

HALIFAX

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Item No. 3 (i)
Budget Committee
May 22, 2020

TO: Chair and Members of Budget committee (Standing Committee of the Whole on Budget)

SUBMITTED BY: Original Signed by 
Jacques Dubé, Chief Administrative Officer

DATE: May 21, 2020

SUBJECT: **Submission of Shovel Ready Projects for Potential Stimulus Funding**

ORIGIN

Staff initiated report in response to discussion with the Federal and Provincial Governments regarding the potential for increased infrastructure funding in order to stimulate the economy in response to COVID-19.

LEGISLATIVE AUTHORITY

Operating and capital budgets

79 The Council shall adopt an operating budget and a capital budget for each fiscal year. 2019, c. 19, s. 15.

Municipal expenditures

79A (1) Subject to subsections (2) to (4), the Municipality may only spend money for municipal purposes if

- (a) the expenditure is included in the Municipality's operating budget or capital budget or is otherwise authorized by the Municipality;
- (b) the expenditure is in respect of an emergency under the *Emergency Management Act*; or
- (c) the expenditure is legally required to be paid.

(5) In the event of ambiguity in whether or not the Municipality has the authority under this or any other Act to spend money or to take any other action, the ambiguity may be resolved so as to include, rather than exclude, powers the Municipality had on the day before this Section came into force. 2019, c. 19, s. 15.

RECOMMENDATION

It is recommended that Halifax Regional Council:

1. Endorse the capital projects in Attachments A and B, as well as the Halifax Regional Water Commission shovel ready projects attached to this report for potential infrastructure funding; and
2. Direct the Chief Administrative Officer to submit these projects for funding in the event a Federal and/or Federal/Provincial infrastructure program is established.

BACKGROUND

With the onset of COVID 19, municipalities across the country have been lobbying the Federal and Provincial Governments for increased infrastructure funding. At a national level the Federation of Canadian Municipalities has been leading the discussions with the federal government.

HRM has been in conversations with the Province of Nova Scotia officials, mainly through the Department of Transportation and Infrastructure Renewal, about the potential for increased infrastructure funding. Preliminary discussions have indicated that there may be an opportunity for a new or modified infrastructure program for shovel ready projects in order to stimulate the economy. The thought is the program would be similar to the stimulus program that was launched by the Federal Government in response to the economic crash of 2008/09.

Conversations with the provincial government have indicated that there may be a willingness by the federal government to relax some of the criteria under existing infrastructure programs to allow for projects that would be deemed ineligible under the current program criteria.

While there is no commitment of a new or relaxed infrastructure program, HRM staff have reviewed the three-year capital plan for projects that could be launched quickly.

DISCUSSION

Projects on the three-year capital plan have been evaluated based on criteria and weighted for risk and the capacity for HRM to deliver. A number of these projects are in the design or tender stage, making them excellent candidates for stimulus funding.

Staff have gone through the capital plan and evaluated the state of readiness of each project for submission to the federal government. Most projects in year one of the three-year capital plan are either ready to be tendered or able to be tendered quickly. Projects in years two and three of the plan would take a little longer to have them ready for tender. They are however, still being submitted on the basis that the program (if established) would span longer than one year, or staff could accelerate them.

Staff have also included projects that traditionally have not been funded under federal infrastructure programs such as fire stations and fleet vehicles. Staff has assumed that IT projects would not be eligible as IT projects are typically funded under a separate innovation fund. The list of shovel ready projects totals approximately \$60 million and is attached as Attachment A.

Another key initiative that HRM has underway is the climate change action plan HalifACT 2050. Numerous stakeholders and Provincial staff have been involved in contributing to the plan. HRM staff have reviewed potential projects and have determined there are several projects that would be eligible for funding under the Green Fund. These projects address climate change by lowering greenhouse gas emissions and significantly lower operating costs. A payback period of less than 10 years is typical for these projects. The energy efficiency projects on the list attached as Attachment B total approximately \$3.5 million in capital costs, but HRM could deliver an additional \$5.5 million of energy efficiency projects in 2020/21 if funding was available, for a total of \$9 million.

Also attached for Council endorsement is a list of potential projects that have been submitted by Halifax Water for consideration for infrastructure funding (Attachment C).

Staff will be coming forward with a separate staff report seeking Regional Council approval to submit a funding request for the Rapid Transit and eBus projects.

