Town of Mahone Bay
Staff Report
RE: YTD Review of 2019-20 Capital Projects
October 29, 2019

General Overview:

The purpose of this report is to update Council regarding the status of 2019-20 capital projects in preparation for the development of 2019-25 capital investment plan.

Background:

The Mahone Bay Town Council approved the 2019-20 capital budget on May 14th, 2019 (relevant excerpts attached as appendix A). Staff provide a monthly YTD update on the status of these projects at the second regular Council meeting of each month (October 24th, 2019 YTD capital spending update attached as appendix B). Staff have also provided for this report a summary of YTD capital funding as per the 2019-20 budget (attached as appendix C); this report excludes application-based capital funding.

Analysis:

Supplementing the YTD capital project updates provided to Council each month (most recent update: October 24th, 2019) staff have included herein additional analysis concerning the status of several major projects, Council's decisions on which will be reflected in the development of the 2019-25 capital investment plan. Also included herein is analysis of how changes to these planned projects could impact planned communications under the Town's current communications contract with Skysail Brand Marketing & Design.

2019-20 YTD capital highlights include:

1) **<u>Wastewater & Water Utility PCAP</u>**

The Town has received confirmation of PCAP funding (letter attached as appendix D). Staff have also received the initial contractors report on wastewater effluent decholorination options (report attached as appendix E).

In consideration of this report, staff recommend proceeding with Peracetic Acid effluent option. If this is accomplished using PCAP funds, only $15,682 in project funds (50/50 Town and Province) would be available for planned water system diagnostics (short of a planned $45,000).

To progress system diagnostics utilizing approved PCAP funds while ensuring the priority

wastewater effluent project is completed, staff recommend engaging an engineering firm to recommend diagnostic approaches for sewer and water, as opposed to doing any diagnostic work in 2019-20. With this report we could better target diagnostics and get more for our dollar in future years, supported by subsequent PCAP applications. It is anticipated that the Department of Municipal Affairs would support this approach.

This approach is not expected to significantly alter total project expenditure for 2019-20 but it will alter the split between the water utility and town general (wastewater) with town general (wastewater) contributing an estimated $20,970 more in 2019-20 and the water utility saving a comparable amount to support diagnostics in future years.

Communications Consideration(s): While the PCAP projects weren't specifically included in the anticipated project communications list initially reviewed by Council, reference to these projects – along with the new pumphouse generator - will be good features for Asset Management: Wastewater communications, which were included in the anticipated list.

2) <u>Replace Fire Station</u>

The fire station project continues to move ahead as anticipated in Council's strategic plan and 2019-20 budget. Communications and engagement consultants (Skysail) have been contracted and Fire Dept consultations have begun. Skysail has developed draft public engagement materials for print and social media to be presented for Council's consideration on October 29th, 2019. Engagement activities will take place throughout November 2019 including the aforementioned communications campaign and a public information session and open house at the fire station. The report on engagement activities is anticipated at the Council's December 10th, 2019 meeting and will included recommendations concerning proceeding to tender for the design and construction of the new fire station. The tender would be issued as soon as possible following Council's direction to staff in this regard, closing in late January, with design work scheduled to begin as soon as possible thereafter. It is anticipated that the project will be completed in 18 months (target opening for new facility would be August 2021, MBVFD centennial year). Fire underwriters confirm that the planned replacement of the Department's pumper truck – the purchase of which forms part of the rationale for the new station – is required in 2021, which will coincide with the project timeline.

Communications Consideration(s): Communications campaign ready to launch as noted above; communications will continue following Council approval of design/construction tender but will change gears. Project communications will need to be continued past the

end of the current communications contract until at least opening of fire station in 2021; materials development can largely be completed in advance for the construction period, equipping Town staff to roll out planned communications over 18 month project period (past the current communications contract end date). This might take more of the current contracted communications service than planned, but this could be offset by reductions in other areas as considered below.

3) <u>ICIP Projects #1 & #2</u>

The Town submitted two applications for major water / wastewater project funding to the Investing in Canada Infrastructure Program in January of 2019. A letter in response to these applications has been received (attached as appendix F). The Town's applications have not been approved in 2019-20 as a decision was made only to fund wastewater treatment projects this round. There will likely be additional rounds of funding under this program in the relatively near future, possibly even in 2020-21, however there is no guarantee, as we have just seen, and the water / wastewater projects for which the Town applied are major priorities for Council (including some potentially time-sensitive components).

Time-sensitive components which the Council may wish to proceed with in the absence of ICIP funding support include the planned sewer line extension on Main St. (picking up remaining straight-pipe outflows) and the upgrade of water and wastewater infrastructure on Main St. between the Town's reservoir and Longhill Road (serving the proposed new nursing home). Excluding projected ICIP funding the Town (general and water utility) had planned to spend $1,483,148 on water and wastewater projects between 2019-20 and 2020-21. Main St. water / wastewater upgrades are estimated at $1,509,000 including net HST while the Main St. sewer extension is estimated at $121,306 including net HST; together the projects total $1,630,306. Options to cover the $147,158 shortfall should Council wish to proceed with both projects include contribution to water / wastewater upgrades by the McLeod Group (nursing home) and/or contributions to the sewer extension from adjacent property owners (a local improvement by-law would be required). Any projects not approved to proceed without ICIP funding could be moved ahead to future years for potential ICIP funding applications, however Council would need to consider the general and water utility debt loads following implementation of any water / wastewater projects in 2019-20 / 2020-21.

Communications Consideration(s): Depending on Council's direction to staff based on the above update, it is likely that less communications support will be required for these ICIP projects under the current contract than was initially anticipated. If Council decides not

to proceed with any of these water / wastewater projects in 2019-20 / 2020-21 no project communications would be required and information on proposed future-year water wastewater projects could be included in planned Asset Management: Water / Wastewater features. Council may want to consider substituting additional communications aimed at generating public support for future investments in 2019-20 and 2020-21, understanding some water rate and tax rate increases are anticipated whenever the priority projects eventually proceed. If Council decides to proceed with any time-sensitive water / wastewater projects in 2019-20 / 2020-21, communications needs would still be significant (if less than originally anticipated) in the case of the water reservoir to long hill road project – project communications re traffic and water interruptions, communications in regards to coordination with nursing home – and could be more or less significant than anticipated in the case of the Main St. sewer extension (if the Town takes the local improvement by-Law route this will entail its own communications, but there are also opportunities for communicating the importance/significance of confronting the straight-pipes issue in a timely manner).

4) <u>Shoreline Project</u>

This project has only been approved to proceed if 93% external funding can be secured under ICIP; no application window for such projects / funding levels under ICIP has been opened to date.

It is recommended that engagement activities in relation to the project, planned for late 2019-20 in the Council's strategic plan: action plan, focus on building support for the overall flood plan (including future phases on Ernst Brook and Main St. waterfront) in the community and on pressuring federal and provincial governments for 93% funding as a precondition to proceed with phase 1 (Edgewater St.). Options for planned project engagement activities would be to seek additional feedback on, a) parking, walkway and bridge components; and/or b) next phases: Ernst Brook and Main St waterfront.

Staff recommend keeping the project in the Council's 2020-21 capital budget on basis of 93% external funding.

Communications Consideration(s): Anticipated communications in relation to engagement activities will proceed in late Q3 and early Q4 of 2019-20. Communication services under current contract will be somewhat reduced from anticipated if external funding is not confirmed within the contract period. Some pre-preparation of materials may be possible however less applicable than with fire station project due to timeline uncertainties. Council may wish to consider additional communication support under current contract in seeking federal / provincial funding for the project (project materials

for distribution to MLAs/MPs, social media campaign to build public support for federal/provincial funding assistance, etc.).

Financial Analysis:

Included in above / attached.

Links to Strategic Plan:

Key Strategic Initiatives and Core Activities

3.1 21st Century Infrastructure

- Asset Management

Recommendation:

It is recommended:

THAT Council accept this report for information.

Attached for Council Review:

- 2019-20 Budget Excerpts
- YTD 2019-20 capital spending
- YTD 2019-20 capital funding
- Provincial Capital Assistance Program Letter
- Effluent decholorination Options Report
- Investing in Canada Infrastructure Program Letter

Respectfully Submitted,

Dylan Heide
Town of Mahone Bay CAO

Excerpts from 2019-20 Budget - Approved May 14, 2019

TOWN OF MAHONE BAY CAPITAL BUDGETS 2019/20

Source of Funding which is used for Captial & Other Expenditures

	BUDGET	
Infrastructure Charges ($265 per unit)	$224,950	
2019/20 Deed Transfer Tax (1.25%)	$100,000	
2019/20 Gas Tax	$155,000	Doubled for 2019-20 only as per federal budget
Dividend from AREA	$183,000	
Outside Fire Tax Revenue	$42,500	
Total Capital Revenue Available	**$705,450**	
Less:		
Principal Debt Charges (Town)	$127,300	
Contribution To Fire Reserve	$57,500	
Contribution to Town Equipment Reserve	$17,000	
Contribution to Town Operating Reserve	$0	Proposing $100,000 to operating reserve per year
Contribution to Water Utility Levy	$25,000	
Total Transfers/Debt Charges	**$226,800**	
Funds Available to Fund Capital Projects	**$478,650**	To capital reserve

2019/20 Capital Budget

	2019-20	*2020-21*	External (projected)	Source of Own Funds
Bandstand	$29,250			capital res
Double Chip Seal - Clearland Road	$50,000			gas tax
New Bunker Gear - Fire Department	$10,000			fire eq reserve
SCBA Packs/Tanks	$45,000		$20,000	fire eq reserve
New Sewer Services	$10,000			capital res
Replace Pumps - Lift Station #3	$10,000			capital res
Town Hall Repairs	$100,000			capital res
Ballfield Backstop ($5,000 additional - communities, culture and heritage?)	$15,000		$5,000	capital res
Flail Mower	$6,000			eq reserve
Repair/Replace Fire Station	$346,500	*$3,118,500*		BORROWING
	$51,200			capital res
ICIP - Project #1 (Town General Portion)	$272,646	*$2,339,688*	$1,924,305	BORROWING
ICIP - Project #2 (Town General Portion)	$120,672		$97,255	BORROWING
Shoreline Project	$349,800	*$3,148,200*	$3,253,140	BORROWING
	$1,416,068	***$8,606,388***	**$5,299,700**	
Water Utility				
Pumphouse Upgrades - Generator	$40,000			Water Reserve
New Water Services	$5,000			Water Fund
Gate Valves	$6,000			Water Reserve
Clearwell Cleaning/Inspection	$13,000			Water Reserve
Cutout Access To Water Transmission Line	$10,000			Water Reserve
New Water Meters	$3,000			Water Fund
Water Rate Study	$8,000			Water Fund
Water Pump Rehabilitation/Replacement	$25,000			Water Reserve
Replace Raw Pumps & Spare - WTP	$8,000			Water Reserve
Pumphouse Upgrades - Door/Window/Well Cover	$5,000			Water Reserve
Transisition Radio Telemetry - WTP	$25,000			Water Reserve
ICIP - Project #1 (Water Utility Portion)	$169,056	*$1,450,744*	$1,179,119	BORROWING
ICIP - Project #2 (Water Utility Portion)	$1,218,100		$884,465	BORROWING
	$1,535,156	***$1,450,744***	**$2,063,584**	
Electric Utility				
New Digital Meters	$6,500			Electric Reserve
New Street Lights	$5,000			Electric Reserve
New Line Truck	$270,000		$135,000	Electric Fund
Line/Pole Replacements	$20,000			Electric Reserve
	$301,500		**$135,000**	

BORROWING FOR FIRE STATION, SHORELINE, ICIP (W/WW) ONLY

2019-20 Budget - Capital Projects - October 24, 2019

Town General

1	Bandstand Rehabilitation	$60,000	$16,717.04	**50%**
	Notes: Phase 1 nearly complete, phase 2 (roof and accessibility) to begin before end of October.			
2	Double Chip Seal - Clearland Road	$72,000	$0.00	**75%**
	Notes: Work currently underway.			
3	New Bunker Gear - Fire Department	$10,000	$0.00	**75%**
	Notes: PO has been issued and EQ will be purchased shortly.			
4	SCBA Packs/Tanks	$45,000	$62,837.00	★
	Notes: Emergency Services Provider Fund grant not received. The $18,000 will be taken from the FD Equipment Reserve with the intent to reapply for the Grant next year for other purchases.			
5	New Sewer Services	$10,000	$1,015.00	**25%**
	Notes: 1 New Hookup to date.			
6	Replace Pumps - Lift Station #3	$10,000	$20,331.00	★
	Notes: Pump 3 has been reparied as included in Budget. However, during the same time Pump 1 failed resulting in an emergency repair required. This resulted in the budget overage.			
7	Town Hall Repairs	$100,000	$0.00	**Not Yet Begun**
	Notes: RFP under development.			
8	Ballfield Backstop	$15,000	$0.00	**Not Yet Begun**
	Notes: Report to Council anticipated.			
9	Flail Mower	$6,000	$5,057.87	★
	Purchased			
10	Repair/Replace Fire Station (Design Phase)	$346,500	$0.00	**25%**
	Notes: Public consultation anticipated Oct-Dec, 2019; consultants engaged. Staff report to Council anticipated for Oct 29, 2019 meeting.			
11	ICIP - Project #1 (Town General Portion)	$272,646	$0.00	**Not Yet Begun**
	Notes: ICIP funding applied for. Staff report to Council anticipated for Oct 29, 2019 meeting.			
12	ICIP - Project #2 (Town General Portion)	$120,672	$0.00	**Not Yet Begun**
	Notes: ICIP funding applied for. Staff report to Council anticipated for Oct 29, 2019 meeting.			

