

## Appendix D – Evaluation of the Proposed Undertaking

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**Criterion 1: Explosive hazard due to combustible gas accumulation in confined spaces.**

Study Lead: Groundwater/Surface Water

Definition/Rationale: Gas produced within a waste disposal facility (e.g., methane) can move through the ground and accumulate in confined spaces (e.g., manholes, basements, etc.) on or immediately adjacent to the waste disposal facility. There is potential for the gas to combust, creating an explosion and fire hazard.

Indicators: Ontario Regulation 347, General – Waste Management (as amended).  
Ontario Regulation 232/98, Landfilling Sites (as amended).

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	None; there are no other existing or anticipated sources of sub-surface combustible gas.	Negligible. Landfill gas collection will remove 85% of the gas and create negative internal gas pressure within the landfill. The liner will be extended up to ground surface to provide a physical barrier to subsurface gas migration. Buffer zones and setbacks will be established between any off-site receptors.	Negligible; no other sources of sub-surface combustible gas.	None required.	Negligible.	Negligible.	Monitoring and contingency plans.
	Post-Closure Period	As above.	As above. Gas collection will continue through the post-closure period until gas concentrations are no longer a concern.	Negligible; no other sources of sub-surface combustible gas.	None required.	Negligible.	Negligible.	Monitoring and contingency plans.

## Criterion 2: Exposure to Air Emissions

Study Lead: Air Quality and Human Health

Definition/Rationale: Waste disposal facilities can produce gases containing contaminants that degrade air quality if they are emitted to the atmosphere. Other operations, such as leachate collection facilities, can also produce emissions that could degrade air quality in the vicinity of the site. Air Quality in the vicinity of the site should meet regulated air quality standards in order to protect public health. Greenhouse gas emissions could contribute to global warming.

Indicators: Ontario Regulation 419 Standards and Guidelines, Ambient Air Quality Criteria, Canadian Air Quality Objectives (CAAQS) and MOECC Guidance Documents (Odour) Comparisons of predicted air concentrations to acute, sub-chronic, and chronic inhalation health-based benchmarks.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	Air quality in the vicinity of the site is reflective of the surrounding urban land uses and major regional transportation corridors (e.g., Hwy 401), but generally meets provincial standards. Two exceptions are chloroform (source unknown, but may be anomalous) which exceeds the provincial criterion by about 20% and benzo(a)pyrene (mainly from vehicle exhaust and is regional) which is up to three times the annual limit.	Landfill gas collection and treatment will substantially reduce air emissions from the site. Modelling demonstrates that the residual emissions from all landfill related sources and landfill traffic would not exceed provincial air quality standards at any off-site residence or public facility.	Modelling demonstrates that air quality at off-site residences and public facilities when the residual emissions from all landfill related sources are combined with the background air quality and other local emission sources (i.e., lime kilns) will continue to meet provincial standards. Two exceptions are chloroform (source unknown) and benzo(a)pyrene (vehicle exhaust emission), where background levels already exceed provincial criterion. However, the landfill is not a major additional contributor to these (less than 15% chloroform and less than 10% benzo(a)pyrene at any off-site receptor).	No further mitigation is necessary.	Residual emissions from all landfill related sources and traffic would not exceed provincial air quality standards at any off-site residence or public facility.	Not significant. Cumulative air quality will continue to meet provincial standards. The exceptions are chloroform (source unknown) and benzo(a)pyrene (vehicle exhaust emission), where the background levels already exceed provincial criterion. However, the landfill is not a major additional contributor to these (less than 15% chloroform and less than 10% benzo(a)pyrene at any off-site receptor).	None required.
	Post-Closure Period	Similar to above.	Similar to above, but with slightly reduced emissions when the landfill is completely capped with a full gas collection system.	Similar to above, but with slightly reduced emissions when the landfill is completely capped with a full gas collection system.	No further mitigation is necessary.	As above.	As above.	None required.
Wider Area	Operational/ Post-Closure Period	Climate is projected to warm by about 2.3 C over the operational period of	The landfill is estimated to emit approximately 4 to 5	There will be an overall (i.e. net) reduction in greenhouse gas emissions of 6 to 8 million	No further mitigation is	The landfill is estimated to emit approximately 4 to 5	There will be an overall (i.e. net) reduction in	None required.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
	(50 years)	the landfill and about 3.9 C over the 50-year greenhouse gas assessment period.	million tonnes of CO <sub>2</sub> e over a 50 year period.	tonnes of CO <sub>2</sub> e compared to landfilling the same waste in Michigan landfills, equivalent to removing about 30,000 cars <i>per year</i> from the road for 50 years.	considered necessary.	million tonnes of CO <sub>2</sub> e over a 50 year period.	greenhouse gas emissions of 6 to 8 million tonnes of CO <sub>2</sub> e compared to landfilling the same waste in Michigan landfills, equivalent to removing about 30,000 cars <i>per year</i> from the road for 50 years.	

### Criterion 3: Effects due to fine particulate exposure.

Study Lead: Air Quality and Human Health

Definition/Rationale: Construction, operation, and truck haulage activities at a waste disposal facility can lead to increased levels of particulate (dust) in the air. Airborne fine particulate is a health concern in certain size ranges exposure durations.

Indicators: Ontario Regulation 419 Standards and Guidelines, Ambient Air Quality Criteria, Canadian Air Quality Objectives (CAAQS) and Canada Wide Standards (PM2.5) Comparisons of predicted air concentrations to acute, sub-chronic, and chronic inhalation health-based benchmarks.

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	Particulates are present in the site vicinity as a result of existing traffic, the quarry activities and other background sources such as farming, although remaining within the standards at off-site residences and public facilities for inhalable (PM <sub>10</sub> ) and respirable (PM <sub>2.5</sub> ) particulate matter. The exception is around the intersection of Beachville Road and County Road 6 where PM <sub>10</sub> levels are forecast to slightly exceed standards on occasion with future population and traffic growth.	Particulates from the landfill operation and landfill traffic would not exceed the standards for inhalable (PM <sub>10</sub> ) and respirable (PM <sub>2.5</sub> ) particulate matter at off-site residences and public facilities.	Particulates from the landfill operation, combined primarily with background traffic and to a lesser degree, quarry operations and other background sources, would exceed the standards for inhalable (PM <sub>10</sub> ) particulate matter at several off-site residences and public facilities. Respirable (PM <sub>2.5</sub> ) particulate matter would exceed the standard at once receptor along Beachville Road.	To further reduce the landfill contribution to cumulative particulate emissions in the vicinity, additional mitigation is recommended: <ul style="list-style-type: none"> <li>• Paving the section of private haul road into the site, with regular flushing/wet sweeping;</li> <li>• Using selected low-dust materials for unpaved internal haul roads, with enhanced dust control watering.</li> <li>• Further minimizing areas of bare soil exposed to wind erosion.</li> </ul>	Particulates from the landfill operation would not exceed the standards for inhalable (PM <sub>10</sub> ) and respirable (PM <sub>2.5</sub> ) particulate matter at any off-site receptor.	With additional mitigation at the landfill, the cumulative net effect would not exceed the standards for inhalable (PM <sub>10</sub> ) and respirable (PM <sub>2.5</sub> ) particulate matter at any off-site receptor except around the intersection of Beachville Road and Highway 6 where PM <sub>10</sub> levels are predicted to slightly exceed standards on occasion with future population and traffic growth. However, the landfill represents less than 8% and only increases the frequency of exceedances by one or two over a five-year period. As well, the concentrations for respirable (PM <sub>2.5</sub> ) particulate matter will also be met at all off-site receptors, except for one instance occurring at the Hi-Way Pentecostal Church on Beachville Road; in this instance the landfill represents less than 35% of the total and increases the frequency of exceedance by only one occurrence over a five-year period.	No further impact management is required.
Along the Haul Routes	Operational Period	As above. (The primary haul route is completely within the On-Site & Site Vicinity study area.)						

**Criterion 4: Effects due to contact with groundwater or surface water.**

Study Lead: Groundwater / Surface Water and Human Health

Definition/Rationale: Contaminants associated with a waste disposal site have the potential to seep into the groundwater or surface water. This could pose a public health concern if it enters local drinking water supplies, or if it mixes with surface water.

Indicators: Ontario Regulation 347 General – Waste management (as amended)  
 Ontario Regulation 232/98 Landfilling Sites (as amended)  
 Safe Drinking Water Act, 2002, Ontario Regulation 169/03 Ontario Drinking Water Quality Standards  
 Water Management – Policies, Guidelines and Provincial Water Quality Objectives (Guideline B-1-3)  
 Guideline B-7 Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities  
 Guideline B-7-1 Determination of Contaminant Limits and Attenuation Zones  
 Canadian Environmental Quality Guidelines, Canadian Council of Ministers of the Environment (CCME)  
 Ontario Regulation 153/04 (as amended) and its associated “rationale” documents  
 Comparisons of predicted groundwater concentrations to acute, sub-chronic, and chronic oral health-based benchmarks.

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	The natural groundwater quality is typical of limestone terrain. Groundwater beneath the site and in the site vicinity is currently captured through quarry dewatering and discharged to the Thames River, where it meets Provincial water quality requirements.  The Patterson-Robbins Drain flows through the west side of the site emptying into the Thames River to the south. It will experience a slight reduction in catchment area, and flow, as the quarry gradually expands and diverts water directly to the Thames. Surface water quality is, and will continue to be, typical of rural agricultural run-off.	The double composite liner system specified by the Ministry is designed to protect ground water for the full contaminating lifespan of the leachate. Any run-off that comes into contact with the active landfill will be segregated and treated at the leachate treatment plant prior to discharge from the site, while non-contact run-off will pass through the storm water management system prior to discharge, ensuring that both meet required discharge standards. As a result, there will be no significant risk to public health and safety due to groundwater or surface water contamination.	Groundwater at the site boundary will meet provincial Reasonable Use requirements, so there will be no cumulative effect. Discharges from the storm water management system could marginally raise the concentrations of some constituents in the surface water, although there will be no significant risk to public health and safety due to groundwater or surface water contamination.	None required.	None.	None.	Monitoring and contingency plans for unexpected leachate escape or spills.
	Post-Closure Period	Quarry dewatering will continue to capture groundwater beneath the site and in the site vicinity as the quarry expands north and east, and discharge it into the Thames River. In the very long term (expected to be hundreds of	The double composite liner system specified by the Ministry is designed to protect ground water for the full contaminating lifespan of the landfill. After closure, the final cover on the landfill will ensure that	As above.	None required.	None.	None.	Monitoring and contingency plans for unexpected leachate escape or spills.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
		<p>years), after quarry dewatering ends and the quarry is fully rehabilitated, groundwater levels beneath the site will recover and follow regional flow patterns.</p> <p>The catchment area and flow in the Patterson-Robbins Drain will continue to decline gradually in the long-term as the quarry expands, although the water quality is likely to remain similar.</p>	<p>all run-off is segregated from the waste, and passes through the storm water management system prior to discharge, ensuring that it meets required discharge standards. As a result, there will be no significant risk to public health and safety due to groundwater or surface water contamination.</p>					



## Criterion 5: Flood hazard

Study Lead: Groundwater / Surface Water

Definition/Rationale: The construction of a waste disposal facility can disrupt natural surface water drainage patterns, causing a potential for increased flooding.