FINANCIAL IMPLICATIONS

Any cost sharing that is received for projects will help alleviate HRM's capital budget pressure. Typically, projects are cost shared on a one third basis. The HRM projects total approximately \$70 million, cost sharing by both orders of government could result in an additional \$46 M in funding that could be redirected to other capital projects on the three-year capital plan.

RISK CONSIDERATION

There is minimal risk to the approval of the projects on the list.

COMMUNITY ENGAGEMENT

N/A

ENVIRONMENTAL IMPLICATIONS

Several projects submitted for fast tracking are green initiatives that will have a positive impact on the environment. Other projects conform to environmental standards.

ALTERNATIVES

1. Council could amend the list of projects. This is not recommended as project managers have assessed them for state of readiness. It is also anticipated there will be an opportunity for a formal submission to the Federal and Provincial governments if a program is established. At that time Council will be able to add projects to a list based on approved criteria.
2. Council may decide to not support submitting projects for infrastructure funding. This is not recommended, as even without a formal program there is value in developing the list in the event a program is developed.

ATTACHMENTS

Attachment A: HRM Shovel Ready Projects April 2020
Attachment B: HRM Shovel Ready Energy Projects April 2020
Attachment C: Halifax Regional Water Commission Projects

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Jane Fraser, Director of Finance, Asset Management and ICT/CFO, 902.490.4630

HRM Shovel Ready Projects

22-Apr-20

Asset Category	Estimated Amount	Included in 2020/21 Budget & Carry Forward	Other Funding Source	Project #	Project Name	Description
Buildings/Facilities	\$ 50,000	Y		CB190006	Accessibility - HRM Facilities	Accessibility update
Buildings/Facilities	225,000	Y		CB190006	Accessibility - HRM Facilities	HRM-20-164 – Acadia School Building Washroom Renovations
Buildings/Facilities	200,000	Y		CB190007	Alderney Gate Recapitalization	Repair of concrete in vault, entrance to Alderney and partial podium
Buildings/Facilities	500,000	Y		CB190007	Alderney Gate Recapitalization	Repair of concrete podium on front and north side of the building
Buildings/Facilities	500,000	Y		CB000075	Dartmouth North Community Centre	Washroom and kitchen renovation
Buildings/Facilities	1,500,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Central Library Emergency Generator
Buildings/Facilities	25,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Alderney Cooling Tower VFD
Buildings/Facilities	35,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Demand Controlled Ventilation Gordon Snow
Buildings/Facilities	35,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Demand Controlled Ventilation Captain Spry
Buildings/Facilities	300,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Additional Recommissioning Measures at Alderney (Beyond what's budgeted)
Buildings/Facilities	75,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Pulse meters at all our Natural Gas Sites
Buildings/Facilities	200,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Blower Door Testing and Air Sealing of many Community Centres
Buildings/Facilities	100,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Air Curtains at Depots and Fire Stations
Buildings/Facilities	100,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	New Energy Efficient Fridge/Freezers for multiple facilities and food banks
Buildings/Facilities	550,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Sackville Sports Stadium Pool Heat Recovery
Buildings/Facilities	425,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Keshen Library Rooftop Unit Replacement
Buildings/Facilities	100,000	N	Not budgeted	CB190008	Energy Efficiency Initiatives	Rebuild Alderney Rooftop Units and Add VFD's
Buildings/Facilities	65,000	Y		CB000088	Fire Station Functional Improvements	Commercial Extractors and Dryers for Bunker Gear
Buildings/Facilities	231,000	Y		CB000088	Fire Station Functional Improvements	Decontamination Sinks
Buildings/Facilities	80,000	Y		CB000088	Fire Station Functional Improvements	Vehicle Exhaust Systems
Buildings/Facilities	400,000	Y		CB000090	General Building Recapitalization	Envelope walls - remaining work not completed in Phase I
Buildings/Facilities	139,267	Y		CB180001	Multi-District Facilities Upgrades	HRM 19-196 Centennial Arena Dehumidification Upgrades
Buildings/Facilities	210,000	Y		CB180001	Multi-District Facilities Upgrades	HRM-20-163 – Centennial Pool Filtration System Upgrade
Buildings/Facilities	10,000,000	Y - \$5M	21/22 Budget	CB000125	Ragged Lake Transit Centre Expansion	Ragged Lake Transit Centre Expansion
Buildings/Facilities	400,000	Y		CBX01165	Regional Library Facilities Upgrade	Dartmouth North Library Renovations (including energy efficiency & accessibility improvements)

