Summary of Work Plans for the EA

Component/ Sub-component	Rationale	Evaluation Criterion/Criteria	Indicator(s)	Data Collection and Field Work	Evaluation of 'Alternative Methods'	Prediction of Potential Effects for the Preferred 'Alternative Method'	Data Sources
Atmosphere/ Air Quality (health-related compounds and dust), odour, GHG)	Landfill expansion and associated operations can produce gases containing contaminants that degrade air quality if they are emitted to the atmosphere. Construction activities associated with landfill expansion and continued landfill operation can lead to levels of particulates (dust) in the air. Landfill operation can also result in odour effects.	• Potential effects on air quality (including dust, odour, GHG)	• Expected concentrations of air quality indicator compounds (selected regulated air contaminants to represent this type of project), including dust, at the property boundary and nearby sensitive receptors. • Expected site-related odour at off-site sensitive receptors. • Expected GHG emissions.	• Compile and interpret existing Environment Canada or MECP's air quality monitoring data and meteorological data. • Review aerial photographic mapping to identify sensitive receptors. • Review zoning maps. • It is not proposed to collect site-specific data.	• Identify the differences in potential air and odour concentrations from emission sources based on their distance and direction to nearest off-site receptors, the property boundary, and site characteristics such as height of the expanded landfill that will influence dispersion. • Identify difference in the expansion alternatives that will impact GHG generation such as the landfill configuration. • Qualitatively evaluate the differences in potential air quality, odour and GHG. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Select air indicator compounds appropriate for the landfill expansion, expected to include suspended particulate matter (SPM), particles nominally smaller than 10 µm in diameter (PM_{10}), particles nominally smaller than 2.5 µm in diameter ($PM_{2.5}$), nitrogen oxides (NOx), sulphur dioxide (SO_2), carbon monoxide (CO), hydrogen sulphide (H_2S), vinyl chloride (C_2H_3Cl), odour. • Complete air and odour emission estimates based on published emission factors and available literature, as well as results from a site-specific LFG generation model for input into the dispersion model. • Execute an air quality dispersion model for the currently approved landfill and for an expanded landfill. • Predict worst-case air quality and odour effects for sensitive receptors based on an expanded landfill operation scenario. • Calculate GHG emissions based on the expanded landfill. • If required, identify mitigation or best management practices that can be implemented into the design of the preferred alternative to allow the landfill expansion to achieve compliance with applicable air quality limits.	• Environment Canada or MECP's regional air quality data, hourly meteorological data and climate normals. • Published emission factors (including odour). • Site-specific LFG generation model. • Preferred 'Alternative Method' landfill design and phasing plan. • Odour complaints history for the landfill site. • Applicable provincial regulations, standards and guidelines.

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Atmosphere/ Noise	Landfill expansion and associated operations will generate noise that will be emitted into the atmosphere and could impact neighbouring sensitive receptors.	• Potential effects on noise	• Noise Levels at neighbouring noise sensitive existing receptors or vacant lots (with appropriate zoning that may accommodate the future construction of sensitive noise receptors).	• Review of aerial imagery. • Review of zoning/land use mapping. • Undertake field program and/or carry out a desktop analysis to quantify existing noise levels.	• Identify existing and vacant lot noise sensitive receptors in the vicinity of the landfill. • Identify potential differences in expected noise levels based on the distance and potential line-of-site exposure of the sensitive receptors to the landfilling. equipment/activities. • Review the direct interaction of the proposed 'Alternative Method' footprints and existing/potential. sensitive receptors. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Noise emission estimates based on available project-specific information, manufacturer's noise data and consultant's database of similar noise sources. • Establish applicable noise limits in accordance with accepted MECP practices. • Develop a project/site-specific three-dimensional noise prediction model in accordance with MECP and internationally accepted standards. • Using the site-specific noise model described above, model the predictable worst-case noise levels from the preferred landfill expansion at identified sensitive receptors (existing or potential), and compare them to MECP noise guidelines. • If required, identify mitigation that can be implemented into the design of the preferred alternative to allow the landfill expansion to achieve compliance with applicable noise limits. • Develop monitoring, trigger and contingency plans, if relevant.	• Landfill equipment list and expected utilization. • Preferred 'Alternative Method' landfill design and phasing plan. • Baseline noise predictions. • Manufacturer's noise data. • Consultant's database of similar noise studies. • Ministry of Transportation Ontario (MTO) / local municipal traffic count data or newer data collected to support this EA. • Applicable provincial guidelines.

