

Municipal Watercourse Projects: Approaches and Cost Considerations

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Overview

- Where we have been – 10+ years of delivery
- Cost trends and drivers
- Where we go from here

Stormwater Management Infrastructure Group

2003 - Wet Weather Flow Master Plan

2014 - Stormwater Management Infrastructure Group Created

2005 and 2013 - Storms result in emergency works and priority repairs

Watercourse Project Types

- Priority Sites and Urgent Works
 - Design, Contract Administration and Post-Construction
 - External Construction
 - Internal Construction

Before

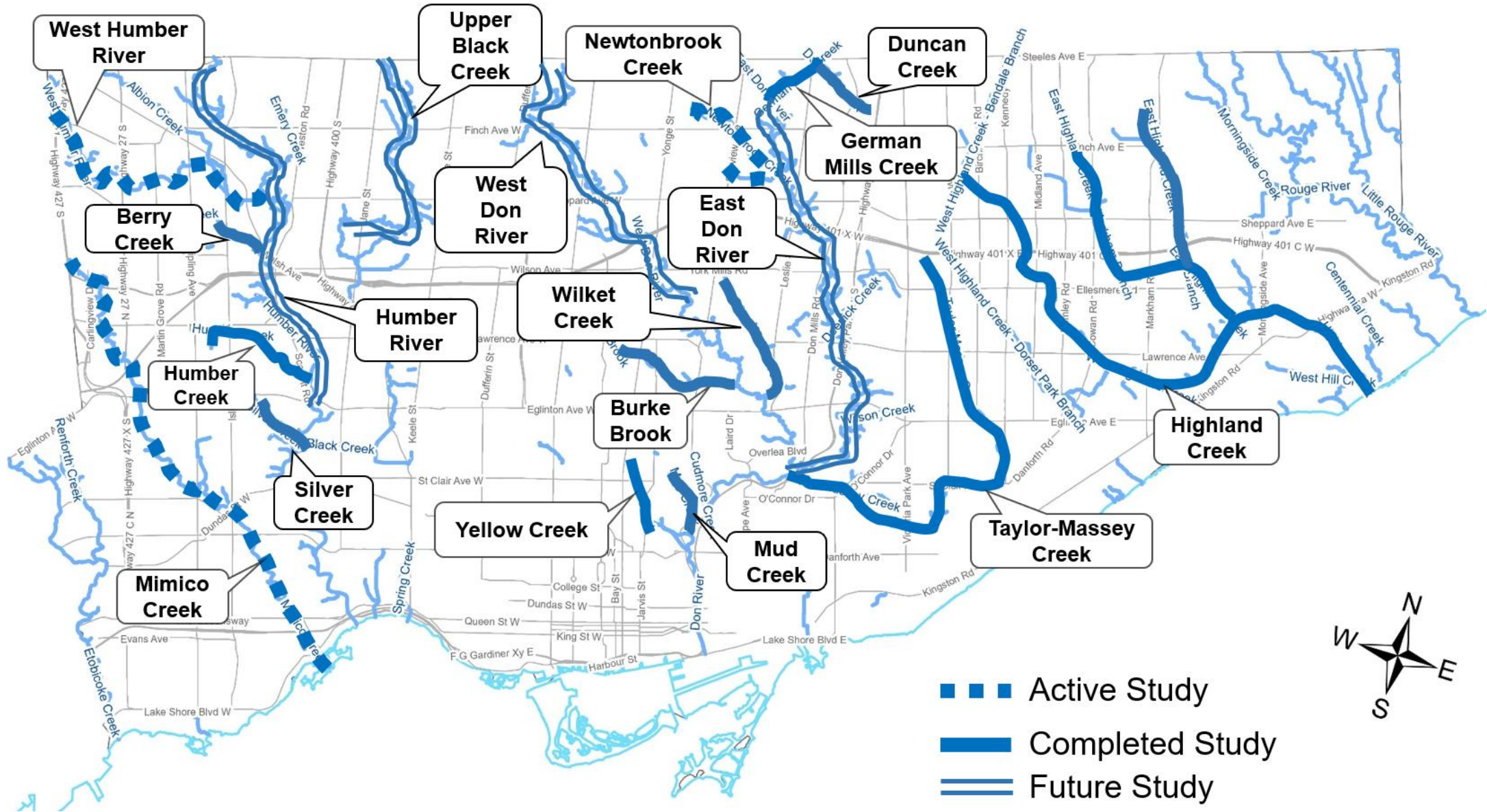


After

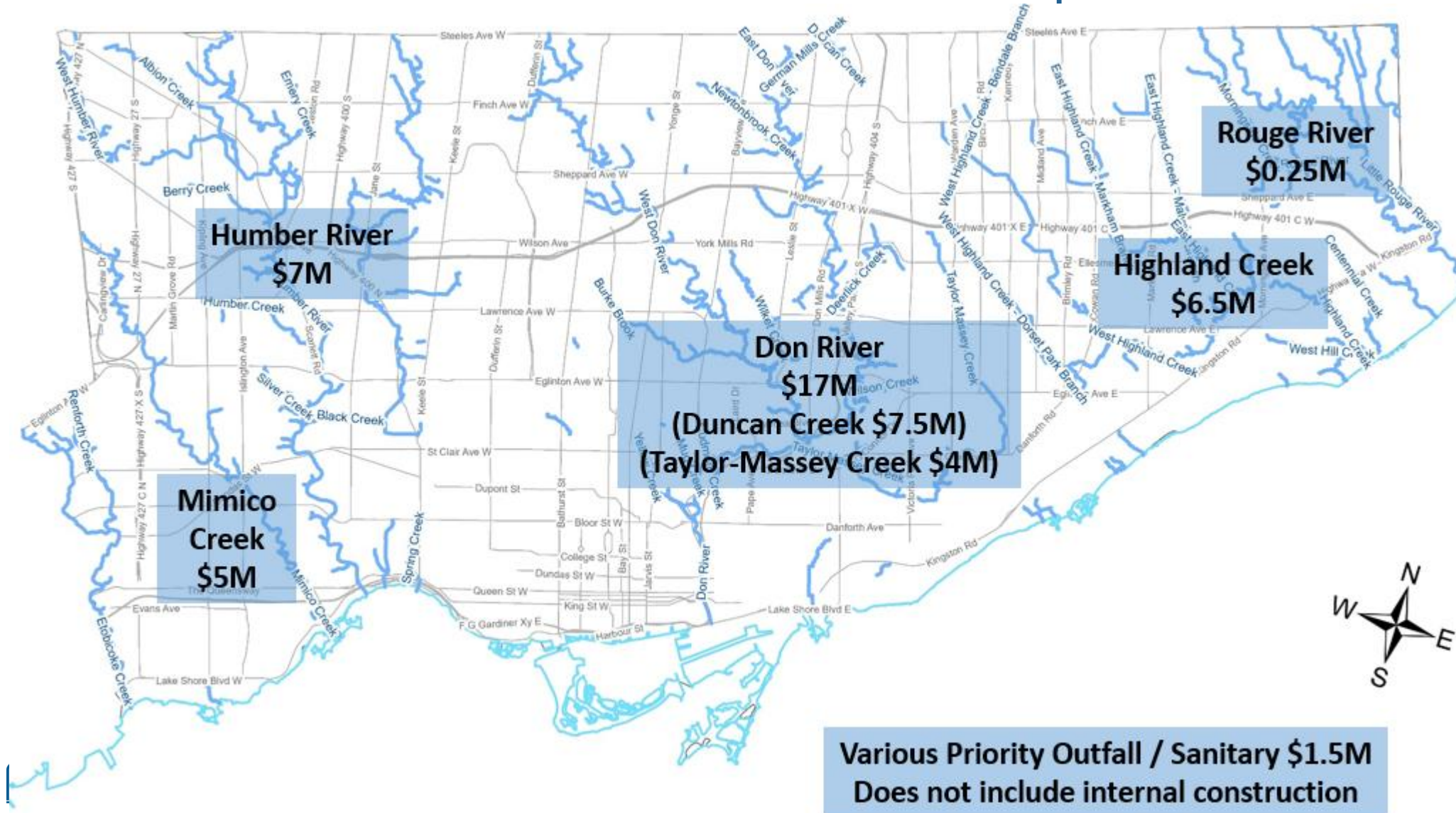


Watercourse Project Types

- Studies – Geomorphic Risk Assessments



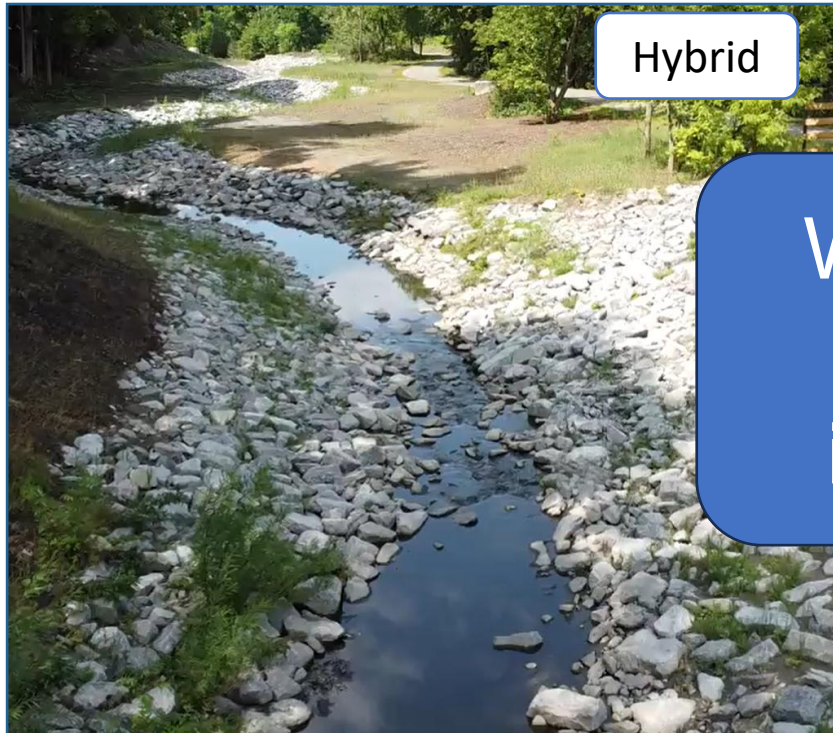
Watercourse Professional Services & Construction Costs 2014-2025: \$37M





