Brooks Road Environmental

Socio-Economic Assessment Report for the Brooks Road Landfill Site Vertical Capacity Expansion Environmental Assessment

Brooks Road Landfill Site
160 Brooks Road
Haldimand County, Ontario

DECEMBER 2016
REF. NO. 018235 (61)

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Section 1.0 Introduction

In July 2015 the Minister of the Environment and Climate Change approved the Terms of Reference (ToR) for the Brooks Road Landfill Site Vertical Capacity Expansion Environmental Assessment (EA). This report provides an overview of the alternative conceptual vertical capacity expansion designs (i.e., 'Alternative Methods') for the Brooks Road Landfill Site Vertical Capacity Expansion EA (**Section 2.0**) and documents the following with respect to the Socio-Economic discipline:

- Describes the Socio-Economic Existing Conditions associated with the EA Study Areas (**Section 3.0**)
- Details the mitigation measures to be incorporated into the Alternative Method designs in order to prevent or minimize effects on Socio-Economic (**Section 4.0**)
- Documents the net effects analysis for each Alternative Method with respect to Socio-Economic (**Section 5.0**)
- Identifies the Preferred Alternative Method from a Socio-Economic perspective through a comparative evaluation process (**Section 6.0**)

Section 2.0 Alternative Methods for Vertical Expansion

Three vertical expansion alternatives have been developed for comparative analysis. The alternatives were identified in consideration of the criteria and assumptions outlined in the Conceptual Design Report (CDR) and based on public input received during the ToR.

The following aspects will be identical across all three vertical expansion alternatives, including:

- An expansion capacity of 421,000 m^3, including waste, daily cover, and interim cover
- The limit of waste (i.e., landfill footprint)
- Traffic associated with importing waste, daily cover, and interim cover
- The location of the site entrance, scalehouse, and other ancillary supporting features
- The size and location of all buffer areas
- The final cover design (0.6 m of compacted fine-grained soil overlain by a 0.15 m thick vegetative layer)
- The leachate treatment (i.e., batch leachate treatment system)

The three vertical expansion alternatives are illustrated on **Drawings C-02** through **C-07** (following text) and their unique attributes are outlined in **Table 2.1**, below. Further information on the vertical expansion alternatives is found in the CDR.

Table 2.1 Comparison of Vertical Expansion Options			
Attribute	**Alternative 1**	**Alternative 2**	**Alternative 3**
General Description	Expansion capacity with 3H to 1V (33%) side slopes to a crest height of 218.075 m	Expansion capacity with 4H to 1V (25%) side slopes to a crest height of 221.0 m	Expansion capacity with 3H to 1V (33%) side slopes to a crest height of 221.25 m and bench at approx. 210.0 m
Approximate Elevation of Top of Landfill (including final cover)	219.65 m	221.50 m	222.13 m
Approximate Height of Landfill Above Existing Grade of 198.96	20.69 m	22.54 m	23.17 m
Post-Closure Leachate Generation Rate	36 m^3/day	36 m^3/day	36 m^3/day
Number of Vehicles Per Day Associated with Waste and Construction Materials	16	16	16

Section 3.0 Socio-Economic Environment Potentially Affected

The July 2015 Minister-approved ToR includes a preliminary description of the existing environmental conditions within the Study Areas and commits to providing an expanded description of the existing environmental conditions within the Study Areas in the EA. The following section provides a more detailed description and understanding of the Socio-Economic Existing Conditions, including Aboriginal Community interests, within the Study Areas for use in the assessment and evaluation of Alternative Methods.

3.1 Study Areas

The following two generic study areas were established for preparation of the EA:

- **Site Study Area**, including all lands (i.e., 14.3 hectares (ha)) within the existing, approved boundaries of the Brooks Road Landfill Site (Site), as defined by Environmental Compliance Approval (ECA) No. A110302, dated July 21, 2014, as amended
- **Local Study Area**, including all lands and waters within a 1 kilometre (km) radius of the Site Study Area boundaries

As provided for in the approved ToR, each technical discipline may modify the Local Study Area, as required, during the EA. For the Socio-Economic Environment, only the Local Study Area is applicable (see **Figure 3.1**).

Source: MNRF NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016;
Aerial: 2006 Grand River Conservation Authority
Coordinate System: NAD 1983 UTM Zone 17N

Legend

Site Location

Local Study Area (1km Radius)

figure 3.1

LOCAL STUDY AREA
SOCIO-ECONOMIC ASSESSMENT REPORT
BROOKS ROAD LANDFILL
160 Brooks Road, Cayuga, Ontario

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3.2 Methodology

Information on the Socio-Economic Existing Conditions within the Study Area was gathered from a combination of secondary source research and field investigations.

3.2.1 Available Secondary Source Information Collection and Review

Available secondary sources of information were collected and reviewed to determine existing Socio-Economic conditions and Aboriginal Community interests within the Local Study Area. The following sources of secondary information were collected and reviewed:

- Most recent aerial photos available of the Study Area
- Community profile from the Haldimand County website
- National Household Survey Profile from Statistics Canada
- Population data from Statistics Canada
- Government of Ontario Agricultural Information Atlas
- Six Nations of the Grand River website
- Ontario Government information on the status of negotiations with the Six Nations of the Grand River
- Mississaugas of the New Credit First Nation (MNCFN) website
- Haudenosaunee Confederacy Chiefs Council (HCCC) website

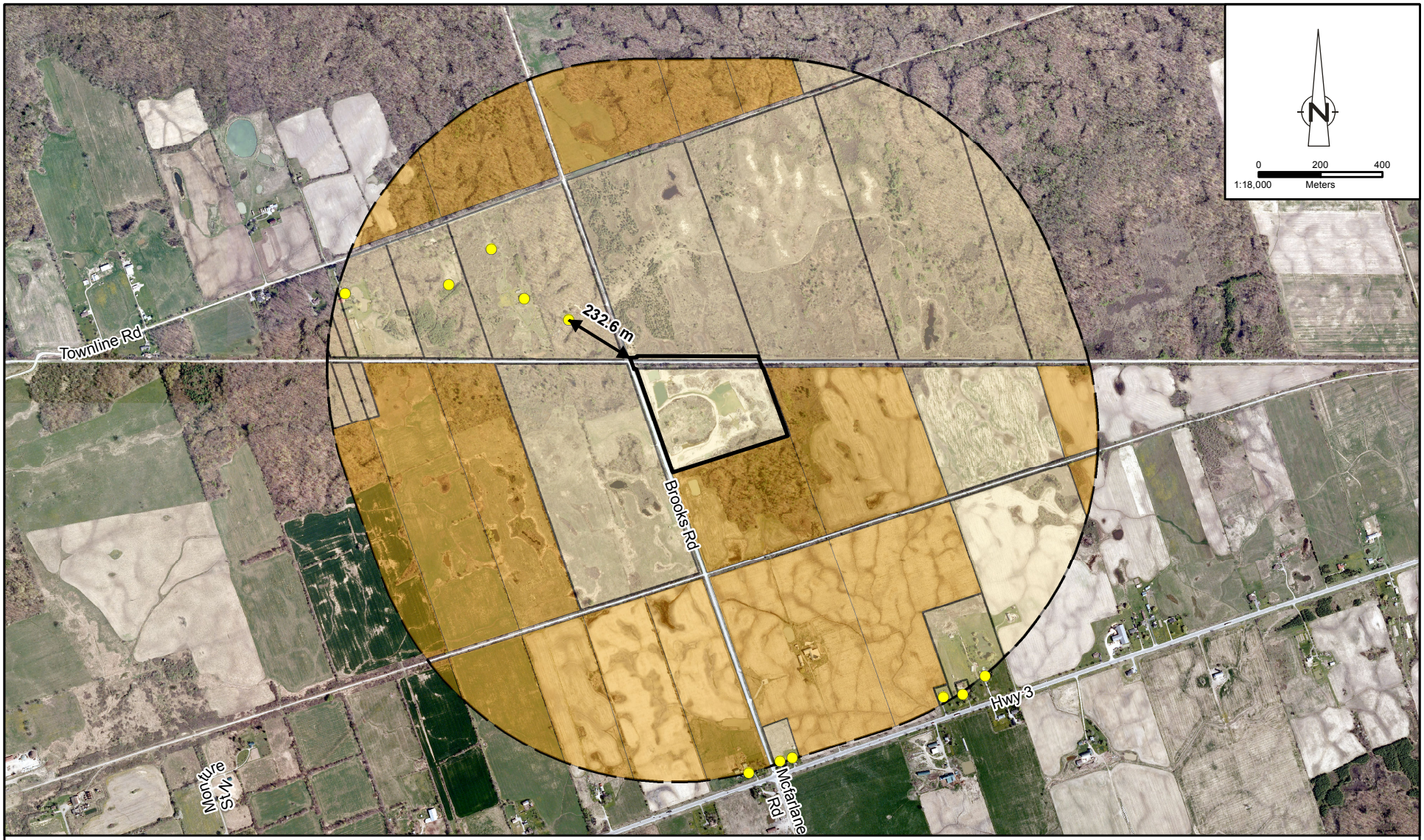
3.2.2 Field Investigations

In order to catalogue the number of residences as well as the existing viewshed from within the Local Study Area, site visits were undertaken on September 11, 2015 and January 22, 2016. During these visits all residences within the Local Study Area were recorded on an aerial map and photos were taken from various locations within and around the Local Study Area in the direction of the existing Site and recorded on an aerial map.

