

F.04 Open House #3 Materials



WELCOME

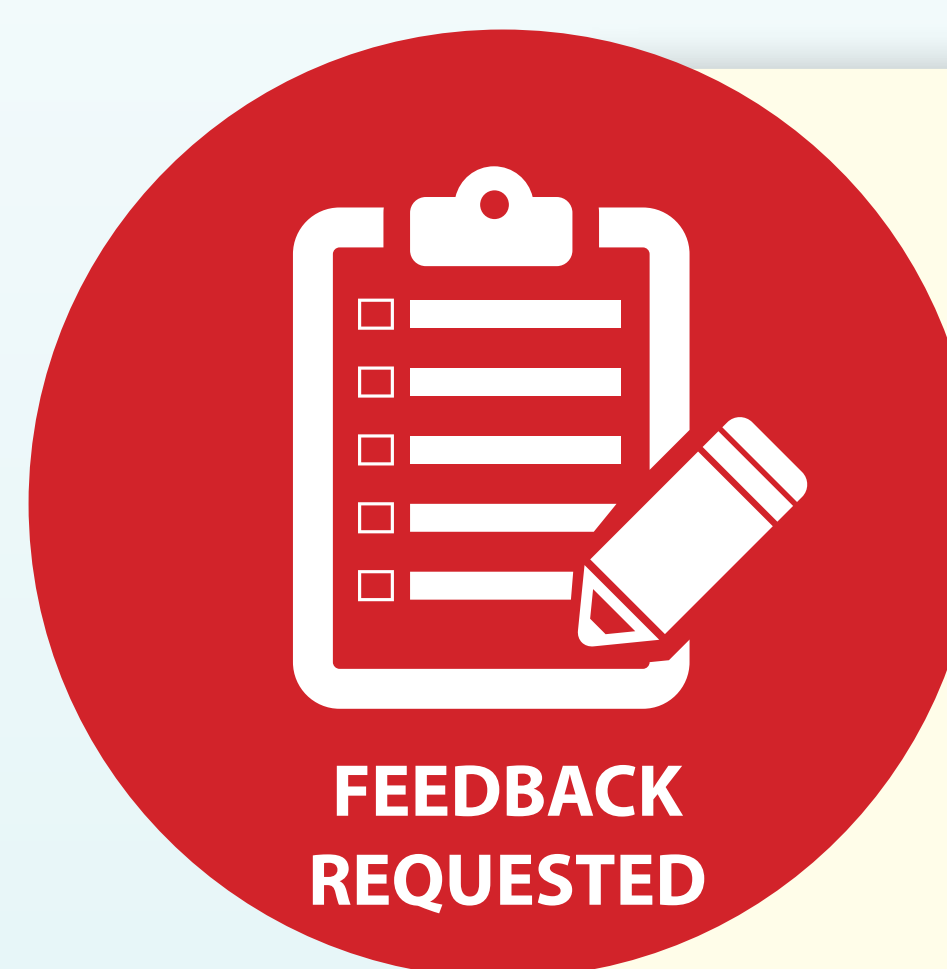
to the Third Series of Open Houses for the Residual Waste Disposal and Resource Recovery Strategies

Today you will learn about:

- Environmental Assessment (EA) for Proposed W12A Landfill Expansion, including:
 - Purpose of the proposed landfill expansion
 - Landfill expansion alternatives (known as 'Alternative Methods')
 - Criteria (known as "environmental components") used to evaluate and compare the 'Alternative Methods'
 - Studies of existing conditions
 - Which landfill expansion alternative is preferred
- Resource Recovery Strategy including:
 - Potential programs/initiatives to get to 60% waste diversion
 - New London Hefty® EnergyBag® Pilot Project
 - Key technologies for advanced diversion and resource recovery
- How you can be involved, stay informed and provide feedback



City staff and project consultants are available to answer your questions and discuss the information presented.



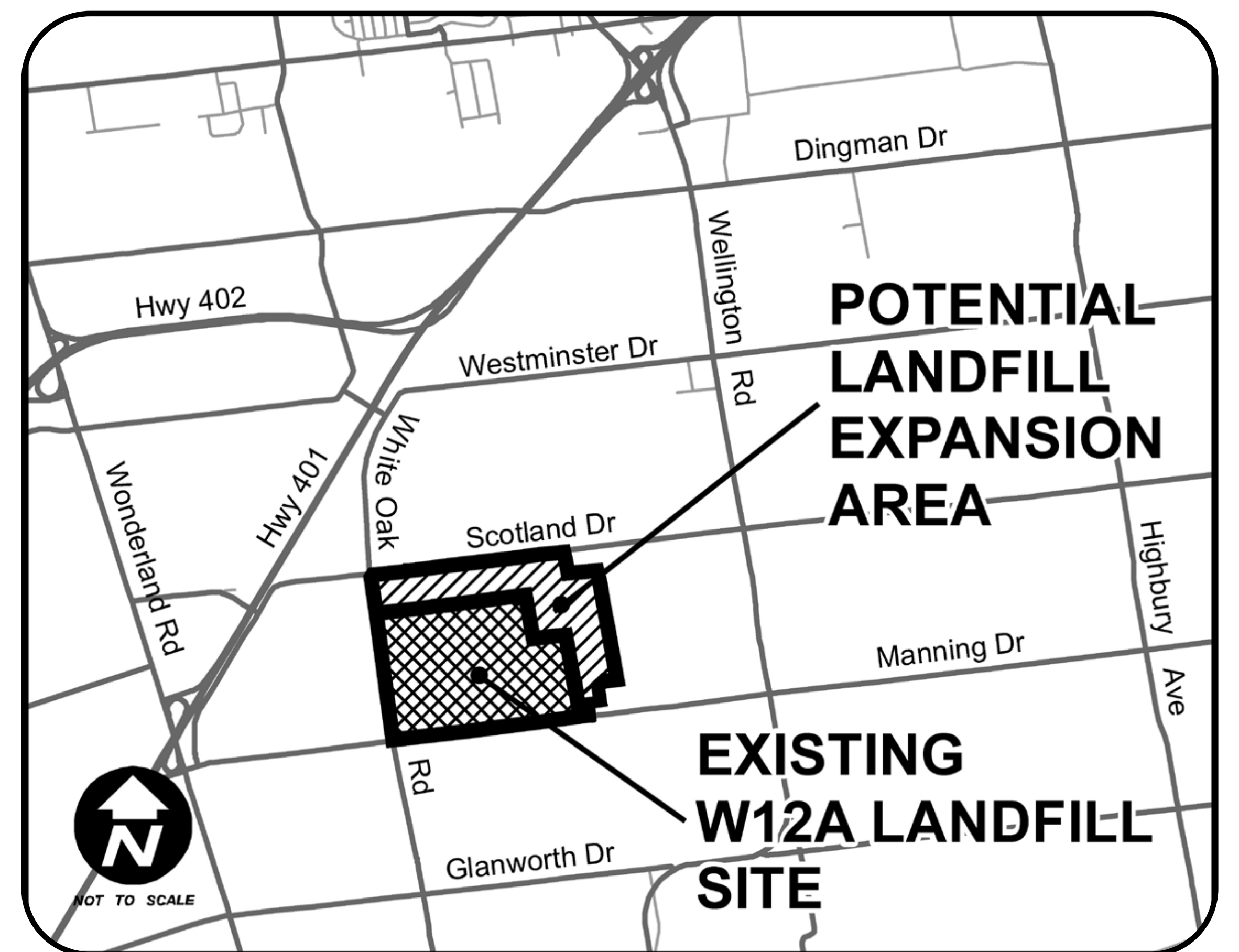
Your questions and comments are important to us. Please complete a feedback form and it will be considered and included in the EA consultation report.



The Proposed Project

Expansion of the W12A Landfill is the overall preferred way to meet London's future waste management planning needs.

This is based on the conclusion of a previous waste management planning study.



The Proposed Project includes:

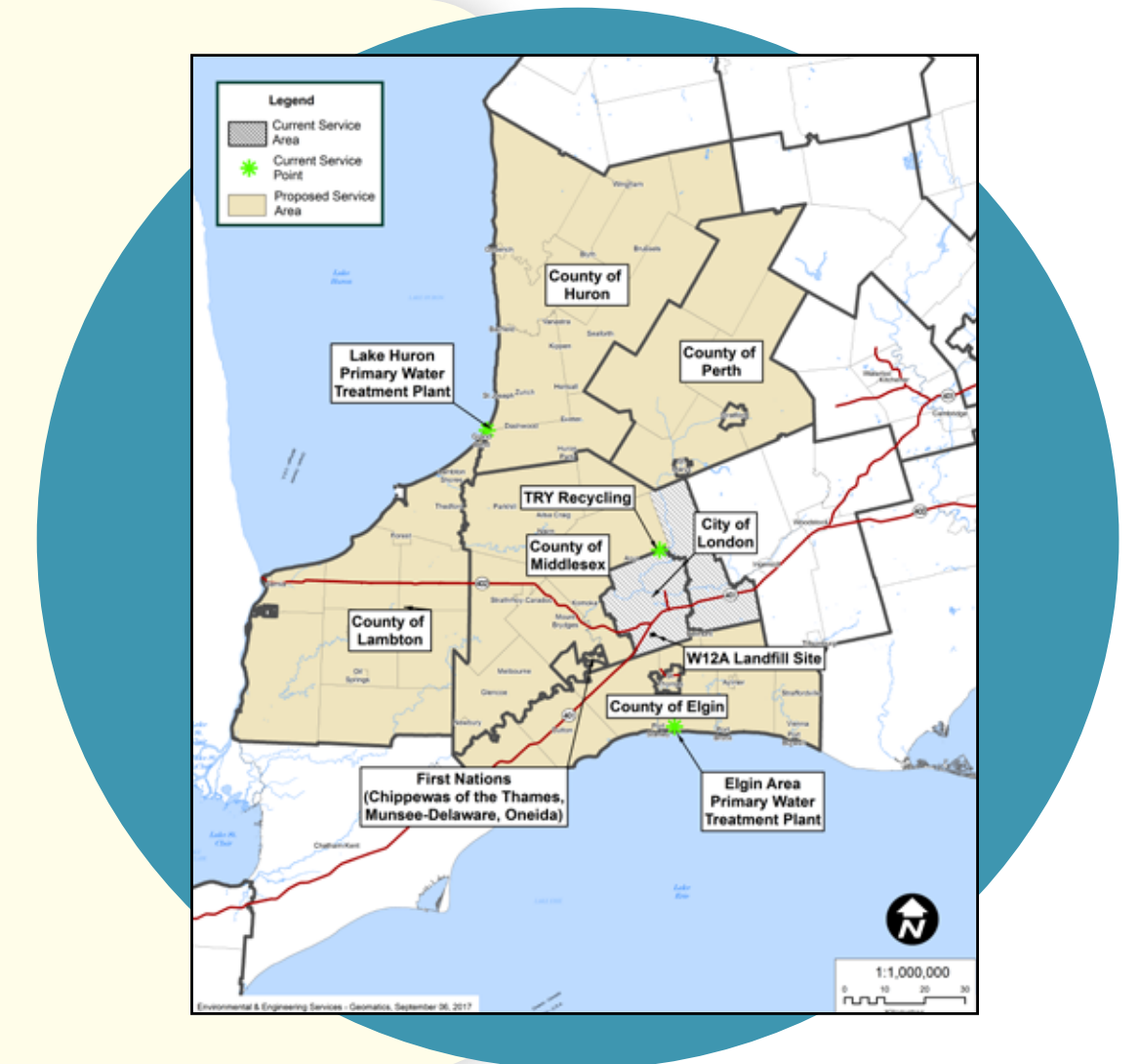
- Expansion of the W12A Landfill (the subject of this EA) within a portion of the Waste Management & Resource Recovery Area.
- The landfill expansion is envisioned to occur above and/or immediately beside the existing W12A Landfill.
- Development of a Resource Recovery Strategy to maximize waste reduction, reuse, recycling, composting and resource recovery in an economically viable and environmentally responsible manner.

Key Landfill Expansion Parameters

Find solutions that will efficiently manage residual waste until 2049 (25 years beyond the current approved capacity of the W12A Landfill).



Allow neighbouring municipalities (Elgin, Huron, Lambton, Middlesex and Perth Counties) to use the expanded landfill under conditions approved by Municipal Council.



Landfill expansion needs to accommodate 9.9 million tonnes (includes 0.5 million tonnes from neighbouring municipalities). This will require 13.8 million cubic metres of additional airspace.



