

REPORT

Visual Existing Conditions and Impact Assessment

W12A Landfill Expansion EA, City of London, Ontario

Submitted to:

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Appendix A - 4348 McDougal Individual Assessment

Acronyms and Glossary of Terms

Term / Acronym	Definition
CEMMP	Community Enhancement and Mitigative Measures Program
EA	Environmental Assessment
EASR	Environmental Assessment Study Report
ECA	Environmental Compliance Approval
ha	Hectares
LFG	Landfill Gas
MECP	Ministry of Environment, Conservation and Parks
m	Metres
m ²	Square metres
m ³	Cubic metres
masl	Metres above sea level
VACF	Visual Absorption Capability Factor

1. Introduction

The City of London is proposing an expansion of the existing W12A Landfill site (the Project) located at 3502 Manning Drive, part of Lots 18, 19, and 20 of Concession 6 in the former Township of Westminster, in the south end of the City of London, Ontario.

The environment is considered in broad terms to include the natural, social, cultural, and economic aspects of the environment. This document presents the existing conditions and impact assessment for the visual component of the Environmental Assessment (EA) for the proposed W12A Landfill expansion. This work has been conducted in accordance with the requirements set out in the approved Terms of Reference (ToR), dated February 2019.

This report is a supporting document to the Environmental Assessment Study Report (EASR).

2. Existing Conditions

In comparison to other large municipal landfills, the W12A Landfill is relatively flat (covers a larger area relative to its height)). Nevertheless, the existing W12A Landfill is an anomaly rising approximately 9 to 12 metres (m) above an otherwise generally flat to gently sloping landscape.

The existing landfill is located on a surface water divide between the Dingman Creek and Dodd Creek Subwatersheds, with the ground sloping away from the landfill to the southwest at approximately 1 percent and to the north at typically 1-2 percent. The existing landfill can be seen from a distance up to five kilometres from the south and east, three kilometres from the west and one kilometre from the north. Most people who see the existing landfill are at least one kilometre away on main traffic routes (e.g., Highway 401 and Wellington Road).

Closer views of the existing landfill are mainly seen by local residents and truck drivers on the landfill haul routes. Perimeter berms with trees are present around the south, west, north and a portion of the east side of the site to visually screen the existing landfill when in closer proximity. These berms are effective in screening the view of the existing landfill from the road immediately beside the landfill when travelling on Manning Drive and White Oak Road, but not from Scotland Drive or Wellington Road South. Figure 1 shows a typical screening berm with trees.

Depending on the location from which the W12A Landfill is viewed, features in the immediate landscape (foreground) such as landscaping and buildings can take visual precedence over the landfill. This draws the viewer's attention away and thereby reduces the potential visual impact of the landfill. Factors such as seasonal changes to foliage and the type of agricultural crops present can affect the degree to which the landfill feature is visible and/or noticed.



Figure 1 - Example of a planted screening berm

3. Project Description

3.1. General Description

The proposed landfill expansion consists of a vertical expansion over the existing landfill footprint to provide 13.8 million cubic metres (m³) of airspace for waste and daily cover. To accommodate ancillary features and provide additional on-Site buffer width compared to the existing landfill, the northern boundary of the landfill property will be adjacent to Scotland Drive and a 100 m buffer width will be provided on the east side of the landfill footprint and some additional area in the southeast corner to tie into the adjacent material recovery facility property line. This results in a 106.3 hectare (ha) landfill footprint within a 192.4 ha landfill property, with a highest ridge elevation of waste of 318.43 metres above sea level (masl).

3.2. Landfill Phasing and Development

The landfill expansion will be developed sequentially in eight Phases (as shown in Figure 2), 1E through 8E, progressing from the west side of the landfill towards the east. Landfilling in each Phase will be approximately 2.5 to 3.5 years based on an expected typical annual air space consumption of 500,000 m³ per year, which corresponds to an average annual waste

receipt of 370,000 tonnes per year over the 25 year planning period. A separate cell dedicated for disposal of the non-decomposable portion of the waste stream will be provided in the southeastern area of the landfill expansion. Filling in this non-decomposable waste cell will take place in lifts over the 25 year expansion period, and will be blended in to meet the temporary sideslopes in the adjacent Phases 7E and 8E as they are developed. Because this waste is non-decomposable, it would not receive daily cover; however, if it is observed that specific materials are generating odours or are otherwise of concern if left uncovered, daily cover material would be placed. This fill area would receive final cover consistent with that on the remainder of the landfill, but it is not proposed to install a landfill gas collection system in this area as part of the final cover construction.

To commence filling in each Phase, the existing cover material would be progressively stripped from an area large enough to accommodate the year's disposal, which is estimated to average approximately 4 ha. The area of exposed waste would be limited to that needed to spread, compact and cover the waste received on a daily basis, and will range from about 40 m by 25 m typically (1,000 m²) to 50 m by 30 m (1,500 m²). The waste will be spread and compacted in lifts of about 0.6 m to a height of approximately 3 m. All waste will be covered daily.

For the southern Phases 1E, 3E, 5E and 7E the waste would be placed initially to build a berm along the south side of the Phase and will be covered with final cover soil and seeded to establish vegetation; the berm will screen the view of subsequent filling operations north of the berm from off-Site vantage points to the south. The south side perimeter waste berm would be raised sequentially and filled in behind until the peak elevation is reached. The Phase boundaries have been designed (offset) such that the completed southern Phases (1E, 3E, 5E, 7E) will effectively screen the view of landfilling operations in the northern Phases (2E, 4E, 6E, 8E) from off-Site vantage points to the south.

Temporary soil berms, and if necessary shallow swales, would be provided to direct surface water runoff from existing covered upslope areas around the active fill areas / Phases to the stormwater management system since this runoff has not been in contact with waste.

On an annual or biannual basis, final cover would then be constructed over areas reaching final grade and permanent vertical landfill gas (LFG) wells will be installed and connected to the LFG gas collection system