Cost Trends and Drivers

City of Toronto stream restoration typically follows two approaches: hybrid or armoured



Hybrid

What about just removing the infrastructure?

More space available
Replicates natural channel form and function



Armoured

Limited space and confined valley
Stabilized channel, heavily protected channel

Why Infrastructure Removal isn't Feasible

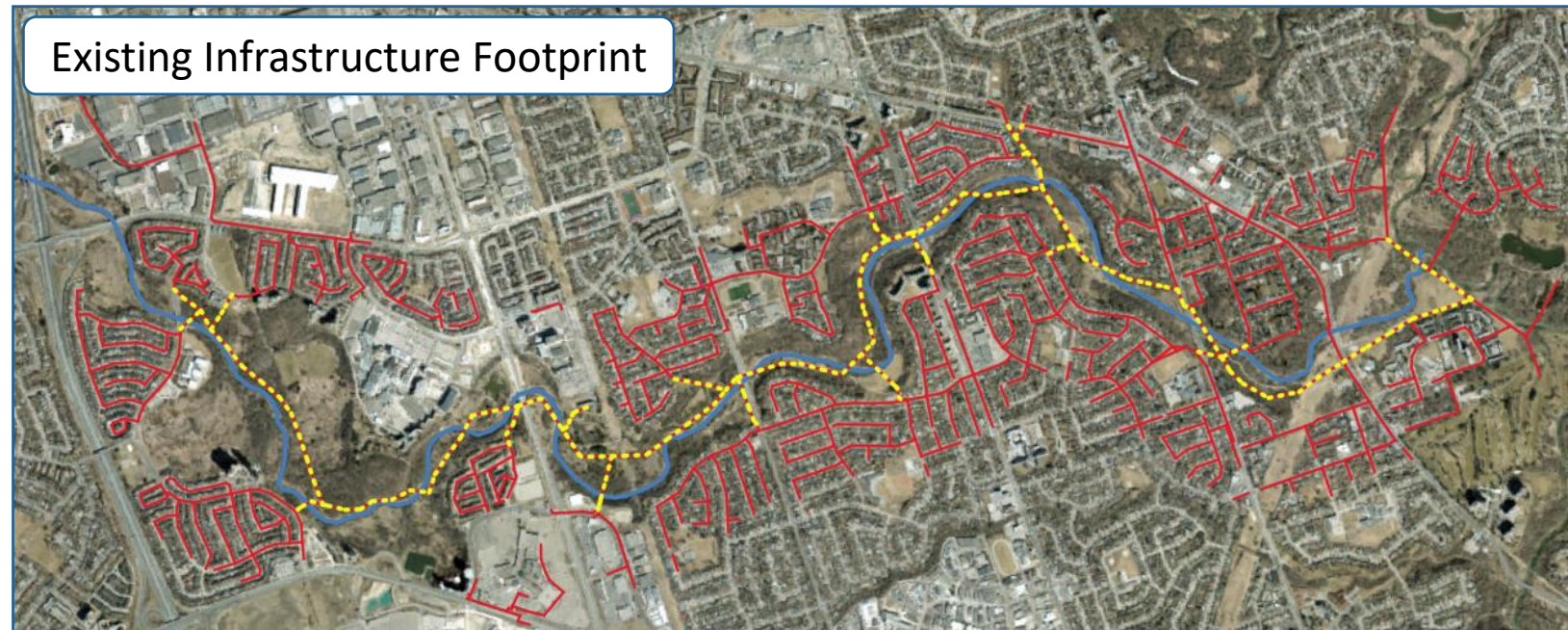
West Humber River case study (Ontario)