3.3 Existing Socio-Economic Conditions

3.3.1 Social Existing Conditions

The Local Study Area for the Brooks Road Landfill EA is located within the boundaries of Haldimand County, Ontario, approximately 2 km northeast the Village of Cayuga. The Village of Cayuga was reported to have a population of 1,622 in 2011 (Statistics Canada, 2011a). There are 39 property parcels within the Local Study Area (not including the Site) and 11 residential dwellings (see **Figure 3.2**). Of these 39 properties, 19 were Farm Tax Rated for the 2014 tax year (Government of Ontario, 2014), as described below. The closest residential dwelling is located approximately 232 m northwest of the Site.



Source: MNRF NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016;
Aerial: 2006 Grand River Conservation Authority
Coordinate System: NAD 1983 UTM Zone 17N

figure 3.2

LOCAL STUDY AREA PROPERTY PARCELS AND RESIDENTIAL DWELLINGS
SOCIO-ECONOMIC ASSESSMENT REPORT
BROOKS ROAD LANDFILL
160 Brooks Road, Cayuga, Ontario

Legend

- Residential Dwelling
- Site Location
- Local Study Area (1km Radius)
- Assessment Parcel
- Farm Tax Rated Parcel

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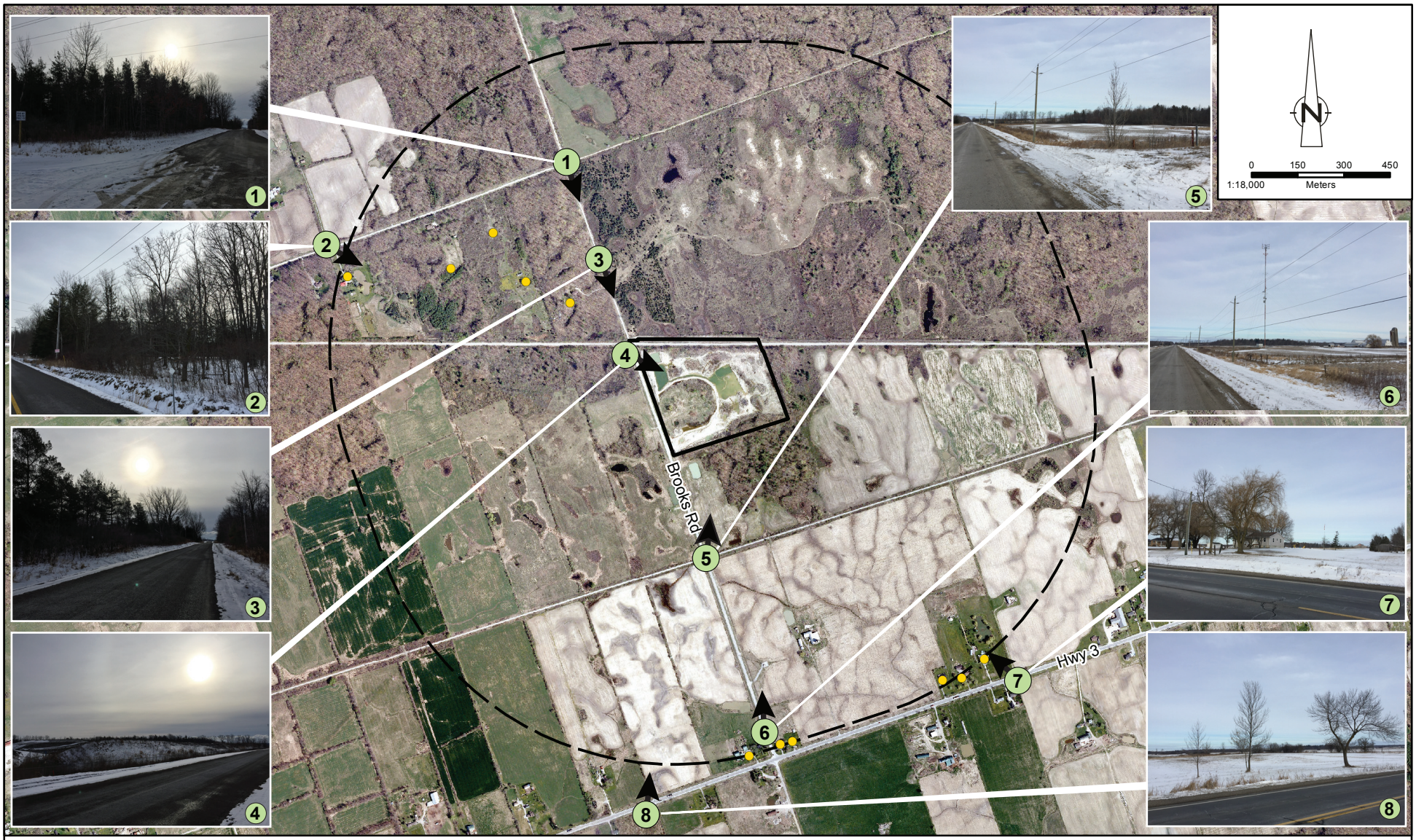
No static recreational resources (e.g., picnic areas, trailer parks), churches, or cemeteries are located within the Local Study Area; however, Brooks Road as well as the abandoned railway to south of the Site (parallel to Highway 3) are identified in the Official Plan as trail locations and in the Haldimand County Trails Master Plan (2009) as "Proposed Special Use Routes" (Brooks Road as a "Proposed Signed Route" and the abandoned railway as a Proposed Multi-Use Trail") for implementation in the short-term (0 to 5 years from the publication date). There is presently no indication of the implementation of the proposed trails along either of these routes.

The topography across the Local Study Area from north to south ranges from approximately 202 m above mean seal level (AMSL) to approximately 196 m AMSL. As such, the land within the Local Study Area can be considered to be relatively flat. The majority of the lands within the Local Study Area immediately adjacent to the Brook Road Landfill Site are forested, thus obscuring the view of the Site. The exception is the parcel of land immediately west of the Site, which includes an open field, from which the Site is visible; however, the existing berm along the western perimeter of the Site obscures most views of the landfilling operations from this parcel. The existing viewshed from areas within and surrounding the Local Study Area, looking in the direction of the Brooks Road Landfill Site, are shown on **Figure 3.3**.



Source: MNRF NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016;
Aerial: 2006 Grand River Conservation Authority
Coordinate System: NAD 1983 UTM Zone 17N

Legend

- Photo Direction
- Photo Locations
- Residential Dwelling
- Site Location
- Local Study Area (1km Radius)

figure 3.3

LOCAL STUDY AREA VIEWSHED
SOCIO-ECONOMIC ASSESSMENT REPORT
BROOKS ROAD LANDFILL
160 Brooks Road, Cayuga, Ontario

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3.3.2 Economic Existing Conditions

As described in the Section 4.5.3 of the EA Report 19 property parcels within the Local Study Area were assessed as Farm Tax Rated for the 2014 tax year. Eligibility criteria for classification as a Farm Tax Rated property include, among others[1]:

- The property must be used as part of a farming operation generating Gross Farm Income (GFI) of at least $7,000 as reported to Canada Revenue Agency for income tax purposes.
- A valid Farm Business Registration number is required for the farm business operating on the land, unless one of the exemptions applies and is granted. Under the Farm Registration and Farm Organizations Funding Act, a farm business generating Gross Farm Income of at least $7,000 as reported to Canada Revenue Agency for income tax purposes must register annually with Agricorp (1-866-327-3678). Continued eligibility for the Farm Property Class tax rate requires the yearly renewal of your Farm Business Registration number.

It can therefore be inferred, based on the eligibility criteria described above, that all properties within the Local Study Area classified as Farm Tax Rated are being actively farmed or used for farming purposes, either wholly or in part, and are registered farm businesses.

In addition to farming, the only other business operating within the Local Study Area is the Brooks Road Landfill Site, which employs six full-time and one part-time staff.

On a regional level, according to the National Household Survey Profile, Haldimand County has an employment rate of 62.5% and an unemployment rate of 6.6% (Statistics Canada, 2011b). The top three employment industries in the County include manufacturing (approximately 15%), health care and social assistance (approximately 12%), and construction (approximately 10%) (Statistics Canada, 2011b).

The Brooks Road Landfill Site employs six full-time and one part-time staff.

3.3.3 Aboriginal Community Interests

The existing Site is located approximately 15 km southeast of the Six Nations of the Grand River territory, within which lies the community of Ohsweken. The Site falls within the Haldimand Tract, a swath of land roughly 9.6 km (6 miles) on either side of the Grand River that was granted to the Six Nations of the Grand River under the Haldimand Proclamation on October 25, 1784. The Six Nations of the Grand River include the Mohawk, Seneca, Oneida, Cayuga, Onondaga and Tuscarora nations. After the American War of Independence, some of the families allied to the British moved from their homeland in the Finger Lakes region of New York State to the Grand River and settled on a tract of land granted by the Haldimand Proclamation of 1784 and confirmed by the Simcoe Patent of 1793 (Ontario,

[1] Farm Property Class Tax Rate Program – Questions & Answers. Ministry of Agriculture, Food & Rural Affairs, 2016

2015). The Six Nations of Grand River are seeking compensation as well as an accounting of what happened to their property, money and other assets in southwestern Ontario, within the Haldimand Tract and, as of 2009, have formally reactivated litigation against Canada and Ontario (Ontario, 2015). These claims are now being pursued in the courts (Ontario, 2015).