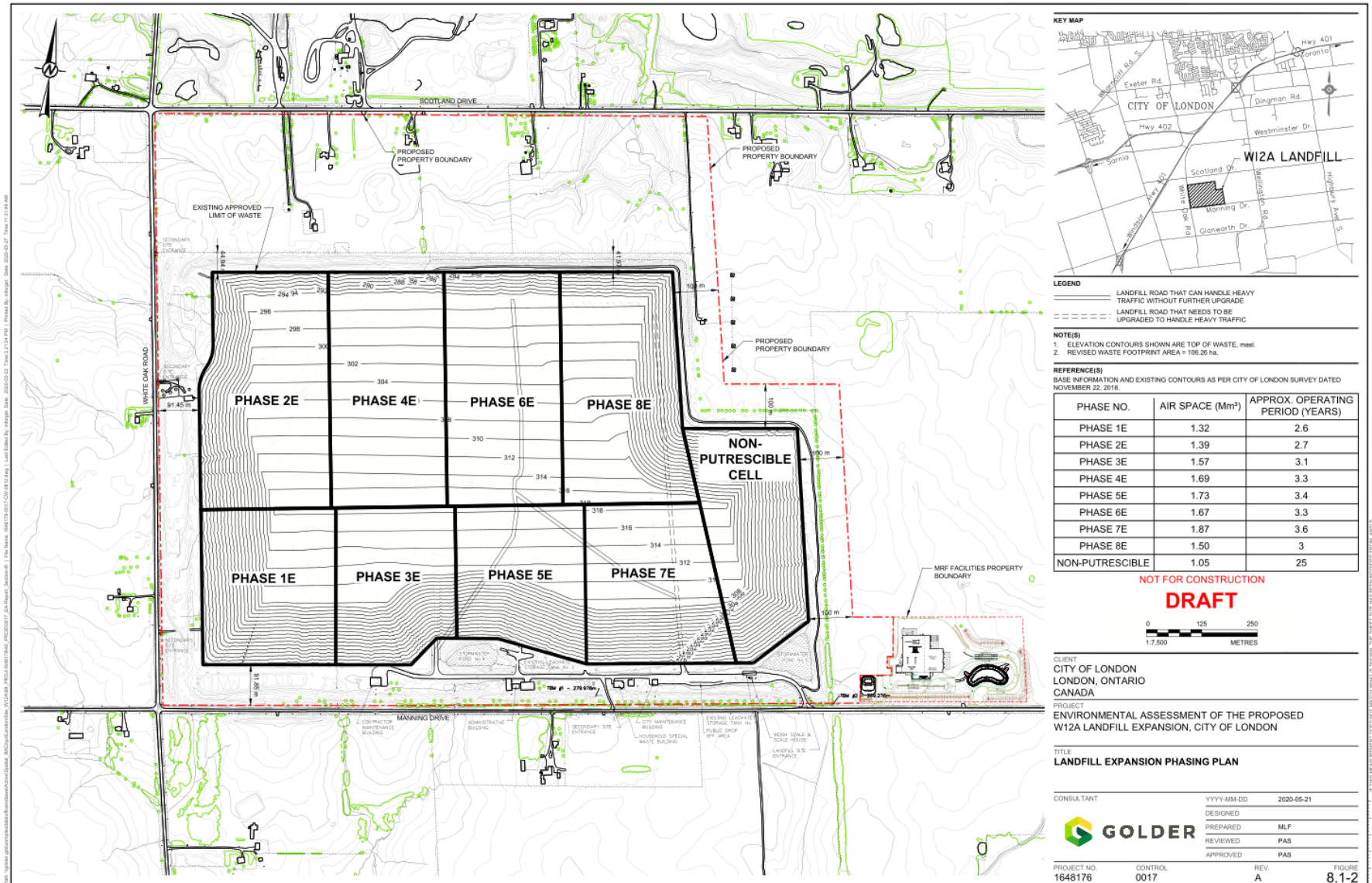


Figure 2 - Landfill Expansion Phasing Plan

4. Impact Assessment

4.1. Overview

The visual impact of the proposed landfill expansion on existing residential properties within 3,500 m of the site (Site-vicinity Study Area) was assessed. This was done by calculating values for the following factors from each point of interest (viewpoints in private outdoor areas and from public rights of way within the Site-vicinity Study Area):

- the visible area of the proposed landfill (in square metres)
- the distance to the nearest visible point (in metres)
- the maximum angle of the cone of view of the visible area of the landfill expansion (in degrees)
- the average slope of the terrain between that viewpoint and the visible proposed landfill area (as a percentage)
- the amount of tree cover between that viewpoint and the visible landfill expansion area (as a percentage)

These factors represent, from a visual perspective, how much of an observer's view is occupied by the proposed landfill, taking into account the intervening terrain's hilliness and tree cover.

Within the Site-vicinity Study Area, comprehensive topographic information describing the terrain, vegetation, and structures was compiled; private and public viewpoints were identified; and the visual effect of the proposed landfill expansion on those views was calculated.

Viewpoints within the Site-vicinity Study Area were selected from private outdoor areas using aerial photography to determine where people would normally gather on their property for outdoor experiences during the summer months (pools, patios, fire-pits, etc.). In the absence of amenities identifiable from the aerial photographs, locations near the house within the backyard were selected.

4.2. Data & Algorithms Used

The following GIS data and algorithms were used in the calculations:

- City of London 2019 Aerial Photography,
- Contours, parcel boundary, and existing limit of waste, taken from the City of London's AutoCAD drawing file project no. 1648176, project title "INDIVIDUAL EA OF THE PROPOSED W12A EXPANSION",
- Significant vegetation (trees and hedges) from the City of London Open Data Catalogue and digitized from aerial photography and site visits,
- Structures (houses, silos, etc.) from the City of London Open Data Catalogue and digitized from aerial photography and site visits,
- Surface and terrain data from Natural Resources Canada High Resolution Digital Elevation Model - CanElevation Series, and

- Viewshed calculation r.viewshed by Laura Toma (Bowdoin College), Yi Zhuang (Carnegie-Mellon University), William Richard (Bowdoin College), and Markus Metz.

4.3. Process

Outdoor private recreation areas were identified using aerial photography, and significant viewpoints from each were selected. From each of these viewpoints, a viewshed was calculated using the aforementioned data sets and algorithms. This calculated viewshed determined what areas of the proposed landfill expansion within the “proposed limit of waste” would be visible, and what intervening topographic features would mitigate the impact of those visible areas.

Each of these factors was then assigned a score, ranging from very low impact to very high impact, and the scores summed to obtain a rating of the total visual effect of the Project on each identified viewpoint.

To check the accuracy of the model, a number of site visits were undertaken to verify the viewshed results. The data used for the viewshed calculations was imported into Google Earth as a 3D model, views of the proposed and existing landfill were generated from that 3D model, and those views were compared with the corresponding views in person. A more comprehensive assessment was undertaken at 4348 McDougall Close, and example photos were taken from chosen views in the private outdoor areas for comparison to the model and its results. This preliminary study confirmed the accuracy of the viewshed ratings and of the real-time views generated by the Google Earth 3D model; the report from that study is included as Appendix A.

4.3.1. Area of Landfill Visible

A score was given based on how much of the landfill expansion is visible; the more of the landfill that is visible, the higher the visual impact rating will be. Given that an object’s visual mass decreases as it gets further from its viewer, the distance to the visible areas is taken into account in assessing the visual impact of these areas.

The height and width of each visible portion of the landfill expansion were multiplied to determine the area visible, and then were summed to get the total area of visible landfill. This sum was then divided by the distance to the landfill expansion to get a “Perceived Area Index”, and assigned a rating as shown in the following table:

Table 1 Perceived Area Index Ratings

Perceived Area Index (PAI)	Rating	Value
0 – 7.5	Very Low	1
7.51 – 13.0	Low	2
13.1 – 18.0	Moderate	3
18.1 – 23.0	High	4
> 23.0	Very High	5

4.3.2. Cone of View

The angle of an observer's cone of vision that has the greatest clarity is approximately 120°. As the portion of an observer's cone of vision is taken up with the expanded landfill, the impact increases. If the angle encompassing the visible portions of the expanded landfill is between 51° and 90°, the impact was determined to be high; if it is between 31° and 50°, it is determined to be moderate; if it is between 16° and 30°, the impact was low.

To calculate the visual impact of the expanded landfill on the cone of view, the angle between the leftmost and rightmost edges of the visible portions of the landfill were determined and assigned a rating as shown in the following table:

Table 2 Cone of View Ratings

Cone of view	Rating	Value
0° - 15°	Very Low	1
16° - 30°	Low	2
31° - 50°	Moderate	3
51° - 90°	High	4
> 90°	Very High	5

4.3.3. Distance from the Landfill

As the distance between an observer and an object increases, the visual impact decreases, as determined by the nature of focal perception. Impact ratings were assigned based on whether the areas of landfill expansion visible from each viewpoint fall into the foreground, middleground, or background of an observer's view. The distance from the viewpoint to the nearest point of the landfill expansion was determined in metres, and assigned a rating as shown in the following table:

Table 3 Distance Ratings

Distance in Metres	Effect Level	Value
2,201 – 3,500	Very Low	1
1,501 – 2,200	Low	2
801 – 1,500	Moderate	3
601 – 800	High	4
0 – 600	Very High	5

4.3.4. Visual Absorption Capability Factor (VACF)

Finally, the nature of the landscape between the viewpoint and the proposed landfill site was taken into account. The visual impact of an object on a view is mitigated by significant masses of vegetation and changes of grade that occupy the space between it and an observer.

The capability of the terrain in the cone of view to absorb visual impact was calculated based on the mean slope of the terrain and the percent coverage of existing significant vegetation within the previously calculated cone of view, as shown in the following table:

Table 4 Visual Absorption Capability Factor Components

Factor	Range	Value	Description
Slope	0 percent	0	Water
	0.1-5 percent	1	Flat
	5.1-20 percent	2	Rolling
	> 20 percent	3	Rugged
Vegetation (% coverage)	< 1 percent	0	Open
	1-10 percent	1	Sparse
	11-40 percent	2	Moderate
	> 40 percent	3	Dense

These values were then summed to obtain a VACF rating as shown in the following table:

Table 5 Visual Absorption Capability Factor Ratings

Range	Description	Effect Level	Value
6	Very High Visual	Very Low	1
4 – 5	High Visual	Low	2
2 – 3	Moderate Visual	Moderate	3
1	Low Visual	High	4
0	Very Low Visual	Very High	5

4.3.5. Total Visual Effect

All of the previous values were then summed to determine the overall visual effect of the proposed landfill site on each particular viewpoint, as shown in the following table:

Table 6 Total Visual Effect Ratings

Combined Effect Value Scale	Visual Effect
4-6	Very Low Effect
7-9	Low Effect
10-11	Moderate Effect
12-15	High Effect
16-20	Very High Effect

To check the accuracy of the model, a number of site visits were undertaken to verify the viewshed results and compare model-generated with views on-site.