13	Shoreline Project	$349,800	$0.00	**Not Yet Begun**
		Notes: Public consultation anticipated, Nov - Feb 2019; consultants engaged. Staff report to Council anticipated for Oct 29, 2019 meeting.		
14	New Storage Container	$6,000	$4,920.00	
		Notes: Council approved the addition of this item at the September 10 meeting of Council on the recommendation of the Director of Operations. This new storage container has been purchased		
Water Utility				
1	Pumphouse Upgrades - Generator	$75,000	$2,310.87	**50%**
		Notes: Budget increased to $75,000 by Council on July 9, 2019. Installation anticipated by end of October 2019.		
2	New Water Services	$5,000	$1,015.00	**25%**
		Notes: 1 New Hookup to date.		
3	Gate Valves	$6,000	$0.00	**Not Yet Begun**
		Notes: None.		
4	Clearwell Cleaning/Inspection	$13,000	$0.00	**Not Yet Begun**
		Notes: None.		
5	Cutout Access To Water Transmission Line	$10,000	$0.00	**Not Yet Begun**
		Notes: None.		
6	New Water Meters	$3,000	$1,983.73	**25%**
		Notes: As required.		
7	Water Rate Study	$8,000	$5,973.40	**75%**
		Notes: Study completed, NSUARB hearing took place August 22, 2019, currently awaiting decision.		
8	Pump Rehabilitation / Replacement	$25,000	$0.00	**Not Yet Begun**
		Notes: None.		
9	Replace Raw Pumps & Spare - WTP	$8,000	$0.00	**Not Yet Begun**
		Notes: None.		
10	Pumphouse Upgrades - Door/Window/Well Cover	$5,000	$0.00	**Not Yet Begun**
		Notes: None.		
11	Transisition Radio Telemetry - WTP	$25,000	$0.00	**Not Yet Begun**
		Notes: None.		
12	ICIP - Project #1 (Water Utility Portion)	$169,056	$0.00	**Not Yet Begun**
		Notes: See above.		

13	ICIP - Project #2 (Water Utility Portion)	$1,218,100	$0.00	**Not Yet Begun**
		Notes: See above.		
Electric Utility				
1	New Digital Meters	$6,500	$0.00	**Not Yet Begun**
		Notes: As required.		
2	New Street Lights	$5,000	$0.00	**Not Yet Begun**
		Notes: As required.		
3	New Line Truck	$270,000	$17,845.00	**75%**
		Notes: New Utility Truck is currently on site and being used by the Electric Utility on a lease. Utility is already seeing benefits of the new truck and is expected to move forward with the purchase in the next few months. The expense shown for this line is for 1 months lease payment (which we will receive partial credit for if we purchase the truck) along with the tools require to outfit the new vehicle. Purchase anticipated by November; staff will recommend draft credit agreement with Riverport Electric Commission to Council.		
4	Line/Pole Replacements	$20,000	$3,300.00	**25%**
		Notes: Some replacement work has been completed		

TOWN OF MAHONE BAY CAPITAL BUDGETS 2019/20

Source of Funding which is used for Captial & Other Expenditures

	BUDGET	YTD
Infrastructure Charges ($265 per unit)	$224,950	$224,950
2019/20 Deed Transfer Tax (1.25%)	$100,000	$77,665
2019/20 Gas Tax	$155,000	$83,897
Dividend from AREA	$183,000	$0
Outside Fire Tax Revenue	$42,500	$0
Total Capital Revenue Available	**$705,450**	**$386,512**

NOVA SCOTIA

Municipal Affairs and Housing
Office of the Minister

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SEP 0 4 2019

Mr. David Devenne
Mayor
Town of Mahone Bay
493 Main Street
PO Box 530
Mahone Bay, NS B0J 2E0

Dear Mayor Devenne:

Thank you for your recent request for funding under the Provincial Capital Assistance Program (PCAP) for the Town of Mahone Bay.

I am pleased to inform you that the Department of Municipal Affairs will contribute 50% of the eligible project costs, up to a maximum contribution of $54,891 toward the cost of the Transmission System Diagnostics and Wastewater Effluent Options 2019.

The Department may be coordinating a public announcement and may reach out to you during that process. In the interim, I would ask that you keep the funding confirmation confidential.

Please note, the Department must be notified two weeks in advance of any event(s) (announcements, sod turnings, official openings, photo opportunities, etc.) related to this project.

Should you have any questions, please contact Hardy Stuckless, A/Director of Grants and Programs at (902) 424-2770.

Sincerely,

Chuck Porter
Minister

c Mr. Dylan Heide, Chief Administrative Officer, Town of Mahone Bay
Ms. Suzanne Lohnes-Croft, MLA, Lunenburg

Enclosure

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Solving today's problems with tomorrow in mind

September 20, 2019

Derrick MacKenzie
Director of Operations & Recreation Facilities
Town of Mahone Bay
493 Main Street
Mahone Bay, NS, B0J 2E0

Dear Mr.MacKenzie:

RE: Town of Mahone Bay Dechlorination Options Review DRAFT

Following is our report on the assessment of dechlorination and alternative disinfection options for the Town of Mahone Bay wastewater treatment plant (WWTP).

BACKGROUND

The Town of Mahone Bay WWTP was constructed in 1994 and consists of a bar screen, grit removal, aerated lagoons, gas chlorination and chlorine contact lagoon. The treated effluent is discharged by gravity through a 450 m long effluent pipe to the outfall located in Mahone Bay. The WWTP operates under the Nova Scotia Environment (NSE) Approval to Operate 2016-096100-00. The WWTP effluent complies with the current regulatory requirements and generally has very good effluent quality.

As of December 31, 2020, the WWTP will be required to meet a total residual chlorine (TRC) discharge requirement of 0.02 mg/L. As shown in Table 1, the WWTP currently exceeds the 0.02 mg/L limit in the effluent sampled. It should be noted that the samples are collected near the WWTP and that the effluent is travels through a 450 m long effluent pipe before being discharged. Because of the current exceedance of the future TRC regulation, the Town requested a review of potential dechlorination options that could be implemented at the WWTP to meet the new regulations.

Table 1: 2017-2019 Town of Mahone Bay Total Residual Chlorine and Flow Data

Year	Quarter	Total Residual Chlorine (mg/L)	Flow (m^3/day)
2017	Q1	0.06	283
	Q2	0.06	220
	Q3	0.05	110
	Q4	0.08	301
2018	Q1	0.06	662
	Q2	0.04	733
	Q3	0.03	267
	Q4	0.03	973
2019	Q1	0.03	692
	Q2	0.03	1034

CANADA'S BEST MANAGED COMPANIES

DECHLORINATION

Dechlorination is the process of removing residual chlorine from disinfected wastewater prior to discharge. Elevated chlorine residuals in wastewater effluent can react with organic compounds in the effluent, forming toxic compounds that can be harmful to the receiving environment. To limit the formation of these compounds, regulatory bodies may enforce chlorine residual limits, resulting in the need for dechlorination.

The most common dechlorination chemicals are sulfur based, either sulfur dioxide gas or sulfite salt compounds. Hydrogen peroxide has also been used for dechlorination. The following text describes each dechlorination option along with the advantages and disadvantages of each.

Sulfur Dioxide

Sulfur Dioxide is commercially available as a liquefied gas which is stored in pressurized tanks. Handling sulfur dioxide and the associated equipment required is very similar to that of chlorine gas. The reaction between sulfur dioxide gas and chlorine happens almost instantaneously meaning that is could be dosed as the effluent enters the weir chamber prior to entering the discharge pipe. However, in order to ensure proper dechlorination, rapid mixing at the point of injection may be required. In order for adequate dechlorination to take place when using sulfur dioxide, 85% of the residual chlorine must be free chlorine. Any percentage lower than this will result in interference during dechlorination. Sulfur dioxide dosing must also be monitored closely as excessive dosing can result in an increase in oxygen demand in the wastewater, subsequently increasing the measured BOD and COD. From a health and safety standpoint, sulfur dioxide gas presents more safety and handling problems than the other dechlorination options, similar to the gas chlorination currently used at the WWTP.

Sulfite Salts

Sulfite salts are very similar to sulfur dioxide gas when used for dechlorination. The salts produce the work in the same manner as the gas but are dissolved into solution and dosed as a liquid. Sulfite salts that have been used for dechlorination include sodium sulfite, sodium bisulfite, sodium metabisulfite and sodium thiosulfate. Sulfite salts, particularly sodium bisulfite and sodium metabisulfite, are used as a dechlorination agent based on safety, as they do not pose the toxic concerns of sulfur dioxide. Sulfite salts can be easier to operate than a gas system, as it only requires a solution tank and metering pumps. However, during winter months, the solution tank may require heating to prevent freezing. As with sulfur dioxide, the sulfite salts could be dosed into the weir chamber prior to entering the discharge pipe.

Hydrogen Peroxide

Hydrogen peroxide has also been used for dechlorination in the past. It reacts with chlorine nearly instantaneously, similarly to sulfur dioxide gas. Due to hydrogen peroxide's ability to react with all forms of chlorine and how rapid the reaction happens, there are essentially no interferences present during the reaction. Similar to sulfite salts, hydrogen peroxide is in liquid form, and typically comes in 35% strength solutions, which can be dosed using chemical metering pumps. Hydrogen peroxide is however a corrosive chemical, making it hazardous to handle. Due to the safety concerns with handling, it is not frequently used.

ALTERNATIVE DISINFECTANTS

An alternative to using dechlorination to meet chlorine residual discharge regulations is to achieve disinfection without using chlorine. Alternative disinfection options include ultraviolet light, ozone and peracetic acid. The following text describes each alternative disinfection option along with advantages and disadvantages of each.

Ultraviolet Light (UV)

Ultraviolet light (UV) disinfection is unique as it is a physical process rather than a chemical process as are most conventional disinfection methods. Being a physical process, UV disinfection eliminates handling and storage safety concerns of toxic chemicals. As a result of very minimal contact time required, UV units are very condensed resulting in a small footprint in the treatment plant, compared to a chlorine contact chamber/lagoon. Continuous maintenance must take place in order to ensure the unit is clean and to prevent fouling in order for an adequate dose to be delivered to the wastewater. UV disinfection also has higher costs associated with it relative to chlorination due to the lamps requiring high amounts of energy, but does not have chemical costs. UV disinfection is commonly used within Atlantic Canada for municipal wastewater systems.

Ozonation

Using ozone for disinfection is generally more effective than chlorine and requires a relatively short contact time. It also decomposes rapidly reducing the toxicity it imposes on the receiving environment of the effluent. However, ozone is one of the most complex disinfection methods as it involves extensive maintenance. It is a very corrosive and very reactive substance so it must be properly contained in order to avoid equipment deterioration and harm to operators as it is also a strong irritant. Ozone is generally produced on site at the treatment plant which eliminates shipping and supplier costs. However, producing ozone is associated with very high costs as a result of requiring major upgrades to be done to the treatment plant and increased power costs. Ozone for municipal wastewater disinfection is not commonly used in Atlantic Canada and has much more handling demands compared to chlorination or UV.

Peracetic acid

Peracetic acid is a relatively new method used for wastewater disinfection, however has been used in the food industry for many years. It is made up of hydrogen peroxide, acetic acid and water and is typically supplied as a 10-15% solution. The safety risks involved with the handling and storage of peracetic acid are much lower than that of chlorine gas and is proven to provide effective disinfection at lower doses and shorter contact times than chlorine. When discharged to the environment, peracetic acid residual decomposes quickly resulting in an effluent which is less toxic as compared to an effluent containing chlorine residual. The rapid decomposition of the residual can also be looked at as a disadvantage since a residual is not maintained throughout the outfall pipe. Compared to other disinfectants, peracetic acid may decompose in storage quicker, however suppliers typically add a stabilizer to the solution to prevent rapid decomposition. Peracetic acid is not commonly used in Atlantic Canada, however it has been listed by the USEPA as an alternative disinfection option and will likely gain popularity as effluent discharge requirements become more stringent.

