Raymond A. Barker Water Treatment Plant Expansion Schedule 'C' Municipal Class Environment Assessment

Addendum Report

Prepared For:

Town of Collingwood

May 2022

CREATING QUALITY SOLUTIONS TOGETHER

RAYMOND A. BARKER WATER TREATMENT PLANT EXPANSION 'C' MUNICIPAL CLASS ENVIRONMENTAL ASSESSMNET
ADDEDUM REPORT

PROJECT NO. 119013/120078

Prepared For:

TOWN OF COLLINGWOOD

By:

Jody Marks

Environmental Planner

Checked By:

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1 Introduction

The Town of Collingwood (Town) completed a Master Servicing Plan for Water and Sanitary Servicing (2019) which identified projects required to service future growth along with continuing to service existing residents. A key recommendation from the Master Servicing Plan was the need to expand the existing Raymond A. Barker Water Treatment Plant (WTP) to accommodate future water demands for the Town and its contractual commitments to supply treated water to other municipalities. In August 2019, the Town initiated the planning process to continue with an updated Municipal Class Environmental Assessment (Class EA) to identify and assess options to increase the Town's water treatment capacity. Based on the scope, this project constituted a Schedule 'C' project in accordance with the Municipal Class Environmental Assessment document. The Class EA was concluded with the finalization of the Environmental Study Report (ESR) and the project moved into the implementation phase as of October 2020.

The result of the completed Class EA update was that the expansion in the capacity of the plant is to be undertaken in two phases (51,871 m^3/d for Phase 1 and 101,069 m^3/d for Ultimate). As the project has moved into the detailed design stage, details have been identified with respect to shoreline protection measures, interpretation of Phase 1 capacity available without exceeding the existing Permit to Take Water and ancillary enhancements to the project to conform with other Town-wide projects and the overall vision for the expansion. It has been determined that an addendum to the 2020 ESR needed to be issued for the recommended shoreline protection work. At the same time, updates to the Phase 1 capacity and general description of additional works will be provided, including an update of project costs. The purpose of this report is to outline the required updates, the environmental implications of the change, and additional mitigation measures.

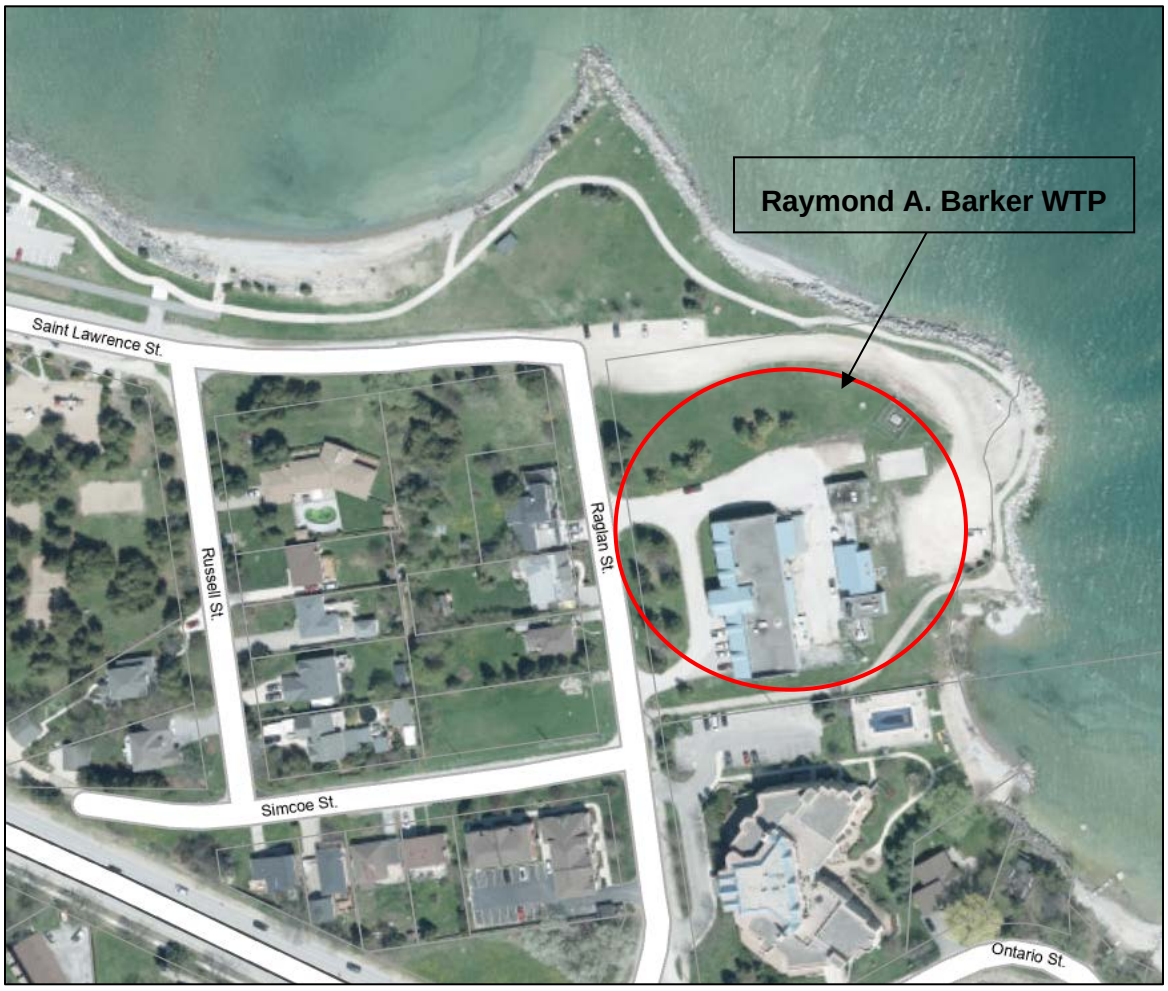
The ESR is referenced as *Raymond A. Barker Water Treatment Plant Expansion Schedule 'C' Class EA Final Environmental Study Report, 2020*.

1.1 Project Area

The Raymond A. Barker WTP is located on Raglan Street as illustrated in Figure 1 and remains the same as identified within the 2020 ESR.

NVCA consultation is required for expansion works as the project is in the shoreline hazard limit area.

Figure 1: Raymond A. Barker WTP Location



2 Addendum to a Municipal Class Environmental Assessment

The Municipal Class Environmental Assessment document (amended 2015) as published by the Municipal Engineers Association outlines a planning process for municipalities to follow so as to complete infrastructure projects in an environmentally responsible manner and in accordance with the *Environmental Assessment Act* (EAA).

The completion and filing of an addendum to a previously completed Municipal Class EA may be required for two reasons:

1. Change in project or environment – If there are any significant modifications to the project or changes in the environmental setting for the project which occur after the filing of the ESR, this is to be reviewed by the proponent and an addendum to the ESR completed. The addendum must describe the circumstances necessitating the change, the environmental implications of the change, and what, if anything can and will be done to mitigate any negative environmental impacts.

2. Lapse of time – If there is a period of 10 years between filing of the Notice of Completion or the Ministry of Environment, Conservation and Parks' (MECP) denial of a Part II Order request (prior to July 2020) if one is received, to the proposed commencement of construction for the project, the proposed project and the environmental mitigation measures proposed may no longer be valid. The proponent is to review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning context.

In this instance, the filing of this addendum to the 2020 ESR is a result of *1. Changes in project*. Following the Municipal Class EA process and guidelines; only the items in this addendum (i.e., the updates) are open for review. The details of the design updates are described in the subsequent sections; however, only the additional requirement for shoreline protection triggers the recommendation for an Addendum to the ESR. Furthermore, recent changes to the Environmental Assessment Act have revised the requirements for public consultation, including changes to the Part II Order request, now referred to as a Section 16(6) Order request. A request can only be made for concerns the project may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights. In addition, the minister now has the right to make a Section 16(6) Order on their own initiative within 30 days from the end of the comment period set out in the Notice of Completion. If the Ministry needs additional information to determine whether to make a Section 16(6) Order on their own initiative, they may issue a Notice of Proposed Order with the request for information and a deadline for submitting it to the Ministry.

3 Shoreline Protection

The 2020 ESR evaluation of the preferred solution identified the consideration for shoreline stabilization where appropriate in areas that may be disturbed during construction. Neither shoreline reconstruction, nor in water work was anticipated and mitigation measures were developed accordingly. These mitigation measures are described in detail in the ESR and are summarized as follows:

- Implement an Erosion and Sediment Control Plan for the work site prior to the start of construction and maintain until all disturbed ground has been permanently stabilized.
- Contain construction and other waste above the High-Water Mark.
- Incorporate site management practices to manage impervious surface run off.
- Develop a response plan for spills before work commences.
- Ensure all machinery is in a clean, good working condition and that refueling stations and stockpiled materials are at least 30 m away from Nottawasaga Bay.
- Minimize clearing of riparian vegetation.
- Immediately stabilize the shoreline and/or banks disturbed by any construction activity.
- Remove all construction materials from the site upon project completion.

The ESR also recommended that consideration be given to scheduling works near water to respect the timing windows to protect aquatic species. Now that it has been determined that shoreline stabilization work is required, it is mandatory that this work be undertaken outside the spring and fall spawning periods for identified aquatic species of concern.

As part of the consultation completed during the Class EA, various agencies and Indigenous communities were engaged. As a result, numerous mitigation measures were identified in the 2020 ESR to reduce or eliminate potential impacts. Specifically, as a result of consultation with both NVCA and Saugeen Ojibway Nation (SON) the Town committed to retain a qualified

coastal engineer during the detailed design process to assess and mitigate the risk of shoreline erosion and design shoreline revegetation. A copy of the consultation record can be found in Table 8, Appendix I of the 2020 ESR.

A shoreline engineer (ShorePlan) was retained in September 2021 as part of the project's design contract. The shoreline engineer has reviewed the existing shoreline, storm data and wave uprush information and determined that the existing shoreline protection is inadequate to protect critical infrastructure. They have made recommendations that the shoreline be reconstructed and upgraded to protect the new WTP infrastructure from wave uprush, flooding and erosion.

A copy of ShorePlan's technical memorandum providing detailed analysis and drawings of the proposed shoreline reconstruction is found in Appendix A.

4 Phase 1 Capacity

The ESR identified that expansion in the capacity of the plant will be undertaken in two phases (with treated water capacity of 51,871 m^3/d for Phase 1 and 101,069 m^3/d for Ultimate). During the EA, the Phase 1 design capacity was established based on the approved daily and instantaneous Permit To Take Water (PTTW) raw water withdrawal limit of 68,250 m^3/d. Since instantaneous withdrawal rates (i.e. L/min) can be higher during treatment operations, the Phase 1 capacity was limited to 51,871 m^3/d so as not to exceed the permitted instantaneous rate.

During consultation with the MECP, they advised that the PTTW could be amended to allow higher instantaneous withdrawal rates of up to 70,795 L/min such that it is now possible to expand the Phase 1 treated water capacity. The revised PTTW will allow for a daily treated water capacity of 59,000 to 64,000 m^3/d.

A detailed Technical Memorandum by AECOM outlining the requested changes to the PTTW is found in Appendix B, as well as a copy of the MECP amendment to the PTTW approval. The Technical Memorandum was prepared to explain the rationale for a Phase 1 treated water capacity increase and identified a very conservative daily treated water capacity of 56,200 m^3/d. Subsequent detailed analysis confirmed that 59,000 m^3/d is a conservative design for Phase 1. While 64,000 m^3/d may be achievable it depends on the efficiency of the treatment process which is related to raw water quality as well as system pressures of the future distribution system which impact pumping capacity of the plant. These factors would need to be reassessed as future raw water quality changes and upgrades to the pipe network are completed.

5 Cost Estimate

The 2020 ESR opinion of cost for the Phase 1 expansion was $65,000,000 (2020 dollars). Funding was to be provided through a combination of the Town's Allocated Water Reserve Fund (funded through water rates), Development Charges, and contributions from other Municipalities in accordance with Water Agreements.

Due to additional costs resulting from increased scope identified during detailed design, and significant inflation resulting from a global pandemic and supply chain disruptions, there is anticipated to be a significant increase to the original opinion of cost. Since the project funding will be provided in the same manner, an Addendum to the ESR is not necessary for cost escalation reasons; therefore, an updated opinion of cost is provided for information only.

A detailed description of the updated costs associated with the proposed scope changes can be found in the Town of Collingwood Staff Report included in Appendix C.

6 Consultation

In anticipation of the commencement of the Addendum to the ESR, consultation with the various agencies such as MECP and NVCA has occurred. In addition, the Town has been working collaboratively with SON throughout this project and has engaged SON in the changes to project scope outlines in previous sections. A copy of initial correspondence with NVCA and SON regarding the project design modifications is provided in Appendix D.

The consultation contact list for agencies from the 2020 Class EA has been carried over and updated to reflect the changes in agency names and/or contacts details. Ensuring compliance with the MEA guidelines for the filing of an addendum any public members that had submitted comments as part of the 2020 Class EA process have been added to the public mailing lists as part of this Class EA Addendum. A Public Information Centre is not required for an addendum to a Class EA.

7 Updated Mitigation Measures

As part of the 2020 Class EA completed for the Raymond A. Barker Water Treatment Plan Expansion, many background studies were completed that are still valid and relevant to the project area today. Based on the additions to the project scope and design details the additional design considerations will include:

- New plant design to enable operations staff to control and dissipate frazil ice more quickly, should a blockage occur.
- Shoreline protection work will improve system resiliency to the changing climate
- Additional drainage and grading improvements to protect the new WTP
- Replacement of the existing stormwater drainage pipe that has been damaged, and new drainage outfall
- The Class EA reviewed the building footprint at a high level and the footprint has increased during detailed design. The increased footprint was analyzed and remains within planning and approval agency parameters with respect to setbacks.

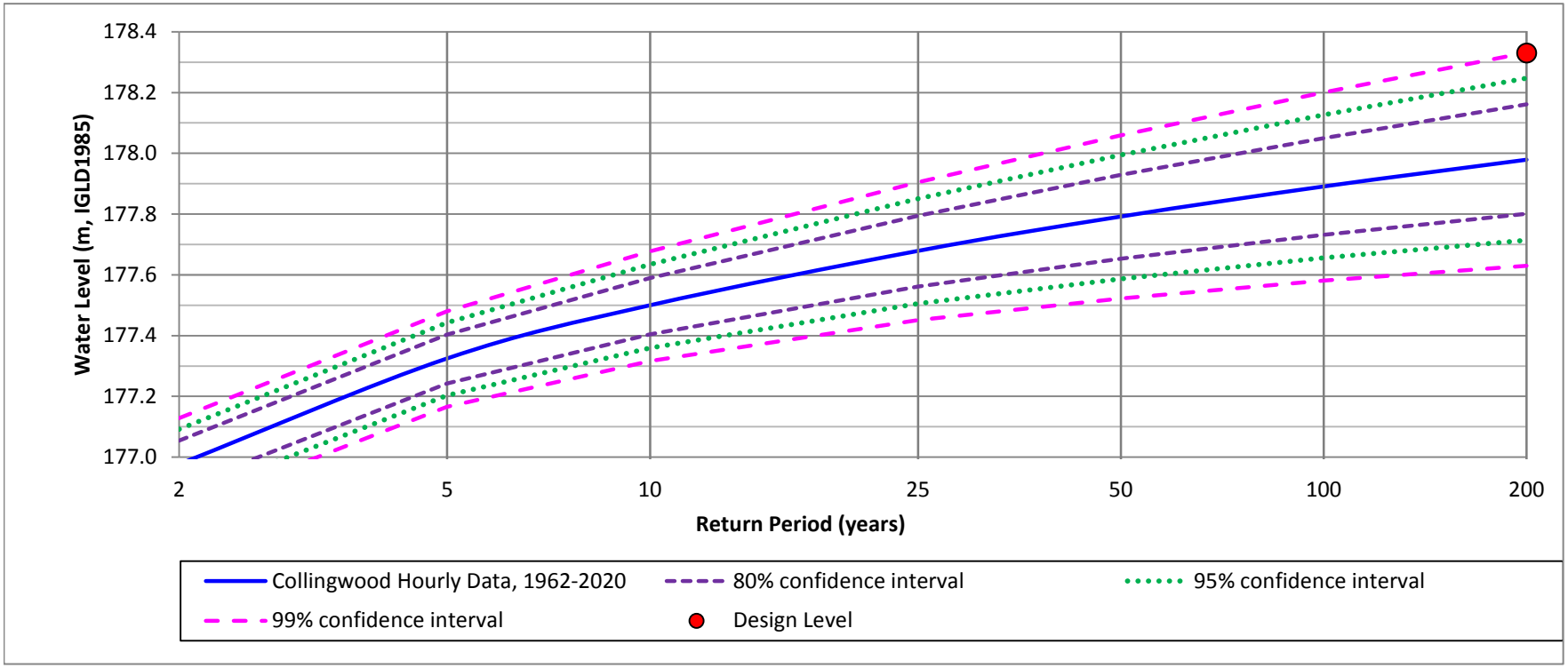
8 Permits and Approvals

Under the 2020 ESR permits and approvals were identified to be acquired during detailed design (see section 13 of 2020 ESR). With the changes to the project scope additional approval may need to be acquired from Fisheries and Oceans Canada to comply with the fish and fish habitat protection provisions of the *Fisheries Act* by incorporating measures to protect fish and fish habitat. The project intends to follow the protection measures; however, if unable to completely implement the protection measures the Town will be required to request a project review by Fisheries and Oceans Canada.

