

7. Comparative Evaluation of Net Effects and Identification of the Preferred Alternative

This section of the EA Study Report provides a comparative evaluation of the net effects of each alternative method and the identification of the Preferred Alternative.

7.1 Comparative Evaluation

The two alternative methods were comparatively assessed and evaluated using the net environmental effects identified in **Section 6** to compare the two alternative methods at the criteria and indicator level for each environmental component. The following two step methodology was applied to the comparative evaluation:

1. The predicted net effect(s) associated with each alternative method for each indicator were identified and a preference rating was assigned (i.e., Preferred, Not Preferred, No Substantial Difference); and
2. Each alternative method was rated at the criteria level (i.e., Preferred, Not Preferred, No Substantial Difference) based on the identified preference rating for each indicator and a rationale was provided.

The net effects for each indicator are provided in **Table 7-1** for both alternative methods and the Preferred Alternative is identified for each environmental component.

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Natural Environment			
Atmospheric Environment			
Air Quality	Predicted off-site point of impingement air concentrations of indicator compounds	<ul style="list-style-type: none"> Alternative Method 1 results in a 10% and 18% (24-hour and 1-hour averaging periods) increase in the concentration of nitrogen oxides at the nearest receptor. Nitrogen oxides concentrations at the location of maximum impact are expected to remain relatively unchanged over existing conditions. It is expected that there will be no significant increase (<10%) in off-site ground-level concentrations of nitrogen oxides relative to the existing conditions at the location of maximum off-site concentrations. There is no significant (<10%) difference between the off-site concentrations or exceedances of nitrogen oxides at any location or over any averaging period for Alternative Method 1 and Alternative Method 2. Frequency of exceedances for nitrogen oxides at the nearest receptor is expected to increase from 0% of the time under existing conditions to 0.03% of the time (1-hour averaging period) under Alternative Method 1. Frequency of exceedances for nitrogen oxides at the location of maximum concentration is expected to remain constant at <1% of the time for all averaging periods under Alternative Method 1. Alternative Method 1 results in an increase of 69% and 3% (24-hour and annual averaging periods) in the concentration of particulate matter at the nearest receptor. There is an increase (up to 12% for 24-hour averaging period) in concentrations at the nearest receptor 	<ul style="list-style-type: none"> Alternative Method 2 results in an 8% and 12% (24-hour and 1-hour averaging periods) increase in the concentration of nitrogen oxides at the nearest receptor. Nitrogen oxides concentrations at the location of maximum impact are expected to remain relatively unchanged over existing conditions. It is expected that there will be no significant increase (<10%) in off-site ground-level concentrations of nitrogen oxides relative to the existing conditions at the location of maximum off-site concentrations. There is no significant (<10%) difference between the off-site concentrations or exceedances of nitrogen oxides at any location or over any averaging period for Alternative Method 1 and Alternative Method 2. Frequency of exceedances for nitrogen oxides at the nearest receptor is expected to increase from 0% of the time under existing conditions to 0.03% of the time (1-hour averaging period) under Alternative Method 2. Frequency of exceedances for nitrogen oxides at the location of maximum concentration is expected to remain constant at <1% of the time for all averaging periods under Alternative Method 2. Alternative Method 2 results in an increase of 48% and 1% (24-hour and annual averaging periods) in the concentration of particulate matter at the nearest receptor. There is a significant (up to 12% for 24-hour averaging period) reduction in concentrations at the