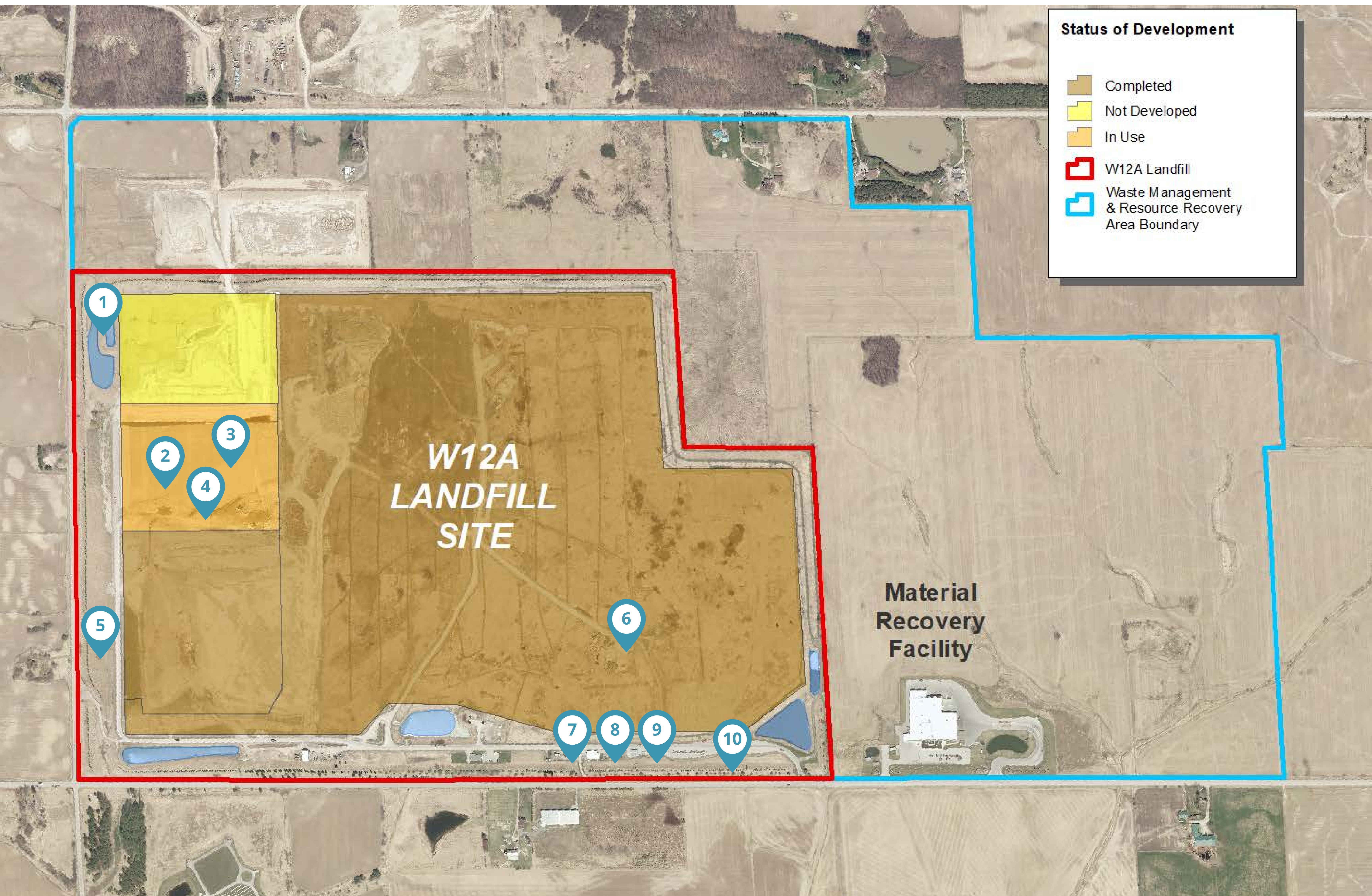
Reduce the maximum annual amount of residual waste that will be accepted at the expanded landfill to 500,000 tonnes from the approved level of 650,000 tonnes.



Commit to increasing the current London residential (household) waste diversion rate to 60% by the end of 2022 from the current rate of 45%.



W12A Landfill – Site Features



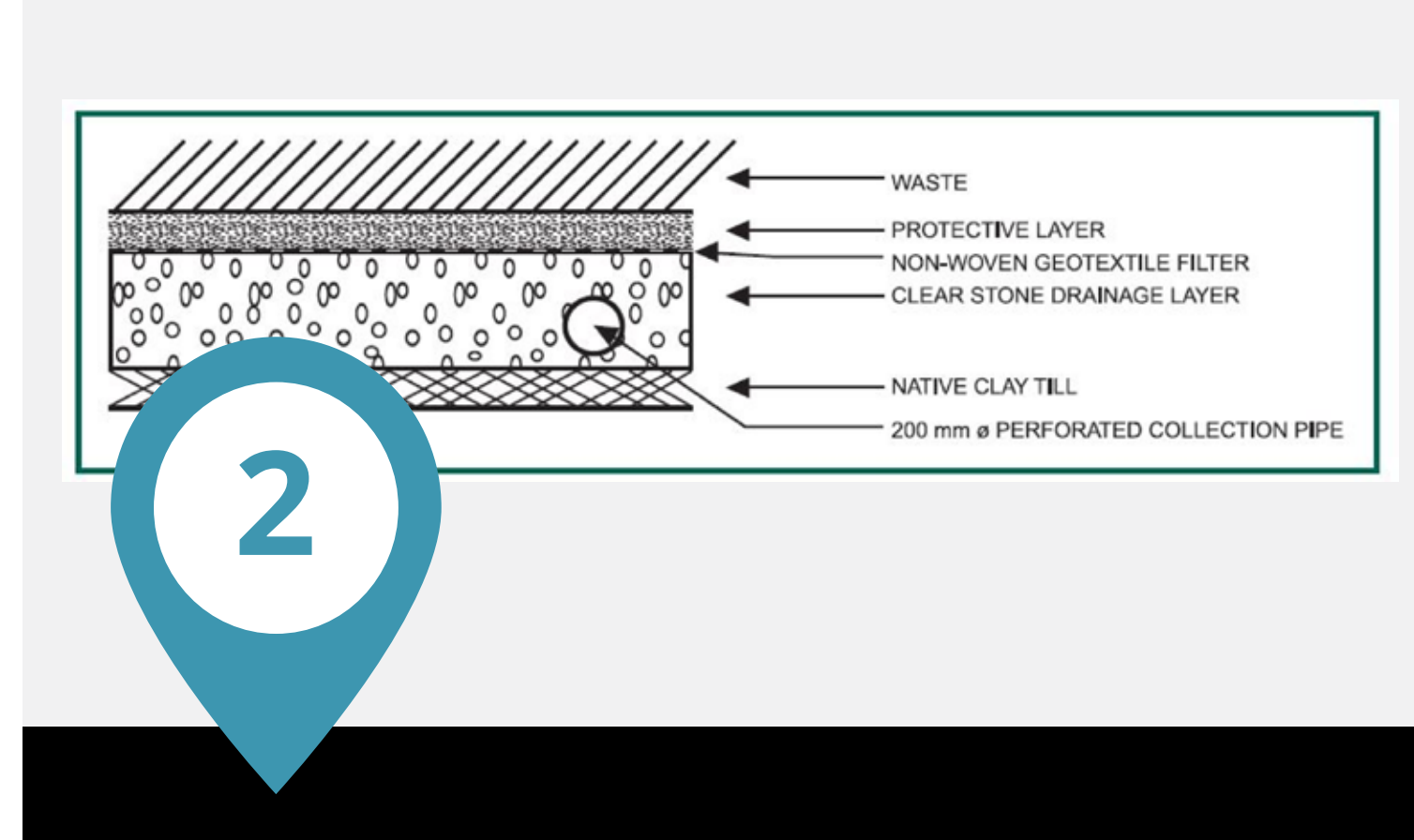
- Approximately 9,000,000 tonnes of waste has been disposed of since 1977
- Current approved waste fill area is 107 hectares
- Expected to reach capacity in 2024

W12A Landfill – Site Features



Stormwater Management Ponds

- 4 ponds
- Provides flow control (flooding) and quality control (sediment removal)



Leachate Collection System

- Leachate is water that has come into contact with the garbage
- More than 10 kilometres of leachate collection pipe and more than 200,000 tonnes of clear stone (drainage layer) installed to date



Portable Litter Fence

- Placed close to where garbage is dumped (tipping face)
- Moved based on wind direction



Fill Area

- Areas where garbage is placed
- Covered with 150 millimetres of material (e.g. soil) at the end of each day



Perimeter Litter Fence & Vegetation Berm

- 2 kilometres of perimeter litter fence
- 4 kilometres of berms



Landfill Gas Collection System

- 70 landfill collection wells
- More than 5 kilometres of gas collection pipe installed to-date



Landfill Gas Flare

- Flares 1,000 to 1,500 cubic feet per minute of landfill gas
- Greenhouse gas destroyed equivalent to removing 26,000 to 40,000 cars from London's roads



Household Special Waste Depot

- 8,000 to 12,000 visitors per year
- 350,000 to 450,000 litres collected per year for off-site recycling/disposal



Public Drop-Off Depot

- 8,000 to 12,000 visitors per year
- 3,000 to 4,000 tonnes/year collected for composting and recycling

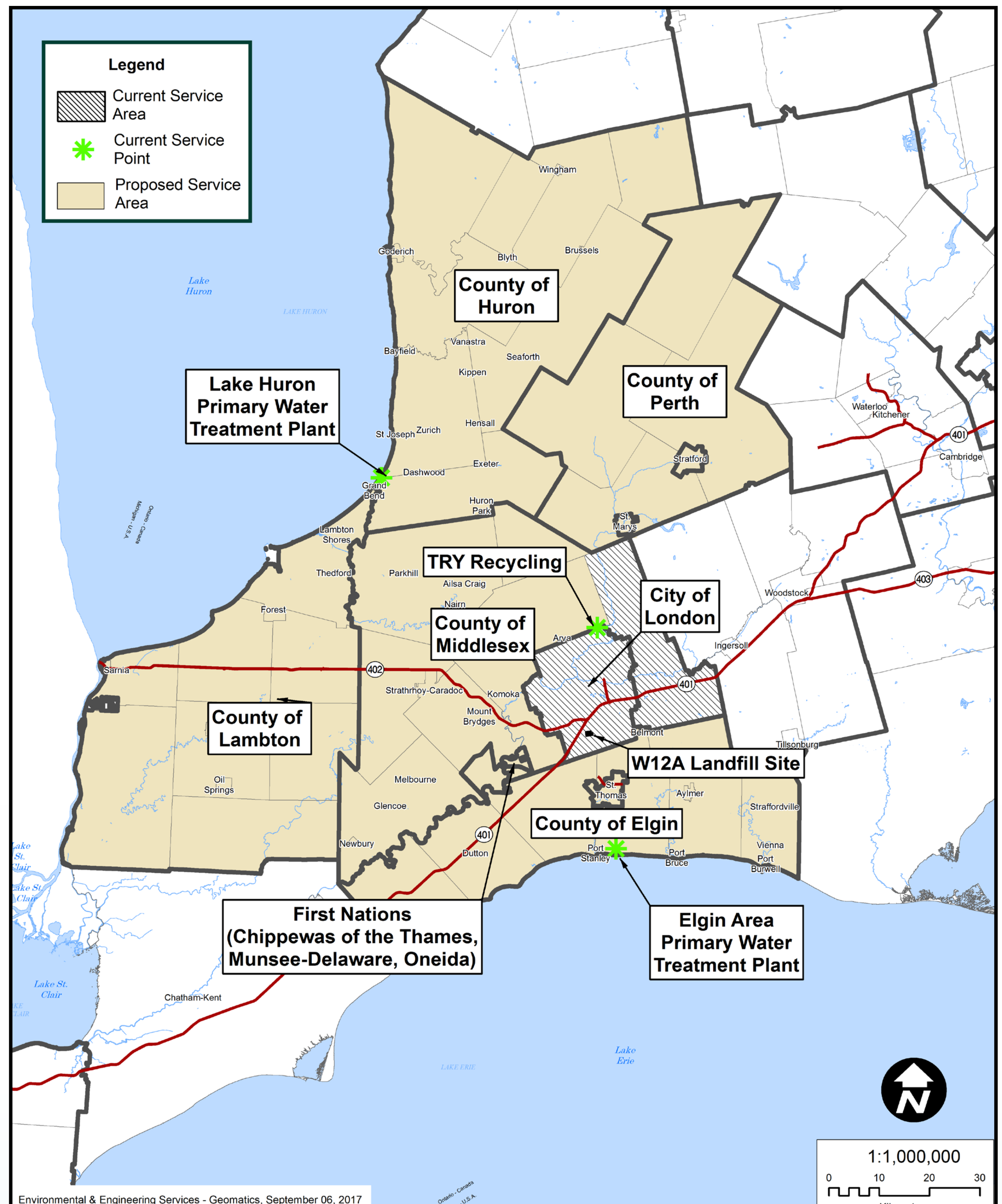


Leachate Pumping Station

- Manages 150,000 to 220,000 cubic metres of leachate per year
- Sends leachate to Greenway Wastewater Treatment Plant to be treated

Proposed Service Area

- In late 2019 the City confirmed with neighbouring municipalities within the proposed regional service area their interest in developing a regional strategy and desire to use the W12A Landfill for residual waste.
- The projected waste from the regional service area is estimated to be 0.5 million tonnes over 25 years.
- Neighbouring municipalities would only be allowed to use the W12A Landfill if approved by the Province during the EA and under conditions approved by Municipal Council.