Appendix A

ShorePlan Technical Memorandum – Preliminary Site Plan

UPDATED WATER LEVEL ANALYSIS



Design Water Level

Based on the 99% upper confidence interval at the 200-year return period

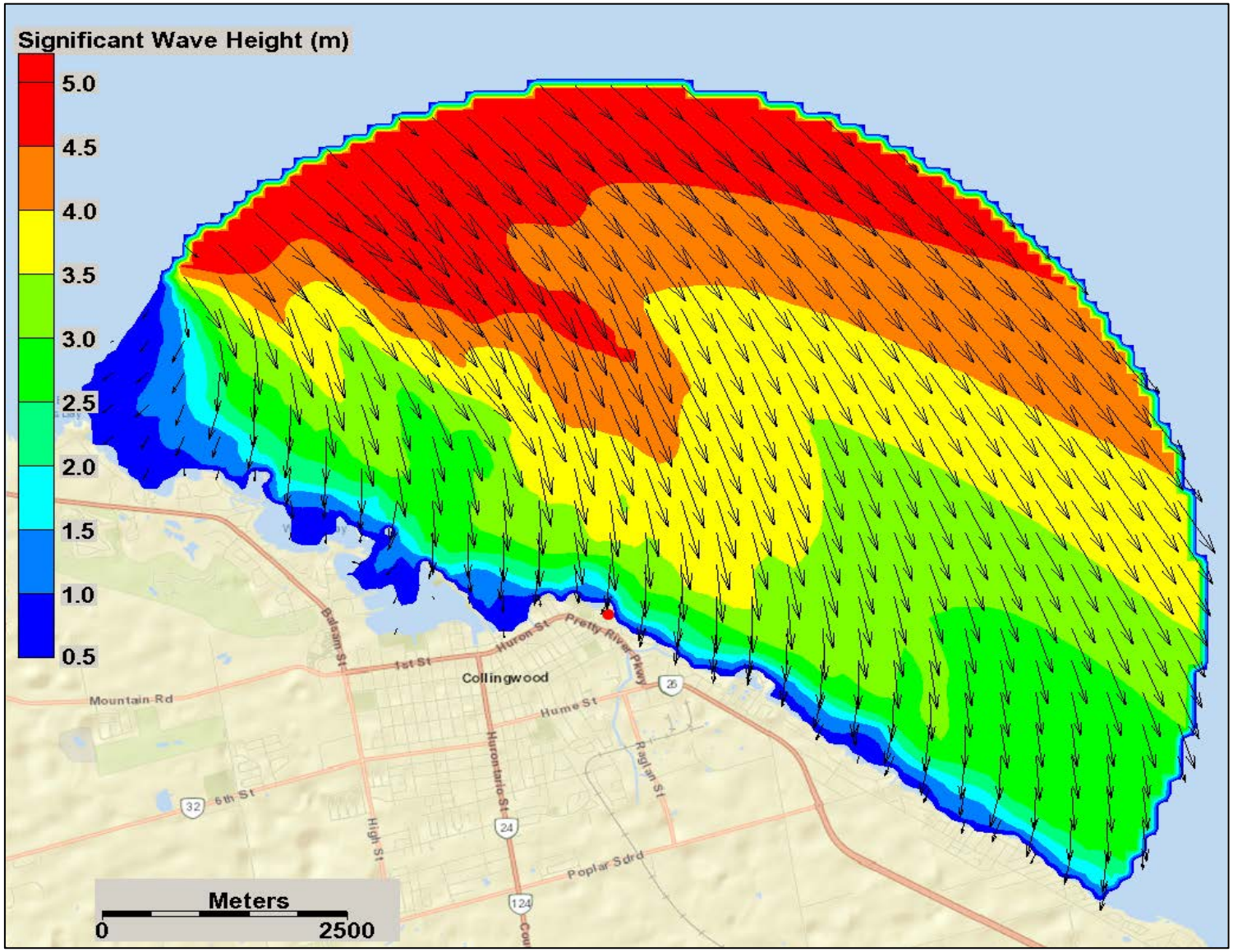
178.33m IGLD1985 = 178.28m geodetic (CGVD1928:78)

Provides a 0.28m buffer above previously used design water level

Accounts for potential impact of climate change on a critical infastructure project

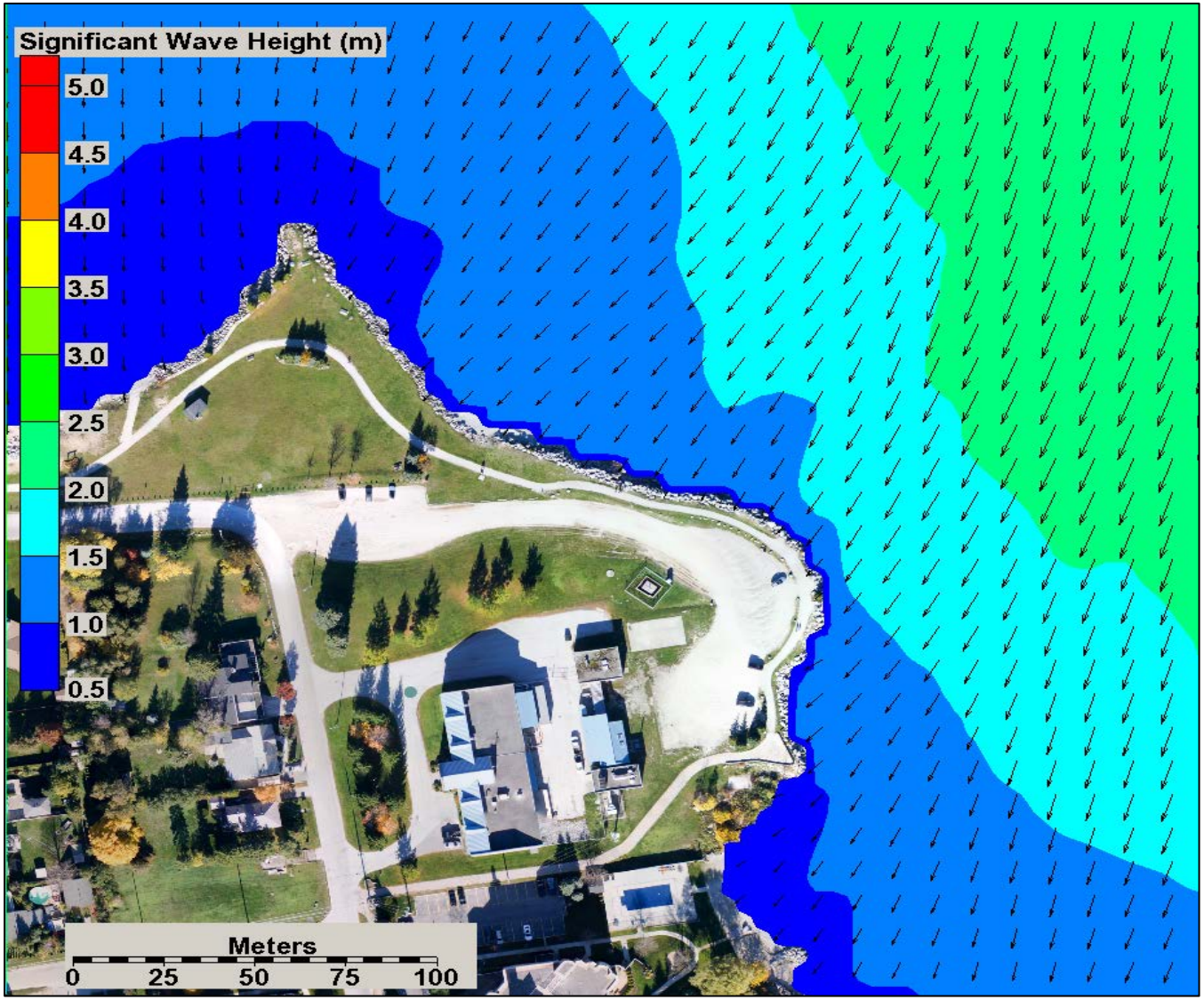
WAVE TRANSFORMATION ANALYSIS

Transfer of 100-year wave from hindcast

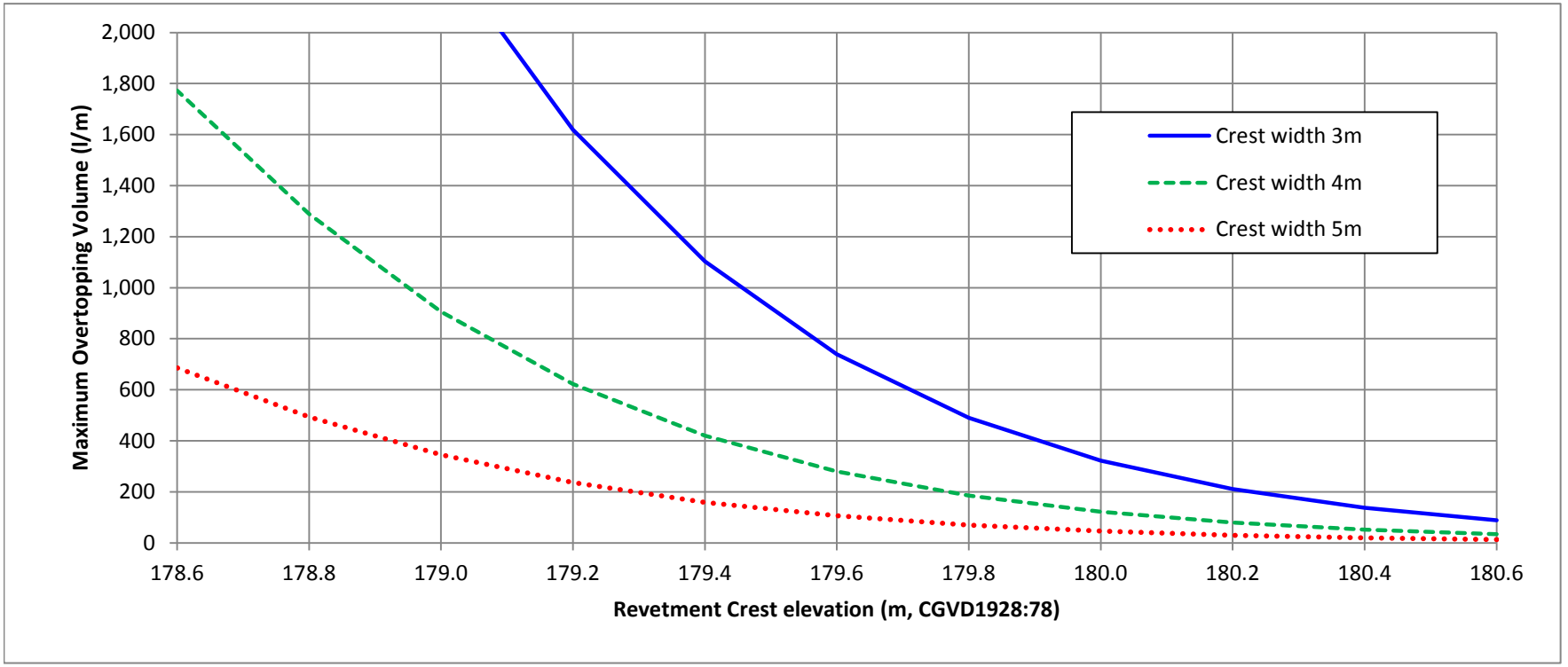


WAVE TRANSFORMATION ANALYSIS

Design Wave at the Site



OVERTOPPING ANALYSIS



Overtopping analysis used verify backshore will not be damaged and will be safe for pedestrian access

Overtopping volumes considered in site grading design

GEORGIAN BAY

LEGEND

- APPROXIMATE EXISTING AQUATIC HABITAT LINE (177.0m±)
- APPROXIMATE PROPOSED AQUATIC HABITAT LINE (177.0m±)
- AREA LOST: 458m^2
- AREA ALTERED: 561m^2

TOE ARMOUR STONE

REVETMENT CREST

CAP ARMOUR STONE

REINFORCED ARMOUR STONE HEADLAND

BEACH CURB/CAP ARMOUR STONE

TRANSITION 10m±

90m±

25m±

TRANSITION 10m±

25m±

B.H.3 EL. 177.925

B.H.1 EL. 178.430

5 0m 5 10 15 20

Drawing Location: S:\Shoreplan Project Files\Files 3400-3499\20-3441 Collingwood Water Treatment Plant (AECOM)\Drawings\3441-rOg.dwg

Project #20-3441
Scale 1:500
SHOREPLAN

Figure 1
Raymond A. Barker Water Treatment Plant
Site Plan - Alternative 1

GEORGIAN BAY

TOE ARMOUR STONE

REVETMENT CREST

CAP ARMOUR STONE

90m±

TRANSITION 10m±

25m±

TRANSITION 10m±

25m±

REINFORCED ARMOUR STONE HEADLAND

BEACH CURB/CAP ARMOUR STONE

B.H.3 EL. 177.925

B.H.1 EL. 178.430

LEGEND

APPROXIMATE EXISTING AQUATIC HABITAT LINE (177.0m±)

APPROXIMATE PROPOSED AQUATIC HABITAT LINE (177.0m±)

AREA LOST: 23m^2

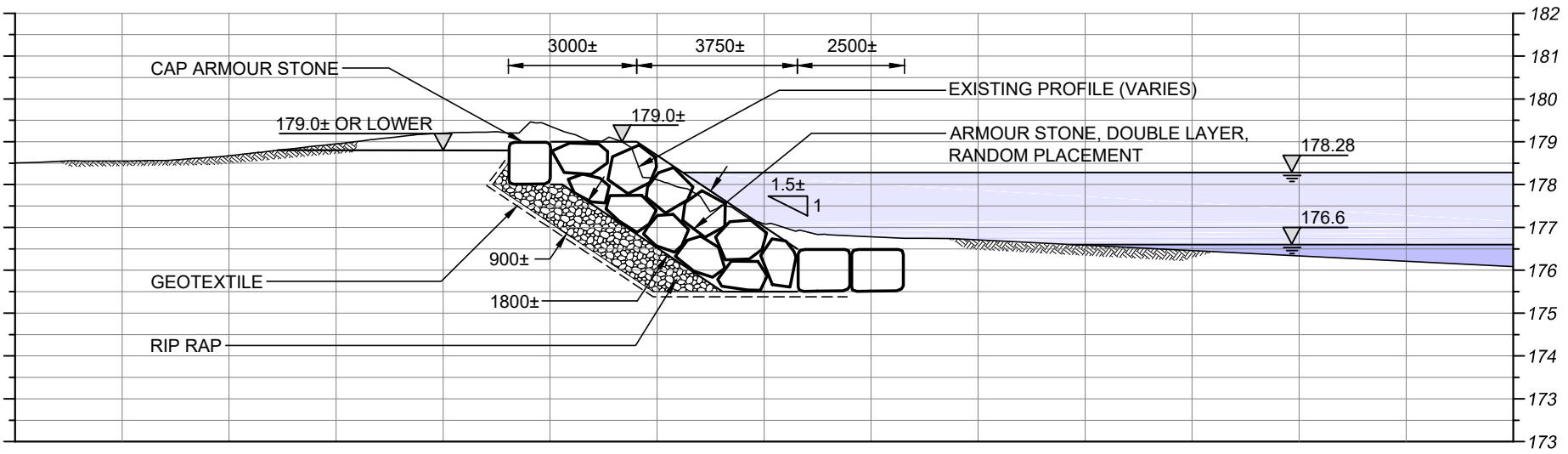
AREA ALTERED: 471m^2

5 0m 5 10 15 20

Drawing Location: S:\Shoreplan Project Files\Files 3400-3499\20-3441 Collingwood Water Treatment Plant (AECOM)\Drawings\3441-r0g.dwg