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
		<p>for Alternative Method 1 over Alternative Method 2.</p> <ul style="list-style-type: none"> Alternative Method 1 results in an increase in particulate matter concentrations at the location of maximum impact of 17% and 9% (24 hour and annual averaging periods) over existing conditions. The difference in maximum ground level concentrations between Alternative Method 1 and Alternative Method 2 (up to 12% for 24-hour average) is expected to be limited to a very small area (<25 m x 25 m) at the extreme southwest corner of the property line and is not reflective of overall changes in concentrations within the study area. Alternative Method 1 results in an increase of 68% in the concentration of PM₁₀ at the nearest receptor relative to existing conditions. The concentrations at the location of maximum impact are expected to increase by 17% over existing conditions. The only significant (>10%) difference in maximum ground level concentrations of PM₁₀ between Alternative Method 1 and Alternative Method 2 (12%) is however expected to be limited to a very small area (<25 m x 25 m) at the extreme southwest corner of the property line and is not reflective of overall changes in concentrations. Alternative Method 1 results in an increase of 21% and 0% (24-hour and annual averaging periods) in the concentration of PM_{2.5} at the nearest receptor. Concentrations at the location of maximum impact are expected to increase by 12% and 5% (24-hour and annual averaging periods) over existing conditions. There is no significant (>10%) difference in maximum ground level concentrations between Alternative Method 1 and Alternative Method 2 within the 	<p>nearest receptor for Alternative Method 2 over Alternative Method 1.</p> <ul style="list-style-type: none"> Alternative Method 2 results in an increase in particulate matter concentrations at the location of maximum impact of 12% and 4% (24-hour and annual averaging periods) over existing conditions. The difference in maximum ground level concentrations between Alternative Method 1 and Alternative Method 2 (up to 12% for 24-hour average) is expected to be limited to a very small area (<25 m x 25 m) at the extreme southwest corner of the property line and is not reflective of overall changes in concentrations within the study area. Alternative Method 2 results in an increase of 48% in the concentration of PM₁₀ at the nearest receptor relative to existing conditions. The concentrations at the location of maximum impact are expected to increase by 15% over existing conditions. The only significant (>10%) difference in maximum ground level concentrations of PM₁₀ between Alternative Method 1 and Alternative Method 2 (12%) is however expected to be limited to a very small area (<25 m x 25 m) at the extreme southwest corner of the property line and is not reflective of overall changes in concentrations. Alternative Method 2 results in an increase of 15% and 0% (24 hour and annual averaging periods) in the concentration of PM_{2.5} at the nearest receptor. Concentrations at the location of maximum impact are expected to increase by 11% and 10% (24-hour and annual averaging periods) over existing conditions. The only significant (>10%) difference in ground level concentrations between Alternative Method 1 and Alternative Method 2 within the study area.

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
		<p>study area.</p> <ul style="list-style-type: none"> Alternative Method 1 will result in an 18%, 30%, and 38% (annual, 24 hour and 1 hour / 10-minute averaging periods) increase in modelled ground-level POI concentrations at the location of the maximum off-site concentration of LFG-related contaminants of concern in the area to the northwest of the EOWHF and a 35% and 74% (1 hour and 24 hour averaging periods) increase in modelled ground-level POI concentrations at the nearest receptors to the northwest relative to existing conditions. Alternative Method 1 will result in maximum POI concentrations of LFG-related contaminants of concern up to a maximum of 4% greater than that of Alternative Method 2, for all averaging periods, at the point of maximum off-site POI concentration. Alternative Method 1 will result in maximum POI concentrations of LFG-related contaminants of concern up to a maximum of 6% less than that of Alternative Method 2 for the 1 hour averaging period at the nearest receptors to the northwest, but 4% greater than that of Alternative Method 2 for the 24 hour averaging period at the nearest receptors to the northwest. Ground level concentrations are expected to be within the relevant MOECC POI limits for all contaminants of concern with the exceptions of: nitrogen oxides, particulate matter, PM₁₀ and PM_{2.5}. Frequency of exceedances for particulate matter, PM₁₀ and PM_{2.5} at the location of maximum concentration are expected to increase from 0% of the time for existing conditions to 64% of the time under Alternative 	<ul style="list-style-type: none"> Alternative Method 2 will result in a 18%, 24% and 34% (annual, 24 hour and 1 hour / 10 minute averaging periods) increase in modelled ground-level POI concentrations at the location of the maximum off-site concentration of LFG-related contaminants of concern in the area to the northeast of the EOWHF and a 35% and 67% (1 hour and 24 hour averaging periods) increase in modelled ground-level POI concentrations at the nearest receptors to the northwest relative to existing conditions. Alternative Method 2 will result in maximum POI concentrations of LFG-related contaminants of concern up to a maximum of 4% less than that of Alternative Method 1, for all averaging periods, at the point of maximum off-site POI concentration. Alternative Method 2 will result in maximum POI concentrations of LFG-related contaminants of concern up to a maximum of 6% greater than that of Alternative Method 1 at the nearest receptors to the northwest for the 1 hour averaging period, but 4% lower than that of Alternative Method 1 for the 24 hour averaging period at the nearest receptors to the northwest. Ground level concentrations are expected to be within the relevant MOECC POI limits for all contaminants of concern with the exceptions of: nitrogen oxides, particulate matter, PM₁₀ and PM_{2.5}. Frequency of exceedances for particulate matter, PM₁₀ and PM_{2.5} at the location of maximum concentration are expected to increase from 0% of the time for existing conditions to 63% of the time under Alternative Method 2.

