

CAPITAL FUND – 2022 Capital Projects

Capital Projects	2020	2020	2021	2021	2022	2023	2024	Note
	Actuals (\$000's)	Carryforward (\$000's)	Budget (\$000's)	Forecast (\$000's)	Budget (\$000's)	Budget (\$000's)	Budget (\$000's)	
50 St Revitalization/DT Multi-Purpose Building Study	-	75	-	-	-	-	-	
Accessibility Audit/Implementation	197	875	581	1,456	567	595	550	
Aquatic Centre	418	6,110	-	1,750	20,757	43,057	3,588	
Arbour Development Study	-	-	50	-	-	-	-	
Art & Culture Master Plan	-	-	75	50	-	-	-	
Asset Management	25	383	-	383	300	340	430	
Backup Power Liftstation Generator Installation	187	336	-	230	-	-	-	
Baling Facility- Mechanical Upgrades	35	8	-	8	-	-	-	
Ban Commercial Cardboard	-	25	-	-	-	-	-	
Bristol Freighter Repainting	100	-	-	-	-	-	-	
Budget Management	-	25	-	25	-	-	-	
CEP Community Outreach	-	32	-	20	-	-	-	
CEP Interior LED Lighting	14	340	-	250	-	-	-	
CEP Waste Strategic Plan	-	50	-	25	-	-	-	
City Hall Upgrades	471	254	-	254	-	-	-	
Class Replacement	13	-	-	-	-	-	-	
CMP/W&S Federal Funded	73	-	-	-	-	-	-	
CMP/W&S Federal Funded - PAVING	11	-	-	-	-	-	-	
Columbarium Park	2	98	150	105	-	-	-	
Community Energy Plan Projects	35	117	-	87	2,640	145	150	
Community Services - Engle 11 Park	14	-	-	-	-	-	-	
Community Services -Hordal & Bagon Green Space	1	-	-	-	-	-	-	
Community Services Land Fund Capital Projects	-	1,900	-	-	-	-	-	
Curling Club Upgrades	19	-	-	-	150	-	-	
Design and Construction Standards	53	16	-	52	-	-	-	
Development & Building Permit Automation	-	-	125	125	-	-	-	
Dispatch Console	169	-	-	-	-	-	-	
Dock Replacement	-	-	-	-	-	-	50	
Electronic Tendering	7	-	-	-	-	-	-	
Email Management	86	4	-	45	-	-	-	
Emergency Radio Infrastructure Renewal	-	-	90	90	-	-	-	
FDM Software	85	27	-	27	-	-	-	
Fire Hall Emergency Response Equipment	-	-	69	69	-	-	-	
Fire Hall Equipment	-	-	-	-	175	111	58	
Fire Hall Expansion/ Renovation	-	-	251	66	295	3,265	-	
Fire Hall Improvement/Study	48	-	-	-	-	-	-	
Fleet Management	1,450	980	1,353	2,333	1,278	1,134	1,735	
Folk on the Rocks Rehabilitation	94	-	-	31	-	-	-	
General Plan Review	1	-	-	-	-	-	-	

CAPITAL FUND – 2022 Capital Projects

Capital Projects	2020 Actuals (\$000's)	2020 Carryforward (\$000's)	2021 Budget (\$000's)	2021 Forecast (\$000's)	2022 Budget (\$000's)	2023 Budget (\$000's)	2024 Budget (\$000's)	Note
Giant Mine Water Shut Off	105	-	-	-	-	-	-	
Heavy Equipment (Class 5)	3	-	-	-	-	-	-	
High Water Level Study	-	-	-	-	-	50	250	
Implementation of 50/50 Recommendations	-	25	-	-	-	-	-	
Information Technology Infrastructure Renewal	260	-	337	337	310	430	390	
Intersections Widening & New Traffic Lights	18	12	-	12	-	-	-	
Lagoon Control Structure Replacement	42	239	550	10	125	-	-	
Lagoon Sludge Removal	43	425	1,800	75	950	2,800	2,800	
Land Fund Capital Projects	-	-	210	-	3,350	935	2,300	
Land Surveying (Commissioners)	-	-	-	-	600	65	100	
Landfill Fire Control & Risk Reduction Plan	-	25	-	-	-	-	-	
Large Vehicle Hoist	10	-	-	-	-	-	-	
Library Upgrades	120	-	-	-	-	-	-	
McMeekan Causeway Abutment Stabilization	271	154	-	6	-	-	-	
Monitoring Well Installation	-	75	-	75	-	-	-	
Multiplex Ice Plant Maintenance/Upgrade	555	40	170	250	-	-	-	
Network Infrastructure	19	-	-	-	-	-	-	
New Landfill/ Landfill Expansion	10	35	350	385	-	4,500	-	
Niven Lake Trail Upgrade	-	-	-	-	-	350	350	
Park Development	128	9	-	9	-	-	-	
Park Equipment Replacement	-	-	115	115	135	250	170	
Paving & Foundation Repairs	5	-	-	-	-	-	-	
Paving Program	3,065	-	2,500	2,500	4,075	4,285	3,838	
PH#4 Water Truckfill Safety Project	7	-	350	333	150	-	-	
Phone System	160	30	-	30	-	-	-	
Potable Water Reservoir Repairs	-	871	-	-	-	-	-	
Public Transit Review	57	-	-	9	-	-	-	
Pump Replacement Program	145	34	-	34	-	-	-	
Pumphouse & Liftstation Upgrades	40	10	-	10	-	-	-	
RIMP Building Structural Assessment	-	-	-	-	75	-	-	
Rotary Range Lake Trail	-	-	-	-	210	-	-	
SCADA Upgrades (Federal)	145	-	-	-	-	-	-	
Secondary Site & Data Replication	10	-	-	-	-	-	-	
Self-Contained Breathing Apparatus	243	100	-	100	-	-	-	
Sewage Force Main Repairs and Retention	361	107	150	257	750	-	-	
Site Restoration/Landfill Closure	-	145	-	145	-	-	75	
Solid Waste Facility Upgrades	56	186	-	186	-	-	-	



CAPITAL FUND – 2022 Capital Projects

Capital Projects	2020 Actuals (\$000's)	2020 Carryforward (\$000's)	2021 Budget (\$000's)	2021 Forecast (\$000's)	2022 Budget (\$000's)	2023 Budget (\$000's)	2024 Budget (\$000's)	Note
Submarine Water Supply Line Replacement	39	951	1,000	150	1,000	1,000	9,000	
Sustainability Coordinator	119	-	120	120	-	-	-	
SWMP Implementation	5	90	-	50	-	-	-	
Tommy Forrest Ball Park Upgrades	60	-	-	15	-	-	-	
Traffic Light Upgrades	84	33	70	103	70	70	70	
Transfer Station & Cell Access Improvement	30	99	-	99	-	-	-	
Water & Sewer Infrastructure Replacement	2,506	-	4,750	4,000	4,225	4,050	2,800	
Water & Sewer Piped Services Expansion Study	10	-	-	-	-	-	-	
Water & Sewer Replacement - PAVING	615	615	-	615	-	-	-	
Water Treatment Plant Pellet Boiler	-	361	-	361	-	-	-	
Webcasting	-	185	-	185	-	-	-	
Weigh Out Station At SWF	43	153	-	100	-	-	-	
Wildland Fire Mitigation Emergency Measures	1	86	-	86	-	-	-	
Wireless Infrastructure	-	-	75	75	-	-	-	
YKCA Upgrade - Contracted Costs	-	-	210	250	-	-	-	
YKCA Upgrades	5	-	-	-	-	-	-	
Total Capital Tree	13,003	16,750	15,501	18,568	42,187	67,432	28,704	

CAPITAL FUND – 2022 Capital Projects

Capital Projects	2022 Budget (\$000's)	Formula Funding (\$000's)	Canada Community-Building Fund (\$000's)	Other Grants (\$000's)	Community Public Infrastructure (\$000's)	IT Reserve (\$000's)	Mobile Equipment Replacement Reserve (\$000's)	User Fees (\$000's)	Land Fund (\$000's)	Debt Financing (\$000's)
Accessibility Implementation	567	(567)	-	-	-	-	-	-	-	-
Aquatic Centre	20,757	(231)	-	(10,525)	-	-	-	-	-	(10,001)
Asset Management	300	(300)	-	-	-	-	-	-	-	-
Community Energy Plan Projects	2,640	(140)	(2,500)	-	-	-	-	-	-	-
Curling Club Upgrades	150	-	-	-	(150)	-	-	-	-	-
Fire Hall Equipment	175	(112)	-	-	(63)	-	-	-	-	-
Fire Hall Renovation and Expansion	295	(295)	-	-	-	-	-	-	-	-
Fleet Management	1,278	-	-	-	-	-	(1,278)	-	-	-
Information Technology Infrastructure Renewal	310	-	-	-	-	(310)	-	-	-	-
Lagoon Control Structure Replacement	125	-	-	-	-	-	-	(125)	-	-
Lagoon Sludge Removal	950	-	-	(713)	-	-	-	(237)	-	-
Land Fund Capital Projects	3,350	-	-	-	-	-	-	-	(3,350)	-
Land Surveying (Commissioners)	600	(600)	-	-	-	-	-	-	-	-
Park Equipment Replacement	135	-	-	(80)	(55)	-	-	-	-	-
Paving Program	4,075	-	-	(2,813)	(1,215)	-	-	-	(47)	-
PH#4 Water Truckfill Safety Project	150	-	-	-	-	-	-	(150)	-	-
RIMP Building Structural Assessment	75	(75)	-	-	-	-	-	-	-	-
Rotary Range Lake Trail	210	-	-	-	(210)	-	-	-	-	-
Sewage Force Main Repairs and Retention	750	-	-	-	-	-	-	(750)	-	-
Submarine Water Supply Line Replacement	1,000	-	-	(750)	(250)	-	-	-	-	-
Traffic Light Upgrades	70	-	-	-	(70)	-	-	-	-	-
Water & Sewer Infrastructure Replacement	4,225	-	(3,640)	(439)	(146)	-	-	-	-	-
Total Capital Projects	42,187	(2,320)	(6,140)	(15,320)	(2,159)	(310)	(1,278)	(1,262)	(3,397)	(10,001)



CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project 50036570 Accessibility Implementation

Division Parks & Trails

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	567,000	595,000	550,000
Funding			
Formula Funding	567,000	595,000	550,000
Total Funding	567,000	595,000	550,000

Purpose	Description
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The Accessibility Audit of the City's Facilities, Trails, Parks and Playgrounds identified key areas where barrier removal is required. A prioritized implementation strategy was developed, and approved by Council, to ensure the City moves towards full accessibility in these key areas. These funds will be used to continue to implement accessibility improvements.

Background

Council provided funding in the 2017 Budget for an Accessibility Audit. The scope of work included auditing the City's facilities and infrastructure, specifically the structural design of facilities as well as their functional usability based on accessibility needs of individuals with a wide range of challenges including mobility, visual, hearing, cognitive and sensory disabilities.

The audit identified a number of projects for a variety of facilities that will assist Council in achieving their Community and Corporate Vision of an inclusive City, and move towards a community that ensures a high quality of life for all, including future generations.

The audit identified the need for approximately \$5,000,000 worth of work to be completed over a ten-year period to strategically remove barriers using a priority-based approach. Through the budgeting process, a three-year implementation plan was developed in 2019 to address the short and mid- term projects.

Projects completed in 2021 include:

- Installed accessible parking pads, multipurpose courts, picnic tables and benches at a variety of parks;
- Developed accessible basketball at two courts

CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project 50036570 Accessibility Implementation

Division Parks & Trails

- Upgraded and adjusted facility components such as accessible door openers, lighting, and exit signs;
- Repaired concrete/asphalt at key locations;
- Installed the Jumpstart Playground; and
- Installed ramps in Council Chamber, the Somba K'e Park washrooms, and the Wildcat Cafe.

Plans for 2022 include:

- Updating more doors to accessible versions;
- Installing accessible washroom sinks;
- Making the main floor City Hall public washroom accessible;
- Upgrading the City Hall elevator;
- Developing accessible Wayfinding signage;
- Adding accessible parking spaces and curbing; and
- Continuing the development of accessible paths, benches, and tables at playgrounds and parks.