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Geology and Hydrogeology/ Groundwater Quality	Contaminants associated with the landfill expansion and associated operations could enter the groundwater and impact off-site groundwater or surface water.	• Potential effects on groundwater resources	• Expected effect on groundwater quality at the landfill site property boundary and/or compliance boundaries.	• Extensive field investigations and hydrogeological assessments have been completed for the existing landfill site since 2001. • Extensive hydraulic conductivity testing has been completed. • Review results of existing groundwater monitoring program. • Limited additional field work in the form of additional parameter analysis expected based on available information. • Renewed analysis of existing data to confirm groundwater flow direction(s), predominant impacts expected in the overburden and not the bedrock, leachate indicator parameters unique to the landfill and not the neighbouring snow storage area.	• Identify the differences between the alternatives that will affect the potential impact on off-site groundwater quality such as expanded waste footprint configuration, direction of groundwater flow, thickness of waste in the expansion. • Estimate qualitatively how the differences will potentially affect the off-site groundwater quality. • Rank each 'Alternative Method' based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Prepare a predictive model of landfill performance (contaminant transport model) as per *O. Reg.* 232/98. • Predict worst case concentrations in the overburden groundwater at the landfill and/or CAZ compliance boundaries for the key leachate indicator parameter chloride, with consideration of reasonable mitigation measures. [1,2] • Compare the predicted concentrations in the overburden groundwater to the Reasonable Use Criteria. • Evaluate potential for overburden groundwater discharge to surface water and consider potential impacts on surface water quality. • Revise and update mitigation measures, if necessary. • Compare predictive results against approved trigger mechanism and contingency plan, if required. • Update groundwater monitoring program, if required. • Predict the contaminating lifespan. • Assess the potential effects in relation to Source Water Protection.	• Published regional sources and data on regional geological and hydrogeological conditions, including source water protection reports and source water protection zones in County and Township Official Plans. • Review MNRF petroleum well records. • Provincial Quaternary and Bedrock Mapping. • Ontario Water Well Records (water supply wells are considered to be sensitive receptors in terms of potential impacts). • Boyne Road Landfill Annual Monitoring Reports. • Previous site characterization/investigation reports. • Borehole logs.

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Surface Water/ Surface Water Quality	Contaminants associated with the landfill expansion and associated operations could seep or runoff into surface water and adversely affect water quality and aquatic life.	• Potential effects on surface water resources	• Expected effect on surface water quality in the drainage ditch along Boyne Road and within the Site-vicinity Study Area.	• Extensive field investigations and hydrogeological assessments have been completed for the existing landfill site since 2001. • Review results of existing surface water monitoring program. • Limited additional field work related to neighbouring municipal drains expected based on available information.	• Identify the differences that may impact changes in surface water quality such as expansion area layout and location. • Estimate qualitatively how the differences will affect the surface water quality. • Rank each 'Alternative Method' based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Evaluation of required construction of new on-site facilities (pond(s)) and the facility's ability to mitigate potential changes to surface water quality. • Modelling of proposed surface water facilities (pond(s)) and comparison with MECP and watershed-specific design criteria. • Update trigger mechanism and contingency plan if required. • Update surface water monitoring program if required.	• Boyne Road Landfill Design and Operations Report. • Boyne Road Landfill Annual Monitoring Reports. • Historical flow observations during sampling program. • Surface water drainage mapping. • Topographic maps. • Air photos. • Published water quality information from the MECP, Environment Canada and SNC.
Surface Water/ Surface Water Quantity	Operations associated with the landfill expansion could alter runoff and peak flows.	• Potential effects on surface water resources	• Expected change in runoff to and peak flows in drainage features. • Expected degree of off-site effects on surface water quantity within the Site-vicinity Study Area.	• Review existing surface water management features and practices. • No additional field work expected based on available information.	• Identify the differences that may impact changes in surface water quantity such as expansion area, expansion location, proposed side slopes of the landfill, and potential effects on the existing drainage ditch adjacent to the landfill footprint. • Estimate qualitatively how the differences may potentially affect the surface water quantity. • Rank each 'Alternative Method' based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Predict and assess future surface water peak flows and quantity conditions associated with the preferred landfill expansion alternative for a range of storm events (e.g., 2, 5, 10, 25, and 100 year) as required by *O.Reg.* 232/98, as well as consideration of climate change effects. • Evaluate the need for stormwater management infrastructure to meet *O.Reg.* 232/98 and prepare EA level design for stormwater management system. • Modelling of proposed stormwater management system and comparison with MECP specific design criteria.	• Boyne Road Landfill Design and Operations Report. • Boyne Road Landfill Annual Monitoring Reports. • Historical flow observations during sampling program. • Surface water drainage mapping. • Local climate data. • Topographic maps. • Air photos. • Published water quantity and flow information from the MECP, Environment Canada and SNC. • Agricultural farm drain mapping.

