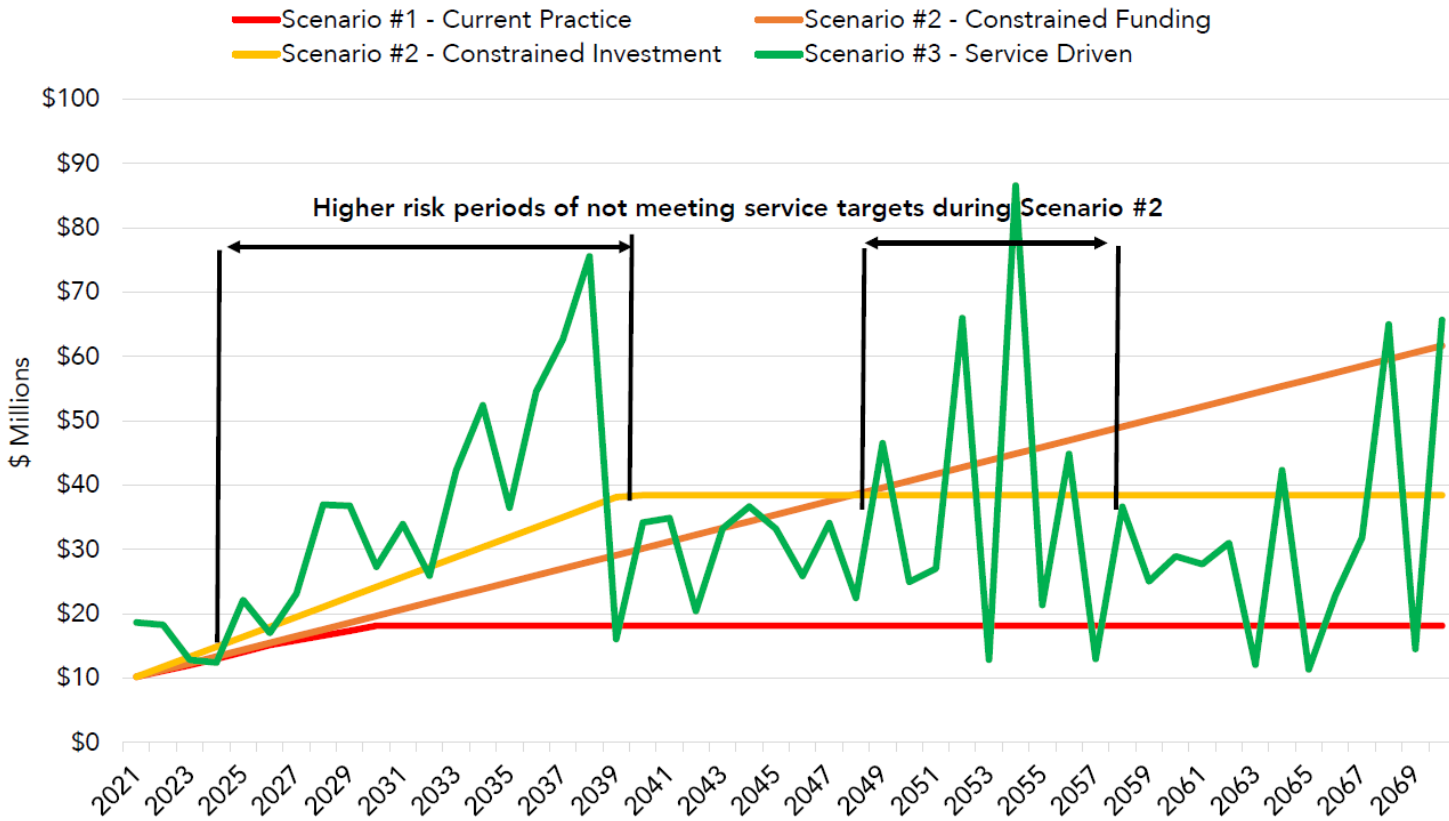


Levels of Service – Constrained Scenario





Managing Long Term Risk

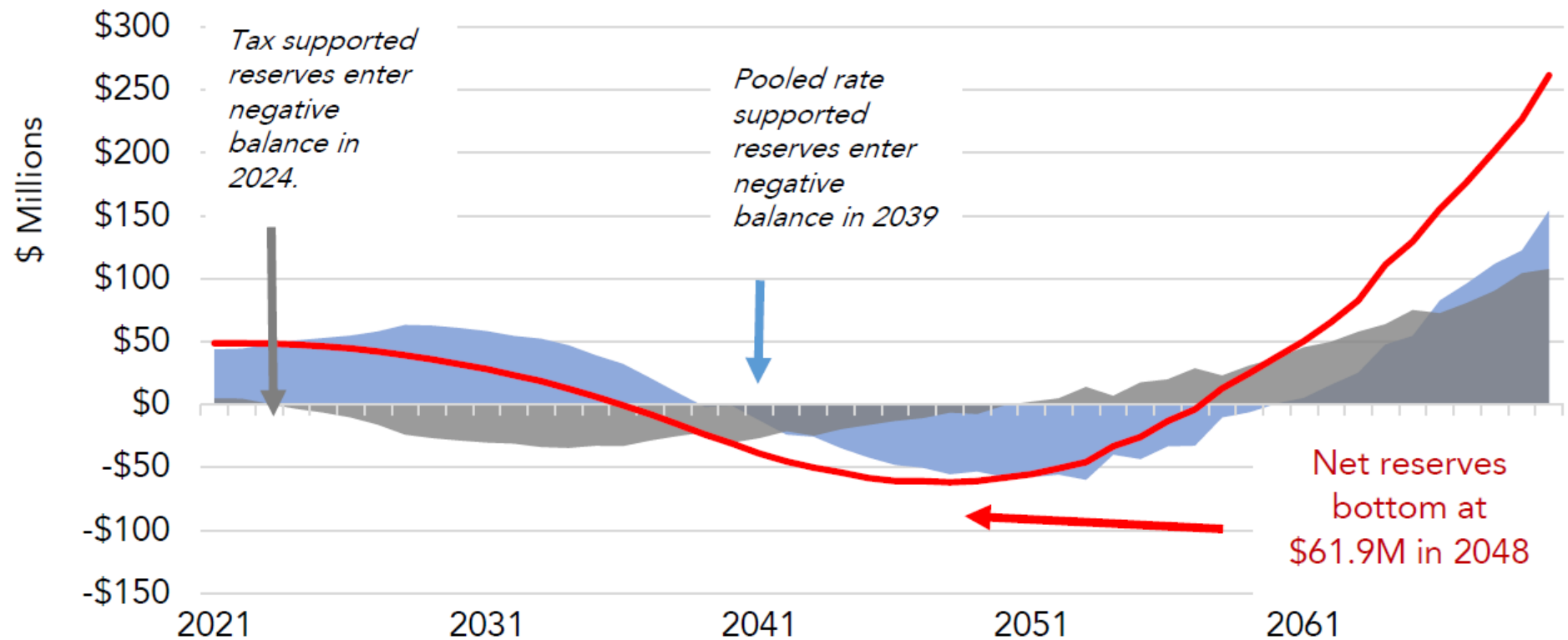




Debt or Negative Reserve Balance

Rate and Tax Supported Reserve Balances Under Scenario #2 If Combined (not current practice)

