TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON SEPTEMBER 22, 2020**
FROM:	**KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR - ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER**
SUBJECT:	**ENVIRONMENTAL ASSESSMENT PROCESS - UPDATES AND PREFERRED METHOD TO EXPAND THE W12A LANDFILL**

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer, and with the support of the Waste Management Working Group, the "Alternative 1 - Vertical Expansion Over Existing Footprint" **BE APPROVED** as the preferred landfill expansion alternative with respect the Environmental Assessment (EA) for the expansion of the W12A Landfill and be referred to in the final phase of public consultation (community engagement) for the EA.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Proposed Expansion of the W12A Landfill Site: Updated Environmental Assessment Engineering Consulting Costs (October 22, 2019 meeting of the Civic Works Committee (CWC), Item #2.12)
- Proposed Terms of Reference - Environmental Assessment of the Proposed W12A Landfill Expansion (September 25, 2018 meeting of the CWC, Item #3.1)
- Draft Proposed Terms of Reference – Environmental Assessment of the Proposed W12A Landfill Expansion (April 17, 2018 meeting of the CWC, Item #3.3)

Relevant reports that can be found at www.london.ca under City Hall (Meetings – Advisory and other Committee Meetings) include:

- Decision Report 10: Environmental Assessment Process – Revised (August 13, 2020 meeting of the Waste Management Working Group (WMWG), Item #4.1)
- Environmental Assessment Process (December 18, 2019 meeting of the WMWG, Item #4.2)
- Proposed Amended Terms of Reference (April 18, 2019 meeting of the WMWG, Item #3.2)
- Proposed Terms of Reference (August 15, 2018 meeting of the WMWG, Item #2.1)
- Draft Proposed Terms of Reference (July 13, 2018 meeting of the WMWG, Item #3.2)
- Preliminary Proposed Draft Terms of Reference (March 8, 2018 meeting of the WMWG, Item #2.1)
- Terms of Reference Outline and Next Steps (January 18, 2018 meeting of the WMWG, Item #9)

COUNCIL'S 2019-2023 STRATEGIC PLAN

Municipal Council has recognized the importance of solid waste management in its 2019-2023 - Strategic Plan for the City of London as follows:

Building a Sustainable City
London has a strong and healthy environment
- Build infrastructure to support future development and protect the environment

Growing our Economy
London is a leader in Ontario for attracting new jobs and investments

- Build infrastructure to support future development and retain existing jobs

Leading in Public Service
Londoners experience exceptional and valued customer service
- Increase community and resident satisfaction of their service experience with the City

BACKGROUND

PURPOSE

This report provides the Civic Works Committee (CWC) with an update on the status of the Environmental Assessment process for the expansion of the W12A Landfill and seeks approval for the preferred Alternative Method (vertical landfill expansion) to be referred to in the final phase of public consultation (community engagement). The Waste Management Working Group supported vertical expansion as the preferred Alternative Method to expand the landfill at its August 13, 2020 meeting.

CONTEXT

An Environmental Assessment (EA) under the EA Act is a planning study that assesses environmental effects and advantages and disadvantages of a proposed project. The environment is considered in broad terms to include the natural, social, cultural and economic aspects of the environment.

There are different classes (types) of EAs depending on the type and complexity of the undertaking (project). The most rigorous EA is an Individual EA. An Individual EA is less prescribed than the more common class EAs and is used for large-scale projects like landfill sites.

The first phase of the Individual EA process is the development and approval of a Terms of Reference (ToR) by the Minister of the Environment, Conservation and Parks. The ToR becomes the framework or work plan for the preparation and review of the Individual EA. The ToR allows the proponent to produce an EA that is more direct and easier to be reviewed by interested persons. The Amended ToR for the proposed expansion of the W12A Landfill was approved on July 30, 2019.

The second phase of the Individual EA process is completion and approval of an EA. The proponent completes the EA in accordance with the approved ToR.

Addressing the Need for Action on Climate Change

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

> *Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change.*

Both the Resource Recovery Strategy and Waste Disposal Strategy (including the EA) address various aspects of climate change mitigation and climate change adaptation. These elements are also a requirement that must be addressed as part of EA documentation.

DISCUSSION

Status of EA

Overview

Completion of the EA study is being undertaken in a series of nine steps which are summarized in Table 1 and described fully in the Amended Terms of Reference. Additional details on Steps 2 to 6 are provided following Table 1.