Proposed Service Area

What conditions (if any) should Council place on other municipalities using the W12A Landfill?



- Accept waste from municipalities with comparable waste diversion programs as London
- Accept waste from municipalities that have reduced waste per capita to a threshold equivalent to or better than London
- Accept waste from municipalities without comparable waste diversion programs as London and charge a higher tipping fee
- Accept waste from businesses that have waste diversion programs in place that meet provincial government requirements
- Restrict total waste received from the expanded service area
- Restrict annual rate of fill from the expanded service area



EA Methodology

Steps	Status
1. Characterize the existing environmental conditions	Complete
Work Plans online for review and comment Indigenous community review	
2. Identify the alternatives for landfill expansion (and incorporate conceptual design mitigation measures)	Complete
3. Evaluation of alternatives	Complete
4. Comparison of the alternatives for landfill expansion for each component of the environment and then identify the overall preferred alternative for landfill expansion	Complete
Open House #3 – Today Indigenous community review	
5. Refine the mitigation measures and determine the net effects on the environment of the preferred alternative for landfill expansion	To be completed
6. Describe the preferred alternative for landfill expansion	To be completed
7. Consideration of climate change	To be completed
8. Cumulative impact assessment	To be completed
Open House #4 – Spring 2020	
9. Preparation of the EA Study Report	Started, to be completed
Various opportunities will be available to comment on the EA Study Report through the City and the Ministry of Environment, Conservation and Parks (MECP)	



Website

getinvolved.london.ca



Meetings

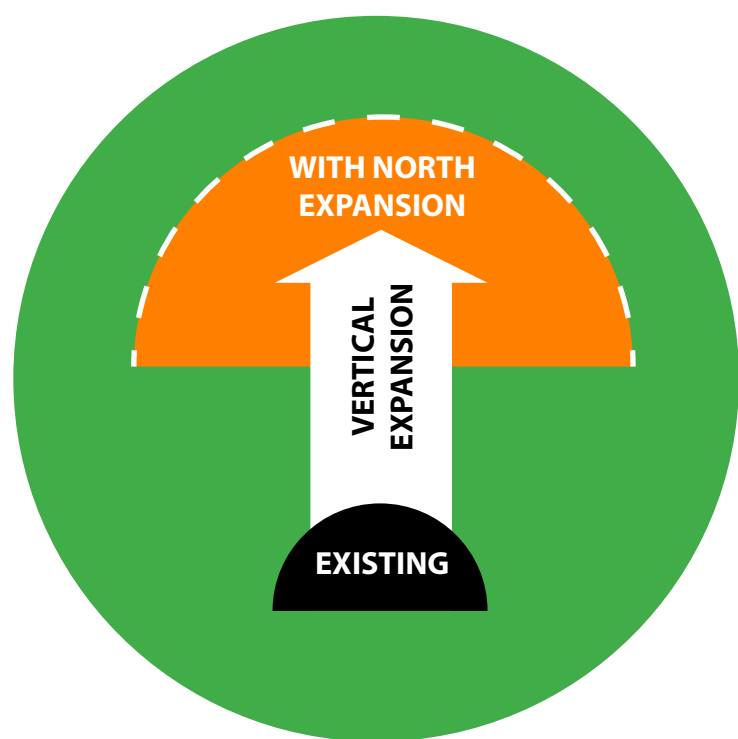
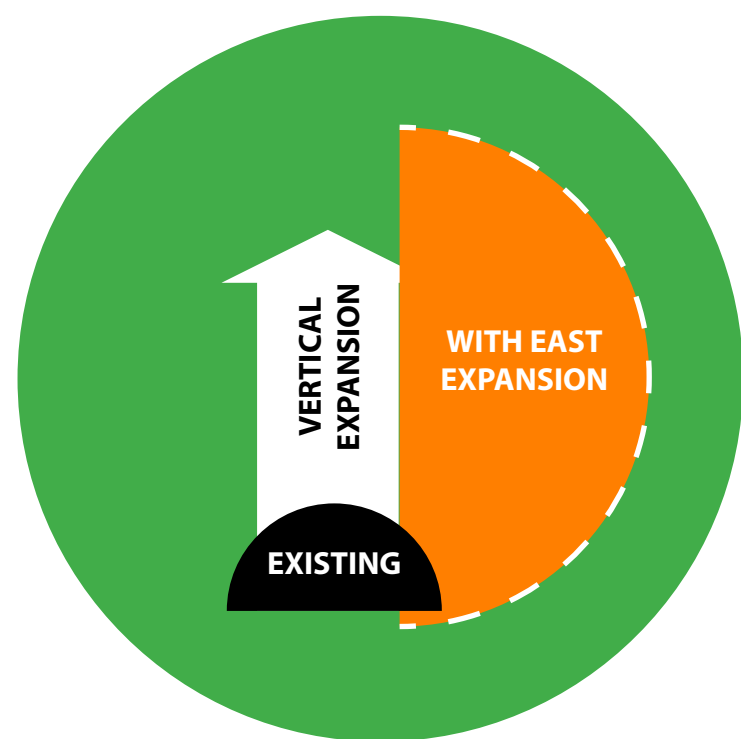
W12A Landfill PLC, Waste Management CLC, Waste Management Working Group



Meet with residents

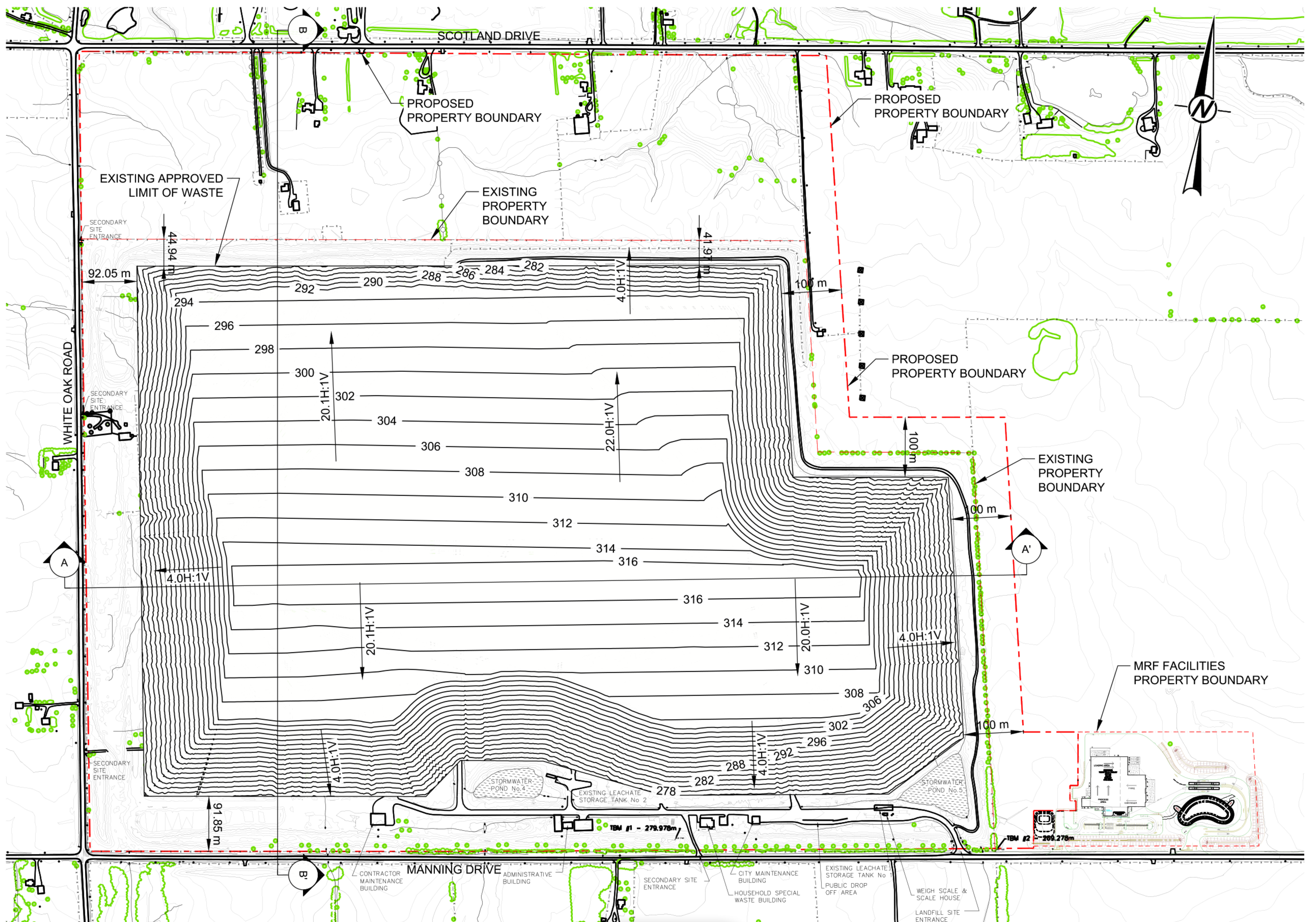
(if requested)

Landfill Expansion Alternatives

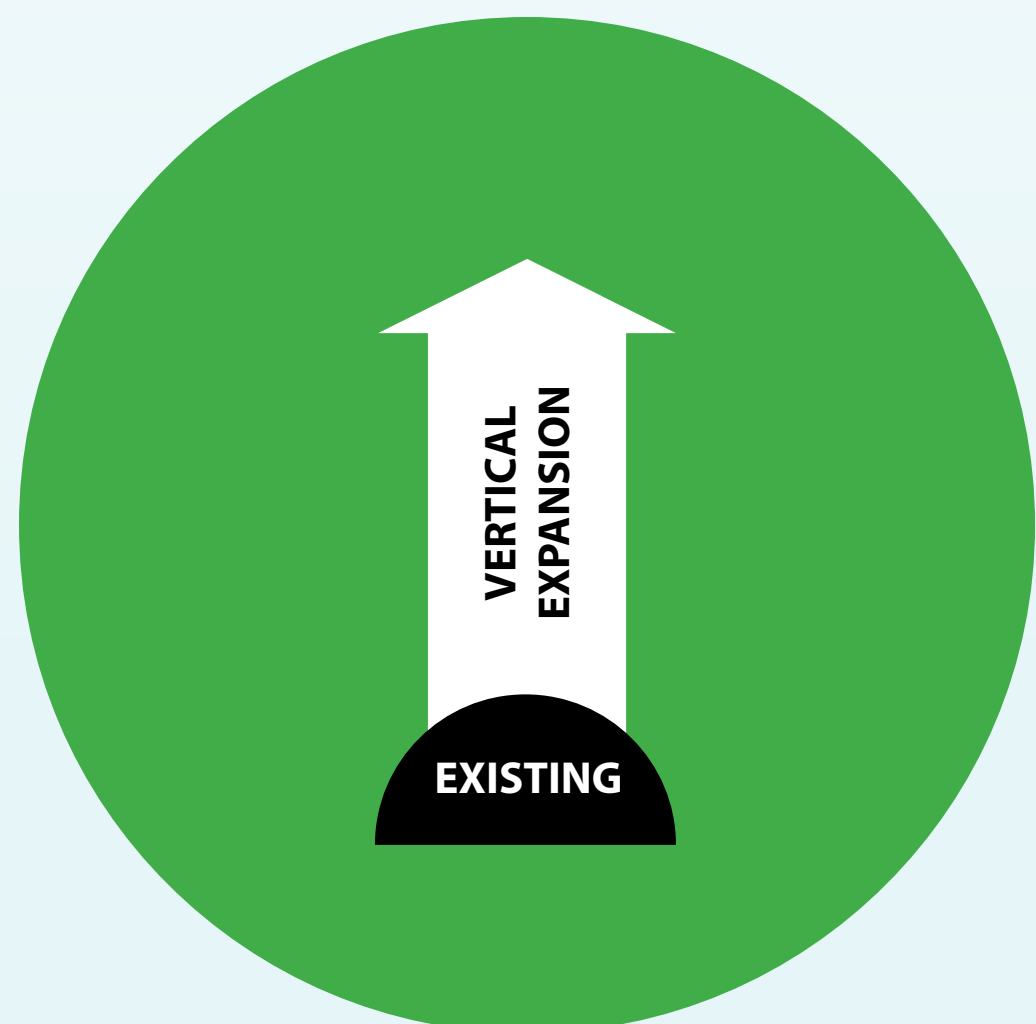
Considerations	Existing Landfill	Alternative 1	Alternative 2	Alternative 3
Description		 Vertical expansion above existing footprint	 Horizontal expansion to north with vertical expansion above existing footprint	 Horizontal expansion to east with vertical expansion above existing footprint
Site Area (hectares)	142	189	189	223
Total Waste Footprint Area (hectares)	107	107	134	135
Height of Peak above Ground Elevation (metres)	17	43	36	38
Volume Excavation (cubic metres)	0	0	2,040,000	821,000
Total Additional Airspace (cubic metres)	–	13,800,000	13,800,000	13,800,000

Alternative 1

Vertical Expansion over Existing Footprint



A'



- Increase peak height of landfill by 26 metres (approximately 9 storeys high)



Proposed Study Areas

Site Study Area:

The existing W12A Landfill Site and adjacent lands where landfill expansion may occur.