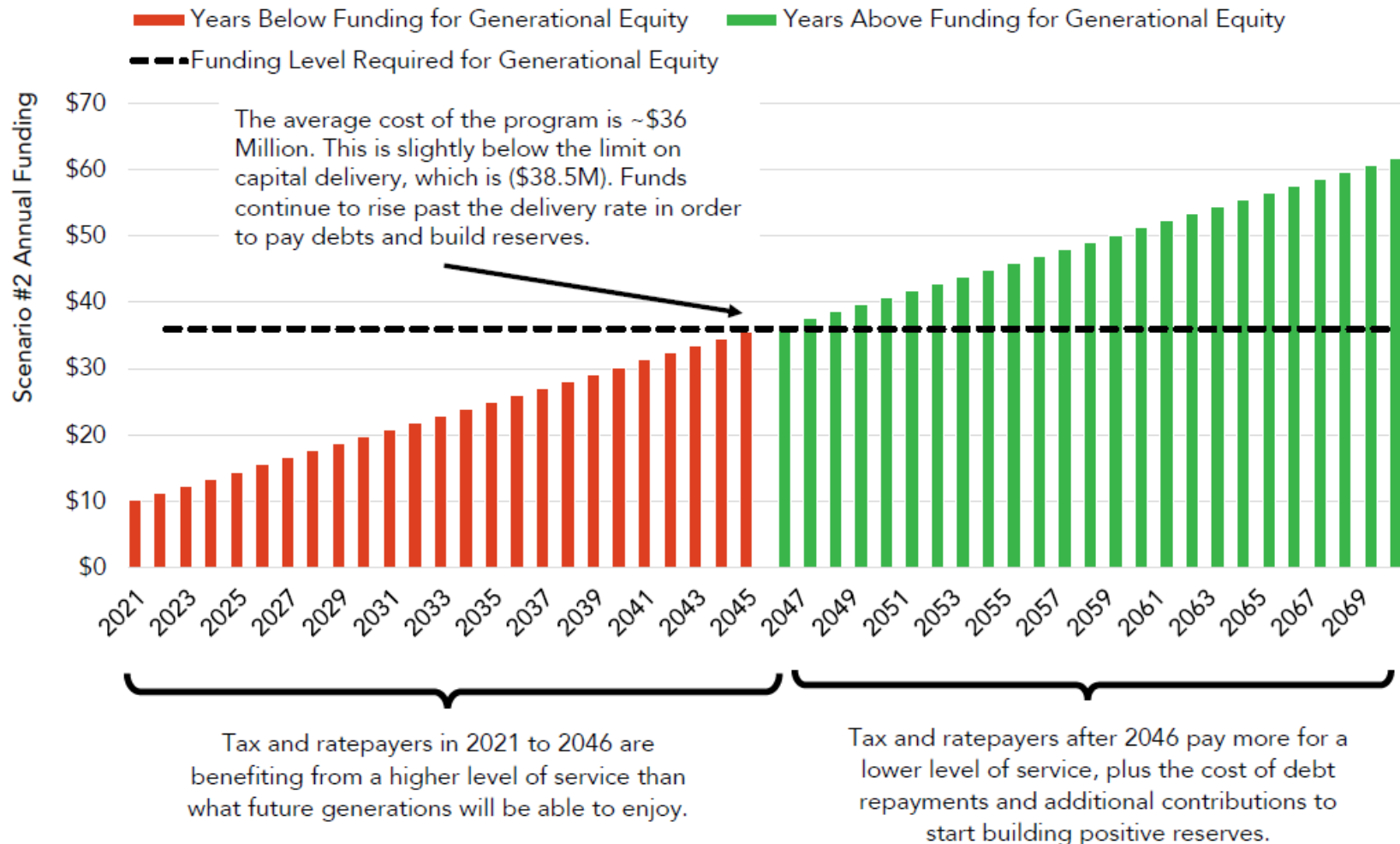
Combined SW/WW/W Reserves Roads and Bridges (Tax Supported)





Generational Equity

Comparison of Proposed Approach with a Generational Equity Approach - Constrained Scenario 50 Years



Opportunities



*Deteriorating assets....
Infrastructure gap.....
Risk...
Data gaps....
Climate change...*

- ✓ Visibility
- ✓ Alignment
- ✓ Proactive
- ✓ Improvements
- ✓ Capability
- ✓ Efficiency

How Do We Achieve Our Goals?

Change Management

'Those that fail to learn from
history are doomed to
repeat it'
'Winston Churchill'



Vision	Skills	Incentives	Resources	Action Plan	=	Success
Vision	Skills	Incentives	Resources	Missing	=	False Starts
Vision	Skills	Incentives	Missing	Action Plan	=	Frustration
Vision	Skills	Missing	Resources	Action Plan	=	Resistance
Vision	Missing	Incentives	Resources	Action Plan	=	Anxiety
Missing	Skills	Incentives	Resources	Action Plan	=	Confusion

Next Steps for Core Assets

2014-2021

- ✓ Set Direction for staff on AM
- ✓ 2019 revised AM policy
- ✓ Provide input in terms of LoS expectations and Financial affordability

Jan 2022

- ✓ Receive the 2021 Core AM Plans
- Adopt the Core AM Plans (**Jan. 31, 2022**)

2023 Core Assets

O.Reg 588/17

- Council to set LoS targets (2023)
- Staff to update Council on implementation of plans (annually)

Discussion