4.4. Assessment

The visual effect of the proposed landfill expansion on the selected viewpoints within the Site-vicinity Study Area is presented in Figure 3 and listed in Table 7. This table lists all properties where the proposed landfill expansion will have a visual impact on the private outdoor areas.

Table 7 shows the landfill expansion will have a very high visual impact on four properties (3691 Manning Drive, 3465 Scotland Drive, 3561 Scotland Drive, and 4067 Scotland Drive) and have a high visual impact on two properties (3452 Glanworth Drive and 4233 Scotland Drive). Three of the six properties with high to very high visual impacts are owned by the City (3465 Scotland Drive, 3561 Scotland Drive and 4233 Scotland Drive) and three properties are privately owned (4067 Scotland Drive, 3691 Manning Drive and 3452 Glanworth Drive). The view of the expanded landfill from each of these properties is presented in Figures 4 to 9. All other properties will have a moderate or lower visual impact.

The expanded landfill is shown in brown-grey to clearly distinguish it from its surroundings. In reality, the expanded landfill will have final cover soil installed and seeded to establish vegetation as the landfill is expanded (as discussed in Section 3.2).

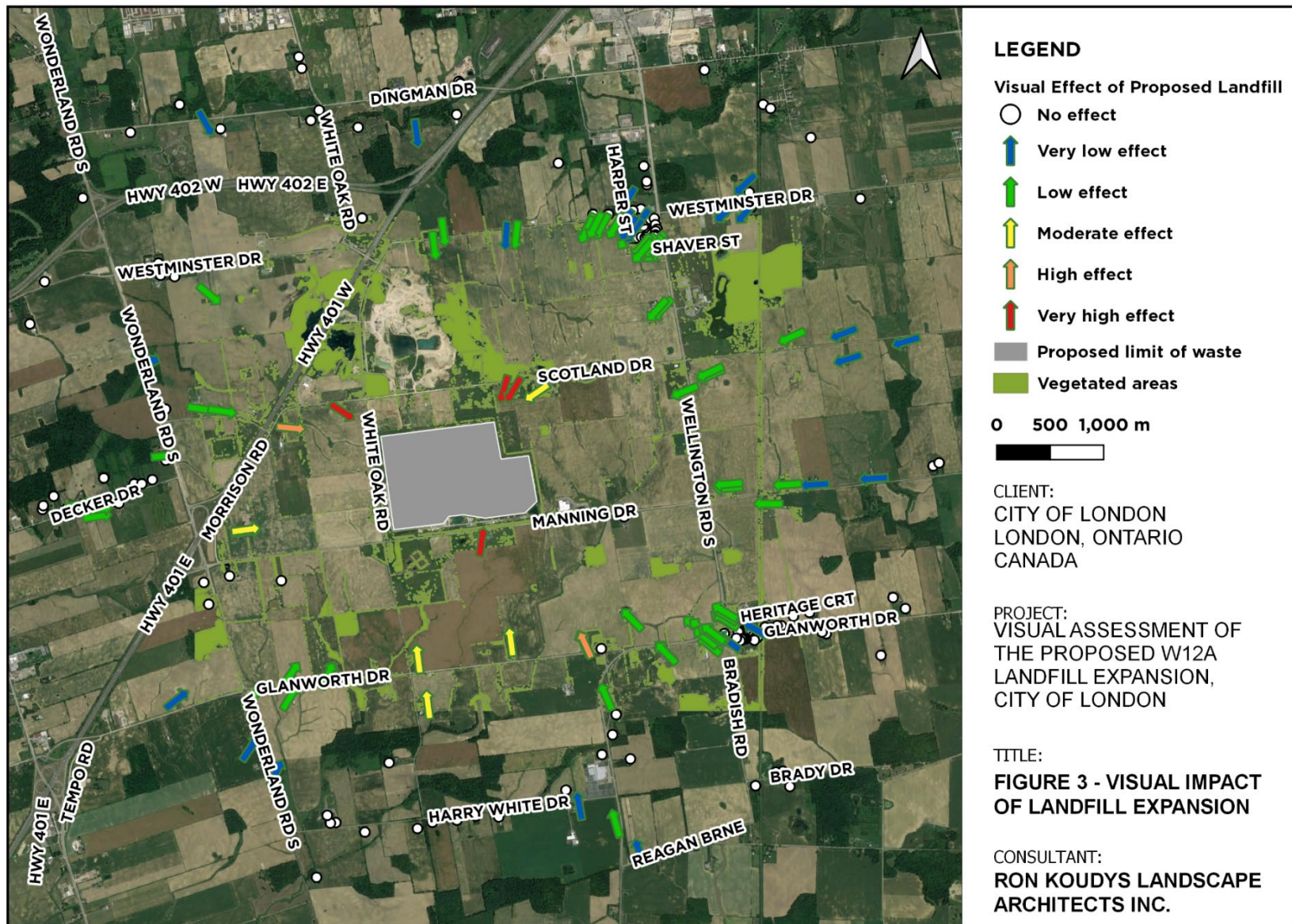




Figure 4 - View of Expanded Landfill from 3465 Scotland Drive

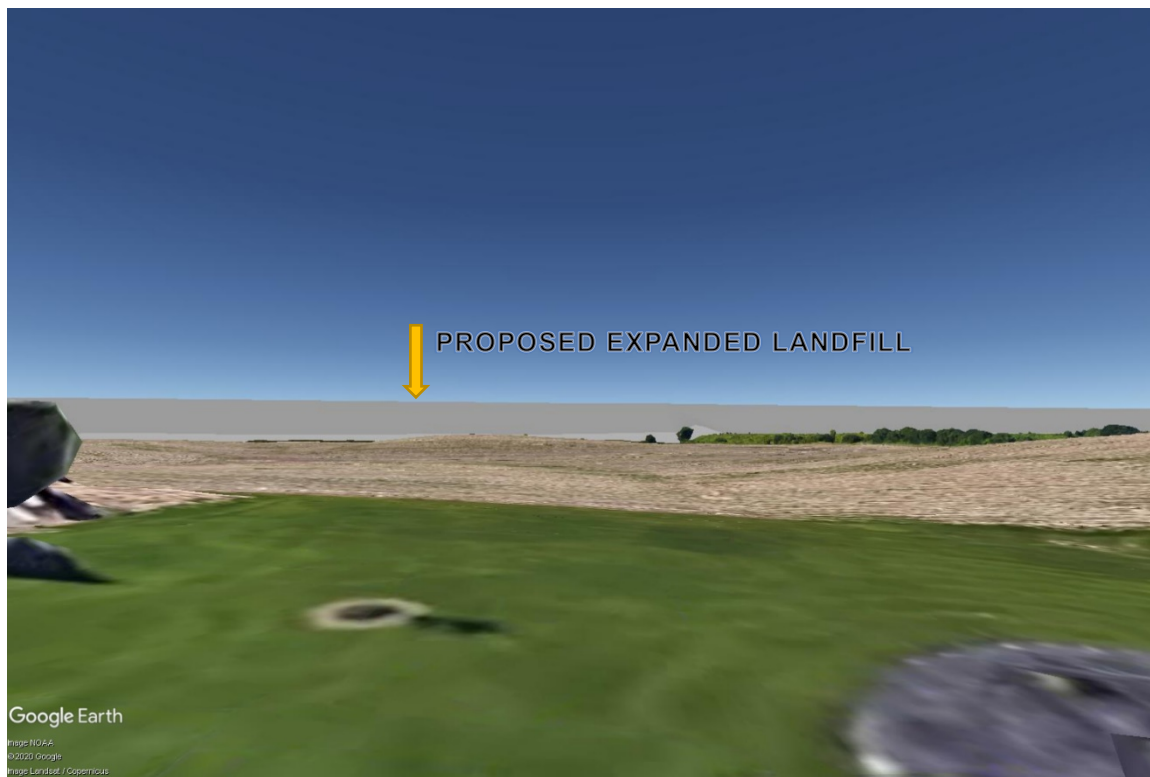


Figure 5 - View of Expanded Landfill from 3561 Scotland Drive



Figure 6 - View of Expanded Landfill from 4067 Scotland Drive



Figure 7 - View of Expanded Landfill from 3691 Manning Drive

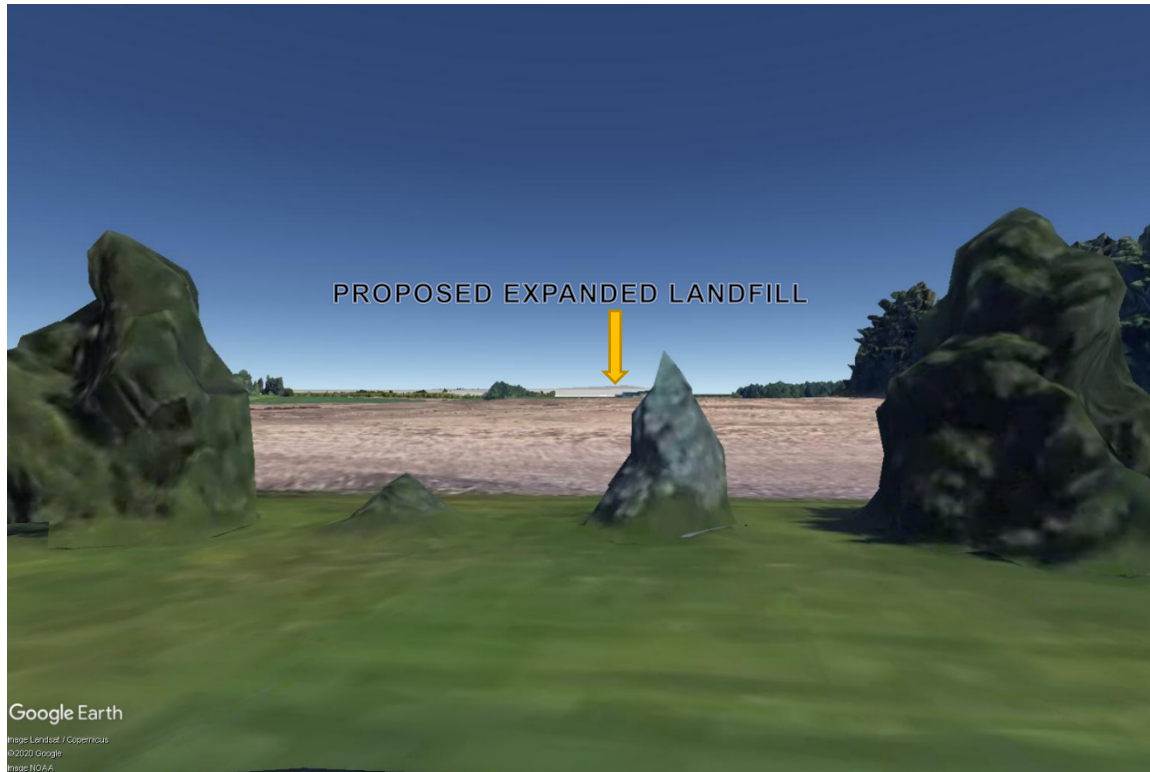


Figure 8 - View of Expanded Landfill from 3452 Glanworth Drive

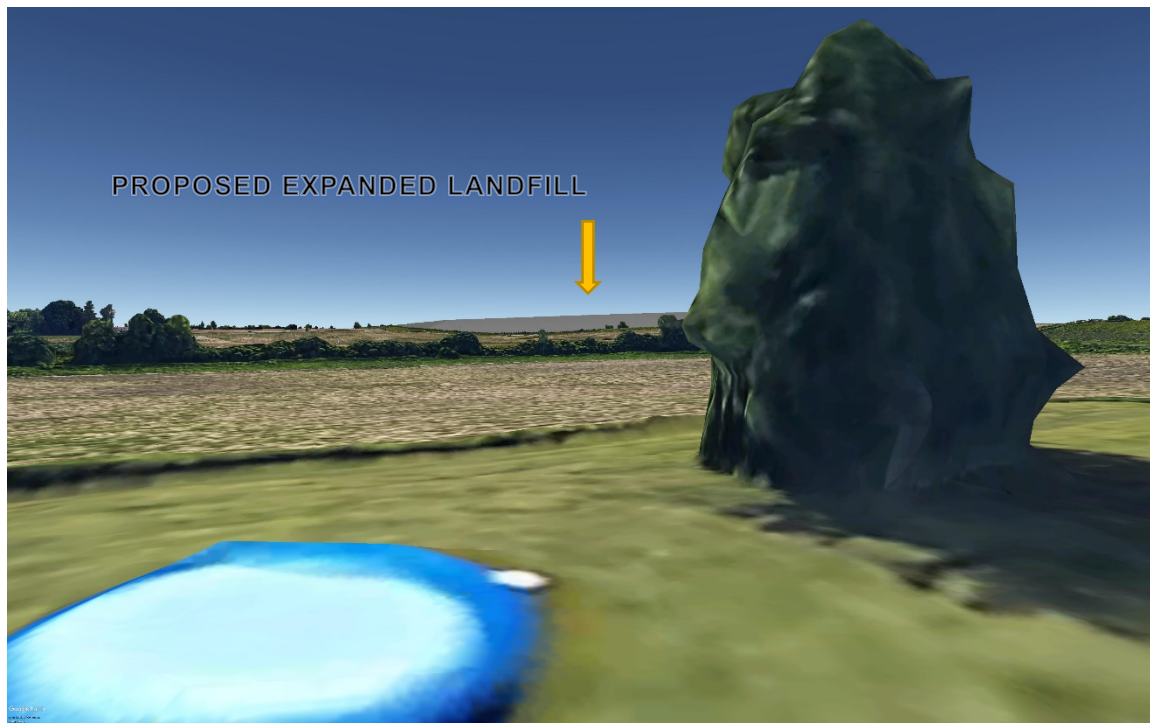