Operational Impact

There will be no additional O&M impact for some of the work, however additional playgrounds and trails/pads will create additional maintenance and upkeep requirements.



CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project 55006570 Aquatic Centre
Division Pool

Budget

	2022	2023	2024
	\$	\$	\$
Expenditures	20,756,826	43,057,393	3,588,116
Funding			
Formula Funding	230,826	22,313,593	
Canada Community-Building Fund		15,860,800	
Other Grants	10,525,000		
Community Public Infrastructure Funding		4,132,000	3,588,116
Reserves		751,000	
Debt Funding	10,001,000		
<i>Total Funding</i>	20,756,826	43,057,393	3,588,116

Description

Purpose

The development of an Aquatic Centre is a multi-year project that started in 2018 with the input of the Aquatic Centre Advisory Committee (ACAC) and is anticipated to be completed in 2024, pending Council approval and funding being approved through a public referendum process.

Background

In January 2021, following a public consultation process that included public open houses and an on-line Place Speak survey, Council adopted the Aquatic Centre Design Plan as prepared by Taylor Architect Group. Following this, three Design Build teams were pre-qualified to participate in the Design Build Request for Proposal process for the development of the Aquatic Centre.

Three proposals were received by the City and were evaluated and scored, with Clark Builders being the successful Design Build Team.

The project budget is as follows:

Design Build Contract	\$67,735,329
Consultant Contract	\$640,226
5% Contingency	\$3,386,766
Project Total	\$71,762,321

CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project 55006570 Aquatic Centre

Division Pool

Funding for the project has been allocated through the 2022-2024 Capital budget and combined with the 2021 Capital carry over of \$4,359,987.

The project proposed by Clark Builders includes the various components identified by Council including:

- 25m, 3 lane leisure pool with beach entry
- 25m, 8 lane lap pool
- Amusement park type water slide and tot slide
- Lazy river
- Storage/office space for youth groups
- Splash Pad
- 1m and 3m diving boards
- Steam room and therapy pool
- Lease space
- Canteen/concession space
- Multipurpose rooms
- Office space
- Universal change rooms
- Spectator seating

Construction is expected to commence in 2022 and be completed in the third quarter of 2024.

Operational Impact

It is anticipated that the project will be completed in 2024 with the full impact of the operational costs to be in effect in 2025. The Aquatic Centre Design Plan indicates the annual net operating expenses for the facility will be \$1,755,094.



CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	300,000	340,000	430,000
Funding			
Formula Funding	300,000	340,000	430,000
<i>Total Funding</i>	300,000	340,000	430,000

Description

Purpose

To develop City-wide Asset Management best practices that help ensure the delivery of financially and environmentally sustainable services through responsible management of the City’s assets.

Background

Context

The City’s mandate is to ensure that citizens are provided with services that are essential to their quality of life, including clean drinking water, emergency response, transportation, and recreational facilities and programs. All of these services depend on infrastructure assets such as pipes, buildings, roads, vehicles, and technology.

The community entrusts the City to take care of these assets in a financially and environmentally responsible manner to ensure that the full value of the assets is optimized, that risks are minimized, and that services are responsive to agreed upon levels of service in the long term. Responsible management of these assets requires consistent long-term, data-based decision making supported by standardized data collection, management, and analysis. This practice is Asset Management.

While the City has been informally applying Asset Management principles to many of its assets and the related decisions, the escalating complexity and value of its assets, the continuing infrastructure gap, the growing demands to comply with new environmental and safety standards, the increasingly stringent demands around external funding, and growing expectations of increased transparency and accountability all mean the City needs to become even more strategic about how assets and related spending are managed.

This requires a more formalized Asset Management Framework that encompasses all disciplines and involves the entire organization in strategically managing existing and new assets to ensure sustainable service delivery and to increase resiliency in the face of a changing climate and economy.

CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

Previous Work

The City has previously endeavoured to apply more structure to its Asset Management efforts. Notably:

- In 2006, FSC Architects & Engineers were contracted to conduct an Infrastructure Needs Assessment. The study inventoried many of the City's capital assets, assessed their condition, determined their replacement costs, and quantified deferred maintenance.
- In 2008, changes to the Public Sector Accounting Board's standards introduced requirements for municipalities to report asset depreciation, and so the City developed mechanisms to track estimated asset values for this purpose.
- In 2010, the City established an Asset Management Task Force to oversee the completion of another inventory of assets and to assess their condition, maintenance, and replacement needs.
- In 2017, a study of fleet asset replacement schedules and funding was completed. In addition, the City received funding from the Federation of Canadian Municipalities to provide training for some staff around integrating the principles of levels of service, climate adaptation, and life-cycle cost analysis into its Asset Management practices.

These undertakings achieved some limited success in specific functions within the organization, particularly with respect to fleet and linear infrastructure. However, the 2006 and 2011 reports essentially sat on the shelf as the organization lacked internal resource capacity to advance more structured Asset Management practices.

Roadmap Process

In late 2018 Administration assembled an Asset Management Working Group to establish formalized corporate-wide Asset Management processes and practises at the City. The group utilized a competitive process to seek external expertise that could leverage the experiences, successes, and lessons-learned from other municipalities. In May of 2019, Dillon Consulting was awarded a contract to assess the usability of the previously-compiled data, compare City practices to best practices, and develop an Asset Management Roadmap to guide the City's next steps.

Dillon consulted with members of the Working Group to assess the current status of Asset Management relative to the key competencies in the Federation of Canadian Municipalities' Asset Management Readiness Scale, plus a sixth area to reflect the importance of measuring levels of service and managing risk. These competency areas, and related Asset Management outcome areas, are shown in Gallery 1 – Asset Management Key Competencies.



CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

Based on staff interviews, table-top exercises, and documentation reviews, the evaluation process rated the City's state in each of these competencies on a scale of one to five, where one describes an organization just starting out with Asset Management and five is considered an organization on the leading edge.

As shown in Gallery 2 – Asset Management Readiness, when the City's overall rating was determined it showed the City's current state at just beyond Awareness. A visioning exercise expressed the staff's intention to position the City at the Excelling end of the continuum, however, after considering the tasks and resources required to advance Asset Management, a conservative interim vision state between Establishing and Competence was identified, although if the City is able to complete all of the work identified in the Roadmap at the end of its five-year path the organization could be at the high end of Competence.

The consultants looked at the City's current Asset Management state and identified the work that needed to be done to move the organization to its sought-after state. It organized this work into a five-year timeframe, centered around a theme for each year, and developed a Roadmap to guide the City; it was presented to the Governance and Priorities Committee in August 2019.

Roadmap

The original Roadmap assumed that an Asset Management leadership position would be filled in early 2020. However, this was unavoidably delayed and therefore the Roadmap has been adjusted to reflect a later-than-planned start date. The revised Roadmap, including progress to date, is summarized in Gallery 3 – Roadmap Overview.

Resources

The original Roadmap identified the need for almost 3,000 days of work and suggested that a considerable portion of it be done by external resources, in part because the City did not have internal resources to dedicate to it, and in part to allow the City to benefit from specialized expertise.

Aware of the need for strong internal guidance for an initiative as wide-ranging as Asset Management, the City created an Asset Management leadership position in 2020 to provide direction, oversight, and coordination of its Asset Management activities. It was filled in late 2020, and over the course of 2021 it was found that several of the activities expected to use external resources were able to be completed internally by the new division of Asset Management and Geographic Information Systems, with support from the Asset Management Steering Committee. It is expected that this trend will continue. It was also found that using internal resources improved internal knowledge of, skill in using, and ownership of Asset Management practices. Moving forward the intent is to utilize internal resources as much as possible to further embed Asset Management practices and knowledge.

The Roadmap estimates did not include the amount of time that will be required to find, record, enter, and track the additional data that will be managed and analyzed on an ongoing basis to support the Asset Management processes.

CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

To support this collection and processing of data, as well as better facilitate the use of internal resources, it is recommended that an additional Asset Management position be created in 2022, funded as part of this capital project. This role’s primary purpose will be to collect data directly, or through the facilitation of other resources, and assist in its management and analysis to support decision-making. The incumbent will also help train and coach staff on how to use the tools developed in year one.

Rationale

Council has clearly articulated the importance of Asset Management by establishing “Develop and resource an asset management plan to guide long- term decision-making” as a key objective for their 2019 – 2022 term. This reflects how important Asset Management is to the City: it can help ensure effective stewardship of its increasingly valuable and complex assets, timely mitigation of the infrastructure gap, compliance with funding requirements, increased transparency and accountability, and can support better-informed decision making.

Previous attempts at formalizing corporate-wide Asset Management practises at the City have stalled due to lack of resources. Therefore, it is critical that this initiative be adequately resourced if it is to be successful.

Operational Impact

While additional operating resources will be required to implement and sustain more structured Asset Management practices, properly maintained and managed assets will contribute to overall lower life-cycle costs and longer-serving assets, resulting in efficiencies and cost savings.

Gallery

Gallery 1: Asset Management Key Competencies

Competency Areas	Asset Management Outcome Areas
Policy & Governance	Policy & Objectives Strategy & Framework Measurement & Monitoring
People & Leadership	Cross-Functional Groups Accountability Resourcing & Commitment
Data & Information	Asset Data Performance Data Financial Data
Planning & Decision-Making	Documentation & Standardization Asset Investment Plans Budgets
Contribution to Asset Management Practice	Training & Development Knowledge Sharing – Internal Knowledge Sharing – External
Asset Management Practices, Processes, and Procedures	Risk Management Levels of Service (LOS) Asset Management Plan



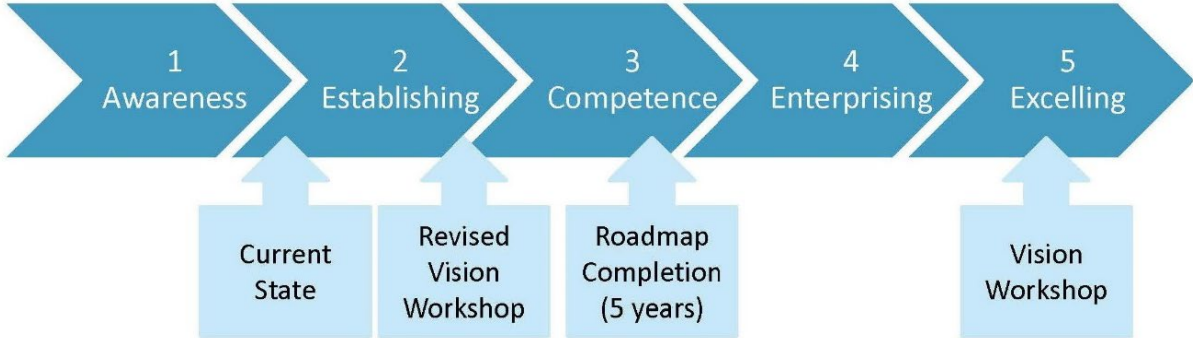
CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

Gallery

Gallery 2: Asset Management Readiness



CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 45006570 Asset Management

Division Asset Management & GIS

Gallery

Gallery 3: Roadmap Overview

Year	Theme	Description of Opportunities
Year 0 (2020/2021)	Raising awareness	Asset management is a team sport requiring broad support across the organization. In Year Zero, the City will develop key documents and bringing them forward to Council. This includes the AM Roadmap, AM Policy and AM Strategy and Vision.
Year 1 (2021)	Building the base	Following the successful launch of the AM Roadmap through Council adoption and the annual budget process, a solid base for asset management will be set by establishing roles and responsibilities within the asset management framework and initiating data management opportunities, as well as a corporate risk framework. The opportunities in Year One and onward will be guided by the Policy, Vision and Roadmap established during Year Zero.
Year 2 (2022)	Asset performance	During Year Two of the AM Roadmap, the condition of assets will be determined using a standardized methodology, along with the expected level of service in order to establish a baseline for evidence-based service and capital planning.
Year 3 (2023)	Asset management plans	In Year Three there will be a continued focus on opportunities that contribute to asset management practices, and a comprehensive update of the asset management plans will be undertaken to incorporate the practices and information from preceding years.
Year 4 (2024)	Integration with demand management	In Year Four, master planning will be undertaken to complete the pictures of service and asset requirements. Work will continue to develop asset management plans across all City assets and to enhance those completed with validated asset strategies.
Year 5 (2025)	Operations and recalibration	In Year Five, focus will shift towards maintenance improvements and the Roadmap implementation will be reviewed and recalibrated based on new information.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project CP0003 Community Energy Plan Projects

Division Community Energy Plan

In 2019, the City commissioned a study to assess the feasibility of installing a centralized biomass boiler to connect five buildings under three orders of government. These buildings included City Hall, the RCMP Detachment, Joint Task Force North (DND), the Legislative Assembly, and the Prince of Wales Northern Heritage Centre.