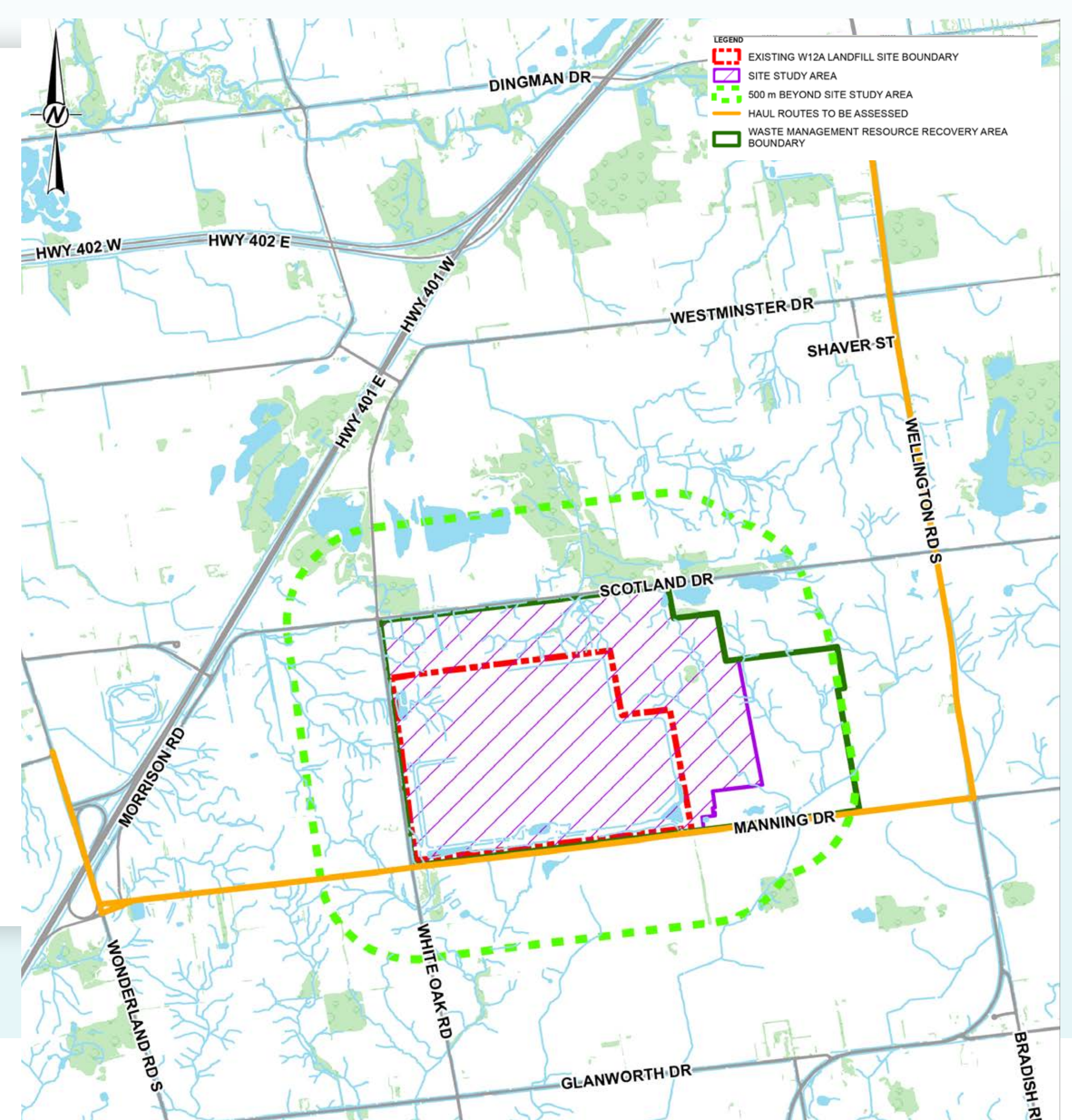
Site-Vicinity Study Area:

The lands in the vicinity of the W12A Landfill extending a minimum of 500 metres in all directions from the limits of the proposed expansion lands.

Haul Route:

Manning Drive between Wellington Road South and Highway 401, Wellington Road South between Dingman Drive and Manning Drive and Wonderland Road South between Decker Drive and Manning Drive. It is expected that this study area is only relevant to the transportation assessment.

Each component will consider and modify their study area as appropriate (e.g. odour study extends 1.5 km from Site Study Area, visual study area extends 2 km from Site Study Area, surface water study area extends to drainage boundaries of sub-watersheds).





Considerations During Comparative Evaluation of Alternatives

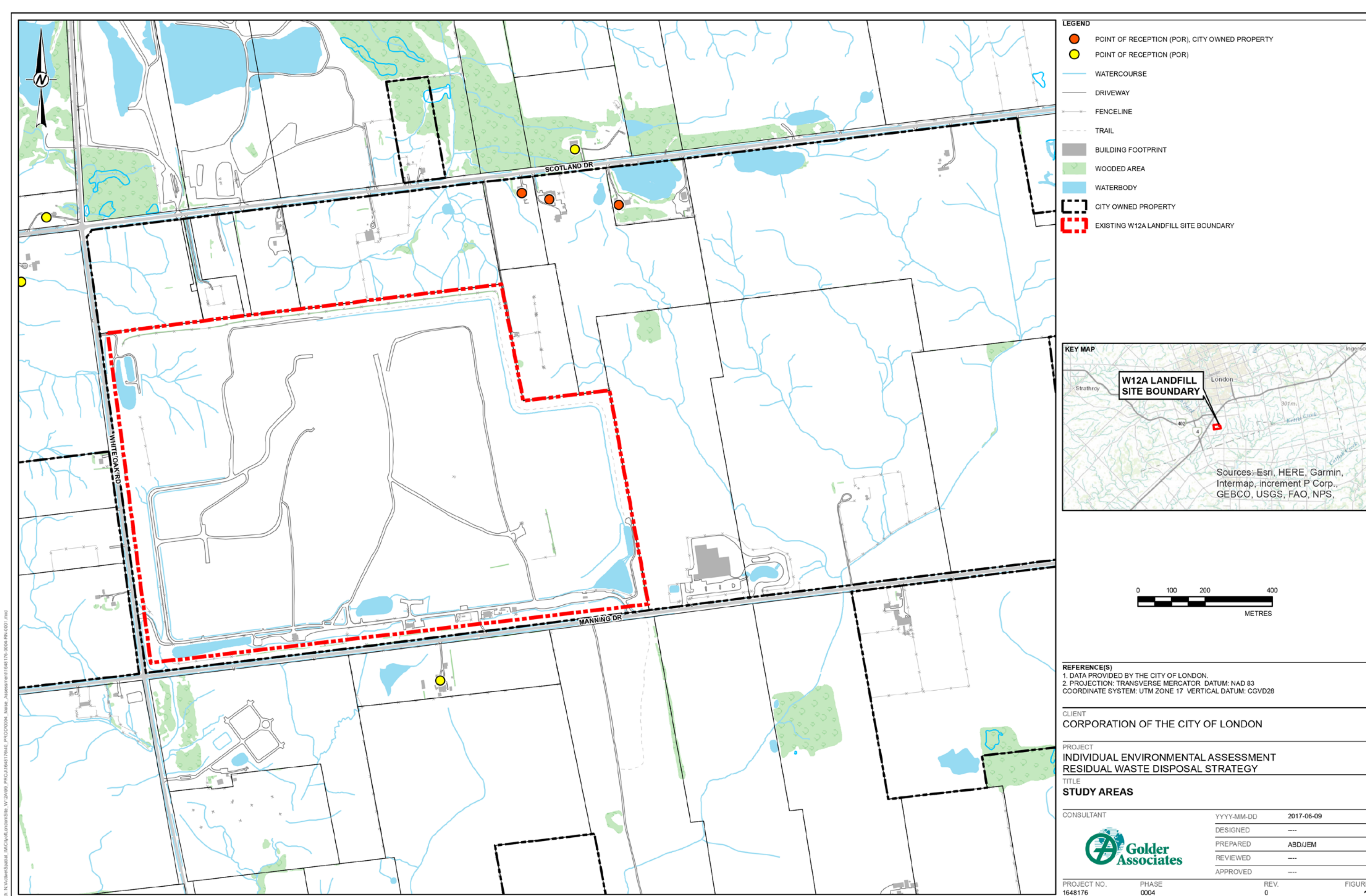
Feedback on the components and sub-components to evaluate the landfill expansion Alternatives was gathered during and after OH #2 (October to December 2017) and on the project website after commencement of the EA (October 2019 to January 2020). The ranking of relative importance is summarized below:

Environmental Component	Environmental Sub-component	More Important	Important	Less Important	Ranking Order	Ranking Group
Atmosphere	Air quality (including dust, odour and LFG)	23	9	1	3	More Important
	Noise	6	16	11	15	Less Important
Geology and Hydrogeology	Groundwater quality	29	3	1	1	More Important
Surface Water	Surface water quality	22	11	0	5	More Important
	Surface water quantity	16	12	5	8	Important
Biology	Aquatic ecosystems	24	8	1	2	More Important
	Terrestrial ecosystems	23	9	1	3	More Important
Land Use Agriculture	Current and planned future land uses	11	17	4	9	Important
	Agriculture	11	20	2	10	Important
Archaeology	Archaeology	6	12	15	16	Less Important
Cultural Heritage	Cultural heritage landscapes	3	12	18	18	Less Important
	Cultural heritage resources (including built heritage)	4	14	15	17	Less Important
Socio-economic	Local economy	11	18	2	7	Important
	Residents and community	18	14	1	6	More Important
Visual	Visual	9	11	13	14	Less Important
Transportation	Traffic	8	15	10	13	Less Important
Design and Operations	Technical considerations	13	13	7	11	Important
	Financial considerations	12	12	9	12	Important

Atmosphere



The study of existing conditions consisted of observing locations of potential sensitive receptors around the Site Study Area, obtaining ambient air quality data, obtaining field noise measurements and evaluating historical odour complaint data.



Alternative 1 is most preferred for atmosphere - air quality

- ✓ Lowest predicted off-property concentrations of air quality contaminants (although only small differences among Alternatives)
- ✓ Best alternative to limit potential odours
- ✗ No disadvantages compared to other Alternatives

Atmosphere



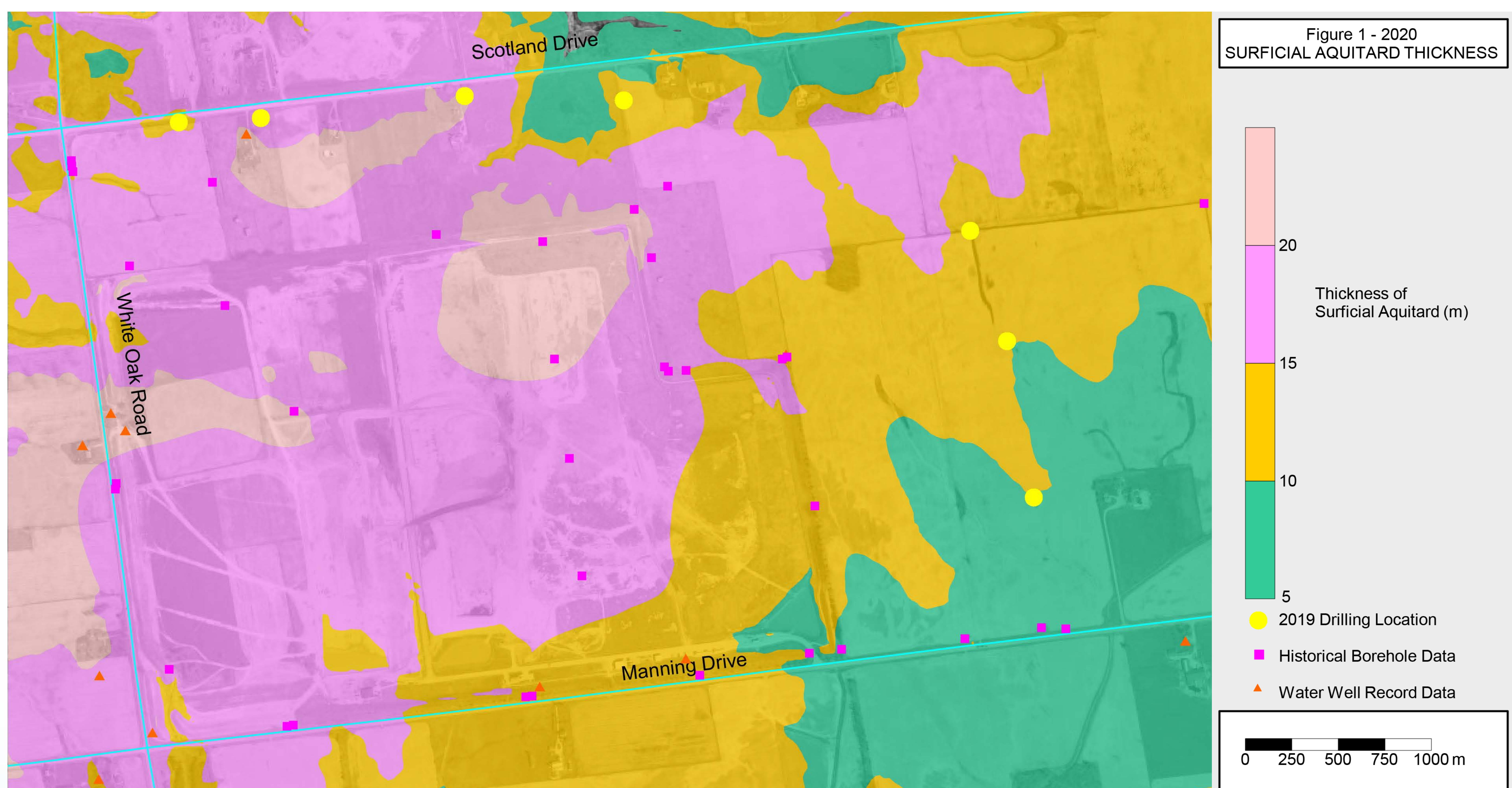
Alternative 1 is most preferred for atmosphere - noise