Asset Category	Estimated Amount	Included in 2020/21 Budget & Carry Forward	Other Funding Source	Project #	Project Name	Description
Buildings/Facilities	500,000	Y		CBX01165	Regional Library Facilities Upgrade	Alderney Gate Library Renovations (exterior entry & outdoor library)
Buildings/Facilities	391,073	Y		CB000010	Regional Park Washrooms	
Buildings/Facilities	4,650,000	Y		CB000090	General Building Recapitalization	HRM-20-159 – Penhorn Lake Washrooms
Buildings/Facilities				CB000079	Sambro/Harrietsfield Fire Station	Replacement for Stations 62 and 63
Buildings/Facilities	150,000	Y		CB000028	Scotiabank Centre	Upgrade to existing Wi-Fi to provide better coverage for the entire facility
Buildings/Facilities	200,000	Y		CB000028	Scotiabank Centre	Upgraded Spectator netting at both north and south ends of the ice surface
Buildings/Facilities	2,763,579	Y		CB000087	Wharf Recapitalization	HRM-20-153 – Wharf & Pier Repairs
Buildings/Facilities	6,950,000	Y - \$4.5M	21/22 Budget	CB000042	Woodside Ferry Terminal Upgrade	Woodside Ferry Terminal
Outdoor Sport Facilities				CP200003		
	850,000	Y		CP180003	Playing Fields and Courts Renewal	HRM 20-059 Courts Phase 1 Various Locations
Outdoor Sport Facilities	67,527	Y		CP180003	Playing Fields and Courts Renewal	HRM 20-034 Don Bayer Park Baseball Field Rehabilitation
Outdoor Sport Facilities	262,382	Y		CP180003	Playing Fields and Courts Renewal	HRM 19-354 - East Preston Ballfield Reconstruction
Outdoor Sport Facilities	90,000	Y		CP180003	Sport Fields/Courts-Renewal	HRM-20-072 – Conrad Ball Field Upgrades
Parks	800,000	Y		CP000012	Fort Needham Master Plan	Washroom update
Parks	74,053	Y		CP200001	Park Recapitalization	Silvers Hill Park Improvements - Detailed Design
Parks	645,429	Y		CP200001	Park Recapitalization	HRM 19-352 Design-Build Playground Development (11 parks)
Parks	400,000	Y		CP200001	Park Recapitalization	HRM-20-083 – Timber Bridge & Boardwalk Repairs: HRM Parks
Roads & Active Transportation	1,200,000		21/22 Budget	CTU01006	Bedford West Road Oversizing	Broad Street Roundabout
Roads & Active Transportation	200,000	Y		CM190002	Bus Stop Accessibility/Improvements	Bus Stop Accessibility
Roads & Active Transportation					Major Strategic Multi Modal Corridor:	
	3,600,000	Y		CT200002	Bayers Road	HRM 20- 217 Bayers Road Phase 1 (Transit Priority)
Roads & Active Transportation					Major Strategic Multi Modal Corridor:	
	3,625,000		21/22 Budget	CT200002	Bayers Road	Bayers Road Transit Priority Project Phase 2
Roads & Active Transportation	3,775,000	Y		CT200006	Multi Modal Corridor: Robie & Young St	Robie/Young Street Transit Priority
Roads & Active Transportation	659,378	Y		CR200007	Regional Centre AAA Bikeways	HRM-20-216 – Penhorn Greenway: Penhorn Lake
Roads & Active Transportation	2,600,000	Y		CR200006	Street Recapitalization	HRM-20-231 – Asphalt Overlays – Various Locations
Roads & Active Transportation	475,000	Y		CR200006	Street Recapitalization	HRM 20-213 – Street Recap: Maple Dr & Birchdale Ave
Roads & Active Transportation	200,000	Y		CR200006	Street Recapitalization	HRM-20-200 – Street Recap: York St
Roads & Active Transportation						HRM-20-220 – Street Recap & Water Main Renewal: Heinish Ave,
	610,000	Y		CR200006	Street Recapitalization	Vaughan Ave, Ward Ave & Cook Ave
Roads & Active Transportation	650,000	Y		CR200006	Street Recapitalization	HRM-20-232 – Street Recap: Southill Dr
Roads & Active Transportation	375,000	Y		CR200006	Street Recapitalization	HRM-20-202 – Street Recap & Water Main Renewal: Berlin St