Figure 9 - View of Expanded Landfill from 4233 Scotland Drive

Table 7 Total Visual Effect on Surrounding Properties

Address	PAI Rating	Distance Rating	CoV Rating	VACF Rating	Total Rating	Visual Effect
2307 Scotland Dr	1	1	1	3	6	Very Low Effect
2472 Manning Dr	1	1	1	3	6	Very Low Effect
2489 Scotland Dr	1	1	1	3	6	Very Low Effect
2492 Scotland Dr	1	1	1	3	6	Very Low Effect
2656 Manning Dr	1	1	1	3	6	Very Low Effect
2700 Westminster Dr	1	1	1	3	6	Very Low Effect
2759 Westminster Dr	1	1	1	3	6	Very Low Effect
2807 Westminster Dr	1	1	1	3	6	Very Low Effect
2920 Glanworth Dr	1	1	1	3	6	Very Low Effect
3011 Glanworth Dr	1	1	1	3	6	Very Low Effect
3088 Westminster Dr	1	1	1	3	6	Very Low Effect
3115 Westminster Dr	1	1	1	3	6	Very Low Effect
3346 Reagan Brne	1	1	1	3	6	Very Low Effect
3507 Harry White Dr	1	1	1	3	6	Very Low Effect
3513 Westminster Dr	1	2	1	2	6	Very Low Effect
3699 Dingman Dr	1	1	1	3	6	Very Low Effect
4351 Dingman Dr	1	1	1	3	6	Very Low Effect
5012 Harper St	1	1	1	3	6	Very Low Effect
5043 Harper St	1	1	1	3	6	Very Low Effect
5268 Wonderland Rd S	1	1	1	3	6	Very Low Effect
6304 Glanworth Dr	1	1	1	3	6	Very Low Effect
6667 Wonderland Rd S	1	1	1	3	6	Very Low Effect
6760 Wonderland Rd S	1	1	1	3	6	Very Low Effect
2746 Manning Dr	1	1	1	4	7	Low Effect
3008 Heritage Crt	1	2	1	3	7	Low Effect
3019 Heritage Crt	1	2	1	3	7	Low Effect
3026 Heritage Crt	1	2	1	3	7	Low Effect
3033 Shaver St	1	1	2	3	7	Low Effect
3051 Shaver St	1	2	1	3	7	Low Effect
3067 Shaver St	1	2	1	3	7	Low Effect
3072 Glanworth Dr	1	2	1	3	7	Low Effect
3110 Shaver St	1	2	1	3	7	Low Effect
3155 Westminster Dr	1	2	1	3	7	Low Effect
3331 Westminster Dr	1	2	1	3	7	Low Effect
3656 Westminster Dr	1	2	1	3	7	Low Effect
3703 Westminster Dr	1	2	1	3	7	Low Effect
4350 Glanworth Dr	1	2	1	3	7	Low Effect