- ✓ Semi-quantitative results indicate the lowest expected increase in predicted noise levels at the most sensitive points of reception (POR) outside the Site Study Area
- ✓ Least likely to impact PORs outside the Site Study Area from a noise perspective
- ✓ It is expected each Alternative could be designed and operated in a manner to comply with MECP noise limits.
- ✗ Could result in an increase at PORs in all directions, where other Alternatives would result in an increase at only PORs adjacent to the expansion areas

Geology and Hydrogeology

The main activity of the study of the existing conditions was to obtain borehole and monitoring well data in areas where previous investigation results were unavailable and to assess the underlying aquitard thickness to protect groundwater quality.



Alternative 1 is most preferred

- ✓ The aquitard thickness is greatest and least variable below this footprint providing the greatest degree of groundwater protection
- ✗ Thicker waste and square shape of proposed expansion which results in a greater contaminant loading per hectare

Surface Water



The study of existing conditions included field investigations to confirm overland flow routes, drainage boundaries, hydraulic structures (e.g. culverts), outlet locations of all surface water features and physical condition of receiving water courses.



Alternative 1 is most preferred for surface water quality

- ✓ Overall area of the landfill development remains the same
- ✓ Least amount of stormwater management facility upgrades
- ✓ The total drainage catchment areas remain the same
- ✗ Increased peak flows to stormwater management ponds

Alternative 1 is most preferred for surface water quantity

- ✓ Overall area of the landfill development remains the same
- ✓ Least amount of stormwater management facility upgrades required
- ✗ Increase in diversion of landfill catchment area from Dodd Creek to Dingman Creek subwatershed



Biology



The main action of the study of the existing conditions was to conduct field studies evaluating and quantifying aquatic and terrestrial ecosystems.

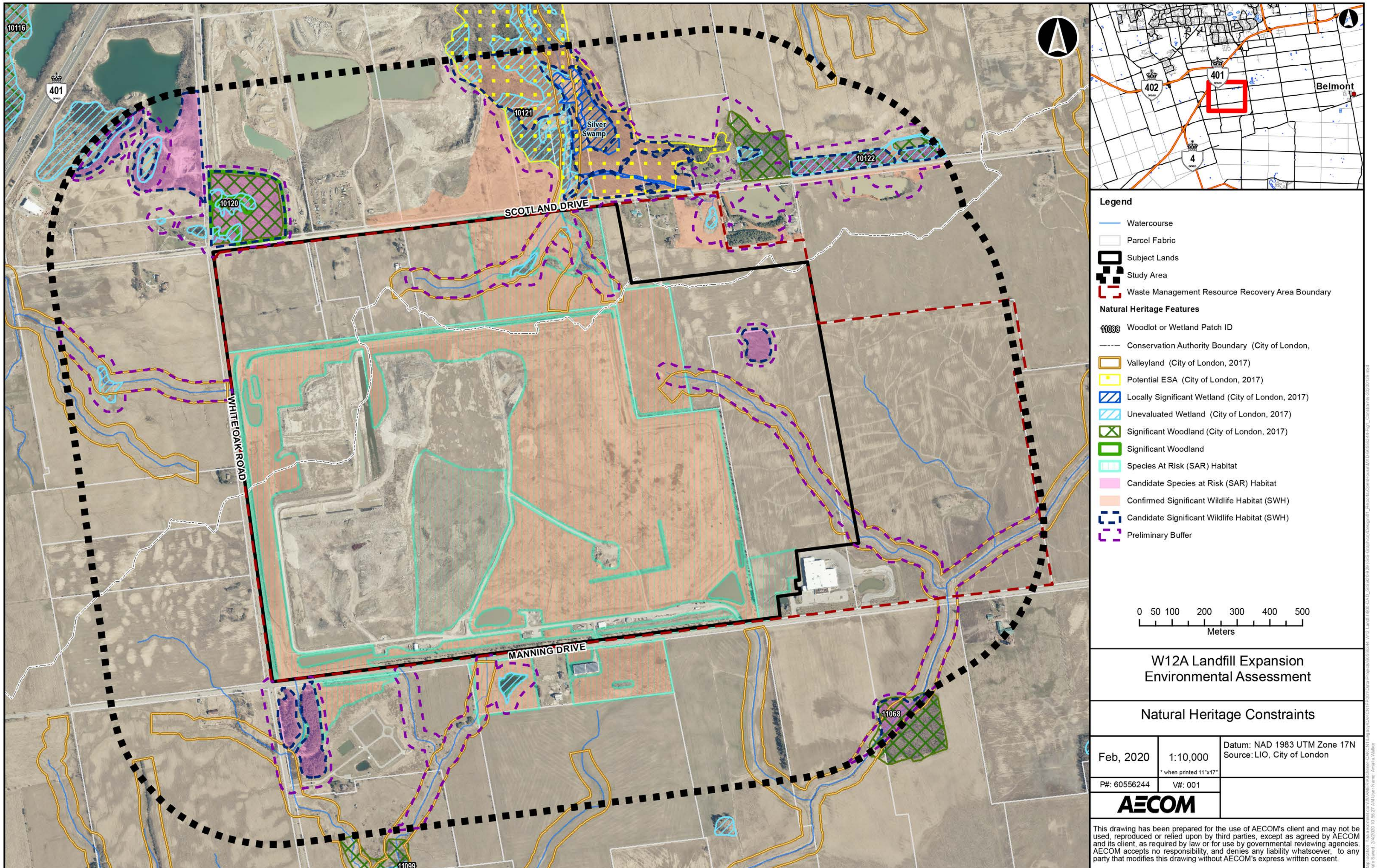
Alternative 1 is most preferred for terrestrial ecosystems

- ✓ Disturbance limited to the existing landfill footprint
- ✗ Confirmed species at risk (Bobolink and Eastern Meadowlark) habitat within the existing landfill footprint
- ✗ Confirmed significant wildlife habitat (Monarch) within the existing landfill footprint.

Alternative 1 is most preferred for aquatic ecosystems.

- ✓ No expected loss of potential fish habitat
- ✗ No disadvantages compared with other Alternatives

Biology





Land Use and Agriculture

The existing conditions studies consisted of observing locations of potential sensitive receptors around the Site Study Area, reviewing municipal and provincial planning documents, reviewing neighbouring farms, farming equipment, farming improvements and review of Canada Land Inventory and soils of Middlesex County mapping.



Alternative 1 is most preferred for land use

- ✓ Does not encroach on any sensitive land uses
- ✗ Greater height may create visual impact (further evaluated under Visual)

Alternative 1 is most preferred for agriculture

- ✓ No loss of agriculture land
- ✗ No disadvantages compared to other Alternatives

Archaeology



The study of existing conditions included a review of existing background data and completing field studies (Stage 2 and Stage 3) to identify and understand identified archaeology sites within the Site Study Area.

Alternative 1	Alternative 2	Alternative 3
Vertical expansion above existing footprint	Horizontal expansion to north with vertical expansion above existing footprint	Horizontal expansion to east with vertical expansion above existing footprint
None of significance	 <ul style="list-style-type: none"> • Pre-contact Indigenous archaeological site (Late Archaic Period, ca. 1500 – 500 BC) • Found a total of 132 Indigenous artifacts (a projectile point, a scraper, and 130 stone flakes from tool manufacture and/or maintenance) • Euro-Canadian archaeological site (mid- to late 19th century into the 20th century) • 488 Euro-Canadian artifacts were recovered from the site (structural artifacts, food and beverage-related items, personal/societal-related artifacts, etc.) 	None of significance

Alternatives 1 and 3 are most preferred for archaeology

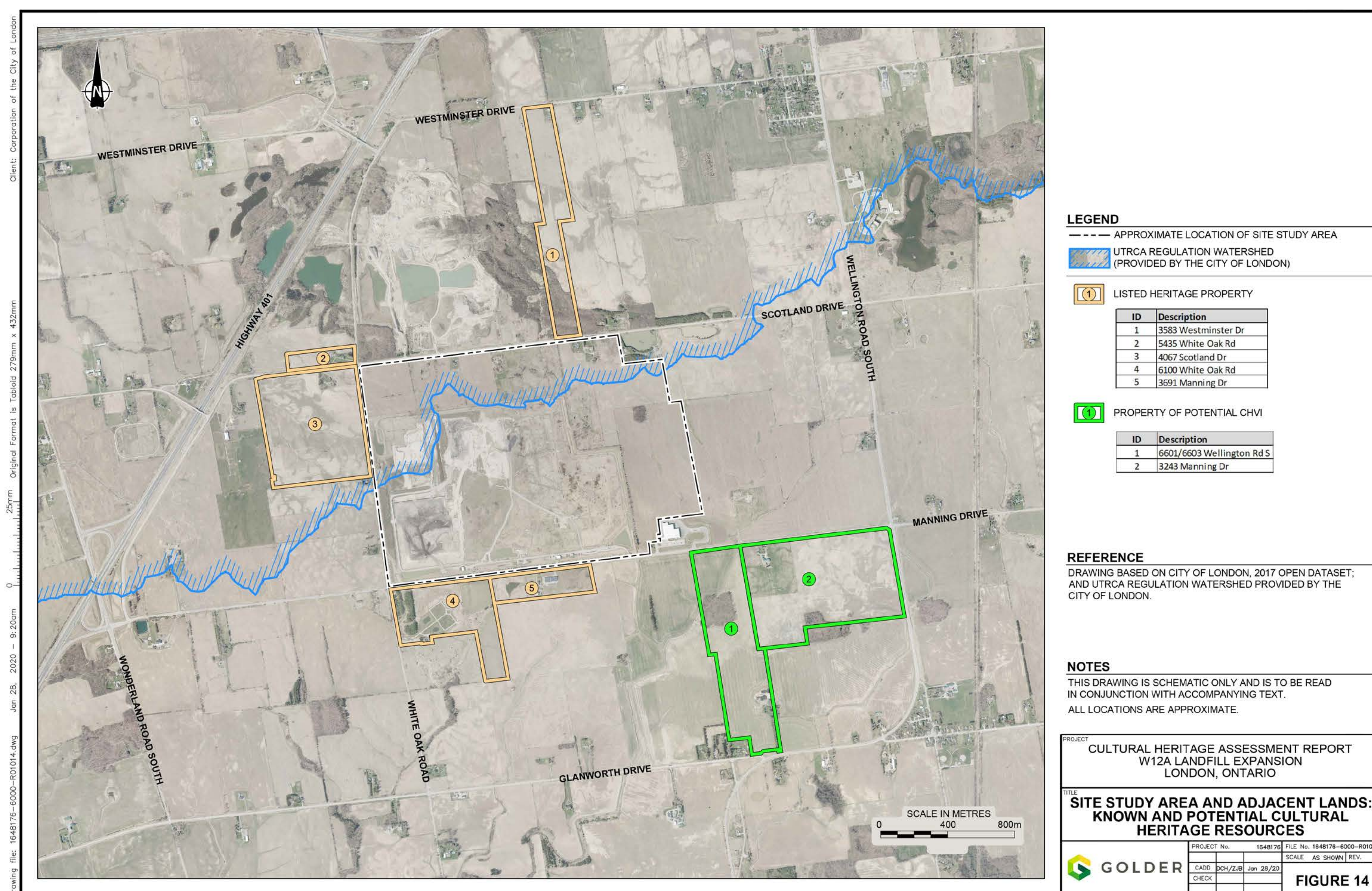
- ✓ Potentially avoids impacting known areas of archaeological significance to the north by landfill construction
- ✗ Landfill-related infrastructure in northern buffer zone could impact known areas of archaeological significance

Cultural Heritage



The study of existing conditions included the background research of neighbouring properties and a field visit to document and evaluate cultural significance.