The outcome of the study determined that the project is feasible, however there will be significant challenges in advancing a centralized biomass boiler at City Hall. After review and consideration of fuel consumption data available for the WTP, Administration determined that the installation of a biomass boiler at this location will realize immediate benefits with minimal complications.

On April 27, 2020, a motion was unanimously passed by Council to re-allocate funding in the 2020 Budget from the City Hall centralized biomass boiler project to begin design on a biomass boiler for the WTP (Motion #0065-20).

In 2021 design for the WTP Biomass Boiler began, with construction scheduled for 2022.

Operational Impact

There is no anticipated impact to the O&M Budget at this time.



CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project 55506570 Curling Club Upgrades

Division Curling Club

Budget

	2022	2023	2024
	\$	\$	\$
Expenditures	150,000		
Funding			
Community Public Infrastructure Funding	150,000		
Total Funding	150,000		

Description

Purpose

To repair the aging roof of the Curling Club to prevent further leaking and damage to the building infrastructure and contents.

Background

The Curling Club roof has experienced periodic leaking over the past two years. Several patches have been carried out to address the issue however due to the age and condition of the roof additional work is required.

An assessment of the roof has indicated that there are several issues with flashing and fasteners as well as some locations indicating that the seams are not properly crimped.

The project will include repairs to the fasteners and flashings as well as the application of two coats of rubberized spray application. The work will extend the lifespan of the roof and will include a warranty period.

The City and the Yellowknife Curling Club have an Agreement that details the City is responsible for all major maintenance.

Operational Impact

There will be no operational impact associated with this project.

CAPITAL FUND – 2022 Capital Projects

Department PS Public Safety **Division** Fire & Ambulance
Project 63007615 Fire Hall Equipment

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	175,000	111,000	58,000
Funding			
Formula Funding	112,223	111,000	58,000
Community Public Infrastructure Funding	62,777		
<i>Total Funding</i>	175,000	111,000	58,000

Description

Purpose

To replace outdated Fire Division Equipment.

Background

The current Knox Box equipment, which provides first responders with timely access to hundreds of commercial and residential buildings in the city in emergency situations, has become outdated and the technology used is obsolete.

This equipment is comprised of a Knox SentraLok in the responding unit, which holds a secure Knox Key which provides access to a Knox Box on the building that has the property owner's keys stored inside. Responders request that City dispatchers release the Knox Key which is done via tones over the analog fire radio channel. The tones instruct the box to release the master key which the responder can then use to access the Knox Box.

All of the Knox SentraLok boxes in the City's apparatus currently have failing circuit boards due to age. As such, they have become unreliable and because the technology has become obsolete, the City can no longer purchase the needed parts for repairs.

All equipment has a life cycle and the present Knox Boxes, which are close to thirty years old, have surpassed their life and technological function. Administration strongly recommends that this equipment be replaced in 2022, at an estimated cost of \$55,000.

The current hydraulic tools used by the Fire Division emergency rescue personnel to assist in the extrication of victims involved in vehicle accidents and from confined spaces have reached the end of the manufacturers recommended lifespan. These tools help save lives and ensure the safety of the Fire Division staff while performing their duties. There is an increased risk that the tools will fail once they have surpassed the manufacturer's recommended lifespan. This puts both Fire Division personnel and the public at risk, therefore Administration recommends that they be replaced in 2022 at a cost of \$120,000.00



CAPITAL FUND – 2022 Capital Projects

Total cost to replace outdated equipment is \$175,000.

Department PS Public Safety
Project 63007615 Fire Hall Equipment

Division Fire & Ambulance

Operational Impact

There is no anticipated impact on the O&M Budget for the Knox Box system. There will be a cost of \$5,000 per year (2022, 2023, 2024) to the O&M Budget to service and maintain the hydraulic tools.

CAPITAL FUND – 2022 Capital Projects

Department PS Public Safety
Project FD0015 Fire Hall Renovation and Expansion

Division Fire & Ambulance

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	295,000	3,265,000	
Funding			
Formula Funding	295,000	2,323,250	
Community Public Infrastructure Funding		941,750	
<i>Total Funding</i>	295,000	3,265,000	

Description

Purpose

To expand the existing Fire Hall to accommodate the staffing and equipment required to meet the emergency and fire service needs of the population of the city of Yellowknife.

Background

On February 8, 2021, Council approved Option 1A (renovation/expansion of the Fire Hall) from the 2020 Fire Hall Study, as the most feasible for addressing requirements to improve the facility's condition and its building functions. Council also directed that Administration bring forward a capital request to implement a Fire Hall renovation/expansion project as part of Budget 2022.

This option was determined to be the most fiscally responsible approach for addressing the facility's needs and supporting the Fire Division in maintaining an acceptable level of community fire protection.

According to the 2020 Fire Hall Study, the Class D cost estimate to renovate and expand the existing facility, considering adopted NFPA Standards, is \$3,200,000. This includes essential components such as a fire training building and a backup generator to ensure back up power to the facility.

In 2022, the City will conduct a competitive Request for Proposals opportunity for the detailed design of the expansion, which will also refine the construction requirements, timeline and costs for the construction phase of the project. Based on best practices, the cost of this design work is estimated to be 15% of the Class D estimate, or \$480,000. Budget 2021 included a conditional allocation of \$185,000 for Fire Hall Renovations, which Council directed be brought forward for the expansion, so a further allocation of \$295,000 will be required to complete this Design work in 2022.

Construction is expected to begin in 2023, at a cost of \$3,265,000, which includes a 20% adjustment for COVID-19 related inflation.



CAPITAL FUND – 2022 Capital Projects

Department PS Public Safety
Project FD0015 Fire Hall Renovation and Expansion

Division Fire & Ambulance

Operational Impact

It is anticipated that the project will be completed in 2023 with the full impact of the operational costs to be in effect in 2024. The 2022 Design work will include options to increase the Fire Hall's energy efficiency, thus reducing increases to operation and maintenance costs.

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering **Division** Fleet Management
Project 71507801 Fleet Management

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures			
<i>Total Expenditures</i>	1,277,895	1,133,523	1,735,203
Funding			
Reserves	1,277,895	1,133,523	1,735,203
<i>Total Funding</i>	1,277,895	1,133,523	1,735,203

Description

Purpose

To continue replacing and redeploying fleet units according to the City of Yellowknife's Fleet Management practises.

Background

The reliability of the City's Mobile Equipment Fleet must be maintained to meet the service levels expected by residents. The City has a fleet of 159 pieces of heavy-duty and mobile equipment that support Fire and Ambulance, Road Maintenance, Water and Sewer Maintenance, Solid Waste, Parks, Arenas and Administrative functions, as well as 26 stationary engines for emergency power generation and fire pumping capacity.

Fleet management practises allow the City to maximize life cycle and properly budget and plan the replacement of all fleet vehicles on a regular basis. These policies and practises help to mitigate risk and repair costs associated with aged vehicles. As vehicles and equipment get older, the operation and maintenance costs of those vehicles increase, with limited resources available for maintenance and repairs. These vehicles should be replaced on a scheduled basis to reduce downtime due to repairs or failures, which could negatively impact the delivery of City services such as snow removal or water/sewer repairs.

Summary of Units:

Small Equipment – 33 units

Small equipment includes miscellaneous equipment required by City departments to do their work. Included are: riding mowers, snowmobiles (Municipal Enforcement Division), all-terrain vehicles (Firefighters), light trailers (Community Services and Public Works), line-painters, crack sealing equipment, trailer-mounted water pumps, and ground thawing equipment. Equipment in this group has a varied life expectancy and replacement cost.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 71507801 Fleet Management

Division Fleet Management

Light-duty Trucks – 38 units

According to the City of Yellowknife Fleet Management practises, these vehicles should be reviewed for replacement after seven years and replaced after ten years. The City currently has 41 pickup trucks and vans in the fleet. The ages vary from one year to more than ten years.

Medium-duty Trucks – 8 units

According to the City of Yellowknife Fleet Management practises, these vehicles should be reviewed for replacement after six years and replaced after ten years. The City currently has 8 medium-duty trucks in the fleet.

Heavy-duty Trucks – 15 units

The 15 heavy-duty trucks and trailers include trailers, tandem tractors, and dump trucks. The heavy-duty trucks are to be replaced every 12 years. Trucks are used for City projects and snow removal in the winter. The cost of operating these vehicles rather than hiring contractors is approximately half. Each truck is operated for approximately 1,000 hours per year, saving the City \$45,000 a year for each truck it operates, rather than contracting out. Trailers are reviewed when aged out. If practical, the trailer is refurbished and returned to service. The dump trailer (due to more use and normal wear and tear) is replaced when aged out.

Heavy Equipment – 10 units

Heavy equipment is to be replaced every 12 years, except specialty equipment, which is explained under that heading. Each piece of heavy equipment is operated for approximately 1,000 hours per year, saving the City \$45,000 a year for each piece of heavy equipment it operates. As heavy equipment gets older, increased maintenance and repairs are required, such as replacing motors and transmissions at a cost of \$30,000 and \$20,000 respectively. Breakdowns inevitably occur when equipment is needed, resulting in a cost to the City to engage contractors.

Mobile Tractors – 9 units

This includes Zambonis, skidsteers, compactors, and forklifts. The anticipated lifespan of these units is ten years.

Municipal Enforcement Vehicles – 4 units

These are to be replaced every four years or 100,000 kilometres. Due to high usage, Municipal Enforcement vehicles require a high amount of maintenance (nearly five times that of similar vehicles in the fleet). For this reason, it is important to maintain the replacement cycles of these vehicles. One Municipal Enforcement vehicle must be replaced yearly to maintain the City standards and in order to reduce O&M costs and labour requirements.

Emergency Vehicles – 10 units

This includes fire trucks, ambulances and water trucks. Due to increased demand, the replacement life cycle standard was re-evaluated by Public Works and the Fire Division, and the standard for replacement was reduced from 30 years to 20 years for most firefighting equipment. Ambulances are now replaced on a 12-year cycle due to the high amount of use and reliability issues with ambulances as they get older. The City has three ambulances and one is replaced every four years. The newest is placed on “first out the door” service and the oldest is surplus.

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 71507801 Fleet Management

Division Fleet Management

Seasonal Vehicles – 23 Units

Once a vehicle such as a light-duty pickup truck is removed from its primary use, it is placed into a lower priority use, such as vehicles used for summer student work activities. If the repair costs of a summer vehicle exceed an estimated cost of \$500, the vehicle may be removed from service at the discretion of the Director of Public Works and Engineering.

Stationary Engines – 26 Units

The City's fleet mechanics also maintain and service 26 stationary engines. These include standby generators for City water and sewer supply and City facilities (City Hall, Fire Division, Multiplex/Fieldhouse). The stationary engines provide standby electricity for water and sewer services in times of power outage or natural disaster. The estimated value of the stationary engines is approximately \$5.1 Million. Many of the existing engines are older: five are over 30 years old, one is over 20 years old, seven are over ten years old, and 13 are under ten years old. Parts are often unavailable for engines over 20 years old. Although these engines get little use, even small breakdowns may lead to lengthy repairs.