OPTIONS FOR MAHONE BAY WWTP

Based on the dechlorination and alternative disinfection options that have been discussed, there are several options that could be implemented at the Mahone Bay WWTP. Table 2 outlines some of the criteria used to evaluate and determine options that could be carried forward for preliminary design.

Table 2: Evaluation of Dechlorination and Alternative Disinfection Options

	Frequency of Use in Atlantic Canada	Health and Safety Concerns	Ease of operability	Ease of integration into WWTP	Availability of Chemicals
Sulfur Dioxide	Medium	High	Medium	Medium	Medium
Sulfite salts	Medium	Medium	High	Medium	High
Hydrogen Peroxide	Low	High	Medium	Medium	High
UV Light	High	Medium	High	Low	N/A
Ozone	Low	High	Low	Low	Generated on site
Peracetic Acid	Low	Medium	High	Medium	Medium

For dechlorination options, sulfite salts (specifically sodium bisulfite) will be carried forward, due to the ease of operability and integration into the existing WWTP and the lower health and safety concerns for handling. Sulfur dioxide, while commonly used in the industry, was not carried forward based on the higher health and safety concerns. Hydrogen peroxide was not included as it is not commonly used and has higher health and safety concerns compared to sodium bisulfite.

UV disinfection is commonly used in Atlantic Canada and reduces the need of chemicals for disinfection. With reduced health and safety concerns for operators, UV will be carried forward. Ozone was not carried forward as it is not commonly used in Atlantic Canada and has much higher operation and health and safety requirements compared to the other options. While peracetic acid is a novel alternative disinfectant and has limited use in municipal wastewater, it was carried forward for consideration as it would be easy to integrate into the existing system and provides an alternative to chlorine and UV disinfection.

Dechlorination- Sodium Bisulfite

For this option, the existing gas chlorination system would be used for disinfection. In the existing chlorination room, a wall would be constructed to form a separate sodium bisulfite room, which would hold a sodium bisulfite solution tank and a duplex chemical metering pump skid. Sodium bisulfite would be pumped from the control building to the weir prior to discharge.

Alternative Disinfectant- UV Light

Implementing UV disinfection will require more substantial upgrades compared to the other two options. Two options for UV disinfection locations have been identified: within the existing control building and in a new, separate UV building.

A UV unit could be installed within the existing control building where the chlorination equipment is currently located. Due to the size of the UV equipment, the existing chlorination equipment would have to be removed, and the wall separating the chlorine room from the process room would have to be removed. Yard piping would have to be rerouted from the weir chamber to the control building and would require the addition of a pump station. The effluent from the UV disinfection would then flow to the weir chamber and to the discharge pipe.

The second option would be to build a separate UV building prior to the weir chamber. The UV unit could be located in the basement of the building, at the grade of the existing yard piping, to allow the UV unit to be fed by gravity. This would eliminate the need for a pump station. The UV effluent would flow by gravity to the weir chamber and to the discharge pipe.

Peracetic Acid

Similar to the sodium bisulfite option, a chemical metering pump skid and solution tank would be installed within the current chlorine room. A wall could be constructed to separate the peracetic acid system from the existing chlorination equipment (if it stays in place) or the existing chlorination equipment could be removed and the peracetic acid system be put in that location.

Preliminary sketches for each option have been developed and are provided in Appendix A.

OPINION OF PROBABLE COSTS

Preliminary capital costs estimates were prepared for each option identified. The total includes engineering and contingency but not including taxes. Costs are based on 2019 and are not inflated for construction to occur several years in the future. The summarized capital costs can be seen in Table 3 and a breakdown of the costs can be found in Appendix B.

Table 3: Capital Cost Estimates (Class D)

Option	Cost Estimate (Class D)
Dechlorination (sodium bisulfite)	$85,100
UV (within existing process building)	$402,500
UV (with new UV building)	$533,000
Peracetic Acid	$85,100

Generalized operating costs were developed for the upgrade options based on the operation of similar facilities. Operating and maintenance costs include electrical, chemical and consumables. It was assumed that the labour requirements for the options would be carried by current WWTP staff. Annual O&M costs are summarized below in Table 4.

Table 4: Annual O&M Cost Estimates

	Dechlorination	UV (within existing process building)	UV (with new UV building)	Peracetic Acid
Electrical Consumption	$900	$2500	$2500	$350
Chemical Consumption	$2600	n/a	n/a	$3900
Replacement/Miscellaneous Costs	$150	$800	$800	$150
Annual Total	$3650	$3300	$3300	$4400

Life cycle cost analysis is a method of assessing the total cost of a system. It takes into account the costs of owning, operating, maintaining and eventual disposal and can be used to compare design options that are relatively similar to be implemented. A life cycle cost analysis was completed for each option over a 20 year period. The calculations in the report were carried out applying an assumed inflation rate of 3%. The real discount rate used in these calculations is 6%, and the time period over which it is calculated is 20 years, starting in 2019. The net present value summary is presented below in Table 5.

Table 5: Life Cycle Cost Analysis

	Dechlorination	UV (within existing control building)	UV (with new UV building)	Peracetic Acid
Annual Total O&M Costs	$3,650	$3,300	$3,300	$4,400
Operations Cost Present Value	$53,195	$48,094	$48,094	$64,131
Capital Costs	$85,100	$402,500	$533,000	$85,100
Net Present Value	$141,945	$453,894	$584,394	$153,631

CBCL LIMITED
Consulting Engineers

Please let us know if you have any questions or want to discuss any of the contents of this letter further.

Yours truly,

CBCL Limited

DRAFT ***.....*** ***DRAFT***

Prepared by:
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Process EIT
Direct: 902-421-7241
E-Mail: mfraser@cbcl.ca

Reviewed by:
Mike Abbott, M.Eng, P.Eng
VP Water Treatment

Appendix A: Preliminary Sketches
Appendix B: Cost Estimates

Project No: 190830.00

Appendix A – Preliminary Sketches

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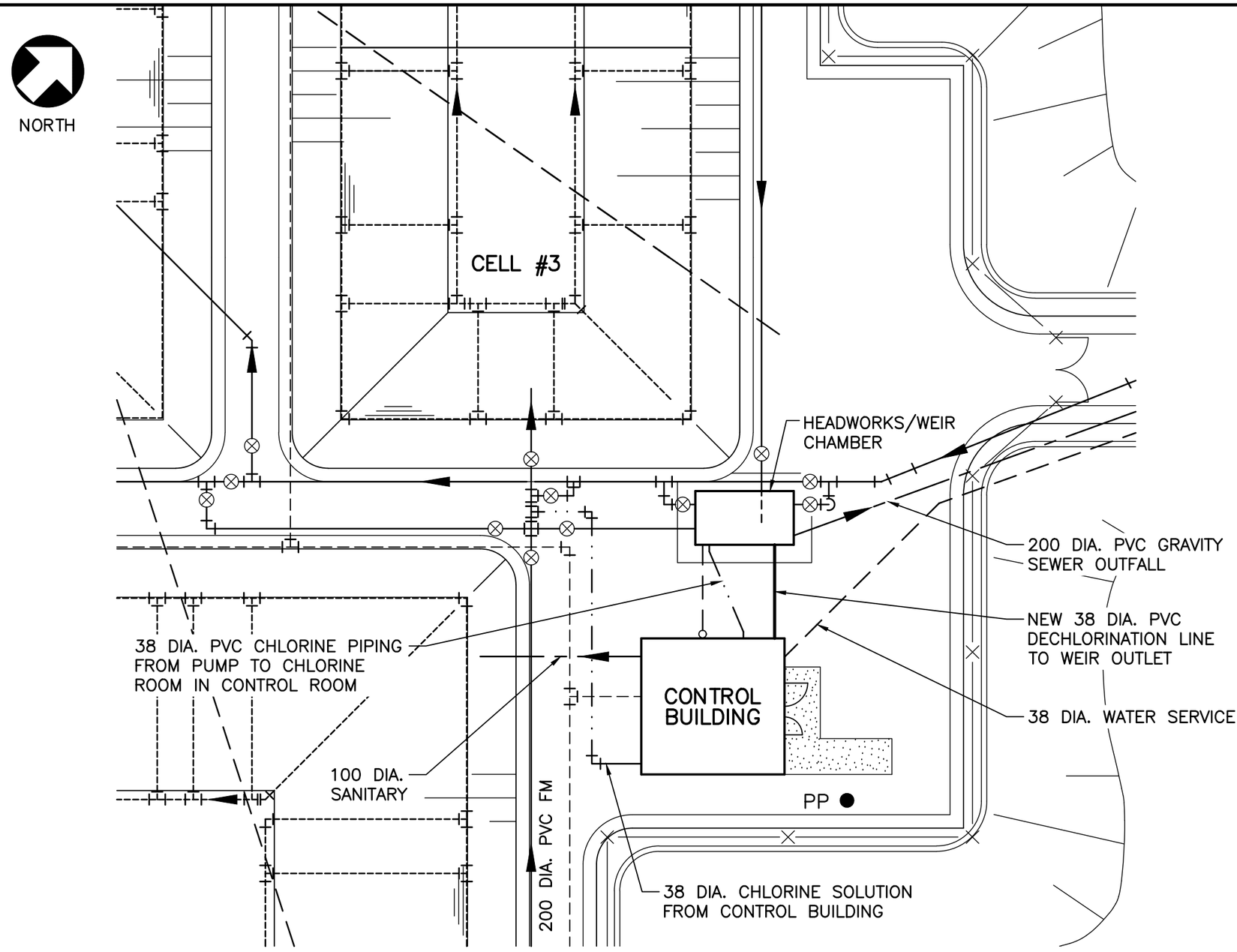


