New Dundee Water Supply – Iron and Manganese Treatment Upgrades

Schedule “C” Class Environmental Assessment

Virtual Public Consultation Centre #3

File Uploaded on February 8, 2022 to the Region of Waterloo’s website and YouTube Page
Welcome and thank you for watching!

What are the goals of our virtual Public Consultation Centre (PCC)?

- Share how we are improving service to the community.
- Review community and partner feedback from PCC #1 and #2.
- Present treatment facility location requirements and potential locations.
- Evaluate facility locations and select a preferred alternative.
- Answer any questions you may have and provide an opportunity to get involved in the project.

Comments received during this study will be used to confirm the recommended approach for the New Dundee water supply iron and manganese treatment upgrades.
New Dundee water supply system – iron and manganese treatment upgrades

Project Overview

The project follows the Municipal Class Environmental Assessment process (Class EA) to plan the New Dundee water supply system treatment upgrades for iron and manganese.

Why are we doing it?

We are taking a proactive approach to ensure that we can improve service to the community for the present and future. Lower aesthetic drinking water objectives for manganese are expected in the near future.

What does it mean for you?

These upgrades will require a new building for the treatment equipment. To accommodate the building, it is expected that additional property will be required either at the Region’s existing water supply site or at a new site.

There will be no change to the amount of water being taken from the New Dundee water supply wells.

Aesthetic objectives are targets we meet when treating water for taste, odour, and colour.
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Municipal Class Environmental Assessment Process

We are here

Phase 1
Identify problem and / or opportunity.

Phase 2
Develop and evaluate solutions. Identify preferred solution.

Phase 3
Develop and evaluate design concepts for preferred solution. Identify preferred design.

Phase 4
Environmental Study Report (ESR) 30-day public review.

Phase 5
Implementation of design and construction.

This study is being completed as a Schedule C Class Environmental Assessment (Class EA).

A Class EA is a decision-making process that all municipalities in Ontario follow for building new infrastructure. The process will allow you to follow what is planned and provide opportunities for you to ask questions and provide input.
PCC #1 Review
Presented to the public on June 18, 2020

What was shared?
✓ Introduced the New Dundee water supply system.
✓ Described iron and manganese, and its presence in the New Dundee water supply; as well as its effect on drinking water systems.
✓ Summarized the Class Environmental Assessment (EA) process.
✓ Discussed background studies to be completed for this project.
✓ Presented the project timeline and next steps.

What did we learn from your feedback?
✓ Desire to keep any possible future building size to a minimum.
✓ Some stakeholders requested more information about manganese in drinking water systems.

Want to learn more?
A video of PCC #1 can be found here:
https://www.youtube.com/watch?v=Jw-FT7g5i0&t=1s&ab_channel=RegionofWaterloo
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PCC #2 Review
Presented to the public on May 11, 2021

What was shared?

✓ Introduced treatment and residual management technologies for iron and manganese removal.
✓ Provided evaluation criteria to compare the different technologies.
✓ Selected conventional oxidation and filtration as the preferred treatment, with a backwash equalization tank and supernatant recycle as the preferred residual management.
✓ Presented five possible locations for the new facility.

What did we learn from your feedback?

✓ Desire to minimize truck hauling activity and reduce impacts such as noise.
✓ Opinions varied on which of the five locations was preferred for the new location.
✓ Building should positively reflect the aesthetic appeal of the neighbourhood and should not diminish views of the existing farm features.
✓ Desire for designers to minimize footprint of building.

Want to learn more?

A video of PCC #2 can be found here: https://www.youtube.com/watch?v=UUcMmFqYpDg&t=18s&ab_channel=RegionofWaterloo
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Potential Facility Location Alternatives
(presented to public in PCC#2)
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Preliminary Facility Sizing

Based on the preferred treatment and residual management approach, an approximate building layout was determined. The new site should have space for adequate property set-backs, driveway, parking, and landscaping. Based on PCC #1 and 2 feedback, a water needs assessment was conducted to minimize the facility footprint, resulting in a 32% building size reduction.