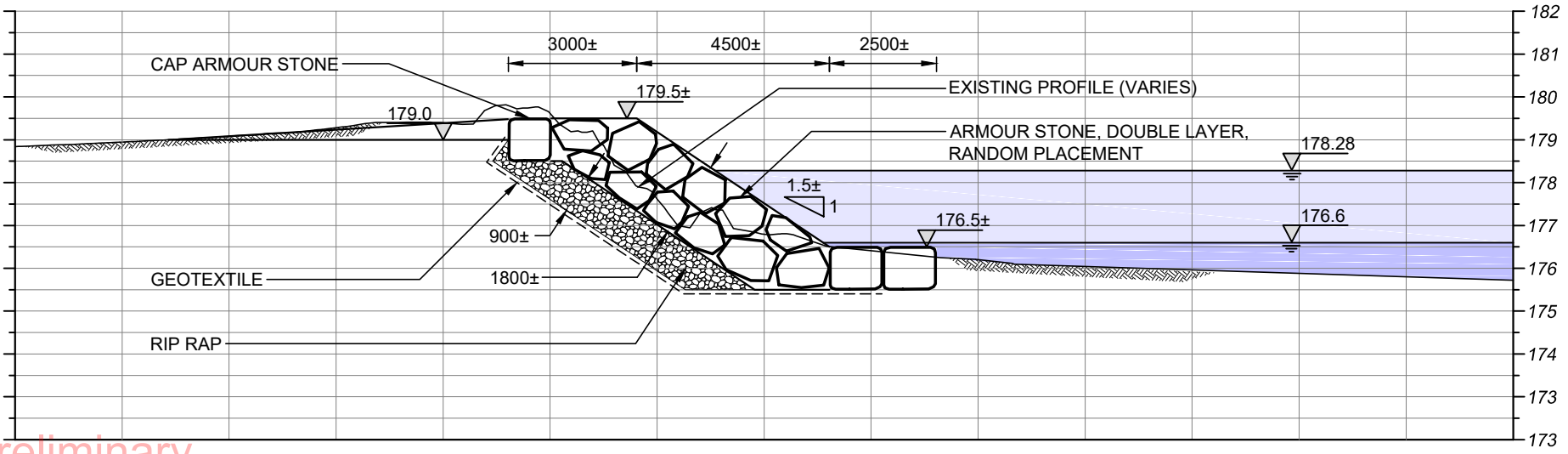
Project #20-3441
Scale 1:500
SHOREPLAN

Figure 2
Raymond A. Barker Water Treatment Plant
Site Plan - Alternative 2



Scale 1:150

Revetment Section 1



Scale 1:150

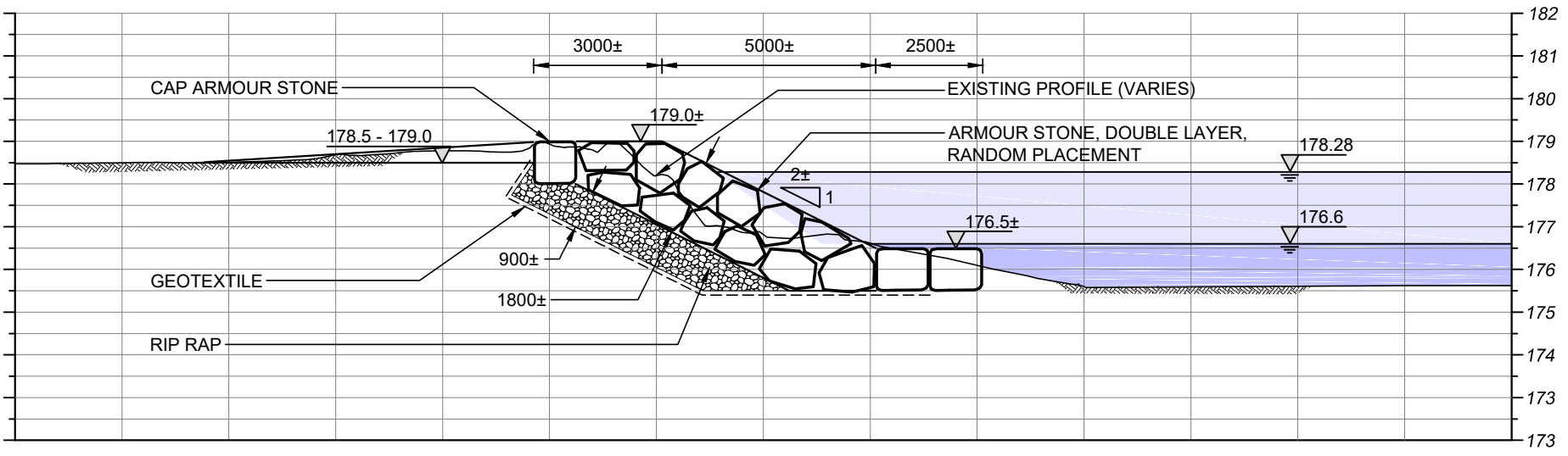
Revetment Section 2

NOT FOR CONSTRUCTION

Project: 20-3441
Scale 1:150

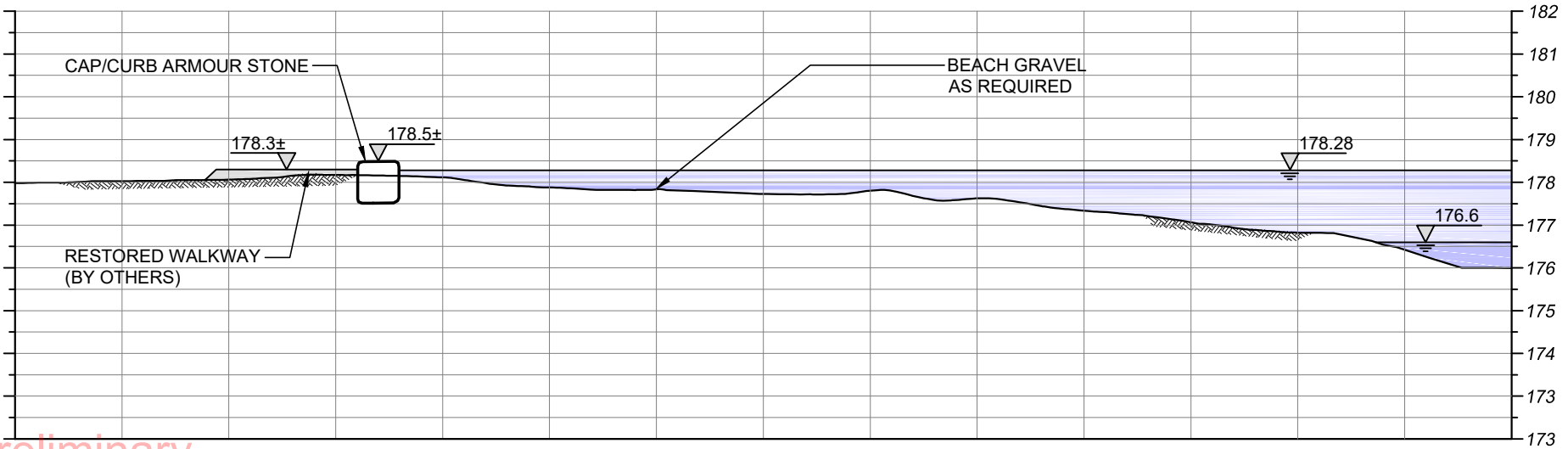
SHOREPLAN

Figure 3
Raymond A. Barker Water Treatment Plant
Typical Revetment Cross-Sections



Scale 1:150

Revetment Section 3



Scale 1:150

Gravel Beach Section 4

NOT FOR CONSTRUCTION

Project: 20-3441
Scale 1:150

SHOREPLAN

Figure 4
Raymond A. Barker Water Treatment Plant
Typical Revetment Cross-Sections

Appendix B

AECOM Technical Memo – PPTW Amendment

MECP Letter of Approval

AECOM
105 Commerce Valley Drive West, Floor 7 905 886 7022 tel
Markham, ON, Canada L3T 7W3 905 886 9494 fax
www.aecom.com

Technical Memorandum

To	Gregory Meek, MECP	Page	1
CC	Ken Kaden, Town of Collingwood Laura Alvarez, AECOM		
Subject	Raymond A. Barker WTP PTTW Instantaneous Flow Rate Amendment - Technical Memorandum		
From	Brian Sahely, AECOM		
Date	October 8, 2021	Project Number	60665174

This technical memorandum (TM) requests changes to the existing Permit to Take Water (PTTW) No. 5425-BVBS2K, specifically the instantaneous flowrate in L/min only, while not changing the current 68,250,000 L/d daily water taking.

1. Existing Permit to Take Water

Table 1 below presents the maximum rates of water taking from the Nottawasaga Bay as indicated in the above PTTW for the Raymond A. Barker WTP. The table indicates the following:

- Max. Taken Per Minute = 47,400 L/min
- Max. Taken Per Day = 68,250,000 L/d

Table 1 Table A in Current PTTW No. 5425-BVBS2K

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Lake Huron	Lake	Municipal	Water Supply	47,400	24	68,250,000	365	17 563560 4928450
						Total Taking:	68,250,000		

If we take 47,400 L/min and convert this rate to L/d, we get:

- (47,400 L/min x 60 min/hr x 24 hr/d) = **68,256,000 L/d**

This means that there is no allowance within the PTTW for:

- Downtime of the Plant for backwashing, cleaning or membrane integrity testing; or,
- Water being used within the Plant for backwashing and cleaning,

such that a **net** Plant capacity of 68,250,000 L/d can be achieved over a 24-hour period.

2. Membranes Downtime and Water Usage

2.1 Downtime

Membrane filtration (and other filtration technologies) have a few processes that result in downtime, i.e., they are not producing water during this time. This includes the following as an example (note that they can vary between membrane Vendors, numbers shown are conservative assumptions based on previous experience):

- **Backwashing** – This is a process of reverse washing membrane treated water back through the membranes to dislodge solids. As an example, this can occur every 17 minutes for a duration of 4 minutes. Given 1,440 minutes within a day, this means that there can be a total of **274.3 minutes of downtime per day** for backwashing alone as calculated below:
    - 1,440 min/d / (17+4) min = 68.6 backwashes x 4 min downtime = 274.3 min downtime per day.

- **Chemically Enhanced Backwash (CEB)** – This is a process of injecting chlorinated water into a membrane tank/skid and having the chlorinated water soak for 30 minutes, as an example, before emptying the tank and neutralizing the wastewater before discharging to the sanitary sewer. This means approximately **30 minutes downtime per day.**

- **Membrane Integrity Testing (MIT)** – This is a process of injecting air into a membrane system and recording the decrease in air over time to determine whether there is a breach in the membrane fibre. The results can be converted to a log removal value (LRV) of the membrane system to confirm performance, e.g., 4-log *Cryptosporidium* removal. The entire process can take 30 minutes as an example. This means approximately **30 minutes downtime per day.**

- **Clean-in-Place (CIP)** – This is a process of injecting caustic and/or chlorine into a membrane tank/skid filled with hot water to increase the pH of the water to 12 as an example to remove organic fouling of the membranes. This process can last 6 hours, excluding time required to heat the water before the CIP cycle and neutralize the chemical waste after the CIP cycle. This process tends to be repeated with injecting an acid into a membrane tank/skid filled with hot water to decrease the pH to 2 as an example to remove inorganic fouling of the membranes. This process can also last 6+ hours. Given the long duration (> 12 hours) of these two CIP cycles combined and that this process tends to occur no more frequent than once per month, we tend not to include this downtime within the calculations of the membrane downtime.

Given above examples, we can experience a **total daily downtime** of a membrane system to be **334.3 min or 5.6 hr** as calculated below**,** leaving 1,105.7min (18.4 hr) of membrane operating time.

- 274.3 min + 30 min + 30 min = 334.3 min (5.6 hr) of downtime

If we would like to produce 66.25 ML/d of **net** treated water within a 24-hour period (2 ML/d out of the total 68.25 ML/d are diverted to the Industrial Raw Water Pumping Station), this means that we will need to operate at an instantaneous flowrate of **86.3 ML/d (59,916 L/min)** as shown below:

- 66.25 ML/d x 1,440 min / 1,105.7 min = 86.3 ML/d (59,916 L/min)

It is important to note that the value above does not account for water usage.

2.2 Water Usage

The backwashing and CEB cycles discussed above will use treated water during the process as follows:

- **Backwashing** – Assuming a 33 ML/d back pulse flowrate for a 60 second duration during the backpulsing step of a backwash cycle as an example would result in a water usage of **1.57 ML/d per tank** as calculated below:
  - 33 ML/d x 60 s x 1 d / 86,400 s = 0.023 ML/d/backwash x 68.6 backwashes = 1.57 ML/d used per tank

- **Chemically Enhanced Backwash (CEB)** – Assuming 100 m^3 used to fill one membrane tank/skid for a CEB process, this equals **100 m^3 (0.1 ML/d)** of treated water used daily per tank.

If we have six (6) membrane tanks/skids as an example, above would result in **10.0 ML/d total treated water used daily** for backwashing and CEB cycles:

- (1.57 ML/d + 0.1 ML/d) x 6 tanks = 10.0 ML/d total treated water used daily

This equals a **recovery rate** (analogous to efficiency rate) of **84.9%:**

- (66.25 ML/d – 10.0 ML/d) = 56.25 ML/d / 66.25 ML/d = 84.9% recovery rate

3. Instantaneous Factors and Flowrate

Above shows the following:

- Operating time of 1,105.7 min (18.4 hr)
- Water usage of 10.0 ML/d, which equals a recovery rate of 84.9%

Given above, we can calculate the **raw water instantaneous flowrate** of **99.3 ML/d (68,985.8 L/min)** required to produce the **net treated water flowrate** indicated in the PTTW for the Raymond A. Barker WTP as follows:

- (66.25 ML/d + 10.0 ML/d) x 1,440 min / 1,105.7 min = 99.3 ML/d (68,985.8 L/min)

This equals an **instantaneous factor** of **1.50** as calculated below:

- 99.3 ML/d raw water instantaneous flowrate / 66.25 ML/d treated water net flowrate = 1.50

In summary, to achieve a net treated water daily production of 66.25 ML with a recovery rate of 85% and an instantaneous factor 0f 1.5, the raw water instantaneous flowrate needs to be 99.3 ML/d (68,985.8 L/min) during the operating time.

Above shows sample calculations only. Depending on the final membrane design and operation given organic and inorganic fouling from the Nottawasaga Bay, the instantaneous factor can change. Increasing backwashing/CEB cycles and thus reducing the operating time and amount of water being used by the membrane system can result in a much higher instantaneous factor.

4. Industrial Pumping Station Flowrate

4.1 Using Raw Water Supply

The Town is currently pumping raw water to the industries via a separate pipe. The water demand for this water supply is assumed to be 2 ML/d net flowrate without any instantaneous factor, thus 2 ML/d (1,389 L/min) instantaneous flowrate.

Given the membrane and industrial flows, the instantaneous flowrate required for the Plant will be:

- [(68,250,000 -2,000,000) L/d x 1.50 + 2,000,000 L/d] = **101,340 L/d (70,375 L/min)**

4.2 Using Treated Water Supply

The Town may discontinue the industrial feed from the raw water supply and use treated water instead. If this was to be practiced, the instantaneous flowrate required for the Plant will be:

- [68,250,000 L/d x 1.50] = **101,944 L/d (70,795 L/min)**

5. PTTW Changes Requested

We request the following changes to the existing PTTW, **while maintaining the current "Max. Taken Per Day" of 68,250,000 L**:

- The **Max. Taken Per Minute to change from 47,400 L/min to 70,795 L/min** (given the worst case scenario above)

After selecting the preferred membrane system via a membrane pre-selection/pre-purchase process, designing the new Plant, and constructing and then commissioning the new Plant, we will have a better understanding of the optimum instantaneous factor for the new Plant given the new membrane type and operational/cleaning strategies/challenges.