Indicators: Ontario Regulation 232/98, Landfilling Sites (as amended)  
 Ontario Regulation 166/06 – Development, Interference with Wetlands and Alterations to Shorelines and Watercourses  
 Technical Guide: River and Stream System Flooding Hazard Limits – Ontario Ministry of Natural Resources (OMNR), 2002  
 Technical Guide: River and Stream System Erosion Hazard Limits, OMNR, 2002  
 Environmental Planning Policy Manual for UTRCA, June 2006  
 UTRCA Regulation Limit (O. Reg 157/06)  
 Stormwater Management Planning and Design Manual (Ontario Ministry of the Environment and Climate Change (MOECC), March 2003

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	The adjacent Patterson-Robbins Drain will experience a slight loss of catchment and related flow as the quarry expands and diverts runoff directly to the Thames. This will be partially offset by climate change. Overall there will be no significant increase in flooding hazard.	The landfill will increase the catchment of the Patterson-Robbins Drain by about 7.5% and increase average flow by less than 5%.	Any increased flow from the landfill site to the Patterson-Robbins Drain will be partially offset by the decreases associated with the quarry expansion.	None required.	No significant increase in flooding hazard in the Patterson-Robbins Drain or the Thames River.	No significant increase in flooding hazard in the Patterson-Robbins Drain or the Thames River.	Surface water monitoring, with contingency plans to temporarily retain and manage storm water on-site during peak storm periods.
	Post-Closure Period	The gradual loss of catchment and related flow in the adjacent Patterson-Robbins Drain will continue in the longer term as the quarry expands and diverts runoff directly to the Thames. This will be partially offset by climate change. Overall there will be no significant increase in flooding hazard.	No further increases in catchment or flow from the landfill site after closure.	Continuing expansion of the quarry during the post-closure period will more than offset the increases in catchment and flow in the Patterson-Robbins Drain related to the landfill.	None required.	No significant increase in flooding hazard in the Patterson-Robbins Drain or the Thames River.	No significant increase in flooding hazard in the Patterson-Robbins Drain or the Thames River.	Surface water monitoring, with contingency plans to temporarily retain and manage storm water on-site during peak storm periods.

## Criterion 6: Disease transmission via insects or vermin

Study Lead: Ecology

Definition/Rationale: Insects and vermin drawn to a waste disposal facility may have the potential to transmit diseases.

Indicators: Increases in the numbers of primary vectors (gulls).

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Vicinity	Operational Period	Populations of Insects, rodents, birds and other vermin that may be associated with disease transmission are not significant within the current quarry area (due to lack of shelter and food sources). In the vicinity of the site they are likely present in numbers typical in rural and agricultural settings.	Control programs will limit the numbers of vermin and birds at the site. A relatively small working area and the application of daily cover will minimize the opportunities for contact with waste. (Note: vermin incidences are insignificant at the Walker South Landfill using these control practices.) Even when vectors are present pathways to human receptors are very weak.  There is a very low risk of disease transmission to humans due from any insects or vermin that might be present in the vicinity of the landfill.	The landfill will not significantly increase existing insect or vermin populations in the vicinity of the site	None required.*  *Note: The measures provided within the Integrated Bird Management Program that have been recommended as mitigation for aviation risk (see Criterion 8) will also further minimize the risk of disease transmission.	No significant risk of disease transmission due to insects or vermin at the landfill.	No significant risk of disease transmission due to insects or vermin at the landfill.	No further impact management measures required.
	Post-Closure Period	Similar to the above.	Negligible. Insects or vermin will not be readily able to contact any waste once the landfill is closed and capped.	Negligible.	None required.	Negligible.	Negligible.	None required.

## Criterion 7: Potential for traffic collisions.

Study Lead: Traffic

Definition/Rationale: The risk of traffic collisions may increase along the haul routes to the waste disposal facility. This includes the risk to pedestrian, bicycle and farm machinery.

Indicators: Collisions per million vehicles at all study area intersections (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)  
Collisions per million vehicle-km along all study area road segments (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)  
Exposure index at rail crossing (daily # vehicles x # trains)  
Sight distance at the rail crossing  
Sight distance at the new private road entrance on west side of County Road 6

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Route	Operational Period	The proposed haul route along County Road 6 (CR6) generally has lower than average collision rates except at the Beachville Road intersection and the stretch between Clarke Road and Hwy 401, which are somewhat higher. Sight lines are good at all private driveways and intersections with the exception of Beachville Road (due to trees/vegetation) and Karn Road (trees/road curve). The Ontario Southlands Railway level rail crossing operates adequately given its low volume of train traffic. No major roadway improvements are planned by the County in this area, so traffic safety is expected to remain similar in the future.	Minor. The landfill will add about 210 vehicle round-trips per day. CR6 is an arterial road designed and designated by the County for truck traffic, and carries more approximately 6,000 to 9,000 vehicles per day. The landfill traffic would only incrementally increase traffic volumes and the potential road safety hazard. However, landfill trucks turning off CR6 could potentially increase safety risk due to the slowing and turning movement in a live through-lane of traffic.	Traffic safety is forecast to remain similar when combining the proposed landfill traffic, existing baseline traffic and future growth. The overall traffic increases on CR6 are incremental and it has sufficient capacity and level of service to accommodate these increases.	<ul style="list-style-type: none"> <li>• Provision of truck queuing space along the private portion of the haul route to prevent early-morning queuing along the shoulder of CR#6.</li> <li>• Extension of the second northbound lane on CR6 to permit safe passing of turning trucks.</li> <li>• Installation of advance warning signs along CR6 where trucks will be turning.</li> </ul>	Not significant.	Not significant.	Regularly inspect road conditions on CR6 and discuss with the County of Oxford regarding safety concerns.

## Criterion 8: Aviation impacts due to bird interference

Study Lead: Ecology

Definition/Rationale: Birds may be attracted to waste disposal facilities. This can pose a risk of bird strikes on aircraft in the vicinity of the site, especially during take-off and landing altitudes.

Indicators: Increase in risk of bird strikes.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There are large flocks of crows and gulls that roost at Pittock Lake in Woodstock. The former West Quarry on the Carmeuse property is also utilized by gulls as a roost. There is an existing presence of gulls and crows in the environment that presents some level of risk to existing airport operations including the transit of gulls back-and-forth to Lake Erie in the spring.	The landfill will provide an additional potential feeding site for gulls, crows and starlings, increasing the general number of bird flights in the area. Birds circling over the landfill may also increase exposure to a small number of training flights from Woodstock airport that might make low level passes over the site. The presence of these flocks in the general area represents a low-level risk of bird strikes for the Woodstock Airport. The transit of gulls back-and-forth to Lake Erie in the spring presents a moderate risk to flights at the Tillsonburg airport.	The landfill would incrementally add to any existing level of bird strike risk at the Woodstock airport, and at the Tillsonburg airport.	An Integrated Bird Management Plan which includes: <ul style="list-style-type: none"> <li>• Minimizing the exposure of food waste in the working area of the landfill through more frequent covering, as required;</li> <li>• Minimizing standing water and access to ponds;</li> <li>• Using tall vegetation and other means to minimize bird loafing areas;</li> <li>• Using a structured program of active bird controls and deterrents including sound sources, birds of prey and lethal control; and</li> <li>• Regular communication with the Woodstock &amp; Tillsonburg airports regarding bird observations.</li> </ul>	With the implementation of the Integrated Bird Management Plan, the bird strike risk related to the landfill operation is anticipated to be low or very low/background levels.	With the implementation of the Integrated Bird Management Plan at the landfill, the overall bird strike risk at the Woodstock and Tillsonburg airports is not expected to increase	Monitoring of the effectiveness of the Integrated Bird Management Plan, with contingencies available to augment the controls if necessary.

## Criterion 9: Displacement of residents from houses

Study Lead: Social

Definition/Rationale: Residents may be displaced from their homes either voluntarily or involuntarily. Voluntary displacement refers to out-migration of residents due to a variety of possible factors (i.e., changes in satisfaction in their community, changes in use and enjoyment of property, personal reasons or other factors). Involuntary displacement refers to residents being required to move from their resident due to property acquisition.

A waste disposal facility has the potential to displace residents through property acquisition or by causing environmental effects that trigger behavioural changes in residents prompting them to move voluntarily. The potential for voluntary out-migration is discussed in Section 9.2 “Disruption to Use and Enjoyment of Residential Properties”.

Indicators: Households/residents (property owners and tenants) to be displaced (i.e., forced relocation) by the project itself regardless of whether their property has been purchased or not.

The potential for or likelihood of voluntary out-migration of residents for consideration of the indirect effects on community character and cohesion is addressed under Disruption to Use and Enjoyment of Residential Property.

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There are no residences on the proposed landfill site or access road. One unoccupied residence formerly located on the leachate treatment site has been removed by the quarry owners.	No significant effects.  The proposed landfill does not require the displacement of any residents from their houses. As such there will be no direct loss of residents from the community as a result of the Project.	None.	None.	None.	None.	None.
	Post-Closure Period	As above.	None.	None.	None.	None.	None.	None.

## Criterion 10: Disruption to use and enjoyment of residential properties

Study Lead: Social

Definition/Rationale: Use and enjoyment of residential property refers to how residents enjoy their properties for a variety of purposes (e.g., raising a family, at-home day-to-day activities, home-based businesses).

A waste disposal facility may affect people's use and enjoyment of their private property if the facility results in measurable adverse effects such as traffic, odour, noise, vibration, water quality, dust and visual effects. The waste disposal facility, along with other projects and activities, may contribute cumulative effects which may affect use and enjoyment of property. These could affect areas surrounding the landfill or along the haul routes.

Indicators: The number of existing residential households and/or future households that are located at specific receptor locations and potentially affected by noise, vibration, dust, odour, traffic, agricultural and visual effects (including lighting) along with the effects on water quality and those of other projects and activities (i.e., cumulative effects).

The number of existing residential households fronting/backing onto a haul route and potentially affected by changes in project related traffic, traffic noise, vibration and lighting along with the effects of other projects and activities (i.e., cumulative effects). *Note: Results from other discipline analyses have been used to determine the magnitude of change in physical disturbances causing nuisance effects. Results from the traffic assessment were used to assess the potential effects along the haul route.*

Potential for or likelihood of changes in people's use of residential property.

Potential for or likelihood of changes in people's enjoyment of residential property. *Note: Results from the field data collection program together with professional judgement and case studies were used to determine types of effects and the potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>There are two residences within 500 m of the site, and a further 88 residences within 1 km of the site.</p> <p>These residents use and enjoy their properties in a variety of ways that are influenced by a wide variety of factors, including:</p> <ul style="list-style-type: none"> <li>sense of security and safety;</li> </ul>	<p>Physical disturbances (nuisance effects) from the project may disrupt the use and enjoyment of the residential property nearest the proposed landfill site boundary (i.e., ZOR-11).</p> <p>Occasional nuisance effects from the landfill site, in combination with those from other ongoing activities within the Site Vicinity Study Area, may</p>	<p>The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects. The residential property nearest the landfill site boundary will likely experience a variety of nuisance effects.</p>	<p>Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, traffic, and property values. [See</p>	<p>With further mitigation, occasional nuisance effects from the landfill that might affect use and enjoyment of residential properties will be generally limited to an area within about 500m of the proposed landfill.</p> <p>Increased personal stress among some residents. Some</p>	<p>The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects.</p> <p>Compensation and property value protection within 500 m of the landfill site, will serve to offset the</p>	<p>Formation of a Public Liaison Committee to exchange information and discuss any concerns with local community members.</p> <p>Establishing formal protocols to demonstrate Walker's full compliance with all landfill design and operational measures and its mitigation commitments aimed at avoiding or minimizing the physical</p>