PLAN– PIPING LAYOUT

1:250

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

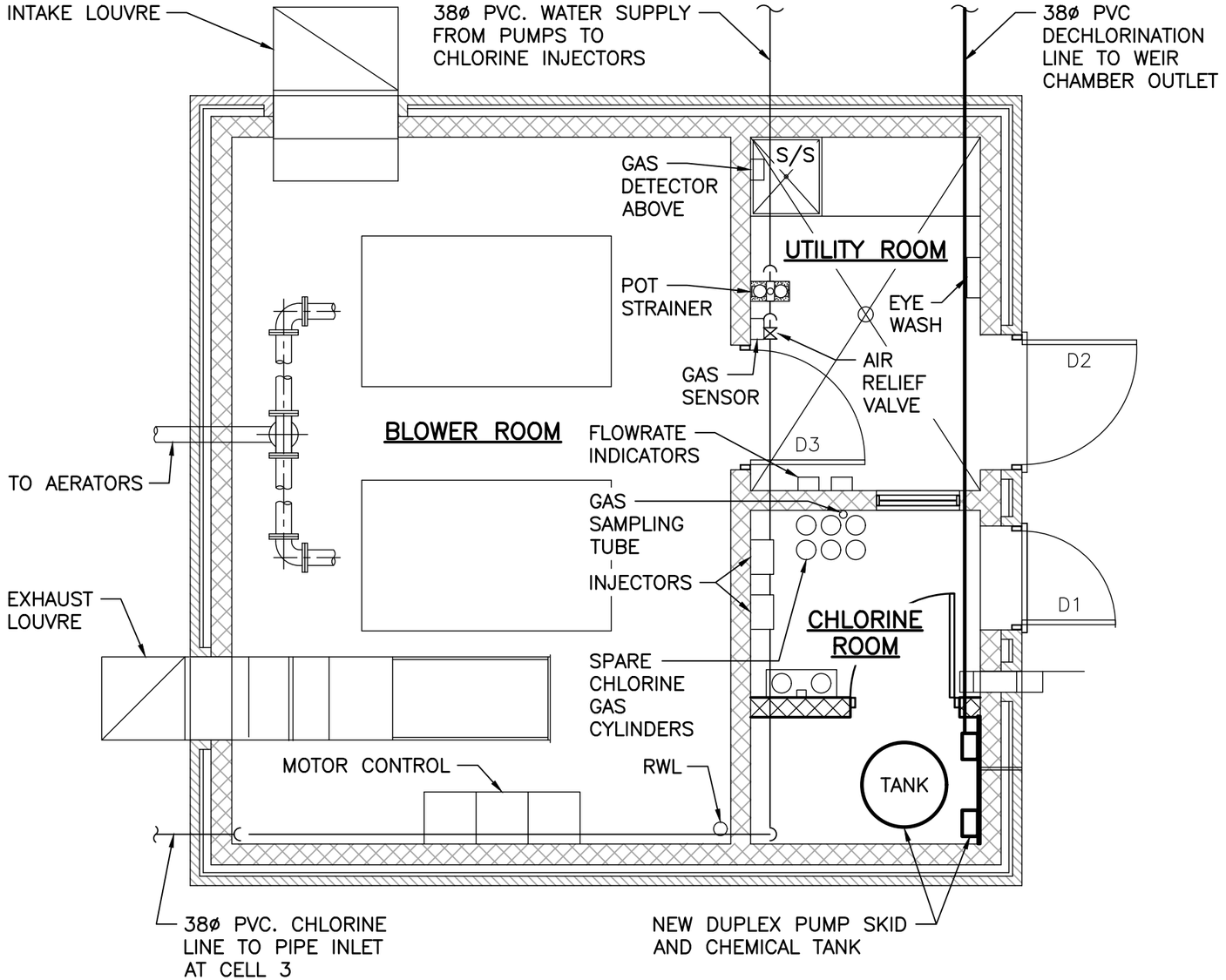
No.	Description

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

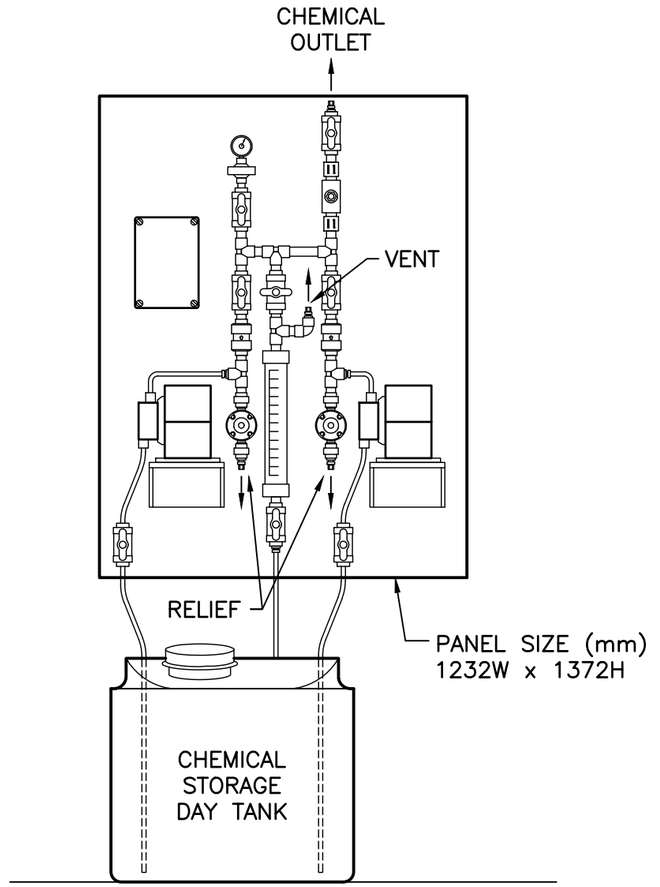
DECHLORINATION OPTION

Drawing
PSK01



FLOOR PLAN – CONTROL BUILDING

1:50



DETAIL – CHEMICAL FEED PANEL LAYOUT

N.T.S.

No.	Description

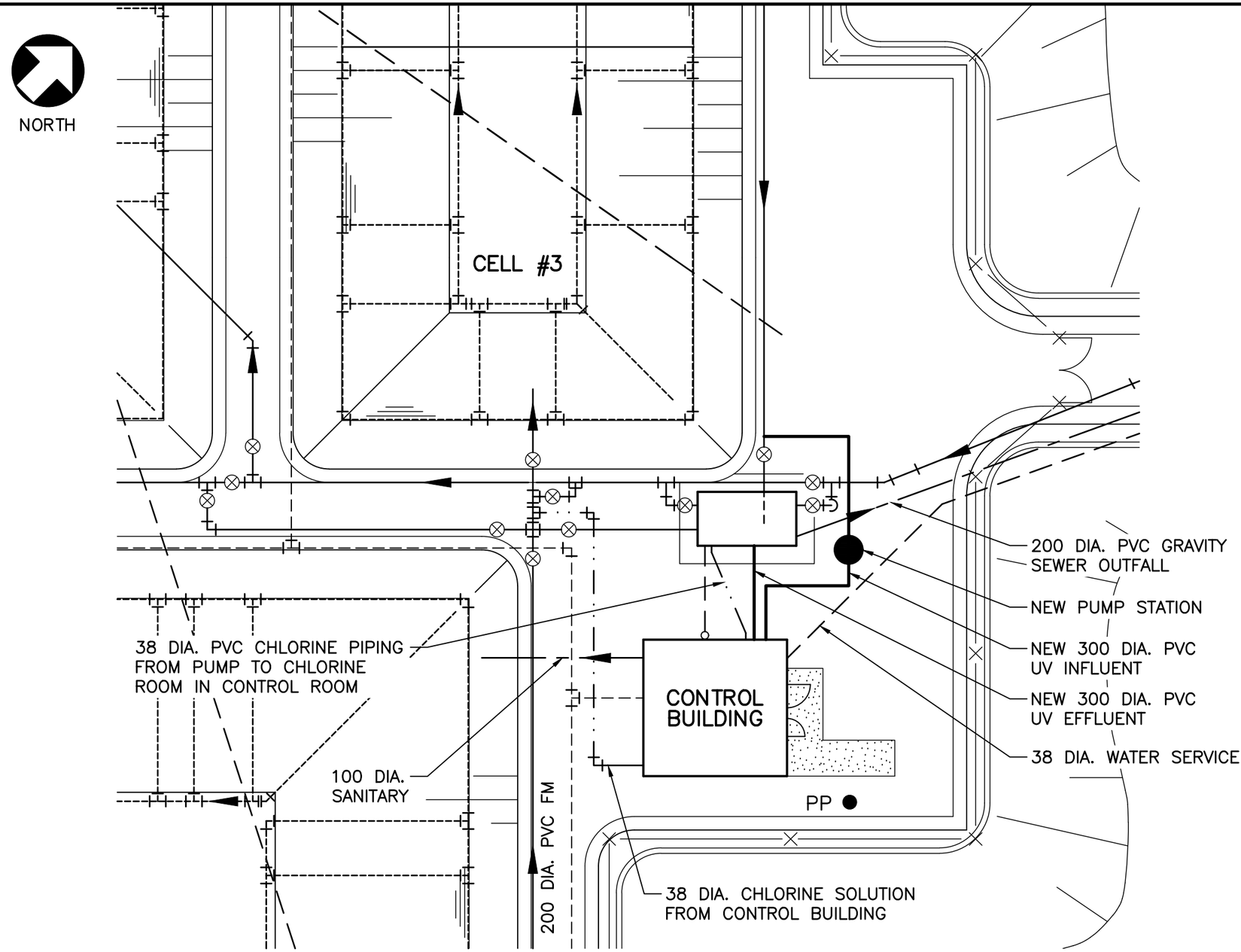
Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

DECHLORINATION OPTION

Drawing
PSK02



PLAN– PIPING LAYOUT

1:250

No.	Description

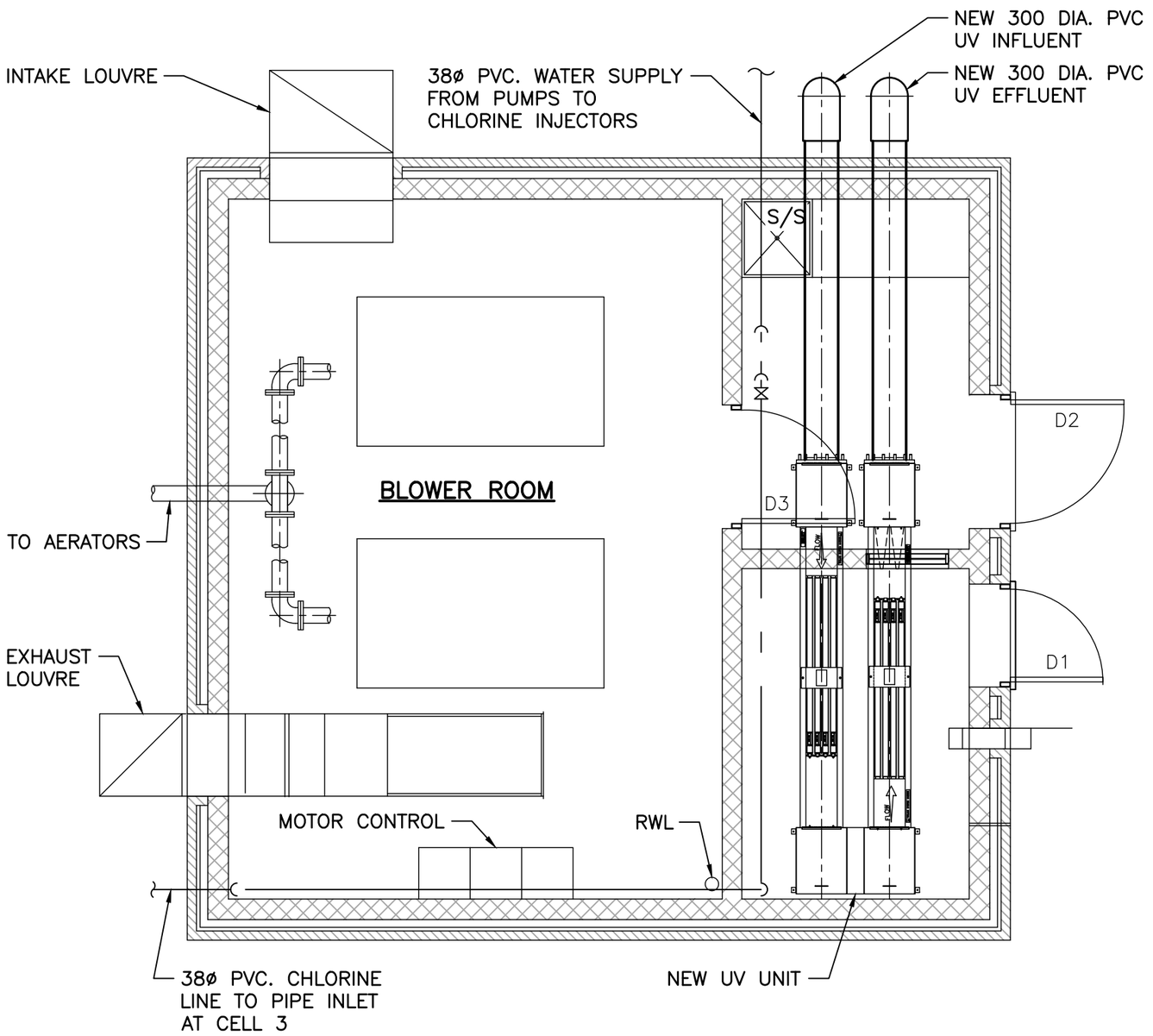
Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