6. Plant Rated/Net Capacity

By allowing above changes in the PTTW, the plant rated/net capacity will increase from a Phase 1 net capacity of 51.9 ML/d to approximately 56.2 ML/d (i.e., 4.3 ML/d increase) given the following formula for the case where the industrial feed will be sourced from the raw water supply:

- (68.25 ML/d PTTW Net - 2 ML/D industrial water net) x 84.9% membrane recovery rate = **56.2 ML/d Plant net treated capacity**

If the industrial feed is sourced from the treated water supply, the plant rated/net capacity will be 57.9 ML/d with 2.0 ML/d being reserved for industrial use and the remaining 55.9 ML/d available to meet the municipal demand.

AMENDED PERMIT TO TAKE WATER

Surface Water
NUMBER 0385-C8CNW8

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Town of Collingwood
43 Stewart Rd
Collingwood, Ontario, L9Y 4M7
Canada

For the water taking from: Lake Huron

Located at: 2 Raglan St
Collingwood, County of Simcoe

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.

(d) "District Office" means the Barrie District Office.

(e) "Permit" means this Permit to Take Water No. 0385-C8CNW8 including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means The Corporation of the Town of Collingwood.

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated October 12, 2021 and signed by Marie Richardson, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **November 13, 2030**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Lake Huron	Lake	Municipal	Water Supply	70,795	24	68,250,000	365	17 563560 4928450
						Total Taking:	68,250,000		

4. Monitoring

4.1 The Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit or as otherwise accepted by the Director. A separate record shall be maintained for each source. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder shall submit, on or before March 31st in every year, the daily water taking data collected and recorded for the previous year to the ministry's Water Taking Reporting System.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon

notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Ontario Land Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the *Ontario Water Resources Act, R.S.O. 1990,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 101 of the *Ontario Water Resources Act, R.S.O. 1990,* as amended, provides that the notice requiring the hearing ("the Notice") shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

*Registrar**
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

AND

The Director, Section 34.1,
Ministry of the Environment, Conservation and Parks
Floor 1, 135 St Clair Ave W
Toronto, ON
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca.**

This Permit cancels and replaces Permit Number 5425-BVBS2K, issued on 2020/11/13.

Dated at Toronto this 4th day of November, 2021.

Neil M. Taylor
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 0385-C8CNW8, dated November 4, 2021.

1. Application for Permit to Take Water signed by Marie Richardson, dated July 29, 2020.

Appendix C
Town of Collingwood Staff Report

STAFF REPORT PW2022-06
Standing Committee 3/7/2022
Council 3/21/2022
Amendments: No

Submitted to:	Strategic Initiatives Committee | Council
Submitted by:	Heather McGinnity, Manager of Environmental Services
Subject:	Water Treatment Plant Expansion Project – Update to Scope and Budget

PURPOSE

Several changes to the scope of the water treatment plant expansion project have been identified in the early stages of the design process based on development pressures, updates to system hydraulics, stakeholder input, and increased concern about the impacts of severe weather events. This report identifies the proposed scope changes and associated budget implications that are necessary to ensure water supply requirements for the Town and its customer municipalities can be achieved, and for the project to meet corporate strategic objectives.

RECOMMENDATION

THAT Council receive Staff Report PW2022-06 Water Treatment Plant Expansion Project – Update to Scope and Budget;

AND THAT staff proceed with the design of all the recommended scope changes;

AND THAT the 2023 Capital Budget include updates to the funding requirements for the Water Treatment Plant Expansion Project to ensure all the recommended scope changes and inflationary impacts are reflected in the total project cost;

AND THAT Staff communicate the incorporation of the additional costs in the water supply negotiations and agreements with the customer municipalities.

AMENDMENTS

None

1. BACKGROUND

An estimated budget for the expansion of the Water Treatment Plant (WTP) was prepared as part of the Municipal Class Environmental Assessment (EA) process that was completed in July 2020. At that time, the cost to design and construct the WTP expansion and upgrades was estimated to be $65 million (in 2020$), and this amount was updated in the Town's capital budget forecast.

The Water Treatment Plant expansion project (Project) is now in the design stage and has evolved to meet the changing water supply needs of the Town and its customer municipalities due to development pressures, updates to system hydraulics and increased concern over severe weather events. There is also evidence of extreme inflation in the construction industry, putting the Town's ability to complete this project within the original budget estimate at risk.

It is critical that a review and approval of the estimated costs associated with these added scope items and financial risks be completed now to ensure the time and resources are not needlessly spent on them during design.

2. INPUT FROM OTHER SOURCES

The Town's engineering consultant AECOM/Ainley, Department Heads, Engineering, Environmental Services, Parks, Recreation and Culture as well as the CAO and Treasurer were all consulted on this issue prior to the preparation of this report.

3. APPLICABLE POLICY OR LEGISLATION

Successful completion of the Water Treatment Plant Expansion is a key element of the Town's Master Plan to allow for continued development within the Town and for the Town to meet its obligations outline in water service agreements with the Town of New Tecumseth (ToNT) and Town of the Blue Mountains (ToBM).

4. ANALYSIS

The design phase of the Project began in July 2021 with the schedule established to prioritize a decision to advance disinfection improvements at the WTP as well as stakeholder consultations. Based on the outcomes of these two items, staff recommend the following items to be added to the project scope:

- Interim installation of UV equipment for existing WTP capacity (previously identified in report PW2021-11 dated May 31, 2021);
- Increase Phase 1 capacity as much as possible (i.e. optimize membrane production) to accommodate additional water supply request from ToNT;
- Enhance shoreline protection due to recent severe weather events and changing lake levels; and
- Align the Project closer to corporate and/or strategic goals, including:
    - Improved waterfront access;
    - Trail connectivity;
    - Reconciliation with Indigenous peoples; and,
    - Climate change mitigation initiatives.

Furthermore, a closer examination of the design requirements for the WTP and an evaluation of risks/potential conflicts with other ongoing water projects identified that:

- Changes to WTP design should be made based on system hydraulics, including the likely delays in other system projects (e.g. Stewart Road Reservoir and Pump Station, the proposed new elevated tank); and,
- Supervisory Control and Data Acquisition (SCADA) Programmable Logic Control (PLC) panel replacements should be added to the scope of the Project due to scheduling conflicts with the SCADA upgrade project.

Staff have reviewed all the recommended scope changes for this Project and have categorized them into three groups:

- **Mandatory** – Scope changes required to ensure the Project meets its fundamental objectives of increased and reliable water supply capacity to 2044.
- **Pay Now/Pay Later** – Items that need to be done eventually but provide cost efficiencies by incorporating them into this Project.
- **Community/Strategic Benefit** – Items that align with the goal of constructing a landmark facility in a public area that provides an opportunity to improve waterfront access/usage, trail connectivity, education on water resources/drinking water in Collingwood and reconciliation with First Nations.

Several additional scope items that have been identified in the early stages of design were excluded from further consideration as they were deemed to not be required to meet the fundamental objectives of this project, and excluding them would not jeopardize the WTP performance or the Town's ability to meet future water demands.

Mandatory Scope Changes

Frazil Ice Control: In the winter of 2021, the WTP intake was blocked by frazil ice for the first time in more than six (6) years. It has subsequently occurred two more times in the winter of 2022. Frazil ice temporarily shuts down production at the plant while operations staff worked to clear the blockage (meaning the water demand needs were being met though stored water capacity in our system, which has a limit). While frazil ice cannot be prevented, there are additional measures that can be added to the new plant design to enable operations staff to control and dissipate frazil ice more quickly should another blockage occur. This item will improve system resiliency and reduce potential downtime and loss of service.

Shoreline Protection: Due to the recent high lake levels, extreme weather events and shoreline damage sustained in 2020-2021 in the vicinity of the existing WTP, a shoreline engineer was retained as part of the Project's design contract. The shoreline engineer has reviewed the existing shoreline, storm data and wave uprush information and determined that the existing shoreline protection is inadequate to protect critical infrastructure. They have made recommendations that the shoreline be reconstructed and upgraded to protect the new WTP infrastructure from wave uprush, flooding and erosion. This item will improve system resiliency to the changing climate and reduce potential downtime and loss of service.

Site Grading & Drainage Improvements: During the design process it was discovered that an existing stormwater drainage pipe has been damaged beyond repair and a new drainage outfall will be required. In addition, the building design and flood protection required have resulted in the need to make additional drainage and grading improvements to protect the new WTP.

Controls Equipment/Wiring Replacement: The SCADA upgrades project is now occurring simultaneously with the WTP expansion project. Following an inspection of existing equipment, it was determined that the most cost-effective solution is to include lifecycle control equipment and wiring replacements as part of the WTP expansion project. This ensures aging critical SCADA hardware is replaced and allows better coordination with the planned SCADA software upgrades.

Municipal High Lift Pump (HLP): A hydraulics analysis was a recently completed that considered increased water demands from continuing development and the expected delays in other Town water projects that rely on developer funding. This analysis confirmed that the existing high lift pumps that supply water to the Town would need to be upgraded to meet the new projected demands. Replacing aging infrastructure as part of a larger construction project will also provide cost efficiencies.

Regional HLP: ToNT has increased their requested water taking volumes as part of the Phase 1 WTP expansion, resulting in the need to upgrade the regional high lift pumps at this time. As with the municipal HLPs, replacing aging infrastructure as part of a larger construction project will also provide cost efficiencies.

Municipal Transient Protection: Updated hydraulic water modeling has demonstrated in the need to provide large scale transient protection for the WTP. This will take the form of large surge tanks located at the WTP as well as specialized control valves to dissipate pressure surges in the distribution system and protect piping and equipment from over pressurization or vacuum conditions.

Regional Transient Protection: Similar to the Municipal system the updated hydraulic water modeling revealed similar transient protection would be required for the Regional pipeline and pumping equipment.

High Lift Wet Well Redundancy: The existing high lift wet well is being retained as part of the new plant. However, the original design only had one chamber, meaning the entire plant would be offline if repairs, cleaning or maintenance was required in this wet well. In order, to improve system resilience and allow ease of maintenance a second wet well has been proposed to be added to the design now that the design engineers have confirmed it is physically possible to integrate one into the plant upgrades.

Operations Administration Space – New and Existing Building: The design engineers have proposed a way to incorporate the chlorine contact tank within the existing plant building instead of building a separate structure. While providing environmental benefits (repurposing instead of building new), this solution will also allow space on the property to be reserved for potential future process/treatment upgrade requirements. However, this solution also takes away space in the existing building that was intended to be used for administration and operational activities. Having consideration for the lessons learned from the COVID-19 pandemic, modifications to the EA design concepts for administrative and operations space within both the new and existing buildings have been proposed. This space includes another Emergency Operations Centre for the Town.

Larger Building Footprint (New Building): The Class EA only reviewed the building footprint at a high level. Once the design team started to lay out the water treatment plant to ensure sufficient operator access for maintenance and to meet the requirements of the Ontario Building Code, the required building footprint got larger. The new WTP building may need to extend 7 meters further

than what was anticipated in the Class EA. The design team will work to keep this extension to the minimum requirements to reduce this additional cost as much as possible.

Convert Generator Building: Following consultation with EPCOR, it was determined that the existing generator building will need to be repurposed to house new electrical service equipment.

Recommended Pay Now/Pay Later Scope Changes

A brief explanation of each of the pay now versus pay later scope changes is provided below.

Increase Rated Capacity: The pre-selection and pre-purchase of membrane filtration equipment has revealed that better than expected treatment capacity can be achieved within our existing approved Permit to Take Water. In order to take advantage of this additional capacity some equipment and piping can be increased as part of Phase 1. This will defer the need for the Phase 2 expansion by a few years and will meet ToNT requested capacity for Phase 1.

New Intake Well and Pipe Stub: The existing plant has a single intake pipe that is suitable for the capacity requirement of the Phase 1 expansion. A larger or twinned intake pipe will be required for Phase 2. This additional item allows for the provisions of this future pipe to be installed now and make future construction easier, less invasive and less expensive.

Recommended Community/Strategic Benefit Scope Changes

Plaza Features: In consultation with Parks, Recreation and Culture (PRC) and to elevate this facility to a flagship project, integrated seamlessly into the newly upgraded Sunset Point Park currently under construction, some additional public plaza features are being proposed. This plaza will expand the public park space and tie in with the WTP offering the opportunity to engage the public through educational displays and promote Indigenous culture through public art installations.

Parks Washroom: Currently there are no washroom facilities located at the east end of Sunset Point Park. Integrating washroom facilities into the WTP will further tie into the park setting and promote public engagement with the facility.

Parking and Intersection Improvement: Following preliminary design consultation with staff it was determined that improvements to the existing gravel parking area and the intersection with St. Lawrence and Raglan Street could be incorporated into the scope of this project. This parking lot will be formalized with pavement and line painting to improve use of the space. The intersection will be realigned to improve safety in the area.

Sidewalk Extension (Raglan Street): This was an improvement identified by PRC and Engineering to improve trail connectivity and safety for pedestrians and cyclists along Raglan Street. It will connect the existing trail to Sunset Point Park along Raglan Street in front of the WTP property.

Electric Vehicle (EV) Charging Stations: In a continued effort to mitigate climate change, staff are proposing the addition of EV charging stations at the WTP for Town vehicles as well as the provision for future public EV charging stations in the new parking lot north of the WTP.

5. EFFECT ON TOWN FINANCES

The recommended scope changes to the Project will result in an increase to the planned budget for the Town and its customer municipalities, specifically ToNT and the ToBM. The share of the financial contributions to the WTP rated capacity (existing and future) by each partner municipality is being used to estimate the cost sharing breakdown of the recommended scope changes for the Project, and is shown in the table below. This cost sharing is updated based on an increased in Phase 1 treatment capacity anticipated due to an amendment to instantaneous water taking rates in the Town's Permit to Take Water and a request from ToNT for additional water supply capacity as part of the Phase 1 WTP expansion.

Item	Portion of Existing Rated Capacity(1) (MLD)	Portion of Phase 1 Rated Capacity (MLD)	Portion of Increased Phase 1 Capacity (MLD)	Percent of Increased Phase 1 Capacity
Town of Blue Mountains	1,250	4,000	2,750	10%
Town of New Tecumseth	6,000	23,500	17,500	63%
Town of Collingwood	23,890	31,500	7,610	27%
Total	**31,140**	**59,000**	**27,860**	**-**

Note: (1) Based on portion of historical capital contribution not volume of water supplied

The uninflated cost estimates for each specific recommended scope change, as well as the estimated cost sharing between contributing municipalities, are provided in Appendices 1, 2 and 3. A summary of the proposed cost sharing for each customer municipality's share for the recommended scope changes is provided below.

	Mandatory (2020$)	Pay Now/ Pay Later (2020$)	Community/ Strategic Benefit (2020$)	Total (2020$)
Town of Blue Mountains	$1,903,400	$390,400	$0	$2,293,800
Town of New Tecumseth	$13,250,490	$2,459,520	$0	$15,710,010
Town of Collingwood	$10,938,110	$1,054,080	$1,188,000	$13,180,190
Total	**$26,092,000**	**$3,904,000**	**$1,188,000**	**$31,184,000**

The updated proposed cost sharing for the original project scope and the recommended additional scope is provided in the table below. This updated (uninflated) cost includes an additional 10% contingency on the original EA cost estimate due to the amount of uncertainty with the construction marketplace and design challenges being uncovered as the design team progress through detailed design.

	EA Cost (+10% Contingency) (2020$)	Recommended Additional Scope (2020$)	Estimated Total Project Cost (2020$)
Town of Blue Mountains	$7,150,000	$2,293,800	$9,443,800
Town of New Tecumseth	$45,045,000	$15,710,010	$60,755,010
Town of Collingwood	$19,305,000	$13,180,190	$32,485,190
Total	**$71,500,000**	**$31,184,000**	**$102,684,000**

In addition to the extra costs associated with the proposed scope changes, all project-related cost estimates need to be inflated to align with anticipated timing of the construction tenders. The Non-Residential Construction Price Index had an inflation rate of 7.9% between 2020 Q2 (when the EA construction estimate was published) and 2021 Q2, and has increased by another 7.8% between 2021 Q2 and 2021 Q4. It is always difficult to predict inflation rates, but it is particularly difficult now with all the economic pressures from the global pandemic and supply chain disruptions. With the construction tender for the WTP expansion expected to be issued in early 2023, it is prudent to anticipate inflation on construction costs to that point in time at a minimum, as presented in the tables below.