Asset Category	Estimated Amount	Included in 2020/21 Budget & Carry Forward	Other Funding Source	Project #	Project Name	Description
Roads & Active Transportation	600,000	Y		CR200006	Street Recapitalization	HRM-20-253 – Street Recap: Gottingen St
Roads & Active Transportation	1,380,000	Y		CR200006	Street Recapitalization	HRM-20-201 – Street Recap: Fielding Ave & Moor Rd
Roads & Active Transportation	1,350,000	Y		CR200006	Street Recapitalization	HRM-20-240 – Micro Surfacing: Various Locations
Roads & Active Transportation	750,000	Y		CR200006	Street Recapitalization	HRM-20-241 Street Planer Patching Phase1
Roads & Active Transportation	750,000	Y		CR200006	Street Recapitalization	HRM-20-242 Street Planer Patching Phase 2
Roads & Active Transportation	355,000	Y		CR200006	Street Recapitalization	HRM 20-214 Studley/Waterloo
Roads & Active Transportation	525,000	Y		CR200006	Street Recapitalization	HRM 20-207 Polara Dr/Polara Ct.
Roads & Active Transportation	260,000	Y		CD000001	Streetscapes - Spring Garden Rd	Sackville Street/Dresden Row Traffic Signals
Traffic Signs/Signalization/Equipment	200,000	Y		CT190006	Road Safety Improvement Program	Quinpool Road between Vernon & Preston - pedestrian 1/2 signal
Traffic Signs/Signalization/Equipment	70,000	Y		CT190006	Road Safety Improvement Program	Lacewood Dr @ Braeside Ln - RA-5 Crosswalk
Vehicles	360,000	Y		CE200001	Municipal Fleet Replacement	12 Hybrid Hatchback vehicles, if any are available in stock.
Vessels	478,000	Y		CM200007		
	<u>\$ 60,286,688</u>			CM180007	Ferry Overhaul & Capital Upgrades	Ferry Rebuild