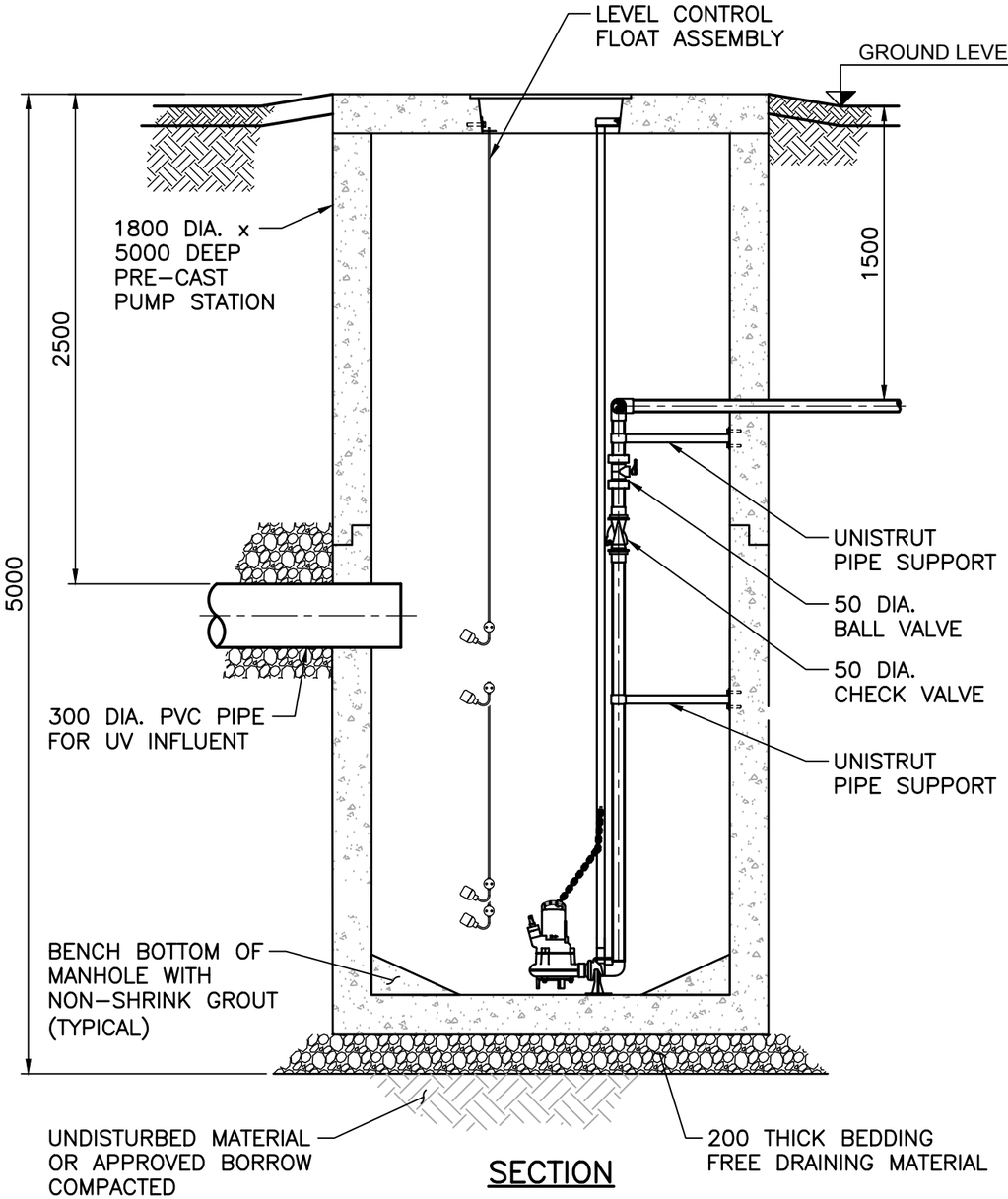
UV OPTION 1

Drawing
PSK03



FLOOR PLAN– CONTROL BUILDING

1:50



SECTION

DETAIL– PUMP STATION

1:30

No.	Description

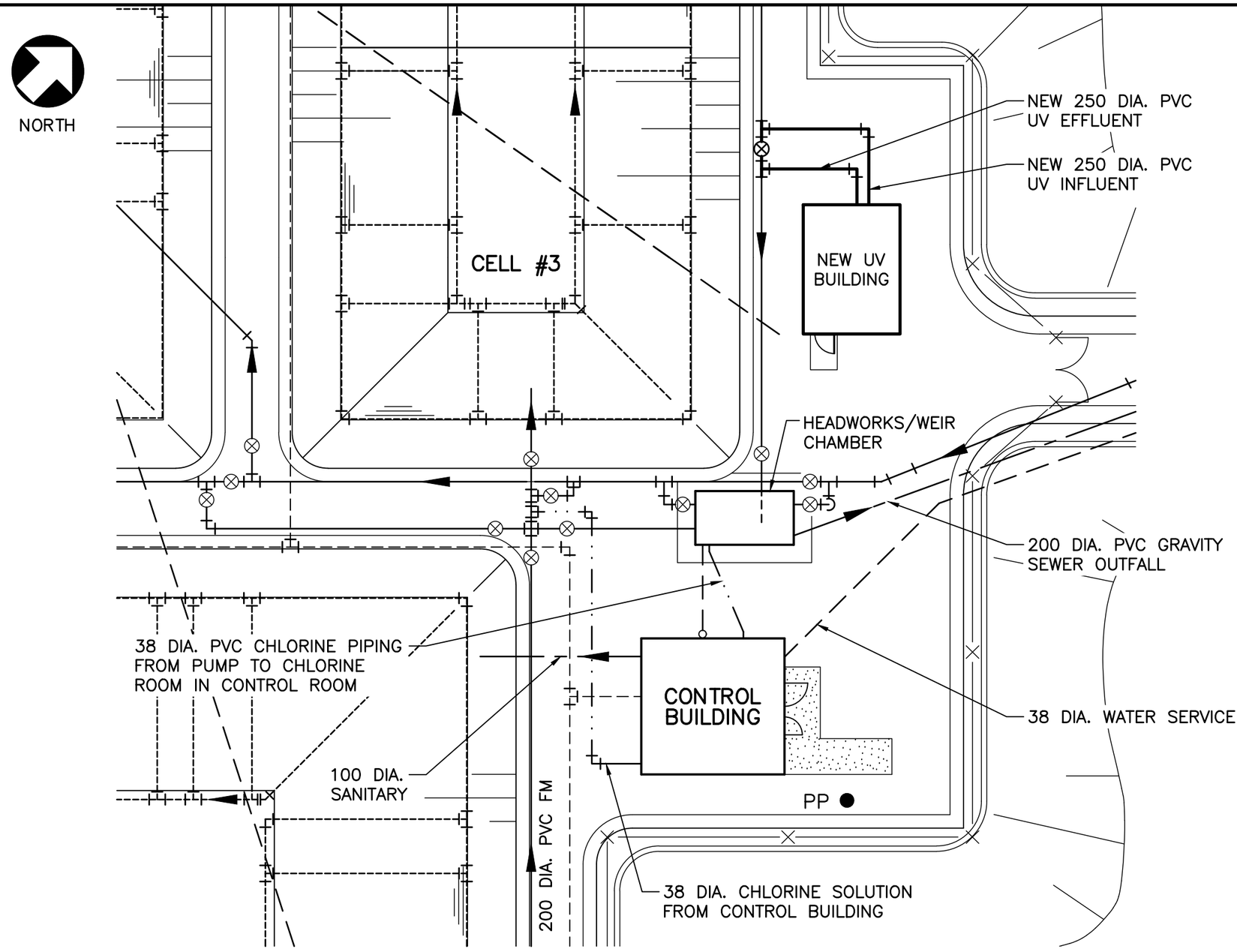
Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

UV OPTION 1

Drawing
PSK04



PLAN– PIPING LAYOUT

1:250

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

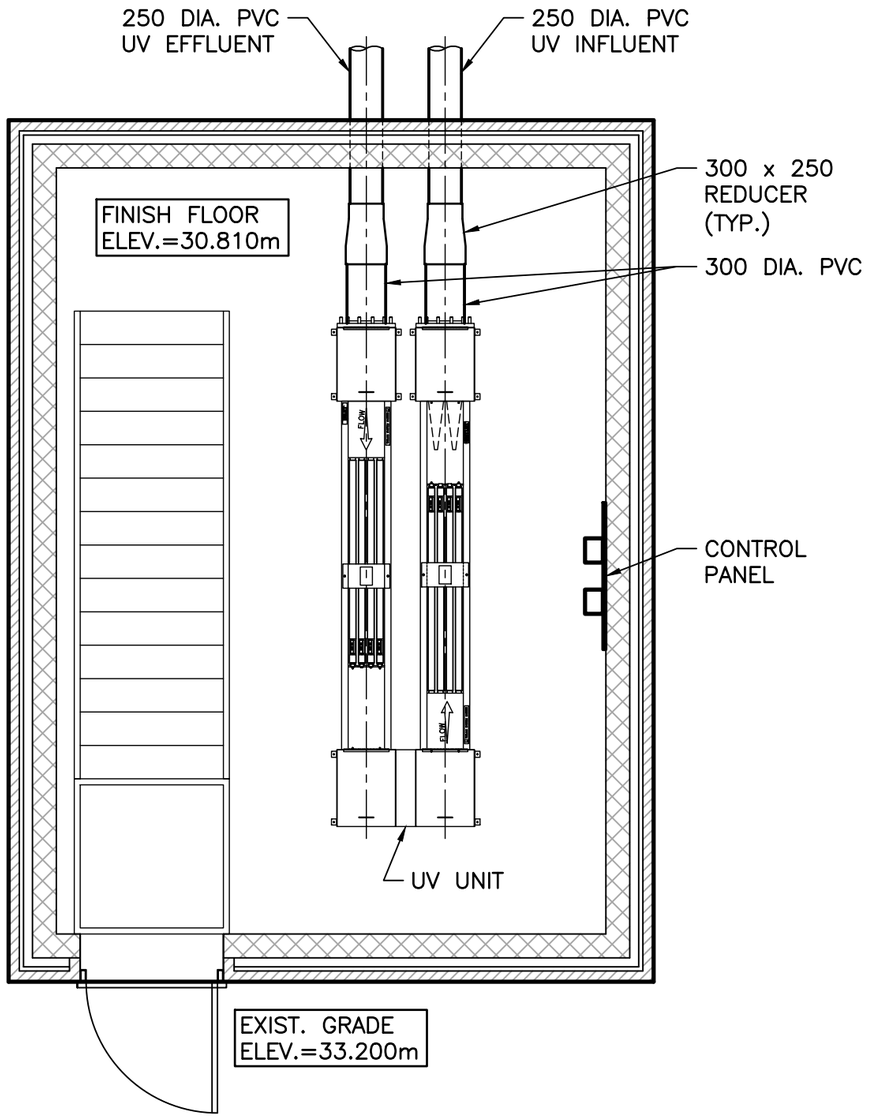
No.	Description

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

UV OPTION 2

Drawing
PSK05



FLOOR PLAN— NEW UV BUILDING

1:50

No.	Description

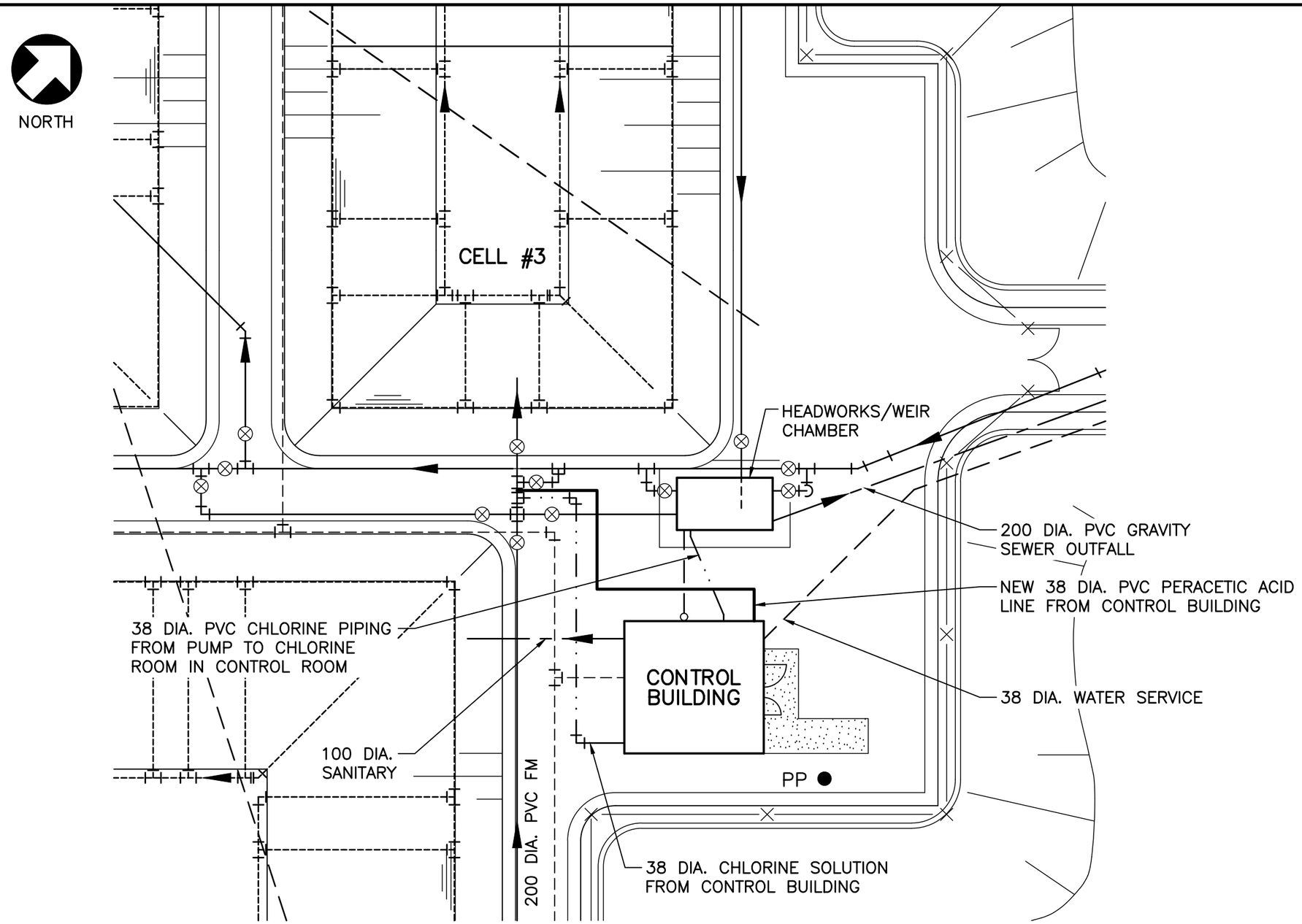
Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