The Mobile Equipment Reserve Fund (MERF) is not used to replace stationary engines even though the fleet resources are used to maintain them. It is recommended to departmental managers that the older stationary engines be replaced, and that one engine a year be replaced until all stationary engines are less than 20 years old.

Specialty Equipment – 9 Units

These pieces of equipment fall into their own category due to their level of importance to City operations. They are graders, street sweepers and vactor trucks. These are replaced more frequently because vital City operations will suffer due to prolonged breakdowns or repairs, which will have a direct impact on residents, vehicular traffic, emergency vehicle routes and the City's transit system.

Operational Impact

Fleet Management practises allow the City to properly budget and plan the replacement of all fleet vehicles on a regular basis. These policies and practises help to mitigate risk and repair costs associated with aged vehicles. As vehicles and equipment get older, the operation and maintenance costs of those vehicles increase, with limited resources available for maintenance and repairs. These vehicles should be replaced on a scheduled basis to reduce downtime due to repairs or failures, which could negatively impact the delivery of City services such as snow removal or water/sewer repairs.



CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 44007600 Information Technology Infrastructure
 Renewal

Division Information Technology

Budget

	2022	2023	2024
	\$	\$	\$
Expenditures	310,000	430,000	390,000
Funding			
Reserves	310,000	430,000	390,000
<i>Total Funding</i>	310,000	430,000	390,000

Description

Purpose

To continue the City of Yellowknife's planned and incremental investment in its Information Technology Infrastructure to provide reliable services while maximizing the service life of each component.

Background

The City's Information Technology infrastructure is essential for effective service delivery. This project will ensure consistent and reasonable investments in each of the four main categories of infrastructure in place at the City: servers and storage, network devices, printers and multifunction devices, and client hardware.

Servers and Storage

The City maintains physical and virtual servers to support a wide range of services to staff, citizens, and stakeholders. It also maintains a redundant file storage system to house and protect the City's burgeoning collection of data and documents that are essential to its day-to-day operations. This project will continue the City's planned and incremental investment in its server fleet and file storage infrastructure to help meet the growing requirements being placed on it.

The City's dependence on its server fleet intensifies with each activity that is automated. In addition to traditional financial applications, staff and stakeholders are adopting increasingly sophisticated solutions to meet diverse needs including emergency services dispatch, mapping, work management, elections, transit, permit processing, problem reporting, security cameras, building access, pellet boilers, solar panels, voice radios, bulk water billing, and black/green cart management. To keep pace with these demands, the servers need to remain current and reliable.

In late 2007, the Information Technology Division adopted a virtualization strategy as a way to meet accelerating demands and provide the flexibility to quickly deploy additional servers as needs arise. However, there are still limits to what can be accommodated within a single physical server and so growth in demand must be matched by growth in capacity. During the term of this budget, the Information Technology Division will use the allocated funds to grow the capacity of this environment, redeploy server equipment that is nearing the end of its life expectancy, and sustain a reasonable inventory of spare parts to ensure replacements are readily available when failures occur.

CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 44007600 Information Technology Infrastructure
Renewal

Division Information Technology

As with the demand for server capacity, the organization's need for storage continues to grow and the City must constantly invest in its infrastructure to ensure adequate capacity.

Network

The network that provides connectivity among the City's computers, laptops, servers, printers, cameras, mobile devices, telephones, traffic lights, SCADA monitors, and emergency voice radios is vital to the City's operations. Planned and incremental investment in this network is required so that it can continue to meet the increasing demands placed on it as functions throughout the organization turn to technology to streamline workloads and improve services.

The City's network employs Ethernet, leased and City-owned fiber, wireless, and microwave technologies to create connections among fourteen sites. Within each site the network connects numerous devices, ensuring that staff, citizens, and stakeholders have consistent and reliable access to applications, documents, data, printers, and the internet.

The network also provides connectivity to every traffic light in order to streamline traffic control management within the Public Works department; this initiative alone added 63 network devices to the City's infrastructure. With additional traffic lights and cameras on the horizon, this complement will continue to grow.

In 2018 wireless connectivity was established to the City's Pumphouses and Liftstations. This added another 23 network devices to the City's infrastructure (Gallery 1).

Ongoing replacement of key network equipment assists in the reduction of unplanned outages and prepares for future technologies and growth. In recent years, City-owned and operated connections have been established between several sites which has reduced reliance on third-party fiber services and resulted in annual operational savings of approximately \$85,000 across the organization.

In addition to connectivity, the network also plays a key role in protecting the City's Information Technology infrastructure and the corporate data assets stored within it (Gallery 2). The network's firewall and other protective mechanisms prevent unauthorized access attempts and its spam filter rejects infected email and spam directed at the organization.

There is a continual focus on security as threats – both internal and external – are becoming increasingly sophisticated and pervasive. Initiatives such as ongoing cyber-threat awareness campaigns to help staff become more knowledgeable and mindful users, implementation of next generation virus protection, continual refinement of security configurations to mitigate risks from all sources, vulnerability assessments and health checks, and enhanced and more granular monitoring of network activity ensure a proactive approach to protecting City information and assets.



CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 44007600 Information Technology Infrastructure
Renewal

Division Information Technology

Printer and Multifunction Devices

The City maintains a fleet of printers and multifunction devices to meet the printing, scanning, and copying requirements of stakeholders. This project will continue the organization's incremental approach to implementing and maintaining multifunction devices throughout the organization so that these requirements can be met in the most cost-effective manner possible.

The City fleet consists of three tiers of devices and all acquisitions are selected from one of these tiers to minimize the variety of devices installed throughout the organization, streamline consumables management, and reduce costs. Where appropriate, devices are reallocated throughout their lifespan in order to maximize their utility. As well, the organization is continually looking for ways to reduce the amount of printing.

Client (Staff) Hardware

A portion of this allocation will be used to renew and augment client facing hardware components in accordance with the City's Information Technology Evergreen Strategy. This includes widely deployed elements like workstations, laptops, tablets, cell phones, and desk sets, as well as more special- purpose equipment like emergency voice radios, digital cameras, conference phones, and projectors.

Operational Impact

City service delivery relies on its Information Technology infrastructure. When any component is out of service, or not operating to specification, it will interrupt service delivery and reduce productivity.

Servers and Storage

When servers are appropriately matched to the work that needs to be done and sufficient disk space is available, services can be delivered more reliably and at a lower cost than when resources must be constantly manipulated and reallocated, often in response to failures. Without adequate investment, the organization will not be able to meet escalating server requirements or acquire much-needed additional storage capacity. In the short- term, this will negatively impact overall infrastructure performance and thus degrade service delivery to both internal and external clients, and over time it will lead to more frequent system outages and necessitate increased support efforts and costs.

Network

The City's network is vital to its operations and even short service interruptions have significant impacts on service delivery and employee productivity. It will be more cost effective – and present a lower risk to the City – to replace and enhance this equipment in a planned and orderly fashion rather than to experience problems that require excessive troubleshooting and repair or failures that create service outages. Lack of appropriately scaled and timed investment will negatively impact the City's ability to sustain its network and will put the organization at risk of a long-term outage while replacement equipment is sourced. Over time, there may be increasingly frequent service disruptions when equipment fails. These failures will interrupt many aspects of City operations, and potentially jeopardize the health and safety of staff, citizens, and visitors.

CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 44007600 Information Technology Infrastructure
 Renewal

Division Information Technology

Printers and Multifunction Devices

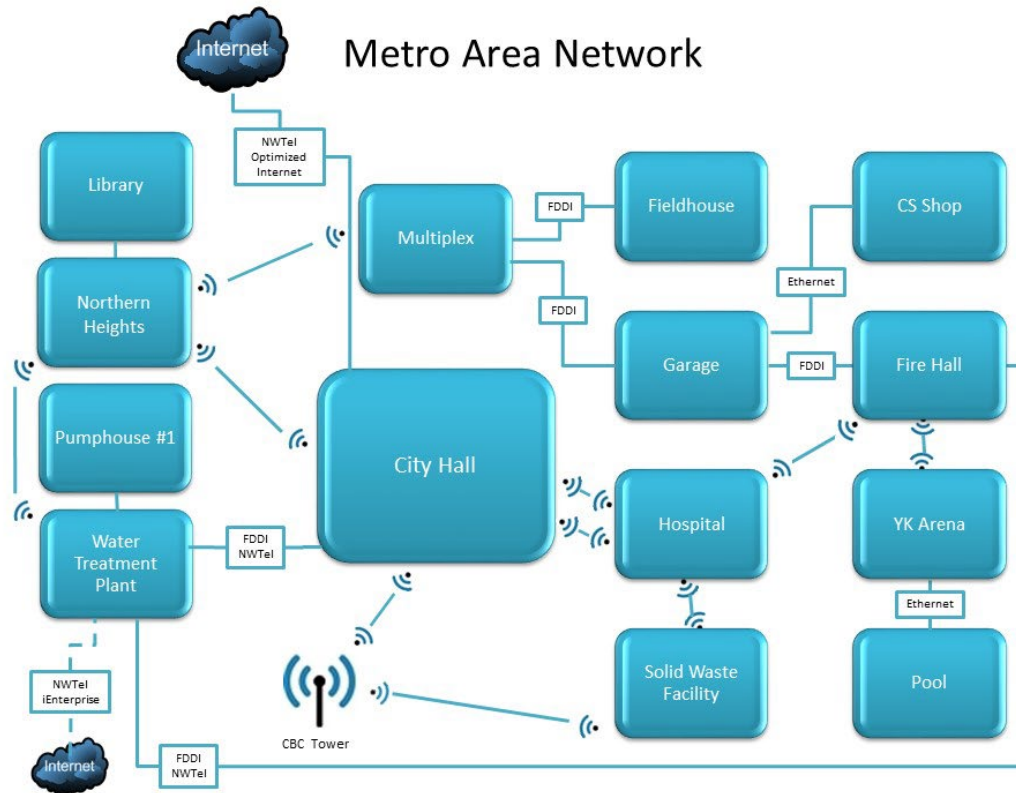
Many printing and copying tasks are time sensitive, and must be done within legislated timeframes. If the printer and multifunction device fleet is not properly maintained, outages will affect the organization’s ability to deliver services.

Client Hardware

Staff all across the organization rely on technology to complete their work and deliver programs and services. Appropriately maintained client facing hardware minimizes downtime and enables effective services for both staff and stakeholders. Planned and scheduled replacements further minimize operational impact by reducing troubleshooting and support efforts.