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Biology/ Aquatic Ecosystems	Landfill expansion could remove or disturb the functioning of natural aquatic habitats and species, including rare, threatened, or endangered species.	• Potential effects on natural environment features (aquatic and terrestrial ecosystems)	• Expected change in surface water quality and/or quantity within the Site Study Area and the Site-vicinity Study Area.
			• Expected impact on aquatic habitat and biota, including rare, threatened, or endangered species within the Site Study Area and the Site-vicinity Study Area.
				• Wetland boundary surveys.
				• Headwater Drainage Features assessment.
				• Fish habitat survey.
				• Fish communities survey.
					• Identify differences in potential impacts to watercourses.
					  • Waste footprint likely to cause alteration or destruction of existing habitat.
					  • Differences in discharge rate from SWM system.
					  • Change in water quality to receiving water courses.
					• Rank each alternative based on the differences.
					• Describe advantages and disadvantages of the 'Alternative Methods'.
						• Identify areas of potential disturbance including:
						  • Direct habitat loss/disturbance.
						  • Indirect habitat disturbance.
						  • Impacts to aquatic species at risk (SAR) habitat and species.
						• Identify appropriate mitigation measures, if needed.
						• Develop monitoring, and contingency plans, if relevant.
							• United Counties of Stormont, Dundas and Glengarry Official Plan.
							• Field surveys.
							• MNRF Natural Heritage Information Centre (NHIC) Make-a-Map geographic explorer (MNRF, 2021a)
							• Existing and readily available information (including watershed studies) and mapping available through the SNC.
							• DFO Aquatic Species at Risk Maps (DFO, 2021).
							• Information contained in natural heritage related map layers from Ontario Base Map series, Natural Resource Values Information System (NRVIS) mapping and Land Information Ontario (LIO).
							• Existing high-resolution aerial imagery and mapping.

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Biology/ Terrestrial Ecosystems	Landfill expansion could remove or disturb the functioning of natural terrestrial habitats and vegetation, including rare, threatened or endangered species.	• Potential effects on natural environment features (aquatic and terrestrial ecosystems)	• Expected impact on terrestrial vegetation communities, wildlife habitat, and wildlife, including rare, threatened or endangered species within the Site and Site-vicinity Study Areas	• Botanical surveys.
				• Ecological land classification.
				• Herpetile surveys.
				• Bat surveys.
				• Breeding Bird Surveys.
				• Wetland Community Boundary Delineation.
				• Wildlife habitat and visual encounter surveys.
				• Species at Risk screening.
					• Identify differences in the alternatives that will potentially impact terrestrial features:
					  • Change in the site development area for the landfill.
					  • Change in the Waste Footprint Area of the landfill.
					  • Impact to SAR.
					  • Impact to Significant Wildlife Habitat (SWH).
					  • Removal of natural vegetation.
					• Rank each alternative based on the differences.
					• Describe advantages and disadvantages of the 'Alternative Methods'.
						• Identify potential impacts to SAR, SWH, wetland woodlands, and environmentally significant areas, including:
						  • Direct habitat loss/disturbance.
						  • Indirect habitat disturbance.
						  • Impacts to terrestrial SAR habitat and species.
						  • Vegetation removal.
						  • Potential impacts to species
						• Identify appropriate mitigation measures, if needed.
						• Develop monitoring, and contingency plans, if relevant.
							• United Counties of SD&G Official Plan.
							• Field surveys.
							• MNRF NHIC Make-a-Map geographic explorer (MNRF, 2021a).
							• Existing and readily available information (including any watershed studies) and mapping available through the local Conservation Authority.
							• Atlas of Breeding Birds of Ontario (Cadman, et al. 2007).
							• eBird online database (eBird, 2021).
							• Atlas of the Mammals of Ontario (Dobbyn, 1994).
							• Bat Conservation International (BCI, 2021).
							• Ontario Odonate Atlas (Jones et. al 2021).
							• Ontario Reptile and Amphibian Atlas (Ontario Nature, 2021).
							• Information contained in natural heritage related map layers from Ontario Base Map series, NRVIS mapping and LIO.
							• Existing high-resolution aerial imagery and mapping.