Why removal is difficult

- Gravity-based sewer system limits options
- Requires new trunk sewers on both sides
- Deep installation under residential areas
- Sewers still well within lifecycle

Compounding constraints

- Relocation of other buried infrastructure
- Significant property and stakeholder impacts
- High design, decommissioning, and restoration costs



West Humber River
~11.6 km of sanitary sewer removal
131 associated maintenance holes

Project Complexity and Length is Increasing

Regulatory & Permitting

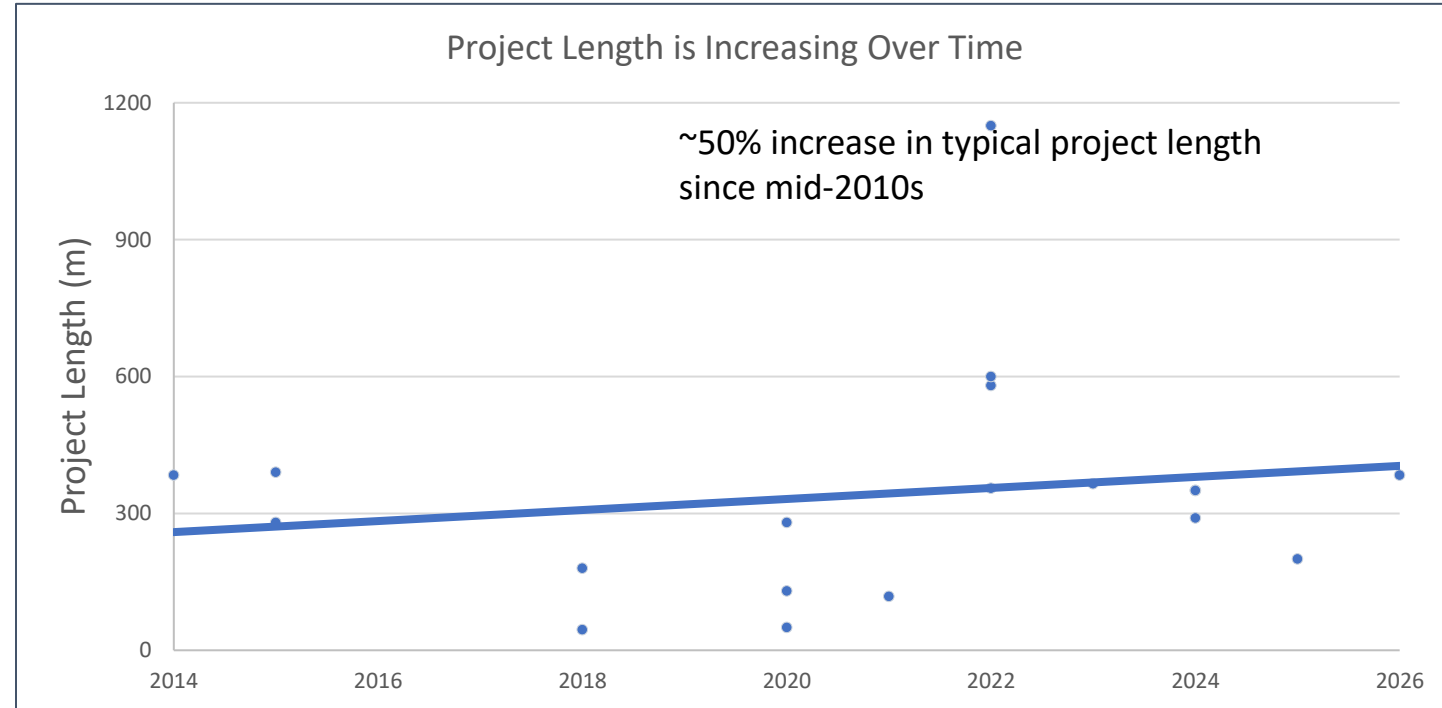
- Stricter environmental approvals and more frequent CLI ECA requirements
- Increased archaeological coordination