ATTACHMENT B

On-site Energy Manager -- Shovel Ready Projects

Project / Measure Type	Account	Estimated Cycle Time to Initiate Project	Estimated Total Cycle Time (Development, Implementation and Close)	Electricity		Other Fuels		Total Annual Utility Cost Savings in \$	GHG Emission Reduction in tCO2e	Estimated Project Cost (\$)	ENS Incentives (\$)
				Savings in KWh	Annual Electrical Savings in \$	Savings in GJ	Savings in \$				
Central Library Chiller Optimization + AHU Optimization+ Controls Recommissioning	Halifax Regional Municipality	1 - 3 Months	9 Months	450,000	\$65,000	0	\$0	\$65,000	225	\$300,000	\$60,000
Ragged Lake Depot: Demand Controlled Ventilation on 14 rooftop units+ 1000 kwh battery storage+ 1 MW Solar PV	Halifax Regional Municipality	2 - 4 Months	12 Months	2,100,000	\$255,000	3500	\$60,000	\$315,000	1,250	\$2,800,000	\$400,000
Alderney Complex: VFDs on pumps, Recommissioning, Demand Controlled Ventilation,	Halifax Regional Municipality	2 - 4 Months	12 Months	900,000	\$108,000	1000	\$17,000	\$125,000	500	\$600,000	\$100,000
Burnside Transit Facility : Rooftop Units VFDs + Demand Controlled Ventilation	Halifax Regional Municipality	3 - 4 months	12 Months	1,000,000	\$120,000	3500	\$60,000	\$180,000	700	\$200,000	\$125,000
Scotiabank Centre HVAC and Refrigeration Controls Upgrade, Heat Recovery,	Halifax Regional Municipality	3 - 4 months	12 Months	450,000	\$65,000	2500	\$40,000	\$105,000	375	\$2,200,000	\$45,000
Multiple Facilities Direct Install Project : Tank Blankets, Pipe Insulation, Faucet Aerators, Low Flow Shower Heads	Halifax Regional Municipality	2 - 4 Months	12 Months	500,000	\$60,000	1000	\$15,000	\$75,000	350	\$100,000	\$50,000
Community Centre Mini-Split Heat Pumps	Halifax Regional Municipality	1 - 3 Months	12 Months	50,000	\$6,000	200	\$4,000	\$10,000	50	\$50,000	\$10,000
Community Centre Insulation Projects	Halifax Regional Municipality	1 - 3 Months	12 Months	25,000	\$3,000	100	\$2,000	\$5,000	25	\$50,000	\$1,500
Community Centre LED Lighting Projects	Halifax Regional Municipality	1 - 3 Months	8 Months	500,000	\$60,000	0	\$0	\$60,000	250	\$300,000	\$60,000
Multiple Facilities Recommissioning of Solar Thermal Systems	Halifax Regional Municipality	1 - 3 Months	12 Months	25,000	\$3,000	0	\$0	\$3,000	12	\$5,000	\$0
Needham Washroom Solar PV Installation	Halifax Regional Municipality	3 - 5 months	10 Months	4,400	\$500	0	\$0	\$500	2	\$20,000	\$1,000
Woodside Ferry Terminal Demand Controlled Ventilation	Halifax Regional Municipality	3 - 6 months	12 Months	25,000	\$2,800	0	\$0	\$2,800	12	\$20,000	\$2,500
Gordon Snow Community Centre Demand Controlled Ventilation	Halifax Regional Municipality	2 - 4 Months	12 Months	25,000	\$2,800	0	\$0	\$2,800	12	\$20,000	\$5,000
Captain Spry Community Centre Demand Controlled Ventilation	Halifax Regional Municipality	2 - 4 Months	12 Months	25,000	\$2,800	0	\$0	\$2,800	12	\$20,000	\$5,000
Burnside Transit Compressed Air Sealing	Halifax Regional Municipality	3 - 4 months	10 Months	100,000	\$12,000	0	\$0	\$12,000	48	\$10,000	\$0
RBC Centre Heat Recovery Optimization	Halifax Regional Municipality	3 - 4 months	12 Months	0	\$0	1000	\$20,000	\$20,000	57	\$35,000	\$0
Multiple Facilities Hybrid Heat Pump Hot Water Heaters	Halifax Regional Municipality	1 - 4 months	12 Months	50,000	\$6,000	300	\$6,000	\$12,000	42	\$100,000	\$15,000
Multiple Facilities ECM Circulator Pumps	Halifax Regional Municipality	1 - 4 months	12 Months	50,000	\$6,000	300	\$6,000	\$12,000	42	\$100,000	\$10,000
Eric Spicer Recommissioning Implementation	Halifax Regional Municipality	3 - 4 months	12 Months	150,000	\$15,000	750	\$15,000	\$30,000	119	\$200,000	\$30,000
Keshen Goodman Library Rooftop Unit Replacement, Demand Controlled Ventilation, Heat Recovery, Solar PV	Halifax Regional Municipality	4 - 6 months	12 Months	50,000	\$6,000	750	\$15,000	\$21,000	94	\$270,000	\$10,000
New Fire Station HQ Heat Piping from BMO Centre	Halifax Regional Municipality	4 - 6 months	12 Months	500,000	\$50,000	0	\$0	\$50,000	250	\$900,000	\$40,000
Sackville Sports Stadium Heat Recovery Project	Halifax Regional Municipality	2 - 4 Months	12 Months	0	\$0	1500	\$35,000	\$46,000	90	\$500,000	\$0
Blower Door Testing and Air Sealing	Halifax Regional Municipality	2 - 4 Months	12 Months	50,000	\$6,000	500	\$10,000	\$16,000	60	\$200,000	\$30,000
				7,029,400	\$854,900	16900	\$305,000	\$1,170,900	4,577	\$9,000,000	\$1,000,000

Project Name

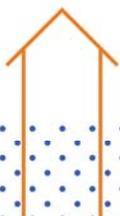
Aerotech BPF Capacity Upgrades and Total Resource Recovery

Project Justification

The Aerotech BPF was constructed and began operation in 2007 as part of the overall Halifax Harbour Solutions Project to provide a strategic solution for the handling, processing, and beneficial reuse of wastewater residual biosolids within the Halifax Regional Municipality (HRM).

The current Aerotech BPF utilizes the N-Viro Soil Process, a patented alkaline stabilization process for the treatment and recycling of biosolids to produce a “Class EQ/Class A” granular fertilizer with multiple commercial/agricultural uses. The product meets or exceeds the requirements for a Class A biosolids designation of both the Canadian Food Inspection Agency and the more stringent Nova Scotia Guidelines for Class A biosolids based fertilizer.