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
		<p>Method 1.</p> <ul style="list-style-type: none"> Frequency of exceedances of particulate matter at the nearest receptor is expected to increase from 0% of the time for existing conditions to 0.1% of the time under Alternative Method 1. No exceedances for PM₁₀ or PM_{2.5} were noted at the nearest receptor under Alternative Method 1. <p>Alternative Method 1 results in higher increases in particulate matter based impacts at nearby receptors, but lower increases in nitrogen oxide impacts at nearby receptors.</p> <p>No Substantial Difference</p>	<ul style="list-style-type: none"> Frequency of exceedances of particulate matter at the nearest receptor is expected to increase from 0% of the time for existing conditions to 0.05% of the time under Alternative Method 2. No exceedances for PM₁₀ or PM_{2.5} were noted at the nearest receptor under Alternative Method 2. <p>Alternative Method 2 results in higher increases in nitrogen oxide impacts at nearby receptors, but lower increases in particulate matter based impacts at nearby receptors.</p> <p>No Substantial Difference</p>
	Number of off-site receptors potentially affected (residential properties, public facilities, businesses/farms, institutions)	Alternative Method 1 is not expected to affect the number of receptors impacted. All identified receptors are existing residential and commercial properties in the area of the existing landfill.	Alternative Method 2 is not expected to affect the number of receptors impacted. All identified receptors are existing residential and commercial properties in the area of the existing landfill.
	Criteria Rating and Rationale	<p><i>There is no substantial difference in the potential effects of the two (2) alternative methods. Any difference in modelled results between the alternative methods will be relatively small (i.e., less than 12%) and/or limited to a very small area (~25 m x 25 m) immediately adjacent to the facility property line.</i></p> <p>No Preferred Alternative is identified from an air quality perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Odour	Predicted off-site odour concentrations (µg/m ³ and odour units)	<ul style="list-style-type: none"> Alternative Method 1 will result in a 30% and 38% (24-hour and 1-hour / 10-minute averaging periods) increase in the maximum modelled ground-level concentrations of odorous contaminants at the location of the maximum off-site concentrations to the northwest of the EOWHF and a 35% and 74% (1-hour and 24- 	<ul style="list-style-type: none"> Alternative Method 2 will result in 28% and 34% (24-hour and 1-hour / 10-minute averaging periods) increase in the maximum modelled ground-level concentrations of odorous contaminants at the location of the maximum off-site concentrations to the northwest of the EOWHF and a 37% and 67% (1-hour and 24-

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
		<p>hour averaging periods) increase in the maximum modelled ground-level concentrations at the nearest receptors to the northwest relative to existing conditions; however, concentrations are expected to be within the relevant MOECC odour-based POI limits at all receptor locations within the off-site study area.</p> <ul style="list-style-type: none"> • Alternative Method 1 will result in maximum concentrations up to 4% greater than Alternative Method 2, for all averaging periods, at the point of maximum off-site concentrations. • Alternative Method 1 will result in maximum concentrations of 3% less than Alternative Method 2 at the nearest receptors to the northwest for the 1 hour averaging period, and of 8% greater than Alternative Method 2 for the 24 hour averaging period. • All modelled impacts for odorous contaminants of concern at off-site receptors fall within their relevant odour-based MOECC POI or JSL concentration standards. • The modelled Odour impacts at off-site receptors fall within the 1 OU/m³ odour-based standards approximately 99.4% of the time with exceedances up to 5.5 OU/m³ expected up to 0.6% of the time. • The magnitude of the relative difference in ground-level concentrations between Alternative Methods 1 and 2 (less than 10%) is considered negligible. As such there is no substantial difference between the modelled results for the two alternative methods. <p style="text-align: center;">No Substantial Difference</p>	<p>hour averaging periods) increase in the maximum modelled ground-level concentrations at the nearest receptors to the northwest relative to existing conditions; however, concentrations are expected to be within the relevant MOECC odour-based POI limits at all receptor locations within the off-site study area.</p> <ul style="list-style-type: none"> • Alternative Method 2 will result in maximum concentrations up to 4% less than Alternative Method 1, for all averaging periods, at the point of maximum off-site concentrations. • Alternative Method 2 will result in maximum concentrations of 3% greater than Alternative Method 2 at the nearest receptors to the northwest for the 1 hour averaging period, and of 8% less than Alternative Method 2 for the 24 hour averaging period. • All modelled impacts for odorous contaminants of concern at off-site receptors fall within their relevant odour-based MOECC POI or JSL concentration standards. • The modelled Odour impacts at off-site receptors fall within the 1 OU/m³ odour-based standards approximately 99.4% of the time with exceedances up to 5.5 OU/m³ expected up to 0.6% of the time. • The magnitude of the relative difference in ground-level concentrations between Alternative Methods 1 and 2 (less than 10%) is considered negligible. As such there is no substantial difference between the modelled results for the two alternative methods. <p style="text-align: center;">No Substantial Difference</p>