Brooks Road Environmental has been in contact with Six Nations of the Grand River First Nation since the commencement of the ToR for this EA. Through meetings and discussions with members of the Six Nations of the Grand River First Nation, the lands within the Local Study Area have not been identified as being used for traditional purposes, and more specifically, the Site Study Area. Six Nations of the Grand River First Nation has expressed a desire to continue to be updated and involved in the EA process and to that end, a number of one-on-one meetings were held throughout the EA process. In addition, there is a spot reserved on the Brooks Road Public Liaison Committee (PLC) or a Six Nations representative for on-going engagement around the operation of the site – this would include the opportunity for discussions between Brooks Road and Six Nations to discuss any particular issues or concerns with respect to potential effects on the use of lands for traditional Aboriginal purposes. Brooks Road is open to discussing future work and partnerships with Six Nations of the Grand River, specifically as it relates to the future operation of the Site.

The Haudenosaunee Confederacy includes all of the nations that comprise the Six Nations of the Grand River as well as the Wyendot, Delaware, and Tutela nations (Haudenosaunee Confederacy, 2014). The Haudenosaunee Confederacy was intended as a way to unite its member nations through the common goal of living in harmony and create a peaceful means of decision making (Haudenosaunee Confederacy, 2014). Each member nation maintains its own council and handles its own internal affairs but defers to the HCCC regarding issues that affect multiple nations within the Haudenosaunee Confederacy (Haudenosaunee Confederacy, 2014). The HCCC has legislated the Haudenosaunee Development Institute (HDI) to represent HCCC interests in the development of lands within areas of Haudenosaunee jurisdiction, including but not limited to the land prescribed by the Haldimand Proclamation and the 1701 Treaty Area (Haudenosaunee Confederacy, 2014). Brooks Road Environmental has been in contact with HCCC and HDI since the commencement of the ToR for this EA.

The MNCFN community is located approximately 18 km to the west of the Site in Hagersville. The traditional territory of the Mississaugas of the New Credit First Nation is located in south-western Ontario between Toronto and Lake Erie and includes Haldimand County. Brooks Road Environmental has been in contact with the MNCFN since the commencement of the ToR for this EA. Correspondence was received as part of the EA process from the MNCFN indicating that they continue to exercise treaty rights within their traditional territory, including the Local Study Area, which include, but are not limited to, rights to harvest, fish, trap and gather species of plants, animals and insects for any purpose including food, social, ceremonial, trade and exchange purposes, and that MNCFN also has the right to use the water and resources from the rivers, creeks and lands across the MCNFN traditional territory.

The correspondence also noted; however, that, at this time, MNCFN does not have a high level of concern regarding the proposed project and approves the continuation of the EA.

Section 4.0 Mitigation Measures to be Incorporated into the Alternative Method Designs

Based on the description of the Alternative Methods provided in **Section 2.0** and the characterization of Socio-Economic Existing Conditions within the Study Areas described in **Section 3.0**, there are no mitigation measures recommended to be incorporated into the Alternative Methods designs in order to avoid or minimize impacts on the Socio-Economic environment and Aboriginal community interests.

Section 5.0 Net Effects Assessment

This section documents the net effects assessment for the Alternative Methods for the Brooks Road Landfill Site Vertical Capacity Expansion EA from a Socio-Economic perspective.

5.1 Net Effects Assessment Methodology

The assessment of the Alternative Methods was conducted in two steps:

- **Step 1: Confirm Evaluation Criteria and Indicators/Measures**
  Prior to undertaking the net effects assessment, the Socio-Economic evaluation criteria, indicators, and developed in the Minister approved ToR were reviewed and confirmed for application to each of the Alternative Methods.
- **Step 2: Undertake the Net Effects Analysis**
  With the evaluation criteria, indicators and measures confirmed through the preceding step, a net effects analysis of the Alternative Methods was carried out consisting of the following activities:
  - Identify potential effects (based on measures) on the Socio-Economic
  - Develop and apply avoidance/mitigation/compensation/enhancement measures
  - Determine net effects on the environment

5.2 General Assumptions

As noted in Section 2.3.3 of the CDR, it is assumed that the existing screening berm will be vegetated and/or additional on-Site plantings introduced, as required, in order to mitigate the potential impacts from a visual and noise standpoint.

5.3 Criteria/Indicators

	Environmental Component	Evaluation Criteria	Study Area	Indicators	Rationale	Data Sources
SOCIO-ECONOMIC	**Social**	Visual impact of facility	Local Study Area	• Predicted changes in perceptions of landscapes and views	The contours of a waste disposal facility can affect the visual appeal of a landscape.	• Vertical expansion alternatives • Site grading plans • Aerial mapping and field reconnaissance • Canadian Society of Landscape Architects reference library • Ontario Horticultural Trades Association reference manual
		Effects on Local Residents	Local Study Area	• Number of residences	Waste disposal facilities can potentially affect local residents in the vicinity of the site.	• Aerial mapping and field reconnaissance • Census information
	Economic	Effects on/ benefits to local community	Local Study Area	• Employment at site (number and duration) • Opportunities to provide products or services	The continued use of the facility will provide economic benefits to the local community in the form of new employment opportunities in both the construction and day-to-day operation. This also has the potential for increased employment opportunities in local firms.	• Census Data for Haldimand County • Vertical expansion alternatives
ABORIGINAL	**Aboriginal Communities**	Potential effects on Aboriginal communities	Local Study Area	• Potential effects on use of lands for traditional purposes	The landfill construction and operations may adversely affect local aboriginal communities.	Discussions with local Aboriginal communities

5.4 Potential Environmental Effects

5.4.1 Alternative Method 1

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 1. Alternative Method 1, at an increased height of approximately 10 m above the existing landfill at closure, would be partially visible from the agricultural areas to the immediate west and southwest of the Site within the Local Study Area, but will be obscured from view when looking from the north, east and south within the Local Study Area due to the forested lands that surround those sides of the Site (see **Figure 5.1** for a visual rendering of Alternative Method 1 using Google Street View as seen from the corner of Brooks Road and Talbot Road/Highway 3 and **Figure 5.2** for a visual rendering of Alternative Method 1 using Google Street View as seen from Brooks Road near the former railroad tracks south of the Site). The Brooks Road Landfill Site will continue to employ 6 persons for the

duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

Alternative Method 1 is a vertical expansion of the existing Brooks Road Landfill and would not require the development of any additional land beyond the existing landfill footprint. As such, there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 1.

Figure 5.1 Visual Rendering of Alternative Method 1 Looking North Towards the Site at Brooks Road & Talbot Road/Highway 3

Figure 5.2 Visual Renderings of Alternative Method 1 Looking North Towards the Site on Brooks Road Near the Abandoned Railway to the South of the Site

5.4.2 Alternative Method 2

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 2. Alternative Method 2, at an increased height of approximately 12 m above the existing landfill at closure, would be visible from the agricultural areas to the immediate west and southwest of the Site within the Local Study Area, but will be partially obscured from view when looking from the north, east and south within the Local Study Area due to the forested lands that surround those sides of the Site (see **Figure 5.3** for a visual rendering of Alternative Method 2 using Google Street View as seen from the corner of Brooks Road and Talbot Road/Highway 3 and **Figure 5.4** for a visual rendering of Alternative Method 2 using Google Street View as seen from Brooks Road near the former railroad tracks south of the Site). The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

Alternative Method 2 is a vertical expansion of the existing Brooks Road Landfill and would not require the development of any additional land beyond the existing landfill footprint. As such, there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 2.

Figure 5.3 Visual Rendering of Alternative Method 2 Looking North Towards the Site at Brooks Road & Talbot Road/Highway 3

Figure 5.4 Visual Renderings of Alternative Method 2 Looking North Towards the Site on Brooks Road Near the Abandoned Railway to the South of the Site

5.4.3 Alternative Method 3

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 3. Alternative Method 3, at an increased height of approximately 13 m above the existing landfill at closure, would be visible from the agricultural areas to the immediate west and southwest of the Site within the Local Study Area, but will be partially obscured from view when looking from the north, east and south within the Local Study Area due to the forested lands that surround those sides of the Site (see **Figure 5.5** for a visual rendering of Alternative Method 3 using Google Street View as seen from the corner of Brooks Road and Talbot Road/Highway 3 and **Figure 5.6** for a visual rendering of Alternative Method 3 using Google Street View as seen from Brooks Road near the former railroad tracks south of the Site). The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

Alternative Method 3 is a vertical expansion of the existing Brooks Road Landfill and would not require the development of any additional land beyond the existing landfill footprint. As such, there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 3.

Figure 5.5 Visual Rendering of Alternative Method 3 Looking North Towards the Site at Brooks Road & Talbot Road/Highway 3

Figure 5.6 Visual Renderings of Alternative Method 3 Looking North Towards the Site on Brooks Road Near the Abandoned Railway to the South of the Site

5.5 Mitigation Measures Beyond Those Incorporated into the Design

5.5.1 Alternative Method 1

Views of Alternative Method 1 from the west and southwest can be minimized by planting trees or shrubs on top of the berm along the western property boundary and/or introducing additional on-Site plantings, as required. Nuisance-related effects to the 11 residences within the Local Study Area during construction and operation will be managed through the implementation of Best Management Practices (BMPs) (i.e., typical operating practices related to minimizing nuisance impacts including noise, litter, vectors, dust and odour), by Brooks Road Environmental.

As there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 1, no specific mitigation measures are required with respect to Aboriginal Communities. Consultation with Aboriginal Communities in the vicinity of the Brook Road Landfill Site will; however, continue throughout the EA process.

5.5.2 Alternative Method 2

Views of Alternative Method 2 from the west and southwest can be minimized by planting trees or shrubs on top of the berm along the western property boundary and/or introducing additional on-Site plantings, as required. Nuisance-related effects to the 11 residences within the Local Study Area during construction and operation will be managed through the implementation of BMPs (i.e., typical operating practices related to minimizing nuisance impacts including noise, litter, vectors, dust and odour), by Brooks Road Environmental.

