

Presented To:	Operations Committee
Presented:	Monday, Dec 04, 2017
Report Date	Tuesday, Nov 21, 2017
Type:	Presentations

For Information Only

Status Report - 2017 Roads, Drainage, Water & Wastewater Capital Projects

Resolution

For Information Only

Relationship to the Strategic Plan / Health Impact Assessment

This report refers to the capital projects identified in the Strategic Plan under Sustainable Infrastructure.

Report Summary

This report provides the status of capital projects from 2016 carry-over and 2017, their current stage, the scope of work to be completed, and an anticipated completion date.

Financial Implications

This report has no financial implications as it provides an update on existing capital projects.

Signed By

Report Prepared By

Mark Frayne
Director of Engineering Services
Digitally Signed Nov 21, 17

Health Impact Review

Mark Frayne
Director of Engineering Services
Digitally Signed Nov 21, 17

Division Review

Mark Frayne
Director of Engineering Services
Digitally Signed Nov 21, 17

Financial Implications

Jim Lister
Manager of Financial Planning and
Budgeting
Digitally Signed Nov 21, 17

Recommended by the Department

Tony Cecutti
General Manager of Growth and
Infrastructure
Digitally Signed Nov 21, 17

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Nov 21, 17

Status Report – 2017 Roads, Drainage, Water & Wastewater Capital Projects

The purpose of this report is to describe the status of the Capital plan for the Roads and Transportation Services Division and the Water/Wastewater Services Division. This is an accountability report designed to provide information over a project's life cycle of all projects (i.e. Work-in-progress and new) approved by Council and undertaken by the Roads & Transportation Services Division and the Water/Wastewater Services Division. Council feedback about the report's form and content is welcome to ensure future versions fully address Council's information needs. This report represents a format that can be used to communicate project status throughout the organization in future years.

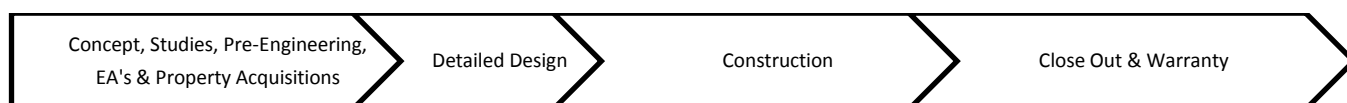
Principal Objectives of Capital Project Management

Currently different phases of capital projects are delivered in various departments and divisions. The nature of the project – i.e. road reconstruction, new splash pad, stormwater treatment facility upgrade, lift-station renewal – determines which department is responsible for completing it. This is effective because managers responsible for operating the asset when the project is finished are involved in the capital project's planning and construction.

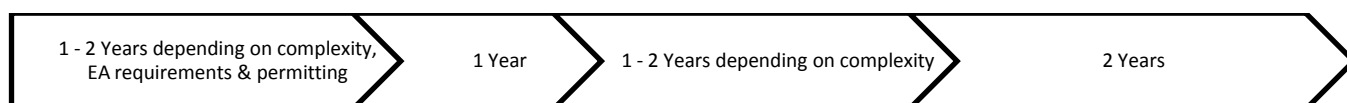
A challenge created by this model is the risk that capital projects are not managed with the same methodology across the organization; this could introduce different norms about the emphasis that should be placed on managing project initiation, timelines, project management, contractor oversight, budget and/or quality. The City of Greater Sudbury's experience in managing capital projects reflects these benefits and risks.