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Agriculture/ -	The agricultural land base or agricultural operations may be impacted by the landfill expansion and associated operations.	• Potential effects on existing agriculture	• Expected effect on agricultural land base and agricultural operations within the Site and Site-vicinity Study Areas	• Review of aerial photographic mapping. • Compile parcel fabric mapping from Township. • Review Official Plans and Zoning By-Law. • Review Canada Land Inventory (CLI) mapping.	• The potential effect of the proposed landfill expansion alternatives on the existing and potential agricultural use of on-site and off-site lands will be assessed. • Differences between alternatives will be identified, for example, proximity to livestock, use of prime agricultural areas (soil capability), degree of infrastructure/investment, impact on agricultural system (fragmentation). • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Based on the proposed landfill operational practices and/or results of predictive assessments of potential nuisance effects as caried out by other components; the technical and operational considerations component; and groundwater and surface water considerations, the potential effects of the preferred expansion method on existing and proposed on-site and off-site agricultural use will be assessed.	• Existing site-specific studies. • Applicable provincial regulations, standards and guidelines. • Provincial Policy Statement (2020). • United Counties of Stormont, Dundas and Glengarry Official Plan. • Available soils mapping. • Aerial photographic and topographic mapping. • Statistics Canada agriculture profiles. • Relevant information available from Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and Ontario Federation of Agriculture (OFA).

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Cultural Heritage Resources/ Archaeological Resources	A horizontal landfill expansion has the potential to affect archaeological resources.	• Potential effects on archaeology	• Expected archaeological resources potentially affected on-site.	• Review and update existing background research including archaeological, historical, and environmental literature. • Review updated list of registered archaeological sites within 1 km of the landfill site. • Complete Stage 1 Archaeology Assessment. If necessary, complete subsequent Stages of archaeological assessment.	• Identify archaeological sites that are anticipated to be impacted by expansion alternatives. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Archaeological sites that will be impacted by the preferred expansion alternative may require further assessment to determine spatial extent, complete a full evaluation of significance, and determine the need for strategies to mitigate impacts and provide future conservation (Stage 4 mitigation).	• Existing site-specific archaeological assessment reports. • Ontario Archaeological Sites Database. • Ministry of Tourism, Culture, and Sport (MTCS) *Standards and Guidelines for Consultant Archaeologists*. • United Counties of SD&G Official Plan.
Cultural Heritage Resources/ Cultural Heritage Landscapes	Identified cultural heritage landscapes can be altered by the landfill expansion. Depending on the nature of identified cultural heritage landscapes, there could be an impact by the ongoing operation of the landfill.	• Potential effects on cultural heritage landscapes	• Expected impact on identified cultural heritage landscapes within the Site-vicinity Study Area.	• Background research of archival, published and unpublished sources, municipal heritage policies, and historic maps and aerial imagery. • Consultation with municipal heritage planner, if available. • Review of identified cultural heritage resources as part of Official Plan. • Field investigations to document and evaluate existing conditions. • Complete a cultural heritage resources impact assessment.	• Identify the risk of potential direct or indirect impact using guidance and types identified in the MTCS *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process.* • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Determine the potential magnitude, reversibility, extent, duration, and frequency of each type of impact, if present. • Methods to predict potential effects following guidance provided in the MTCS *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process*. • Methods to consist of identifying key vistas and views, sources of direct and indirect impact resulting from construction and operation, and preferred landfill expansion and conservation measures to reduce or avoid impact to cultural heritage landscapes.	• Description of proposed expansion alternatives. • Preferred landfill expansion design. • Existing site-specific studies. • Applicable provincial plans, acts, regulations, standards and guidelines, and policies. • United Counties of SD&G Official Plan. • Local Historical Society, if available.