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
	Number of off-site receptors potentially affected (residential properties, public facilities, businesses/farms, institutions)	<ul style="list-style-type: none"> Alternative Method 1 is not expected to affect the number of receptors impacted. All identified receptors are existing residential and commercial properties in the area of the existing landfill. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> Alternative Method 2 is not expected to affect the number of receptors impacted. All identified receptors are existing residential and commercial properties in the area of the existing landfill. <p style="text-align: center;">No Substantial Difference</p>
	Criteria Rating and Rationale	<p><i>There is no substantial difference in the potential effects of the two (2) alternative methods. All criteria and indicators suggest that any difference between the alternative methods will be relatively small (i.e., less than 10%).</i></p> <p>No Preferred Alternative is identified from an odour perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Noise	Predicted site-related noise levels (measured in dBA or dBAI)	<ul style="list-style-type: none"> Predicted maximum cumulative daytime noise impact is 54 dBA at the closest receptor, which is below the MOECC noise limits. Predicted maximum impulse noise is 70 dBAI at the receptor, within MOECC noise limits. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> Predicted maximum cumulative daytime noise impact is 54 dBA at the closest receptor, which is below the MOECC noise limits. Predicted maximum impulse noise is 69 dBAI at the receptor, within MOECC noise limits. <p style="text-align: center;">No Substantial Difference</p>
	Number of off-site receptors potentially affected (residential properties, public facilities, businesses/farms, institutions)	Noise levels at all receptors (2) within off-site study area are within MOECC noise limits.	Noise levels at all receptors (2) within off-site study area are within MOECC noise limits.
	Criteria Rating and Rationale	<p><i>There is no substantial difference between the Alternative Methods 1 and 2 with regard to noise.</i></p> <p>No Preferred Alternative is identified from a noise perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Overall Rating and Rationale for the Atmospheric Environment		<p><i>No Preferred Alternative is identified from an Atmospheric Environment perspective.</i> There is no substantial difference between the two alternative methods for the air quality, odour and noise evaluation criteria.</p>	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Geology and Hydrogeology			
Groundwater Quality	Predicted effects to groundwater quality at property boundaries and off-site	The predicted maximum chloride concentration in the receiving bedrock aquifer at the northern property boundary is 95.6 mg/L after 3,900 years, which is above the background concentration of 89 mg/L, but below the regulatory limit of 170 mg/L. No Substantial Difference	The predicted maximum chloride concentration in the receiving bedrock aquifer at the northern property boundary is 96.1 mg/L after 3,700 years, which is above the background concentration of 89 mg/L, but below the regulatory limit of 170 mg/L. No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the Alternative Methods 1 and 2 with regard to groundwater quality.</i> No Preferred Alternative is identified from a groundwater quality perspective as there is no substantial difference in the net effects between the alternative methods.	
Groundwater Quantity	Predicted groundwater flow characteristics	No effects anticipated. No Substantial Difference	No effects anticipated. No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the Alternative Methods 1 and 2 with regard to groundwater quantity.</i> No Preferred Alternative is identified from a groundwater quantity perspective as there is no substantial difference in the net effects between the alternative methods.	
Overall Rating and Rationale for Geology and Hydrogeology		<i>No Preferred Alternative is identified from a Geology and Hydrogeology perspective.</i> There is no substantial difference between the two alternative methods for the groundwater quality and quantity evaluation criteria.	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Surface Water Environment			
Surface Water Quality	Predicted effects on surface water quality; on-site and off-site	<ul style="list-style-type: none"> On-site surface water quality meets MOECC requirements and criteria specified in ECA and meets discharge quality criteria. Considering that the effluent contaminant concentrations are still limited to the same effluent discharge limits currently in place under the existing ECA and that the receiving water body is a moving system, no substantial changes to downstream surface water quality are expected. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> On-site surface water quality meets MOECC requirements and criteria specified in ECA and meets discharge quality criteria. Considering that the effluent contaminant concentrations are still limited to the same effluent discharge limits currently in place under the existing ECA and that the receiving water body is a moving system, no substantial changes to downstream surface water quality are expected. <p style="text-align: center;">No Substantial Difference</p>
	Criteria Rating and Rationale	<p>There is no substantial difference in the potential effects of the two (2) alternative methods from an on-site and off-site surface water quality perspective.</p> <p>No Preferred Alternative is identified from a surface water quality perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Surface Water Quantity	Change in drainage areas	<ul style="list-style-type: none"> Increase in total surface water quantity volume to the site outlet but no net effects since peak flows to the site outlet are controlled with the ponds within the predevelopment conditions values up to a 100-year return period. Slightly smaller total run-off volume due to slightly smaller drainage area addressed by design, which includes smaller storage quantity of additional ponds to be constructed. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> Increase in total surface water quantity volume to the site outlet but no net effects since peak flows to the site outlet are controlled with the ponds within the predevelopment conditions values up to a 100-year return period. Slightly larger total run-off volume due to slightly larger drainage area addressed by design, which includes larger storage quantity of additional ponds to be constructed. <p style="text-align: center;">No Substantial Difference</p>