Typical Project Life Cycle

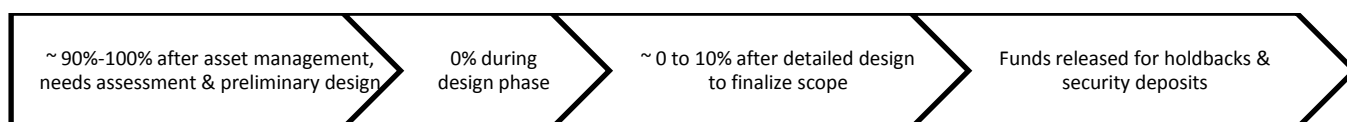
Key Project Phases



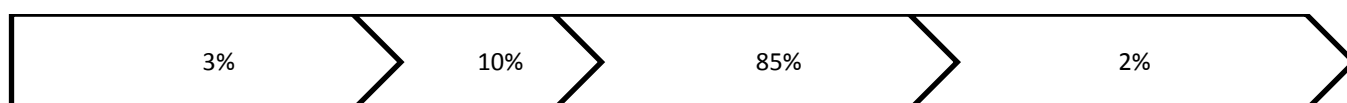
Typical Phase Duration



Current Project Funding Allocation



Typical Project Spend



The above chart demonstrates the typical key phases of a normal construction project that would require some level of planning, design and permitting or approvals. It also demonstrates that Council approval for funding is normally allocated at the onset of a multi-year project, while spending occurs sometime later.

It is important to note that the corporation's capital funding processes will change. As has been discussed throughout 2017 with Council in reports and presentations, the corporation is revising its capital planning and budgeting processes to incorporate a risk-based approach to project prioritization and selection. These changes will occur in 2018, in time for the 2019 capital budget. They will include adjustments to funding so that there is alignment with each project's anticipated spending plan.

Capital Projects Require Collaboration Throughout Life-cycle

The Engineering Services Division collaborates with Roads and Transportation Services Division and the Water/Wastewater Services Division to initiate, manage, and deliver capital projects. The capital projects entail design, planning, studies, upgrades, reconstruction, and rehabilitation of roads, bridges, culverts, watermains, sanitary sewers, storm sewers, active transportation, water facilities and wastewater facilities. As the Project Management model evolves Engineering Services will engage and collaborate with departments and divisions undertaking capital projects throughout the organization.

Consultants Support Project Delivery in Specific Circumstances

The planning, design, and construction phases of complex capital projects (i.e. Maley Drive, plants, etc.) and operational capital projects (i.e. watermain lining) are managed using operational resources and external resources with support from Engineering Services.

Consultants are engaged for engineering, contract administration, and quality assurance activities on capital projects that require specific engineering disciplines and expertise (i.e. hydrogeology, geotechnical, structural, SCADA, electrical, etc.) or when there are insufficient internal resources.

Capital Projects Are Managed Using a Standard Method to Minimize Cost and Maximize Control Over Project Results

Growth and Infrastructure's objective is to initiate conceptual design and planning at least two years prior to a project proceeding to construction. Upon preliminary definition of the scope, schedule, and cost of a project, detailed design and tendering phase will be initiated one year prior to a project construction proceeding. This strategy allows for consultation with stakeholders and better definition of the scope, cost, and schedule for a project. The plan is to establish contracts during the winter season to organize construction activities to take maximum advantage of the short construction season.

To optimize this strategy, Engineering Services has adopted a comprehensive approach to Project Management and continues to improve and adjust this approach. A Project Team is assigned to ensure that the objectives are met with a focus on control of budget, schedule, scope, and quality. The Project Manager provides comprehensive project

progress to all stakeholders, business owners, and City management to ensure customer satisfaction.

The above strategy will help ensure that the City continues to safely receive value for money, a quality product, and customer satisfaction.

Summary

In 2017, the Growth and Infrastructure Department worked on a total of 609 capital projects: 7 active transportation; 39 bridges & culverts; 96 roads; 44 stormwater; 115 water-facilities; 107 water-linear; 104 wastewater-facilities and 97 wastewater-linear. A total of 449 capital projects were classified as work-in-progress at the start of 2017 and 160 new capital projects were added to the portfolio in 2017. It is anticipated that 196 capital projects will be completed by the end of 2017 and 413 capital projects will be work-in-progress entering 2018 which is 36 fewer capital projects in progress than at the start of 2017. This is the first year since 2010 that the number of work-in-progress capital projects has declined. Going forward it is the goal and expectation that the number of capital projects carried forward from prior years will continue to decline.

The forecasted total expenditures capital projects for 2017 for Roads and Transportation Services Division and Water/Wastewater Services Division is \$115.4 M.