Halifax Water completed in 2019 an Integrated Master Plan (IMP) to assess population related water, wastewater and stormwater growth within the HRM. Coming from the IMP, growth in biosolids production has also been assessed. This assessment shows biosolids production will exceed the capacity of the existing Aerotech BPF to handle and process these biosolids around the 2027 timeframe. As a result, Halifax Water has completed an analysis of the existing BPF capacity relative to the IMP forecast, and an analysis of alternative processing technologies that may be considered for the future upgrade of the facility. This study has identified the addition of an anaerobic digestion facility at the existing BPF to provide pre-processing capability, thereby reducing the volume of biosolids by approximately 40%, while at the same time generating renewable natural gas (RNG) that can be sold directly to the gas distribution system in Nova Scotia. It would also be expected to reduce operating costs and generate revenue through the sale of RNG, significantly contributing towards Provincial and Federal climate change mitigation efforts.



Project Scope

This project includes all phases of design and construction of an upgraded biosolids processing facility, including total resource and energy recovery. Energy recovery will entail utilizing anaerobic digestion to generate renewable natural gas (RNG) from the co-digestion of biosolids and the addition of secondary waste streams such as food-based fats, oils and grease (FOG). It has been identified that alkaline stabilization, in concert with anaerobic digestion, is the most technically and economically feasible. It will reduce the volume of biosolids going to the BPF, thereby delaying or removing the requirement to expand the capacity of the existing facility. It will also mean a higher quality biosolids, allow for the generation and sale of RNG, and contribute significantly towards GHG reductions and climate change mitigation efforts, both nationally and Provincially.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	Total
Phase	Design	Construction	Construction	Construction	
Cashflow (x 1,000)	\$3,000	\$10,000	\$15,000	\$15,000	\$43,000



Project Name

Cowie Hill Reservoir Replacement

Project Justification

The Cowie Water Storage Reservoir is a 2.4 MG gunite water storage reservoir that was constructed in 1972. The Cowie Reservoir serves the Spryfield and Herring Cove areas of HRM. It provides fire protection, peak balancing and emergency storage and helps supply high quality water to customers in the service area.

The reservoir underwent a significant rehabilitation project in 1996. The recent Gunite Reservoir Inspection program, completed by AECOM in 2018, identified that the Cowie Reservoir was a priority for rehabilitation or replacement. The internal and external inspection found numerous locations where the gunite covering has spalled off leaving the underlying steel reinforcing wires exposed and rusting. Many of these spall locations corresponded with the location of previous 1996 repair work. There are numerous locations on the wall that show evidence of cracks and water migration out through the wall of the reservoir. Based on the study recommendations and considering the risks and uncertainties associated with reservoir rehabilitations, Halifax Water staff determined that replacement was the best solution.

The replacement of the Cowie Reservoir is a key component of Halifax Water's mandate to provide and maintain fire protection, peak balancing and emergency storage and high-quality water service to the Spryfield and Herring Cove area.

Project Scope

It is proposed to construct the new reservoir in 2021. Halifax Water has retained a consultant to undertake the design of the new reservoir. It has been assumed that the tank will be the



same size as the existing tank. The sizing and type of tank will be determined as part of the detailed design work. The cost estimate is based on replacing the same size tank.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	Total
Phase	Design	Construction	Construction		
Cashflow (x 1,000)	200,000	8,040,000			8,240,000



Project Name

JD Kline Water Supply Plant (JDKWSP) - Clarifiers

Project Justification

Halifax Water is beginning a multi-year capital upgrade strategy, at the J.D. Kline WSP, primarily driven by climate adaptation. This climate adaptation strategy will see a wide range of process upgrades throughout the plant over the next few years. The upgrades are aimed at adjusting to changes in water quality that have been seen due to the combined impacts of Climate Change and the phenomenon of Lake Recovery. As lakes recover from years of acid rain deposition, they evolve both chemically and biologically, resulting in increased growth of aquatic life (algal blooms, increased natural organic matter); a warming climate compounds these issues. In recent years higher intensity precipitation events have resulted in higher organic loading of the water treatment process which J.D. Kline WSP was not designed to treat. In order to make the plant capable of handling these water quality changes and maintain high quality drinking water that exceeds regulatory standards, the addition of a clarifier system is required. This addition will make the plant more resilient and robust in the face of changing water quality. This will ensure it meets and exceeds the Guidelines for Drinking Water Quality as well as customer expectations.