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
		<ul style="list-style-type: none"> <li>neighbours and friendliness of a community;</li> <li>access to public facilities and infrastructure;</li> <li>a healthy and clean environment;</li> <li>recreational activities and availability; and</li> <li>low property and tax levies.</li> </ul> <p>People's use and enjoyment of their residential properties are currently affected by nuisances such as noise, dust, odour and traffic from existing development, industrial and agricultural activities in the study area.</p> <p>Some residents may experience increasing nuisance related to future development and traffic growth in the County. Occasional days when dust is visible in the air will be the most noticeable, which may reduce some residents' use and enjoyment of their properties from time-to-time (depending on actual location and/or distance from the roadway).</p>	<p>disrupt people's use and enjoyment of residential properties at or near receptors ZOR-4, ZOR-5, ZOR-6, and ZOR-10.</p> <p>Residents beyond this distance are not expected to experience any significant physical disturbances that would affect the use and enjoyment of their properties.</p> <p>Increased personal stress among some residents stemming from decreased satisfaction with community and a decreased sense of health, safety and well-being and potential mistrust of Walker and Provincial regulators during the initial years following Provincial approval and the commencement of landfill operations.</p> <p>Some residents who may have pre-determined concerns about the landfill could decide to leave the community, while others may remain and re-assess based on the actual performance of the landfill.</p>	<p>Other issues or events in the broader area could potentially combine with the presence of the landfill to cause some residents to decide to leave the community.</p>	<p>other criteria tables.]</p> <p>Developing and offering a compensation package to accommodate for nuisance effects at the nearest household to the proposed landfill site.</p>	<p>residents who may have pre-determined concerns about the landfill could decide to leave the community, while others may remain and re-assess based on the actual performance of the landfill.</p>	<p>cumulative nuisance effects likely be experienced at the residential property nearest the landfill site boundary.</p> <p>Other issues or events in the broader area could potentially combine with the presence of the landfill to cause some residents to decide to leave the community.</p>	<p>disturbances of the Project (i.e., odour, noise, particulate matter, dustfall), effects on the traffic network, visual intrusion and effects of the landfill operations on groundwater and surface water resources.</p> <p>Regular community updates regarding activities and performance of the landfill, in a publically accessible style and format.</p>
	Post-Closure Period	As above.	None. There will be minimal off-site nuisance effects in the post-closure period.	None.	None required.	None.	None.	None required.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Routes	Operational Period	<p>There are 27 residences along the primary haul route on County Road 6.</p> <p>Some residents along County Road 6 may experience increasing nuisance related to forecast population and traffic growth in the County. Occasional days when dust is visible in the air will be the most noticeable, which may reduce some residents' use and enjoyment of their properties from time-to-time (depending on actual location and/or distance from the roadway).</p>	Landfill trucks will add incrementally to traffic, dust, noise and odour (exhaust) emissions along the haul route.	Combined with other background sources of traffic, which will increase with future population growth, some gradually increasing degree of nuisance will be experienced at residences along County Road 6. Occasional days when dust is visible in the air will be the most noticeable, which may reduce some residents' use and enjoyment of their properties from time-to-time (depending on actual location and distance from the roadway).	Additional nuisance mitigation measures are recommended through other studies including further controls for dust and traffic. [See other criteria tables.]	Landfill trucks will add incrementally to traffic, dust, noise and odour (exhaust) emissions along the haul route. One their own these would not exceed nuisance thresholds.	Combined with other background sources of traffic, which will increase with future development and traffic growth, some gradually increasing degree of nuisance will be experienced at residences along County Road 6. Occasional days when dust is visible in the air will be the most noticeable, which may reduce some residents' use and enjoyment of their properties from time-to-time (depending on actual location and/or distance from the roadway). Note that the landfill will only represent a fraction of this nuisance.	Walker (in cooperation with the County and other major road users) can mutually explore ways to further reduce roadway dust on County Road #6 (e.g., road cleaning) when traffic levels and dust generation warrant.
	Post-Closure Period	As above.	None. There will be no significant landfill traffic in the post-closure period.	None.	None required.	None.	None.	None required.



## Criterion 11: Disruption to use and enjoyment of public facilities and institutions

Study Lead: Social

**Definition/Rationale:** People use and access facilities and institutions such as schools, emergency services, places of worship, medical services, post offices, libraries and other civil services for a variety of uses. A waste disposal facility may affect the operation, use of and access to public facilities and institutions if the facility results in measurable adverse effects such as traffic, odour, noise, vibration, water quality, dust and visual effects. The waste disposal facility, along with other projects and activities, may contribute to cumulative effects which may affect the operation, use and access to public facilities and institutions. These could affect areas surrounding the landfill or along the haul routes.

**Indicators:** The number of public facilities and institutions that may be affected by nuisance factors such as noise, vibration, dust, odour, traffic and visual effects (including lighting) long with the effects on water quality and those of other projects and activities (i.e., cumulative effects) *Note: Results from other discipline analyses will be used to determine the magnitude of change in nuisance effects. Results from the traffic assessment will be used to assess the potential effects along the haul route.*

Potential for or likelihood of changes in operations of public facilities and institutions.

Potential for or likelihood of changes in use and enjoyment of public facilities and institutions. *Note: Results from field data collection program together with professional judgement were used to determine types of effects and potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	The only public facilities or institutions within 500 m of the site are the Ingersoll Rural Cemetery and a Hydro One substation. There are numerous others further away in Ingersoll, Centreville and Beachville.  In the context of the changing land uses, population demographics and economic conditions, it can be expected the public facilities and institutions that operate in Site Vicinity Study Area will continue to exist and provide services to area residents in similar ways as they do today.	The Southwestern Landfill Project does not require the physical displacement of any public lands, facilities or institutions.  Physical disturbances (nuisance effects) from the project that might affect use and enjoyment of public facilities and institutions would include the hydro substation and the cemetery.	The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects.	Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, and traffic. [See other criteria tables.]	With further mitigation, occasional nuisance effects from the landfill that might affect use and enjoyment of public facilities and institutions can be limited to an area within about 500m of the proposed landfill.  The Ingersoll Rural Cemetery could experience occasional days when visible dust, noise or odour are a nuisance, though these are expected to be infrequent.  The Hydro One substation is an industrial facility that is not regularly staffed.	The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects.	Formation of a Public Liaison Committee to exchange information and discuss concerns with local community members.  Regular community updates regarding activities and performance of the landfill, in a publicly accessible style and format.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
			Public facilities and institutions beyond this distance are not expected to experience any significant physical disturbances that would affect their use and enjoyment or operations			Occasional nuisances would not result in social effects on people or the community.		
Along the Haul Routes	Operational Period	There are no public facilities or institutions along the primary haul route on County Road 6, nor any planned.	Not applicable.	Not applicable.	Not required.	Not applicable.	Not applicable.	Not required.

## Criterion 12: Disruption to local traffic networks

Study Lead: Traffic

Definition/Rationale: Increased traffic volume resulting from a waste disposal facility could disturb the overall traffic flow along the haul routes, and effectively reduce the available road capacity.

Indicators: Change in daily truck traffic volume and AADT along all study area road segments  
Intersection performance – capacity, delay, queues (based on HCM 2010 and generated by Synchro 9) – for all study area intersections

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Route	Operational Period	County Road 6 (CR6) currently carries approximately 6,000 to 9,000 vehicles <i>per</i> day. Baseline traffic is expected to grow by about 1% <i>per</i> year. It will remain within acceptable capacity and performance levels, with stable traffic flow and low potential for congestion, with the exception of the Highway 401 eastbound off ramp approach to CR6 during the afternoon peak, although the existing ramp length can accommodate the longer vehicle queues and delays.	The landfill will increase traffic on CR6 by about 5%.	The addition of the landfill traffic to the forecast baseline traffic over a 20-year period will not significantly affect local traffic networks. Capacity and performance levels on CR6 will remain within acceptable limits, with stable traffic flow and low potential for congestion. Very little of the landfill traffic will use the Highway 401 eastbound off ramp to CR6, so it will not exacerbate any future congestion at that location.	None required.	No significant net effects.	No significant net effects.	None required.

### Criterion 13: Visual impact of the waste disposal facility

Study Lead: Visual / Landscape

Definition/Rationale: Development and operation of a waste disposal facility can affect the visual appeal of a landscape.

Indicators: Degree of visual change expected at various private and public properties in the areas surrounding the site.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>The quarries and related infrastructure, along with the railway lines and channelized reach of the Thames River, impart a highly disturbed, industrial character to the landscape.</p> <p>Views of the quarries are currently screened from most directions by topography and/or vegetation, some of which is used in conjunction with screening berms around the perimeter of the quarry site. Long-distance views into the quarries are available from a few locations, such as certain elevated points along Karn Road on the opposite bank of the Thames River valley to the south.</p>	One residence to the southwest will have a relatively close view of the upper levels of the landfill operations above the existing berm. All other views from residences, public facilities and roadways will be sufficiently distant and/or screened.	The landfill operations will offer a similar industrial view as the ongoing quarry operations at the site.	A tree planting and maintenance program for additional visual screening on the existing berm along the southwestern perimeter of the site. Plantings to occur during Phase 1 of the landfill operations so that the vegetation matures prior to the landfill operations reaching the southern/upper phases.	No significant visual impact.	Not contributing to any significant cumulative impact.	Not required.
	Post-Closure Period	The quarry will eventually be backfilled and rehabilitated while quarrying continues further north and east. The landscape will continue to have an overall industrial character with some interspersed green space.	Any views of the finished and rehabilitated landfill will be green space.	The finished and rehabilitated landfill will offer a similar view as a rehabilitated quarry on the same site.	None required.	No significant visual impact.	Not contributing to any significant cumulative impact.	Not required.

## Criterion 14: Nuisance associated with vermin

Study Lead: Social

Definition/Rationale: Pests such as vermin or gulls can be a nuisance and affect how residents use and enjoy their property as well as agricultural operations.

A waste disposal facility may result in an increase of vermin and gulls. These could affect areas surrounding the landfill or along the haul routes.

Indicators: Potential for and likelihood of changes in the presence of vermin and gulls; *Note: Results from other discipline analyses (e.g., ecological studies) will be used to determine the magnitude of change.*

Potential for or likelihood of the project causing changes in people's use and enjoyment of residential property. *Note: Results from the field data collection program together with professional judgement were used to determine types of effects and potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There are no significant occurrences of rodents, insects or birds that pose a nuisance to community members on site (in the quarry); any occurring in the surrounding vicinity would be those typical of rural and agricultural landscapes.	Well run, modern landfills with good housekeeping and bird control practices do not host significant numbers of rodents, insects or birds. Rodents, insects or birds have not been an issue at Walker's Niagara Region landfill operations.	None. No major populations of rodents, insects or birds are expected to be present on site or in the surrounding vicinity.	Landfill operational measures and good housekeeping practices, along with an Integrated Bird Management Program recommended through the ecology study will further reduce nuisance related to rodents, insects and birds at the site and surrounding area.	Operational measures and on-site housekeeping are anticipated to keep rodents, birds and insects to levels at or below that which is sustained by local natural features. An increased risk of nuisance to community members is not expected.	An increased risk of nuisance to community members is not expected.	None required.

## Criterion 15: Displacement/disturbance of cultural/heritage resources

Study Lead: Cultural Heritage

Definition/Rationale: Cultural resources (including heritage buildings, cemeteries and cultural landscapes) are an important component of human heritage. These non-renewable cultural resources may be displaced by the construction of a waste disposal facility. The use and enjoyment of cultural resources may also be disturbed by the ongoing operation and traffic. Disturbances could result from noise, dust, odour, visibility, birds, litter and traffic congestion.