As there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 2, no specific mitigation measures are required with respect to Aboriginal Communities. Consultation with Aboriginal Communities in the vicinity of the Brook Road Landfill Site will; however, continue throughout the EA process.

5.5.3 Alternative Method 3

Views of Alternative Method 3 from the west and southwest can be minimized by planting trees or shrubs on top of the berm along the western property boundary and/or introducing additional on-Site plantings, as required. Nuisance-related effects to the 11 residences within the Local Study Area during construction and operation will be managed through the implementation of BMPs (i.e., typical operating practices related to minimizing nuisance impacts including noise, litter, vectors, dust and odour), by Brooks Road Environmental.

As there are no potential effects on the use of lands for traditional purposes associated with Alternative Method 3, no specific mitigation measures are required with respect to Aboriginal Communities.

Consultation with Aboriginal Communities in the vicinity of the Brook Road Landfill Site will; however, continue throughout the EA process.

5.6 Net Environmental Effects

5.6.1 Alternative Method 1

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 1. Views of the Site from surrounding areas to the west and southwest would be minimized by vegetating the screening berms along the western boundary of the Site and introducing additional plantings on the Site. The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

There are no net effects on the use of lands for traditional purposes associated with Alternative Method 1.

5.6.2 Alternative Method 2

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 2. Views of the Site from surrounding areas to the west and southwest would be minimized by vegetating the screening berms along the western boundary of the Site and introducing additional plantings on the Site. The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

There are no net effects on the use of lands for traditional purposes associated with Alternative Method 2.

5.6.3 Alternative Method 3

Eleven residential dwellings within the Local Study Area have the potential to be affected by Alternative Method 3. Views of the Site from surrounding areas to the west and southwest would be minimized by vegetating the screening berms along the western boundary of the Site and introducing additional plantings on the Site. The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations and will continue services to waste disposal customers for the 5 to 7 year planning period.

There are no net effects on the use of lands for traditional purposes associated with Alternative Method 3.

Table 5.1 Alternative Method 1 Socio-Economic & Aboriginal Communities Potential Environmental Effects, Mitigation Measures & Net Effects

	Environmental Component	Evaluation Criteria	Indicator	Potential Effects	Mitigation Measures	Net Effects
SOCIO-ECONOMIC	Social	Visual Impact of Facility	Predicted changes in perceptions of landscapes and views	• Final height at closure approximately 10 m above existing landfill. • Visible from agricultural areas to the immediate west and southwest of the Site within the Local Study Area. • No visibility from the north, east and south within the Local Study Area due to existing vegetation.	Screening berm along the western Site boundary to be vegetated and/or introduction of additional plantings on the Site to minimize views from agricultural areas to the west and southwest, as required.	Vegetating the screening berm and/or introducing additional plantings on the Site, as required, would minimize views of the Site from surrounding areas.
		Effects on Local Residents	Number of residences	11 residential dwellings within the Local Study Area.	BMPs will be implemented by Brooks Road Environmental to manage nuisance related effects during construction and operation.	11 residential dwellings within the Local Study Area.
	Economic	Effects on / Benefits to Local Community	Employment at site (number and duration)	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.	No mitigation measures required.	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.
			Opportunities to provide products or services	Continue services to waste disposal customers for the 5 to 7 year planning period.	No mitigation measures required.	Continue services to waste disposal customers for the 5 to 7 year planning period.
ABORIGINA	Aboriginal Communities	Potential Effects on Aboriginal Communities	Potential effects on use of lands for traditional purposes	No potential effects on the use of lands for traditional purposes.	No mitigation measures required. Consultation with Aboriginal Communities will continue throughout the EA process.	No effects on the use of lands for traditional purposes.

Table 5.2 Alternative Method 2 Socio-Economic & Aboriginal Communities Potential Environmental Effects, Mitigation Measures & Net Effects

	Environmental Component	Evaluation Criteria	Indicator	Potential Effects	Mitigation Measures	Net Effects
SOCIO-ECONOMIC	Social	Visual Impact of Facility	Predicted changes in perceptions of landscapes and views	• Final height at closure approximately 12 m above existing landfill. • Visible from agricultural areas to the immediate west and southwest of the Site within the Local Study Area. • No visibility from the north, east and south within the Local Study Area due to existing vegetation.	Screening berm along the western Site boundary to be vegetated and/or introduction of additional plantings on the Site to minimize views from agricultural areas to the west and southwest, as required.	Vegetating the screening berm and/or introducing additional plantings on the Site, as required, would minimize views of the Site from surrounding areas.
		Effects on Local Residents	Number of residences	11 residential dwellings within the Local Study Area.	BMPs will be implemented by Brooks Road Environmental to manage nuisance related effects during construction and operation.	11 residential dwellings within the Local Study Area.
	Economic	Effects on / Benefits to Local Community	Employment at site (number and duration)	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.	No mitigation measures required.	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.
			Opportunities to provide products or services	Continue services to waste disposal customers for the 5 to 7 year planning period.	No mitigation measures required.	Continue services to waste disposal customers for the 5 to 7 year planning period.
ABORIGINA	Aboriginal Communities	Potential Effects on Aboriginal Communities	Potential effects on use of lands for traditional purposes	No potential effects on the use of lands for traditional purposes.	No mitigation measures required. Consultation with Aboriginal Communities will continue throughout the EA process.	No effects on the use of lands for traditional purposes.

Table 5.3 Alternative Method 3 Socio-Economic & Aboriginal Communities Potential Environmental Effects, Mitigation Measures & Net Effects

	Environmental Component	Evaluation Criteria	Indicator	Potential Effects	Mitigation Measures	Net Effects
SOCIO-ECONOMIC	Social	Visual Impact of Facility	Predicted changes in perceptions of landscapes and views	• Final height at closure approximately 13 m above existing landfill. • Visible from agricultural areas to the immediate west and southwest of the Site within the Local Study Area. • No visibility from the north, east and south within the Local Study Area due to existing vegetation.	Screening berm along the western Site boundary to be vegetated and/or introduction of additional plantings on the Site to minimize views from agricultural areas to the west and southwest, as required.	Vegetating the screening berm and/or introducing additional plantings on the Site, as required, would minimize views of the Site from surrounding areas.
		Effects on Local Residents	Number of residences	11 residential dwellings within the Local Study Area.	BMPs will be implemented by Brooks Road Environmental to manage nuisance related effects during construction and operation.	11 residential dwellings within the Local Study Area.
	Economic	Effects on / Benefits to Local Community	Employment at site (number and duration)	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.	No mitigation measures required.	The Brooks Road Landfill Site will continue to employ 6 persons for the duration of Site operations.
			Opportunities to provide products or services	Continue services to waste disposal customers for the 5 to 7 year planning period.	No mitigation measures required.	Continue services to waste disposal customers for the 5 to 7 year planning period.
ABORIGINA	Aboriginal Communities	Potential Effects on Aboriginal Communities	Potential effects on use of lands for traditional purposes	No potential effects on the use of lands for traditional purposes.	No mitigation measures required. Consultation with Aboriginal Communities will continue throughout the EA process.	No effects on the use of lands for traditional purposes.

Section 6.0 Comparative Evaluation

This section documents the comparative evaluation of the Alternative Methods from a Socio-Economic and Aboriginal Community perspective based on the net environmental effects identified in **Section 5.0**.

6.1 Comparative Evaluation Methodology

The Minister approved ToR states that the comparative evaluation of the Alternative Methods will be carried out using a Reasoned Argument (or Trade-off) method, with evaluation criteria as the basis for comparison. Under the Reasoned Argument approach, the differences in the net effects associated with each Alternative Method are highlighted. Based on these differences, the advantages and disadvantages of each alternative can be identified according to the evaluation of trade-offs between the various evaluation criteria and indicators. The relative significance of potential impacts is then examined to provide a clear rationale for the selection of a preferred alternative from a Socio-Economic perspective. The term *trade-offs* is defined as "*things of value given up in order to gain different things of value*". Each Alternative Method will be compared against the others to distinguish relative differences in impacts to the environment, taking into account possible mitigation measures.

6.2 Comparative Evaluation Results

Heightening and/or vegetating the existing berm along the western boundary of the Site will serve to minimize views of all three Alternatives; however, given that each Alternative will have a different final height at closure, the extent to which views can be minimized by the berm will vary between the Alternatives. As such, Alternative Method 1 is slightly preferred from a visual impact perspective as it will have the lowest height at final closure (10 m above the existing landfill versus 12 m and 13 m for Alternative Methods 2 and 3, respectively). As the Local Study Area is identical for all three vertical expansion Alternatives, each Alternative has the potential to impact the same number of residences (11) within the Local Study Area.

From an Economic standpoint, all three Alternatives will have the same positive effects through the continued employment of 6 persons at the Site and the ability to continue to provide waste disposal services to customers for the 5 to 7 year planning period.

There are no net effects associated with any of the proposed Alternative Methods in relation to Aboriginal Communities. As such, there is no distinction between the alternatives in relation to their effects on the use of lands for traditional purposes within the Local Study Area and, therefore, all alternatives rank the same.