UV OPTION 2

Drawing
PSK06



PLAN– PIPING LAYOUT

1:250

No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

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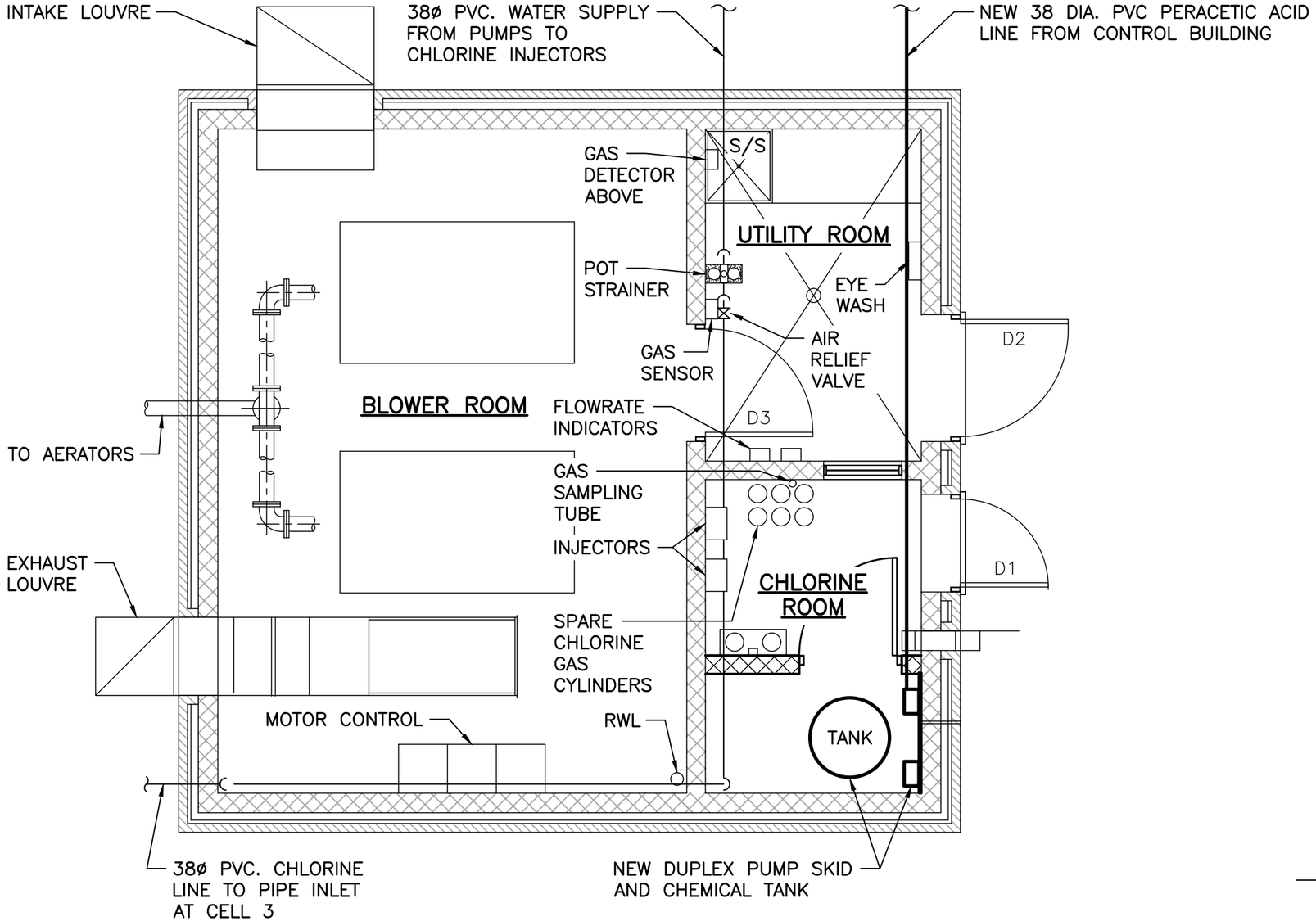
TOWN OF MAHONE BAY
DECHLORINATION

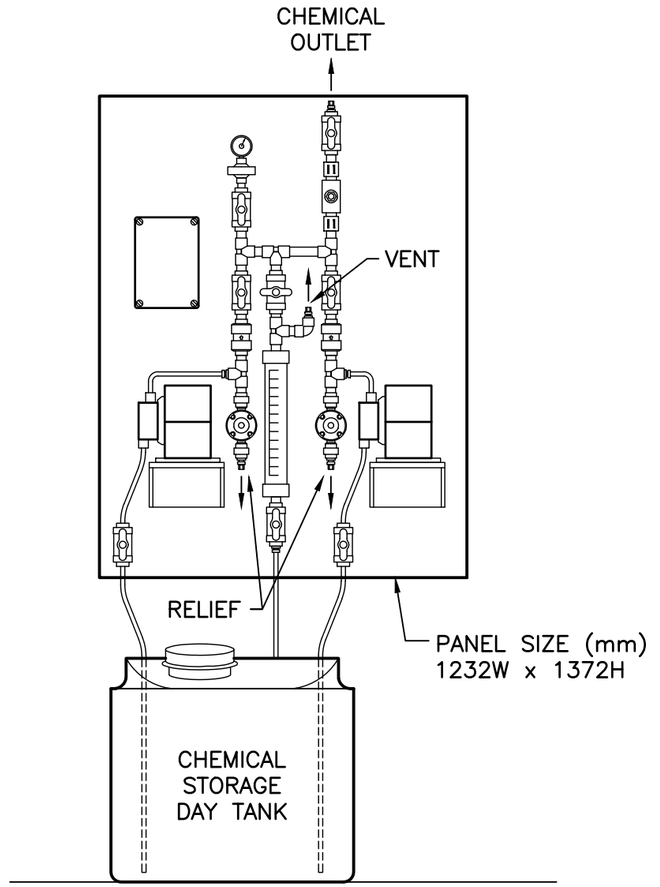
PERACETIC ACID OPTION

Drawing
PSK07



FLOOR PLAN – CONTROL BUILDING

1:50



DETAIL – CHEMICAL FEED PANEL LAYOUT

N.T.S.

No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
JULY 24/19	AS NOTED	MF	NHM			190830.00	

CBCL LIMITED
Consulting Engineers

TOWN OF MAHONE BAY
DECHLORINATION

PERACETIC ACID OPTION

Drawing
PSK08

Appendix B – Cost Estimates

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CANADA'S BEST MANAGED COMPANIES

CBCL LIMITED
Consulting Engineers

Opinion of Probable Construction Cost

Town of Mahone Bay WWTP
Dechlorination Option
Class D Cost Estimate

DATE:	September 18, 2019
CBCL FILE No.:	190830.01
PREPARED BY:	MF/AT
EST. DESCRIPTION :	Class D Cost Estimate

No.	DESCRIPTION		AMOUNTS
	CONSTRUCTION COSTS		
1	Site Works		$ 9,000
2	Metals		$ 3,000
3	Finishes/Doors/Windows		$ 3,600
4	Process Equipment Supply		$ 17,600
5	Mechanical		$ 7,400
6	Electrical		$ 3,800
7	Prime Contractor Overhead/fees		$ 14,000
	SUB-TOTAL COSTS (Excluding below contingencies, allowance and factors)		**$ 57,800**
8	Design Development Contingency	15%	$ 8,700
9	Construction Contingency	10%	$ 6,700
10	Escalation / Inflation (Based on 2019 Dollars)		Not Included
11	Location Factor		Included
	CONSTRUCTION COSTS (A)		**$74,000**
	ENGINEERING and OTHER COSTS		
12	Engineering	15%	$ 11,100
13	Other	N/A	
	ENGINEERING and OTHER COSTS (B)		**$11,100**
	TOTAL PROJECT COST (A + B)		**$85,100**
	HST Taxes	15.0%	$ 12,765
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST		**$98,000**

THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

Note 1	A Design Development Contingency is for growth of quanties, increase material costs and the like as the work is better defined in the future.
Note 2	A Construction Contingency is to allow for the cost of additional work that is over and above the original tendered construction contract price.
Note 3	The Escalation/Inflation allowance is for anticipated increases in construction costs from the time that the budget is prepared to time of Tender.
Note 4	The Location Factor is for anticipated variances between construction costs at the location of the project and historical construction data

Form CBCL 035.Rev 1

Opinion of Probable Construction Cost

Town of Mahone Bay WWTP
UV Option 1 (within existing building)
Class D Cost Estimate

DATE:	September 18, 2019
CBCL FILE No.:	190830.01
PREPARED BY:	MF/AT
EST. DESCRIPTION :	Class D Cost Estimate

No.	DESCRIPTION		AMOUNTS
	CONSTRUCTION COSTS		
1	Site Works		$ 36,000
2	Metals		$ 3,000
3	Pump Station		$ 60,000
4	Process Equipment Supply		$ 73,700
5	Mechanical		$ 24,200
6	Electrical		$ 33,600
7	Prime Contractor Overhead/fees		$ 46,100
	SUB-TOTAL COSTS (Excluding below contingencies, allowance and factors)		**$ 276,600**
8	Design Development Contingency	15%	$ 41,500
9	Construction Contingency	10%	$ 31,900
10	Escalation / Inflation (Based on 2019 Dollars)		Not Included
11	Location Factor		Included
		CONSTRUCTION COSTS (A)	**$350,000**
	ENGINEERING and OTHER COSTS		
12	Engineering	15%	$ 52,500
13	Other	N/A	
		ENGINEERING and OTHER COSTS (B)	**$52,500**
		TOTAL PROJECT COST (A + B)	**$402,500**
		HST 15.0%	$ 60,375
		TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST	**$462,875**

THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

Opinion of Probable Construction Cost

Town of Mahone Bay WWTP
UV Option 2 (new building)
Class D Cost Estimate

DATE:	September 18, 2019
CBCL FILE No.:	190830.01
PREPARED BY:	MF/AT
EST. DESCRIPTION :	Class D Cost Estimate

No.	DESCRIPTION			AMOUNTS
	CONSTRUCTION COSTS			
1	Site Works			$ 48,000
2	Concrete			$ 46,000
3	Metals			$ 10,000
4	Finishes/Doors/Windows			$ 34,400
5	Process Equipment Supply			$ 73,700
6	Mechanical			$ 42,200
7	Electrical			$ 50,600
8	Prime Contractor Overhead/fees			$ 61,000
	SUB-TOTAL COSTS (Excluding below contingencies, allowance and factors)			**$ 365,900**
9	Design Development Contingency	15%		$ 54,900
10	Construction Contingency	10%		$ 42,100
11	Escalation / Inflation (Based on 2019 Dollars)			Not Included
12	Location Factor			Included
	CONSTRUCTION COSTS (A)			**$463,000**
	ENGINEERING and OTHER COSTS			
13	Engineering		15%	$ 69,500
14	Other		N/A	Separate Contract
	ENGINEERING and OTHER COSTS (B)			**$70,000**
	TOTAL PROJECT COST (A + B)			**$533,000**
	Taxes		15.0%	$ 79,950
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST			**$542,950**

THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

CBCL LIMITED
Consulting Engineers

Opinion of Probable Construction Cost

Town of Mahone Bay WWTP
Peracetic Acid Option
Class D Cost Estimate

DATE:	September 18, 2019
CBCL FILE No.:	190830.01
PREPARED BY:	MF/AT
EST. DESCRIPTION :	Class D Cost Estimate

No.	DESCRIPTION		AMOUNTS
	CONSTRUCTION COSTS		
1	Site Works		$ 9,000
2	Metals		$ 3,000
3	Finishes/Doors/Windows		$ 3,600
4	Process Equipment Supply		$ 17,600
5	Mechanical		$ 7,400
6	Electrical		$ 3,800
7	Prime Contractor Overhead/fees		$ 14,000
	SUB-TOTAL COSTS (Excluding below contingencies, allowance and factors)		**$ 57,800**
8	Design Development Contingency	15%	$ 8,700
9	Construction Contingency	10%	$ 6,700
10	Escalation / Inflation (Based on 2019 Dollars)		Not Included
11	Location Factor		Included
	CONSTRUCTION COSTS (A)		**$74,000**
	ENGINEERING and OTHER COSTS		
12	Engineering	15%	$ 11,100
13	Other	N/A	
	ENGINEERING and OTHER COSTS (B)		**$11,100**
	TOTAL PROJECT COST (A + B)		**$85,100**
	HST Taxes	15.0%	$ 12,765
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST		**$98,000**

THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

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Note 2	A Construction Contingency is to allow for the cost of additional work that is over and above the original tendered construction contract price.
Note 3	The Escalation/Inflation allowance is for anticipated increases in construction costs from the time that the budget is prepared to time of Tender.
Note 4	The Location Factor is for anticipated variances between construction costs at the location of the project and historical construction data

Form CBCL 035.Rev 1

NOVA SCOTIA

Municipal Affairs and Housing

Grants, Programs and Operations

Aileen Waller-Hebb, P.Eng.
Director Strategic Infrastructure Initiatives

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Fax: (902) 424-0821
E-mail: Aileen.Waller-Hebb@novascotia.ca

14th Floor N, Maritime Centre
1505 Barrington St.
PO Box 216
Halifax, NS B3J 2M4

October 1, 2019

Dylan Heide
Chief Administrative Officer
Town of Mahone Bay
PO Box 530, 493 Main Street
Mahone Bay, NS B0J 2E0

Dear Mr. Heide: Dylan

RE: Main Street Utilities Rehabilitation & Improvements
Waterline Rehabilitation and Wastewater System Extension

I am writing to acknowledge receipt of your applications for funding assistance under the Investing in Canada Infrastructure Program (ICIP) – Environmental Quality stream.