Table 1: Status of Environmental Assessment

Step listed in Terms of Reference		Description/Explanation	Status
1	Characterize the existing environmental conditions	Complete technical studies (e.g., groundwater, surface water, traffic, air quality, archeology, etc.) on the area.	Complete
2	Identify the 'Alternative Methods' of landfill expansion	Develop different vertical (higher) and/or lateral (northern or eastern) expansion alternatives.	Complete
3	Qualitative and/or quantitative evaluation of 'Alternative Methods'	Determine the potential impact of each of the different expansion alternatives on the study areas.	Complete
4	Compare the 'Alternative Methods' for landfill expansion and identify the preferred alternative	Select the expansion alternative that has the least overall impact.	Complete
5	Determine the net effects of the preferred alternative	Detailed assessments will be completed on the potential impacts from the preferred expansion alternative.	90% Complete
6	Describe the preferred 'Alternative Method' for landfill expansion	Prepare a detailed description of the preferred expansion alternative and confirm how leachate (water that has contacted garbage) will be managed.	90% Complete
7	Consideration of climate change	Look at how climate change (e.g., larger rainfall events) may impact the project and how to reduce the project's contribution to climate change.	50% Complete
8	Cumulative Impact Assessment	Consider the cumulative impact of expansion of the W12A Landfill with other facilities or activities in the area.	25% Complete
9	Preparation of the EA Study Report	Prepare the EA Study Report for review by stakeholders.	25% Complete

<u>Step 2: Identify the 'Alternative Methods' of Landfill Expansion</u>

Three Alternative Methods (expansion alternatives) were developed and presented at the December 2019 WMWG meeting. The three expansion alternatives are:

- Alternative 1 – Vertical Expansion Over Existing Footprint
- Alternative 2 – Horizontal Expansion to the North and Vertical Expansion Over Part of the Existing Footprint
- Alternative 3 – Horizontal Expansion to the East and Vertical Expansion Over Part of the Existing Footprint

The three Alternative Methods were presented to the public as part of Open House #3 (February 2020) and related engagement matters following Open House #3.

<u>Step 3: Qualitative or quantitative evaluation of 'Alternative Methods and</u>
<u>Step 4: Compare alternatives and identify the preferred alternative</u>

The three landfill expansion alternatives were compared across a number of environmental, social and technical considerations. Details of the comparison are provided in Appendix A (a separate draft Section 7.0, Evaluation and Comparison of Landfill Expansion Alternatives, from the draft Environmental Assessment Study Report (EASR) for the proposed expansion of the W12A Landfill. This work is about 90%

complete as of September 10, 2020) and summarized in Table 2 below (✓ means least impact).

Based on this comparison, it was determined that *Alternative 1 – Vertical Expansion Over Existing Footprint* was the preferred alternative.

Table 2: Comparison of Landfill Expansion Alternatives

Category	Component	Sub-component	Landfill Expansion Alternative (✓ means least impact)			Public Ranking Group
			1	2	3	
Environmental	Atmosphere	Air quality (dust, odour and GHG)	✓			More important
		Noise	✓			Less important
	Biology	Aquatic ecosystems	✓			More important
		Terrestrial ecosystems	✓			More important
	Geology and Hydrogeology	Groundwater quality	✓			More important
	Surface Water	Surface water quality	✓			More important
		Surface water quantity	✓			Important
Social	Agriculture	Agriculture	✓			Important
	Archaeology	Archaeology	✓		✓	Less important
	Cultural Heritage	Cultural Heritage Resources	✓	✓	✓	Less important
	Land Use	Current & planned future land uses	✓			Important
	Socio-economic	Local Economy		✓	✓	More important
		Residents and Community	✓			More important
	Transportation	Traffic	✓	✓	✓	Less important
	Visual	Visual			✓	Less important
Tech-nical	Design and Operations	Technical Considerations			✓	Important
		Financial	✓			Important

As shown in Table 2, the main advantages of Alternative 1 are:

- Highest degree of groundwater protection;
- Best alternative to limit odours;
- Fewest changes to existing stormwater management system;
- Least potential for air quality, archaeology, agricultural, aquatic ecosystem, community, land use, noise and terrestrial ecosystem impacts; and
- Lowest capital cost alternative. All three alternatives have similar operating and maintenance costs except for leachate management costs which will be lower for Alternative #1.

The main disadvantages of Alternative #1 are:

- Greatest visual impact; and
- More complex design (more engineering infrastructure required to store leachate).

All three alternatives were considered to have similar transportation, heritage and cultural potential impacts.