2017 Capital Project Expenditure by Program

For Roads & Transportation Services Division and Water/Wastewater Services Division

Category	Remaining Project Funding for Work in Progress at End of 2016	New Project Funding Approved in 2017 Capital Budget	Total Projected 2017 Spend	Remaining Project Funding at End of 2017 for Work In Progress
ACTIVE TRANSPORT	\$2.5 M	\$5.4 M	\$3.0 M	\$4.8 M
BRIDGES & CULVERTS	\$8.7 M	\$13.7 M	\$17.9 M	\$4.4 M
ROADS - MALEY DRIVE	\$75.2 M	\$0.0 M	\$16.3 M	\$59.2 M
ROADS - DESIGN, PLANNING, STUDIES & PROJECT MANAGEMENT	\$4.5 M	\$3.4 M	\$2.0 M	\$6.2 M
ROADS - UPGRADES, RECONSTRUCTION & REHABILITATION	\$29.7 M	\$30.6 M	\$35.6 M	\$24.0 M
STORM WATER - UPGRADES & RECONSTRUCTION	\$18.0 M	\$4.4 M	\$3.8 M	\$18.2 M
STORM WATER - DESIGN, PLANNING, STUDIES & PROJECT MANAGEMENT	\$2.6 M	\$0.5 M	\$2.3 M	\$0.9 M
WATER FACILITY - UPGRADES & REPAIRS	\$3.3 M	\$2.9 M	\$1.4 M	\$4.9 M
WATER FACILITY - COMPLIANCE, PLANNING, STUDIES & PROJECT MANAGEMENT	\$7.8 M	\$7.9 M	\$2.3 M	\$13.4 M
WATER LINEAR - UPGRADE, REPLACEMENT & REHABILITATION	\$12.2 M	\$16.5 M	\$17.9 M	\$9.1 M
WATER LINEAR - DESIGN, PLANNING, STUDIES & PROJECT MANAGEMENT	\$0.6 M	\$3.5 M	\$0.8 M	\$3.4 M
WASTEWATER FACILITY - UPGRADES & REPAIRS	\$15.3 M	\$12.3 M	\$2.0 M	\$25.5 M
WASTEWATER FACILITY - COMPLIANCE, PLANNING, STUDIES & PROJECT MANAGEMENT	\$5.0 M	\$6.4 M	\$2.6 M	\$8.9 M
WASTEWATER LINEAR - UPGRADE, REPLACEMENT & REHABILITATION	\$5.2 M	\$19.9 M	\$6.8 M	\$17.2 M
WASTEWATER LINEAR - DESIGN, PLANNING, STUDIES & PROJECT MANAGEMENT	\$5.0 M	\$7.1 M	\$0.8 M	\$11.4 M
TOTAL	\$195.8 M	\$134.8 M	\$115.4 M	\$211.6 M

Status of Capital Projects – Start of 2017

For Roads & Transportation Services Division and Water/Wastewater Services Division

Status Start of 2017	Remaining Project Funding for Work in Progress at End of 2016	New Project Funding Approved in 2017 Capital Budget	Total Projected 2017 Spend	Remaining Project Funding at End of 2017 for Work In Progress
Work in progress	\$191.5 M	\$56.2 M	\$72.9 M	\$172.9 M
New	\$4.3 M	\$78.5 M	\$42.5 M	\$38.7 M
TOTAL	\$195.8 M	\$134.8 M	\$115.4 M	\$211.6 M

Forecast Status of Capital Projects – End of 2017

For Roads & Transportation Services Division and Water/Wastewater Services Division

Status End of 2017	Remaining Project Funding for Work in Progress at End of 2016	New Project Funding Approved in 2017 Capital Budget	Total Projected 2017 Spend	Remaining Project Funding at End of 2017 for Work In Progress
Work in progress	\$172.7 M	\$109.2 M	\$70.3 M	\$211.6 M
Complete	\$23.1 M	\$25.1 M	\$45.0 M	\$0.0 M
TOTAL	\$195.8 M	\$134.3 M	\$115.4 M	\$211.6 M

2017 Capital Projects Expenditure by Ward

For Roads & Transportation Services Division and Water/Wastewater Services Division