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
	Predicted occurrence and degree of off-site impacts	<ul style="list-style-type: none"> Increase in total surface water quantity volume, but no net effects since peak flows to the site outlet are controlled with the ponds within the predevelopment conditions values up to a 100-year return period. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> Increase in total surface water quantity volume, but no net effects since peak flows to the site outlet are controlled with the ponds within the predevelopment conditions values up to a 100-year return period. <p style="text-align: center;">No Substantial Difference</p>
	Criteria Rating and Rationale	<p><i>There is no substantial difference in the potential effects of the two (2) alternative methods from a surface water quantity perspective.</i></p> <p>No Preferred Alternative is identified from a surface water quantity perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Overall Rating and Rationale for the Surface Water Environment		<p><i>No Preferred Alternative is identified from a Surface Water Environment perspective.</i> There is no substantial difference between the two alternative methods for the surface water quality and quantity evaluation criteria.</p>	
Ecological Environment			
Terrestrial Ecosystems	Predicted impact on vegetation communities	<ul style="list-style-type: none"> The construction of Alternative Method 1 will result in the removal of approximately 3.18 ha (22%) of the treed swamp in the northeast corner of the site and the loss of native species. <p style="text-align: center;">Preferred</p>	<ul style="list-style-type: none"> The construction of Alternative Method 2 will result in the removal of approximately 6.28 ha (44%) of the treed swamp in the northeast corner of the site and the loss of native species. <p style="text-align: center;">Not Preferred</p>
	Predicted impact on wildlife habitat	<p><i>On-site Habitat</i></p> <ul style="list-style-type: none"> Loss of associated bird habitat (3.18 ha). Addition of amphibian habitat in SWM ponds. Minimal potential for increased disturbance. <p><i>Off-site Habitat</i></p> <ul style="list-style-type: none"> No net effects identified. <p style="text-align: center;">Preferred</p>	<p><i>On-site Habitat</i></p> <ul style="list-style-type: none"> Loss of associated bird habitat (6.28 ha). Addition of amphibian habitat in SWM ponds. Minimal potential for increased disturbance. <p><i>Off-site Habitat</i></p> <ul style="list-style-type: none"> No net effects identified. <p style="text-align: center;">Not Preferred</p>