Indicators:  
 Displacement of built heritage resources  
 Displacement of cultural heritage landscapes  
 Disruption of built heritage resources (both habitable and non-habitable)  
 Disruption of cultural heritage landscapes

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There are no designated cultural heritage resources on-site or within 1 km, nor were any of the structures or landscapes determined to have significant cultural heritage value in accordance with the regulations.	None. No removal of any significant cultural heritage resources or landscapes. No physical disturbance to any significant cultural heritage resources or landscapes in the site vicinity.	None.	Not required.	None. No removal of any significant cultural heritage resources or landscapes. No physical disturbance to any significant cultural heritage resources or landscapes in the site vicinity.	None.	Not required.
	Post-Closure Period	As above, but with continued removal of agricultural fields to the north of the site as the quarry progresses, and rehabilitation of completed quarry to private green space.	None, as above.	None.	Not required.	None, as above.	None.	Not required.
Along the Haul Route	Operational Period	There are no designated cultural heritage resources along the haul route on County Road 6 (CR6).	None. There are no physical modifications proposed to CR6. The new access road route across the quarry property is not a significant cultural heritage landscape.	None.	Not required.	None. There are no physical modifications proposed to CR6. The new access road route across the quarry property is not a significant cultural heritage landscape.	None.	Not required.
	Post-Closure Period	As above.	None, as above.	None.	Not required.	None, as above.	None.	Not required.

## Criterion 16: Effects on land resources, traditional activities or other interests of Aboriginal Communities

Study Lead: Social

**Definition/Rationale:** A waste disposal facility may result in effects on Aboriginal communities through changes in their use of resources for traditional purposes. A waste disposal facility may also result in indirect effects to the well-being of Aboriginal communities due to changes in the biophysical environment (e.g., water resources, landscape). A waste disposal facility may affect Aboriginal Communities and their interests including (but not limited to) Aboriginal rights, environmental monitoring and stewardship, capacity development and potential economic opportunities.

**Indicators:** Potential for and likelihood of changes in the use of resources by Aboriginal persons for traditional purposes. *Note: This may include, but not be limited to the consideration of the potential for or likelihood of indirect effects to community well-being resulting from changes in the biophysical environment (e.g., water resources, landscape). Results from other discipline analyses will be used to determine the magnitude of change in the biophysical environment.*

Compatibility of the project with Aboriginal Interests. *Note: Results from research and engagement activities with participating First Nations and Metis were used to put forth Walker’s perspectives on the compatibility of the Project with Aboriginal Interests. This included, the consideration of First Nations and Metis interests related to: Aboriginal rights; environmental monitoring and stewardship; economic development (e.g., related to waste management; systems); and other potential opportunities.*

Due to the fact that several of the identified communities did not participate in interviews or focus groups, a precautionary approach to the effects assessment was taken.

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	<p>There are 12 Indigenous communities with constitutionally protected Indigenous or Treaty Rights in the area.</p> <p>Members of these communities use certain lands in the general area for traditional activities such as hunting, harvesting and gathering. Others are engaged in commercial or non-commercial entrepreneurial businesses, or as employees.</p> <p>The Thames River is used for recreation, travel, gathering (plants and medicines), hunting, fishing and ceremony, where public access can be gained or where permission is granted through private property. The river also has cultural and spiritual significance beyond these physical activities.</p>	<p>Given the limited nature and range of physical disturbances that are anticipated to occur in the vicinity of the site, and that water quality and ecosystems in the Thames River valley will not be affected, it is not anticipated that there will be effects on land uses or traditional activities of any Indigenous communities.</p> <p>On the other hand, the landfill construction and operation could open new opportunities for Indigenous employment or businesses.</p>	<p>The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of possible effects.</p>	<p>Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, traffic, and property values. [See other criteria tables.]</p>	<p>No effects are anticipated on land uses or traditional activities of any Indigenous communities.</p> <p>The landfill construction and operation could open new opportunities for Indigenous employment or businesses.</p>	<p>The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of possible effects.</p>	<p>Formation of an Indigenous Liaison Committee to exchange information and discuss concerns and/or opportunities with community members.</p>

		It is not anticipated that, in the future, there will be fundamental changes from the current baseline conditions. However, some Indigenous members have observed a gradual degradation in water, plant and wildlife health in the Thames.						
	Post-Closure Period	As above.	No significant effects are expected following closure of the site.	None.	None required.	None.	None.	None.



## Criterion 17: Displacement / destruction of archaeological resources

Study Lead: Archaeology

Definition/Rationale: Archaeological resources are non-renewable cultural resources that can be destroyed by the construction and operation of a waste disposal facility.

Indicators: Indices as described within the Standards and Guidelines for Consultant Archaeologists O. Reg. 9/06: Criteria for Determining Cultural Heritage Value or Interest as defined in the Glossary within the Standards and Guidelines for Consultant Archaeologists.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There is one site of archaeological significance (now registered as AgHf-67) located in the area where the leachate treatment plant is proposed to be built. It consists of a scatter of primarily Euro-Canadian artifacts (e.g., brick, pottery and other building materials and domestic items) with a minor Indigenous component (three chert fragments), within an area of about 1.8 ha. The assemblage suggests the location of a previous farm dwelling dating from the mid- to late-19th century into the early 20th century.  The site is outside of the licenced quarry so it is assumed it would otherwise remain undisturbed in the future.	The construction of the leachate treatment plant could disturb or destroy artifacts at site AgHF-67.	None; there are no other known activities expected to disturb these resources.	The site will be subject to a Stage 3 site-specific assessment in accordance with provincial requirements prior to any disturbance of this area. Based on those findings, a Stage 4 mitigation plan will be developed and implemented, if warranted.	None, subject to the successful completion and provincial approval of the Stage 3/4 archaeological assessment(s).	None.	Not required.

## Criterion 18: Level of public service provided by the waste disposal facility

Study Lead: Economic / Financial

Definition/Rationale: The presence of a waste disposal operation within a municipality can provide an increased level of public service (e.g., convenient access to waste disposal services) to local residents and businesses, as well as those in the broader community(s).

Indicators: Number of area residents and businesses that might use the proposed landfill.  
Number of regional waste disposal companies and waste haulage companies that could use the landfill.  
Costs of service provision afforded by the proposed landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	The County of Oxford currently operates the Salford Landfill mainly for its own municipal waste disposal needs. It has sufficient capacity for about 45 more years. Most businesses in Oxford County contract with private-sector waste disposal companies that export industrial, commercial and institutional (IC&I) wastes to landfills outside of Oxford County.	<p>The Southwestern Landfill will provide approximately 20 years of additional, secure waste disposal capacity in Ontario to support the province's businesses and municipalities, and reduce Ontario's forecast waste disposal deficit.</p> <p>It will provide convenient local disposal capacity to businesses in Oxford County that currently export waste.</p> <p>Potential savings to County businesses are estimated at yielding an approximate gross annual savings between \$200,000 to \$250,000 <i>per year</i>.</p> <p>The landfill will also provide an alternative/emergency disposal location for Oxford County municipal waste, if required.</p>	Together with the Salford Landfill, the Southwestern Landfill will allow the County of Oxford to provide sufficient in-County waste disposal capacity for both municipal and IC&I waste for at least 20 years, supporting the County's "Future Oxford" goals.	Not required.	<p>The Southwestern Landfill will provide approximately 20 years of additional, secure waste disposal capacity in Ontario to support the province's businesses and municipalities, and reduce Ontario's forecast waste disposal deficit.</p> <p>It will provide convenient local disposal capacity to businesses in Oxford County that currently export waste, with potential savings estimated at \$200,000 to \$250,000 <i>per year</i>.</p> <p>The landfill will also provide an alternative/emergency disposal location for Oxford County municipal waste if required.</p>	<p>Together with the Salford Landfill, the Southwestern Landfill will allow the County of Oxford to provide sufficient in-County waste disposal capacity for both municipal and IC&amp;I waste for at least 20 years.</p> <p>The landfill offers the potential for the Walker and the County to pursue innovative waste management initiatives in line with the County's goals.</p>	Not required.
	Post-Closure Period	As above. Beyond the life of the Salford Landfill, alternative waste disposal capacity will be required either in the County or through export.	None. The Southwestern Landfill will not provide any further waste disposal service after closure.	None. The Southwestern Landfill will not provide any further waste disposal service after closure.	Not required.	None. The Southwestern Landfill will not provide any further waste disposal service after closure.	None. The Southwestern Landfill will not provide any further waste disposal service after closure.	Not required.

## Criterion 19: Effects on other public services

Study Lead: Economic / Financial

Definition/Rationale: The presence of a waste disposal facility may have positive or negative spin-off effects on other public services in the community (e.g., leachate trucking, waste water treatment capacity, if there is discharge to the sewer system).

Indicators: Identification of other public services that could be required for operation of the proposed landfill  
Estimated scope, scale and cost of these public service requirements  
Effects on public service capacities

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Route	Operational Period	The County provides maintenance and snow clearing services on County Road 6.	No specific changes in snow clearing or road maintenance services are required to accommodate the landfill traffic on County Road 6.	Combined with existing and forecast traffic on County Road 6, the landfill may result in a slight increase in the frequency of maintenance requirements.	None.	No specific changes in snow clearing or road maintenance services are required to accommodate the landfill traffic on County Road 6.	Combined with existing and forecast traffic on County Road 6, the landfill may result in a slight increase in the frequency of maintenance requirements.	Regular inspection/ observation of the primary haul route on County Road 6 by Walker operations personnel to identify any road condition issues, and discuss with the County of Oxford Public Works Department.
	Post-Closure Period	The County provides maintenance and snow clearing services on County Road 6.	None. Post-closure traffic to the landfill will be relatively insignificant.	None. Post-closure traffic to the landfill will be relatively insignificant.	None.	None. Post-closure traffic to the landfill will be relatively insignificant.	None. Post-closure traffic to the landfill will be relatively insignificant.	None required.
Wider Area	Operational Period	Not applicable. (The landfill will not require any other public services.)	None. The landfill will not require any other public services (aside from electrical power).	None. The landfill will not require any other public services.	None required.	None. The landfill will not require any other public services (aside from electrical power).	None. The landfill will not require any other public services.	None required.
	Post-Closure Period	Not applicable. (The landfill will not require any other public services.)	None. The landfill will not require any other public services (aside from electrical power).	None. The landfill will not require any other public services.	None required.	None. The landfill will not require any other public services (aside from electrical power).	None. The landfill will not require any other public services.	None required.

## Criterion 20: Changes to community character / cohesion

Study Lead: Social

**Definition/Rationale:** Community character refers to the ways in which the community sees itself. Community cohesion refers to the ways in which community members come together in a shared vision or a shared purpose. A waste disposal facility has the potential to affect community character by changing how community members see themselves and their environment. A waste disposal facility has the potential to affect community cohesion by either causing divisions among community members or by bringing them together in a shared purpose.