The first intake of applications under the ICIP closed in January 2019 with the number of applications exceeding our available budget. Your applications were reviewed for consideration and, unfortunately, was not approved.

Projects that were approved were those identified as provincial and federal priorities and included projects that helped the province make strides in meeting the federal Wastewater and Effluent Guidelines.

The ICIP is a multi-year program and we anticipate future calls for applications. We will reach out when the timing is confirmed.

Should you require any further information, please feel free to contact me at 902-424-7414.

Yours truly,

Aileen

Aileen Waller-Hebb, P.Eng.

Town of Mahone Bay
Staff Report
RE: Development of 2019-25 Capital Investment Plan
October 29, 2019

General Overview:

The purpose of this report is to initiate the development of a 2019-25 capital investment plan for the Town by introducing a draft capital planning document for Council's consideration.

Background:

Prior report presented October 8, 2019 (attached as Appendix A) outlined federal requirements for each municipal unit to prepare a 5-year capital investment plan (CIP). The Town's prior 2016-22 Capital Investment Plan was also provided for reference (attached as Appendix B).

The Council's 2018-2021 Strategic Plan: Action Plan calls for the Town to institute a 10-year capital budget by the 2020-21 budget year. In two special meetings over the fall of 2019 Council will confirm the 2019-25 CIP for reporting purposes. Staff will then use this document as the basis for a draft 10-year capital budget (2020-2030) to be presented for Council's consideration in the 2020-21 budget process (anticipated in March of 2020). A significant benefit of developing the 2019-25 CIP now – other than satisfying reporting requirements – is that staff will have Council's guidance on priority projects anticipated for 2020-21 and will therefore be able to improve the accuracy of the draft 2020-21 capital when presented (addressing an issue we've noted this year).

This 10-year capital budget, once confirmed by Council in the 2020-21 budget process, will also be a starting place for the development of an asset management plan. Integration of the 10-year capital budget and 10-year asset management plan is anticipated in the 2021-22 budget.

Analysis:

See attached draft 2019-25 capital project listing (appendix C). Staff are requesting Council input on this list at the Oct 29th special meeting and following-on this meeting by email until November 15th. Staff will use this input to refine a draft 2019-25 capital investment plan with additional financial analysis (see below) for presentation to the Council's second special meeting on capital planning (to be scheduled for late November / early December).

Financial Analysis:

The 5-year capital investment plan will be informed by financing and debt considerations. The staff report to the second special meeting on capital planning will focus on this, incorporating Council's input from the Oct 29th meeting and follow-up.

Links to Strategic Plan:

Key Strategic Initiatives and Core Activities

3.1 21st Century Infrastructure

- Asset Management

Recommendation:

It is recommended:

THAT Council schedule a second special meeting to discuss 2019-25 capital investment plan. Proposed meeting date/time: 9 AM, Tuesday, Nov 19, Nov 26 or Dec 3.

Attached for Council Review:

- Staff Report re Capital Investment Plan (Oct 8, 2019)
- 2016-22 Capital Investment Plan
- Working Draft 2019-25 Capital Investment Plan

Respectfully Submitted,

Dylan Heide
Town of Mahone Bay CAO

Appendix A

Town of Mahone Bay
Staff Report
RE: Capital Investment Plan
October 8, 2019

General Overview:

The purpose of this report is to provide Council with a recommendation concerning the development of a 2019-25 Capital Investment Plan.

Background:

The Town is required by the NS Department of Municipal Affairs and Housing to prepare a minimum five-year Capital Investment Plan outlining long-term capital spending anticipated by the Town. In prior years the Department accepted plans submitted by staff which had not been approved by Council, but they now require councils to approve the plan prior to submission. This is a good practice as it encourages councils to take a long-term view of capital expenditures and supports the development of more comprehensive asset management strategies. Reviewing and updating the Capital Investment Plan annually in the fall of each year helps staff and Council to prepare for the upcoming annual budget process, improving budget accuracy and streamlining capital budget approvals; it also provides an opportunity for a detailed mid-year check-in on ongoing capital projects.

Relevant excerpts from the Town's 2019-20 budget (approved by Council May 14, 2019) and 2016-22 Capital Investment Plan are attached as Appendix A to this report. There have also been updates since May 14, which are reported to Council each month as a part of the regular Report to Council (excerpt from Sept. 26 report attached as Appendix B); there have been additional updates from Council's Sept. 26th meeting which will be reflected in the next Report to Council (Oct. 24, 2019).

Analysis:

Staff recommend that Council schedule a special meeting for the purpose of developing a 2019-25 Capital Investment Plan. This meeting would provide Council the opportunity to receive and review additional updates from staff including a proposed draft 2019-25 plan, bringing the 2016-22 Capital Investment Plan and the 2019-20 budget into alignment. Council would then discuss and provide direction to staff to amend the plan as necessary prior to approval and submission to Municipal Affairs. This plan, once approved by Council, would also be used to inform the development of asset management strategies for Town infrastructure.

It is proposed that the special session be scheduled for late October (Oct. 28th, 29th, and 30th are recommended dates), dependent on Council availability. Staff will send out a meeting package in advance of the session as usual.

Financial Analysis:

See appendices for budget information. Additional long-term financial analysis will be provided in the special meeting package.

Links to Strategic Plan:

Key Strategic Initiatives and Core Activities

3.1 21st Century Infrastructure

- Asset Management

Recommendation:

It is recommended:

THAT Council schedule special meeting to discuss the development of a 2019-25 Capital Investment Plan.

Attached for Council Review:

- 2019-20 Budget / 2016-22 Capital Investment Plan Excerpts
- Sept 26, 2019 Council Report Excerpt

Respectfully Submitted,

Dylan Heide
Town of Mahone Bay CAO

Appendix B

TOWN OF MAHONE BAY DRAFT 5 YEAR CAPITAL PLAN 2016-2022

#	Capital Project	Description	TOTAL 5 YR COST	2018	2019	2020	2021	2022
1	Council _Laptops	Council _Laptops	**15,000**					15,000
2	Town Hall Furnishings/Equipment	Council Chambers Floor & Desks	**10,000**				10,000	
3	Town Office Furnishings/Equipment	Town Office Furnishings/Equipment	**5,000**			5,000		
4	Fire Station Improvement	Replace or Improvements Fire Station	**2,500,000**		2,500,000			
5	New Facilities Detailed Design	New Facilities Detailed Design (Several Options)	**50,000**	50,000				
6	Parking Improvements Fire Hall	Parking Improvements Fire Hall	**90,000**			90,000		
7	Fire Fighting Equipment	Bunker Gear	**50,000**	10,000	10,000	10,000	10,000	10,000
8	Fire Hall -Casade System	Cascade Air System -Fire Hall	**40,000**					40,000
9	Waste Receptable	3 Stream Receptable (New Playground)	**3,000**	3,000				
10	Fire Vehicles	Capital Improvements - Vehicles	**50,000**		25,000			25,000
11	New Fire Vehice	New Fire Vehice	**600,000**			600,000		
12	1/2 Ton Pick-up Truck	1/2 Ton Pick-up Truck	**30,000**	30,000				
13	Front End Loader	Front End Loader	**80,000**		80,000			
14	International Dump Truck with Plow	International Dump Truck with Plow	**160,000**					160,000
15	New Van or Utility Truck	Water Utility Van	**40,000**					40,000
16	Public Works Equipment	Town Machinery & Equipment	**10,000**			10,000		
17	Sidewalk Plow - & Attachments	Sidewalk Plow - & Attachments	**100,000**	100,000				
18	Public Works Garage/Office	Renovate Fire Hall	**250,000**		250,000			
19	Sand Storage Shed	Winter Maintenance/Sand	**40,000**		40,000			
20	Double Chip Seal Clearland Rd	Double Chip Seal Clearland Rd	**70,000**		35,000		35,000	
21	Paving Mainstreet Edgewater to Sewage Treatment Plant Rd	Paving Mainstreet Edgewater to Sewage Treatment Plant Rd	**350,000**				350,000	
22	Sidewalk Fairmont Street	Sidewalk Fairmont Strret	**80,000**			80,000		
23	New/Replace Various Culverts	New/Replace Various Culverts	**30,000**	10,000		10,000		10,000
24	Sidewalk -Fauxburg Main to Pleasant	Sidewalk -Fauxburg Main to Pleasant	**125,000**				125,000	
25	Guard Rail Curve Correction Hawthorn Hill	Guard Rail Curve Correction Hawthorn Hill	**20,000**				20,000	
26	Watershed Protection Study -Hwy 3	Watershed Protection Study -Hwy 3	**20,000**		20,000			
27	Land Purchase Watershed	Land Purchase Watershed	**40,000**			40,000		
28	New Water Services	New Water Services	**23,000**	5,000	5,000	5,000	5,000	3,000
29	CutOut Access to Water transmission Line	CutOut Access to Water transmission Line	**10,000**		10,000			
30	Water-Trasmission Line	Replace Transmission Main -Lake to Treatment plant	**500,000**					500,000
31	WTP Upgrades Controls & Redundancy	WTP Controls & Insulation	**15,000**		15,000			
32	Gate Valves	Gate Valve Replacement Program	**24,000**		6,000	6,000	6,000	6,000
33	Hydrant Replacements	Hydrant Replacements	**10,000**			5,000		5,000
34	Mainstreet Watermain Replacement Edgewater to Sewage Treatment Plant Rd	Mainstreet Watermain Replacement Edgewater to Sewage Treatment Plant Rd	**550,000**				550,000	
35	Mainstreet Watermain Replacement Longhill to Edgewater	Mainstreet Watermain Replacement Longhill to Edgewater	**400,000**					400,000
36	New Water Meters	New Water Meters	**6,000**		3,000		3,000	
37	Pump House Back up Generator	Back-up Generator Pumphouse	**50,000**	50,000				
38	Water Rate Study	Water Rate Study	**8,000**		8,000			
39	Mainstreet Sewer main Replacement Longhill to Edgewater	Mainstreet Sewer main Replacement Longhill to Edgewater	**400,000**				400,000	
40	Mainstreet Sewer main Replacement Zwicker Lane to Longhill Rdr	Mainstreet Sewer main Replacement Mahone In to Longhill Rdr	**175,000**			175,000		
41	New Sewer Services	New Sewer Services	**40,000**		10,000	10,000	10,000	10,000
42	Swimming Pool Improvement	Liner/Ground Work	**30,000**	30,000				
43	Pipe Locator & Camera	Pipe Locator & Camera	**14,000**			14,000		
44	Sewer Main Extension(to Town Limits)	Sewer Main Street to end of Town Limits	**350,000**		350,000			
45	Water Pal System Replace Filter Modules	Water Pal System Replace Filter Modules	**60,000**	12,000	12,000	12,000	12,000	12,000
46	Sewer Lift Station	Replace Pumps Station #2	**20,000**			10,000		10,000
47	Sewer Lift Station	Replace Pumps Station #3	**10,000**		10,000			