Property & Stakeholders

- More easements
- Greater stakeholder coordination

Design Scope

- Larger, multi-site projects integrating adjacent infrastructure

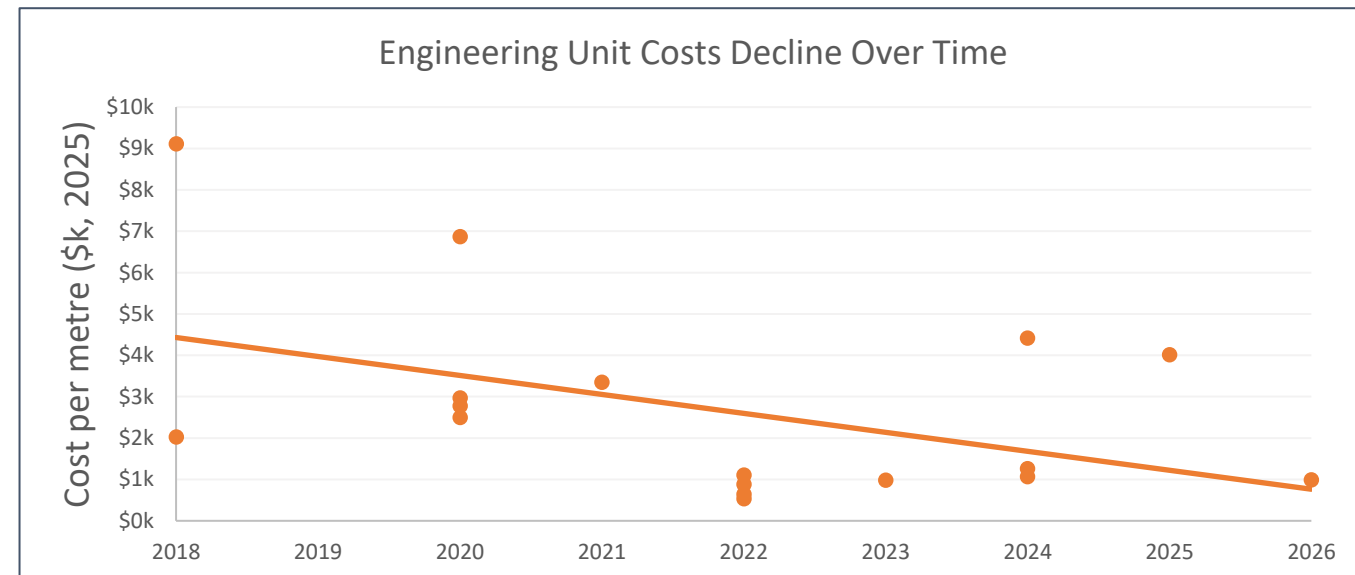
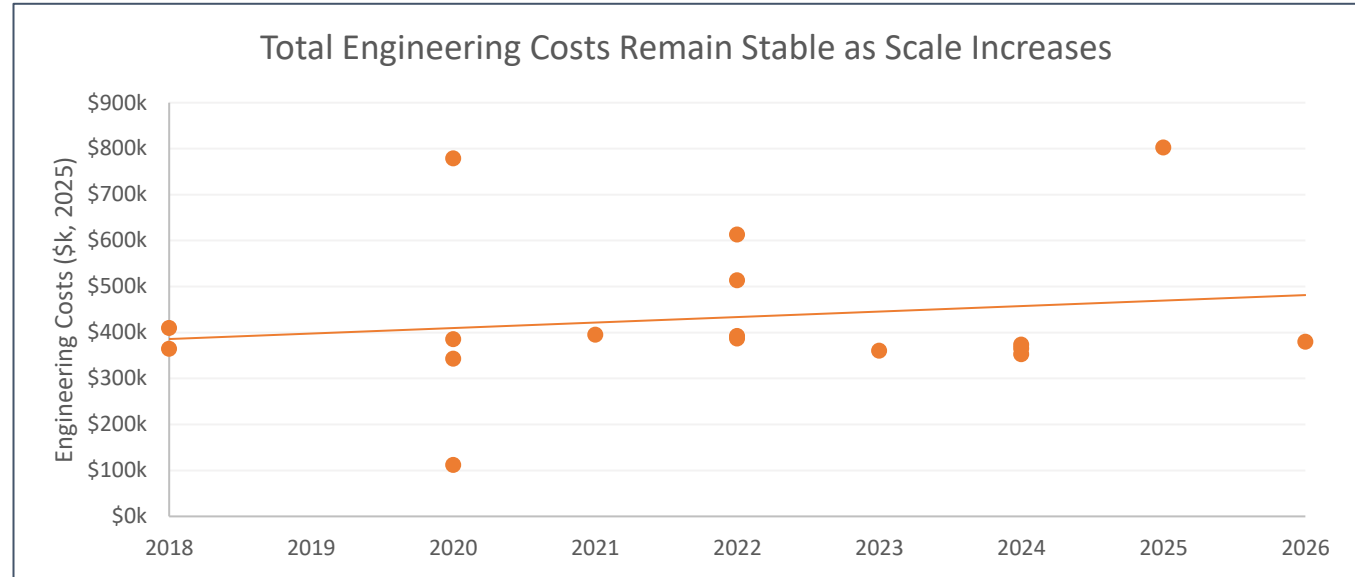


