OPERATIONS & ENGINEERING - CAPITAL

OVERVIEW

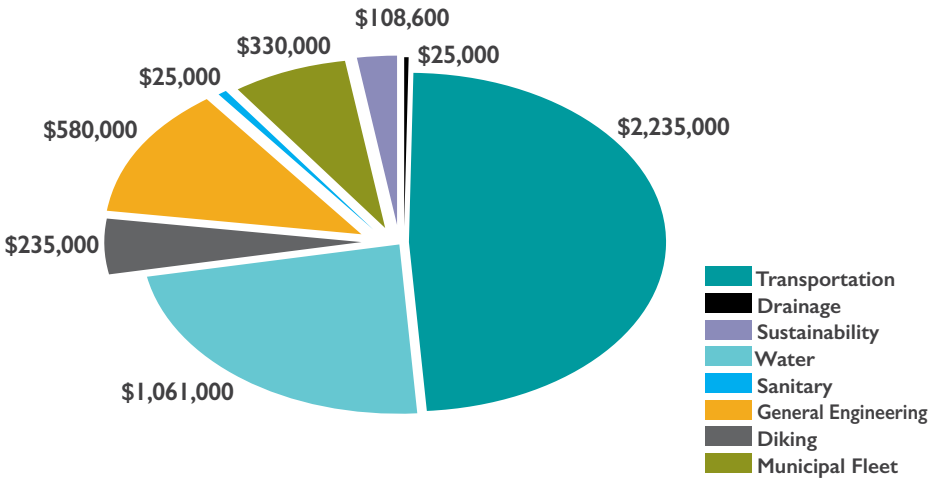
Each year the City partakes in a detailed capital planning process that forecasts the infrastructure needs over the next five, 10 and in some circumstances 40 years. All infrastructure is reviewed and prioritize based on asset age, condition, capacity, and identified corporate priorities. After Council has reviewed and approved the five-year capital plan budgets are generated to ensure that all encompassing costs of all planned future infrastructure upgrades are anticipated and accounted for.

The major groups or categories for the Engineering and Operations capital plan and budget are:

- Transportation
- Water
- Diking
- Drainage
- Sanitary
- Municipal Fleet
- Environmental Protection / Sustainability
- General Engineering

The 2017 Preliminary Capital Budget funding requirements amount to $4,599,600
The individual project category requirements are as follows:

2017 ENGINEERING AND OPERATIONS CAPITAL FUNDING REQUIREMENTS PER DISCIPLINE



For 2017, the majority of the engineering and operations funding will come from the City's Capital Reserve Fund with smaller contributions from DCC's and third party contributors.

OPERATIONS & ENGINEERING - CAPITAL

2017 ENGINEERING AND OPERATIONS CAPITAL FUNDING SOURCES

Funding Source	Amount
DCC's	$265,900
Grants	$0
3rd Party Contributions	$22,500
Reserves	$4,311,200
Debts	0
Total	**$4,599,600**

Further information for each of the major asset categories above are detailed within this report. Each subsequent section provides further detail on the overall asset category, its condition, proposed projects and allocated budget. Water, drainage, and sanitary have been combined under the Utility heading Life cycle schedules are dependent on routine maintenance schedules being followed and repairs being addressed as needed.

The proposed 2017 capital budget and the remaining 2017-2021 capital plan represents an investment of $21.8 million in engineering and operations capital assets over this five-year period.

The current capital requirements exceed cash flow and grant opportunities, therefore unfunded projects have been pushed into later years so as not to exceed available and approved funding capacity. Projects could be realized earlier if funding or financing opportunities are realized.

Transportation

Transportation projects include: intersection control, sidewalks, street signs, bus stops, roadways and bridges. Projects in this category include the design, maintenance, construction and purchase of these assets to keep them functional and in a good state of repair in order to maintain an exceptional level of service to our residents.

The Engineering and Operations divisions are responsible for these assets. The engineering division collates these corporate projects and helps prioritize them based on criteria that include the age and condition of the assets, their forecasted level of service, any health or safety risks and the availability of funds. When a project is identified as a priority and is approved by Council, the engineering division assumes responsibility for managing the design, construction and acquisition of these assets through a third party engineering contractor.

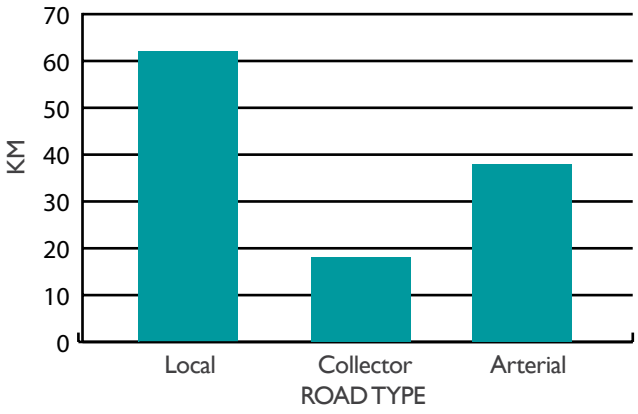
An investment of $2,235,000 is required to fund the preliminary 2017 transportation projects.