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Cultural Heritage Resources/ Built Heritage Resources	Heritage attributes of identified built heritage resources could be impacted by the landfill expansion and associated operations.	• Potential effects on built heritage resources	• Expected impact on the heritage attributes of identified built heritage resources within the Site-vicinity Study Area.	• Background research of archival, published and unpublished sources, municipal heritage policies, and historic maps and aerial imagery. • Consultation with municipal heritage planner, if available. • Review of identified cultural heritage resources as part of Official Plan. • Field investigations to document and evaluate existing conditions. • Complete a cultural heritage resources impact assessment.	• Identify the risk of potential direct or indirect impact using guidance and types identified in the MTCS *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process.* • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Determine the potential magnitude, reversibility, extent, duration, and frequency of each type of impact, if present. • Methods to predict potential effects following guidance provided in the MTCS *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process*. • Methods to consist of identifying resources, sources of direct and indirect impact resulting from construction and operation, and preferred options and conservation measures to reduce or avoid impact to protected heritage resources or newly identified resources of cultural heritage value or interest.	• Description of proposed expansion alternatives. • Preferred landfill expansion design. • Existing site-specific studies. • Applicable provincial plans, acts, regulations, standards and guidelines, and policies. • United Counties of SD&G Official Plan. • Local Historical Society, if available.

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Land Use Planning/ Current and Planned Future Land Uses	Waste disposal facilities could potentially be incompatible with municipal land use policy framework.	• Potential effects on existing land use	• Expected incompatibility with existing or known future land use.	• Review aerial photographic mapping. • Compile parcel fabric mapping from Township. • Review Official Plan and Zoning By-law • Review Provincial Guidelines (e.g., Land Use Compatibility, Guideline D-1, Land Use On or Near Landfills and Dumps, Guideline D-4). • Review Provincial Policy Statement 2020. • Interviews with municipal staff to confirm development activity planned in the site-vicinity and identify potential planning issues.	• Differences between alternatives will be identified with respect to land use compatibility. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Based on the proposed operational practices and/or results of predictive assessments of potential nuisance effects as carried out by other components and the design and operation component, the potential compatibility of the preferred method with existing and proposed surrounding land use will be assessed.	• Preferred 'Alternative Method' landfill design and phasing plan. • Existing site-specific studies. • Applicable provincial regulations, standards and guidelines. • Provincial Policy Statement (2020). • United Counties of SD&G Official Plan. • Land Use Compatibility, Guideline D-1. • Land Use On or Near Landfills and Dumps, Guideline D-4. • Aerial photographic and topographic mapping • Field reconnaissance. • Discussion with City planning department.

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Socio-economic/ Local Economy	The continued operation of the landfill can influence employment and business in the wider regional area.	• Relative potential changes in employment, impacts to local commercial businesses and capital costs.	• Expected effect on local employment. • Expected effects on local businesses and commercial activity. • Expected effects on municipal finances.	• Review of current and projected employment numbers (during both construction and operation phases). • Review of municipal revenues and projected change from site expansion. • Review of land use designations and Official Plan. • Interviews with municipal staff to understand potential costs and impacts to services from expanded site (e.g., public works, emergency management systems, transportation). • Review of local business database.	• Identify total increase in employment hours/full time equivalent positions during both construction and operational phases by alternative design. • Identify loss of potential land use for commercial purposes or residential purposes as a result of landfill expansion and associated employment and rental income, respectively. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Re-evaluate property taxes or rent paid to the municipality based on larger property parcel and any potential change in land use designation. • Qualitative assessment of impacts on local businesses from changes at the landfill site, (e.g., loss of patronage, operational impacts). • Impacts on employment as determined by change in employment numbers and resultant economic impact at the local level. • Calculate amount of increased revenue to the Township minus any potential increased costs to determine net economic effect.	• United Counties of SD&G Official Plan. • Statistics Canada 2016 Census data. • United Counties of Stormont Dundas and Glengarry website, 2020.
Socio-economic/ Residents and Community	Waste disposal facilities can potentially affect the use and enjoyment of their properties by residents in the vicinity of the site.	• Potential site operational effects on sensitive off-site receptors (i.e., noise, litter, air quality)	• Displacement of residents. • Expected interference with use and enjoyment of residential properties (nuisance effects).	• Review aerial photography to identify closest residential properties. • Windshield survey of study area to identify residences and businesses (including farms) as well as any other community facilities in the site-vicinity.	• Establish closest residential receptors to each alternative design. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Review of findings from other disciplines - noise, odour, air quality, operations (litter and vermin)- to ascertain any potential nuisance effects on sensitive receptors. • Evaluate level of nuisance effects once mitigation measures and best management practices have been implemented to determine change from baseline (current) conditions. • Evaluate if the preferred alternative could cause displacement of residents.	• Site related complaints. • Discipline findings – noise, air quality, land use, operations. • Existing site or proposed expansion related best management practices. • Statistics Canada 2016 Census data. • United Counties of SD&G website, 2020