Gallery

Gallery 1 - Metro Area Network



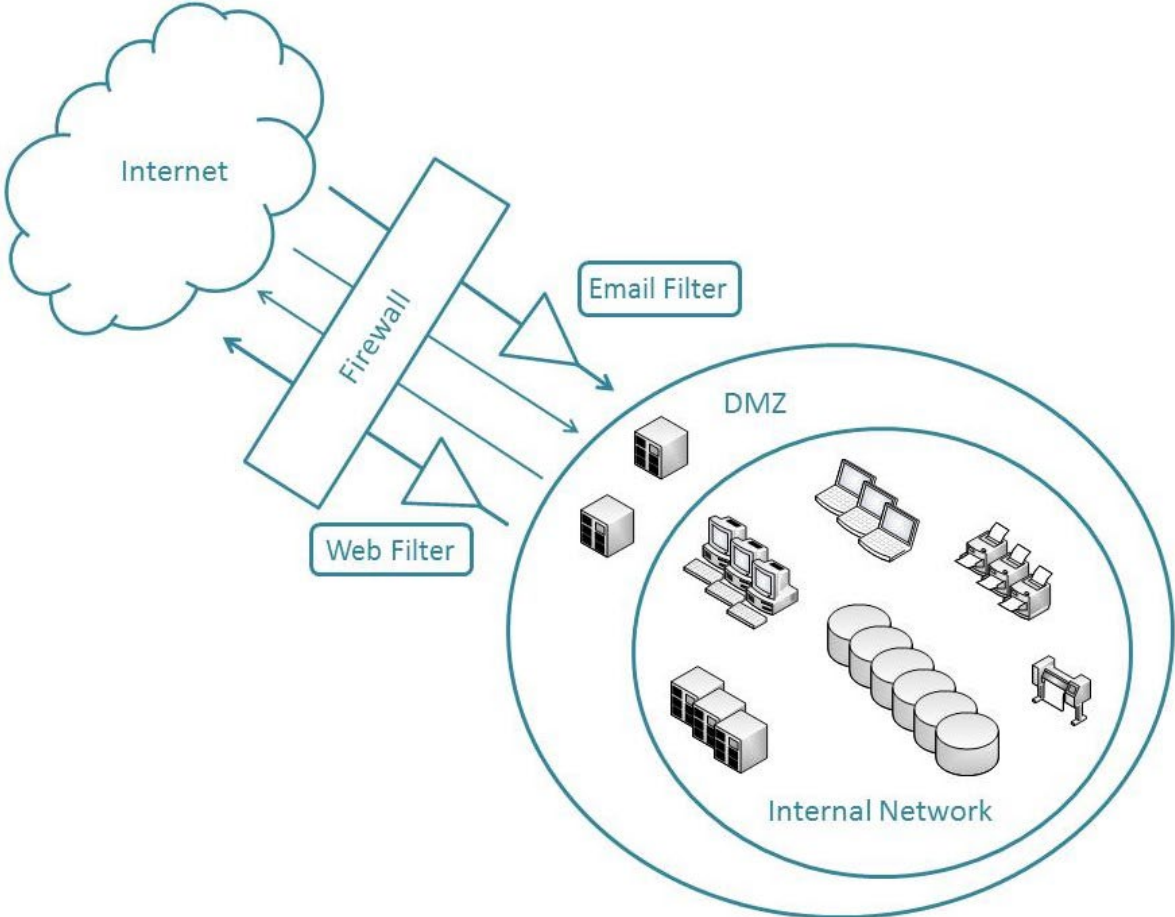
CAPITAL FUND – 2022 Capital Projects

Department GG General Government
Project 44007600 Information Technology Infrastructure
Renewal

Division Information Technology

Gallery

Gallery 2 - Network Protection



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 94006570 Lagoon Control Structure Replacement

Division Water & Sewer

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	125,000		
<i>Total Expenditures</i>	125,000		
Funding			
User Fees	125,000		
<i>Total Funding</i>	125,000		

Description

Purpose

To replace failing control structures on Trapper's Lake to divert flow away from the Fiddler's Lake sewage lagoon.

Background

The Fiddler's Lake Sewage Lagoon System was built in 1980. As part of the system, the drainage pathways for Trapper's Lake were altered to divert them from the sewage lagoon area (Galleries 1 and 2). This ensured water from Trapper's Lake was not flowing into the lagoon, which would increase the volume of effluent entering the lagoon and affect its capacity.

In order to divert the flow from Trapper's Lake, a series of earthen dykes and dams were built in low-lying areas along the shoreline. A concrete and earth control structure was built in the location chosen for flow from the lake into the designated drainage area. As part of the City of Yellowknife's water licence requirements, these dams, dykes and control structure must be inspected every four years. During the last inspection, it was noted that these structures are no longer performing as intended and require rebuilding.

Rebuilding of the dams, dykes and control structure will stop the flow from Trapper's Lake to Fiddler's Lake sewage lagoon, which will help to reduce the total amount of runoff entering the lagoon system, thus increasing the overall capacity of the lagoon.

This is a multi-year project which saw the engineering work done in 2019, final design in 2020, and permitting in 2021 and will conclude in 2022 with the rebuilding of the dykes.

Operational Impact

This project has negligible direct effect on operations. Maintenance of control structures at Trapper's Lake is a requirement of the City's water licence and is consistent with good asset management principles.



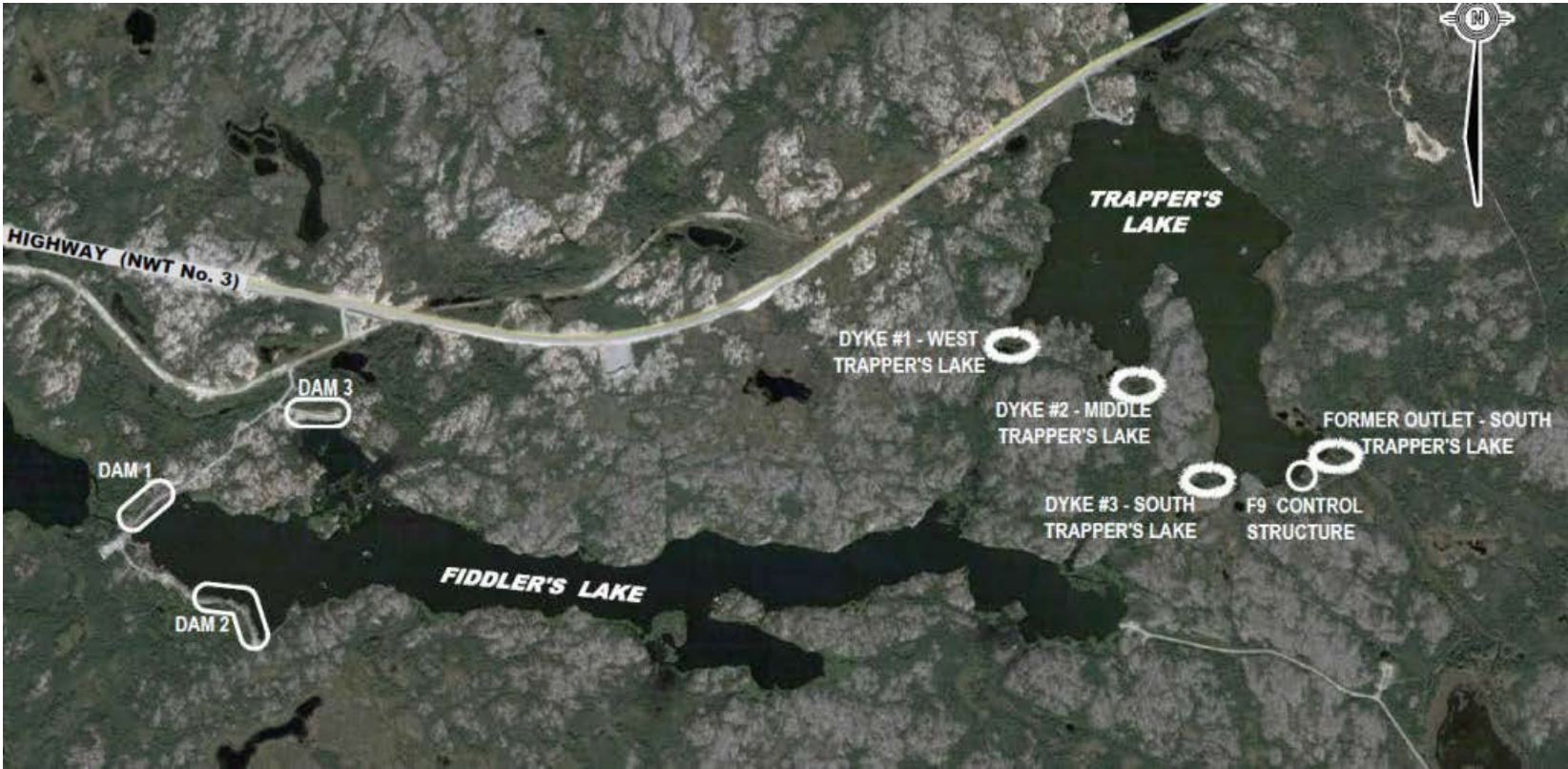
CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 94006570 Lagoon Control Structure Replacement

Division Water & Sewer

Gallery

Gallery 1: Trapper's Lake Control Structure



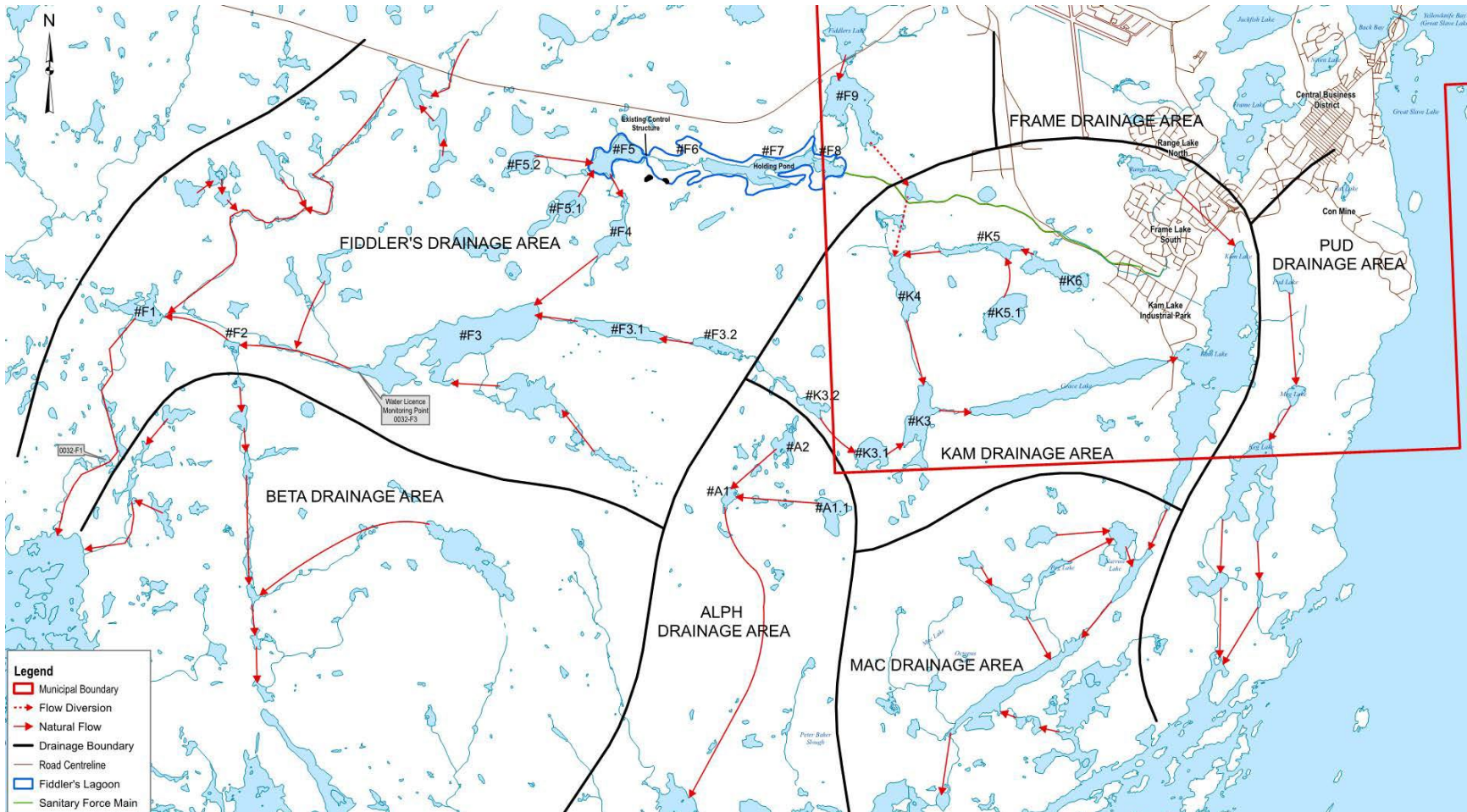
CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 94006570 Lagoon Control Structure Replacement

Division Water & Sewer

Gallery

Gallery 2: Fiddler's Lake Drainage Area and Surrounding Replacement



CAPITAL FUND – 2022 Capital Projects

Department Project PW Public Works & Engineering
94006575 Lagoon Sludge Removal

Division Water & Sewer

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	950,000	2,800,000	2,800,000
Funding			
Other Grants	712,500	2,100,000	1,462,500
Community Public Infrastructure Funding		700,000	
User Fees	237,500		1,337,500
<i>Total Funding</i>	950,000	2,800,000	2,800,000

Description

Purpose

To remove sludge build up from the bottom of the Fiddler's Lake sewage lagoon.