Project Scope

This project will require design and construction of a brand-new pre-treatment, flocculation, coagulation and clarifier building along with upgrades inside the building. It has been identified that Dissolved Air Flootation (DAF) technology is best suited clarification technology for the current and future water quality. The existing plant will remain in operation during the design and construction phase of the upgrades.



Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	Total
Phase	Design	Construction	Construction		
Cashflow (x 1,000)	\$1,475	\$16,220	\$16,225		\$33,920





Project Name

JD Kline Water Supply Plant (JDKWSP) –Raw Water Intake and Pump Station Optimization

Project Justification

Halifax Water is beginning a multi-year capital upgrade strategy, at the J.D. Kline WSP, primarily driven by climate adaptation. This climate adaptation strategy will see a wide range of process upgrades throughout the plant over the next few years. The upgrades are aimed at adjusting to changes in water quality that have been seen due to the combined impacts of Climate Change and the phenomenon of Lake Recovery. As lakes recover from years of acid rain deposition, they evolve both chemically and biologically, resulting in increased growth of aquatic life resulting in algal blooms; a warming climate compounds these issues. In recent years higher intensity precipitation events have resulted in higher organic loading of the water treatment process which J.D. Kline WSP was not designed to treat. The existing intake structure at the pump station draws its water from the thermocline layer of the lake which exacerbates the impact of algal activity. This layer is also prone to temperature and water quality changes, making downstream plant operations challenging. As a fixed level intake, it does not provide any flexibility to draw water from other more stable layers of water column which would be more conducive to treatment.

In addition, the current pump station was built in 1970s. One of the major drawbacks of the pump station is that all mechanical equipment operates on 4160 Volts. This not only makes it a very specialized work, but it is increasingly difficult to source replacement, or new, parts posing a substantial risk to the water supply. Also, it is not suitable from a safety standpoint. The existing pumps and motors infrastructure are original to the plant, past the service life and should be replaced with new 600 Volts infrastructure with enhanced controls and variable frequency drives which would not only provide stable process but also be more energy



efficient and improve resiliency. This would in turn help towards lowering the carbon footprint to the environment.

Project Scope

This project includes all phases of design and construction of a new multi-level intake. The controls and Motor Control Center will need to be replaced along with state-of-the-art HVAC system as the existing pump station is prone to significant solar gains. The work will need to be coordinated with extreme diligence as the current pump station intake and pump station needs to stay operational while upgrades take place in the same area.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Phase	Design	Construction	Construction	Construction			
Cashflow (x 1,000)	\$670	\$5,975	\$6,900	\$1,725			\$15,270



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Halifax, Nova Scotia
Canada B3K 5M1

Project Name

Lake Major Water Supply Plant (LMWSP) - Clarifiers

Project Justification

Halifax Water is beginning a multi-year capital upgrade strategy, at the Lake Major WSP, primarily driven by climate adaptation. This climate adaptation strategy will see a wide range of process upgrades throughout the plant over the next few years. The upgrades are aimed at adjusting to changes in the water quality that have been seen due to the combined impacts of Climate Change and the phenomenon of Lake Recovery. As lakes recover from years of acid rain deposition, they evolve both chemically and biologically, resulting in the growth of aquatic life (algal blooms, increased natural organic matter); a warming climate compounds these issues. In recent years higher intensity precipitation events coupled with periods of draught conditions have resulted in higher organic loading of the water treatment process and presented a significant obstacle to the production of high-quality water. LMWSP has experienced several issues with existing Ultrapulsator clarifiers. Through various studies and workshops, it has been pointed out that this clarification technology may not be best suited for the variable characteristics of source water quality that currently exist at Lake Major. Additionally, the existing clarifiers have shown signs of deterioration and pre-mature failure, which poses a significant risk to the provision of safe water. The addition new clarification technology will make the plant more resilient, and robust, in the face of changing water quality. This will ensure it meets and exceeds the Guidelines for Drinking Water Quality as well as customer expectations.