TOWN OF MAHONE BAY DRAFT 5 YEAR CAPITAL PLAN 2016-2022

#	Capital Project	Description	TOTAL 5 YR COST	2018	2019	2020	2021	2022
48	Sewer Lift Station	Replace Pump Station#1	**40,000**				40,000	
49	Drainage Fauxburg Road	Drainage Fauxburg Road	**50,000**		50,000			
50	Drainage Main Street	Drainage Main Street	**75,000**			75,000		
51	Engineering Various StormWater/Sewer Projects	Engineering Various StormWater/Sewer Projects	**20,000**			10,000	10,000	
52	Storm Water Drainage RPS	Storm Water Drainage RPS	**20,000**				20,000	
53	Storm Water Separator	Pleasant St ,Main , Fairmont Streets	**200,000**			100,000		100,000
54	Sea Wall Development	Harbour - Climate Change	**500,000**			500,000		
55	Boardwalk	Along Harbour	**400,000**			400,000		
56	Bandstand Repair	Capital Improvement - Bandstand	**14,000**	14,000				
57	Walking Bridge	Irving to Bandstand	**250,000**			250,000		
58	Breakwater Repairs	Breakwater Repairs	**8,500**		8,500			
59	Drilled Well Visitor Information Centre Edgewater St	Drilled Well Visitor Information Centre Edgewater St	**12,000**				12,000	
60	Enlarge Comfort Station Wharf::additional toilets, additional shower; laundry facilities	Enlarge Comfort Station Wharf::additional toilets, additional shower; laundry facilities	**100,000**				100,000	
61	Replace Floating Wharfs and Gangway	Replace Floating Wharfs and Gangway	**30,000**			30,000		
62	Shoreline Edgewater Sea Level Rise Protection	Shoreline Edgewater Sea Level Rise Protection	**1,500,000**		100,000			1,400,000
63	Wharf Repairs	Wharf Repairs	**335,000**		35,000		300,000	
64	Ballfield Backstop	Replace Ballfield Backstop	**10,000**		10,000			
65	Leaf Blower	Leaf Blower	**8,000**			8,000		
66	Picnic tables/benches throughout town/bike racks	Walkway enhancement for seniors	**10,000**		5,000		5,000	
67	Playground Equipment	Parks & Playgrounds	**22,000**				22,000	
68	Seniors Agility Park	Seniors Agility Park	**50,000**			50,000		
69	Electric Line Replacements	Pole, Line Replacements	**108,000**	18,000	20,000	20,000	20,000	30,000
70	Line Truck (small)	Line Truck (small)	**150,000**		150,000			
71	New Electric Meters (Digital)	New Electric Meters (Digital)	**46,000**	20,000	6,500	6,500	6,500	6,500
72	New Street Lights	New Street Lights (LED)	**13,000**	3,000	5,000			5,000
73	Replace Reclosurers-Substation	Replace Re-closers Substation	**12,000**				12,000	
74	Transformers	Transformers	**43,905**	33,905		5,000		5,000
75	Misc. Tools (Electric Utility)	Misc. Tools (Electric Utility)	**10,000**	10,000				
76	Various Capital Line Work	Various Capital Line Work	**10,000**	10,000				
77	Wood Chipper-Electric Utility	Wood Chipper - Electric Utility	**40,000**		40,000			
78	Main Street Water Main Replacement Longhill Road to ~23 Main Street	Replace existing CI and 2" line with PVC	**300,000**			300,000		
79	Vacuum Truck	Water/Sewer Vac Truck	**300,000**		300,000			
80	Corrosion Coating	Chemical Room Floor WTP	**10,000**			10,000		
81	Automatic Flushers	Deadend Flushing - System Extremities	**30,000**			15,000	15,000	
82	Pumphouse	Replace Raw Pumps + Spare	**10,500**		3,500	3,500	3,500	
83	Pumphouse Upgrades	Replace door, window, wet well cover	**5,000**		5,000			
84	Air Conditioning Unit	WTP Production Floor	**5,000**		5,000			
85	Transition Radio Telemetry at WTP	Move antenna from metal tower to new pole and RTU from old WTP to current WTP	**25,000**		25,000			
86	Tree replacement program	Tree replacement program	**5,000**	1,000	1,000	1,000	1,000	1,000
87	Splash Pad	Splash Pad	**100,000**			100,000		
88	10 BENCHES	10 BENCHES	**8,000**		4,000	4,000		
89	5 covered picnic tables	5 covered picnic tables	**5,000**		5,000			
90	Signage	Re Trails, Jubilee Park, Tot Lot Town Wharf etc	**2,000**		2,000			
91	Town Hall Repairs	Make repairs suggested in Inspection Report	**200,000**		200,000			
			12,445,905	**409,905**	**4,369,500**	**2,970,000**	**2,103,000**	**2,793,500**

Appendix C

TOWN OF MAHONE BAY CAPITAL PROJECT LISTING 2019-2025

#	Capital Project	Description	TOTAL 5 YR COST	2019	2020	2021	2022	2023	2024
1	Fire Station Improvement	Replace or Improvements Fire Station	**3,465,000**	346,500	3,118,500				
2	Parking Improvements Fire Hall	Parking Improvements Fire Hall	**90,000**		90,000				
3	Fire Fighting Equipment	Bunker Gear	**60,000**	10,000	10,000	10,000	10,000	10,000	10,000
4	SCBA Packs / Tanks	SCBA Packs / Tanks	**45,000**	45,000					
5	Fire Vehicles	Capital Improvements - Vehicles	**25,000**				25,000		
6	New Fire Vehice	New Fire Vehice	**600,000**		600,000				
7	International Dump Truck with Plow	International Dump Truck with Plow	**160,000**				160,000		
8	New Van or Utility Truck	Water Utility Van	**40,000**				40,000		
9	Flail Mower	Flail Mower	**6,000**	6,000					
10	Public Works Garage/Office	Renovate Fire Hall	**400,000**		400,000				
11	Sand Storage Shed	Winter Maintenance/Sand	**40,000**		40,000				
12	Double Chip Seal Clearland Rd	Double Chip Seal Clearland Rd	**72,000**	72,000					
13	Paving Mainstreet Edgewater to Sewage Treatment Plant Rd	Paving Mainstreet Edgewater to Sewage Treatment Plant Rd	**350,000**			350,000			
14	Sidewalk Fairmont Street	Sidewalk Fairmont Strret	**80,000**		80,000				
15	New/Replace Various Culverts	New/Replace Various Culverts	**30,000**		10,000		10,000		10,000
16	Sidewalk -Fauxburg Main to Pleasant	Sidewalk -Fauxburg Main to Pleasant	**125,000**			125,000			
17	Guard Rail Curve Correction Hawthorn Hill	Guard Rail Curve Correction Hawthorn Hill	**20,000**			20,000			
18	Watershed Protection Study -Hwy 3	Watershed Protection Study -Hwy 3	**20,000**		20,000				
19	Land Purchase Watershed	Land Purchase Watershed	**40,000**		40,000				
20	New Water Services	New Water Services	**30,000**	5,000	5,000	5,000	5,000	5,000	5,000
21	ICIP Projects	Water / wastewater line replacements (ICIP)	**5,570,906**	1,780,474	3,790,432				

TOWN OF MAHONE BAY CAPITAL PROJECT LISTING 2019-2025

#	Capital Project	Description	TOTAL 5 YR COST	2019	2020	2021	2022	2023	2024
22	Cut Out Access to Water transmission Line	CutOut Access to Water transmission Line	**10,000**	10,000					
23	Water Transmission Line	Replace Transmission Main -Lake to Treatment plant	**500,000**				500,000		
24	Clearwell Cleaning / Inspection	Clearwell Cleaning / Inspection	**13,000**	13,000					
25	Gate Valves	Gate Valve Replacement Program	**36,000**	6,000	6,000	6,000	6,000	6,000	6,000
26	Hydrant Replacements	Hydrant Replacements	**15,000**		5,000		5,000		5,000
27	Mainstreet Watermain Replacement Edgewater to Sewage Treatment Plant Rd	Mainstreet Watermain Replacement Edgewater to Sewage Treatment Plant Rd	**550,000**			550,000			
28	Mainstreet Watermain Replacement Longhill to Edgewater	Mainstreet Watermain Replacement Longhill to Edgewater	**400,000**				400,000		
29	New Water Meters	New Water Meters	**9,000**	3,000		3,000		3,000	
30	Water Rate Study	Water Rate Study	**8,000**	8,000					
31	New Sewer Services	New Sewer Services	**60,000**	10,000	10,000	10,000	10,000	10,000	10,000
32	Pipe Locator & Camera	Pipe Locator & Camera	**14,000**		14,000				
33	Water Pal System Replace Filter Modules	Water Pal System Replace Filter Modules	**60,000**		12,000	12,000	12,000	12,000	12,000
34	Sewer Lift Station	Replace Pumps Station #2	**30,000**		10,000		10,000		10,000
35	Sewer Lift Station	Replace Pumps Station #3	**10,000**	10,000					
36	Sewer Lift Station	Replace Pump Station#1	**40,000**			40,000			
37	Drainage Fauxburg Road	Drainage Fauxburg Road	**50,000**		50,000				
38	Drainage Main Street	Drainage Main Street	**75,000**		75,000				
39	Engineering Various StormWater/Sewer Projects	Engineering Various StormWater/Sewer Projects	**20,000**		10,000	10,000			
40	Storm Water Drainage RPS	Storm Water Drainage RPS	**20,000**			20,000			
41	Storm Water Separator	Pleasant St ,Main , Fairmont Streets	**200,000**		100,000		100,000		
42	Bandstand Repair	Capital Improvement - Bandstand	**60,000**	60,000					

TOWN OF MAHONE BAY CAPITAL PROJECT LISTING 2019-2025

#	Capital Project	Description	TOTAL 5 YR COST	2019	2020	2021	2022	2023	2024
43	Breakwater Repairs	Breakwater Repairs	**8,500**		8,500				
44	Drilled Well Visitor Information Centre Edgewater St	Drilled Well Visitor Information Centre Edgewater St	**12,000**			12,000			
45	Enlarge Comfort Station Wharf::additional toilets, additional shower; laundry facilities	Enlarge Comfort Station Wharf::additional toilets, additional shower; laundry facilities	**100,000**			100,000			
46	Replace Floating Wharfs and Gangway	Replace Floating Wharfs and Gangway	**30,000**		30,000				
47	Shoreline Edgewater Sea Level Rise Protection	Shoreline Edgewater Sea Level Rise Protection	**3,498,000**	349,800	3,148,200				
48	Wharf Repairs	Wharf Repairs	**335,000**		35,000	300,000			
49	Ballfield Backstop	Replace Ballfield Backstop	**15,000**	15,000					
50	Leaf Blower	Leaf Blower	**8,000**		8,000				
51	Playground Equipment	Parks & Playgrounds	**22,000**			22,000			
52	Seniors Agility Park	Seniors Agility Park	**50,000**		50,000				
53	Electric Line Replacements	Pole, Line Replacements	**120,000**	20,000	20,000	20,000	20,000	20,000	20,000
54	Line Truck	Line Truck	**270,000**	270,000					
55	New Electric Meters (Digital)	New Electric Meters (Digital)	**39,000**	6,500	6,500	6,500	6,500	6,500	6,500
56	New Street Lights	New Street Lights (LED)	**10,000**	5,000			5,000		
57	Replace Reclosurers-Substation	Replace Re-closers Substation	**12,000**			12,000			
58	Transformers	Transformers	**15,000**		5,000		5,000		5,000
59	Wood Chipper-Electric Utility	Wood Chipper - Electric Utility	**40,000**		40,000				
60	Corrosion Coating	Chemical Room Floor WTP	**10,000**		10,000				
61	Automatic Flushers	Deadend Flushing - System Extremities	**30,000**		15,000	15,000			
62	Pumphouse	Replace Raw Pumps + Spare	**8,000**	8,000					
63	Pumphouse Upgrades	Replace door, window, wet well cover	**5,000**		5,000				

TOWN OF MAHONE BAY CAPITAL PROJECT LISTING 2019-2025

#	Capital Project	Description	TOTAL 5 YR COST	2019	2020	2021	2022	2023	2024
64	Air Conditioning Unit	WTP Production Floor	**5,000**		5,000				
65	Transition Radio Telemetry at WTP	Move antenna from metal tower to new pole and RTU from old WTP to current WTP	**25,000**	25,000					
66	Splash Pad	Splash Pad	**100,000**		100,000				
67	Town Hall Repairs	Town Office Repairs	**100,000**	100,000					
			18,216,406	**3,184,274**	**11,982,132**	**1,648,500**	**1,329,500**	**72,500**	**99,500**

*delayed in fiscal 2019-20 awaiting required external funding confirmation; subject to change in 2020-21