The proposed facility will contain the following:

- A room that will house the filters, pumps, and process piping
- An electrical room
- A chemical room
- Underground tankage for the treatment and residual process

This sketch shows approximate sizing of the facility.
The facility is shown in each of the five locations on the next slide.
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Potential Facility Layouts for Each Location

Location Alternative No. 1

Location Alternative No. 2

Location Alternative No. 3

Location Alternative No. 4

Location Alternative No. 5
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Pre-Screening of Location Alternatives

Two location alternatives will not proceed to detailed evaluation because they do not meet project objectives, come with a prohibitive cost, provide construction challenges and operational difficulties and would increase traffic along Alderview Drive.

<table>
<thead>
<tr>
<th>Location Alternatives 4 and 5</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Over 200 m from the existing well site.</td>
<td>Location alternatives 4 and 5 will not be considered for detailed evaluation.</td>
</tr>
<tr>
<td>• Results in a remote treatment site, adding operational and maintenance complexities. Would increase operation traffic along Alderview Drive.</td>
<td></td>
</tr>
<tr>
<td>• Excessive underground utility construction along Alderview Drive.</td>
<td></td>
</tr>
<tr>
<td>• Requires new emergency standby power, hydro power, telecommunication connections, and storm sewer connections.</td>
<td></td>
</tr>
</tbody>
</table>
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Archaeological Assessments

Each of the three short-listed location alternatives contains equal archaeological potential. Field investigations as part of a Stage 2 Archaeological Assessment (AA) will be completed during the design phase for the preferred location. This will determine if there are any items on the property of archaeological potential.

Legend

- Stage 2 AA (required) Test Pit Survey at 5-metre intervals
- Stage 2 AA (required) Pedestrian survey a 5-metre intervals
- Disturbed Area

Location No. 1
Location No. 2
Location No. 3
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Natural Heritage Studies

A barn swallow nest is likely to be in the neighbouring barn, placing each of the short-listed alternatives in a Category 3 area. Additional work, including consultation with the Ministry of the Environment, Conservation and Parks (MECP) is required, but is not expected to limit construction in this area.
Evaluation Criteria

Criteria Scoring

The short-listed facility location alternatives will be evaluated according to the criteria shown below:

**Technical Criteria**
- Provides reliable service.
- Meets current and future needs.
- Aligns with existing and planned infrastructure.
- Aligns with existing and future land uses.
- Aligns with approval and permitting processes.
- Manages and minimizes construction risks.
- Ability to adapt to climate change.

**Natural Environment Criteria**
- Protects environmental features.
- Protects wildlife and species at risk.
- Protects groundwater, streams, and rivers.
- Minimizes climate change impacts.

**Social Criteria**
- Protects health and safety.
- Minimizes impacts to residents and businesses related to noise, odour, traffic, and aesthetics.
- Minimizes impacts to businesses.
- Manages and minimizes construction impacts.
- Protects cultural heritage features.
- Protects archaeological features.

**Financial Criteria**
- Provides low lifecycle costs.
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Location Alternative 1

Features

- North and adjacent to the existing supply system site.
- Existing properties are manicured lawn with some agricultural paddock.
- Least land acquisition required.
- More complex construction techniques required due to proximity to existing wells.
- The 50-year lifecycle cost of this alternative is $8.2 million.
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Location Alternative 2

Features

- Northwest and adjacent to the existing supply system site.
- Existing properties are manicured lawn with some agricultural paddock.
- Possible interconnection with the existing facility.
- Greater open-field space provides some ease of construction.
- The 50-year lifecycle cost of this alternative is $8.2 million.
Location Alternative 3

Features

- South and adjacent to the existing supply system site.
- Existing properties are mostly agricultural paddock.
- Greatest utility and yard piping requirements.
- Greatly hinders the view of the farmscape from the Alderview Drive and Main Street intersection.
- The 50-year lifecycle cost of this alternative is $8.3 million.
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## Evaluation of Location Alternatives