**Indicators:** Compatibility of the proposed end use with the existing and likely future character of the community.  
The effects from potential voluntary out-migration. *Note: Results from the field data collection program together with professional judgement were used to determine types of effects and potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>Residents in Oxford County describe their community character and cohesiveness as generally positive - friendly, supportive and welcoming, with a peaceful "small town" feel and a spirit of volunteerism for community events. The majority (82%) reported their feeling of overall health and well-being as good to excellent. Crime and drugs were noted as the most significant concerns, while about 16% reported the proposed landfill as the most important issue facing the community. Nevertheless, 95% of Oxford County residents are satisfied with living in their community.</p> <p>Recent announcements regarding the future of the Canterbury Festival and the Leaping Deer Farm and Market represent a loss to the local community character and cohesion.</p> <p>The current character and cohesiveness of the County and the local communities is likely to continue into the future even as further growth is experienced.</p>	<p>The landfill will strengthen the existing industrial presence of the Carmeuse quarry site and site vicinity during the operations phases.</p> <p>The controversy surrounding the landfill approvals will have engendered some residual social impacts that could continue to affect the community character and cohesiveness to some extent during the initial years of operations, although this can be expected to diminish over time as the landfill establishes and demonstrates a good performance record.</p> <p>Since at least 2012, Walker has been making a variety of corporate sponsorships and donations that benefit residents and community organizations, and will continue to do so. Many of these activities contribute positively to community character and cohesion.</p>	<p>Apart from loss to community character and cohesion stemming from the future status of the Canterbury Festival and the Leaping Deer Farm and Market, no other major issues or activities that would have a substantive effect on community character or cohesion have been identified.</p>	<p>Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, traffic, and property values. [See other criteria tables.]</p>	<p>The landfill will strengthen the existing industrial presence of the Carmeuse quarry site and site vicinity during the operations phases.</p> <p>The controversy surrounding landfill approvals may result in reduced community cohesion during the initial years of landfill operation. This can be expected to diminish over time as the landfill establishes and demonstrates a good performance record.</p> <p>Corporate sponsorships and donations will contribute positively to community character and cohesion.</p>	<p>No significant potential for cumulative effects have been identified.</p>	<p>Formation of a Public Liaison Committee to exchange information and discuss concerns with local community members.</p> <p>Regular community updates regarding activities and performance of the landfill, in a publically accessible style and format.</p> <p>Establishment of a host municipality fund used to address community needs and priorities.</p>

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
	Post-Closure Period	As above.	By the time of closure, the landfill would not be expected to have any further significant effects.	None.	None required.	None.	None.	None required.
Along the Haul Routes	Operational Period	As above; the community along the haul route is a subset of the site vicinity.						
	Post-Closure Period	As above; the community along the haul route is a subset of the site vicinity.						
Wider Area	Operational Period	As above, although with most of the population, housing and employment growth directed to Woodstock, increased urbanization can be expected there along with a growing youth demographic.	As above. In the wider area (i.e., County-wide) the landfill will be a less prominent concern and less likely to affect community character and cohesiveness at this scale.	As above.	As above.	As above.	As above.	As above.
	Post-Closure Period	As above.	By the time of closure, the landfill would not be expected to have any further adverse social effects.	None.	None required.	None.	None.	None required.

## Criterion 20: Changes to community character / cohesion

Study Lead: Social

**Definition/Rationale:** Community character refers to the ways in which the community sees itself. Community cohesion refers to the ways in which community members come together in a shared vision or a shared purpose. A waste disposal facility has the potential to affect community character by changing how community members see themselves and their environment. A waste disposal facility has the potential to affect community cohesion by either causing divisions among community members or by bringing them together in a shared purpose.

**Indicators:** Compatibility of the proposed end use with the existing and likely future character of the community.  
The effects from potential voluntary out-migration. *Note: Results from the field data collection program together with professional judgement were used to determine types of effects and potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	Residents in Oxford County describe their community character and cohesiveness as generally positive - friendly, supportive and welcoming, with a peaceful "small town" feel and a spirit of volunteerism for community events. The majority (82%) reported their feeling of overall health and well-being as good to excellent. Crime and drugs were noted as the most significant concerns, while about 16% reported the proposed landfill as the most important issue facing the community. Nevertheless, 95% of Oxford County residents are satisfied with living in their community.  Recent announcements regarding the future of the Canterbury Festival and the Leaping Deer Farm and Market represent a loss to the local community character and cohesion.  The current character and cohesiveness of the County and the local communities is likely to	The landfill will strengthen the existing industrial presence of the Carmeuse quarry site and site vicinity during the operations phases.  The controversy surrounding the landfill approvals will have engendered some residual social impacts that could continue to affect the community character and cohesiveness to some extent during the initial years of operations, although this can be expected to diminish over time as the landfill establishes and demonstrates a good performance record.  Since at least 2012, Walker has been making a variety of corporate sponsorships and donations that benefit	Apart from loss to community character and cohesion stemming from the future status of the Canterbury Festival and the Leaping Deer Farm and Market, no other major issues or activities that would have a substantive effect on community character or cohesion have been identified.	Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, traffic, and property values. [See other criteria tables.]	The landfill will strengthen the existing industrial presence of the Carmeuse quarry site and site vicinity during the operations phases.  The controversy surrounding landfill approvals may result in reduced community cohesion during the initial years of landfill operation. This can be expected to diminish over time as the landfill establishes and demonstrates a good performance record.  Corporate sponsorships and donations will contribute positively to community character and cohesion.	No significant potential for cumulative effects have been identified.	Formation of a Public Liaison Committee to exchange information and discuss concerns with local community members.  Regular community updates regarding activities and performance of the landfill, in a publically accessible style and format.  Establishment of a host municipality fund used to address community needs and priorities.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
		continue into the future even as further growth is experienced.	residents and community organizations, and will continue to do so. Many of these activities contribute positively to community character and cohesion.					
	Post-Closure Period	As above.	By the time of closure, the landfill would not be expected to have any further significant effects.	None.	None required.	None.	None.	None required.
Along the Haul Routes	Operational Period	As above; the community along the haul route is a subset of the site vicinity.						
	Post-Closure Period	As above; the community along the haul route is a subset of the site vicinity.						
Wider Area	Operational Period	As above, although with most of the population, housing and employment growth directed to Woodstock, increased urbanization can be expected there along with a growing youth demographic.	As above. In the wider area (i.e., County-wide) the landfill will be a less prominent concern and less likely to affect community character and cohesiveness at this scale.	As above.	As above.	As above.	As above.	As above.
	Post-Closure Period	As above.	By the time of closure, the landfill would not be expected to have any further adverse social effects.	None.	None required.	None.	None.	None required.

## Criterion 22: Displacement / Disruption of Businesses (including farms and tourism related businesses)

Study Lead: Economic / Financial

Definition/Rationale: On-site businesses or farms could be displaced by a waste disposal facility, and there could be financial losses as a result of relocation. Some types of businesses located in the site vicinity or along the haul routes may suffer financial losses due to the potential nuisance effects or perceived effects associated with the operation of a waste disposal facility such as noise, litter, dust, odour, visibility, birds, vermin and traffic congestion.

Indicators:

- Number of businesses physically displaced by proposed landfill
- Number of businesses that would be disturbed by landfill operation
- Number of businesses whose product could be affected by proposed landfill operation
- Number of businesses who perceive their brand would be stigmatized by the proposed landfill

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	Business activity within the area is expected to grow as a result of population growth and favourable economic conditions.	No businesses will be displaced by the proposed landfill.  Once in operation, limited off-site effects are anticipated and will be managed so no significant effects on businesses or their products and services are expected.  Through surveys and interviews a number of businesses owners worry that their brand will be stigmatized by the proposed landfill. Over time these concerns are expected to dissipate as people realize the landfill is carefully managed and offsite effects are very limited.	The economy of the area is growing. The landfill will be carefully managed to prevent off-site effects and therefore it will not impede business vitality and growth.  The long-time and continuing heavy industry in this vicinity (i.e., quarries, lime processing) means that local businesses are already adjusted to an industrial land use.	Non-required	No significant effects on area businesses.	No detrimental effects on business vitality or growth.	Monitor the business community for complaints and concerns and take action as required to ensure there are no off-site effects causing disturbance or disruption.
	Post-Closure Period	As above	No significant effects. Post-closure operations will be very limited with minimal potential for off-site effects that could affect local businesses.	The long-time and continuing heavy industry in this vicinity (i.e., quarries, lime processing) suggests that local businesses are already adjusted to an industrial land use.	Non-required	No significant effects on local businesses.	No significant effects on local businesses.	None required



Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Route	Operational Period		As above. (The primary haul route lies fully within the Site Vicinity study area.)					
	Post- Closure Period		As above. (The primary haul route lies fully within the Site Vicinity study area.)					

### Criterion 23: Property Value Impacts

Study Lead: Economic / Financial

Definition/Rationale: The establishment and operation of a waste disposal facility may adversely affect property values in the site vicinity or along the haul routes.

Indicators: Number of properties that are likely to be directly affected by the proposed landfill operation.  
Estimated loss of property value in site vicinity.  
Number of property owners who perceive their property values could be affected.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	Property values in the vicinity of the landfill are expected to continue rising due to strong demand from home buyers, including a substantial number pushing out from the GTA.	The landfill may have contributed to a small (<4%) and temporary drop in property values in the first year following its announcement, but no significant effects since then despite a high degree of negative publicity.  Once in operation, limited off-site effects are anticipated and will be managed, so no significant effects on property values are expected.	The long-time and continuing heavy industry in this vicinity (i.e., quarries, lime processing) means that property values are already adjusted to this type of land use.	None required.	No significant effects on property values.	No significant effects on property values.	Offer property value protection agreements to neighbours whose properties are within 500 m of the landfill site.
	Post-Closure Period	As above.	No significant effects. Post-closure operations will be very limited with minimal potential for off-site effects that could affect property values.	The long-time and continuing heavy industry in this vicinity (i.e., quarries, lime processing) means that property values are already adjusted to this type of land use.	None required.	No significant effects on property values.	No significant effects on property values.	None required.
Along the Haul Route	Operational Period	As above. (The primary haul route lies fully within the Site Vicinity study area.)						
	Post-Closure Period	As above. (The primary haul route lies fully within the Site Vicinity study area.)						

## Criterion 24: Direct employment in waste disposal facility construction and operation

Study Lead: Economic / Financial

Definition/Rationale: A waste disposal facility may create new employment opportunities both in the construction and day-to-day operation.

Indicators: Number of direct FTE jobs and levels of income, gross domestic product and gross output associated with the construction, operation and closure of the proposed landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	<p>The economy in the vicinity of the proposed landfill is strong and will continue to grow. The automotive sector in particular is a major economic driver in Ingersoll and Woodstock.</p> <p>Overall on an annualized basis, job growth is projected to be in the order of 125 jobs per year in the Study area municipalities and approximately 700 per year for the County as a whole.</p> <p>While job growth is forecast for manufacturing activities very little is expected in agriculture and quarrying going forward.</p>	<p>The proposed landfill will contribute to the economy of Zorra, South-west Oxford and Ingersoll.</p> <p>Projected direct impacts in the wider study area (Oxford County and vicinity) over the life of the operating life of the landfill include:</p> <ul style="list-style-type: none"> <li>•Gross Output: \$ 643 million</li> <li>•GDP: \$329 million</li> <li>•Labour Income: \$173 million</li> <li>•FTE Jobs: 2,313 (~ 105 jobs / year on average)</li> </ul>	<p>The area economy is expected to grow, and the proposed landfill will make a positive additive contribution.</p>	None required.	<p>The proposed landfill will contribute to the economy of Zorra, South-west Oxford and Ingersoll.</p> <p>Projected direct impacts across the wider study area (Oxford County and vicinity) over the life of the operating life of the landfill include:</p> <ul style="list-style-type: none"> <li>•Gross Output: \$ 643 million</li> <li>•GDP: \$329 million</li> <li>•Labour Income: \$173 million</li> <li>FTE Jobs: 2,313 (~ 105 jobs / year on average)</li> </ul>	<p>A positive contribution to the growing area economy.</p>	<p>Hiring policy giving preference to local and Indigenous candidates, where possible.</p>

## Criterion 25: Indirect employment in related industries and services

Study Lead: Economic / Financial

Definition/Rationale: A waste disposal facility has the potential to have impacts on employment opportunities in local firms supplying products or services directly, or as secondary suppliers.