Address	PAI Rating	Distance Rating	CoV Rating	VACF Rating	Total Rating	Visual Effect
4371 Glanworth Dr	1	2	1	3	7	Low Effect
5033 Harper St	1	2	1	3	7	Low Effect
5109 Wellington Rd S	1	1	1	4	7	Low Effect
5137 Wellington Rd S	1	2	1	3	7	Low Effect
5369 Wellington Rd S	1	2	1	3	7	Low Effect
6314 Decker Dr	1	1	1	4	7	Low Effect
6341 Bradish Rd	1	2	1	3	7	Low Effect
6351 Bradish Rd	1	2	1	3	7	Low Effect
6367 Bradish Rd	1	2	1	3	7	Low Effect
6399 Wellington Rd S	1	2	1	3	7	Low Effect
6506 Wonderland Rd S	1	2	1	3	7	Low Effect
6540 Wellington Rd S	1	2	1	3	7	Low Effect
7077 Wellington Rd S	1	1	2	3	7	Low Effect
2652 Scotland Dr	2	1	2	3	8	Low Effect
2797 Manning Dr	1	2	1	4	8	Low Effect
2910 Manning Dr	1	2	2	3	8	Low Effect
2939 Scotland Dr	1	2	2	3	8	Low Effect
3058 Glanworth Dr	1	2	2	3	8	Low Effect
3179 Westminster Dr	1	2	2	3	8	Low Effect
3205 Westminster Dr	1	2	2	3	8	Low Effect
3483 Westminster Dr	1	2	2	3	8	Low Effect
4248 Glanworth Dr	1	3	1	3	8	Low Effect
4436 Scotland Dr	1	3	1	3	8	Low Effect
5371 Wellington Rd S	1	2	2	3	8	Low Effect
6267 Decker Dr	1	1	2	4	8	Low Effect
6597 Wellington Rd S	1	3	1	3	8	Low Effect
3041 Heritage Crt	2	2	2	3	9	Low Effect
3071 Glanworth Dr	2	2	2	3	9	Low Effect
3084 Glanworth Dr	2	2	2	3	9	Low Effect
3137 Scotland Dr	2	2	2	3	9	Low Effect
3223 Westminster Dr	1	2	2	4	9	Low Effect
4429 Westminster Dr	2	2	1	4	9	Low Effect
5567 Wonderland Rd S	1	2	2	4	9	Low Effect
5595 Wellington Rd S	2	2	2	3	9	Low Effect
6421 Wellington Rd S	2	2	2	3	9	Low Effect
6601 Wellington Rd S	2	3	1	3	9	Low Effect
6643 Fisher Lane	2	2	2	3	9	Low Effect
3674 Glanworth Dr	2	3	2	3	10	Moderate Effect
4412 Manning Dr	1	3	2	4	10	Moderate Effect

Address	PAI Rating	Distance Rating	CoV Rating	VACF Rating	Total Rating	Visual Effect
3405 Scotland Dr	2	5	1	3	11	Moderate Effect
6368 White Oak Rd	2	3	3	3	11	Moderate Effect
6602 White Oak Rd	2	2	3	4	11	Moderate Effect
3452 Glanworth Dr	3	3	3	3	12	High Effect
4233 Scotland Dr	2	3	3	4	12	High Effect
4067 Scotland Dr	4	5	4	3	16	Very High Effect
3465 Scotland Dr	5	5	4	4	18	Very High Effect
3561 Scotland Dr	5	5	4	4	18	Very High Effect
3691 Manning Dr	5	3	5	5	18	Very High Effect

5. Mitigation

5.1. General

To reduce the visual impact of the proposed landfill expansion, topographic and vegetative elements between potentially-affected views and the landfill should be preserved and, where possible, introduced. Using the viewshed model, the views most impacted can be identified and locations for the most effective interventions determined. Fundamentally, these measures will either reduce the area of the landfill visible (the perceived area or cone of view) or increase the visual-absorption capability of the landscape.

The closer these mitigative measures are placed to an impacted viewpoint, the more effective they will be at reducing that visual effect, but the less likely they will be to ameliorate other views. Conversely, mitigation closer to the target of these views (the expanded landfill) will be less effective at mitigating any particular view but will mitigate more views in total.

The most effective measure at reducing visual impact is screening; physically interrupting a line of site to reduce or remove entirely a view of the proposed landfill. Where that is not feasible, measures such as distraction or a combination of measures can be used. By strategically placing a landscape feature that catches the eye or attracts attention within the sight lines of an impacted view, such as an attractive sign along a right-of-way that has views of the proposed landfill, the perceived visual effect can be reduced by distracting the eye away from the landfill and towards the sign. If landscape elements are introduced within a viewshed to be mitigated that are visually similar to the landfill, establish a pattern that incorporates it, frames the view of it, etc., then the combination of visual impacts may be less than just the expanded landfill on its own.

This planned mitigation can be grouped into phases, addressing immediate impacts first. Screening to be provided by tree plantings can be planned to grow as the landfill expands.

5.2. Operations

As discussed earlier, the most obvious views of the proposed landfill are to the south. To reduce the visual impact of daily operations, waste would be placed initially to build a berm along the south side of the landfill's waste disposal area and will be covered with final cover soil and seeded to establish vegetation. This berm will screen the view of subsequent filling operations north of the berm from off-site vantage points to the south. The south side perimeter waste berm would be raised sequentially and filled in behind until the peak elevation is reached.

5.3. Roadways

The existing perimeter berms with trees on the south, west, north and a portion of the east sides of the landfill are effective at visually screening the existing landfill and expected to continue to screen the view of the expanded landfill from traffic beside the landfill on Manning Drive and White Oak Drive, but not from Scotland Drive or Wellington Road South.

The following figures show existing views from the surrounding roadways and those same views with the proposed landfill expansion shown in green.



Figure 10 - View of existing landfill from Wellington Road South



Figure 11 - View of Proposed Expansion from Wellington Road South



Figure 12 - View of existing landfill from Glanworth Drive



Figure 13 - View of Proposed Expansion from Glanworth Drive



Figure 14 - View of existing landfill from Highway 401



Figure 15 - View of Proposed Expansion from Highway 401

With the expansion, the landfill property boundary will be moved northward to Scotland Drive and new berms with tree plantings will be constructed along the new property boundary (White Oak Road northward to Scotland Drive, Scotland Drive). This will visually screen the landfill expansion from traffic beside the landfill on Scotland Drive.

Drivers on Wellington Road South east of the landfill will continue to see the site if they look in the direction of the landfill. However, the landfill expansion is not in the direct line of sight for the driver and is over 1.5 kilometres away. These factors help to mitigate views from Wellington Road South.

There are other roads near the landfill from which the expanded landfill will be visible (e.g., Glanworth Drive). In many cases, these roads are not in the direct line of sight for the driver and are far enough away, which will help to mitigate the visual impact. In some locations, specific view-mitigation measures may be warranted.

An example of a specific view-mitigation measure would be a planting strategy like shown in Figure 16 that can be implemented to mitigate views of the W12A site from nearby roads, creating an idyllic country-road feel with a minimal investment. Here, plantings of deciduous trees along the roadside creates a continuous screen that effectively blocks the view to the adjacent properties. When viewed from a vehicle where the occupants are looking forward, the trunks of the trees align to effectively direct the view down the road rather than to the side.



Figure 16 - An example of roadside tree-based visual mitigation once it has matured.