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Location Alternative 1: North Site</th>
<th>Location Alternative 2: Northwest Site</th>
<th>Location Alternative 3: South Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
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<tr>
<td>Social/cultural</td>
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<td><img src="image1" alt="Alignment" /></td>
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<tr>
<td>Natural environment</td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
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<tr>
<td>Financial (Lifecycle)</td>
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<td><img src="image1" alt="Alignment" /></td>
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<tr>
<td>Overall Score</td>
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<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
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<tr>
<td>Recommended Site</td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
<td><img src="image1" alt="Alignment" /></td>
</tr>
</tbody>
</table>

**Legend**
- ![Alignment](image1) Very low alignment with criteria
- ![Alignment](image1) Not well aligned with criteria
- ![Alignment](image1) Somewhat aligned with criteria
- ![Alignment](image1) Well aligned with criteria
- ![Alignment](image1) Very well aligned with criteria
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**Highest Scoring Location Alternative**

The preliminary scoring indicates Location Alternative 2 as the highest scoring at this time. Location Alternative 2 is recommended as the preferred site with the size and configuration of the new facility further optimized within the area to minimize impacts. A sample rendering is shown on the next slide.

**Question for our stakeholders**

Are there any other aesthetic features you would like us to consider?

Do you have any comments or suggestions for the next stage?
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Conceptual Architectural Rendering Sample
Next Steps in the Class EA Process...

Review Background Information
- Collect data, review existing conditions, and identify project constraints and opportunities.

Public Consultation Centre #1
- Introduce the project.

Develop and Evaluate Alternatives
- Develop and evaluate alternatives to meet the New Dundee water supply system’s needs including treatment approach and key site requirements.

Identify Preferred Alternative
- Identify the preferred alternative based on the evaluation process (the preferred alternative is the option that is considered the best overall solution).

Public Consultation Centre #2
- Obtain input on the preferred treatment approach.

Develop and Evaluate Alternative Design Concepts
- Develop and evaluate the design of the preferred alternative including the facility location and site considerations.

Public Consultation Centre #3
- Obtain input on the facility location and size.

Reporting
- Prepare the Environmental Study Report to document project information and the decision-making process.

We are here

Provide approval to file the Environmental Study Report for a 30-day review period for public comment.

An opportunity for the public to provide input
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After the Class EA

Upon completion of the Class EA there are several stages for this project that will need to be completed before the new facility is built. The following is an estimate of the project timeline. This timeline may change as the project progresses.

Conceptual Design (2022)
- The Region needs to acquire land based on the preferred location.
- A preliminary geotechnical and hydrogeological investigation will be completed on site to look at the property’s soil and groundwater conditions.

Detailed Design (2027 to 2029)
- Several investigations will be conducted to support the detailed design including a site survey and a Stage 2 archaeological assessment.
- The exterior of the facility will be finalized in detailed design.

Construction (2029 to 2031)
- The facility will be a one-storey building.
- The site will include a paved driveway and landscaping to match the surrounding area.
Thank you for your participation!

Get Engaged!
We are nearing the end of the New Dundee water supply system - iron and manganese treatment upgrades Class EA.

Questions, comments, or want to stay up to date?
Please contact Kaoru or Kirk

Kaoru Yajima, P.Eng.
Sr. Engineer, Water Services
Region of Waterloo
150 Frederick Street, 7th Floor
Kitchener, Ontario N2G 4J3
Tel: 519-575-4757 ext. 3349
Email: kyajima@regionofwaterloo.ca

Kirk Worounig, P.Eng., PMP.
Project Manager
R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto, Ontario M2J 4Z8
Tel: 416-497-8600 ext. 1246
Email: kworounig@rvanderson.com

More information, including copies of project notices and Public Consultation Centre materials including a transcript of this virtual presentation can be found at:
https://www.regionofwaterloo.ca/waterprojects