The Site-vicinity Study Area did not contain any cultural heritage landscapes and as such Alternatives were not considered for this sub-component."



The Alternatives are equally preferred for cultural heritage resources.

- ✓ No expected impacts to identified built heritage resources from each of the three Alternatives
- ✗ No disadvantages for each of the Alternatives

Socio-Economic



The socio-economic existing conditions study consisted of observing locations of potential sensitive receptors and businesses around the Site Study Area, consideration of existing and future employment and evaluating relative costs of the expansion Alternatives and future business opportunities and losses.



Alternatives 2 and 3 are most preferred for local economy (excluding agriculture considerations)

- ✓ Additional employment opportunities during construction and no predicted impacts to local business operations
- ✗ Higher capital costs

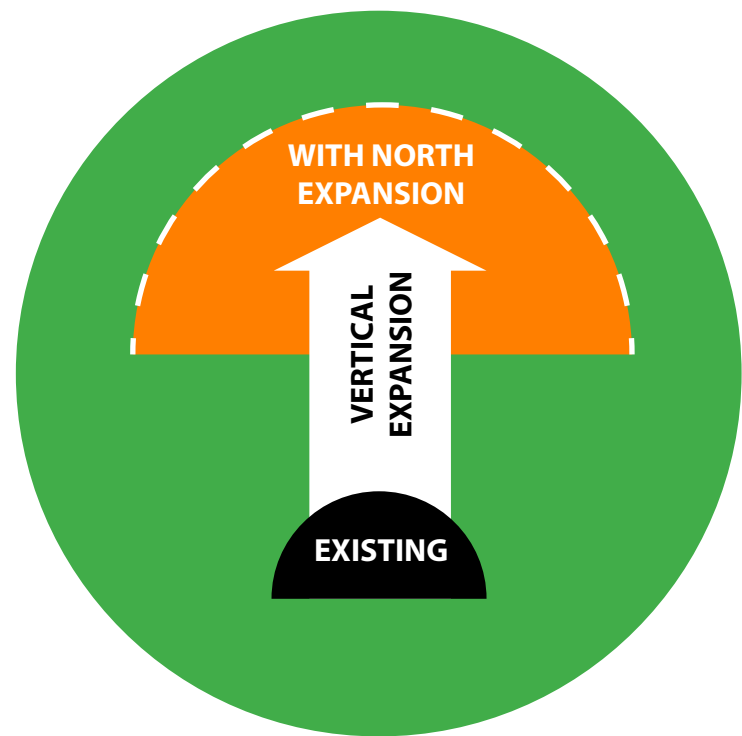
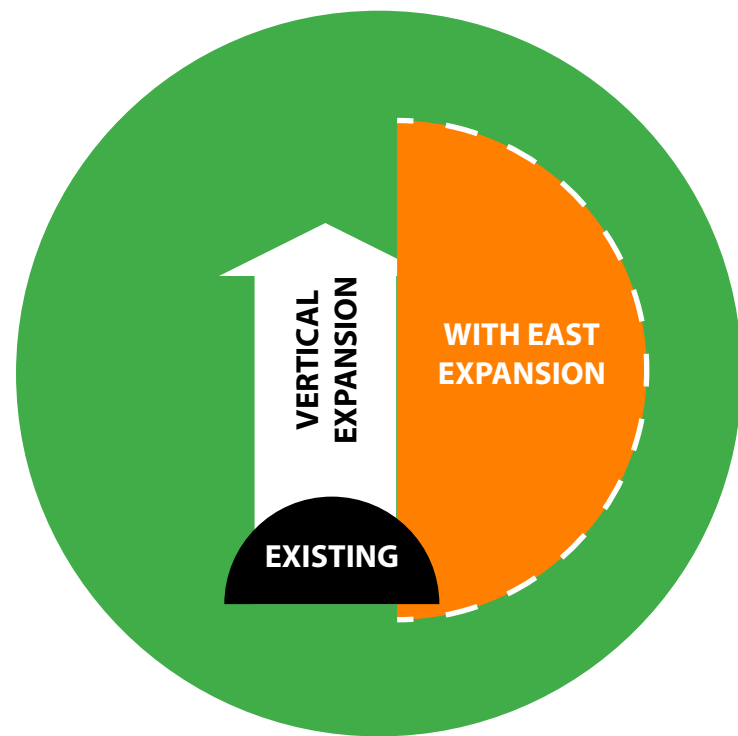
Alternative 1 is most preferred for residents and the community (excluding visual considerations)

- ✓ Least likely to impact residential receptors from an odour or noise nuisance perspective
- ✗ No disadvantages compared to other Alternatives

Visual



The main activities of the visual existing conditions evaluation were to take photos of the existing landfill from different views and prepare a 3D model of the existing site.

Alternative 1	Alternative 2	Alternative 3
 <p>Vertical expansion above existing footprint</p> <p>W12A LANDFILL EXPANSION VISUAL IMPACT MAP OPTION 1 - VERTICAL EXPANSION</p> 	 <p>Horizontal expansion to north with vertical expansion above existing footprint</p> <p>W12A LANDFILL EXPANSION VISUAL IMPACT MAP OPTION 2 - EXPANSION TO THE NORTH</p> 	 <p>Horizontal expansion to east with vertical expansion above existing footprint</p> <p>W12A LANDFILL EXPANSION VISUAL IMPACT MAP OPTION 3 - EXPANSION TO THE EAST</p> 

Alternative 3 is the most preferred for visual considerations.

- ✓ Fewest residents impacted
- ✓ Easier to mitigate
- ✗ Some residents will have increased visual impacts

LEGEND

- Low Effect
- Moderate-low Effect
- Moderate Effect
- Moderate-high Effect
- High Effect
- Proposed limit of waste
- Vegetated areas

Transportation



The main actions of the study of the existing conditions were to obtain available recent traffic data, collect data on turning movements, average annual daily traffic volumes and signal timing, and undertake a site visit.



All Alternatives are equally preferred for transportation

- Access locations, operations and additional vehicle traffic are expected to be the same for each Alternative



Design and Operations

The main action of the existing conditions study for design and operations was to evaluate the expected degree of engineering containment required and the associated costs (requirement for additional leachate collection system (LCS) and management infrastructure, an active landfill gas collection system, and the provision of temporary leachate storage during storm events).



Alternative 3 is most preferred for engineered containment

- ✓ The eastern horizontal expansion area can temporarily store most, if not all, of the leachate collected by Phase 1 perimeter LCS
- ✓ Shortest length of perimeter LCS/finger drain control system.
- ✗ No disadvantages compared to other Alternatives

Alternative 1 is most preferred for financial

- ✓ No excavation or excavated soil to manage
- ✓ Lower capital costs compared to Alternatives 2 or 3
- ✗ Longest length of perimeter LCS/finger drain control system



Identification of the Preferred 'Alternative Method'

Each Component and its independent assessment and ranking of the 'Alternative Methods' are summarized in the table below along with the identification of the overall preferred 'Alternative Method'.



Environmental Component	Environmental Sub-component	Preferred (Overall Result)			Public Ranking Group
		Alternative 1	Alternative 2	Alternative 3	
Atmosphere	Air quality (including dust, odour and LFG)	✓			More Important
	Noise	✓			Less Important
Geology and Hydrogeology	Gound water quality	✓			More Important
Surface Water	Surface water quality	✓			More Important
	Surface water quantity	✓			Important
Biology	Aquatic ecosystems	✓			More Important
	Terrestrial ecosystems	✓			More Important
Land Use Agriculture	Current and planned future land uses	✓			Important
	Agriculture	✓			Important
Archaeology	Archaeology	✓		✓	Less Important
Cultural Heritage	Cultural heritage resources (including built heritage)	✓	✓	✓	Less Important
Socio-economic	Local economic	✓	✓	✓	Important
	Residents and community	✓			More Important
Visual	Visual			✓	Less Important
Transportation	Traffic	✓	✓	✓	Less Important
Design and Operations	Technical considerations			✓	Important
	Financial considerations	✓			Important



Next Steps in EA and How to Get Involved

Next Steps are as follows:

- Complete Steps 5 through 8 of the EA methodology:
 - Step 5: Refine the mitigation measures and determine the net effects of the preferred expansion alternative on the environment
 - Step 6: Describe in more detail the preferred 'Alternative Method' for landfill expansion
 - Step 7: Consider potential effects of climate change on the preferred alternative
 - Step 8: Complete a cumulative impact assessment of the landfill expansion and other activities in the area
- Conduct next Open House, planned in the spring of 2020



Your questions and comments are important to us. Please complete and submit a feedback form.

We will post information on the project website as it becomes available:

getinvolved.London.ca/WhyWasteDisposal



Getting to 60% by the end of 2022



Organics Management

- Food waste reduction initiatives
- Home composting
- Community composting
- City wide organics program



Recyclables

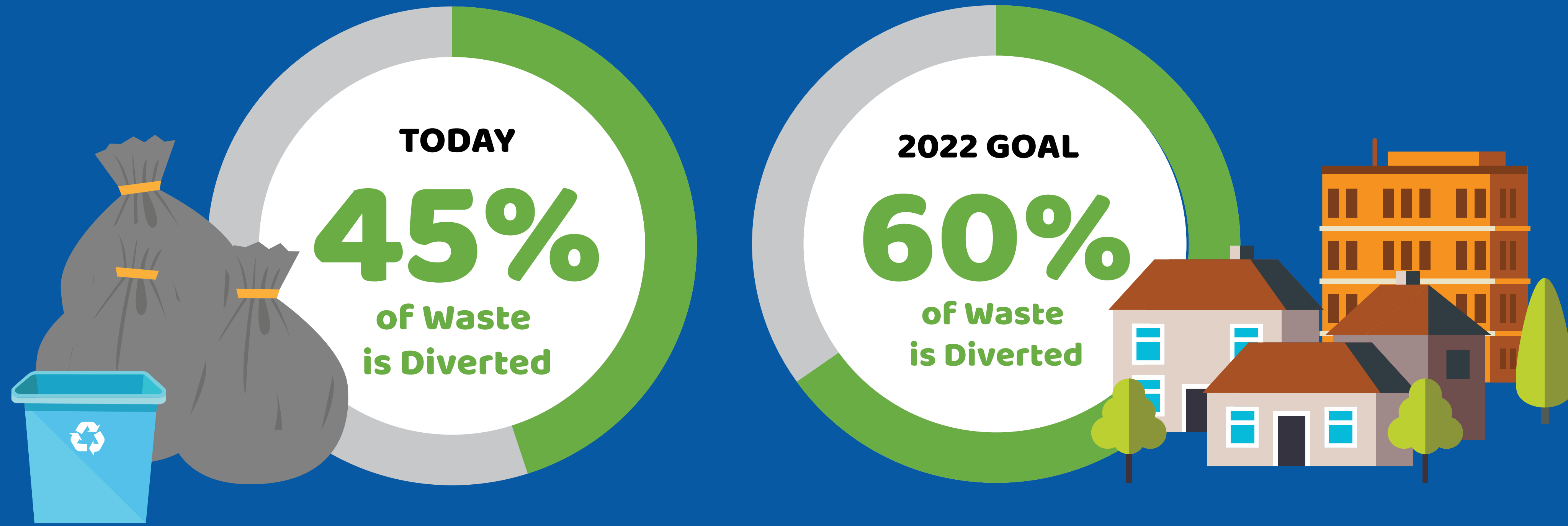
- Carpet, mattresses and textiles
- Electronics, scrap metal and small metal appliances
- Wooden furniture
- Bulky plastics