Project Scope

This project includes all phases of design and construction of a brand-new pre-treatment, flocculation, coagulation and clarifier building along with upgrades inside the current plant envelope. It has been identified that Dissolved Air Flootation (DAF) technology is a better



suited clarification technology for the current and future water quality. The existing plant will remain in operation while this construction happens.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	Total
Phase	Design	Construction	Construction		
Cashflow (x 1,000)	\$1,770	\$9,290	\$9,290		\$20,350



Project Name

Lake Major Water Supply Plant (LMWSP) – New Raw Water Intake and Pump Station

Project Justification

Halifax Water is beginning a multi-year capital upgrade strategy, at the Lake Major WSP, primarily driven by climate adaptation. This climate adaptation strategy will see a wide range of process upgrades throughout the plant over the next few years. The upgrades are aimed at adjusting to changes in the water quality that have been seen due to the impacts of Climate Change and Lake Recovery. As lakes recover from years of acid rain deposition, they evolve both chemically and biologically, resulting in increased growth of aquatic life resulting in algal blooms; a warming climate compounds these issues. In recent years higher intensity precipitation events have resulted in higher organic loading of the water treatment process. The existing intake structure at the pump station draws water from the surface layer of the lake which exacerbates the impact of algal activity and higher organic loads. This layer is also prone to pronounced temperature and water quality changes, making downstream plant operations, and thus the production of high-quality water, very challenging. As a fixed level intake, it does not provide flexibility to draw water from other more stable layers of water column which would be more conducive to treatment. In recent years, extended periods of draught have led Halifax Water impose mandatory and voluntary water restrictions in Dartmouth. As the pump station draws its water from the surface this makes the raw water pump station uniquely vulnerable to low lake levels. As such, moving the intake to a deeper lake location would address a significant supply risk to the City of Dartmouth.

In addition, the current pump station was built in 1960s and was only partially refitted during the construction of the LMWSP in 1998. Due to its age, it has come to end of its serviceable life. The current environment within the pump station does not allow enhanced controls and installation of variable frequency drives which would not only provide stable process but will



also be more energy efficient. This would in turn help towards lowering the carbon footprint to the environment.

Project Scope

This project includes all phases of design and construction of a brand-new intake and pump station. The existing intake and pump station will remain operational until the construction of new assets and will be decommissioned and demolished at the end of the project.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Phase	Design	Construction	Construction			
Cashflow (x 1,000)	\$930	\$6,505	\$7,835			\$15,270



Project Name

Sullivan's Pond Storm Sewer Replacement Phase II

Project Justification

Halifax Water has identified the need to replace its existing stormwater sewer system that runs from Sullivan's Pond to Dartmouth Cove. This stormwater system serves an urban watershed of approximately 1500 ha in size. The stormwater sewer is approximately 600 metres in length and was installed in the early 1970s. The stormwater sewer is made of corrugated steel pipe and is at the end of its service life and needs to be replaced.

The upper section of the stormwater sewer system from Sullivan's Pond to a point within Starr Park just north of Irishtown Road was replaced in 2018 as Phase 1 of the overall project to replace the complete stormwater sewer system. The Phase 1 project consisted of a combination of box culvert and open channel sections being installed to convey the stormwater flows. In addition to conveyance, the project also included various environmental considerations including the regulatory requirement for fish passage.

Project Scope

The Phase 2 project involves the replacement of approximately 300 metres of stormwater sewer with similar section configurations as used in Phase 1. The sections are approximately 4.5 metres in width and have an ultimate flow capacity of 30 cubic metres per second. In addition to the storm sewer replacement, project work also includes associated water, wastewater renewal and/or relocation work within the limits of disturbance due to the anticipated extensive excavation. The storm sewer is very deep in some locations, as much as seven metres deep in the Alderney – Portland Street intersection.



Climate change impacts and adaptation have been factored into the proposed project work scope. In addition to this key environmental concern, the Phase 2 project will also satisfy the same environmental and regulatory requirements as Phase 1 including fish passage.

The Phase 2 project alignment passes through the Prince Albert Road / Portland Street / Alderney Drive intersection (PAPA) and as such the project will be a fully integrated and coordinated with other municipal work being done by Halifax Regional Municipality within the corridor. This includes street work, traffic signals, active transportation trails and the new Dundas street bridge.

Project Timeline & Budget (with external funding)

Year	2020/21	2021/22	2022/23	2023/24	Total
Phase	Design	Construction	Construction		
Cashflow (x 1,000)	740,000	2,000,000	12,060,000		14,800,000