The City will seek feedback on appropriate roadside view-mitigation measures from area residents when it updates its Community Enhancement and Mitigative Measure Program (CEMMP). The CEMMP is discussed further in Section 5.4

The effectiveness of each mitigation measure can be assessed using the viewshed model to “see” what the impact will be over time.

5.4. Residential Properties

As noted earlier, the landfill expansion will have a high to very high visual impact on six properties. Three of these properties are owned by the City and three properties are privately owned. Many other properties have a very low to moderate visual impact.

The City currently has a W12A Landfill Community Enhancement and Mitigative Measures Program. The CEMMP is part of the City’s overall efforts to reduce and address the negative effects of the W12A Landfill on neighbouring properties. Work on developing the CEMMP began in 2006 and was approved by Council in 2009. The Program was updated in 2010 and again in 2014. The current CEMMP consists of five programs or actions:

- Property Value Protection Plan
- “Right of First Refusal” Program
- Community Mitigative Measures Fund
- No Charge Waste Disposal
- Public Liaison Committee (PLC)

The City will be updating the CEMMP in consideration of the proposed expansion of the landfill. The first step in updating the CEMMP will be seeking stakeholder feedback on how the program can be improved, including what are appropriate visual screening measures for residential properties.

6. Monitoring

No formal visual monitoring is required. In the future, potential concerns over visual impacts as the landfill expands will be able to be taken to the W12A Landfill Public Liaison Committee or the City’s Civic Works Committee for consideration.

7. Other Approvals

The Project will require an application for an amendment of the Environmental Compliance Approval (ECA) for waste under Section 27 of the *Environmental Protection Act*. The on-site screening measures (operational berm on south site of landfill’s waste disposal area and new screening berms along White Oak Road and Scotland Drive) will be part of this approval.

8. Conclusion

There will be increased visual impacts to the area as a result of the vertical expansion of the W12A Landfill. For most off-site locations, the impact will be a low to moderate visual impact. For six residential properties, the impact will be a high or very high visual impact.

The City will be seeking stakeholder feedback on appropriate screening measures for off-site locations as part of updating its CEMMP.

The landfill design will also include additional on-site berms and vegetation to provide further screening, which will be part of the landfill's ECA approval.



Appendix A- 4348 McDougal Individual Assessment

Comparison of W12A Landfill views with the 3D Model

From 4248 Glanworth Drive to the existing W12A site

Introduction

During the open house held on February 27th, 2020, an area resident suggested that the visible portion of the existing W12A Landfill within the Google Earth 3D model, as seen from his property, was significantly smaller than what portion is actually visible.

The model's detailed 3D topography of the area extends to approximately 1 kilometre south of the W12A Landfill site, beyond which only the ground is shown. This limitation of the 3D model was explained at the open house, and increases the apparent visual impact of the landfill, as screening elements of the landscape such as trees are not shown.

The residence in question is approximately 300 metres beyond the detailed model area, and significant vegetation between the views from the private outdoor areas and the landfill are not represented.

Photos of the landfill from the areas concerned were supplied by the resident, and a photo from the street was taken by Ron Koudys. The views represented in these images were recreated within the 3D model and overlain on the originals.

Towers on 6150 White Oak Road were visible in the photographs, and so were added to the model to assist with the comparison of model views with the photographs, but these towers were not shown during the open house.



Figure 1 - view of towers added to the 3D model on 6150 White Oak Rd.

Comparison of site photos and views from the 3D model
Photo titled "Glanworth 50mm_MG_3071.5"



Figure 2 - Photo from resident titled "Glanworth 50mm_MG_3071.5"



Figure 3 - Matched view from 3D model with towers to Figure 2

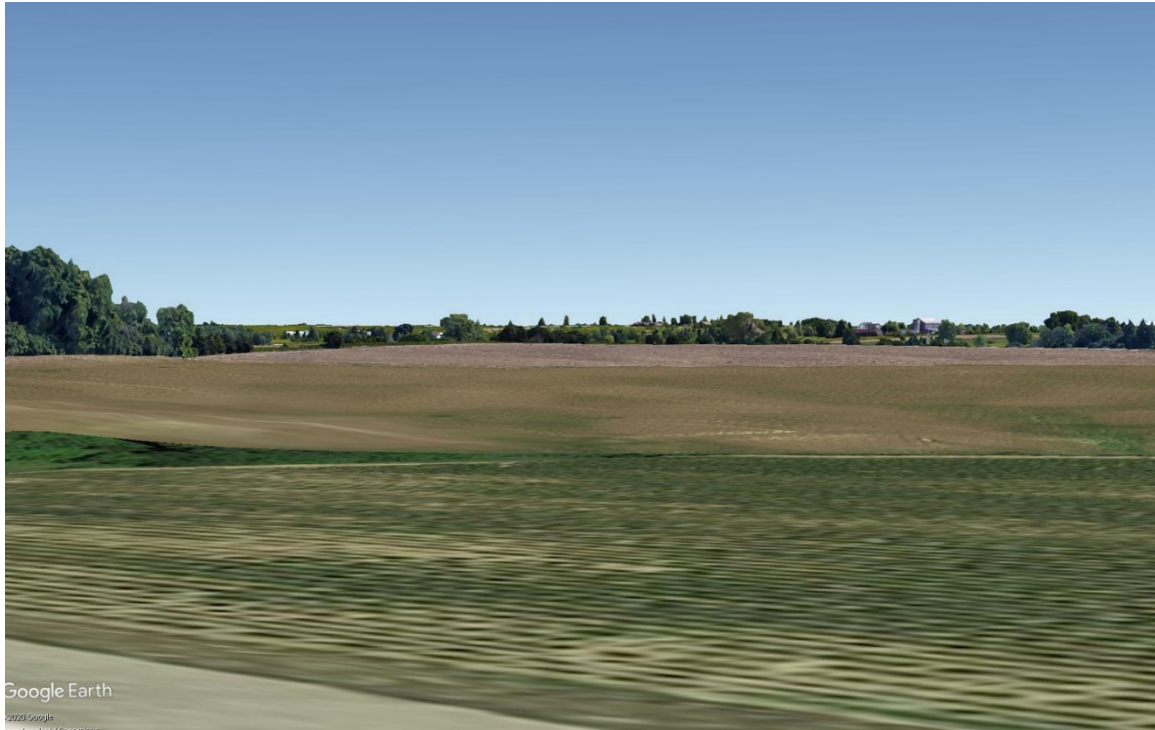


Figure 4 - Matched view from 3D model as shown at the open house to Figure 2

Photo titled "Glanworth 50mm_MG_3062-2.5"



Figure 5 - Photo from resident titled "Glanworth 50mm_MG_3062-2.5"