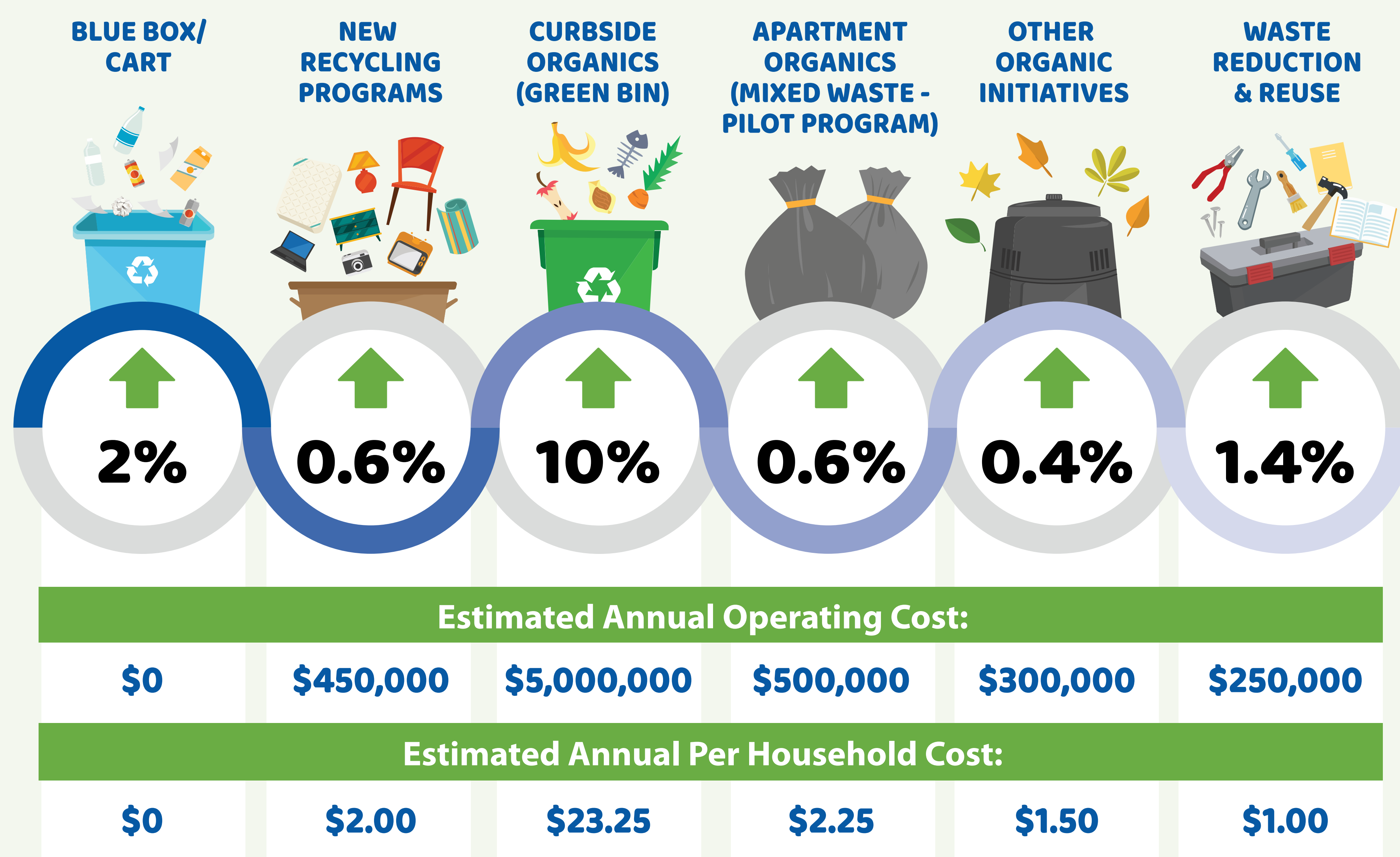
Waste Reduction & Reuse Programs (examples)

- Waste Reduction Programs: lending libraries, repair workshops
- Community outreach programs: environment days
- Policies and by-laws: landfill bans, reduced garbage limit, pay per container, use of clear bags for garbage, mandatory separation programs

Setting a new goal for Waste Diversion by 2022.



60% Waste Diversion Action Plan



What will this cost?

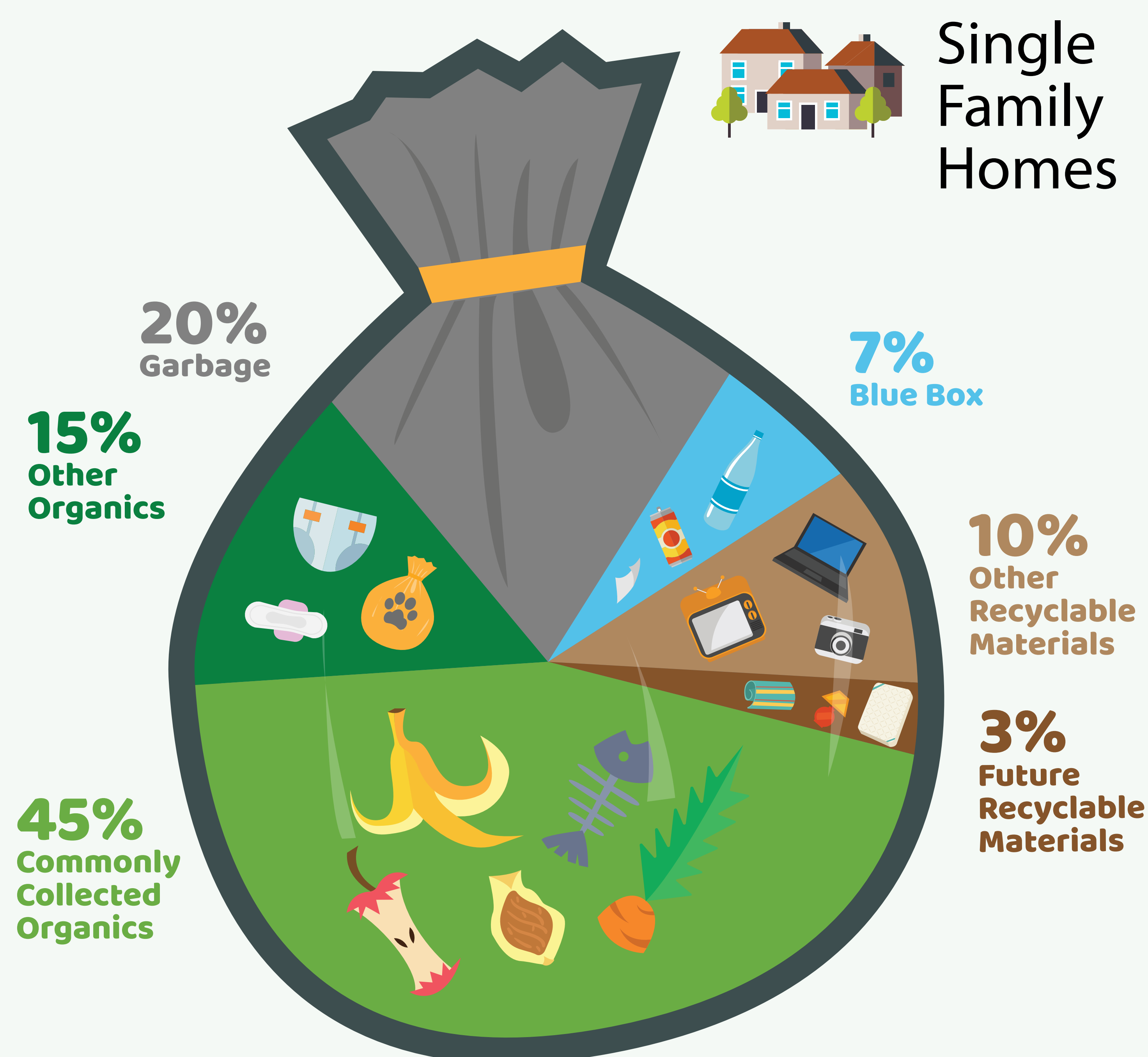
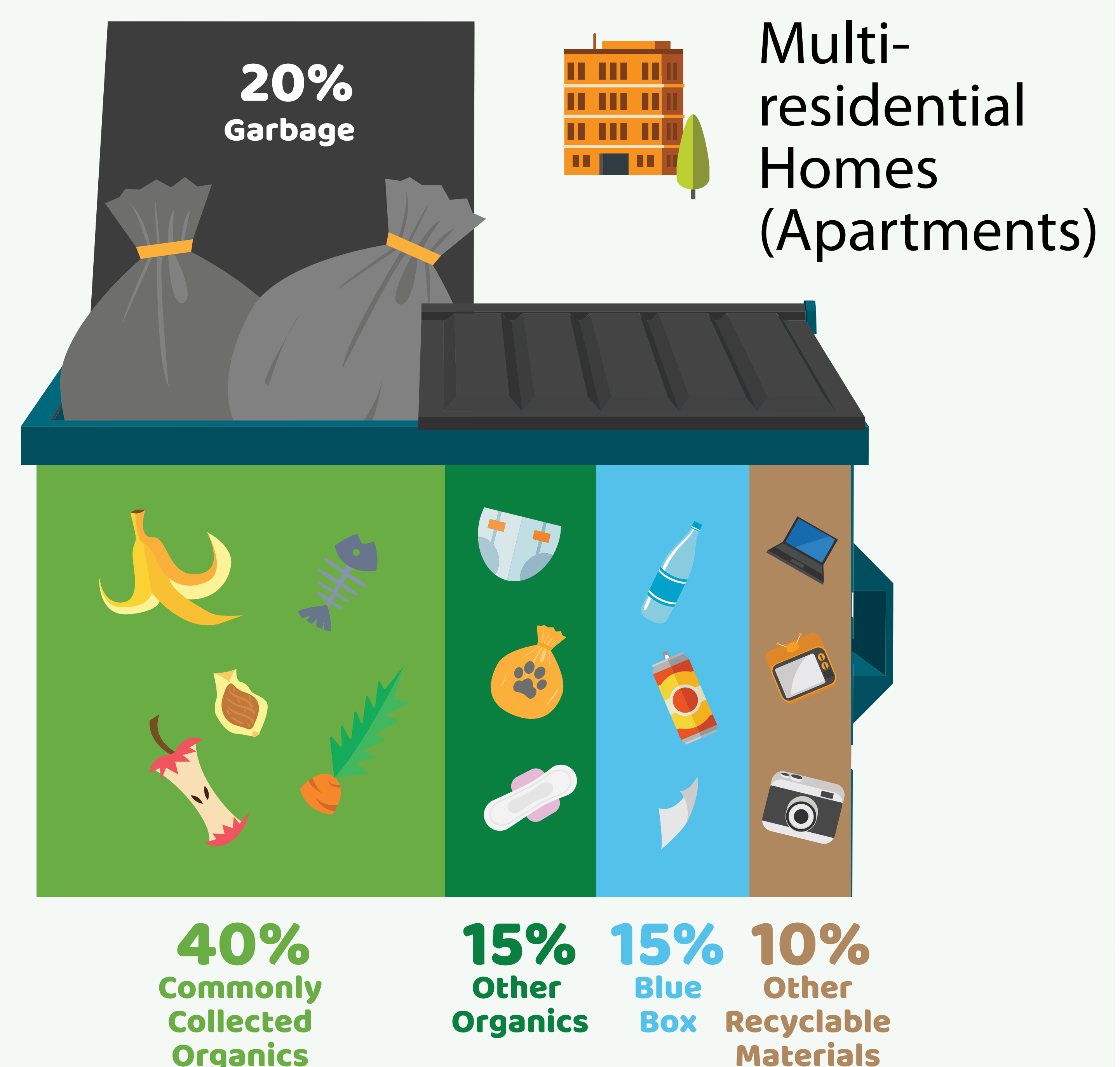
\$30 per household annually[†]

\$6,500,000 Estimated Total Annual Operating Cost*

[†]On average. *Revenues and payments from industry should reduce this cost.



What's in London's Household Residual Waste?



Commonly Collected Organics

Organics that are easily composted. They include food waste and non-recyclable paper (soiled paper, tissues, paper towels).

Other Organics

Pet waste and sanitary products (e.g., diapers) which typically require pre-processing to remove the plastic bag that contains the pet waste and plastic covering of the diaper.

Blue Box

Items that were placed in the garbage but should have gone in the Blue Box.

Other Recyclable Materials

Items that were placed in the garbage but should have been dropped off at a depot or returned to retailer for recycling such as textiles, scrap metal, electronics, renovation materials and plastic bags.

Future Recyclable Materials

Items that may have local recycling options in the future such as carpets, mattresses and furniture.