OPERATIONS & ENGINEERING - CAPITAL

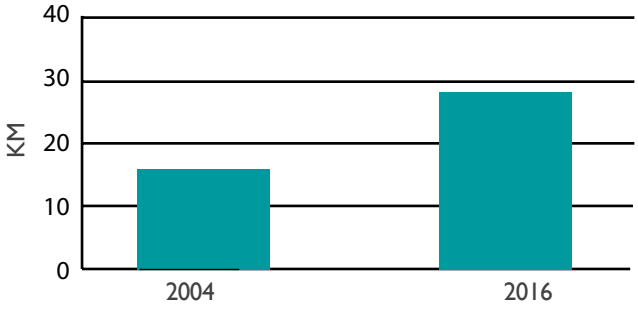
AT A GLANCE - TRANSPORTATION ASSET STATISTICS

- Total road lengths have increased 7.7% (7,750) since 2001.
- Bike road lane lengths have increased 28% since 2004.
- Off road Multi-use Trails have increased 95% since 2000; dikes are not included in this total.

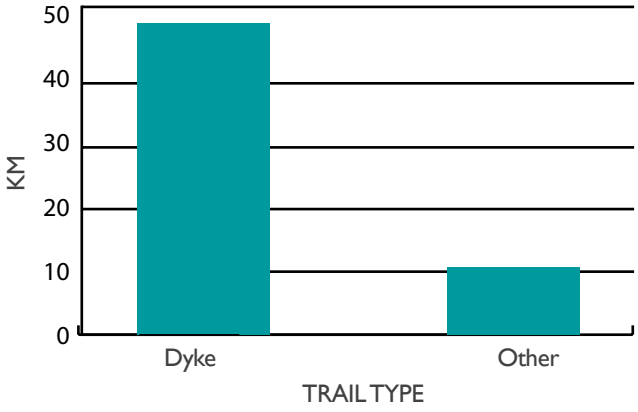
ROAD INVENTORY



BIKE LANES IN ROADWAY



OFF ROAD MULTI-USE TRAILS



OPERATIONS & ENGINEERING - CAPITAL

The current estimated replacement value for the City's transportation infrastructure assets is $74,600,000.

Current Assets	
Asset Category	**Quantity**
Roads	114.3 km
Bike lanes	31.0 km
*Bridges	9
**Off Road Trails/Paths	15.0 km
Traffic Control Signals	8
Street Lights	1,009
Sidewalks	58.7 km
Traffic signs	2,034 signs on 1,249 poles
*Includes all Vehicle Bridges, CP Pedestrian Overpass & Heron Pedestrian Bridge. **Not including Dikes	

Sustainability (Life Cycle) Considerations

Asset Type	Asset Component	Useful Life
Road Network	Wooden Bridge	40
	Concrete Bridge	100
	Curb and Gutter	25 to 50
	Rail Crossing	15
	Road Base	50 to 75
	Road Surface -Asphalt	20
	Roundabout	50
	Sidewalk -Concrete	23 to 50
	Sidewalk -Brick	50
	Sidewalk -Asphalt	50
	Main Streetlights	40 to 50
	Streetlights -LED Head	10
	Streetlights -Parking Lot Lights	47 to 50
	Streetlights -Short Post Top	47 to 50
	Streetlights -Bevel Top Bollard	50
	Streetlights -Control Box	50
	Crosswalk Signals	25
	Traffic Signals	25

OPERATIONS & ENGINEERING - CAPITAL

2016 ACHIEVEMENTS - TRANSPORTATION

Repaving

- McNeil Road (Sheridan Drive to Neaves Road)
- Ford Road (Harris Road to 189B Street)
- Airport Way Road (Southgate to Bonson Road)
- Wildwood Crescent (Wildwood Crescent North, Wildwood Place, Wildcrest Avenue)
- Park Road @ Somerset Drive Intersection

Reconfigurations

- Wheelchair sidewalk letdowns reworked:
  - Park Rd & Oak Terrance (Northeast)
  - Park Rd & Oak Terrance (Northwest)
  - 119th Ave & 190A St (Northeast)
  - Park Rd & Sommerset Dr (Southeast)
  - Park Rd & Bonson Rd (Northeast)
  - Park Rd & Bonson Rd (Southeast)
  - Park Rd & Mcmyn Ave (Southwest)
  - Park Rd & 194A St (Southwest)
  - Park Rd & 194A St (Southeast)
  - Park Rd & Mcmyn Ave (Southeast)
  - Cusick Crescent @ 194A Ave (Southwest)
  - Bonson Rd & 117B St (Southwest)
  - Bonson Rd & 117B St (Northwest)
  - Bonson Rd & Hammond Rd (Southeast)

- Trailhead bollard replacements:
  - 18850 - 119b Ave
  - 12405 - 193b St
  - Somerset Dr and Park Rd
  - 19635 - Cedar Lane
  - 11606 -196A St

OPERATIONS & ENGINEERING - CAPITAL

KEY CHALLENGES FOR 2017 - TRANSPORTATION

Pavement Management. A pavement management survey is conducted every five years to determine if the City's asphalt repair program is keeping pace with asphalt degradation. The pavement management survey conducted in 2012 by third party consultants indicates that the current asphalt repair/replacement program is not keeping pace with the increasing number of asphalt failures that are occurring, in particular on rural roads and recommends the City consider increasing funding for road rehabilitation. A new Pavement Management survey is scheduled for 2017. This, along with the completion of a road asset management plan will provide essential information to the asset management system and assist in future capital planning efforts.

Pedestrian and Cycling Master Plan. The City has adopted a Pedestrian and Cycling Master Plan along with recommended improvements to the City's Active Transportation Infrastructure (sidewalks, pedestrian crossings, bike lanes and multi-purpose pathways). Currently funding is allocated for projects identified in the Plan. Council has approved funds for a 5-year period to allow projects to proceed. 2017 projects to be prioritized by the Active Transportation Committee in early 2017.