Projects are getting longer and more complex. Typical length up ~50% since the mid-2010s

Engineering costs are broadly stable, with declining unit costs due to bundling

- Total engineering costs stable over time despite growing project scale
- Cost per metre shows a declining trend
- Engineering costs don't grow proportionally with project size
- Larger projects deliver better per-metre value
- Shift to bundled, multi-site programs
- Economies of scale reduce duplication and overhead

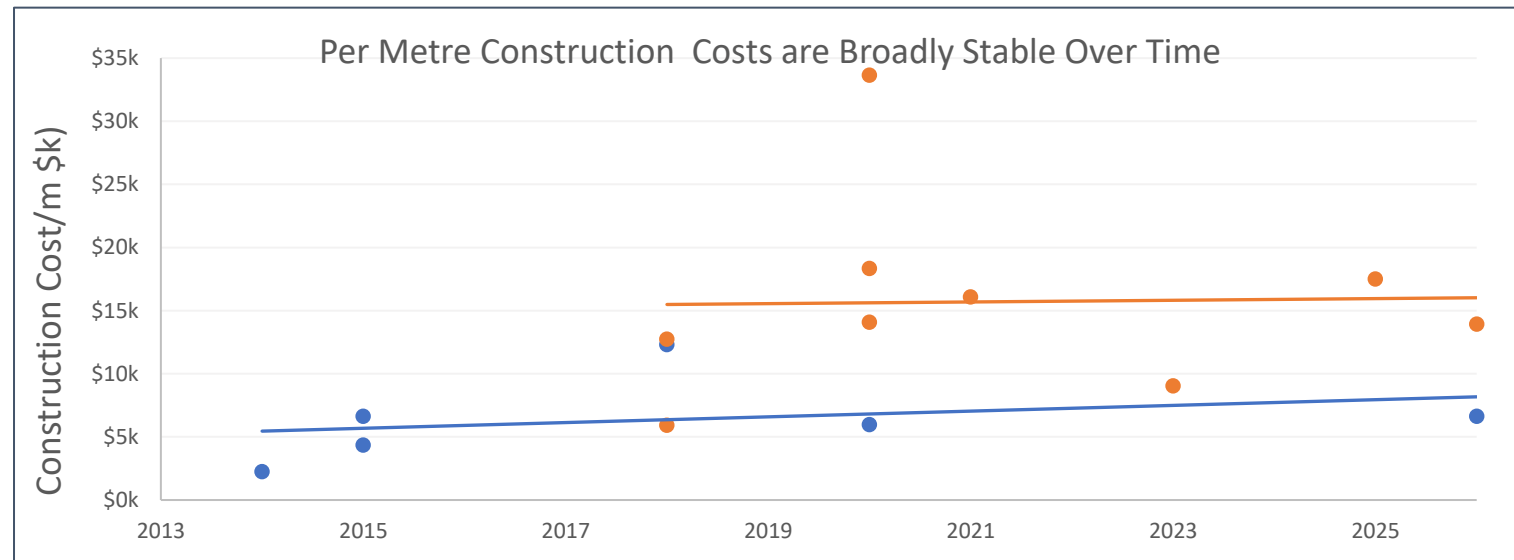