Ward	Remaining Project Funding for Work in Progress at End of 2016	New Project Funding Approved in 2017 Capital Budget	Total Projected 2017 Spend	Remaining Project Funding at End of 2017 for Work In Progress
1	\$13.1 M	\$15.6 M	\$17.2 M	\$11.4 M
2	\$18.3 M	\$16.4 M	\$13.6 M	\$20.7 M
3	\$0.6 M	\$1.2 M	\$1.3 M	\$0.4 M
4	\$7.4 M	\$2.7 M	\$2.2 M	\$7.4 M
5	\$80.8 M	\$9.1 M	\$25.1 M	\$65.1 M
6	\$0.2 M	\$1.5 M	\$0.6 M	\$0.9 M
7	\$3.5 M	\$6.5 M	\$6.9 M	\$1.9 M
8	\$0.4 M	\$2.4 M	\$1.9 M	\$0.3 M
9	\$3.2 M	\$8.4 M	\$8.0 M	\$2.6 M
10	\$4.6 M	\$3.4 M	\$3.1 M	\$5.1 M
11	\$12.6 M	\$7.2 M	\$10.2 M	\$9.1 M
12	\$5.9 M	\$4.4 M	\$4.8 M	\$5.4 M
ALL	\$45.4 M	\$55.9 M	\$20.5 M	\$81.3 M
TOTAL	\$195.8 M	\$134.8 M	\$115.4 M	\$211.6 M

The % of 2017 spend is higher in Wards 1, 2, 5 and 11 as a result of the following priority projects:

- Ward 1 – Spruce Street Reconstruction (CWWF) ~ \$4.8M
- Ward 2 – Bridge & Culvert Reconstruction ~ \$6.3M
- Ward 5 – Maley Drive Extension & Widening ~ \$16.3M
- Ward 11 – First Avenue, Coniston (CWWF) ~ \$3.4M

Summary of Selected 2017 Construction Projects

There were 98 capital projects approved for execution in 2017 and 243 projects carried over from 2016 for a total of 341 projects.

Smaller projects were combined into a single contract for project management purposes. Performance statistics are as follows:

- 35 Contracts tendered.
- 24 Contracts will be completed.
- 11 Contracts will be finished in 2018.

It is anticipated that 143 projects will be completed by 2017 with 198 projects being carried over to 2018.

The following is a summary of a select number of projects worked on in 2017.

Phase One - Maley Drive - Extension & Widening

Project cost - \$81 million.

Delivery status – on time.

Financing status – on budget.

Phase 1 involves 4 contracts:

- Contract 1 – Clearing and Grubbed completed in 2016.
- Contract 2 - Interchange at Notre Dame (MR 80) is currently being worked on and is anticipated to be completed by end of this year.
- Contract 3 - Connecting Maley Drive from College Boreal to Barry Downe Road.
- Contract 4 - Rehabilitation of Existing Maley Drive from Barry Downe Road to Falconbridge Highway.

Contract 3 entails extending Maley Drive from Barry Downe Road to LaSalle Boulevard near College Boreal. The tender for the Contract was issued in November 2017.

Construction will begin in 2018 and will be completed in 2019. The final contract for Phase 1 will be out to tender Spring 2018 with construction scheduled for completion in 2019.

Second Avenue, Scarlett to First – Road, Watermain & Drainage Upgrades

Value - \$8 million.

Delivery status – construction commenced in 2017 after all permitting received.

Financing status – on budget.

This project involved the replacement of critical below-grade infrastructure, including storm sewers and watermain as well as road widening with new driving lanes and cycle tracks on both sides of the road. This project was originally budgeted for 2014 but was only completed in 2017 after receiving MOECC permits late in 2016. Carry-over into 2018 involves final surface asphalt and restoration.

Lorne Street (MR55) and Gutcher Avenue - Road and Watermain Upgrades

Value - \$8.5 million.

Delivery status – on time other than CPR crossing at Martindale.

Financing status – on budget.

This project involves the replacement of critical below-grade infrastructure, including storm sewers and watermain as well as new curb and sidewalk on the north side of Lorne and paved shoulder on the south side of Lorne. Construction began in 2016 and substantial completion was achieved in 2017.

Carry-over into 2018 involves the following:

- Martindale Road CP traffic signal to be relocated in February and March of 2018 so intersection can be completed in 2018.
- 400mm diameter Watermain casing from Lorne Street to Ontario Street may be completed this year pending CP approval; otherwise it will be completed in 2018.
- Sections of final surface asphalt and restoration.
- Landscaping for area improvements.