Traffic Patterns and Volumes. The two new bridges, Golden Ears (east side of the City) and Pitt River (west side of the City) have changed traffic patterns on City roads which is creating issues on those routes experiencing increased traffic volumes, future capacity requirements (road widening with additional lanes) and more complaints from adjacent residents. East west traffic volumes through Pitt Meadows are increasing as development continues in the communities to our east and these volumes will continue to increase in future years. This increase will continue to put pressure on the City's corridors, as traffic will seek alternate east/west routes other than the Lougheed Highway. There is continued Provincial focus on the transportation of goods through the Gateway network. The result is an effect on the Pitt Meadows rail and road networks as rail is expected to see higher volumes and longer trains in the future. Traffic calming on local roads within residential neighborhoods continues to provide challenges and requires education, engineering and enforcement.

KEY INITIATIVES FOR 2017 – TRANSPORTATION

2017 Proposed Projects	Value
Rannie Rd Repave	$575,000
Bonson Road (North)	$235,000
Arena parking Lot Repave	$240,000
Neaves Road Bike Lanes	$300,000
Katzie Slough Bridge Replacement (Design)	$150,000
South Alouette Bridge Rehab	$60,000* *remainder carried over from 2016
Miscellaneous Street Paving (locations based on Pavement Management Study)	$300,000
Pavement Management Study	$65,000

DRAFT TRANSPORTATION CAPITAL PLAN FOR 2017

Category	Project#	Priority	2017	2018	2019	2020	2021	Total
Transportation								
Misc Road Asset Rehab 02-2-90-8158	RD-001	3	60,000	60,000	60,000	60,000	60,000	*300,000*
Rannie Road Repave 02 290 7777	RD-017	3	575,000					*575,000*
Thompson Road - Repave 02-2-90-8155	RD-019	3		350,000				*350,000*
Hammond Rd Overlay Bonson to Katzie 02-2-90-7744	RD-024	3		300,000				*300,000*
Active Transportation 02-2-90-7745	RD-028	3	100,000	100,000				*200,000*
Wildwood Cr Repave-Hammond to Bonson 02-2-90-8156	RD-034	3			250,000			*250,000*
McKechnie Rd Repave-ODT to Connecting 02-2-90-7739	RD-035	3			500,000			*500,000*
Ford Rd Repave-Woolridge to West End 02-2-90-7779	RD-042	3		248,000				*248,000*
Hale Rd Repave-Cranberry to Dyke 02 290 7713	RD-055	4				250,000		*250,000*
Ladner Rd Repave-Rannie to Middleton 02-2-90-7760	RD-061	3			300,000			*300,000*
Various Bridge Maintenance 02-2-90-7752	RD-062	3	125,000	20,000		20,000		*165,000*
Bonson Rd (North) Asphalt Lift 02-2-90-7735	RD-070	3	235,000					*235,000*
Fraser Way Upgrade 02-2-90-7767	RD-081	4			450,000			*450,000*
Katzie Slough Bridge - Harris Rd 02-2-90-7748	RD-084	3	150,000	700,000				*850,000*
Middleton Rd Repave 02-2-90-7774	RD-086	4				300,000		*300,000*
Miscellaneous Street Paving 02-2-90-8560	RD-090	3	300,000			0	0	*300,000*
Arena Parking Lot Repave 02-2-90-7763	RD-093	1	240,000					*240,000*
Advent Road Mill & Pave	RD-096	4					100,000	*100,000*
Park Road Repave	RD-097	3					450,000	*450,000*
Sidewalk Repair 02-2-90-7768	RD-099	1	20,000	20,000	20,000	20,000	20,000	*100,000*
Ladner Road Bridge 02-2-90-7765	RD-102	3		250,000	700,000			*950,000*
South Alouette Bridge Rehab 02 290 7782	RD-110	2	65,000					*65,000*
Harris Road Paving (urban area)	RD-111	3					150,000	*150,000*
McDonald/Patrick Road	RD-113	3					200,000	*200,000*
Pavement Management 02 290 7769	RD-115	3	65,000					*65,000*
Neaves Road Pavement Repair 02 290 7705	RD-116	2				400,000		*400,000*
Neaves Rd Bike Lanes 02 290 7783	RD-117	3	300,000	150,000				*450,000*
Harris Rd Between 2 Dewdneys	RD-118	3					150,000	*150,000*
Transportation Total			**2,235,000**	**2,198,000**	**2,280,000**	**1,050,000**	**1,130,000**	***8,893,000***

UTILITY INFRASTRUCTURE

Utility infrastructure projects include water and waste water systems (both sanitary and storm drainage). Projects in this category include the design, maintenance, construction and purchase of these assets to keep them functional and in a good state of repair in order to maintain an exceptional level of service to our residents.

The Engineering and Operations divisions are responsible for these assets. The engineering division collates these corporate projects and helps prioritize them based on criteria that include the age and condition of the assets, their forecasted level of service, any health or safety risks and the availability of funds. When a project is identified as a priority and is approved by Council, the engineering division assumes responsibility for managing the design, construction and acquisition of these assets through a third party engineering contractor.