	2019-2020 Q2	2020-2021 Q2	2021-2022 Q2	2022-2023 Q2
Actual % Inflation	2.6%	7.9%	-	-
Forecasted % Inflation	-	-	10%	3.5%

	Estimated Total Project Cost (2020$)	Estimated Total Project Cost (Inflated$)
Town of Blue Mountains	$9,443,800	$11,105,000
Town of New Tecumseth	$60,755,010	$71,475,000
Town of Collingwood	$32,485,190	$38,325,000
Total	**$102,684,000**	**$120,905,000**

Updated uninflated and inflated cash flow projections for the remaining WTP Expansion project costs, including the recommended scope changes, are provided in the table below. Note that these do not include the actual costs already incurred in 2021.

	Uninflated Cash Flow	Inflated Cash Flow
2022	$8,150,000	$9,215,000
2023	$9,900,000	$11,780,000
2024	$29,050,000	$33,770,000
2025	$30,800,000	$36,860,000
2026	$18,400,000	$21,810,000
2027	$3,650,000	$4,305,000
2028	$2,300,000	$2,790,000
Total	**$102,250,000**	**$120,530,000**

Based on the cash flow projections, sufficient funding has been approved through the 2022 Capital Budget to continue to move forward with the design of the recommended scope changes; however, the 2023 Capital Budget will need to update the cash flow and funding requirements for the project based on inflationary impacts and the approved scope changes.

In 2025 it will be important for an updated water rates study to be completed so that user rates will incorporate the cost of the new expanded WTP. It is anticipated that there will be some impact to the rates however increasing sales of any excess capacity and the benefit of having a new rehabilitated WTP (that will last many years) will assist in mitigating any significant impact.

Grant Funding Opportunities

The scope of work for the engineering design team for the Project includes identifying and assisting the Town with for grant funding opportunities for the project. This work has already started and the grant opportunities that the Town currently intends to pursue include:

Disaster Mitigation and Adaptation Fund (DMAF) – The majority of the shoreline improvement work is eligible for this grant funding and potentially even some of the siteworks (stormwater risk management). With 40% of eligible costs being funded this would equal $1,500,000 potential funding.

Green Municipal Fund (GMF) – Like the DMAF funding, both the shoreline improvement works and siteworks could be eligible as protecting the shoreline should mitigate against water quality issues. The GMF involves a loan of up to $5,000,000 of which up to $750,000 would be issued as grant funding.

Canada Cultural Spaces Fund – The costs related to the arts, heritage, culture and creative innovation through the Town's work with the Saugeen Ojibway Nation (SON) may be eligible for an estimated $750,000 in grant funding (50% of anticipated costs).

6. CONSIDERATIONS

Community Based Strategic Plan: ☐ N/A or ☒ Explain: Progresses towards achieving CBSP Goal
Climate Change / Sustainability: ☐ N/A or ☒ Explain: Increases Climate Change / Sustainability
Accessibility: ☒ N/A or ☐ Explain: Choose an item.
Communication / Engagement: ☒ N/A or ☐ Explain: Choose an item.
Accountability / Transparency: ☐ N/A or ☒ Explain: Enhances Accountability and Transparency

7. APPENDICES & OTHER RESOURCES

Appendix A	Mandatory Scope Changes and Cost Estimates
Appendix B	Pay Now/Pay Later Scope Changes and Cost Estimates
Appendix C	Strategic/Community Benefit Scope Changes and Cost Estimates

SIGNATURES

Prepared by:		Department Head:
Heather McGinnity, Manager of Environmental Services		Peggy Slama, Director, Public Works, Engineering and Environmental Services
Town of Collingwood		Town of Collingwood

Appendix A – Mandatory Scope Changes and Cost Estimates

Item	Rationale	Estimated Extra Cost (2020$)	Proposed ToC Cost	Proposed ToNT Cost	Proposed ToBM Cost
Interim UV	Increase interim water supply capacity	$2,219,000	100%	0%	0%
Frazil Ice Control	Climate adaptation/system resiliency	$423,000	27%	63%	10%
Shoreline Protection	Climate adaptation/system resiliency	$1,848,000	27%	63%	10%
Site Grading & Drainage Improvements	System resiliency/connectivity with Shoreline Protection	$747,000	27%	63%	10%
Controls Equipment/Wiring Replacement	Scope clarification	$1,089,000	27%	63%	10%
Municipal HLP	Hydraulics/system demands	$2,880,000	90%	0%	10%
Regional HLP	Hydraulics/system demands	$3,880,000	24%	76%	0%
Municipal Transient Protection	Hydraulics	$959,000	90%	0%	10%
Regional Transient Protection	Hydraulics	$959,000	24%	76%	0%
High Lift Wet Well Redundancy	System resiliency	$1,927,000	27%	63%	10%
Operations Admin Space – New & Existing Buildings	To facilitate administration space, Emergency Operations Centre requirements	$3,868,000	27%	63%	10%

Item	Rationale	Estimated Extra Cost (2020$)	Proposed ToC Cost	Proposed ToNT Cost	Proposed ToBM Cost
Larger Plant Footprint	To meet OBC, provide sufficient maintenance access based on actual equipment/space requirements	$4,703,000	27%	63%	10%
Convert Generator Building	Equipment needs to be removed. Repurposing building for electrical service equipment and other equipment storage.	$590,000	27%	63%	10%
Total Mandatory Extra Costs		**$26,092,000**	**$10,938,110**	**$13,250,490**	**$1,903,400**

Appendix B – Pay Now/Pay Later Scope Changes and Cost Estimates

Item	Rationale	Estimated Extra Cost (2020$)	Proposed ToC Cost	Proposed ToNT Cost	Proposed ToBM Cost
Increase Rated Capacity	Postpone Phase 2/Additional capacity for ToNT	$1,557,000	27%	63%	10%
New Intake Well & Pipe Stub	Plan for growth/system resiliency	$2,347,000	27%	63%	10%
Total Pay Now/Pay Later Extra Costs		**$3,904,000**	**$1,054,080**	**$2,459,520**	**$390,400**

Appendix C – Strategic/Community Benefit Scope Changes and Cost Estimates

Item	Rationale	Estimated Extra Cost (2020$)	Proposed ToC Cost Share	Proposed ToNT Cost Share	Proposed ToBM Cost Share
Plaza Features	Community benefit/reconciliation	$370,000	100%	0%	0%
Parks Washroom	Community benefit/waterfront access	$300,000	100%	0%	0%
Parking & Intersection Improvement	Community benefit/waterfront access	$303,000	100%	0%	0%
Sidewalk (Raglan St)	Community benefit/active transportation	$85,000	100%	0%	0%
EV Charging Stations	Climate mitigation	$130,000	100%	0%	0%
Total Community/Strategic Benefit Extra Costs		**$1,188,000**	**$1,888,000**	**$0**	**$0**

Appendix D
Consultation with SON and NVCA

- Site Visit Pre-Consultation Meeting with SON and NVCA September 22, 2021
- Comment/Response Letter from SON December 7, 2021
- Update Meeting with SON and NVCA March 9, 2022
- Correspondence with SON re: PTTW Amendment

AECOM
105 Commerce Valley Drive West, Floor 7 905 886 7022 tel
Markham, ON, Canada L3T 7W3 905 886 9494 fax
www.aecom.com

Minutes of Meeting

Date of Meeting	September 22, 2021	Start Time	1:00 pm	Project Number	60665174
Project Name	Raymond A. Barker WTP Expansion				
Location	Microsoft Teams				
Regarding	NVCA Presentation				
Attendees	Chris Hibberd (CH) (NVCA) Emma Perry (EP) (NVCA) Ryan Post (RP) (NVCA) Ben Krul (BK) (NVCA) Marianne Maertens (MM) (NVCA) Kate Thomson (NVCA) Ken Kaden (KK) (Town of Collingwood) Heather McGinnity (HM) (Town of Collingwood) Marie Richardson (Town of Collingwood) Christa Carter (Town of Collingwood) Lindsay Ayers (LA) (Town of Collingwood) Robin Shugan (Town of Collingwood) Milo Sturm (MS) (Shoreplan) Kristian Dray (AECOM) Matt Thurston (AECOM) Abhi Sood (AS) (AECOM) Brian Sahely (BS) (AECOM) Laura Alvarez (AECOM) Mike Ainley (MA) (Ainley) Reid Mitchell (Ainley) Jody Marks (JM) (Ainley)				
Distribution	All Attendees				
Minutes Prepared By	Jody Marks				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct. Note also that blue shade means the Town action items while green shade means AECOM/Ainley action items, yellow means NVCA action items.

NVCA ACTION ITEMS – PRIORITIZED

- 7.1 Provide requirements for updated source water protection modelling process to the Town.
- 8.3 Provide reviews/permits required, if any, to reinstall the decommissioned storm MH and outfall at the same approximate location at the northeast end of the plant as previously installed.
- 10.3 Provide an example of an contingency plan in the event that ESC requirements aren't being met.

Item	Description	Action By
1.0	**Acknowledgement**	
1.1	JM acknowledgement of Traditional Lands	Info

Item	Description	Action By
2.0	**Safety Moment**	
2.1	JM provided a safety moment.	Info
3.0	**Introduction and purpose of meeting**	
3.1	Individual introductions	Info
4.0	**Presentation of Exterior Concepts**	
4.1	Viewed virtual exterior tour of building concept	Info
5.0	**Shoreline Hazard Limit (Flooding) and Shoreline Protection**	
5.1	MS provided an overview of Shoreplan's preliminary review of the project design. Placement and configuration of the stone currently in place along the shoreline requires some improvements. Some of the stone is over steepened and the stability under wave action shows it would be subject to some movement.	Info
5.2	BS advised that an onsite meeting with Saugeen Ojibway Nation (SON) is also being planned and recommends included NVCA staff in this site meeting. An online poll will be sent out to gather NVCA staff availability.	AECOM/ Ainley
5.3	EP stated that this project is focused primarily on mitigation of hazards and that the ecological portion is secondary. However, any opportunity to include habitat enhancement would be appreciated and would like to see included if possible. MS responded that their team will look at aquatic habitat improvements. They are aware of all the requirements of the NVCA and will solicit input from SON as well. In addition, a biologist from AECOM will work with their team.	Shoreplan
5.4	CH asked what consideration was given to shoreline hazards in terms of new structure location, and how far the project team is into engagement with SON. BS replied that the location of the new structure is limited due to property boundaries, current infrastructure, and needs of the facility operation (e.g., enough open space between the old and new building for safe chemical delivery by truck). BS shared that the project team had a workshop with SON last week.	Info
5.5	CH asked how the team is addressing high water level and wave uprush, including any concerns to the building regarding spray and ice from winter conditions. MS shared that as part of the design, protection methods will be reviewed. They will try to flatten the slope in some areas to help to lessen the spray and break up of ice.	Info
5.6	BS asked if NVCA has completed any recent analysis of high-water levels and uprush in the Town of Collinwood shoreline area. CH shared that Shoreplan had actually completed the latest study, done in 2017. MS indicated that although the 2017 was fairly detailed, it was not site specific. Shoreplan has the latest data that was compiled for NVCA and will request NVCA permission to use metric data from the 2017 study. Shoreplan will submit a data sharing agreement to NVCA.	Shoreplan
6.0	**Permit Requirements**	
6.1	BS noted that the project team held a meeting on September 8th with the Ministry of Environment, Conservation, and Parks (MECP). These discussions included discussions on requirements for amending the PTTW, first to increase the instantaneous flow rate without changing the daily water taking limit of 68.25 ML, and second, to allow for a future daily water taking limit of 100 ML as had been included in the Town's 2001 PTTW but deleted in their 2011 and 2021 renewal permits. At the September 8th meeting, MECP informed the team that a simple clerical amendment would be required for the instantaneous flow rate increase	Info

Item	Description	Action By
	while MECP would have to further review the reason for the change in the PTTW after 2001.	
6.2	BS then asked if NVCA had any requests or concerns regarding the proposed increases/changes at this time. RP asked for clarification on the 2001 PTTW and BS noted that AECOM will send NVCA the 2001 PTTW.	AECOM/ Ainley
6.3	RP asked why the team is interested in a future increase to 100 ML/d volume at this time. BS noted that the team is looking at designing the plant such that adding capacity beyond the Phase 1 capacity is as simple as the Town purchasing and installing new membranes, and would like to work with NVCA as well as SON and MECP to identify any future approvals needed.	Info
6.4	CH asked how long project construction may take, as NVCA permits are typically 2 years in length and that a 5-year permit that would require board approval (O.REG 172/06 for site works). BS responded that the estimate for project construction is 4 years.	Info
7.0	**Source Water Protection**	
7.1	MA mentioned that NVCA would like this project to review the Intake Protection Zones (IPZs) given uncertainties about the intake velocity and flow assumed when the assessment was done in 2015. RP shared that the modelling was based on an IPZ-1 of a 1km (in-water) radius around the intake. If there is a significant increase to the amount of water taking there may be impacts to the IPZ- 2 area delineation which corresponds to the 2 hours time travel/velocity. If the change is considered minor the process would fall under section 31 of the *Safe Drinking Water Act* – requiring minor revisions in text and mapping. If there is significant change the process would fall under section 34 of the *Clean Water Act* – changes would be subject to public consultation and council approval with documentation and rationale required.	Info
7.2	BS noted that AECOM is currently seeking a consultant to conduct the modelling required for the IPZ-2 delineation. BS asked if NVCA has in-house capability to conduct the modelling and RP noted that NVCA does not have this capability.	Info
7.3	HM noted that a request for review of updated modelling has been submitted to NVCA and LSRCA and that confirmation on which process will be required would be appreciated by the Town given the project timeline. HM asked if NVCA could share how long would they expect the process to take before the Town receives their notice. RP responded that he would bring the Town submission to the next Source Protection meeting and the Town should receive the notice shortly after that. RP noted that the Source Protection meetings are held every 3 to 4 months.	NVCA
8.0	**Erosion and Sediment Control Plan and Site Drainage**	
8.1	CH inquired if quality control is being considered. MA informed that the erosion and sediment control (ESC) plan included slowing water velocity through straw bales, mud mats and silt curtain. BS added that swales may be also considered as the original storm sewer at the north end of the site has been decommissioned.	Info
8.2	MM recommended developing a more detailed ESC plan and suggested continued discussions with NVCA for input into the plan.	NVCA, AECOM/ Ainley
8.3	BS noted that they may wish to reinstate (replace) the existing decommissioned storm MH and outfall at the northeast end of the site, with discharge to that same location. BS asked if this would trigger any reviews or permits from NVCA. MM	NVCA

Item	Description	Action By
	replied that other technical staff would have to weigh in on any possible implications of this proposal and NVCA would have to get back to BS.	
8.4	MM noted that no construction staging or 'lay down' is supposed to be within 30m of the shoreline. AS asked if this was a requirement or a law. MM replied that it was NVCA best management practice.	Info
9.0	**Quality and Quantity Control Measures (During Construction)**	
9.1	BK noted that it would be helpful if any ESC monitoring reports prepared by the site inspector could also be circulated to NVCA so they can keep updated on the project. BK recommended the development of a contingency plan in the event that ESC requirements aren't being met. BS asked if NVCA could provide an example of a contingency plan as a reference/guide so it could be added to the contractor documents.	NVCA
9.2	CH added that there are ESC guidelines available on the NVCA website. If there is difficulty finding them on the website, they can also be accessed through the last board meeting (August 2021) minutes on the NVCA website.	Info
10.0	**Stormwater Management Design (Ongoing Post Construction)**	
10.1	CH asked the team to review the Low Impact Development (LID) guidelines (found on NVCA website) and to also include site enhancements ecologically. MA acknowledged this goal and that the team would review existing road surfaces and investigate if LID measures could be included to improve the area.	AECOM/ Ainley
11.0	**Provincial Water Quality Objective (PWQO) Monitoring**	
11.1	MA asked what parameters the NVCA feels should be monitored for both surface runoff and groundwater. BS further asked if a full PWQO scan of groundwater prior to dewatering was required. MM noted that from a surface runoff perspective, a salt management plan would be of interest and mentioned a terms of reference specific to salt management. Other parameters will require an internal NVCA discussion. CH recommended that Ainley/AECOM follow up with an email to clarify NVCA's expected input.	AECOM/ Ainley
12.0	**Identification of Significant Drinking Water Threats**	
12.1	MA noted that the Town acknowledges its responsibility for identification of significant drinking water threats. RP offered his assistance with this task, noting that there are two different processes to consider that look at ensuring safe drinking water and any threats - the *Safe Drinking Water Act* and the *Clean Water Act*.	Info
13.0	**New Business**	
13.1	BS asked for a timeline for permit approval from NVCA. CH replied that the timeline is dependant on how complete the application is. Staff will certainly try to expedite the approval process where possible. CH suggested that it may be helpful if the project team could develop a list in terms of expectations for a timeline and the NVCA will do their best to meet it. CH further shared that when the NVCA receives a permit application they have 21 days to determine if it is complete and then 90 days to render a decision.	AECOM/ Ainley
13.2	LA noted that the Town site plan bylaws do not apply to any works undertaken by the Town. A Town initiative project would go through a pre-consultation process and the NVCA would be circulated in this process. BS further added that the	Info