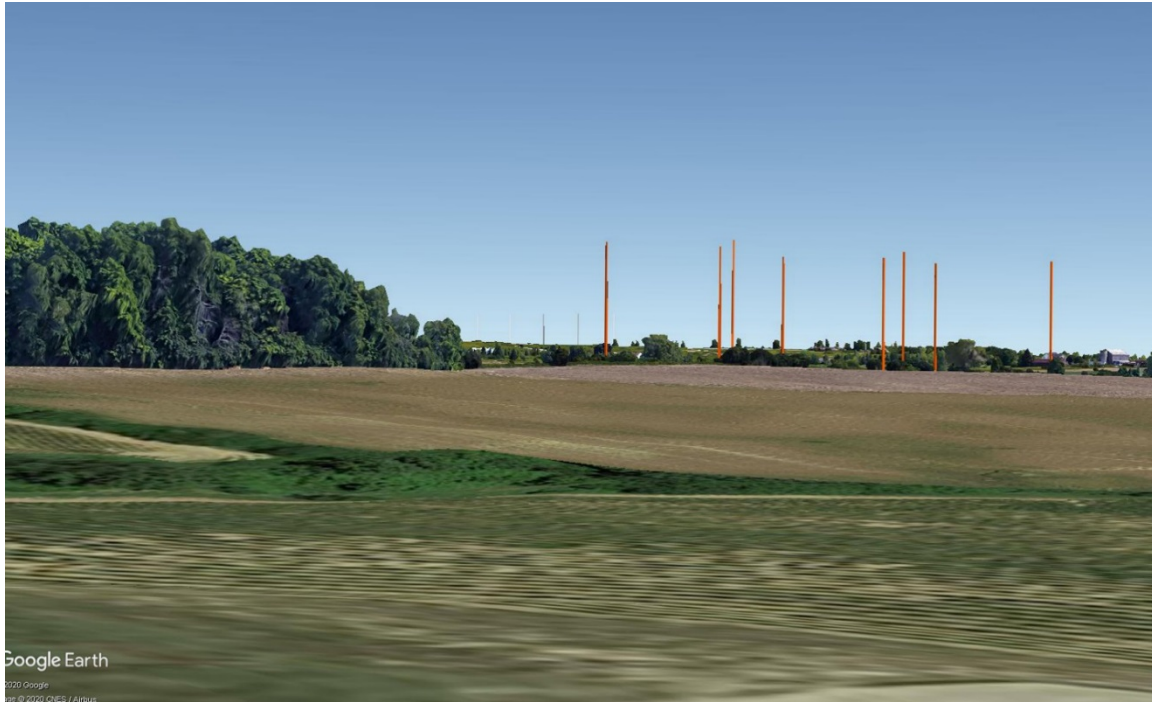


Figure 6 - Matched view from 3D model with towers to Figure 5

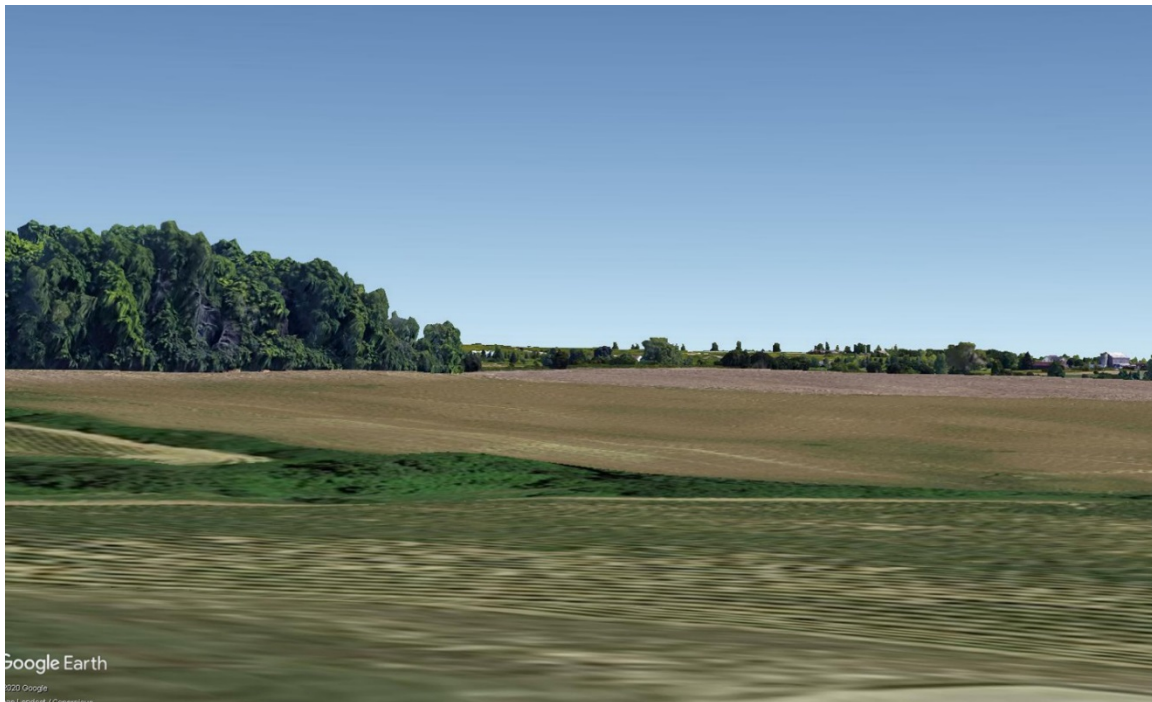


Figure 7 - Matched view from 3D model as shown at the open house to Figure 5

Photo taken by Ron Koudys



Figure 8 - Photo of landfill from street in front of 4248 Glanworth Dr



Figure 9 - Matched view from 3D model with towers to Figure 8



Figure 10 - Matched view from 3D model as shown at the open house to Figure 8

Comparison of W12A Expansion Alternatives from 4248 Glanworth Dr.
From the location of photo titled "Glanworth 50mm_MG_3071.5"

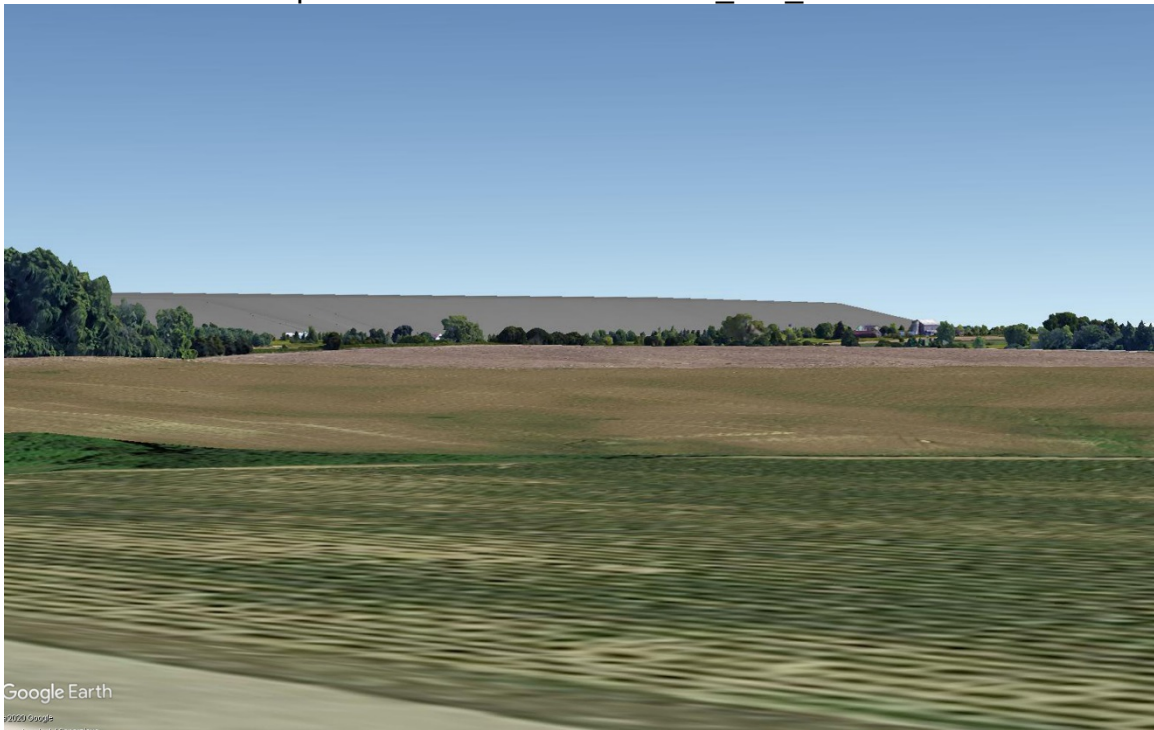


Figure 11 - View of Alternative 1 (vertical expansion) from the same location as Figure 2