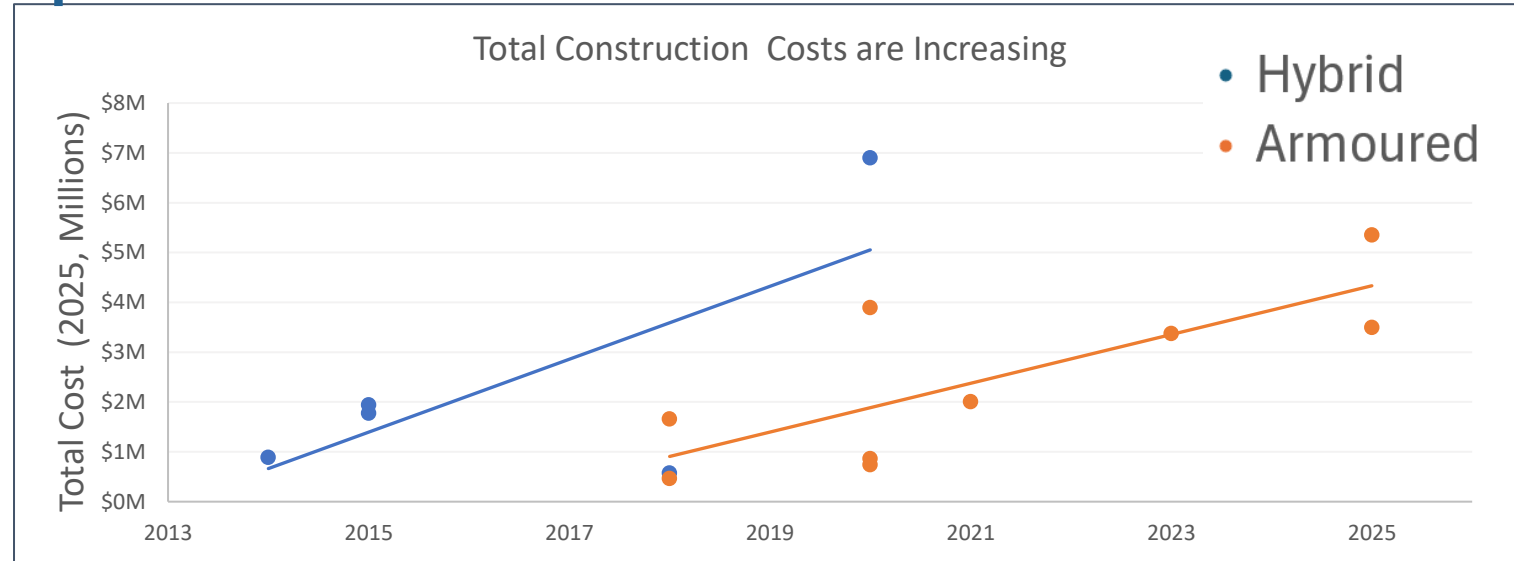
Bundling programs appears to support greater efficiency, with unit costs trending downward as project scale increases



Rising project costs are driven by increasing scale and complexity, not by proportional increases in unit costs

- Construction costs increasing ~13–15% annually
- When normalized to \$/m, the upward trend largely disappears
- Unit costs remain broadly stable

Urban restoration projects have evolved from strictly channel restoration to multi-infrastructure delivery within constrained corridors



