



## **Appendix M**

Results of Application of Assessment Criteria  
to the Potential Outfall Locations

**Table M.1: Assessment of the Potential Water Reclamation Centre Outfall Locations to the East Holland River**

Potential Water Reclamation Centre Outfall	Description of the Conveyance Infrastructure and Outfall Location	Use of existing road/utility rights-of-way and/or Regional easements	Assessment Criteria				Length and depth below ground surface of conveyance infrastructure	Use of existing grades in selection of the type of main (forcemain vs. gravity sewer)
			Potential effects on the social environment	Potential effects on the natural environment	Potential effects on water quality and quantity			
<p><b>1 Queensville Sideroad (East Holland River)</b></p>	<p>Linear infrastructure within existing road right-of-way along 2nd Concession and Queensville Sideroad.</p> <p>Discharge (through headwall to open channel) into a drainage ditch on south side of Queensville Sideroad at the River, flowing into the East Holland River.</p>	<p>Yes</p>	<p>Improved water quality in the summer would provide a benefit for summer recreation use, such as swimming and fishing.</p> <p>Winter recreational activities such as ice skating, snowmobiling, etc. would potentially be affected during periods when the treated clean water would contribute to ice melt conditions, which would extend from approximately 1 km to up to 4 km downstream of Queensville Sideroad depending on conditions at 2031.</p> <p>Ice melting may span across a length of the East Holland River where approximately 35 to 44 residential properties on River Drive have direct backyard access to the East Holland River.</p> <p>Access to the East Holland River as a snowmobile route would be affected during periods when the treated clean water contributes to ice melt conditions. This location provides snowmobile access to the river for non-Holland Landing residents since they may park their vehicles and launch their snowmobiles at Soldiers' Bay.</p>	<p>Improved water quantity, quality, and clarity in the East Holland River would provide a benefit to aquatic habitat in the longer stretch of river water compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity and quality in the East Holland River.</p> <p>Discharge at this location would provide a longer stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the third furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 2,500 and 3,500 metres from Sites 24, WH1 and WH2, and 7,500 metres from Site 30, having a depth of less than 2.5 metres Below Ground Surface (BGS).</p> <p>The route minimizes the conveyance infrastructure length compared to the other outfall locations.</p>	<p>The alignment and elevation provide for a gravity discharge and requires minimal hydraulic grade to permit peak flows under 2031 conditions.</p>	

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<b>2a Queensville Sideroad (Soldiers' Bay)</b>	<p>Linear infrastructure within existing road right-of-way along 2nd Concession and Queensville Sideroad.</p> <p>Discharge into Soldiers' Bay on the north side of Queensville Sideroad.</p>	Yes	<p>Improved water quality in the summer would provide a benefit for summer recreation use, such as swimming and fishing.</p> <p>The area of potential ice melt at 2031 would include Soldiers' Bay and would extend into the East Holland River for approximately 500 m downstream of the mouth of Soldiers' Bay depending on conditions, and would potentially affect approximately 15 residential properties on Old Yonge Street and 20 residential properties on River Drive.</p> <p>Access to the East Holland River as a snowmobile route would be affected during periods when the treated clean water contributes to ice melt conditions.</p> <p>An Ontario Heritage Trust plaque commemorating Holland's Landing Depot is located on the north side of Queensville Sideroad adjacent to Soldiers' Bay. While the exact location of Holland's Landing Depot is unknown, it stood on the east bank of Soldiers' Bay.</p>	<p>Improved water quantity, quality, and clarity in the East Holland River and Soldiers' Bay would provide a benefit to aquatic habitat in a longer stretch of river water compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity and quality in the East Holland River and Soldiers' Bay.</p> <p>Discharge at this location would provide a longer stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the third furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 2,500 and 3,500 metres from Sites 24, WH1 and WH2, and 7,500 metres from Site 30, having a depth of less than 2.5 metres BGS.</p> <p>Similar to Queensville Road (East Holland River) the route minimizes the conveyance infrastructure length compared to the other locations.</p>	<p>The alignment and elevation provide for a gravity discharge and requires minimal hydraulic grade to permit peak flows under 2031 conditions.</p>	