Step 5 - Determine the net effects of the preferred alternative

Detailed impact assessments of future environmental effects associated with the preferred 'alternative' (assuming that conceptual design mitigation measures are in place) are required for some environmental components but not for others.

Summarized on Table 3 are the environmental components that require more detailed impact assessments. In addition, Table 3 also highlights the status and key findings of these detailed assessments.

Table 3: Comparison of Landfill Expansion Alternatives

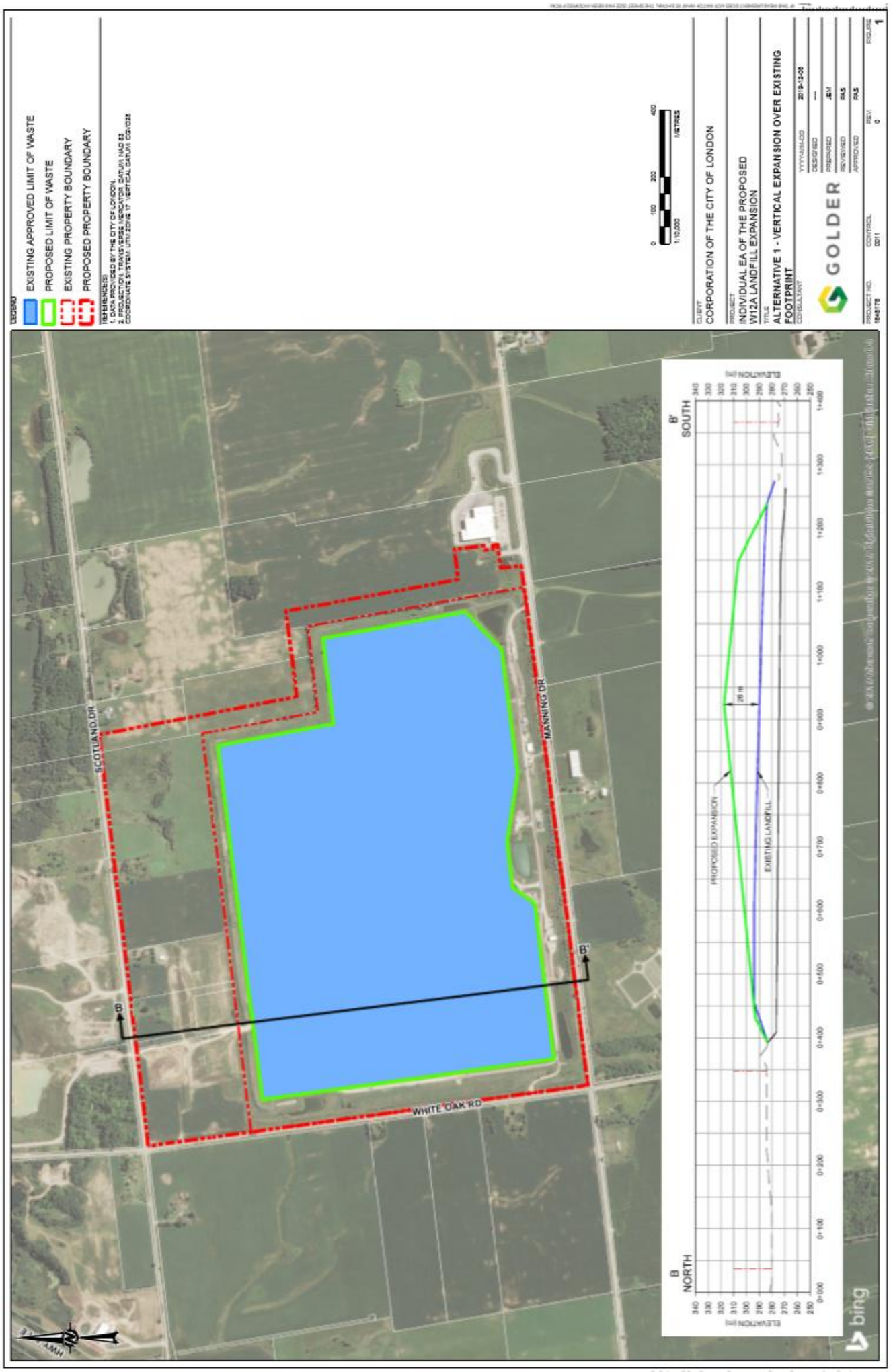
Category	Component	Comments
Environmental	Atmosphere	Detailed impact assessments of noise, odour, health related air quality and noise underway.
	Biology	Mitigation measures being developed to protect Species at Risk and Significant Wildlife habitat located on the landfill footprint and buffer areas.
	Geology and Hydrogeology	Preliminary assessment shows no impact. Preliminary assessment currently being reviewed by First Nations' consultant.
	Surface Water	Assessment has determined the need for stormwater management pond improvements.
Social	Agriculture	No detailed assessment required.
	Archaeology	Mitigation measures required for significant archaeology site located within on-site buffer land.
	Cultural Heritage	No detailed assessment required.
	Land Use	No detailed assessment required.
	Socio-economic	No detailed assessment required.
	Transportation	Assessment underway to determine the need (if any) for roadway upgrades.
	Visual	Mitigation measures being developed to reduce visual impact.
Tech-nical	Design and Operations	Design enhancements included to improve leachate management and landfill gas capture.