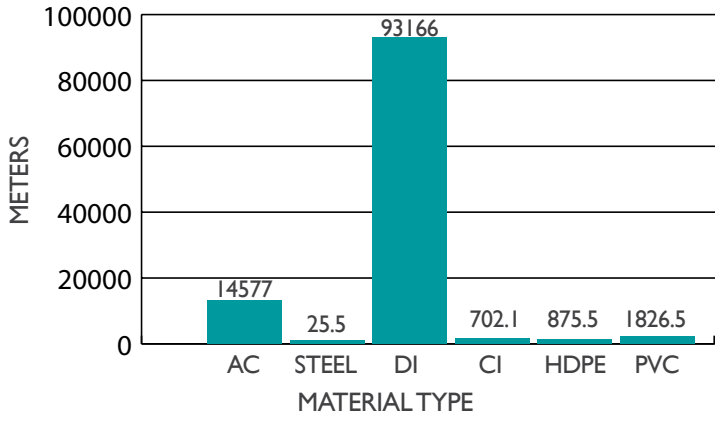
Depending on complexity, these projects may require multiple years to complete. Accordingly, projects may be segmented to match funding constraints. An investment of $1,901,000 is required to fund the preliminary 2017 utility infrastructure projects.

AT A GLANCE – UTILITY INFRASTRUCTURE ASSET STATISTICS

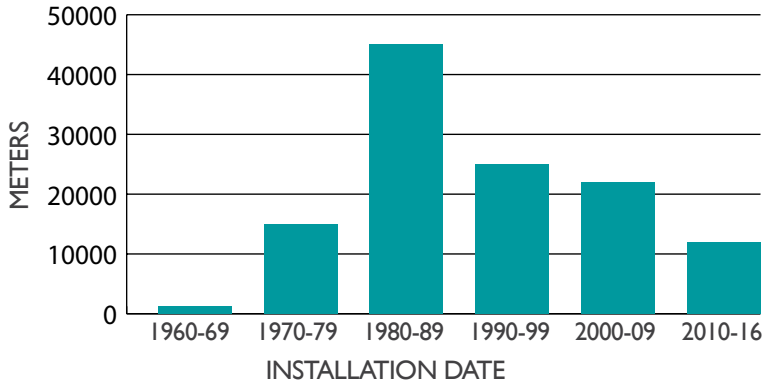
Water Distribution System

- The City purchases the water it distributes from Metro Vancouver, and the City's trunk distribution system is constructed, maintained and upgraded under a Joint Supply Agreement with Metro Vancouver.
- A significant portion (80%) of the water distribution system is constructed of Ductile Iron pipe and is in good condition.

WATER SYSTEM INVENTORY



WATER SYSTEM AGE DISTRIBUTION



- Approximately 50% of the annual water capital budget is designated for the replacement of Asbestos Cement (AC) water mains with a target of 2025 for the replacement completion of all AC mains.
- The length of water main inventory has increased by 12% (or 13,164 metres) since 2001.
- Estimated Replacement Value for the City's water distribution assets is $100,900,000.

Current Assets	
Asset Category	**Quantity**
Water mains	112.5 km
Pressure Reducing Stations	6
Booster Station	1
Fire Hydrants	481
Valves	989
Meters	720
Service Connections	3,945

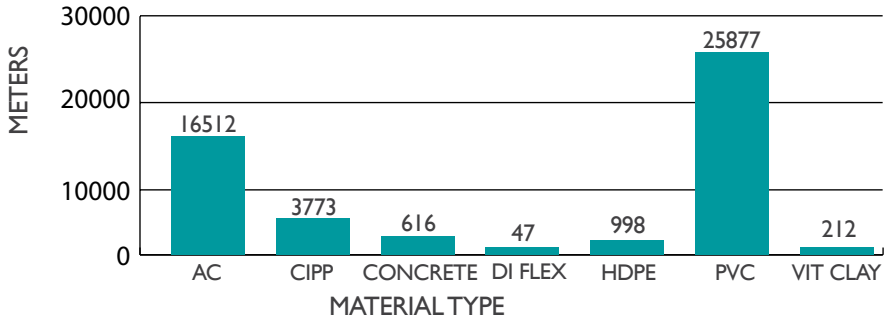
Sustainability (Life Cycle) Considerations

Asset Type	Asset Component	Useful Life
Water Network	Water Pipes	45 to 100
	Service Connections	50
	Booster Station	30
	Hydrant	50
	Water Meter	20
	PRV Station	50
	Water Valves	50

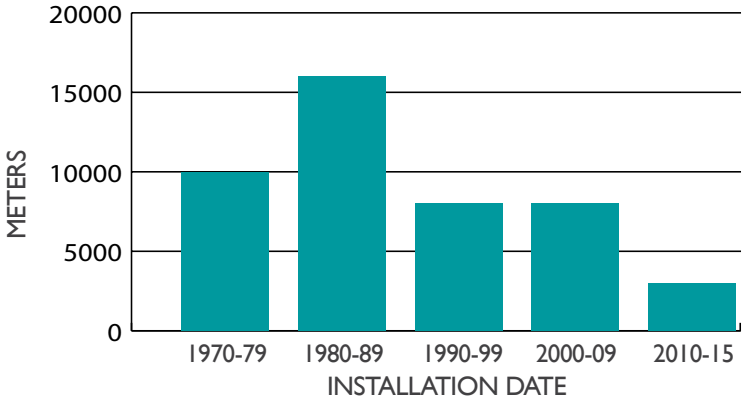
Sanitary Sewer System

- The sanitary sewer collection system discharges to the Metro Vancouver Sanitary Sewer Collection pump station on Baynes Road on-route to the regional Annacis Island Sewerage Treatment Plant in Delta, B.C.
- The City has a long-term replacement plan for the conversion of Asbestos Concrete (AC) mains to PVC mains, and where possible, mains are re-lined with PVC to extend their useful life for an additional 50 years.
- Development activity provides for the installation, extension and or capacity upgrades of sanitary sewer mains, as required.