Table 6.1 Socio-Economic and Aboriginal Communities Comparative Evaluation

	Environmental Component	Evaluation Criteria	Indicator	Alternative Method 1 Net Effects	Alternative Method 2 Net Effects	Alternative Method 3 Net Effects
SOCIO-ECONOMIC	Social	Visual Impact of Facility	Predicted changes in perceptions of landscapes and views	View of the Site from surrounding areas can be minimized by vegetating the screening berm and/or introducing additional plantings on-Site, as required. **LOW NET EFFECTS**	View of the Site from surrounding areas can be minimized by vegetating the screening berm and/or introducing additional plantings on-Site, as required. **LOW NET EFFECTS**	View of the Site from surrounding areas can be minimized by vegetating the screening berm and/or introducing additional plantings on-Site, as required. **LOW NET EFFECTS**
			Criteria Ranking:	**1st**	**2nd**	**3rd**
			Criteria Rationale:	Although views of all three alternatives can be minimized by vegetating the screening berms along the western property boundary and/or introducing additional plantings on-Site, as required, Alternative Method 1 is slightly preferred from a visual impact perspective as it will have the lowest height at final closure (10 m above the existing landfill versus 12 m and 13 m for Alternative Methods 2 and 3, respectively).		
		Effects on Local Residents	Number of residences	11 residential dwellings within the Local Study Area. **LOW NET EFFECTS**	11 residential dwellings within the Local Study Area. **LOW NET EFFECTS**	11 residential dwellings within the Local Study Area. **LOW NET EFFECTS**
			Criteria Ranking:	**Tied for 1st**	**Tied for 1st**	**Tied for 1st**
			Criteria Rationale:	There is no distinction between the alternatives in terms of the number of residential dwellings within the Local Study Area and, therefore, potentially affected. All alternatives rank the same.		
		Environmental Component Ranking:		**1st**	**2nd**	**3rd**
	RATIONALE			While there is no distinction between the alternatives in terms of the number of residential dwellings within the Local Study Area, Alternative 1 ranks 1st from a Social perspective as it will have the lowest height at final closure (10 m above the existing landfill versus 12 m and 13 m for Alternative Methods 2 and 3, respectively).		

	Economic	Effects on/ Benefits to Local Community	Employment at site (number and duration)	Continue to employ 6 persons for the duration of Site operations. **MEDIUM (POSITIVE) NET EFFECTS**	Continue to employ 6 persons for the duration of Site operations. **MEDIUM (POSITIVE) NET EFFECTS**	Continue to employ 6 persons for the duration of Site operations. **MEDIUM (POSITIVE) NET EFFECTS**
			Opportunities to provide products or services	Continue services to customers for waste disposal for the 5 to 7 year planning period. **MEDIUM (POSITIVE) NET EFFECTS**	Continue services to customers for waste disposal for the 5 to 7 year planning period. **MEDIUM (POSITIVE) NET EFFECTS**	Continue services to customers for waste disposal for the 5 to 7 year planning period. **MEDIUM (POSITIVE) NET EFFECTS**
		Environmental Component Ranking:		**Tied for 1st**	**Tied for 1st**	**Tied for 1st**
		RATIONALE		There is no distinction between the alternatives in relation to their positive effects on employment at the site and opportunities to provide products or services.		
ABORIGINAL	Aboriginal Communities	Potential Effects on Aboriginal Communities	Potential effects on use of lands for traditional purposes	No effects on the use of lands for traditional purposes. **NO NET EFFECTS**	No effects on the use of lands for traditional purposes. **NO NET EFFECTS**	No effects on the use of lands for traditional purposes. **NO NET EFFECTS**
		Environmental Component Ranking:		**Tied for 1st**	**Tied for 1st**	**Tied for 1st**
		RATIONALE		There is no distinction between the alternatives in relation to their effects on the use of lands for traditional purposes within the Local Study Area.		

Section 7.0 Conclusion

From a Social environment perspective, Alternative Method 1 is slightly preferred as its final height will be lower than those of the other two Alternatives by 2 to 3 m.

All three of the Alternative Methods are preferred with respect to the Economic environment as they will result in identical positive benefits to local community.

From an Aboriginal Community perspective, all three of the Alternative Methods are preferred. There will be no effects on the use of land for traditional purposes associated with any of the alternatives.

Section 8.0 References

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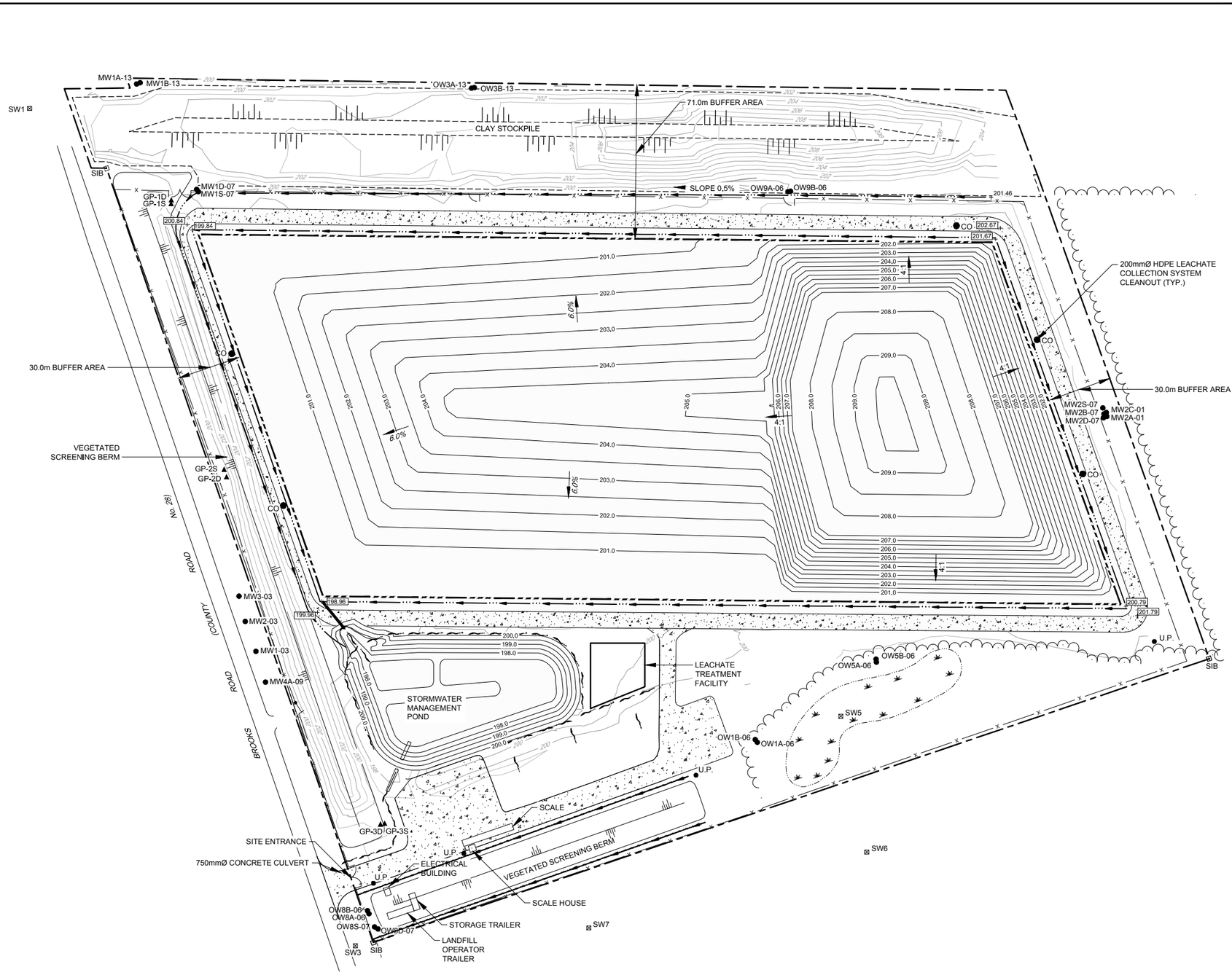
Drawings



No.	Revision	Date	Initial

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- 202 — GROUND CONTOUR (2.0m INTERVAL)
- GROUND CONTOUR (1.0m INTERVAL)
- PROPERTY LINE
- APPROVED LIMIT OF WASTE
- x — EXISTING FENCELINE
- CLAY STOCKPILE AREA
- PERIMETER DITCH
- TREELINE
- GRANULAR SURFACE ACCESS ROAD
- SWAMPY AREA
- 201.67 — SPOT ELEVATION (m AMSL)
- CO — LEACHATE COLLECTION SYSTEM CLEAN OUT
- SIB — STANDARD IRON BAR
- OW1B-06 — OBSERVATION WELL
- MW2A-01 — MONITORING WELL
- SW6 — SURFACE WATER MONITORING
- GP-3S — GAS PROBE
- U.P. — UTILITY POLE
- DOUBLE GATE
- SINGLE GATE