Step 6 - Describe the preferred 'Alternative Method' for landfill expansion

A detailed description of the preferred alternative will be included in the EA Study Report. Figure 1 is a plan view of the proposed expansion showing the new property boundary.

A brief summary of the key features of the preferred alternative are listed following Figure 1.

Figure 1 - Alternative 1 – Vertical Expansion Over Existing Footprint



- The landfill will be developed in a series of eight cells each lasting 2.5 to 3.5 years plus one cell for the non-decomposable portion of the waste stream (e.g., street sweepings).

- Filling will start on southern portion of landfill to maximize visual screening for nearby properties.

- Changes are proposed to the final cover design.

Leachate Control and Management

- Existing leachate perimeter collection system around the older portion of landfill will be replaced with a new perimeter collection system with finger drains (made from stone/gravel) extending into the waste to control leachate mounding.

- Additional leachate storage will be added to prevent off-site pumping of leachate when Greenway Wastewater Treatment Plant or Dingman Pumping Station is in a bypass situation.

Groundwater Protection Measures

- Additional groundwater protection measures may be needed to prevent exceeding groundwater quality guideline for non-health related parameter (chlorides) in several hundred years. A number of additional protection measures are currently being examined.

Landfill Gas Control and Management

- New larger landfill gas flare will be required within the next 5 to 8 years.

- Current landfill gas control design is based on vertical wells. Landfill expansion design will be based having both vertical wells and horizontal collectors.

Stormwater Management

- Upgrades will be made to all four existing ponds.

- Upgrades include increasing the size of the ponds and modifications to the outlet control structures.

Ancillary Components

- All existing/buildings will be replaced/upgraded and a larger public drop-off area constructed.

- Permanent asphalt road will replace seasonal road on the north and east sides of the landfill.

Preliminary Estimated Direct Landfill and Ancillary Estimated Costs

- Preliminary estimated capital costs have been prepared based on available engineering and scientific technical data. The preliminary estimates will be reviewed with the completion of detailed EA studies and with *Environmental Protection Act* and *Ontario Water Resources Act* technical studies. The additional groundwater protection measures currently has the widest cost range due to the level of complexity at this stage (Table 4).

- The preliminary estimated direct capital cost of the landfill is between $53,300,000 to $88,400,000 (in $2020) (Table 4).

- The preliminary estimated capital cost of potential ancillary features whose cost would be funded directly or indirectly by others is between $17,000,000 and $25,400,000 (in $2020) (Table 4).

- The preliminary estimated direct landfill capital cost translates to approximately $5.50 to $9 per tonne of waste disposed of (excluding ancillary features funded by others as well as any financing costs or the cost of additional properties purchased for buffer).

- It is expected that there will be no changes required to the four year capital budget or the long term capital budget (next 25 years) for the proposed landfill expansion. Some changes may be required to the 10 year capital budget as more costs are expected to incur between years 4 and 10 of the expansion than originally anticipated.