Background

The Fiddler's Lake Sewage Lagoon System has been in service since the mid-1980s. Since that time, solids in the raw sewage entering the lagoon have been accumulating at the bottom of the lagoon.

In June 2018, a survey was performed on the sludge layer to determine the approximate quantity of sludge currently in the lagoon. Gallery 1 shows the depths of the sludge throughout the lagoon. Based on the survey, it is estimated that roughly 226,000 cubic metres of sludge needs to be removed from the lagoon.

The City of Yellowknife's water licence requires the creation of a sludge management plan. Part of that plan includes the removal of sludge built up in the lagoon. By removing the sludge, the overall holding volume of the lagoon will increase and the chemical and biological process that occurs in the lagoon will be able to take place in a more effective manner.

In 2019, a study was completed to evaluate sludge removal methods and sludge dewatering methods. It was determined that using a barge-mounted dredge was best for sludge removal, and the use of geotubes was best for dewatering. The methods chosen require a pad be built as a laydown area for the geotube dewatering process in order to remove as much liquid from the sludge as possible. The end use of the dewatered sludge is still to be determined, but is expected to be able to be used as cover material at the Solid Waste Facility.

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 94006575 Lagoon Sludge Removal

Division Water & Sewer

The anticipated timeline for this project is as follows:

2018 - Sludge Survey Completed

2019 - Sludge Removal Method Determined with Class D Cost Estimate 2021 - Engineering Design for Laydown Area of Geotubes

2022 - Construction of Laydown Area, Upgrading of Lagoon Access Road, and Finalization of Desludging Operations

2023 - First Year of Sludge Removal

2024 - Second Year of Sludge Removal

NOTE:

Class A (more defined) estimates will be available once the finalization of the desludging operations is complete. The current figures noted for 2023 and 2024 are Class D estimates and could be subject to change for future budgets.

Operational Impact

There is no direct operational impact, however it will ensure continued performance of the Fiddler's Lake Lagoon System. It is also a requirement of the City's water licence. This project is consistent with standard Asset Management principles.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 94006575 Lagoon Sludge Removal

Division Water & Sewer

Gallery

Gallery 1: Fiddler's Lake Sewage Lagoon Sludge Depths

FIDDLERS LAAGOON SLUDGE FINDINGS

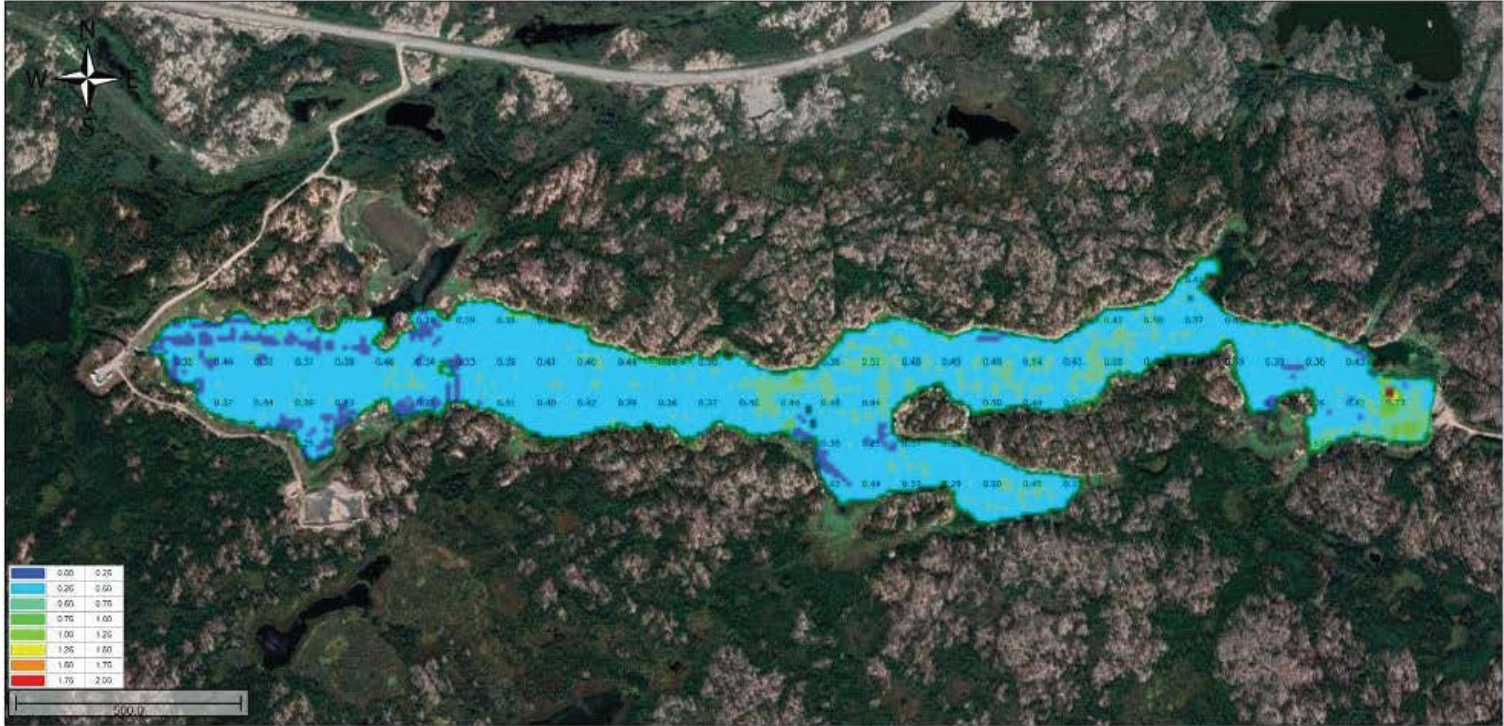


Figure 2 Fiddlers Lagoon sludge thicknesses (m)

CAPITAL FUND – 2022 Capital Projects

Department PD Planning & Development
Project 60046570 Land Fund Capital Projects

Division Directorate

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	3,350,000	935,000	2,300,000
Funding			
Land Fund	3,350,000	935,000	2,300,000
<i>Total Funding</i>	3,350,000	935,000	2,300,000

Description

Purpose

To continue the City's strategic land acquisition, which supports development to meet current and future needs.

Background

Development and subdivision plans for the next three years include (not in order of priority):

- a) a new subdivision plan for residential development in the remaining Niven Phase V area, infill lots in Old Town and Downtown areas - making the current lots available more marketable;
- b) planning and engineering of commercial/industrial lots in the Kam Lake area, to be approached in conjunction with other development interests and water/sewer infrastructure potential expansion;
- c) Frame Lake West development of subdivision for commercial lands (potential);
- d) Encouraging new commercial development along Old Airport Road including consideration for municipal servicing;
- e) Kam Lake South Area Development Plan; and
- f) New residential subdivision location, context options (potential)

Includes Surveying for Commissioners Lands and some development in Enterprise 2.0 - lands to be resold

2022-2024 will focus on completing Land Fund projects to include. There are currently residential lots in Niven, Grace Lake South, Old Town, the Downtown and Central Residential areas available for purchase and development. Commercial use is to be encouraged in the Downtown and Old Airport Road areas while industrial uses are to be promoted within the Kam Lake and Engle Business District areas.

The development of Area Development Plans for the listed areas will provide lands for development over the planning period. Planning staff will review development needs, population growth and employment statistics in guiding the prioritization of the Area Development Plans.

Operational Impact

There will be no operational impact.



CAPITAL FUND – 2022 Capital Projects

Department PD Planning & Development
Project PD0004 Land Surveying (Commissioners)
Division Directorate

Budget

	2022	2023	2024
	\$	\$	\$
Expenditures	600,000	65,000	100,000
Funding			
Formula Funding	600,000	65,000	100,000
Total Funding	600,000	65,000	100,000

Description

Purpose

To survey Commissioner's Land obtained for municipal purposes. Lands include municipal roads, water disposal facility and other similar lands.

Background

The majority (74.8%) of land within the City's municipal boundary is Commissioner's Land and is owned by the Government of the Northwest Territories (GNWT). Currently, the City owns approximately 11.3% of land within the municipal boundary. Land Title is also held by the Territorial Government, Federal Government, and private ownership.

Historically, the City has sought to acquire land from the GNWT when there was a need for land development, municipal infrastructure or a public request. This "as-and-when" approach to land acquisition takes significant time and staff resources to traverse the multiple steps of the land transfer process. The bulk transfer of available Commissioner's Lands is expected to expedite the process necessary for the City to obtain ownership and support strategic land use planning, development and municipal infrastructure going forwards. The GNWT has indicated support for the transfer of the lands to the City. The total area of the proposed lands to be acquired is approximately 4,600 hectares or 59% of the Commissioner's Land within the current municipal boundary. As the City discusses the bulk land transfer application and the ongoing boundary expansion with the GNWT Department of Lands and the Yellowknives Dene First Nation (YKDFN), the final quantity might change.

Acquisition of GNWT Lands has been of significant interest to Council for a number of years due to the continued decrease in City-owned land available for development. A formal letter was provided to the GNWT requesting that the application and process be expedited. The City and the GNWT have made significant process on the agreed to process steps, and are nearing the formalization of a Memorandum of Understanding to solidify these actions. The transfer of all available Commissioner's Lands was a political topic during the 2019 Territorial Election and the legislature put in place a mandate to transfer these lands to the City. Engagement with the GNWT Department of Lands and the YKDFN regarding the bulk land transfer of all available Commissioner's Lands within the municipal boundary to the City of Yellowknife is ongoing.

CAPITAL FUND – 2022 Capital Projects

Department PD Planning & Development
Project PD0004 Land Surveying (Commissioners)

Division Directorate

Operational Impact

Additional staff resource is required with an estimated annual cost of about \$120,000.



CAPITAL FUND – 2022 Capital Projects

Department CS Community Services **Division** Parks & Trails
Project 53116570 Park Equipment Replacement

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	135,000	250,000	170,000
Funding			
Formula Funding		10,000	10,000
Other Grants	80,000	80,000	80,000
Community Public Infrastructure Funding	55,000	160,000	80,000
<i>Total Funding</i>	135,000	250,000	170,000

Description

Purpose
 To continue to refurbish and replace amenities on a rotational basis to keep playgrounds and pads safe and enjoyable for the community.

Background

The City of Yellowknife replaces older playgrounds in a rotational manner so that the playgrounds are kept up in a safe and aesthetically pleasing manner. Playgrounds are replaced with amenities that are modern and safe, and reflect the needs of the area that they are installed in.

In 2022, the Jeske Crescent Park multi-sport court will be replaced with a multi-purpose asphalt pad and the Magrum Park playground will be upgraded. 2023 will see updates to the Latham Island Park sport court and Forrest Drive Park playground, and in 2024 the sport courts at the School Draw Park and St. Joe's Park will be upgraded and exercise equipment will be added to Hall Crescent Park.

This project will allow the City to manage its assets wisely by strategically investing in infrastructure to optimize function, service and safety.

Operational Impact

There will be little O&M impact during the term of this Budget, as this is essentially a refurbishment and replacement project for existing equipment.

CAPITAL FUND – 2022 Capital Projects

Department Project PW Public Works & Engineering
76156570 Paving Program

Division Roads & Sidewalks

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures			
Paving Program	3,750,000	3,955,000	3,500,000
Patching Program	325,173	329,563	338,494
<i>Total Expenditures</i>	4,075,173	4,284,563	3,838,494
Funding			
Formula Funding		777,063	338,494
Canada Community-Building Fund			3,500,000
Other Grants	2,812,500	2,966,250	
Community Public Infrastructure Funding	1,215,173	541,250	
Land Fund	47,500		
<i>Total Funding</i>	4,075,173	4,284,563	3,838,494

Description

Purpose

To repair or replace asphalt, concrete and other appurtenances on city streets as required, including storm water infrastructure. This project also installs concrete, asphalt and landscaping (if specified) on newly developed streets in the city.

Background

The typical design life of pavement is generally between 20 and 25 years, but it will vary significantly due to factors such as traffic volumes, vehicle types, geotechnical conditions, construction practices, and adequate maintenance.