Item	Description	Action By
	project team will have a second workshop with the NVCA before the final design and permit application is submitted.	
14.0	**Next Workshop**	
	TBD.	Info
15.0	**Next Steps**	
	Refer to the action items above.	Info
16.0	**Adjournment**	
	The meeting was adjourned at 3:47pm	Info

Ainley & Associates Limited
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December 7, 2021 File No. 120078

Saugeen Ojibway Nation (SON) Environment Office
25 Maadokii Subdivision
Neyaashiinigmiing, Ontario
N0H 2T0

Attention: Emily Martin

Ref: Town of Collingwood
Raymond A. Barker Water Treatment Plant Expansion
Response to SON's November 3, 2021 Comments Letter

Dear Ms. Martin,

Thank you for your letter of November 3rd and for meeting with us virtually on November 19th. We acknowledge SON's wishes to mitigate the impacts of the project on the nearshore fish community and aquatic and semi-aquatic vegetation and wetland community. As it relates to the proposed WTP expansion site, the Town understands SON's focus on:

- Proposed major preliminary design considerations, including potential deviations/changes to previously identified design concepts in the Class EA,
- Proposed surface/drainage services and storm outlet(s) design considerations,
- Potential design considerations for the storm outlet(s) energy dissipation measures and/or structural requirements that mitigate required discharging from the subject site,
- Water quality monitoring programs selections, implementation measures and ownership,
- Design considerations to address flood protection, including extreme events flood protection measures under Climate Change conditions,
- Erosion and sediment control plan during construction activities, and
- Consideration given to increased levels of the shoreline/coastal areas and slope stability measures, including measures associated with the proposed site works.

We have summarized SON's comments from the November 3rd letter below. Responses on behalf of the Town follow in bold print:

1. The existing WTP building is recommended to be substantially enlarged (will be approximately doubled in size compared the existing building size) to accommodate all recommended WTP Expansion works and proposed WTP increased capacity. The proposed new enlarged WTP building (permanent structure) will have a substantially larger footprint and will cause an increase in the WTP site development density, and will be substantially closer to the open water shoreline along the subject site and may encroach on the existing flood lines.

The Town acknowledges that the new building will be substantially closer to the open water shoreline at the east end of the plant site. As permitted under the Town's Official Plan and NVCA regulations, and as is the case with many such facilities in the province, the existing WTP is already located in the flood plain.

2. The existing small buffer (the setback) between the proposed WTP building upgrades- the permanent structure footprint size and the open water shoreline areas along the subject site is proposed to be substantially reduced because of the proposed footprint size of the recommended to be upgraded WTP building is proposed to be enlarged, approximately double in size of the footprint to accommodate the WTP Expansion works. This existing buffer size would be required to be a substantially larger buffer under the current water resources management requirements and regulations.

   Both the existing and new buildings will be in the flood plain; however, the "buffer" between the new building and the revetment will meet typical requirements for flood line setback. The revetment elevation in combination with protective site features will be designed to manage high lake level plus wave runup. The MNRF 100-year instantaneous water level for Collingwood is 178.00m CGVD1928 (MNR, 1989) which accounts for Lake Huron mean water levels and storm surge heights measured at Collingwood. These levels are currently being reassessed (by Shore Plan) using a wider range of historical data and to also consider potential increases due to climate change.

3. The proposed reduction of the existing buffer (the setback) potentially may warrant appropriate mitigation measures and additional shoreline/coastal stability works along the site in the open water. The proposed existing buffer size reduction, due to the proposed increase of the building size and footprint enlargement, may be considered as a buffer encroachment and may require additional mitigation measures/works, as well as approvals from MNRP, CA, DFO and MECP would be required for the subject site proposed design. SON is of the opinion that every effort must be applied to reduce the proposed new WTP building size and footprint and minimize or eliminate any existing buffer encroachments and adverse effects. SON is willing to work with the Town and its Consultants to achieve this objective.

   The Town acknowledges that every attempt must be made to restrict the new building's footprint as much as possible. The Town also recognizes that in-water works will be necessary to stabilize the shoreline. Both the existing and new buildings will be technically within the flood plain as noted in Items 1 and 2; however, the "buffer" from the shoreline revetment will exceed the setback limits from flood lines typically applied to buildings and the building superstructure floor elevation will be above the flood plain.

4. The finalized WTP design shall be required to address an increased level of required flood protection measures and works, including, but not limited to, extreme events flood protection under the Climate Change conditions for the proposed upgraded and enlarged WTP building, the subject site and the applicable shoreline areas along the subject site. SON believes this will be required by the Conservation Authority and DFO.

   Acknowledged.

5. The finalized WTP design shall be required to incorporate a required design to eliminate the existing deficiencies of coastal/shoreline slope stability previously completed works.

   Acknowledged.

6. The finalized WTP design shall be required to address the proposed surface/drainage services and storm outlet (s) design considerations, as well as potential design considerations of the storm outlet (s) energy dissipation measures and/or structures for the existing or new storm outlet (s) discharging from the subject site.

   Acknowledged.

7. All these activities and flood protection requirements would warrant major additional slope stability shoreline/coastal works, (as identified at this meeting by the Town's consultant specialized in shoreline protection works) which may impact existing shoreline and slope stability conditions, water quality and environmental/ecological condition during the construction and in the post-construction periods.

   Acknowledged.

8. Because of the potential design challenges associated with the small site and potential issues with potential sediment discharge during construction activities, this project requires a strong robust erosion sediment control plan and storm/drainage outlet discharge(s) measures during the construction stages of the project.

   Acknowledged. In addition to measures previously outlined in the Class EA and Framework for Site Management and Shoreline Protection (working draft), the works will be designed in compliance with NVCA requirements as outlined in the following documents:

   - **TRCA 2019 ESC Guide for Urban Construction** https://sustainabletechnologies.ca/app/uploads/2020/01/ESC-Guide-for-Urban-Construction_FINAL.pdf
   - **Low Impact Development Stormwater Management Planning and Design Guide** https://sustainabletechnologies.ca/app/uploads/2013/01/LID-SWM-Guide-v1.0_2010_1_no-appendices.pdf

9. As discussed at the meeting, the final design of the subject site must include water quality monitoring programs that include baseline (existing conditions) monitoring for a period of approximately 6 months prior to commencing site construction, during construction and for a post-construction period of 2-3 years. SON supports the water quality monitoring programs being conducted by the Town and its Consultants. Please see Appendix 'A' that is attached to this letter and identifies SON recommendations for the required water quality monitoring programs for monitoring discharges from the subject site under the pre and post construction and during construction conditions.

   As discussed at the November 9th meeting, the Town acknowledges and agrees in principle to periodic sampling and testing for the chemical parameters listed in Appendix 'A' of the November 3rd letter. However, there are practical considerations with respect to safely accessing sampling locations, as well as

retrieving representative samples in the immediate area of the outfall(s) where wind and wave action will affect the results (this will also be the case with offshore sampling in rough weather).

There are also significant cost considerations with SON's suggested number of samples per monitoring event and with testing frequency during construction, and the Town would like to discuss alternative monitoring procedures during construction that we believe will still satisfy SON's objectives.

We will prepare a sampling protocol for pre/during/post construction for review and discussion with SON at a later date. This proposed plan will reflect sampling procedures, frequency and locations in accordance with the requirements of the NVCA, EPA, MECP and other reputable sources for applications similar to this project.

10. SON has major concerns about shoreline hardening in SON's territory. Shoreline hardening is widespread and has an adverse impact on fish habitat, and thus fish and SON's fishery. Every effort should be made to employ bioengineering approaches, alternatives or enhancements for the proposed coastal protection/slope stability work.

    As agreed at the November 9th meeting, every effort will be made to incorporate bioengineering approaches; however, it was agreed that such alternatives may likely be futile due to the harsh shoreline conditions experienced at the site. SON has offered to investigate if such measures have been successfully employed other locations under similar conditions; we look forward to receipt of that information. In the meantime, our shoreline engineering design consultant will prepare a report on water levels and wave uprush that we can share when complete.

11. The Environment Office of SON requires that all the above collected monitoring program information will be shared and reviewed by Environment Office of the Saugeen Ojibway Nation.

    NVCA is the authorized Agency for receiving and enforcing monitoring reports on storm runoff and dewatering discharge. However, the Town has no objection to SON requesting copies of the reports from NVCA.

12. Some areas of the site modification works would encroach on the existing flood lines and/or on the designated hazardous flood lands, and/or the required setbacks from these areas that are governed by the Conservation Acts, DFO Act, OWRA and other MECP Acts and Regulations.

    As noted in the responses to Items 1, 2 and 3, the existing WTP site already is in the flood plain and has been granted a variance for this.

13. The geotechnical and hydrogeological evaluations/reports were not provided to SON for reviews and in our previous comments we requested these reports.

    The Town has issued RFPs to qualified geotechnical/hydrogeological firms to complete this work. The investigation and report are expected to be completed early in 2022 and SON will be provided a copy of the completed report.

14. SON is concerned that taking into consideration the subject site is located in close proximity to the open water and the construction works and activities that are proposed be undertaken at the subject site, a substantial dewatering may be required. SON is of the opinion that water quality monitoring for all discharges should be undertaken to protect the existing water quality of existing water resources, environmental/ecological conditions, fishery and/or aquatic health that are critical for SON.

    A robust monitoring program for all dewatering discharges will be implemented for this project. As detailed in the attached geotechnical/hydrogeological RFP, the geotechnical/ hydrogeological firm will conduct groundwater level monitoring for a 2-month period to determine maximum construction dewatering rates/volumes, which will be used as the basis for an application for a construction PTTW (if necessary based on anticipated water volumes) and will help establish whether dewatering effluent is discharged to the Bay or to the Town's sanitary sewer system.

15. Based on the above, a water quality monitoring program needs to be developed and implemented for the total period of all proposed construction works and activities.

    As detailed in the attached geotechnical/hydrogeological RFP, the groundwater will initially be tested for the full MECP PWQO spectrum for chemical parameters, in accordance with *Table 2 – Table of PWQOs and Interim PWQOs* of the Province's 1994 *Water Management: Policies, Guidelines, Provincial Water Quality Objectives* document. The results will be compared with the respective criteria specified in the Town's Sewer Use By-law and PWQO. Based on the point of discharge (Bay or Town's sanitary sewer system) and chemical analysis, the geotechnical/ hydrogeological firm's Qualified Person (QP) will determine treatment requirements for the dewatering effluent.

    Once the dewatering system is installed a representative groundwater sample will be taken for chemical analysis to confirm the water quality. Samples will be submitted for analysis of the parameters in the Town's Sewer Use By-law or PWQO document, as applicable, to obtain a discharge agreement with the Town or NVCA. In addition, for the duration of the groundwater dewatering, daily inspection will be conducted at the point of discharge for any indication of contamination including odours, sheen or discoloration in the groundwater pumped at the site. Should any indication of contamination be observed, all pumping will be stopped, and groundwater chemical testing will be conducted for analysis of the parameters in the Sewer Use By-law or PWQO document, as applicable.

16. The proposed water quality monitoring needs to include, but not be limited to: the basic chemistry and ecological monitoring (BioMap) to meet the requirements of MECP's PWQO.

    The water quality monitoring procedures detailed in the response to Item 15 will ensure that dewatering effluent will meet PWQO basic chemistry requirements if discharged to the Bay.

17. SON, through the CWMP program, plans to undertake an ecological monitoring (BioMap) protocol and BiioMap ecological monitoring often used by MECP for municipal and provincial projects.

    Acknowledged.

18. The draft ESR makes reference to a list of very basic sediment and erosion control measures. In the ESR, the Town of Collingwood makes a commitment that more detailed sediment and erosion control measures will be developed during the detailed design stage.

    Acknowledged. The works will be designed to comply with the NVCA guides referenced in the response to Item 8.

We wish to thank you for your further input into project as it progresses and want to assure you that we will endeavour to provide all of the information you require to complete your reviews.

Yours truly,

AINLEY & ASSOCIATES LIMITED

M.W Ainley, P.Eng., PMP

Cc – Juanita Meekins, SON
Berta Krichker, SON
Ken Kaden, Town of Collingwood
Heather McGinnity, Town of Collingwood
Brian Sahely, AECOM
Laura Alvarez, AECOM
Heidi Ferris, Ainley
Jody Marks, Ainley

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MINUTES OF MEETING

Date of Meeting	March 9, 2022	Start Time	4:00 pm	Project Number	60665174 (AECOM) 120078 (Ainley)
Project Name	Raymond A. Barker WTP Expansion				
Location	Microsoft Teams				
Regarding	Shoreline Alterations Meeting				
Attendees	Emily Martin (EM) (SON) Kathleen Ryan (KR) (SON) Elisha Jones (EJ) (SON) Juanita Meekins (JM) (SON) Berta Krichker (BeK) (SON) Ben Krul (BK) (NVCA) Marianne Maertens (MM) (NVCA) Ken Kaden (KK) (Town of Collingwood) Carley McCormick (CM) (Town of Collingwood) Milo Sturm (MS) (ShorePlan) Bruce Pinchin (BP) (ShorePlan) Brian Sahely (BS) (AECOM) Laura Alvarez (LA) (AECOM) Alex Doran (AD) (AECOM) Mike Ainley (MA) (Ainley) Heidi Ferris (HF) (Ainley) Jody Marks (JM) (Ainley)				
Distribution	All Attendees, Emma Perry, Heather McGinnity				
Minutes Prepared By	Jody Marks				

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Action Item Summary

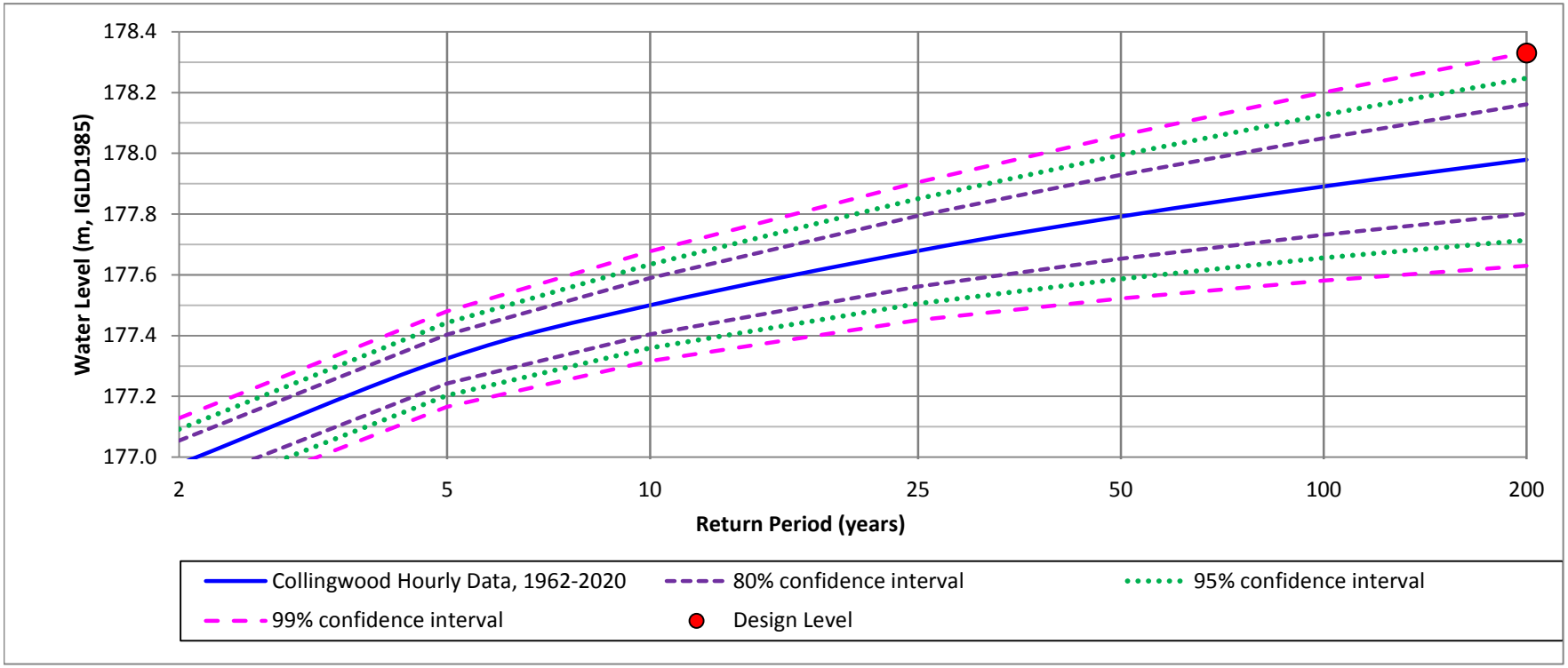
- Town and SON to schedule a meeting for the end of March/early April to discuss monitoring plan.
- Town to schedule a meeting with SON and Town architect to discuss details of SON art installation. Timeline for meeting dependant on the procurement of artist and contract.
- Town to provide SON with the dimensions of educational signage to be installed.