SCALE VERIFICATION

THIS BAR MEASURES 50mm ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

BROOKS ROAD LANDFILL SITE
HALDIMAND COUNTRY, ONTARIO

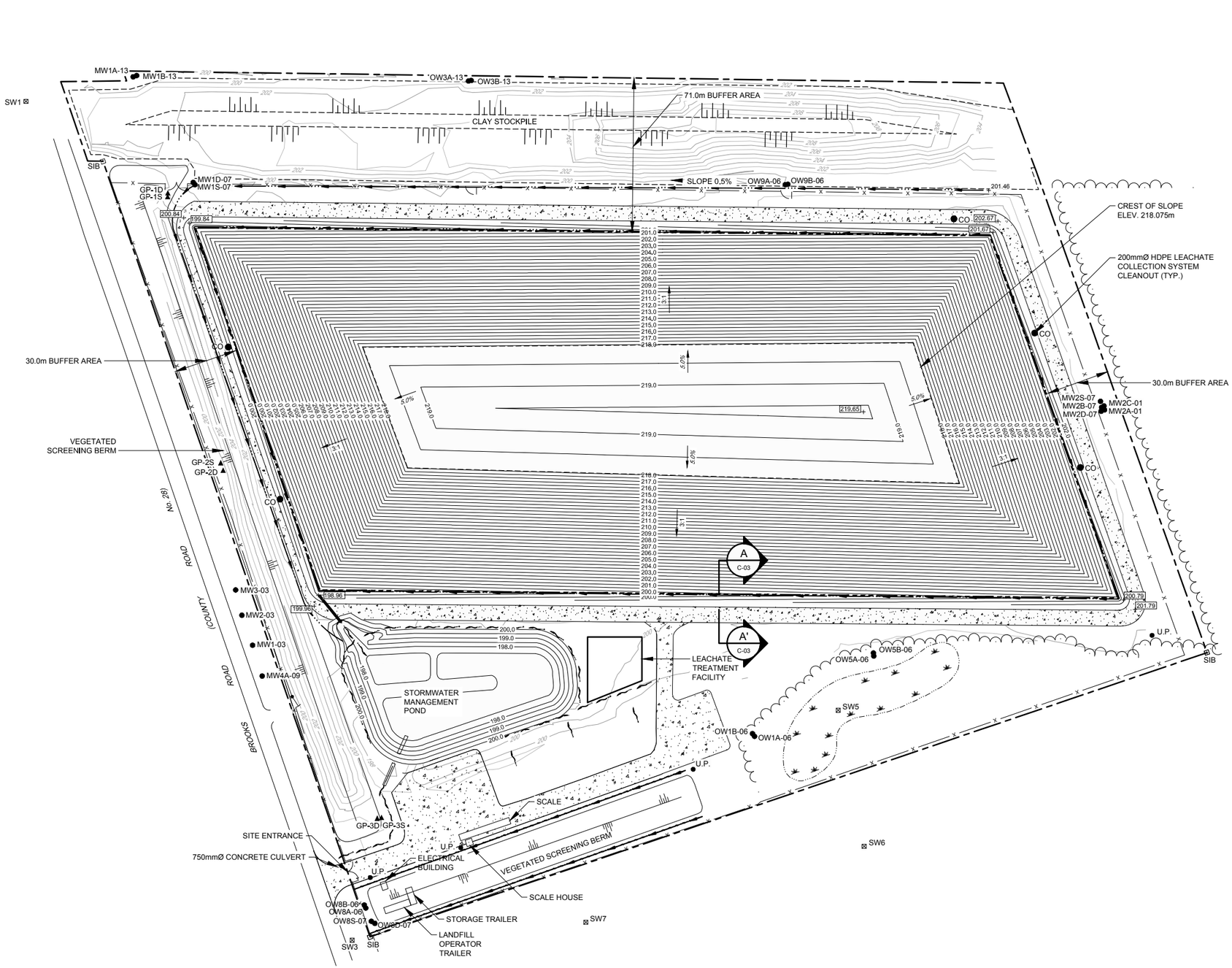
CONCEPTUAL DESIGN REPORT

EXISTING CONDITIONS INTERIM CLOSURE

GHD

Source Reference:
EXISTING GROUND CONTOURS AND TOPOGRAPHIC FEATURES SHOWN ARE BASED ON TERVITA AS-BUILT FOR FINAL CONDITIONS FOR STAGE 2A, 2B AND STAGE 3A, AND NORTH CLAY STOCKPILE SURVEY BY VAN NOSTRAND AND GIBSON SURVEYED JULY-17-2013

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
Scale: 1:1000	Project N°: 18235-20	Report N°: 051	Drawing N°: C-01



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- 202 — GROUND CONTOUR (2.0m INTERVAL)
- GROUND CONTOUR (1.0m INTERVAL)
- PROPERTY LINE
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- SW6 — SURFACE WATER MONITORING
- GP-3S — GAS PROBE
- U.P. — UTILITY POLE
- DOUBLE GATE
- SINGLE GATE

SCALE VERIFICATION

THIS BAR MEASURES 50mm ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

BROOKS ROAD LANDFILL SITE
HALDIMAND COUNTRY, ONTARIO

CONCEPTUAL DESIGN REPORT

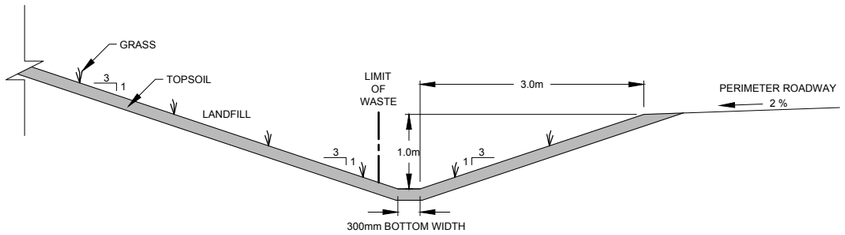
VERTICAL EXPANSION ALTERNATIVE 1

GHD

Source Reference:
EXISTING GROUND CONTOURS AND TOPOGRAPHIC FEATURES SHOWN ARE BASED ON TERVITA AS-BUILT FOR FINAL CONDITIONS FOR STAGE 2A, 2B AND STAGE 3A, AND NORTH CLAY STOCKPILE SURVEY BY VAN NOSTRAND AND GIBSON SURVEYED JULY-17-2013

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
Scale: 1:1000	Project N°: 18235-20	Report N°: 051	Drawing N°: C-02

18235-20(051)CI-WA002 JAN 19/2016



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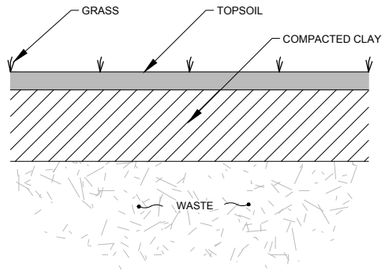

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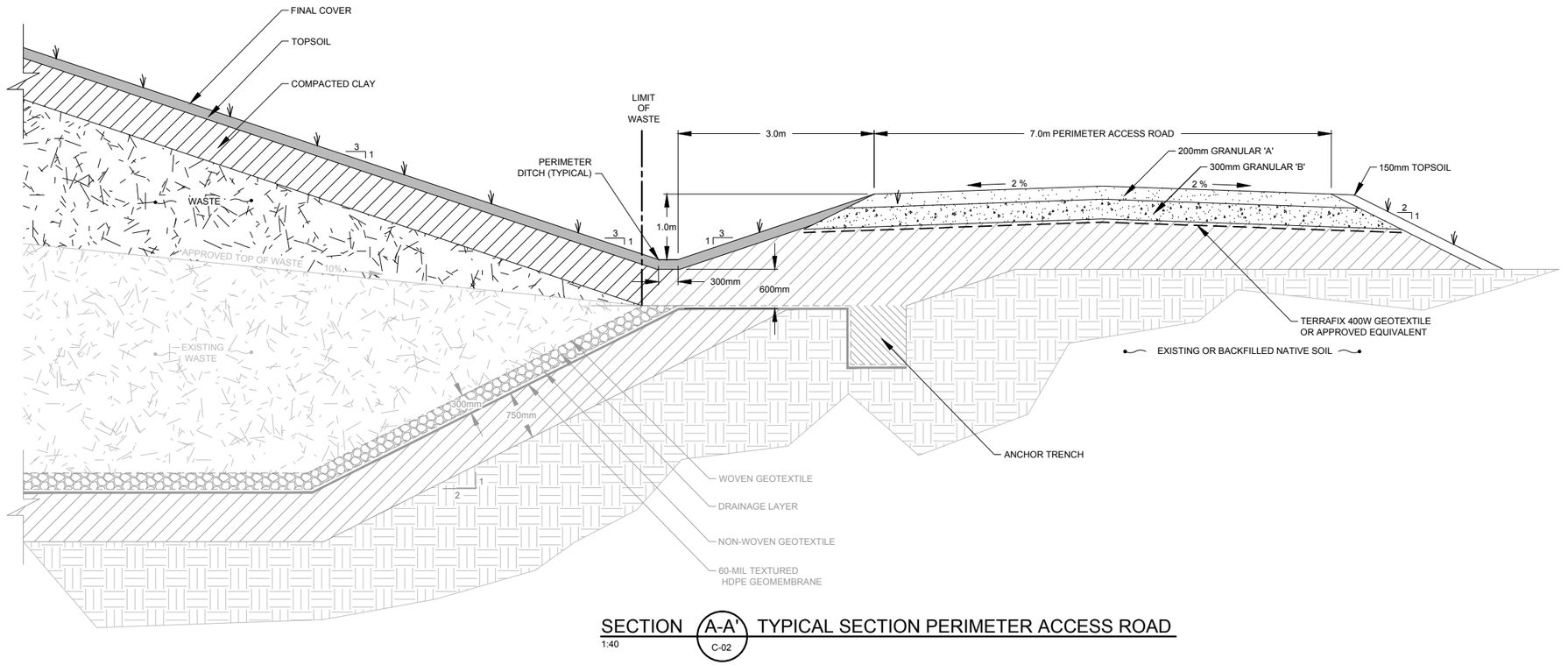

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No.	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 50mm ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