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Socio-economic/ Visual	The landfill expansion can affect the local community by changes in the visual appearance of the site.	• Potential changes in visibility of the landfill	• Expected changes in landscape views from off-site.	• Field investigations to identify key viewpoints and obtain photos. • Use software to produce representative 3D perspective images for each viewpoint.	• Identify the differences in potential visual impacts based on the distance and direction to nearest off-site receptors, the property boundary, and site characteristics such as height of the expanded landfill. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Prepare 3D models from each viewpoint for the preferred landfill expansion 'Alternative Method' and render them with appropriate surface material / vegetation cover (turf, meadow, trees, etc.). • Compare the landfill expansion model of the preferred 'Alternative Method' with the existing site conditions model and describe potential impacts. • Apply conceptual level mitigation measures to preferred landfill expansion alternative, if required. Identify the degree of visual impact.	• Google Earth. • Township of North Dundas aerial photos. • ACAD drawings of existing landfill and proposed expansion alternatives. • Site photos.
Transportation/ Traffic	The operations at the landfill can impact the traffic in the surrounding area through changes in truck traffic to/from the landfill.	• Potential effect on road network	• Expected effect on traffic along haul routes.	• Obtain available traffic data for selected intersections and corridors within haul route study area. • Conduct traffic count estimates if recent or sufficient data does not exist.	• Assess existing traffic conditions based on haul routes and other common users. • Identify the differences in traffic operations by evaluating the alternatives for landfill expansion. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• Assess existing hourly and daily carrying capacity of the haul route study area roads. • Assess existing intersection level of service and other performance metrics for the haul route study area intersections to confirm overall intersection and critical movement performance (capacity and delay) • Assess future traffic operation and safety requirements of defined study area (adjacent roadway and haul route) conditions. • Assess potential intersection geometric requirements for mitigation. Undertake warrants to confirm any required improvements, i.e., auxiliary lane and/or intersection control requirements, as necessary.	• Turning Movement Count, average annual daily traffic (AADT), and signal timing data, if available. • Additional tonnage and resulting number of trucks to site due to expansion. • Collision history statistics, if available. • Existing site-specific and related studies, consultant observations, and available Township planning and engineering documents. • Traffic counts if necessary.

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Design and Operations/ Financial	Different methods of landfill expansion can have different costs based on the design and associated requirements to construct the expansion.	• Potential effects on capital costs	• Estimated costs associated with implementation of expansion alternatives.	• Existing cost information from the Township and local construction projects. • Estimates of required earthworks for each 'Alternative Method'.	• The expected cut and fill and any additional earthworks for each 'Alternative Method' will be estimated. • Expected differences in operations between alternatives. • Rank each alternative based on the differences. • Describe advantages and disadvantages of the 'Alternative Methods'.	• A summary of the design of the preferred 'Alternative Method' including best management plans will be prepared.	• Existing landfill site or proposed expansion related best management practices. • Description of proposed expansion alternatives. • Preferred 'Alternative Method' landfill design and phasing plan.

Notes:

1 Given the relatively small nature of the existing landfill and the proposed landfill expansion, selection and identification of relevant leachate indicator parameters is likely to be different than those identified in *O. Reg* 232/98. It is known that chloride is a relevant leachate indicator parameter that can be modelled at the landfill site and, if others can be identified, then one or more will be included.

2 The existing and future leachate plume in the overburden is assumed to be more extensive than the plume in the bedrock. It is acknowledged that some portion of the plume may extend into bedrock. The vertical spreading of the plume to the bedrock would result in lower concentrations in the bedrock relative to what is represented in the overburden. The leachate plume is also assumed to travel at a lower velocity in the bedrock relative to the overburden due to the lower hydraulic gradients. As such, it is assumed that if regulatory compliance is met in the overburden, compliance would also be met in the bedrock at the same distance from the disposal area.