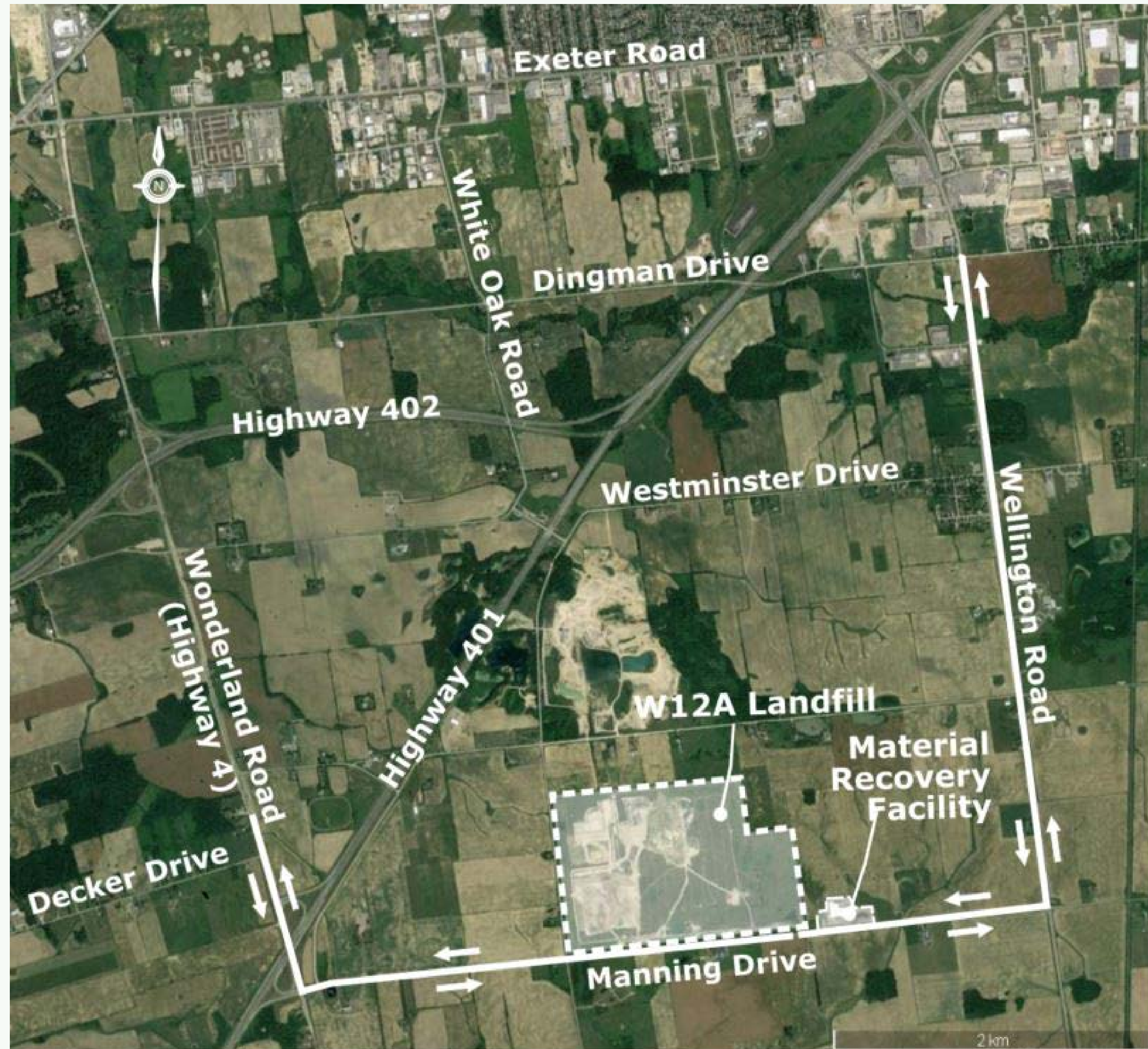


London Waste to Resources Innovation Centre

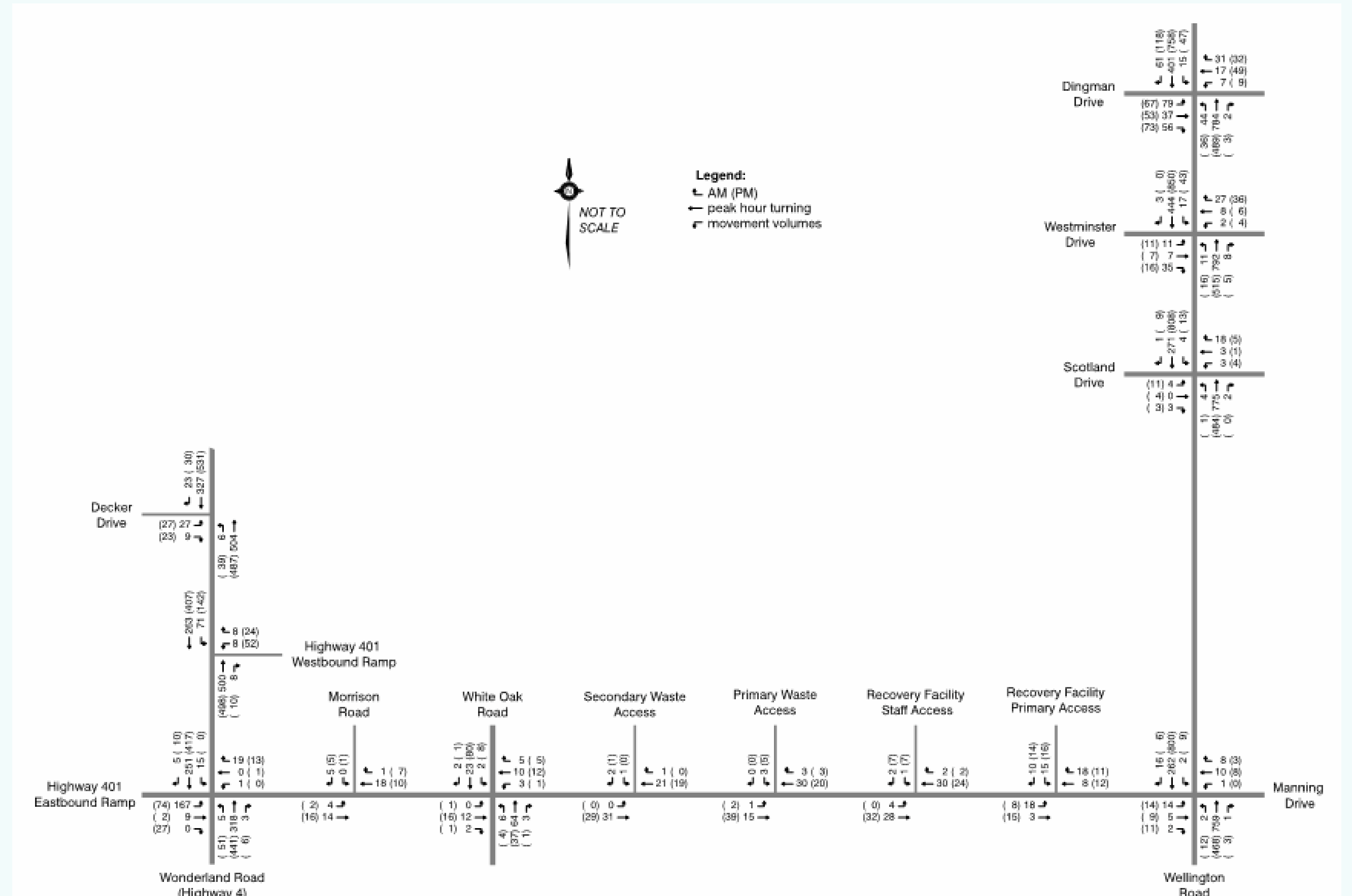


- Part of Council's Strategic Plan (2019 - 2023)
- Research, testing and training centre for business, institutions and municipalities
- Working with partners (e.g., Western University, businesses, associations) to examine new, emerging and next-generation resource recovery and waste conversion technologies... from feedstocks to end markets
- Focus on waste diversion and resource recovery associated with:
 - Household garbage
 - Other materials targeted by the Provincial Government
 - Source separated or facility separated organics
 - Other marketable products and/or creation of energy resources
 - Other "waste materials" into resources
 - Creating higher value end products
 - Growing the local and regional economy

Traffic



Existing Haul Routes



Existing (2019) Traffic Volumes

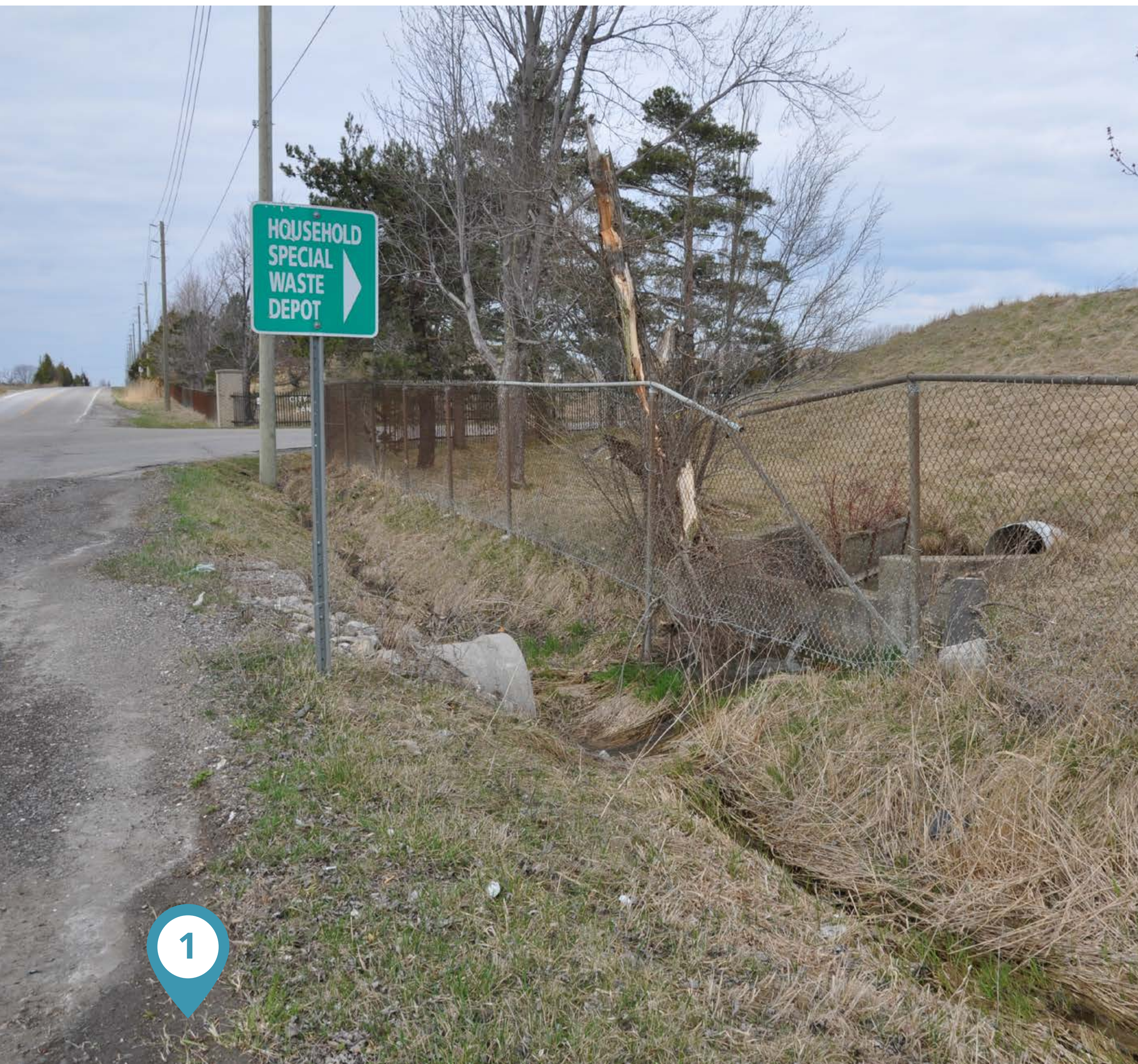
Key Information

- All intersections along Manning Drive are operating at service level "A" (highest level of service)
- Less than 1% of the traffic on Wellington Road (just north of Manning Road) is headed to or from W12A Landfill during morning or evening peak traffic hour
- Less than 0.5% of traffic on Wonderland Road South (north or south of 401 interchange) is headed to or from W12A Landfill during morning or evening peak traffic hour

Consideration of future traffic volumes during the next steps in the EA will determine what (if any) road improvements are required.



Litter and Illegal Dumping (Existing Mitigative Measures)



1 Berms, trees and litter fence at property boundary

2 Mobile litter fence at tipping face

3 Regularly schedule litter pick-up and regular inspections of roads for litter and illegal dumping



Consideration to enhancing the existing measures will be given during the development of the Design and Operations report for any expansion of the landfill.

Odour Abatement Plan*



Step	Description	Timeline
1	Commissioned expert review of options for reducing odours.	Complete
2	Determine how options identified as practical may be implemented as part of the overall odour management strategy.	1 st quarter of 2020
3	Atmosphere technical study being completed as part of Environmental Assessment may suggest additional measures to consider during expansion.	Starting 1 st quarter of 2020 and extending through EA
4	Installation of horizontal collectors part of the future expansions of the existing landfill gas collection system	1 st and 2 nd quarters, 2020
5	<p>Proposed odour management research and monitoring study involving the City, Western University and Golder Associates. Research would include:</p> <ul style="list-style-type: none"> • Assessment of Industry Best Practices Not Currently Employed at the W12A Landfill that may be applicable (i.e. building on review from steps 1 and 2) • Local Air and Odour Monitoring around the W12A Landfill Site • Broader Air and Odour Monitoring 	Starting 2 nd quarter of 2020

*Handouts with additional details about the odour abatement plan are available at the front table



Hefty[®] EnergyBag[®] Pilot Project

Phase 1 (late October 2019)

- 13,000 households started
 - 6,000 dropping off at a depot
 - 7,000 collected at the curb
- Participants were supplied with the first sample pack (of 20 bags)

Phase 2 (late February, 2020)

- 1,000 multi-residential households (in about 8 to 10 buildings)

Phase 3 (March, 2020)

- another 6,000 households to be added

End markets being examined for tests

- Composite plastic lumber products: Rivalries Corporation and ReGen Composites
- Energy conversion technologies - BBL Energy Inc. and Green Shields Energy

The Pilot Project includes a number of measurements such as curbside set outs, participation rates, materials quantity and quality, impacts on collection and processing, etc.

Further details can be obtained at:

- www.London.ca or <https://getinvolved.london.ca/HEB>