SANITARY SYSTEM INVENTORY



SANITARY SYSTEM AGE DISTRIBUTION



- The City replaced approximately 3,773 meters of sanitary sewer main since 2010 with cured in place polyethylene (CPP).
- The City's sanitary sewer inventory has increased 22.9% (11,129m) since 2001.
- Estimated Replacement Value for the City's sanitary sewer system assets is $32,300,000

Current Assets	
Asset Category	**Quantity**
Sewer Mains	48.5 km
Sewer Lift Stations	8
Pumps & Controls	16
Manholes	697
Generator	6 fixed & 1 portable
Service Connections	3,029

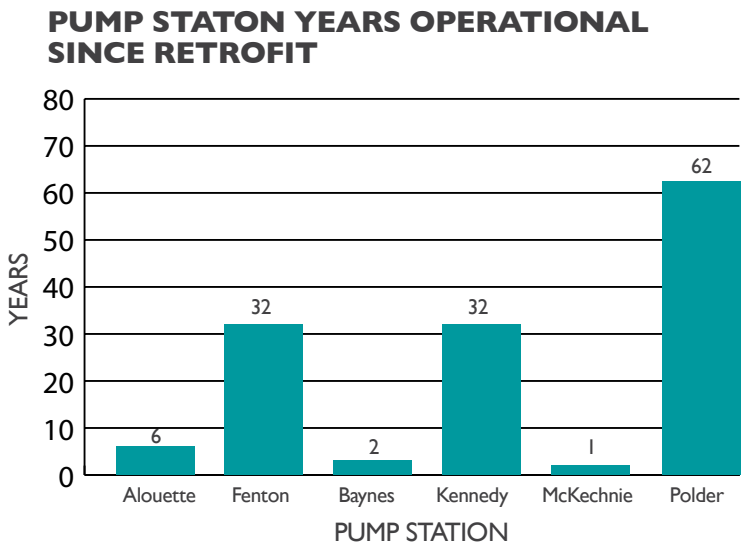
Sustainability (Life Cycle) Considerations

Asset Type	Asset Component	Useful Life in Years
Sanitary Sewer Network	Gas Monitors	10
	Lift Stations	50
	Manholes	70
	Sewer Main -50 mm	80
	Sewer Main -100 mm	30 to 80*
	Sewer Mains -150 mm	80
	Sewer Mains -200 mm	30 to 125*
	Sewer Mains -250 mm	30 to 80*
	Sewer Mains -300 mm	30 to 80*
	Sewer Mains -375 mm	30 to 80*
	Sewer Mains -400 mm	30
	Sewer Mains -450 mm	30 to 80*
	Sewer Mains -500 mm	30 to 80*
	Sewer Mains -525 mm	80
	Sewer Mains -530 mm	80
	Sewer Mains -675 mm	80
	Service Connections	50

Storm Drainage

- In 2004, a Storm Sewer Audit was completed for the urban area piped system and the audit found the system to be in good shape with no major deficiencies identified.
- Development activity provides for extensions from trunk sewers.
- There are four separate municipal drainage systems in the City with a total of 204 km of ditches that require regular cleaning and maintenance.
- The ditch and culvert system was reviewed by a consultant in 2007 to determine existing and future capacities. Despite investment in drainage infrastructure in the short term, drainage infrastructure continues to age faster than the City's current rate of replacement.
- The majority of the drainage pump stations were constructed in the early 1980`s under the Agriculture and Rural Subsidiary Agreement (ARDSA) program and the pumps are now coming to the end of their life cycle and need replacement. This work has been underway since 2010.

Pump Stations



- The pumps in the Area #1 station were replaced in 2010 with a grant from the Emergency Flood Response Program.
- The pumps in the Area #2 and #3 are now being slowly replaced, as funding is available.
- The pumps in the Baynes Road Pump Station were retrofit including new controls in 2014.
- The pump station in area #4 was built in 1954 and requires replacement; parts are limited due to the age of the station. The City continues to actively pursue grant opportunities for a full replacement of the station, at the same time the City is looking for a more cost effective replacement option.

The estimated Replacement Value for the City's drainage infrastructure assets is $76,100,000.

Current Assets	
Asset Category	**Quantity**
Storm Mains	48.9 km
Service Connections	2,337
Catch Basins	1,405
Manholes	720
Pump Station & Flood Boxes	6
Pumps	15
Culverts	740
Open Ditches (public land)	176.7 km
Floodgates	11

Sustainability (Life Cycle) Considerations

Asset Type	Asset Component	Useful Life
Storm Sewer (Drainage) Network	Storm Pipes	30 to 80
	Storm Service Connections	50
	Culverts	30 to100
	Catch Basins	50
	Flood Boxes	50
	Headwall	70
	Manholes	70
	Pump Stations (includes components)	50
	Pump	35
	Storm Inlet	50
	Trash Racks	30

OPERATIONS & ENGINEERING - CAPITAL

2016 ACHIEVEMENTS – UTILITIES

Water main Replacement

- Wildwood Crescent North Main
- 117B Ave & 193A / 193B Street Mains
- 116B Ave & 192A & 192B Street Mains

Culvert Install / Replacement

- 11834 Baynes Road Culvert Replacement

Cranberry Sough

- Flood box repair

Sewer

- Cured in Place Pipe
  (Blakley Road, 116B Avenue, 117 Ave, Bonson Road)

KEY INITIATIVES FOR 2017 – UTILITIES

Storm Drainage Projects	Value
Culvert Replacements	$200,000
Pump Station Trash Rack System	$235,000

Sanitary Sewer Projects	Value
Scada Upgrades	$10,000

Water Projects	Value
Wildwood Crescent Main	$290,000
McKechnie Road Main	$285,000
Bonson PRV Replacement	$310,000
Meadow Gardens PRV Replacement	$130,000* *Remaining budget carried over from 2016

KEY CHALLENGES FOR 2017 – UTILITIES

Sustainable Funding. Obtaining sustainable funding for asset life cycle and replacement purposes is a challenge for the City. The steady pressure to reduce capital funding in order to balance cash flow forces the deferral of necessary infrastructure work. The risk is an eventual increase in costs in the future when assets fail.