The construction of new roads generally coincides with the development of new subdivisions. The replacement of roads generally follows the replacement of water and sewer infrastructure. Otherwise, a road is scheduled for reconstruction when it is in poor condition and may be a danger to the public, or when maintenance and repairs are no longer cost-effective. The paving of roads may be done in the same year as water and sewer infrastructure replacement or may be delayed a year or two to allow for settlement, depending on the ground conditions.

As streets are reconstructed, the City of Yellowknife works with Northland Utilities Ltd. (Northland) to ensure that street lighting levels are evaluated and increased to comply with national standards. Also included in the paving program is coordination with Northland, NorthwesTel Inc. and NorthwesTel Cable Inc. to determine if replacement or addition of underground duct work for power and communication infrastructure is required.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 76156570 Paving Program

Division Roads & Sidewalks

Considerations when determining areas of reconstruction include:

- Condition and age of asset,
- Recurring maintenance costs,
- Priority level of roadway,
- Number of impacted residents, and
- Underground infrastructure requirements.

Gallery 1 lists the 2022 to 2024 planned paving program. Gallery 2 shows the 2022 planned water, sewer and paving projects.

Operational Impact

Aging infrastructure has an operational cost of between two and four percent of replacement costs. Replacing this infrastructure will allow the department to focus operational and maintenance activities on other roads, sidewalks and storm water appurtenances in the city.

Gallery

Gallery 1: 2022 - 2024 Paving Program

Year	Street
2022	45 Street (49 Ave. to Franklin Ave.)
	McDonald Drive
	50 Street (Franklin Ave. to 52 Ave.)
	Hall Crescent (Phase 3 & 4)
	<i>Hagel Drive (Lemay Drive to end of developed area) - Land Fund Project</i>
2023	51 Street (49 Ave. to 51 Ave.)
	Wiley Road (Causeway to Hank Koenen Park)
	Franklin Avenue (Bretzlaff Drive to Weaver Drive)
	54 Street (50A Ave. to 52 Ave.)
2024	54 Street (52 Ave. to end)
	Curry Drive (all)
	52 Street (Franklin Ave. to 51 Ave.)
	55 Street (51 Ave. to Con Road)

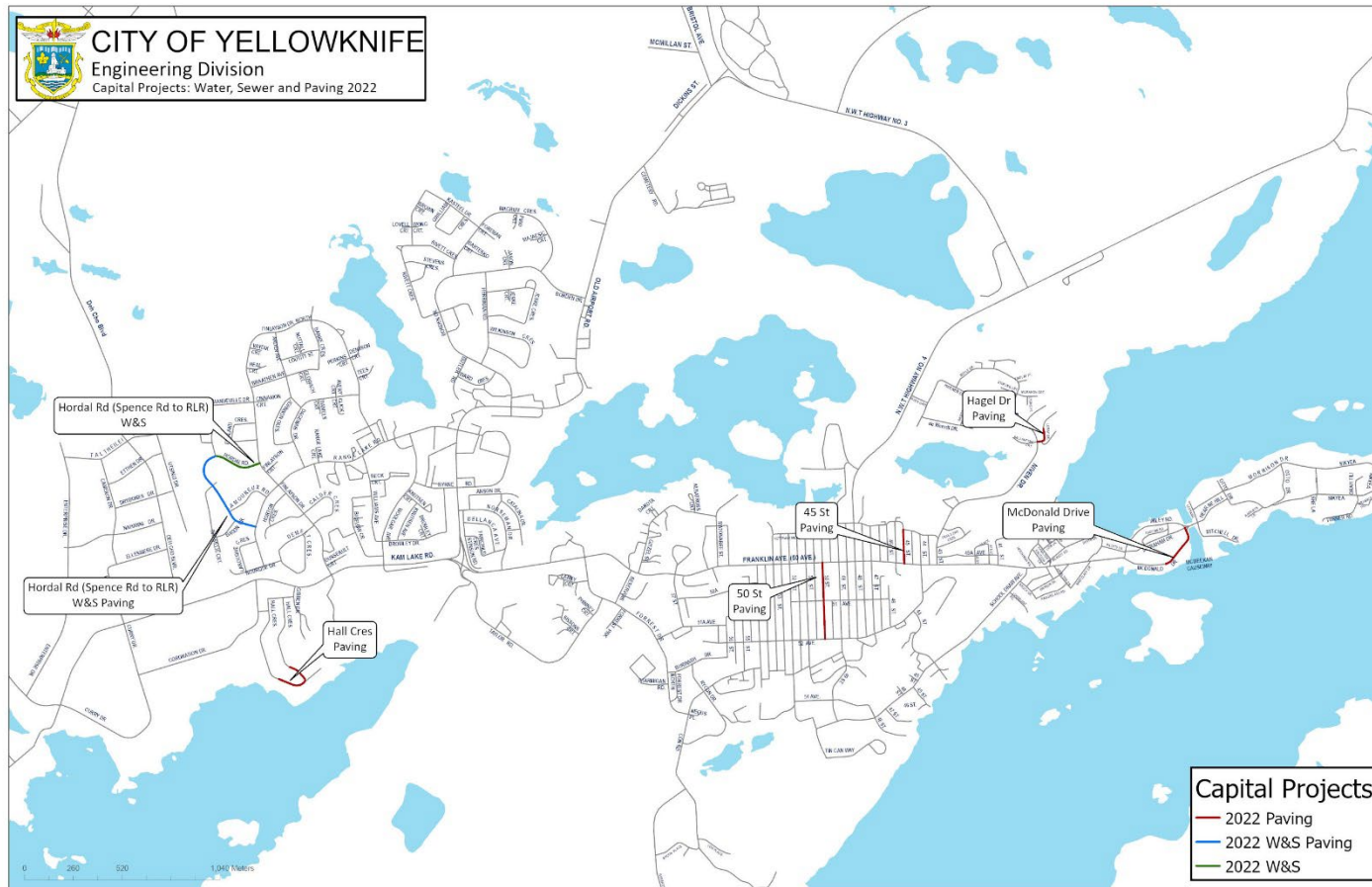
CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 76156570 Paving Program

Division Roads & Sidewalks

Gallery

Gallery 2: 2022 Water, Sewer & Paving Projects



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Projects 90406571 PH#4 Water Truckfill Safety

Division Water & Sewer

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	150,000		
<i>Total Expenditures</i>	150,000		
Funding			
User Fees	150,000		
<i>Total Funding</i>	150,000		

Description

Purpose

To provide a safe means for filling Water Trucks while working at heights to meet Occupational Health and Safety Regulations, and to improve on-site parking and traffic flow.

Background

The City of Yellowknife has one potable Water Truck fill station located at Pumhouse #4 on the corner of Old Airport Road and Kam Lake Road. There are multiple activities occurring at this site, including potable Water Truck filling for Yellowknife, N'dilo and Dettah, as well as residents and contractors, RV (recreational vehicle) sewage dumping, and parking for the tennis courts located at the back of the Pumhouse situated on top of the potable water reservoir.

The demand for trucked potable water in the city has increased with the expansion of municipal services to areas without underground infrastructure. The City also provides potable water to the communities of N'dilo and Dettah. The demand for both the RV sewage dumping and tennis court activity has significantly increased, which is creating instances of multiple use conflicts occurring at the same time.

The City is responsible for providing a safe means of access for contractors and private residents to fill potable water delivery trucks. This project will add a second truck fill station at this location to keep up with demand and provide redundancy. Safety apparatuses to facilitate working at heights will be installed at each fill station to ensure a safe means for operators to fill their tanks from the overhead pipe.

To improve traffic circulation given the conflicting uses in the area, on-site parking stalls will be created to accommodate the tennis court use and the RV sewage dumping and water fill station will be relocated to Kam Lake Road.

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Projects 90406571 PH#4 Water Truckfill Safety

Division Water & Sewer

Operational Impact

The overall operational impact is expected to be minimal, with the exception of an additional truck fill location and safety apparatus that will have to be maintained and certified.



CAPITAL FUND – 2022 Capital Projects

Department CS Community Services **Division** Programs
Project PG0002 RIMP Building Structural Assessment

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	75,000		
Funding			
Formula Funding	75,000		
Total Funding	75,000		

Description

Purpose

To complete an Engineered Assessment of the Ruth Inch Memorial Pool (RIMP) building structure and identify future uses of the Pool building, if the new Aquatic Centre proceeds.

Background

The RIMP opened its doors to the public in the fall of 1988 and continues to be popular among residents and visitors alike. The proposed project will examine the exterior walls of the building as well as the roof, windows, and heating and ventilation systems.

A facility life cycle analysis conducted by Williams Engineering in July 2010 identified many issues that needed to be addressed to ensure the building will meet or exceed its life expectancy. Since the time of the initial report, several of the identified items have been addressed such as replacement of the Air Handling Unit, replacement of exterior glazing, and upgrading of insulation in the exterior walls of the office space. In 2019 rain clad siding was added to the exterior walls.

With a new Aquatic Centre planned to open in 2024, the City of Yellowknife is seeking a new use for this structure so that it may continue to serve the residents of Yellowknife.

Operational Impact

There is no anticipated impact to the O&M Budget at this time.

CAPITAL FUND – 2022 Capital Projects

Department CS Community Services
Project FC0011 Rotary Range Lake Trail

Division Parks & Trails

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures	210,000		
Funding			
Community Public Infrastructure Funding	210,000		
<i>Total Funding</i>	210,000		

Description

Purpose

The purpose of this project is to improve the Range Lake trail so that travel is easier for a larger range of the population. The trail is currently fairly narrow and there are areas that are difficult to navigate. This project will make the route easier to navigate and provide rest stations along the route so that individuals who need them can also access this trail.

Background

This trail is an important link from Parker Park to St. Joe's and is an important part of the overall trail system linking Parker Park to the nearby Frame Lake Trail. Users enjoy the natural setting and the ability to access nature within the City. The trail is currently quite rugged in many areas and travel over it is limited to individuals who require no rest areas and are fairly sure-footed.

The proposed upgrades will make the trail more usable by a larger portion of the population. The trail will be more evenly graded, wider, and have rest points, trail markers and lookouts added along the route. The trail will not be fully accessible but will be much more user-friendly and available to a much larger portion of the population, which is in line with the Accessibility Audit objectives.

The City and the Rotary Club will be partnering on this project, as has been done in the past with other trail development. The City will purchase the materials and supply the equipment where necessary, and the Rotary Club will provide the labour to carry out the work.

Operational Impact

Trail checks already occur for this trail so O&M impact will be upkeep and not everyday staffing.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering **Division** Water & Sewer
Project 93306570 Sewage Force Main Repairs and Retention

Budget			
	2022	2023	2024
	\$	\$	\$
Expenditures			
	750,000	-	-
<i>Total Expenditures</i>	750,000	-	-
Funding			
User Fees	750,000		
<i>Total Funding</i>	750,000		

Description

Purpose

To improve the condition of the Force Main pipeline which transports sewage to the Fiddler's Lagoon treatment system.

Background

The City of Yellowknife has one Force Main that carries sewage from Liftstation #5 to the Fiddler's Lake Sewage Lagoon. This line was installed in 1979 with an expected 50-year lifespan. As the Force Main nears the end of its life, increased maintenance and the potential for additional leaks can occur. In 2018 the City experienced a significant break on the Force Main and the ensuing repair and cleanup resulted in substantial unexpected costs to the City. Another break occurred in 2019, during which the City shut down operations at Liftstation #5 and allowed the station to overflow in order to minimize contamination of private property. This necessitated a significant cleanup of contamination in the City Yard.

After seeing several substantial ruptures in the Force Main the past few years in the Kam Lake Industrial Park, this project was initiated in 2019 with an assessment of the current system. The following recommendations were presented:

Force Main Repair (Late 2020)

- Replacing a section of existing Force Main which has undergone multiple repairs.
- \$440,000 Budget, completed with existing budget.