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
	Predicted impact on vegetation and wildlife including rare, threatened or endangered species	<ul style="list-style-type: none"> Minimal effect due to loss of 3.18 ha of bird habitat. The treed swamp on site provides interior habitat for area-sensitive birds, and will continue to be of an appropriate size to support these species. Blackbirds that use forested habitat for migration will still have habitat on site. Addition of amphibian habitat via SWM ponds. Minimal potential for increased disturbance to on-site wildlife. <p style="text-align: center;">No Substantial Difference</p>	<ul style="list-style-type: none"> Minimal effect due to loss of 6.28 ha of bird habitat. The treed swamp on site provides interior habitat for area-sensitive birds, and will continue to be of an appropriate size to support these species. Blackbirds that use forested habitat for migration will still have habitat on site. Addition of amphibian habitat via SWM ponds. Minimal potential for increased disturbance to on-site wildlife. <p style="text-align: center;">No Substantial Difference</p>
	Criteria Rating and Rationale	<p>Alternative Method 1 is preferred over Alternative Method 2 with regard to Terrestrial Ecosystems because:</p> <ul style="list-style-type: none"> Alternative Method 1 will result in the removal of 3.1 ha (50%) less of the treed swamp in the northeast corner of the site and less loss of native species than Alternative Method 2. Alternative Method 1 will result in less bird habitat loss (3.1 ha (50%)) than Alternative Method 2. Alternative Method 1 will result in the same amount of potential amphibian habitat than Alternative Method 2. 	
Aquatic Ecosystems	Predicted changes in water quality	No net effects to surface water quality. No Substantial Difference	No net effects to surface water quality. No Substantial Difference
	Predicted impact on aquatic habitat	No net effects to aquatic habitat. No Substantial Difference	No net effects to aquatic habitat. No Substantial Difference
	Predicted impact on aquatic biota including rare, threatened or endangered species	No net effects to aquatic biota. No Substantial Difference	No net effects to aquatic biota. No Substantial Difference
	Criteria Rating and Rationale	<p>There is no substantial difference between the alternative methods with regard to Aquatic Ecosystems.</p> <p>No Preferred Alternative is identified from an Aquatic Ecosystems perspective as there is no substantial difference in the net effects between the alternative methods.</p>	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Overall Rating and Rationale for the Ecological Environment		Alternative Method 1 is the Preferred Alternative from an Ecological Environment perspective. Alternative Method 1 will result in the removal of 50% less vegetation and bird habitat than Alternative Method 2.	
Socio-Economic Environment			
Economic			
Economic Effects on / Benefits to Local Community	Employment at site (number and duration)	Beneficial effect from extended duration of employment for an additional 5 to 10 years. No Substantial Difference	Beneficial effect from extended duration of employment for an additional 5 to 10 years. No Substantial Difference
	Opportunities to provide products or services	<ul style="list-style-type: none"> Beneficial effect from the continued provision of cost-effective and environmentally-secure waste management services to municipalities and businesses across Eastern Ontario for an additional 5 to 10 years. Beneficial effect from an additional \$50 million to \$100 million contributed to the local economy through the procurement of local goods and services. No Substantial Difference	<ul style="list-style-type: none"> Beneficial effect from the continued provision of cost-effective and environmentally-secure waste management services to municipalities and businesses across Eastern Ontario for an additional 5 to 10 years. Beneficial effect from an additional \$50 million to \$100 million contributed to the local economy through the procurement of local goods and services. No Substantial Difference
	Criteria Rating and Rationale	There is no substantial difference between the alternative methods with regard to the economic benefits to the local community. No Preferred Alternative is identified from an economic perspective as there is no substantial difference in the net effects between the alternative methods.	
Overall Rating and Rationale for Economic		No Preferred Alternative is identified from an Economic perspective. There is no substantial difference between the two alternative methods for the economic effects evaluation criteria.	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Social			
Effects on Local Community	Number of residents	No net effects to the number of residents. No Substantial Difference	No net effects to the number of residents. No Substantial Difference
	Predicted changes to use of property	No net effects on residents and their use of property. No Substantial Difference	No net effects on residents and their use of property. No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the alternative methods with regard to effects on the local community.</i> No Preferred Alternative is identified from a local community perspective as there is no substantial difference in the net effects between the alternative methods.	
Visual Impact of Facility	Predicted changes in perceptions of landscapes and views	No net effects on the visual landscape. No Substantial Difference	No net effects on the visual landscape. No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the alternative methods with regard to the visual impact of the facility.</i> No Preferred Alternative is identified from a visual impact perspective as there is no substantial difference in the net effects between the alternative methods.	
Overall Rating and Rationale for Social		<i>No Preferred Alternative is identified from a Social perspective.</i> There is no substantial difference between the two alternative methods for the local community and visual impact evaluation criteria.	
Cultural Environment			
Cultural Heritage Resources	Cultural heritage resources (built and landscapes) on-site and in vicinity and predicted impacts on them	No net effects on cultural heritage resources No Substantial Difference	No net effects on cultural heritage resources No Substantial Difference