BROOKS ROAD LANDFILL SITE
HALDIMAND COUNTRY, ONTARIO

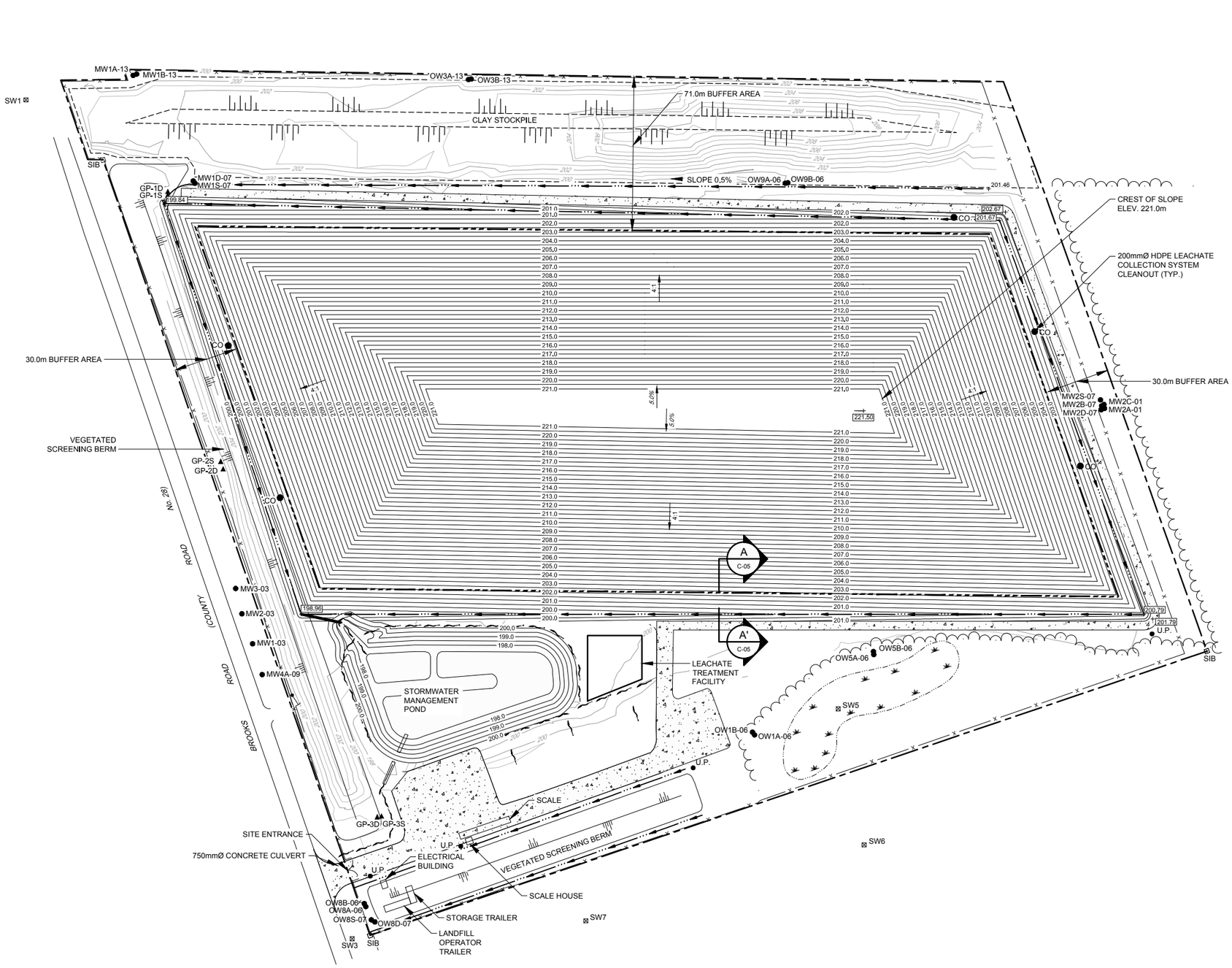
CONCEPTUAL DESIGN REPORT

VERTICAL EXPANSION
ALTERNATIVE 1 DETAILS

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
Scale: 1:1000	Project No: 18235-20	Report No: 051	Drawing No: C-03



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- 202 — GROUND CONTOUR (2.0m INTERVAL)
- GROUND CONTOUR (1.0m INTERVAL)
- PROPERTY LINE
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- SW6 — SURFACE WATER MONITORING
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- U.P. — UTILITY POLE
- DOUBLE GATE
- SINGLE GATE

SCALE VERIFICATION

THIS BAR MEASURES 50mm ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

BROOKS ROAD LANDFILL SITE
HALDIMAND COUNTRY, ONTARIO

CONCEPTUAL DESIGN REPORT

VERTICAL EXPANSION ALTERNATIVE 2

GHD

Source Reference:
EXISTING GROUND CONTOURS AND TOPOGRAPHIC FEATURES SHOWN ARE BASED ON TERVITA AS-BUILT FOR FINAL CONDITIONS FOR STAGE 2A, 2B AND STAGE 3A, AND NORTH CLAY STOCKPILE SURVEY BY VAN NOSTRAND AND GIBSON SURVEYED JULY-17-2013

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
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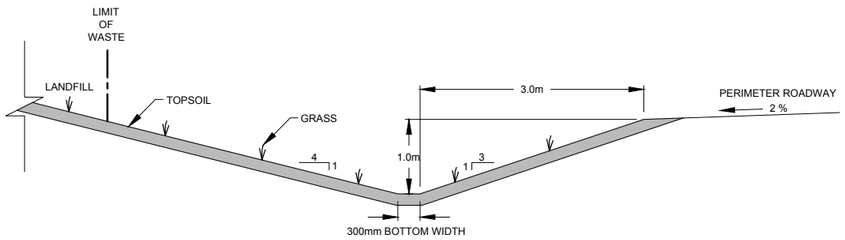

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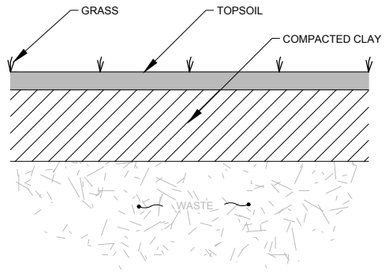

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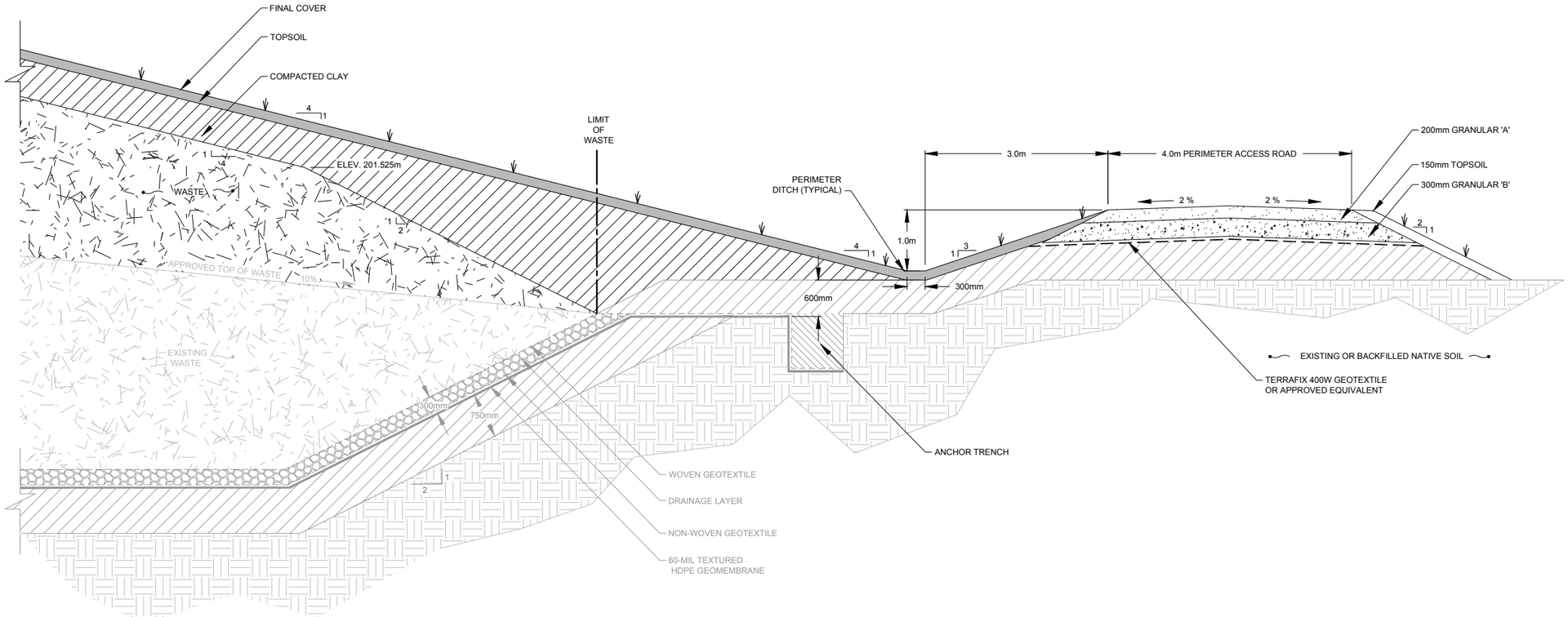