Table 4: Preliminary Estimated Capital Cost of Landfill Expansion

	Preliminary Estimated Cost		
List of Capital Items	**Low**	**Medium**	**High**
Direct Landfill Capital Costs			
Environmental Protection Act (EPA), *Ontario Water Resources Act* (OWRA) Approvals	1,200,000	1,500,000	1,800,000
Leachate Management	3,800,000	4,800,000	5,800,000
Groundwater Protection Measures	2,000,000	5,000,000	9,000,000
Final Cover	9,400,000	11,800,000	14,200,000
Landfill Gas Management	13,400,000	16,800,000	20,200,000
Earth Works, Roadways, Landscaping	1,800,000	2,300,000	2,800,000
Stormwater Management	1,000,000	1,200,000	1,400,000
Facilities (administration building, scalehouse, maintenance building, small vehicle drop-off, etc.)	6,900,000	8,600,000	10,300,000
Subtotal	*39,500,000*	*52,000,000*	*65,500,000*
Engineering at 15% of Subtotal	5,900,000	7,800,000	9,800,000
Contingencies at 20% of Subtotal	7,900,000	10,400,000	13,100,000
Total – Direct Landfill Capital Costs	**$53,300,000**	**$70,200,000**	**$88,400,000**
Ancillary Features (Likely Funded by Other Sources) Capital Costs			
Household Special Waste Depot (a large percentage likely funded through Extended Producer Responsibility, if built)	1,000,000	1,200,000	1,400,000
Renewable Natural Gas Plant (funded through RNG sales, if built)	11,600,000	14,500,000	17,400,000
Subtotal	*12,600,000*	*15,700,000*	*18,800,000*
Engineering at 15% of Subtotal	1,900,000	2,355,000	2,800,000
Contingencies at 20% of Subtotal	2,500,000	3,140,000	3,800,000
Total – Ancillary Features Capital Costs	**$17,000,000**	**$21,195,000**	**$25,400,000**
GRAND TOTAL	**$70,300,000**	**$91,395,000**	**$113,800,000**

Waste Management Working Group (WMWG) Meeting

The WMWG reviewed the assessment of landfill expansion alternatives at its August 13, 2020 meeting and passed the following resolution:

> *…"Alternative 1 - Vertical Expansion Over Existing Footprint"* ***BE SUPPORTED IN PRINCIPLE*** *as the preferred landfill expansion alternative..*

During the Working Group discussion on the assessment of alternatives, a number of items were raised including:

- The need to move to the next step of developing principles, requirements and restrictions for waste that could be delivered to the expanded landfill;
- The need to ensure meaningful and thorough Indigenous community engagement;
- The need to ensure that community engagement for Open House #4 and other engagement opportunities are consistent with best practices and requirements of the COVID-19 pandemic and introduce flexibility to meet community and stakeholder needs;
- The updated approaches to manage leachate at the W12A Landfill;
- Potential implications to the four and ten year capital budgets; and,
- Providing additional details on the assessment of alternatives to CWC and Council (see Appendix A).

Next Steps

The remaining tasks and schedule to complete the EA are summarized in Table 5.

Table 5 – Schedule and Remaining Tasks to Complete EA

Task	Timeline	Comments
Additional Public (Community) Engagement	• August to November 2020	• Second First Nations Workshop in August • Fourth Open House in October • Other engagement opportunities
Complete Detailed Assessments of Preferred Alternative	• September 2020	• Determine the net effects of the preferred alternative (Step 5) • Describe preferred alternative (Step 6) • Consideration of Climate Change (Step 7) • Cumulative Impact Assessment (Step 8)
Prepare Preliminary Draft EA Report	• September to October 2020	• Prepare preliminary draft EA report and send to MECP for comments
Prepare Draft EA Report	• November 2020 to January 2021	• Update report based on MECP comments and prepare Draft EA report • Review of Draft by MECP, Government Review Team (GRT), Stakeholder • Council Approval
Formal Submission of EA Documentation	• February 2021	• Publish required notices and submit to MECP

Table 5 – Schedule and Remaining Tasks to Complete EA

Task	Timeline	Comments
Minister Decision	• March 2021 to September 2021	• The MECP process requires the Minister to make a decision on whether to approve or reject an EA within 30 weeks of submission. This includes the MECP public and agency review period. • A decision by the Minister after 30 weeks is still valid.

It is currently proposed that the fourth Open House planned for October will have both an in-person and a virtual component as in the past. The in-person Open House is tentatively scheduled October 14 and/or October 15. Appropriate COVID-19 safety measures will be in place for the in-person Open House including limiting the number of persons inside at one time, physical distancing, face masks, hand sanitizer, etc. The format for the in-person component will be approved in advance by the City's Senior Leadership Team (SLT).

Like the three previous Open Houses, all materials will be on the City's website with opportunities to ask questions and provide comments.

PREPARED BY:	
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PREPARED AND RECOMMENDED BY:	**CONCURRED BY:**
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c Wesley Abbott, Technical Project Manager

Appendix A (separate report) - draft Section 7.0, Evaluation and Comparison of Landfill Expansion Alternatives, from the draft Environmental Assessment Study Report (EASR) for the proposed expansion of the W12A Landfill