Item	Description	Action By
1.0	**Acknowledgement**	
1.1	JM recited the Acknowledgement to the First Nations.	Info
2.0	**Safety Moment**	
2.1	JM provided a safety moment on virtual meeting burnout.	Info

Item	Description	Action By
3.0	**Purpose of the Meeting**	
3.1	MA noted that the purpose of the meeting was to discuss details of the shoreline alternations work necessary to stabilize the shoreline protection and mitigate overtopping.	Info
4.0	**Proposed Shoreline Works**	
4.1	Shoreplan (MS and BP) presented coastal analysis and shoreline design options. The focus of the analysis was water levels and wave condition.	Info
4.2	With the shoreline protecting critical infrastructure, along with the predicted impacts of climate change, a 200-year return period was chosen for the coastal analysis and was able to provide a 99% confidence interval. The lake level chosen for the model used to design shoreline options is 178.33m IGLD1985 = 178.28m geodetic (CGVD1928:78).	Info
4.3	MS noted that wave overtopping cannot be avoided as the structure height would be far higher than practical. Therefore, the design options provide the highest crest that is practical with additional design features within the site to manage the overtopping.	Info
4.4	The design options use slope ratios of 1.5:1 to 2:1 that are generally flatter than the current slope ratios. This will provide greater stability and safety. The easterly portion of the shoreline will remain similar to the current structure. An armour stone curb is proposed for flood protection in this area of the site and small cobbles stones and vegetation can be added to the shoreline in this location to enhance the habitat.	Info
4.5	MS noted that the flatter slope ratios and higher crest requires a greater width of shoreline protection. He presented two design options - Option 1 proposes to minimize alterations to the site footprint by extending the shoreline out into the water and Option 2 proposes to minimize alterations to the aquatic habitat line by extending the shoreline protection inland, thereby losing some site area.	Info
4.6	EM asked about the pros and cons of each design option. MS noted that while the presentation shares the alternative designs that were considered, the consensus coming into this meeting was that Option 2 is preferred as it minimizes any intrusion into the water, which is considered the governing concern. EM and BK agreed that SON and NVCA also consider Option 2 the preferred option.	Info
4.7	EM asked that a copy of ShorePlan's presentation be circulated to attendees. A copy of the presentation is included with these minutes.	Info
4.8	EM asked if the existing amour stone would have to be removed or if the new structure could be built on top of it. MS responded that the current structure lacks embedment of the toe stone in the lake bottom, which is critical to long term stability. Therefore, as part of the shoreline work all of the existing armour stone will need to be physically removed, sorted and then reused in the new structure. EM noted that the information was helpful so as to get a better understanding of the level of habitat destruction and that it is understood and acknowledged that the construction work must be done. MS shared that with Option 1 it would be possible to build on top of the current structure, but at the expense extending the shoreline out into the water and losing significant aquatic habitat area.	Info
4.9	BK asked what mitigation measures are being considered during in-water works. MS responded that some of the existing armour stone will be used to create a tight row structure in front of the walking path to separate the site from the water's edge. It is not anticipated that any siltation will be created, and mitigation measures including mud mats and retention ponds to filter water in the work area will be considered. More detail will be developed during design.	Info
4.10	EM inquired if the shoreline work would be following in-water timing windows. MS	

Item	Description	Action By
	replied that once the design work is completed it will be submitted to all appropriate agencies, who will set out the timing window. MS believes that the applicable in-water work window is July 15 to Sept 15.	
5.0	**Outfall Upgrades/Relocation**	
5.1	BS noted that, in conjunction with the shoreline alterations work, now was the time to consider upgrades to and/or relocation of current stormwater and membrane backwash discharge outlets. Specifically, it is proposed to reposition the outlets to align with the rest of the site and building design (shorter lengths) and to increase the size of the pipes to reduce velocities.	Info
5.2	BS asked if repositioning the outlets and increasing the pipe sizes would trigger any additional studies. BeK, BK and MM agreed that there would be a net benefit to this work and indicated that SON and NVCA would not require additional studies for this. However, all three stressed the importance of the detailed design drawings submitted for approval providing comprehensive, clear details on: • Dissipation system • Erosion and sediment control • Storm event planning • Phasing of works with respect to interior swales to manage stormwater • How sediment will be moved, stabilized, and protected during construction especially if equipment is anticipated to be driven over swales • How the outlets will be protected	Info
5.3	BS suggested a site visit to further discuss any sediment erosion plan and construction drawings once the team has provided drawings. It was agreed that no site visit is necessary prior to drawings being prepared.	Info
5.4	EM noted that SON may have additional comments or questions once they have reviewed the copy of the presentation internally.	Info
12.0	**New Business**	
12.1	KK noted that SON and the Town still have to finalize sampling parameters and a monitoring plan. It was agreed that EM will schedule a meeting for the end of March or early April to discuss the monitoring program.	SON
12.2	KK shared an update regarding the artist procurement for the SON mural installation. The Town is currently working through the procurement process and anticipates having an artist under contract by April or May of this year. At that point the Town intends to set up a meeting with SON and the Town architect.	Town
12.3	Although this component is a couple of years away, EM mentioned and KK acknowledged that the educational signage along the pathways of the site will also have approved content from SON. The Town will provide SON the dimensions of signage that will be installed so that SON knows the exact space and can start to work on sign design and content drafts.	Town
12.3	EM shared that there has been an increase in interest for signage from SON from local communities and with that SON is creating a committee specific to educational signage. EM anticipates that in the future this committee will work with the Town on the signage component.	Info
14.0	**Adjournment**	
	The meeting was adjourned at 4:55pm	Info

UPDATED WATER LEVEL ANALYSIS



Design Water Level

Based on the 99% upper confidence interval at the 200-year return period

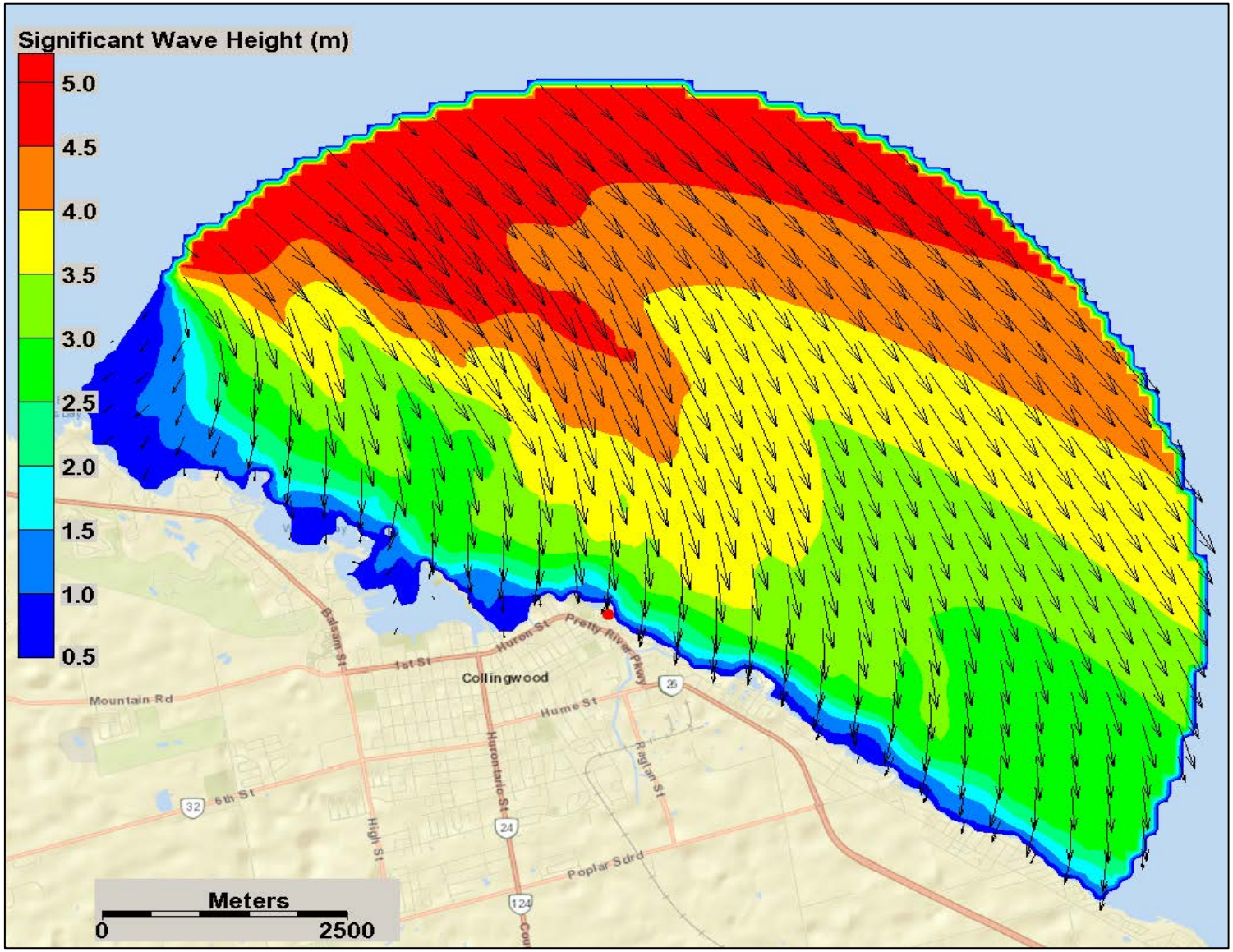
178.33m IGLD1985 = 178.28m geodetic (CGVD1928:78)

Provides a 0.28m buffer above previously used design water level

Accounts for potential impact of climate change on a critical infastructure project

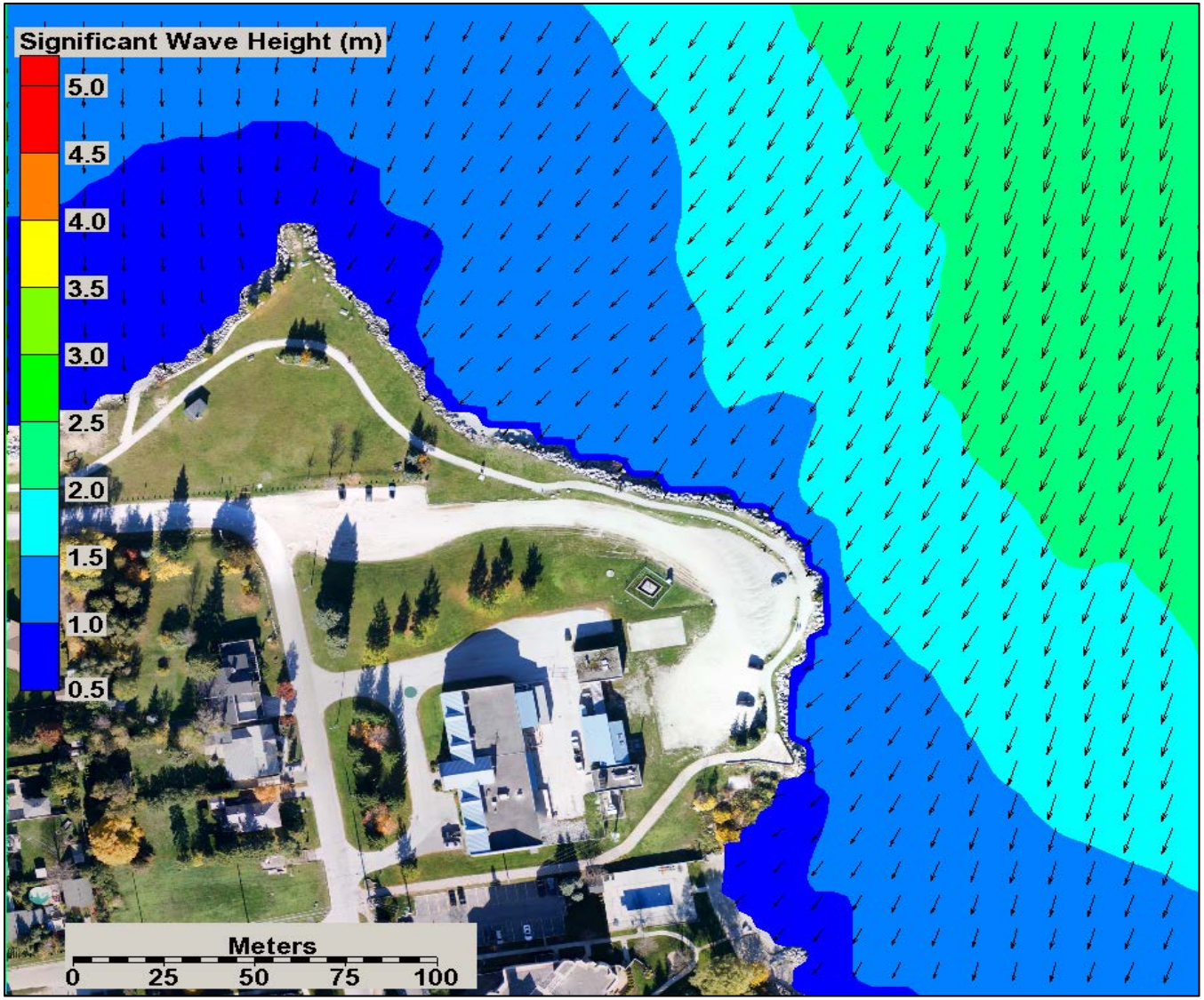
WAVE TRANSFORMATION ANALYSIS

Transfer of 100-year wave from hindcast

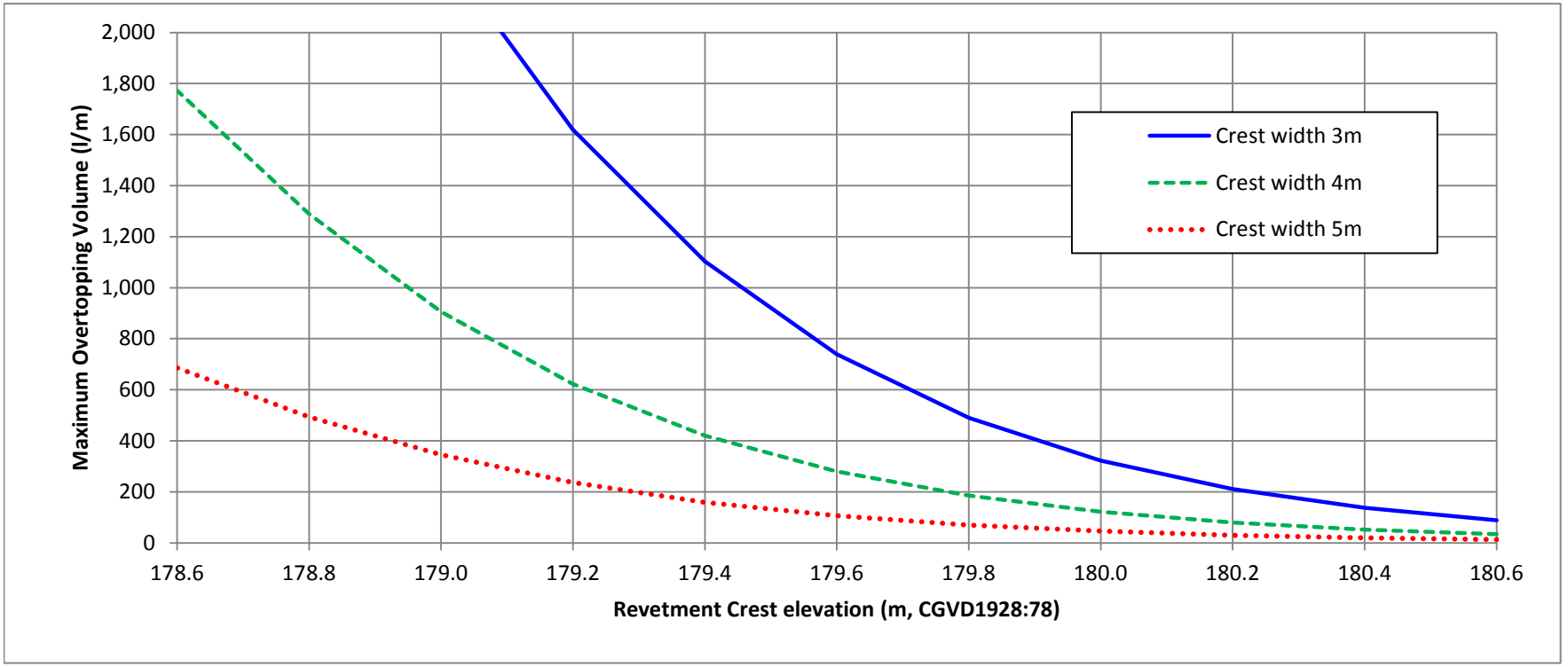


WAVE TRANSFORMATION ANALYSIS

Design Wave at the Site



OVERTOPPING ANALYSIS



Overtopping analysis used verify backshore will not be damaged and will be safe for pedestrian access