Indicators: Number of indirect and induced FTE jobs and levels of income, gross domestic product and gross output associated with the construction, operation and closure of the proposed landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	<p>The economy in the vicinity of the proposed landfill is strong and will continue to grow. The automotive sector in particular is a major economic driver in Ingersoll and Woodstock.</p> <p>Overall on an annualized basis job growth is projected to be in the order of 125 jobs per year in the Study area municipalities and approximately 700 per year for the County as a whole.</p> <p>While job growth is forecast for manufacturing activities very little is expected in agriculture and quarrying going forward.</p>	<p>The proposed landfill will contribute to the economies of Zorra, South-west Oxford and Ingersoll.</p> <p>Projected indirect and induced Impacts across the wider study area (Oxford County and vicinity) over the operating life of the landfill include:</p> <ul style="list-style-type: none"> <li>• Gross Output: \$643 million</li> <li>• GDP: \$349 million</li> <li>• Labour Income: \$173 million</li> <li>• FTE Jobs: 2,313 (~ 105 jobs / year on average)</li> </ul>	<p>The proposed landfill will positively contribute to the growing economy of the area.</p>	None required.	<p>Over the operating life of the landfill projected indirect and induced economic Impacts will contribute to the economies of Zorra, South-west Oxford, Ingersoll, the County of Oxford and beyond</p> <ul style="list-style-type: none"> <li>• Gross Output: \$643 million</li> <li>• GDP: \$349million</li> <li>• Labour Income: \$173 million</li> <li>• FTE Jobs: 2,313 (~ 105 jobs / year on average)</li> </ul>	<p>A positive contribution to the growing area economies.</p>	<p>A procurement policy that giving preference to local suppliers, where possible.</p>

**Criterion 26: New business opportunities related directly to waste disposal facility construction and operation.**

Study Lead: Economic / Financial

Definition/Rationale: A large capital project, such as the construction and operation of a waste disposal facility, can create new opportunities for local businesses supplying products or services.

Indicators: Potential for new business opportunities to be spawned through construction, operation and closure of the proposed landfill.

Study Area	Duration	Baseline (“Do Nothing” Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	The business economy, and the potential for new businesses, in the vicinity of the landfill is expected to grow as the population grows and the area economy expands.	<p>The proposed landfill will require a variety of goods and services from businesses in the surrounding region related to the landfill construction and operation. Some of these expenditures will contribute to the growth/expansion of existing business and in other instances new businesses may be created to take advantage of the opportunities afforded</p> <p>The projected capital cost is \$218 m with roughly 95% of these expenditures (\$208 m) being made in Ontario. Of the monies spent in Ontario approximately \$148 m will be made in the wider area within roughly one hours drive of the proposed site.</p> <p>Operating expenditures inclusive of labour are estimated to total approximately \$277 m with approximately 86% of these expenditures (\$240 m) being spent in the wider area.</p>	<p>The area economy is robust with strong business opportunities for the provision of goods and services to a growing population and business base.</p> <p>The proposed landfill will further bolster the area economy through the purchase of goods and services.</p>	None required.	Substantial positive effect with the potential for the expansion of existing businesses and the creation of new businesses to service the estimated \$148 million in capital expenditures and \$240 million in operating expenditures projected to be spent within roughly one hour drive of the landfill.	The projected business growth related to the landfill will further enhance economic growth forecast for this region.	Purchasing policy giving preference to local suppliers, where possible.

**Criterion 27: New business opportunities in related industries and services.**

Study Lead: Economic / Financial

Definition/Rationale: New opportunities may be created for local businesses, or as secondary suppliers to industries working for the waste disposal facility (e.g., restaurants, gas stations, machine shops, repair shops, welding shops, equipment rentals, etc.).

Indicators: Potential for new business opportunities associated with the supply goods and services to businesses that are directly involved with the construction and operation of the proposed landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	The business economy, and the potential for new businesses, in the vicinity of the landfill is expected to grow as the population grows and the area economy expands.	<p>The proposed landfill will result in expenditures in a wide variety of related goods and services (e.g., fuel, food, etc.). Some of these expenditures will contribute to the growth/expansion of existing business and in other instances new businesses may be created to take advantage of the opportunities afforded</p> <p>The projected capital cost is \$218 m with roughly 95% of these expenditures (\$208 m) being made in Ontario. Of the monies spent in Ontario approximately \$148 m will be made in the wider area within roughly one hours drive of the proposed site.</p> <p>Operating expenditures inclusive of labour are estimated to total approximately \$277 m with approximately 86% of these expenditures (\$240 m) being spent in the wider area.</p>	<p>The area economy is robust with strong business opportunities for the provision of goods and services to a growing population and business base.</p> <p>The proposed landfill will further bolster the area economy through the purchase of goods and services.</p>	None required.	Substantial positive effect with the potential for the expansion of existing businesses and the creation of new ancillary businesses to service the estimated \$148 million in capital expenditures and \$240 million in operating expenditures projected to be spent within roughly one hour drive of the landfill.	The projected business growth related to the landfill will further enhance economic growth forecast for this region.	A procurement policy that gives preference to local suppliers, where possible.

## Criterion 28: Public costs for indirect liabilities

Study Lead: Economic / Financial

Definition/Rationale: Some public services may have to be upgraded to accommodate the establishment and operation of a waste disposal facility (e.g., snow removal, sewer and water connections, etc.).

Indicators: Municipal costs incurred as a result of public infrastructure and services required to enable development and operation of the landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	Municipal services will continue to be provided at levels budgeted for by the municipalities and County, with future increases commensurate with population and economic growth forecast for this area.	The proposed landfill will place no demands on municipal services. It will have its own source of potable water and it will build its own treatment facility to handle sewage and leachate. Any solid waste produced on -site will be handled by Walker.	Combined with existing and forecast traffic on County Road 6, the landfill may result in a slight increase in the frequency of maintenance requirements	None.	No significant costs imposed on municipal infrastructure or service provision.	Combined with existing and forecast traffic on County Road 6, the landfill may result in a slight increase in the frequency of maintenance	Regular inspection/ observation of the primary haul route on County Road 6 by Walker operations personnel to identify any road condition issues, and discuss with the County of Oxford Public Works Department.
	Post-Closure Period	As above.	No significant effects. Post closure operations will impose no undue costs on municipal infrastructure or community services.	No significant effects. Post closure operations will impose no undue costs on municipal infrastructure or community services.	None required.	No significant effects.	No significant effects.	None required.

## Criterion 29: Effects on the municipal tax base

Study Lead: Economic / Financial

Definition/Rationale: A waste disposal facility has the potential to affect municipal tax revenues from the site it occupies.

Indicators: Municipal revenues directly created via taxes, charges, permits and revenues as a result of construction and operation of the landfill.  
Potential for municipal revenues to be indirectly created through the creation of ancillary businesses.  
Potential for municipal tax losses through business displacement and property value diminishment.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	The site would continue to pay municipal taxes at an industrial (quarry) rate as mining and progressive rehabilitation occur.	The proposed landfill is estimated to generate approximately \$77,400 in direct annual property taxes distributed accordingly:  Lower Tier: \$28,500 Upper Tier: \$20,400 Education: \$28,500  Further, over the life of the landfill product and production taxes associated with the landfill are projected to generate \$12.8 million in municipal tax contributions across the Province.	Municipal property taxes for the operating landfill will be similar to those of the active quarry.  However, over the life of the landfill product and production initiatives associated with landfill activities will generate an estimated \$12.8 million in municipal tax revenue across the Province	None required.	The proposed landfill is estimated to generate approximately \$77,400 in direct annual property taxes distributed accordingly:  Lower Tier: \$28,500 Upper Tier: \$20,400 Education: \$28,500  Further, over the life of the landfill product and production taxes associated with the landfill are projected to generate \$12.8 million in municipal tax contributions across the Province.	None. Municipal property taxes for the operating landfill will be similar to those of the active quarry.  However, over the life of the landfill product and production initiatives associated with landfill activities will generate an estimated \$12.8 million in municipal tax revenue across the Province	A host municipality payment will be offered by Walker to supplement property taxes.
	Post-Closure Period	The rehabilitated quarry site would continue to pay municipal taxes at a rate commensurate with private greenspace.	The closed and rehabilitated landfill would continue to pay municipal taxes at a rate commensurate with private greenspace.	None. Municipal property taxes for the closed and rehabilitated landfill would be similar to those for the rehabilitated quarry.	None required.	The closed and rehabilitated landfill would continue to pay municipal taxes at a rate commensurate with private greenspace.	None. Municipal taxes for the closed and rehabilitated landfill would be similar to those for the rehabilitated quarry.	None required.



### Criterion 30: Effect on the cost of service to customers

Study Lead: Economic / Financial

Definition/Rationale: The costs of constructing a waste disposal facility will effect the price of tipping fees to the site. This affects the cost of service to customers in Oxford County and the province.

Indicators: Cost savings/increases incurred by local customers as a result of landfill operation.  
Cost savings/increases incurred by regional customers as a result of landfill operations.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	<p>Most businesses in Oxford County contract with private-sector waste disposal companies that export industrial, commercial and institutional (IC&amp;I) wastes to landfills outside of Oxford County.</p> <p>There is currently a 30% disposal capacity deficit within the Province which necessitates the export of waste to other US jurisdictions, particularly Michigan. Without new landfill capacity in the Province, this export can be expected to increase in the future along with associated transportation costs, along with potential risks if the international border is closed to waste export.</p>	<p>Potential savings to County businesses that currently export waste for disposal outside of the County are estimated at yielding a gross annual savings between \$200,000 to \$250,000 <i>per year</i>.</p> <p>The landfill will also reduce waste disposal transportation costs for regional businesses that ship their waste out-of-Province.</p> <p>Additionally, new landfill capacity within the Province lowers the risk to Ontario businesses of a border closure.</p>	<p>The potential cost savings (and lowered risk) to local and regional customers would be additive to the provincial economy, compared to expenditures on waste disposal in the US.</p>	None required.	<p>Potential savings to County businesses that currently export waste for disposal outside of the County are estimated at yielding a gross annual savings between \$200,000 to \$250,000 <i>per year</i>.</p> <p>The landfill will also reduce waste disposal transportation costs for regional businesses that ship their waste out-of-Province or private landfills in the province</p> <p>Additionally, new landfill capacity within the Province lowers the risk to Ontario businesses of a border closure.</p>	<p>The potential cost savings (and lowered risk) to local and regional customers would be additive to the provincial economy, compared to expenditures on waste disposal in the US.</p>	None required.

### Criterion 31: Effect on the provincial / federal tax base

Study Lead: Economic / Financial

Definition/Rationale: A waste disposal facility has the potential to affect provincial/federal tax revenues.