Lessons Learned through Design and Construction

Permitting

- Start early — timelines often longer than planned

Upfront Investigation

- Invest in early studies to confirm conditions
- Reduces construction risk

Delivery Complexity

- Requires significant coordination
- Expect higher-than-planned complexity

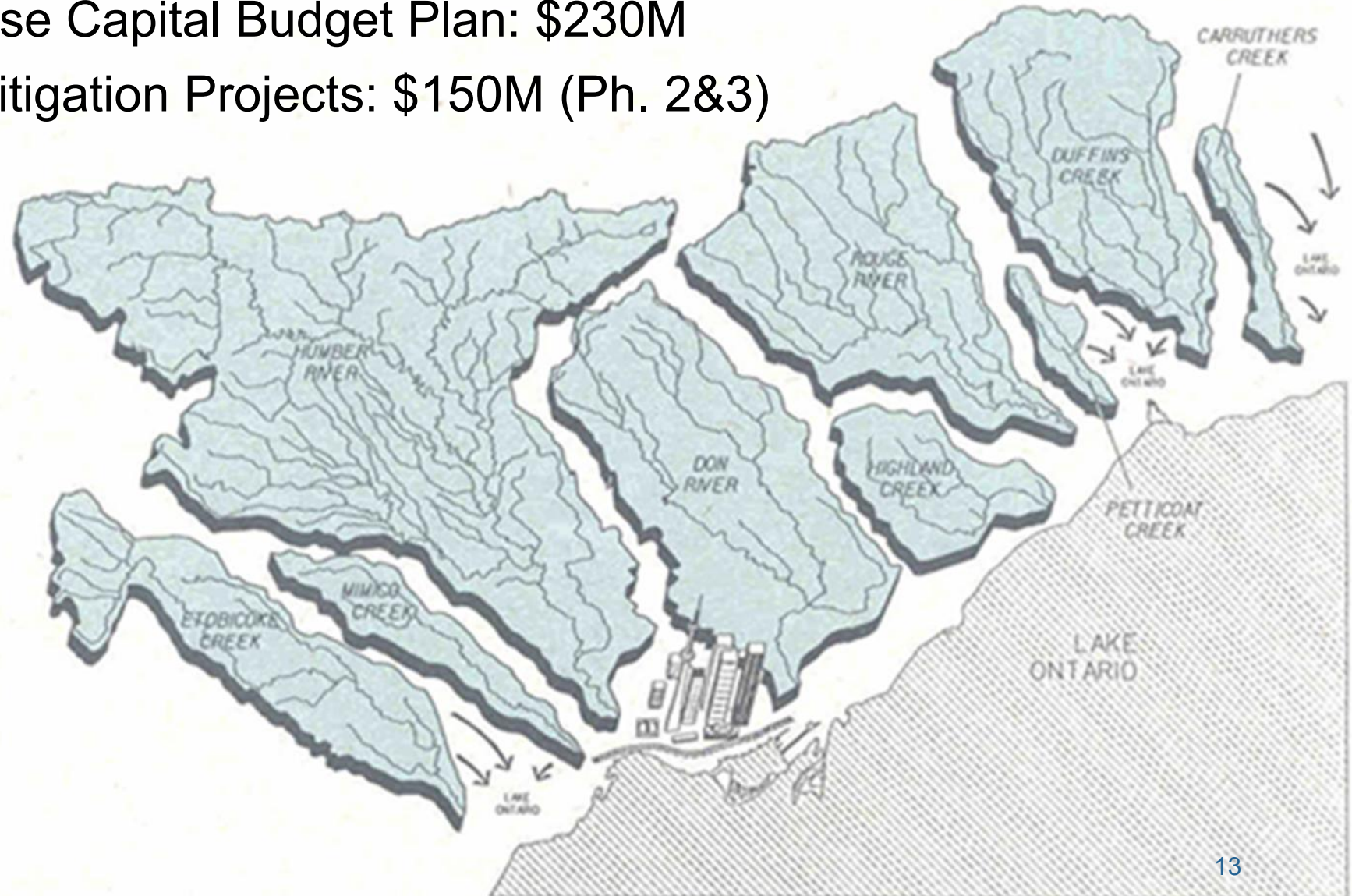
Early investigation and proactive planning are critical to avoid delays during construction



Unforeseen conditions required cleaning before work could proceed

Future Direction

- 10-year Watercourse Capital Budget Plan: \$230M
- Rockcliffe Flood Mitigation Projects: \$150M (Ph. 2&3)
- Studies
- Bundling
- Post-Construction
- Delivery





Thank You