Prices fluctuate with the economy, with the cost of fossil fuels influencing material, labour and construction costs. As this trend continues, estimating project costs is becoming increasingly difficult to budget to maintain current infrastructure replacement levels. Projects are often reviewed and reduced in scope to fall within the dedicated budget amount.

Despite investments in drainage, the City's storm drainage infrastructure, in particular pumps and culverts, continues to age faster than the City's current rate of replacement, which in turn drives up operating costs. The two biggest challenges in the utility are:

- trying to spread the costs of upgrading and or replacing infrastructure that is well beyond its expected useful life out over the long term to manage costs and the risk associated with infrastructure failure, and
- building up reserves to sustainable levels in order to reduce the City's reliance on borrowing and grants.
- an Integrated Stormwater Management Plan for the urban area, mandated by Metro Vancouver and the Province, was completed in 2015. This plan includes capital expenditures and highlights areas of immediate focus.

Environmental Protection. Environmental protection and fisheries mandates continue to challenge implementation of the City's ditch maintenance system and pump station upgrades. There is an increased public interest in Katzie Slough. Volunteer groups have an interest in planting the foreshore in hopes of establishing additional habitat and introducing additional freshwater to the drainage system. This provides a unique challenge for the City managing the many competing interests. Accordingly, staff is suggesting the creation of an Integrated Water Management Master Plan to coordinate these efforts. Additionally, access is often via private property providing a challenge to this activity. A three-year cleaning of the Katzie slough of vegetation concluded in 2015. While the project has been successful in improving water conveyance, regrowth of invasive vegetation is occurring at a rate faster than anticipated.

Water Distribution. The City is responsible for the delivery of potable water to a population of approximately 18,673, including agricultural water users. The provision of domestic water to agricultural users is unique to this region and sets Pitt Meadows apart from the rest of Metro Vancouver. Over 55% of the City's water distribution system services the rural area. As a result, the City of Pitt Meadows is one of the largest per capita water users in Metro Vancouver. Infrastructure demands in the rural area are driving significant upgrades in the water distribution system.

Sanitary Sewer System Maintenance. The City's sanitary sewer Asbestos Cement (AC) pipes have been reviewed for life cycle replacement and additional testing has been completed on extracted pipe sections to determine time frames for these replacements. A comprehensive rehabilitation schedule with estimated costs has been completed for a long-term replacement funding strategy. A strategy has been developed to re-line existing mains with poly vinyl chloride (PVC) material as an alternative to full replacement of the AC mains. To date the City has rehabilitated approximately 3,773 meters (19% of AC mains) by this method.