Indicators: Federal and provincial taxes created by construction and operation of the proposed landfill.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Wider Area	Operational Period	Provincial and Federal taxes will continue to be generated from individuals and businesses in the Province.	<p>The proposed landfill will generate Provincial and Federal taxes over its life through associated capital and operating expenditures.</p> <p>Tax outputs are:</p> <ul style="list-style-type: none"> <li>•Federal: \$7.2 million</li> <li>•Provincial: \$19.4 million</li> </ul> <p>In addition to business taxes generated from the landfill and its supply chain, personal income taxes will be generated via direct, indirect and induced employment created by the landfill.</p> <p>These tax monies over the life of the landfill are estimated to be:</p> <ul style="list-style-type: none"> <li>•Federal: \$32.7 million</li> <li>•Provincial \$13.6 million</li> <li>•CPP/EI: \$10.1 million</li> </ul> <p>In addition to all of the preceding, the landfill over its 20-year operating life and 50-year emissions life will reduce status quo GHG emissions and enable Provincial carbon tax avoidance in the range of \$290 to \$375 million.</p>	<p>The Provincial and Federal taxes related to the landfill will be additive to the economy.</p> <p>It will also lower the tax burden imposed on provincial businesses and consumers by reducing <i>status quo</i> GHG emissions.</p>	None required.	<p>The proposed landfill will generate Provincial and Federal taxes over its life through associated capital and operating expenditures.</p> <p>Tax outputs are:</p> <ul style="list-style-type: none"> <li>•Federal: \$7.2 million</li> <li>•Provincial: \$19.4 mill.</li> <li>•Aboriginal: \$37,000</li> </ul> <p>In addition to business taxes generated from the landfill and its supply chain, personal income taxes will be generated via direct, indirect and induced employment created by the landfill.</p> <p>These tax monies over the life of the landfill are estimated to be:</p> <ul style="list-style-type: none"> <li>•Federal: \$32.7 million</li> <li>•Provincial \$13.6 mill.</li> <li>•CPP/EI: \$10.1 million</li> </ul> <p>In addition to all of the preceding, the landfill over its 20-year operating life and 50-year emissions life will reduce status quo GHG emissions and enable Provincial carbon tax avoidance in the range of \$290 to \$375 million.</p>	<p>The provincial and federal taxes related to the landfill will be additive to the economy.</p> <p>It will also lower the tax burden imposed on provincial businesses and consumers by reducing <i>status quo</i> GHG emissions.</p>	None required.
	Post-Closure Period	Provincial and federal taxes will continue to be generated from individuals and businesses in the Province.	No significant economic effects.	No significant economic effects.	None required.	No significant economic effects.	No significant economic effects.	None required.

### Criterion 32: Loss / Displacement of surface water resources

Study Lead: Groundwater / Surface Water

Definition/Rationale: Construction of a waste disposal facility may cause the removal of all or part of a natural stream or pond.

Indicators: Ontario regulation 347, General – Waste Management (as amended).  
 Ontario regulation 232/98, Landfilling Sites (as amended).  
 Ontario Regulation 166/06 – Development, Interference with wetlands and Alterations to Shorelines and Watercourses.  
 Applicable Regulations under the Ontario Conservation Authorities Act.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	The Patterson-Robbins Drain is the only watercourse on the site, crossing the northwestern corner between the proposed landfill and leachate treatment plant.  In the very long term, a portion of the east branch of the Patterson-Robbins Drain upstream of the site may have to be diverted for quarry development.	No water bodies or watercourses would be removed or displaced in order to construct and operate the proposed landfill.	No cumulative effects related to the landfill. In the very long term, a portion of the east branch of the Patterson-Robbins Drain upstream of the site may have to be diverted for quarry development.	Not required.	None.	None.	Not required.

### Criterion 33: Impact on the availability of groundwater supply to wells

Study Lead: Groundwater / Surface Water

Definition/Rationale: A waste disposal facility can impact the availability of groundwater supply if groundwater is pumped from aquifers or if recharge to aquifers is reduced.

Indicators: Ontario Water resources Act (OWRA).  
Water Taking Regulation O. Reg. 387/04  
Environmental Protection Act (EPA)

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	Groundwater levels beneath the site and in the site vicinity are controlled by quarry dewatering. Water wells within about 1 km of the active quarry in the overburden or shallow bedrock aquifers are affected to some degree but are generally still viable.  The quarry drawdown cone (zone of influence) will extend slightly east and north as the quarry starts to expand in this direction over a 20-year period, although there are no water wells in this area to be affected.	None. Groundwater levels beneath the site and in the site vicinity will be controlled by quarry dewatering and remain below the base of the landfill, which will be constructed on backfill well above the quarry floor and isolated from the groundwater by the liner. The landfill operation will have no significant effects on groundwater levels or flow, and therefore no effect on water supply to area wells.	None.	None required.	None.	None.	Monitoring to confirm groundwater levels.
	Post-Closure Period	In the longer term, the quarry drawdown cone will extend further east and north as the quarry progresses over a period of many decades. Depleted portions of the quarry will be progressively rehabilitated with backfill and groundwater levels here will start to recover somewhat. Wells to the south and west of the site could gradually experience slightly better yields. Eventually (in hundreds of years) quarry dewatering will stop and groundwater levels will fully recover.	None. Groundwater levels beneath the site and in the site vicinity will continue to be controlled by quarry dewatering, which is expected to continue throughout the landfill post-closure period. The landfill will be isolated from the groundwater by the liner system, and will have no significant effects on groundwater levels or flow, and therefore no effect on water supply to area wells.	None.	None required.	None.	None.	Monitoring to confirm groundwater levels.

### Criterion 34: Effects on stream baseflow quantity /quality.

Study Lead: Groundwater / Surface Water

Definition/Rationale: The presence of a waste disposal facility has the potential to affect the quality or quantity of baseflow to surface water.

Indicators: Sections 53 and 34 of the Ontario Water Resources Act (OWRA)  
Environmental Protection Act (EPA).  
Guide to Permit to Take Water Application (2007)  
Water Taking Regulation O. Reg. 387/04.  
Appropriate water quality guidelines (e.g. PWQO or CCME)

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There is minimal potential for any significant groundwater base flow to the Patterson-Robbins Drain or the Thames River from the site or site vicinity, since the quarry dewatering effectively captures groundwater within this area and discharges it directly to the Thames River. (With the exception of shallow recharge through the overburden soils very near to the streams.)  Surface water base flow further upstream may decrease slightly as quarrying removes upstream catchment to the Patterson-Robbins Drain.	Groundwater levels beneath the site and in the site vicinity will be controlled by quarry dewatering and remain below the base of the landfill, which will be constructed on backfill well above the quarry floor and isolated from the groundwater by the liner. The landfill operation will have no significant effects on groundwater levels or flow, and therefore no effect on groundwater base flow to adjacent streams.  Surface water base flow may increase marginally due to input from the leachate treatment plant and storm water treatment ponds.	Surface water base flow from the leachate treatment plant and storm water treatment ponds will offset reductions due to ongoing loss of quarry catchment.	None required.	No significant change to the overall base flow in Patterson-Robbins Drain or Thames River.	No significant change to the overall base flow in Patterson-Robbins Drain or Thames River.	Monitoring to confirm water levels and flows.
	Post-Closure Period	As above; quarry expansion and dewatering is expected to continue throughout the post-closure period.	Groundwater levels beneath the site and in the site vicinity will continue to be controlled by quarry dewatering, which is expected to continue throughout the landfill post-closure period. The landfill will be isolated from the groundwater by the liner system, and will have no significant effects on groundwater levels or flow, and therefore no effect on groundwater base flow to adjacent streams.  Surface water base flow may increase marginally due to input from the leachate treatment plant and storm water treatment ponds.	As above.	None required.	No significant change to the overall base flow in Patterson-Robbins Drain or Thames River.	No significant change to the overall base flow in Patterson-Robbins Drain or Thames River.	Monitoring to confirm water levels and flows.

### Criterion 35: Loss/disturbance of terrestrial ecosystems.

Study Lead: Ecology

Definition/Rationale: Terrestrial ecosystems refer to the land-based habitats connected through the vegetation cover; their protection and integration maintains and regulates ecological health. Waste disposal facility operations and/or traffic may remove or disturb the functioning of these systems.

Indicators: Loss of habitat communities for area-sensitive species defined under the Ecological Land Classification (ELC) System for southern Ontario.  
Loss of wetlands as defined under the Ontario Wetland Evaluation System.  
Loss of significant woodlands.  
Displacement of Species at Risk or their habitat.  
Loss or disturbance of colonial nesting bird habitat.  
Loss of amphibian breeding habitat.  
Impairment to landscape connectivity.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>No key natural heritage features or rare, endangered or threatened species were identified on the site due to the ongoing quarry operation.</p> <p>The majority of the terrestrial ecosystems in the site vicinity (and beyond to about 1 km) consist of small patches of isolated, early stage successional habitat such as meadows, thickets or hedgerows that are located along roads, fence lines and watercourses. A few notable features identified within the site vicinity include:</p> <ul style="list-style-type: none"> <li>• Woodlands west of the site which were assumed to provide habitat for endangered bats. These woodlands have also been identified as a "natural heritage feature that provides ecologically important services in the ONHSS (UTRCA 2006);</li> <li>• A meadow south of the site providing Eastern Meadowlark habitat a threatened species;</li> <li>• Swamp and marsh habitats to the northeast that are amphibian breeding habitat;</li> <li>• Habitat for nesting Cliff Swallows along the northern wall of the former West Quarry;</li> <li>• Two woodlands located adjacent to the proposed Haul Route, which have been</li> </ul>	<p>No removal of key natural heritage features or rare, endangered or threatened species or their habitat for landfill construction or operation.</p> <p>No significant off-site effects on vegetation or wildlife in the vicinity of the site, with the exception of the heronry south of the former west Quarry due to noise associated with bird control shotguns from certain limited areas of the landfill.</p>	<p>No significant cumulative effects on terrestrial ecosystems, which have generally adapted to adjacent industrial, agricultural and urban land uses are anticipated.</p>	<p>Lethal bird control using a shotgun will not be used in an exclusion zone near the southern boundary of the landfill in order to limit impulsive noise impacts on the heronry located to the south of the former West Quarry. Enhanced control with birds of prey and other means will be substituted in this area, as required.</p>	<p>No significant effects on terrestrial ecosystems.</p>	<p>No significant cumulative effects on terrestrial ecosystems, which have generally adapted to adjacent industrial, agricultural and urban land uses.</p>	None.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
		identified as "natural heritage feature that provides ecologically important services" in the ONHSS (UTRCA 2006); <ul style="list-style-type: none"> <li>• A Great Blue Heron heronry on the south side of the former West Quarry that also contains cormorants and Turkey Vultures;</li> <li>• A wildlife corridor along the South Thames River; and</li> <li>• Snapping Turtle habitat in the Centreville Conservation Area and the South Thames River.</li> </ul> These features are generally expected to remain similar in the future, with the exception of features located within licensed extraction areas north of the Site, which will be gradually removed as the quarry advances.						
Along the Haul Routes	Operational Period	Included above (for the new access road across the quarry property).						

### Criterion 36: Loss/disturbance of aquatic ecosystems.

Study Lead: Ecology

Definition/Rationale: Aquatic ecosystems refer to the water-based habitats connected through the surface water; their protection and integration maintains and regulates ecological health. Waste disposal facility operations may remove or disturb the functioning of these systems.

Indicators:  
 Decrease in benthic invertebrates.  
 Decrease in fish community abundance and health.  
 Decrease in fish habitat area.  
 Decrease in Species at Risk habitat.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>No significant aquatic habitat exists on the proposed landfill site.</p> <p>No rare, endangered or threatened aquatic species were identified on site or in the site vicinity.</p> <p>The Patterson-Robbins Drain to the west of the site contains fairly common fish species. It is a cool-water environment, with evidence of habitat disturbance throughout and evidence of pollution inputs in some locations, typical of an agricultural drain.</p> <p>The South Thames River contains a variety of fish species within a cool to cool-warm water fish community. However, overall species diversity and aquatic water quality is fair.</p> <p>The former West Quarry has relatively poor aquatic habitat conditions and is isolated from adjacent watercourses, and therefore has low diversity; Rock Bass was the only species identified in the survey.</p> <p>These aquatic communities are expected to remain in similar condition in the future.</p>	<p>No removal of any aquatic habitat is required nor any significant effects on aquatic ecosystems in any watercourses or water bodies in the vicinity of the site.</p> <p>Treated storm water discharged into the Patterson-Robbins Drain could exceed aquatic water quality guidelines (PWQO,CCME) for a few parameters during regional storm events.</p>	<p>No additional impacts on aquatic ecology in the Patterson-Robbins Drain or the South Thames River are expected from any new activities in the site vicinity.</p> <p>The water quality in the Patterson-Robbins agricultural drain exceeds aquatic water quality guidelines for most of the same parameters as the modelled treated storm water discharge, so it is anticipated that the aquatic communities are already tolerant/acclimated to this type of water quality.</p>	None required.	<p>No removal of any aquatic habitat nor any significant effects on aquatic ecosystems in any watercourses or water bodies in the vicinity of the site.</p>	<p>Not significant. The aquatic ecosystems in the site vicinity will continue to reflect the predominant land uses.</p>	<p>Monitoring of the water quality (benthic and fish surveys) in the Patterson-Robbins Drain to discharges.</p>



### Criterion 37: Displacement of agricultural land

Study Lead: Agriculture

Definition/Rationale: The establishment of a waste disposal facility has the potential to displace existing or potential agricultural resources, including the loss of prime agricultural land.