First Avenue, Coniston (CWWF) – Watermain and Road Upgrades

Value - \$3.2 million.

Delivery status – on time.

Financing status – on budget.

Detailed engineering for this CWWF funded project was completed over the winter and replacement of the existing watermain and road reconstruction reached substantial completion. Final restoration and surface asphalt will be completed in 2018.

Spruce Avenue (CWWF) – Watermain Upgrade

Value - \$5.5 million.

Delivery status – on time.

Financing status – on budget.

Detailed engineering for this CWWF funded project was completed over the winter and replacement of the existing watermain and road reconstruction reached substantial completion. Final restoration and surface asphalt will be completed in 2018.

Kelly Lake Road - Bridge

Value - \$2.8 million.

Delivery status – on time.

Financing status – on budget.

This project was accelerated from 2018 due to condition of the existing culvert. The project required installation of a temporary one lane bailey bridge, and temporary

relocation of a large natural gas trunk supply line, to allow the replacement of the large culvert. The culvert material was changed from metal to concrete. The project will achieve substantial completion in 2017 in preparation for installation of a forcemain from Copper Cliff to the Sudbury Wastewater Treatment Plant and reconstruction of Kelly Lake Road in 2018. Cycling infrastructure will also be completed in 2018

Kingsway Sidewalk (PTIF)

Value - \$2.0 million.

Delivery status – on time.

Financing status – on budget.

Civil work (i.e. pipes, sidewalks, paving, curbs) will be completed by end of construction season. Restoration work will take place next spring.

Elgin Street Pedestrian Tunnel

Value - \$0.5 million.

Delivery status – construction start deferred to Fall 2017 to minimize impact to pedestrian activity.

Financing status – on budget.

Work has commenced and planned activity will see 30% to 50% of scope completed by end of 2017 with remainder to be completed in 2018.

Brady-Durham Stairs

Value - \$1.3 million.

Delivery status – construction commenced.

Financing status – on budget.

Work has begun and will focus on demolition of the one building and reinforcement of the retaining wall and transformer vault walls in 2017. Remaining work will be completed in 2018.

Rehabilitation on MR 15, MR 84, and MR 55

Value - \$5.8 million.

Delivery status – on time.

Financing status – on budget.

This project involves road re-surfacing in various areas. All of the resurfacing will be completed by the end of 2017 construction season.

Capreol Lakeshore Improvements

Value - \$1.8 million.

Delivery status – late start but will be completed on time.

Financing status – on budget.

The project is progressing. It is anticipated that all civil work will be completed by end of construction season with landscaping being completed in time for the June 30, 2018 Capreol's Centennial celebration.

Active Transportation Improvements Various Locations

Value - \$1.5 million.

Delivery status – on time.

Financing status – on budget.

- The Paris Street Cycle Track is substantially complete (PTIF).
- College Street work has been deferred to 2018.
- Auger Avenue sidewalk installation has been deferred to 2018 pending CN approval.

CWWF Projects

Value - \$14.0 million.

Delivery status – on time.

Financing status – on budget.

All CWWF Projects will be completed by the end of construction season other than final surface paving and restoration work which will be completed in the spring of 2018.

Summary of work includes:

- 13 culvert replacements.
- Spruce Street watermain upgrade and road reconstruction (see above).
- First Avenue (Coniston) watermain upgrade and road reconstruction (see above).
- New Bell Park Stormwater Treatment facility.

MR 35 – Notre Dame to Highway 144 – Four-Laning

Delivery status – pre-engineering in progress.

Financing status – on budget.

This project involves detailed design and construction of a four-lane widening and road rehabilitation including replacement of existing watermain between Chelmsford and Azilda. The tender for construction is scheduled to commence in 2018.

Lorne Street – Elm Street to Power Street Road Rehabilitation

Delivery status – pre-engineering in progress.

Financing status – on budget.

This project involves rehabilitation of the road and replacement of existing watermain and sewer infrastructure as necessary along the length of Lorne Street from Elm Street to Power Street with the exception of the portion between Martindale Road and Logan Street which was reconstructed in 2017. Detailed engineering is scheduled to be completed and the project shovel ready in 2018 in anticipation of funding availability for possible construction in 2019.