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
	Criteria Rating and Rationale	<i>There is no substantial difference between the alternative methods with regards to cultural heritage resources.</i> No Preferred Alternative is identified from a cultural heritage resources perspective as there is no substantial difference in the net effects between the alternative methods.	
Archaeological Resources	Archaeological resources on-site and in vicinity and predicted impacts on them	No net effects on archaeological resources No Substantial Difference	No net effects on archaeological resources No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the alternative methods with regards to archaeological resources.</i> No Preferred Alternative is identified from an archaeological resources perspective as there is no substantial difference in the net effects between the alternative methods.	
Overall Rating and Rationale for the Cultural Environment		<i>No Preferred Alternative is identified from a Cultural Environment perspective.</i> There is no substantial difference between the two alternative methods for the cultural heritage and archaeological resources evaluation criteria.	
Built Environment			
Transportation			
Effects from Truck Transportation along Access Roads	Disturbance to traffic operations	No net effects on traffic operations. No Substantial Difference	No net effects on traffic operations. No Substantial Difference
	Criteria Rating and Rationale	<i>There is no substantial difference between the alternative methods with regards to the transportation component of the Built Environment.</i> No Preferred Alternative is identified from a Transportation perspective as there is no substantial difference in the net effects between the alternative methods.	
Overall Rating and Rationale for Transportation		<i>No Preferred Alternative is identified from a Transportation perspective.</i> There is no substantial difference between the two alternative methods for the truck transportation along access roads evaluation criteria.	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Current and Planned Future Land Use			
Effects on Current and Future Land Uses	<ul style="list-style-type: none"> • Current land use • Planned land use 	No net effects on current and planned land use Preferred	A portion of the alternative method requires an amendment to the current zoning by-law Not Preferred
	Type(s) and proximity of off-site recreational resources within 1 km of a landfill footprint potentially affected	No net effects on off-site recreational resources No Substantial Difference	No net effects on off-site recreational resources No Substantial Difference
	Type(s) and proximity of off-site sensitive land uses (e.g., dwellings, churches, parks) within 1 km of a landfill footprint potentially affected	No net effects on off-site sensitive land uses No Substantial Difference	No net effects on off-site sensitive land uses No Substantial Difference
	Criteria Rating and Rationale	Alternative Method 1 is preferred over Alternative Method 2 with regard to effects on current and planned land use because a portion of Alternative Method 2 will require an amendment to the current zoning by-law.	
Overall Rating and Rationale for Current and Planned Future Land Use		Alternative Method 1 is the Preferred Alternative from a Current and Planned Future Land Use perspective. Alternative Method 1 will not require any rezoning, while a portion of Alternative Method 2 will require an amendment to the current zoning by-law.	
Aggregate Extraction and Agricultural			
Aggregate Resources	Presence of known or identified aggregate resources and the predicted impact of impairment of their use due to the proposed footprint, construction and operation on-site	No net effects on aggregate resources No Substantial Difference	No net effects on aggregate resources No Substantial Difference
	Criteria Rating and Rationale	There is no substantial difference between the alternative methods with regards to aggregate resources. No Preferred Alternative is identified from an aggregate resources perspective as there is no substantial difference in the net effects between the alternative methods.	

Table 7-1. Comparative Evaluation of the Alternative Methods

Evaluation Criteria	Indicators	Net Effects of Alternative Methods	
		Alternative Method 1	Alternative Method 2
Effects on Agricultural Land	<ul style="list-style-type: none"> • Current land use • Predicted impacts on surrounding agricultural operations • Type(s) and proximity of agricultural operations (e.g., organic, cash crop, livestock) 	No net effects on agricultural land No Substantial Difference	No net effects on agricultural land No Substantial Difference
	Criteria Rating and Rationale	<p><i>There is no substantial difference between the alternative methods with regards to agricultural resources.</i></p> <p>No Preferred Alternative is identified from an agricultural resources perspective as there is no substantial difference in the net effects between the alternative methods.</p>	
Overall Rating and Rationale for Aggregate Extraction and Agricultural		<p><i>No Preferred Alternative is identified from an Aggregate Extraction and Agricultural perspective.</i></p> <p>There is no substantial difference between the two alternative methods for the aggregate resources and agricultural land evaluation criteria.</p>	
Design and Operations			
Site Design and Operational Characteristics	Complexity of site infrastructure	No Net Effect No Substantial Difference	No Net Effect No Substantial Difference
	Operational flexibility	No Net Effect No Substantial Difference	No Net Effect No Substantial Difference
	Criteria Rating and Rationale	<p><i>There is no substantial difference in the potential effects of the two (2) alternative methods.</i></p> <p>There will be a difference in terms of leachate and stormwater generation between both alternative methods, and a small but negligible difference in design and construction complexity, but none are significant enough to make a difference in terms of the design and operation of the landfill.</p>	
Overall Rating and Rationale for Design and Operations		<p><i>No Preferred Alternative is identified from a Design and Operations perspective.</i></p> <p>There is no substantial difference between the two alternative methods for the site design and operational characteristics evaluation criteria.</p>	