Overtopping volumes considered in site grading design

GEORGIAN BAY

LEGEND

- APPROXIMATE EXISTING AQUATIC HABITAT LINE (177.0m±)
- APPROXIMATE PROPOSED AQUATIC HABITAT LINE (177.0m±)
- AREA LOST: 458m^2
- AREA ALTERED: 561m^2

TOE ARMOUR STONE

REVETMENT CREST

CAP ARMOUR STONE

REINFORCED ARMOUR STONE HEADLAND

BEACH CURB/CAP ARMOUR STONE

TRANSITION 10m±

90m±

25m±

TRANSITION 10m±

25m±

B.H.3 EL. 177.925

B.H.1 EL. 178.430

5 0m 5 10 15 20

Drawing Location: S:\Shoreplan Project Files\Files 3400-3499\20-3441 Collingwood Water Treatment Plant (AECOM)\Drawings\3441-rOg.dwg

Project #20-3441
Scale 1:500
SHOREPLAN

Figure 1
Raymond A. Barker Water Treatment Plant
Site Plan - Alternative 1

GEORGIAN BAY

TOE ARMOUR STONE

REVETMENT CREST

CAP ARMOUR STONE

90m±

TRANSITION 10m±

25m±

TRANSITION 10m±

25m±

REINFORCED ARMOUR STONE HEADLAND

BEACH CURB/CAP ARMOUR STONE

B.H.3 EL. 177.925

B.H.1 EL. 178.430

LEGEND

APPROXIMATE EXISTING AQUATIC HABITAT LINE (177.0m±)

APPROXIMATE PROPOSED AQUATIC HABITAT LINE (177.0m±)

AREA LOST: 23m^2

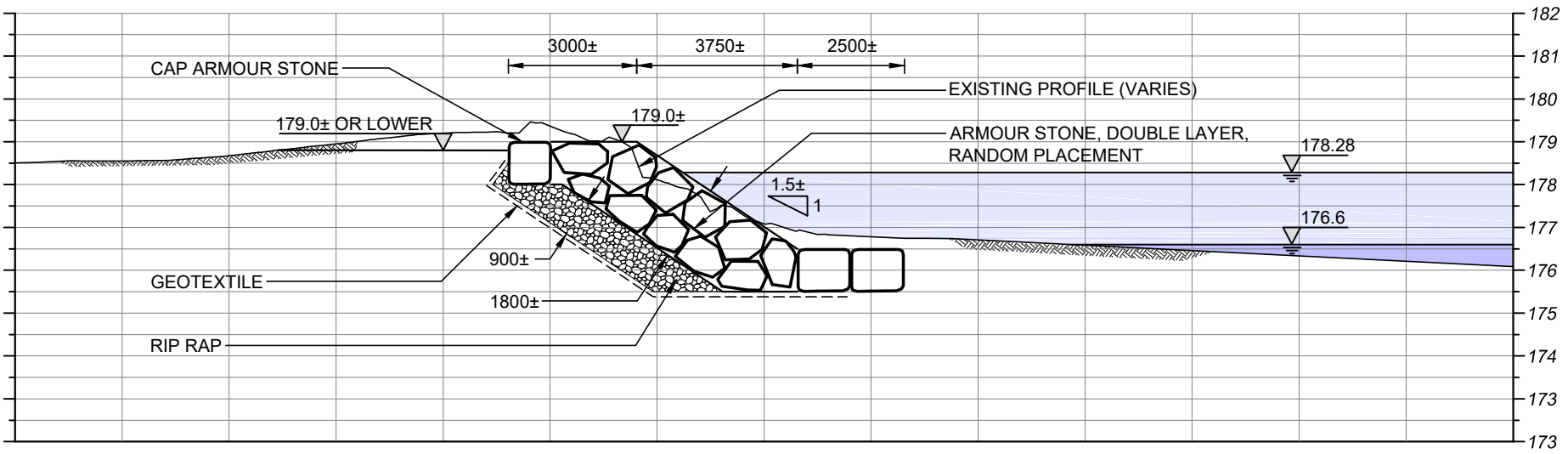
AREA ALTERED: 471m^2

5 0m 5 10 15 20

Drawing Location: S:\Shoreplan Project Files\Files 3400-3499\20-3441 Collingwood Water Treatment Plant (AECOM)\Drawings\3441-r0g.dwg

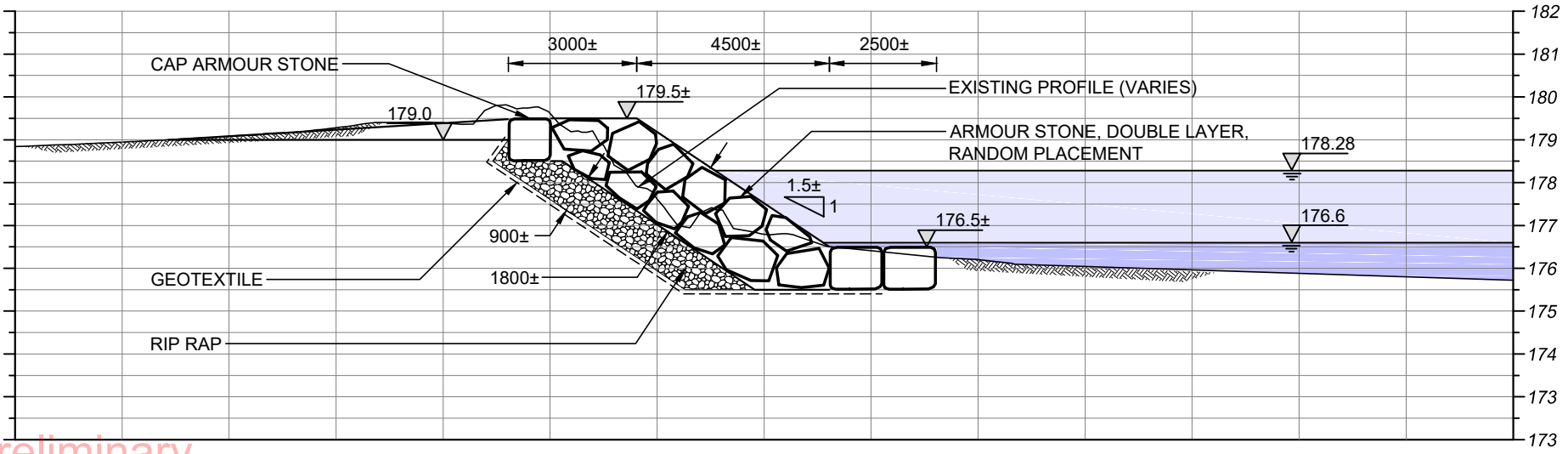
Project #20-3441
Scale 1:500
SHOREPLAN

Figure 2
Raymond A. Barker Water Treatment Plant
Site Plan - Alternative 2



Scale 1:150

Revetment Section 1



Scale 1:150

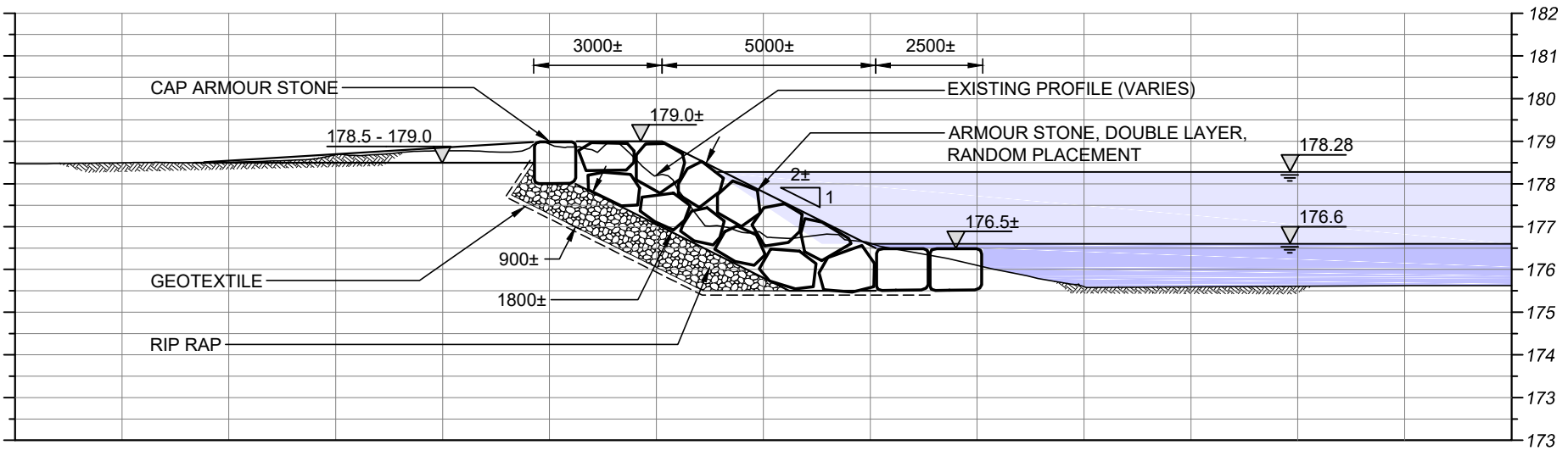
Revetment Section 2

NOT FOR CONSTRUCTION

Project: 20-3441
Scale 1:150

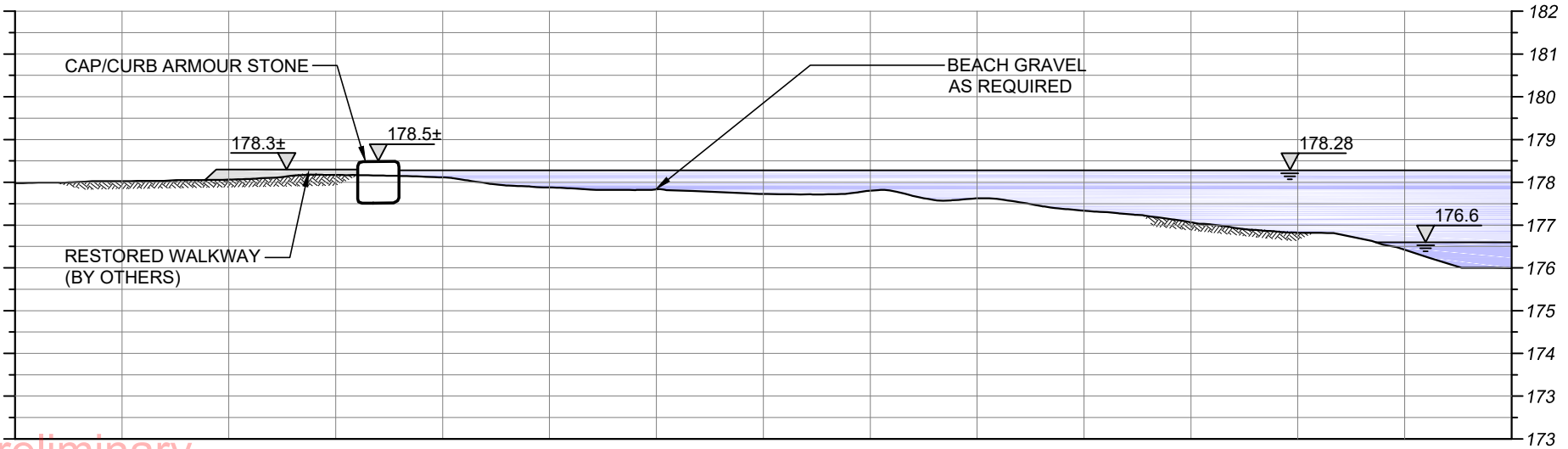
SHOREPLAN

Figure 3
Raymond A. Barker Water Treatment Plant
Typical Revetment Cross-Sections



Scale 1:150

Revetment Section 3



Scale 1:150

Gravel Beach Section 4

NOT FOR CONSTRUCTION

Project: 20-3441
Scale 1:150

SHOREPLAN

Figure 4
Raymond A. Barker Water Treatment Plant
Typical Revetment Cross-Sections

From:	Juanita Meekins
To:	Mike Ainley
Cc:	emily.martin@saugeenojibwaynation.ca; bertakrichker@gmail.com; Ken Kaden; Heather McGinnity; Sahely, Brian; Alvarez, Laura; mitchell@ainleygroup.com; Jody Marks
Subject:	Re: 120078 RAB EXP- Potential PTTW Amendment and In-Water Works
Date:	Friday, October 1, 2021 9:09:20 AM
Attachments:	image001.png

Good morning Mike,

Thank you for your email with the clarification (clerical amendment). I look forward to this meeting in October when a time and date is available.

Respectfully,
Juanita

On Thu, Sep 30, 2021 at 9:20 AM Mike Ainley <ainley.m@ainleygroup.com> wrote:

> Good Morning Juanita, Emily and Berta,
>
> Prior to the upcoming site visit to the Collingwood water treatment plant site in October discussed at our workshop, we would like to make you aware of some potential topics of interest that have recently arisen.
>
> First, the current PTTW authorizes daily water taking up to 68.25 ML/d. The MECP has advised that they consider increasing the instantaneous flow rate on the PTTW to be a clerical amendment, as long the total daily water taking does not exceed 68.25 ML/d. Increasing the permitted instantaneous flow rate would allow a portion of the daily water takings to be used for in-plant backwashing and cleaning of the membrane filters, which is required as part of the treatment process, and increase the Phase 1 expansion treatment capacity without exceeding the existing permitted daily water taking. The Town intends to move forward with this clerical amendment to the PTTW. The timing for an increase in the total daily water taking that would be part of Phase 2 of the plant expansion and beyond the scope of our current work is unknown and is likely still several years out. That process will include additional consultation with SON and other stakeholders.
>
> Second, a report on emergency shoreline repairs completed in November 2019 in consultation with SON and NVCA indicated the potential need for additional stabilization of the shore protection. Our coastal engineer (Shoreplan) is investigating this and may provide some insights during the upcoming site visit.
>
> Finally, potential restoration of the storm drainage to the Bay at the north-east end of the site may be an option to help with stormwater runoff during construction (as shown in the ESR).

We look forward to meeting with you at the plant in October once we have scheduled a time and date. Also attending will be representatives from NVCA, Shoreplan, the Town, AECOM and Ainley.

Mike Ainley, P. Eng., PMP

Vice-President, Corporate Affairs

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Juanita Meekins
Executive Assistant to Resources and Infrastructure
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