DRAFT UTILITY CAPITAL PLAN FOR 2017

Category	Project#	Priority	2017	2018	2019	2020	2021	Total
Diking System								
Diking - Miscellaneous Repairs 02-2-90-8550	DD-001	3	30,000	30,000	30,000	30,000	30,000	*150,000*
Dike Topping 02-2-90-8551	DD-005	3	30,000	30,000	30,000	30,000	30,000	*150,000*
Dike Master Plan	DS-047	3	175,000					*175,000*
Diking System Total			**235,000**	**60,000**	**60,000**	**60,000**	**60,000**	***475,000***
Drainage System								
Storm Misc. Repairs 04-2-94-7105	DS-001	3	20,000	20,000	20,000	20,000	20,000	*100,000*
Meadow Gardens Storm Sewer 04-294-7111	DS-010	5				111,300		*111,300*
All Pumpstations - Refurbish 04-2-94-8000	DS-012	3	10,000	10,000	10,000	10,000	10,000	*50,000*
Culvert Replacements 04-2-94-8009	DS-015	2	200,000	100,000	150,000	100,000	150,000	*700,000*
Drainage Pumpstations - Misc. Repairs 04-2-94-8000	DS-017	3	10,000	10,000	10,000	10,000	10,000	*50,000*
Drainage Pump Repl-Kennedy A3 04-2-94-8005	DS-019	3		880,000	467,500			*1,347,500*
Drng Pump Lifecycle Repl - FentonArea2 04 294 8512	DS-022	3					545,000	*545,000*
Major Slough Cleaning 04-2-94-7116	DS-036	2			100,000	100,000		*200,000*
Trash Rack Systems 04-2-94-8556	DS-038	3	325,000			350,000	350,000	*1,025,000*
Fill Site Review 04 294 8513	DS-043	2		35,000				*35,000*
ISMP Monitoring 04-294-7120	DS-044	3	15,000					*15,000*
Drainage System Total			**580,000**	**1,055,000**	**757,500**	**701,300**	**1,085,000**	***4,178,800***
Engineering								
DCC Bylaw Review 02-290-7798	DE-001	2	25,000					*25,000*
Engineering Total			**25,000**					***25,000***
Sanitary Sewer System								
Sewer Misc. Repairs 08-2-94-8100	SS-001	3	15,000	15,000	15,000	15,000	15,000	*75,000*
Sewer Pipe Rehabilitation 08-2-94-8209	SS-023	2		300,000		300,000		*600,000*
SCADA Upgrades 08-2-94-8211	SS-024	3	10,000	10,000	10,000	10,000	10,000	*50,000*
Sanitary Sewer System Total			**25,000**	**325,000**	**25,000**	**325,000**	**25,000**	***725,000***
Water System								
Various Water Rehab 06-2-94-8100	WS-001	3	30,000	30,000	30,000	30,000	30,000	*150,000*
203 St. Watermain and PRV 06-2-94-8707 MAF	WS-039	3			250,000	500,000		*750,000*
194A and 194B Streets Mains 06-294-8164	WS-048	3				150,000		*150,000*
195A/195B Streets & 117B Avenue Mains 06-294-8160	WS-049	3				200,000		*200,000*
Advent Road West Main 06-2-94-8715	WS-052	3		200,000				*200,000*
194B Street and 118B Ave Mains 06-2-94-8711	WS-053	3		480,000				*480,000*
196B Street and 119A/120B Ave Mains	WS-054	3					300,000	*300,000*
119/119B and 116A Ave Mains 06 294 8155	WS-057	3			250,000			*250,000*
Wildwood Crescent Main 06-2-94-8708	WS-058	3	290,000					*290,000*
McKechnie Road Main 06-2-94-8137	WS-059	3	285,000					*285,000*
Sharpe Road Main 06-2-94-8716	WS-060	3		415,000				*415,000*
Park Road Water Service Transfers 06 294 8156	WS-067	4				150,000		*150,000*
Hale Road Watermain 06 294 8157	WS-070	3					400,000	*400,000*
PRV Replacement - Bonson PRV 06 294 8158	WS-074	3	310,000					*310,000*
PRV Repl - Meadow Gardens Way 06 294 8159	WS-075	3	130,000					*130,000*
South Bonson Watermain-Hammond to 116B	WS-076	3				375,000		*375,000*
188A/188B/119B Mains 06-294-8162	WS-079	3			275,000			*275,000*
116A/193/193B Water Main Replacement	WS-084	3			400,000			*400,000*
PRV Replacement - Lougheed	WS-085	3					400,000	*400,000*
PRV Confined Space Access	WS-086	3	16,000					*16,000*
Water System Total			**1,061,000**	**1,125,000**	**1,205,000**	**1,405,000**	**1,130,000**	***5,926,000***
GRAND TOTAL			**4,619,600**	**4,908,000**	**4,362,500**	**4,054,300**	**3,845,000**	***21,789,400***

OPERATIONS & ENGINEERING - CAPITAL

MUNICIPAL FLEET AND EQUIPMENT, DIKES AND THE ENVIRONMENT (PUBLIC ASSETS)

These public asset projects include fleet and equipment, dikes, and the environment. Projects in this category include the purchase, repair and replacement of these assets to keep them functional and in a good state of repair in order to maintain an exceptional level of service to our residents.

Municipal Fleet and Equipment, Dikes and the Environment require an investment of $673,600 to fund these preliminary 2017 public asset projects.

AT A GLANCE - PUBLIC ASSET STATISTICS

Municipal Fleet and Equipment

- Municipal equipment is utilized to perform a large number of maintenance, public works and development services functions.
- The City's fleet is used to maintain the water, sewer, drainage, roads, buildings and solid waste assets of the municipality and for bylaw enforcement, building inspection and fire to respond to emergencies.
- Estimated Replacement Value for the City's fleet and equipment is $2,250,000 - $2,550,000.

Current Assets	
Asset Category	**Quantity**
Works Vehicle Fleet	23
Works Equipment	37
Works Small Tools	42

Sustainability (Life Cycle) Considerations

- Major heavy duty equipment has an estimated service life of between 12 and 20 years
- Minor equipment and standard vehicles have an estimated service life of 10 years or less. (The majority of the fleet falls into the minor equipment category

OPERATIONS & ENGINEERING - CAPITAL

Diking System

- Pitt Meadows has approximately 86% of its 9,516 hectares of land mass in the floodplain.
- Pitt Meadows is a community bordering three major rivers (Fraser, Pitt and Alouette).
- Flood protection is provided by 61 km of dike systems across 4 separate diking and drainage areas. There is no plan at this time to raise the dikes to the new recommended standard.
- There are two types of Dikes in Pitt Meadows. Type 1 dikes are standard dikes built between 1977 and early 1989 and Type 2 Dikes are nonstandard agricultural dikes constructed/rebuilt between 1949 and 1950.
- Diking Area #2 and #3 dikes (type 1) were rebuilt in 1977 to 1989 and have an indeterminate lifespan. Operations have completed periodic gravel topping over the years. Recent toppings have improved the surface to accommodate pedestrian traffic.
- Diking Area #1 and #4 are agricultural standard dikes and has an indeterminate lifespan. Operations maintain the slopes by mowing and removal of any trees within the dike structure.
- New flood construction elevations recommended by Fraser River Basin Council will require all standard dikes to be raised by 0.3 m to 0.9 m. There is no time line or dollar value determined at this time to raise the dikes.

Current Assets	
Asset Category	**Quantity**
Dike (type 1)	30.5 km
Dike *(type 2) *Agricultural dike (including Pitt Addington dike)	30.4 km

Environmental Protection / Environmental Stewardship

Current Assets	
Asset Category	**Quantity**
Vehicle	1 Ea.