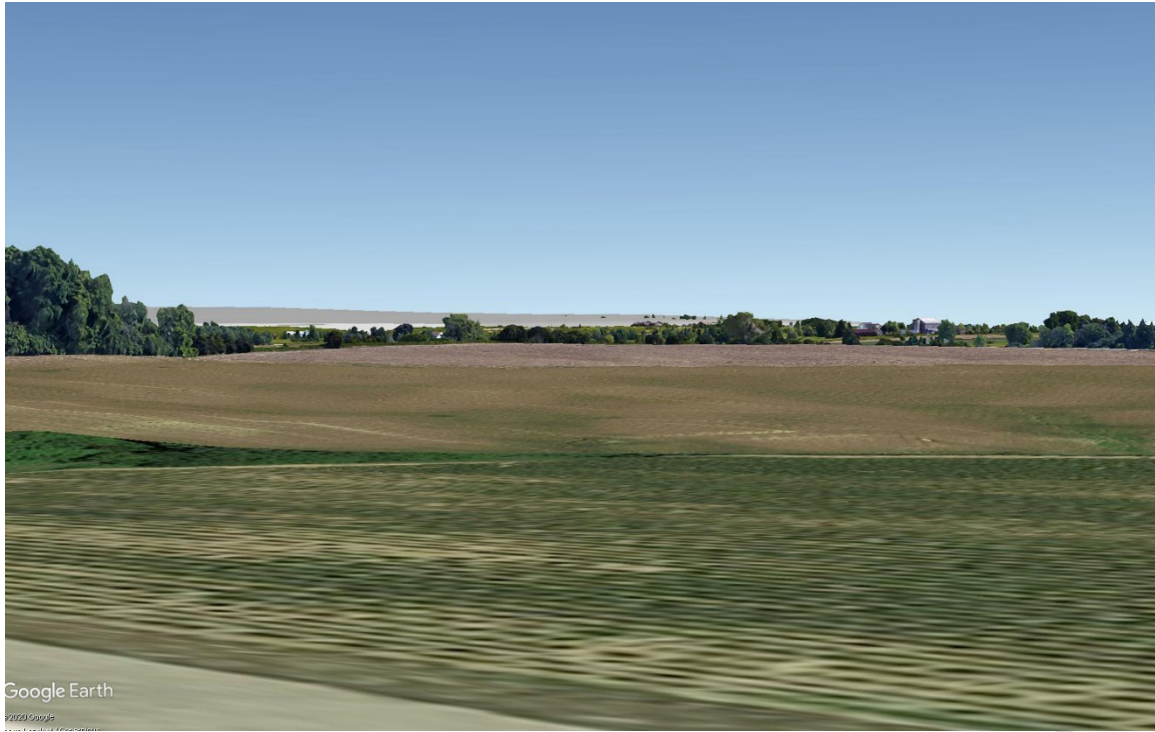


Figure 12 - View of Alternative 2 (northward expansion) from the same location as Figure 2

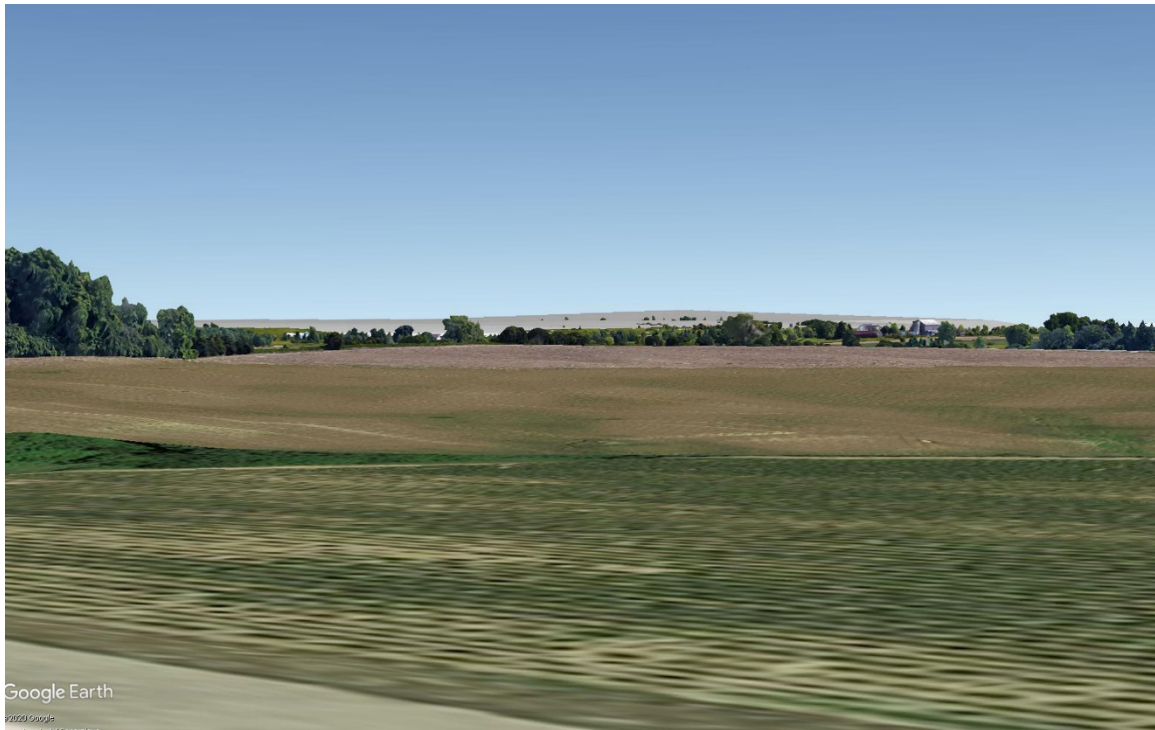


Figure 13 - View of Alternative 3 (eastward expansion) from the same location as Figure 2
 From the location of photo titled "Glanworth 50mm_MG_3062-2.5"

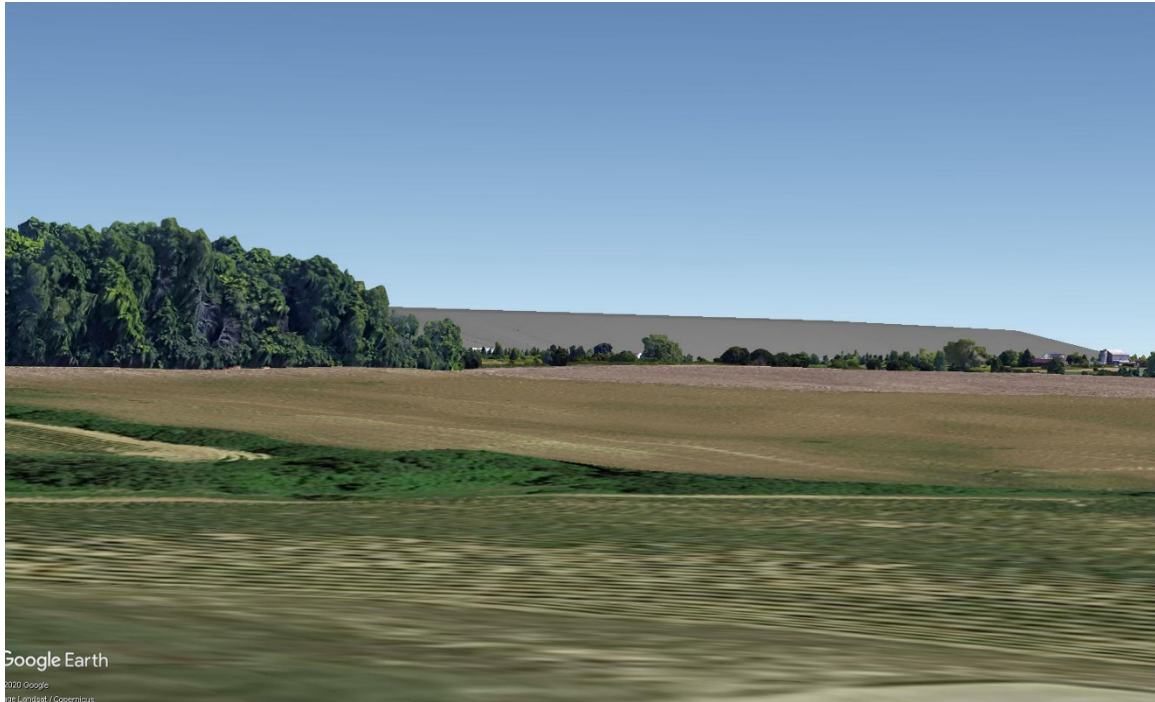


Figure 14 - View of Alternative 1 (vertical expansion) from the same location as Figure 5



Figure 15 - View of Alternative 2 (northward expansion) from the same location as Figure 5



Figure 16 - View of Alternative 1 (eastward expansion) from the same location as Figure 5

Conclusion

As demonstrated by the images in section 2, the visible portion of the existing landfill from 4248 Glanworth Drive in the 3D model presented at the open house on February 27, 2020 matches closely with the visible portion of the landfill in photographs taken on-site.