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No.	Revision	Date	Initial

SCALE VERIFICATION

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Status	Date	Initial

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HALDIMAND COUNTRY, ONTARIO

CONCEPTUAL DESIGN REPORT

VERTICAL EXPANSION
ALTERNATIVE 2 DETAILS

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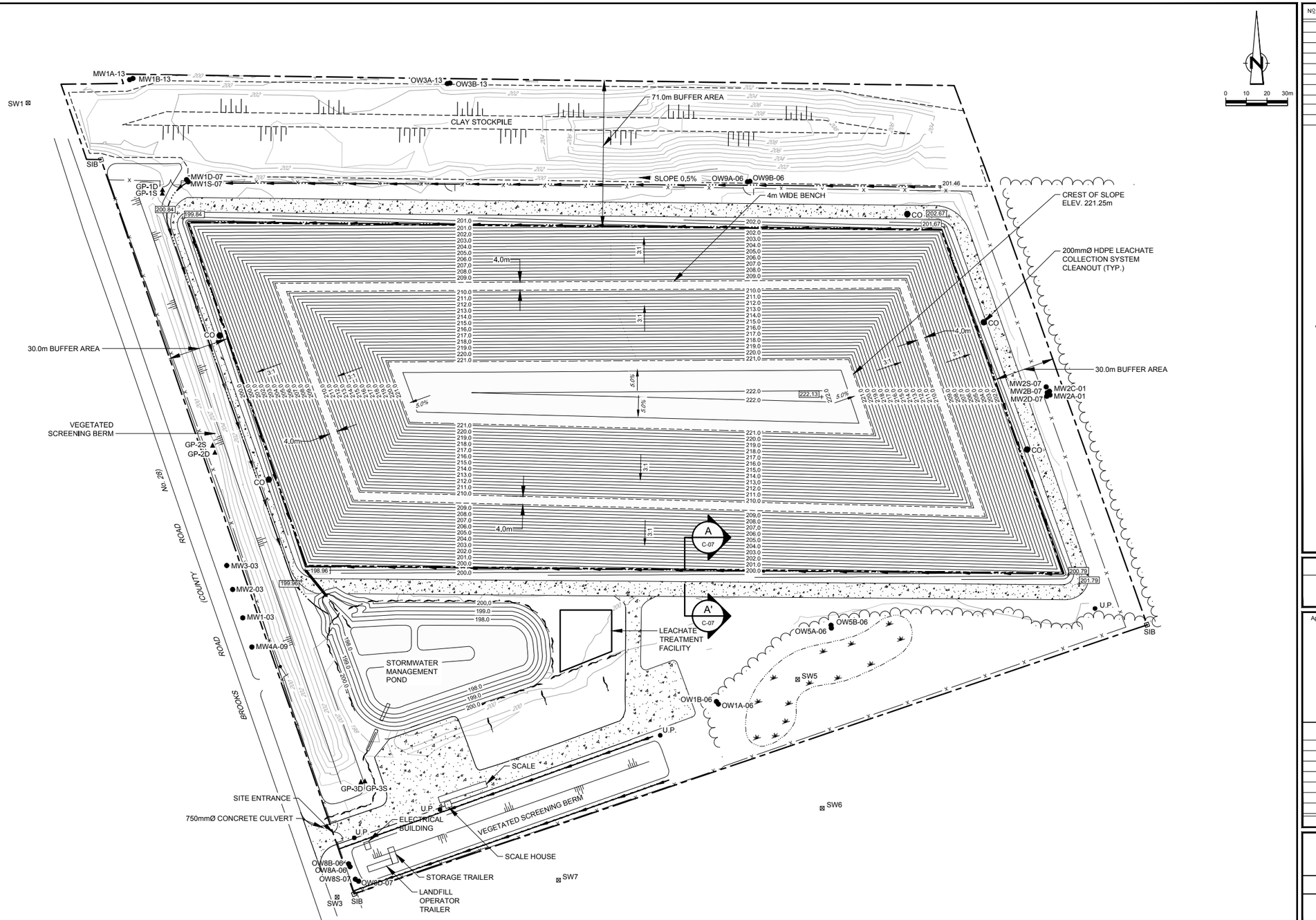
Source Reference:

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
Scale: 1:1000	Project No: 18235-20	Report No: 051	Drawing No: C-05

18235-20(051)CI-WA005 DEC 11/2015



No.	Revision	Date	Initial

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- PROPERTY LINE
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- SW6 — SURFACE WATER MONITORING
- GP-3S — GAS PROBE
- U.P. — UTILITY POLE
- DOUBLE GATE
- SINGLE GATE

SCALE VERIFICATION

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HALDIMAND COUNTRY, ONTARIO

CONCEPTUAL DESIGN REPORT

VERTICAL EXPANSION
ALTERNATIVE 3

GHD

Source Reference:
EXISTING GROUND CONTOURS AND TOPOGRAPHIC FEATURES SHOWN ARE BASED ON TERVITA AS-BUILT FOR FINAL CONDITIONS FOR STAGE 2A, 2B AND STAGE 3A, AND NORTH CLAY STOCKPILE SURVEY BY VAN NOSTRAND AND GIBSON SURVEYED JULY-17-2013

Project Manager:	Reviewed By:	Date:	
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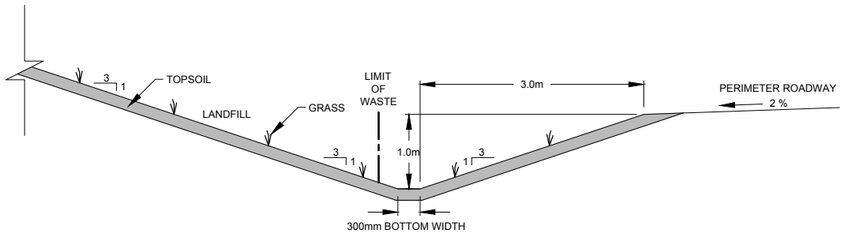

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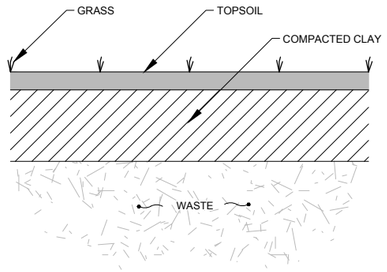

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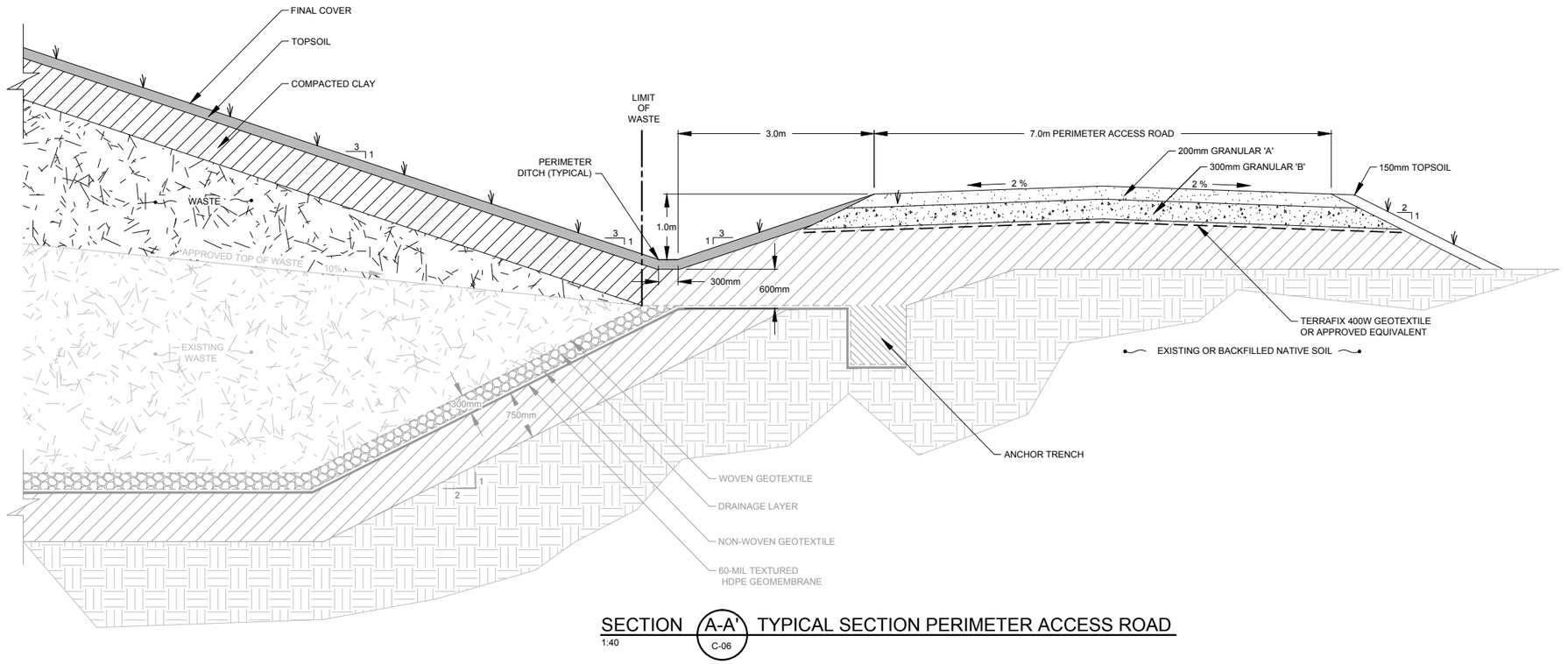

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No.	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 50mm ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

BROOKS ROAD LANDFILL SITE
HALDIMAND COUNTRY, ONTARIO

CONCEPTUAL DESIGN REPORT

VERTICAL EXPANSION
ALTERNATIVE 3 DETAILS

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Source Reference:

Project Manager:	Reviewed By:	Date:	
G.FERRARO	P.KEMP	DECEMBER 2015	
Scale: 1:1000	Project No: 18235-20	Report No: 051	Drawing No: C-07