Indicators: Loss of existing or quarry rehabilitated Prime Agricultural Land defined as Canada Land Inventory Classes 1 – 3, in the Provincial Policy Statement.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	The landfill would occupy a depleted portion of the limestone quarry, which would otherwise be rehabilitated to greenspace and ponds. The new section of haul route would occupy lands licenced for eventual quarrying. The leachate treatment area would occupy an area currently rented out by the quarry owner for horse boarding and crops.	No displacement of agricultural land for the waste disposal area (existing quarry). A (temporary) displacement of rented fields for the new access road. The loss of approximately 6.3 ha of rented agricultural land for the leachate treatment facility.	Same, along with the gradual removal of rented fields to the north as the quarry progresses.	None required.	A (temporary) displacement of rented fields for the new access road. The loss of approximately 6.3 ha of rented agricultural land for the leachate treatment facility.	Same, along with the gradual removal of rented fields to the north as the quarry progresses.	None required.
	Post- Closure Period	Same as above, with the further northerly progression of the quarry and associated removal of rented fields. The former quarry would be partially backfilled with overburden soils resulting in about 43 ha of level areas, along with some steeper slopes and water features.	Potential for about 54 ha of new agricultural land on the closed and rehabilitated landfill. Continued displacement of agricultural land for the leachate treatment facility.	A minor (~11 ha) overall gain in potential agricultural land on the closed landfill, compared to the rehabilitated quarry. Removal of the access road by the quarry. Continued displacement of agricultural land for the leachate treatment facility	None required.	Potential for about 54 ha of new agricultural land on the closed and rehabilitated landfill. Continued displacement of agricultural land for the leachate treatment facility.	Continued, gradual removal of rented fields to the north as the quarry progresses.  The net potential new agricultural land on the closed and rehabilitated landfill will offset the loss from the leachate treatment facility.	

### Criterion 38: Displacement of farm operations

Study Lead: Agriculture

Definition/Rationale: The establishment and operation of the waste disposal facility may affect agricultural crop or livestock production and related agriculture activities

- Indicators:
- Area of cropland potentially affected by emissions, fine particulates (dust), flooding or drainage disruption.
  - Number of farm operations with potential for loss of water quality or quantity affecting livestock or crop production.
  - Number of farm operations with livestock or crop production potentially affected by disease transmission, noise or litter associated with the proposed landfill.
  - Number of inter-property farm operational linkages along the proposed haul routes.
  - Number of farm laneway and field access points occurring along the haul routes.
  - Number of farm operations with potential business impacts.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	The site itself is currently a quarry. There is one (retired) farm operation immediately west of the site with fields still in production. There are a further five operational farms to the west, northwest and southeast within 500 m to 1 km. Agricultural lands to the north owned by the quarry operator are rented out.	The landfill would have no off-site effects on groundwater or surface water, aside from some minor drainage works. Odour, litter, air, dust, and noise emissions and bird impacts would all be relatively minor and would not disrupt farming operations or land values.	The quarry dewatering operations will continue to control groundwater levels in the site vicinity. The landfill would have no off-site effects on groundwater or surface water. The landfill would add incrementally to air, dust, and noise emissions from other sources such as the quarry and road traffic, but would not disrupt farming operations or land values.	Repair or restore any agricultural tile drains, drainage outlets or surface drainage features interrupted or disrupted within farmlands abutting the extension of the haul route to be constructed westward from County Road 6, or at the site entrance or the site of the leachate treatment plant.	No significant disruption to farm operations in the vicinity of the site.	The landfill operations will not contribute significantly to any disruption of farm operations in the vicinity of the site.	None required.
	Post-Closure Period	The site itself would be rehabilitated and have some potential for agriculture. Existing farming operations in the site vicinity are expected to continue over the longer term. Rented farmlands to the north of the site would eventually be removed for quarrying.	The landfill would continue to have no off-site effects on groundwater or surface water. Emissions from the site would be further reduced after closure and would not disrupt farming operations or land values.	The landfill would not contribute significantly to any cumulative effects that would disrupt farming operations.	None required.	No significant disruption to farm operations in the vicinity of the site.	The closed landfill will not contribute significantly to any disruption of farm operations in the vicinity of the site.	None required.
	Operational Period	There are a number of farms bordering the haul	An average of about 210 landfill-related	The landfill traffic would be a relatively small proportion of	None required.	No significant disruption to farm	No significant disruption to farm	None required.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
Along the Haul Route		route on County Road 6, including two farm lanes and six field access points. As well, there are large farm operations with land holdings located on both sides of the haul route	trips per day will travel along County Road 6 from Highway 401 to the site, mostly trucks.	the overall traffic on County Road 6. Continued caution will be required for farm equipment moving along or across the haul route on County Road 6.		operations along County Road 6 due to the landfill related traffic.	operations along County Road 6. Continued caution will be required for farm equipment moving along or across the haul route.	
	Post-Closure Period	Similar to above.	No significant traffic after closure. Access will be via existing municipal roads.	The landfill traffic would be a negligible proportion of the overall traffic on County Road 6.	None required.	No disruption to farm operations along County Road 6 after landfill closure.	The landfill traffic would be a negligible proportion of the overall traffic on County Road 6.	None required.

### Criterion 39: Sterilization of industrial mineral resources

Study Lead: Land use

Definition/Rationale: The establishment of a waste disposal facility may limit the opportunity to extract industrial mineral resources located beneath the site.

Indicators: Sterilization of mineral aggregate resources identified in the Oxford County Official Plan.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	<p>The proposed landfill itself is a quarry where all of the economically viable limestone resources have been, or will be, extracted.</p> <p>The approx. 6.3 ha area where the leachate treatment plant is located is identified as Limestone Reserve in the County Official Plan, but is not currently licenced or proposed for extraction by the quarry owner.</p>	<p>No economically viable limestone reserves will be sterilized by the landfill.</p> <p>The landfill access road will be removed at the end of the landfill operations to permit quarrying.</p> <p>Approximately 6.3 ha of limestone resource will be (temporarily) sterilized for the construction and operation of the leachate treatment plant.</p>	None.	Not required.	<p>None. Temporary sterilization of approximately 6.3 ha of limestone resources for the construction and operation of the leachate treatment plant.</p>	None.	Not required.
	Post-Closure Period	As above.	<p>As above.</p> <p>When leachate treatment is no longer required, the plant will be removed and the limestone resources may be extracted.</p>	None.	The leachate treatment plant could be relocated onto the finished landfill or buffer during the post-closure period to permit extraction of the underlying limestone resources, if desired.	<p>None. The limestone resources beneath the leachate treatment plant can be made available for future extraction when the plant is no longer required or relocated.</p>	None.	Not required.

### Criterion 40: Displacement of forestry resources

Study Lead: Land Use

Definition/Rationale: The establishment of a waste disposal facility may limit the opportunity to utilize forestry resources on or near the site.

Indicators: Forestry resources identified in the Oxford County Official Plan.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	There are no significant forestry resources on the site and no significant woodlands are identified on the site in the County of Oxford Official Plan.	None. No significant forestry resources will be displaced for the landfill construction or operations.	None.	Not required.	None. No significant forestry resources will be displaced for the landfill construction or operations.	None.	Not required.
	Post-Closure Period	No forestry operations are proposed in the approved rehabilitation plans for the quarry.	None, as above.	None.	Not required.	None, as above.	None.	Not required.

## Criterion 41: Loss/disruption of recreational resources

Study Lead: Social

**Definition/Rationale:** Recreational resources include parks, conservation areas, trails and other resources that people access in pursuit of their personal and community well-being. A waste disposal facility may affect the use and enjoyment of recreational resources if the facility results in measurable adverse effects such as traffic, odour, noise, vibration, water quality, dust and visual effects. The waste disposal facility, along with other project and activities may contribute to cumulative effects which may affect the operation, use and enjoyment of recreational resources. These could affect areas surrounding the landfill or along the haul routes.

**Indicators:** The number/nature of existing recreational resources and/or future features potentially affected by noise, dust, odour, visual effects and changes in project-related traffic.  
Potential for or likelihood of changes in operations of recreational features.  
Potential for or likelihood of changes in use and enjoyment of recreational resources. *Note: Results from the field data collection program together with professional judgement will be used to determine types of effects and potential for or likelihood of social effects.*

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
On-Site & Site Vicinity	Operational Period	Two recreational features were identified within 500 m of the site: an "unofficial" railway trail (i.e., on private property owned by the quarry operator) west of the site, and an on-road bike route along Beachville Road. Some residents use the Ingersoll Rural Cemetery for recreational purposes. Some residents and visitors use the rural roads in the study area for country drives.  Further from the site there are a variety of parks, playgrounds, sports fields, etc.  One of the two preferred sites for Ingersoll's proposed multi-use recreational complex is 99	The landfill will not result in the physical displacement of any public or private recreational facilities, lands or waters used for recreational purposes.  Physical disturbances (nuisance effects) from the project might affect use and enjoyment of the "unofficial" railway trail and the on-road bike route along Beachville road.  Facilities beyond this distance are not expected to experience any significant physical disturbances that would affect their use and enjoyment.  Use of the unofficial railway trail and walking, cycling or	The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects.	Additional nuisance mitigation measures are recommended through other studies including further controls for dust, odours, noise, birds, and traffic. [See other criteria tables.]	With further mitigation, occasional nuisance effects from the landfill that might affect use and enjoyment of public facilities and institutions can be limited to an area within about 500m of the proposed landfill.  Use of the unofficial railway trail and walking/cycling/driving along public roadways nearest the site are recreational activities that experience occasional days when visible dust, noise or odour are a nuisance, though these are expected to be infrequent.	The assessment of physical disturbances is cumulative; all relevant sources have been included and considered cumulatively in terms of social effects.	Formation of a Public Liaison Committee to exchange information and discuss concerns with local community members.  Regular community updates regarding activities and performance of the landfill, in a publically accessible style and format.

Study Area	Duration	Baseline ("Do Nothing" Alternative)	Potential Effects		Additional Mitigation	Net Effects		Impact Management
			Landfill	Cumulative		Landfill	Cumulative	
		North Town Line East, which is approximately 1.5 km from the proposed landfill site boundary. There is a priority proposal to construct a new trail along Beachville Road.	driving along public roadways nearest the site are recreational activities that could potentially be subject to increased nuisances from the landfill operations.					
	Post-Closure Period	As above.	No significant nuisance effects are expected in the site vicinity once the landfill is closed.	None.	Not required.	No significant nuisance effects are expected in the site vicinity once the landfill is closed.	None.	Not required.
Along the Haul Routes	Operational Period	As above.	There are no existing or forecast public or private recreational facilities located along the primary haul route, or significant use of this section of County Road 6 for recreational purposes.	None.	Not required.	No significant effects.	None.	Not required.
	Post-Closure Period	As above.	None.	None.	None.	None.	None.	None.