Engineering for Sewage Retention Structure (2021)

- Assess various options provided in the 2019 Engineering Study for a containment area in the City Yard to facilitate future repairs on the Force Main should it rupture, then prepare and post this work for competitive construction bids
- \$150,000 Budget

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 93306570 Sewage Force Main Repairs and Retention

Division Water & Sewer

Construction of Sewage Retention Structure (2022)

- Construction of the sewage containment area will be completed. The construction of a retention structure will allow sewage to be stored in an environmentally safe structure while repairs are being carried out on Liftstation #5 or the Force Main itself.
- \$750,000 Budget recommended.

Operational Impact

Improvements to the Force Main will reduce the likelihood of substantial sewage spills. Additionally, a containment area in the City Yard will minimize environmental impact and cleanup required, and give City staff time to complete necessary repairs.

Gallery

Gallery 1: Sewage Force Main Repair



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 97016570 Submarine Water Supply Line Replacement

Division Water & Sewer

In 2017, the City undertook a study to provide an updated recommendation based on new arsenic data and current cost information. The options were evaluated using a decision matrix model to provide Council with the information necessary to make a decision on potable water source selection. The study was completed and the recommendation was to retain the Yellowknife River location as the city's water source. A separate review of the study by a third-party engineering firm was completed in 2018, and they concurred that the Yellowknife River should remain the water source.

Funding was received in 2019 through the Disaster Mitigation and Adaptation Fund (DMAF), a federal funding program that will cover up to \$25.8 million of the project costs, which is 75% of total Budget costs. Council provided approval via Motion #0123-19 on May 13, 2019 to move forward with the Yellowknife River as the city's primary water source, enter into a contribution agreement with Canada for DMAF funding, and to seek additional funding sources for the City's 25% obligation. City staff are pursuing additional funding options for the remaining \$8.6 million or 25% of the total project costs.

The detailed design and regulatory processes are anticipated to occur from 2021 through 2024, with tentative construction to occur during the winter of 2024/2025.

Operational Impact

The asset is past the end of its useful life. Failure of the pipeline will require the City to draw directly from Yellowknife Bay with no treatment for arsenic.

Gallery

Gallery 1: Submarine Line Replacement Timeline

	Budget	Tentative Project Schedule
2020	\$1,000,000	
2021	\$1,000,000	Preliminary Engineering & Regulatory Work Water Line Design for Water Licence Renewal
2022	\$1,000,000	Detailed Design (Water Line, Pump House Upgrades) Permitting
2023	\$1,000,000	Design Finalization (Water Line, Pump House Upgrades) Project Staging and Preparation
2024	\$9,000,000	Construction (Winter of 2024/2025)
2025	\$20,982,958	
2026	\$500,000	Post Construction Activities
	\$33,482,958	



CAPITAL FUND – 2022 Capital Projects

Department Project PW Public Works & Engineering
73807611 Traffic Light Upgrades

Division Roads & Sidewalks

Budget

	2022	2023	2024
	\$	\$	\$
Expenditures	70,000	70,000	70,000
<i>Total Expenditures</i>	70,000	70,000	70,000
Funding			
Formula Funding		70,000	70,000
Community Public Infrastructure Funding	70,000		
<i>Total Funding</i>	70,000	70,000	70,000

Description

Purpose

To improve traffic lights at signalized intersections by introducing technology that makes the intersections safer for vehicular and pedestrian traffic.

Background

There are 19 intersections which rely on traffic lights for reliable vehicular flow. In recent years, the City of Yellowknife has installed equipment that uses different technologies to aid in traffic flow. These technologies include video detection and countdown pedestrian timers.

The video detection equipment is the new standard in detection and data collection and is easy to install and program. This equipment has a proven field detection accuracy of 98% according to the manufacturer's specifications; this also includes motorcycles and bicycles. The cameras can also capture traffic data, such as traffic counts of cars, trucks and pedestrians, as well as vehicle speeds. However, vehicle speed data can only be used for design methods and not as a method of speed enforcement. The cameras are not used to record video of any intersection, but are used for detection and data collection only.

Depending on the geometry of an intersection, either three or four cameras are required.

In 2017, when new traffic lights were installed at the intersection of Finlayson Drive and Kam Lake Road, countdown pedestrian timers were included in the installation. This equipment uses the typical pedestrian crossing signals alongside a numerical countdown that ends when the light turns yellow. The use of this type of signal allows pedestrians to know how much time they have to cross the intersection.

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 73807611 Traffic Light Upgrades

Division Roads &
Sidewalks

This project has been ongoing since 2013 in order to improve vehicle detection at intersections with traffic lights. To date, video detection equipment has been installed at 14 intersections and countdown timers at eight intersections. It is the City's intent to install video detection equipment at two intersections per year. Public Works recommends continuing with this project in order to improve the overall flow of traffic in Yellowknife.

Operational Impact

The video detection will collect data such as traffic counts, which will otherwise require a staff person counting vehicles, to be used for timing and coordination patterns.



CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 96156570 Water & Sewer Infrastructure Replacement

Division Water & Sewer

Budget			
	2022	2023	2024
Expenditures	\$	\$	\$
Water and Sewer Upgrades	3,640,000	3,260,000	2,000,000
Water and Sewer Paving	585,000	790,000	800,000
<i>Total Expenditures</i>	4,225,000	4,050,000	2,800,000
Funding			
Canada Community-Building Fund	3,640,000	3,260,000	2,217,000
Other Grants	438,750	592,500	
Community Public Infrastructure	146,250		49,884
Funding			
User Fees		197,500	533,116
<i>Total Funding</i>	4,225,000	4,050,000	2,800,000

Description

Purpose

To replace failing underground water and/or sewer infrastructure on a planned and prioritized basis to reduce reactive maintenance costs.

Background

In the late 1940s, the City of Yellowknife began providing piped water and sewer services in the present downtown area. Pumphouse #1 was constructed during this time to draw water from Great Slave Lake and distribute it to the downtown residents of Yellowknife. By 1977, the sewer mains had degraded to the point where entire sections of the City's piped system failed. The water and sewer mains were comprised of cast iron and corrugated metal pipe (CMP) respectively, and were predominantly uninsulated. The pipe material, combined with no insulation in the freeze/thaw layer, resulted in high maintenance and repair costs that the City continues to deal with today.

The City has since changed pipe material standards to insulated, ductile iron pipe. With these changes to City standards, the life expectancy of water and sewer mains can be as much as 50 years. However, prevailing ground conditions and permafrost presence can impact the life span of any pipe installation.

The following are currently included in the annual Water & Sewer Infrastructure Replacement (Galleries 1 and 2) plans:

- Replacement of existing corrugated metal pipe sewer mains and/or ductile iron sewer mains in poor condition, with ductile iron pipe
- Replacement of concrete sewer manholes
- Replacement of existing cast iron water mains, and/or insulated ductile iron water mains in poor condition, with appropriately-sized insulated ductile iron pipe

CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering **Division** Water & Sewer
Project 96156570 Water & Sewer Infrastructure Replacement

- Replacement of in-line hydrants, valves with hydrants, and valves located in insulated concrete vaults with manhole access
- Replacement of individual lot water and sewer services where deemed necessary
- Road stabilization and reconstruction with crushed rock backfill
- Completion of the project with concrete sidewalks and a paved roadway

Considerations when determining areas of reconstruction include:

- Condition and age of asset
- Recurring maintenance costs
- Priority level of roadway
- Number of impacted residents and services

Operational Impact

Aging infrastructure has an operational cost of between 2% and 4% of replacement costs. Replacing this infrastructure will allow the department to focus operational and maintenance activities in other areas of the water and sewer systems.

This project is consistent with good Asset Management principles.

Gallery

Gallery 1: 2022 to 2024 Water & Sewer Projects

Year	Street
2022	Hordal Road (Phase 2)
	Hordal Road (Phase 1) - Paving
2023	Johnson Crescent
	Hordal Road (Phase 2) - Paving
2024	49A Avenue (Niven Drive to 42 Street)
	Johnson Crescent - Paving



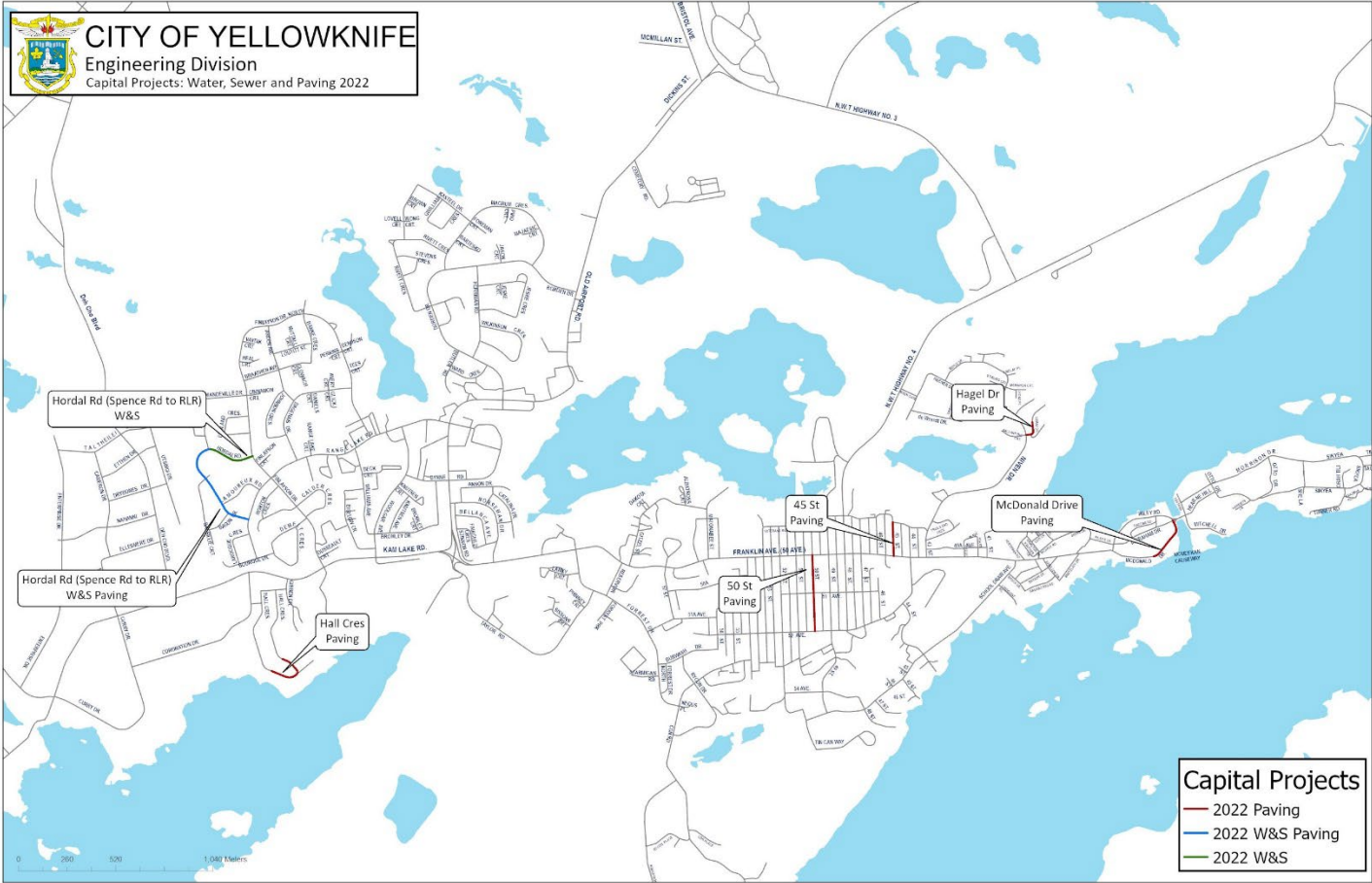
CAPITAL FUND – 2022 Capital Projects

Department PW Public Works & Engineering
Project 96156570 Water & Sewer Infrastructure Replacement

Division Water & Sewer

Gallery

Gallery 2: 2022 Water, Sewer & Paving Projects



CAPITAL FUND – 2022 Capital Projects

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