7.2 Identification of the Preferred Alternative

As shown in **Table 7-1**, Alternative Method 1 is identified as the Preferred Alternative for two of the evaluation criteria, while the remainder of the assessments determined that there is no substantial difference in the net effects between Alternative Methods 1 and 2. The results are summarized in **Table 7-2**.

Table 7-2. Identification of the Preferred Alternative Summary

Environmental Component	Evaluation Criteria	Preferred Alternative	
		Alternative Method 1	Alternative Method 2
Natural Environment			
Atmospheric Environment	Air Quality	No Substantial Difference	No Substantial Difference
	Odour	No Substantial Difference	No Substantial Difference
	Noise	No Substantial Difference	No Substantial Difference
Preferred Alternative for the Atmospheric Environment		No Substantial Difference	
Geology and Hydrogeology	Groundwater Quality	No Substantial Difference	No Substantial Difference
	Groundwater Quantity	No Substantial Difference	No Substantial Difference
Preferred Alternative for Geology and Hydrogeology		No Substantial Difference	
Surface Water Environment	Surface Water Quality	No Substantial Difference	No Substantial Difference
	Surface Water Quantity	No Substantial Difference	No Substantial Difference
Preferred Alternative for the Surface Water Environment		No Substantial Difference	
Ecological Environment	Terrestrial Ecosystems	Preferred	Not Preferred
	Aquatic Ecosystems	No Substantial Difference	No Substantial Difference
Preferred Alternative for the Ecological Environment		Preferred	Not Preferred
Socio-Economic Environment			
Economic	Economic Effects on / Benefits to Local Community	No Substantial Difference	No Substantial Difference
Preferred Alternative for Economic		No Substantial Difference	
Social	Effects on Local Community	No Substantial Difference	No Substantial Difference
	Visual Impact of Facility	No Substantial Difference	No Substantial Difference
Preferred Alternative for Social		No Substantial Difference	

Table 7-2. Identification of the Preferred Alternative Summary

Environmental Component	Evaluation Criteria	Preferred Alternative	
		Alternative Method 1	Alternative Method 2
<i>Cultural Environment</i>			
Cultural Environment	Cultural Heritage Resources	No Substantial Difference	No Substantial Difference
	Archaeological Resources	No Substantial Difference	No Substantial Difference
Preferred Alternative for the Cultural Environment		No Substantial Difference	
<i>Built Environment</i>			
Transportation	Effects from Truck Transportation along Access Roads	No Substantial Difference	No Substantial Difference
Preferred Alternative for Transportation		No Substantial Difference	
Current and Planned Future Land Use	Effects on Current and Future Land Uses	Preferred	Not Preferred
Preferred Alternative for Current and Planned Future Land Use		Preferred	Not Preferred
Aggregate Extraction and Agricultural	Aggregate Resources	No Substantial Difference	No Substantial Difference
	Effects on Agricultural Land	No Substantial Difference	No Substantial Difference
Preferred Alternative for Aggregate Extraction and Agricultural		No Substantial Difference	
Design and Operations	Site Design and Operational Characteristics	No Substantial Difference	No Substantial Difference
Preferred Alternative for Design and Operations		No Substantial Difference	
Overall Preferred Alternative		Preferred	Not Preferred

Alternative Method 1 is preferred over Alternative Method 2 based on the comparative evaluation of net effects to terrestrial ecosystems and current and planned future land use. The net effects assessment, cumulative effects, climate change considerations, and advantages and disadvantages of the Preferred Alternative are presented in **Section 8**.