2016 ACHIEVEMENTS – PUBLIC ASSETS

Municipal Fleet and Equipment

- Equipment Purchases. The following equipment was purchased:
- Tractor replacement for vegetation management
- Environmental Stewardship vehicle

Diking

- Irrigation Study. In 2016, the drainage system was successfully modelled to determine its capacity. Additional modelling is still required to determine the feasibility to bring water into the system for irrigation purposes and be able to move water out of the system sufficiently if inclement weather occurs.
- Drainage Area Four Upgrades. A breach in the Area Four dike at the Pitt River was successfully repaired in 2016.

Environment

- Environmental Stewardship Officer Vehicle. In 2016, a vehicle for the environmental stewardship officer was procured. This vehicle will be utilized amongst the engineering division for site visits, inspections and attending regional meetings.

OPERATIONS & ENGINEERING - CAPITAL

KEY CHALLENGES FOR 2017 – PUBLIC ASSETS

- **Capital Replacement Reserve.** Currently a dike assessment is underway by the Ministry of Forests, Lands, and Natural Resource Operations focusing on the effects rising sea levels will have on the seismic stability of BC dikes. Findings could result in considerable future capital expenditures.
- **Environmental Protection / Environmental Stewardship: Water Quality.** The City of Pitt Meadows has 204km of key ditches throughout the 8,020 hectares of land within its catchment. Streamside protection and erosion and settlement control play an integral role in the health of our watercourse network.
- **Potable Water for Irrigation.** While a number of farms have water licences issued by the Ministry of Environment for irrigation, there are still a number of farms using City supplied potable water. Using treated water for irrigation is not optimal, and is a large cost burden to the farmer. Increased water quality and quantity in the key ditch network would allow additional water use permits to be issued for irrigation supply. This would result in a lower cost to the farming community and would ensure fire protection pressures are maintained in the rural area and reserve the high quality treated water for drinking water purposes. Modelling in 2017 will allow us to understand what infrastructure upgrades are required to supply this water to the agricultural community.
- **Environmental Inventory and Management Strategy.** A formal environmental inventory to document and map fish, wildlife, vegetation and ecosystem attributes and assets within the City of Pitt Meadows is planned for the 2017 year to better inform decision-making related to environmental management and land use management initiatives. Additional inventory and subsequent monitoring opportunities will be explored with post-secondary institutions. A management strategy would follow the inventory effort.

KEY INITIATIVES FOR 2017 – PUBLIC ASSETS

2017 Proposed Projects	Value
Service Truck Replacement	$90,000
Development Services Vehicle	$35,000
Bucket Truck Replacement	$150,000
Air Compressor	$20,000
Superintendent Vehicle	$35,000
Water Quality Monitoring Testing Equipment	$10,000
Environmental Inventory and Management Strategy	$50,000

DRAFT PUBLIC ASSETS CAPITAL PLAN FOR 2017

Category	Project#	Priority	2017	2018	2019	2020	2021	Total
Municipal Fleet and Equipment								
2006 Bobcat Replacement M068 02-2-90-8039	MF-048	3				145,000		*145,000*
2007 Service Truck Repl M192 02-2-90-8055	MF-049	3	90,000					*90,000*
'06 Development Services Vehicle DS03 02-2-90-8041	MF-050	3	35,000					*35,000*
Pickup Repl 2010 1/2 Ton M178 02-2-90-8058	MF-052	3				45,000		*45,000*
Bucket Truck Repl 2007 M193 02-2-90-8059	MF-053	3	150,000					*150,000*
2007 3/4 Ton Pickup Replacement M194 -8060	MF-054	3		45,000				*45,000*
Dump Truck M195 2007 Tandem Axle 02-290-8068	MF-055	3				255,000		*255,000*
Ton Pickup Repl 2010 1/2 Ton M150 02-2-90-8060	MF-056	3				45,000		*45,000*
'97 Toro Snowblower Repl M395 02-2-90-8057	MF-058	3				8,000		*8,000*
Paint Sprayer M323 02-2-90-8023	MF-060	3		20,000				*20,000*
Ride On Roller(Repl M290) 02-2-90-8061	MF-061	3		45,000				*45,000*
Trailtech Trailer (Repl M306) 290 8065	MF-062	3		15,000				*15,000*
Trailtech Trailer (Repl M307) 90 8065	MF-063	3			20,000			*20,000*
Air Compressor M321 02-2-90-8062	MF-064	3	20,000					*20,000*
2010 Service Van Replacement M179	MF-066	3					145,000	*145,000*
'16 Tractor Replacement MF-051 (M082)	MF-067	3					255,000	*255,000*
Utility Vehicle	MF-070	3	20,000					*20,000*
Superintendent Vehicle	MF-072	3	35,000					*35,000*
Municipal Fleet and Equipment Total			**350,000**	**125,000**	**20,000**	**498,000**	**400,000**	***1,393,000***
Sustainability								
Water Quality Monitoring and Testing Equipment	SU-001	3	10,000					*10,000*
Environmental Consultants	SU-002	2	35,000	15,000	10,000	10,000	10,000	*80,000*
Environmental Software	SU-003	4	3,600					*3,600*
Community Carbon Offset Project	SU-004	2	10,000	5,000	5,000	5,000	5,000	*30,000*
Environmental Inventory andManagement Strategy	SU-005	3	50,000					*50,000*
Sustainability Total			**108,600**	**20,000**	**15,000**	**15,000**	**15,000**	***173,600***