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<b>2b Queensville Sideroad (Split between East Holland River/Soldiers' Bay)</b>	<p>Linear infrastructure within existing road right-of-way along 2nd Concession and Queensville Sideroad.</p> <p>Discharge is split to Soldiers' Bay on the north side of Queensville Sideroad and to the wetlands on the south side of Queensville Sideroad that discharges to the East Holland River.</p> <p>Treated clean water split could be on a percentage flow basis or a seasonal basis.</p>	Yes	<p>Improved water quality in the summer would provide a benefit for summer recreation use, such as swimming and fishing.</p> <p>The area of potential ice melt at 2031 would include Soldiers' Bay and a portion of the East Holland River dependent on the amount of flow and on conditions, and would potentially affect approximately 15 residential properties on Old Yonge Street and a portion of the 44 residential properties on River Drive.</p> <p>Access to the East Holland River as a snowmobile route would be affected during periods when the treated clean water contributes to ice melt conditions.</p> <p>An Ontario Heritage Trust plaque commemorating Holland's Landing Depot is located on the north side of Queensville Sideroad adjacent to Soldiers' Bay. While the exact location of Holland's Landing Depot is unknown, it stood on the east bank of Soldiers' Bay.</p>	<p>Improved water quantity, quality, and clarity in the East Holland River and Soldiers' Bay would provide a benefit to aquatic habitat in a longer stretch of river water compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity and quality in the East Holland River and Soldiers' Bay.</p> <p>Discharge at this location would provide a longer stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the third furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 2,500 and 3,500 metres from Sites 24, WH1 and WH2, and 7,500 metres from Site 30, having a depth of less than 2.5 metres BGS.</p> <p>The additional outfall would require more pipe and a submerged outlet into Soldiers' Bay.</p> <p>Similar to Queensville Road (East Holland River) the route minimizes the conveyance infrastructure length compared to the other locations.</p>	<p>The alignment and elevation provide for a gravity discharge and requires minimal hydraulic grade to permit peak flows under 2031 conditions.</p> <p>The additional outlet would require a flow splitter to regulate the distribution. The distribution device would require motorized devices to regulate flows under varying water elevations (seasonal).</p>	

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<b>3a Holborn Drainage Ditch (Piped)</b>	Linear infrastructure within existing road right-of-way along 2nd Concession and the un-opened road allowance on Holborn Road.  Discharge into the East Holland River.	Yes. However, the unopened Town of East Gwillimbury road right-of-way has limited access and road access may be required to the service pipeline.	The area of potential ice melt would extend approximately 400 m to 2 km downstream of the Holborn drainage ditch depending on conditions. However, no residential properties have direct backyard access to the East Holland River in the area of potential ice melt.  Use of the East Holland River as a snowmobile route to Cook's Bay would be affected during periods when the treated clean water contributes to ice melt conditions.	Construction of the outfall in Holborn drainage ditch would permanently affect approximately 25,000 m <sup>2</sup> of historically undisturbed Provincially Significant Wetland, and would require temporary dewatering of the wetland during construction  Approval from LSRCA for construction of the outfall in the Holborn drainage ditch would require: <ul style="list-style-type: none"> <li>Justification that no other viable alternative exists (LSRCA Watershed Development Policy, Sections 11.4.1.1 and 11.4.2.2)</li> <li>Wetland and ecosystem compensation</li> <li>No negative impacts to natural features or their ecological function in accordance with Provincial Policy Statement (Section 2.1.4), reflected in local and regional official plans</li> </ul>	The treated clean water would improve water quantity and quality in the East Holland River.  Discharge at this location would provide the shortest stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the furthest downstream point.	The length of the conveyance infrastructure is between approximately 4,300 and 5,300 metres from Sites 24, WH1 and WH2, and 6,400 metres from Site 30, having a depth of less than 2.5 metres BGS.  This is a longer route than other alternatives and does not minimize the conveyance infrastructure length compared to other locations.  This route would be very challenging to construct due to the soil conditions and high water table in the Holborn drainage ditch.  Fill would have to be placed within established wetlands to develop suitable cover and maintenance roads (sunk cost) would need to be constructed for future maintenance.	The alignment and elevation provide for a gravity discharge and requires improved hydraulic grade to permit peak flows under 2031.  Less backwater events than option 1 and 3b.	

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<b>3b Holborn Drainage Ditch (Piped/Open Channel Combination)</b>	<p>Linear infrastructure within existing road right-of-way along 2nd Concession and the un-opened road allowance on Holborn Road.</p> <p>Discharge into an open channel approximately 1 km east of 2nd Concession.</p>	<p>Yes. However, the unopened Town of East Gwillimbury road right-of-way has limited access and road access may be required to the service pipeline.</p>	<p>The area of potential ice melt would extend approximately 400m to 2 km downstream of the Holborn drainage ditch depending on conditions. However, no residential properties have direct backyard access to the East Holland River in the area of potential ice melt.</p> <p>Use of the East Holland River as a snowmobile route to Cook's Bay would be affected during periods when the treated clean water contributes to ice melt conditions. The ice melt condition will be approximately 25 percent less than Location 3a.</p>	<p>Improved water quantity, quality, and clarity in the East Holland River would provide a benefit to aquatic habitat in the shortest stretch of river water compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water may capture and discharge additional phosphorus to the East Holland River, resulting in a potential net increase in phosphorus and reducing the benefit of high water quality from the Water Reclamation Centre.</p>	<p>The length of the conveyance infrastructure for the piped/open channel option is between approximately 1,800 and 2,800 metres from Sites 24, WH1 and WH2, and 3,900 metres from Site 30, having a depth of less than 2.5 metres BGS.</p> <p>This is the shortest length of conveyance infrastructure compared to other locations.</p> <p>Due to the open cut ditch, less fill than option 3a would have to be placed within established wetlands to develop suitable cover and maintenance roads (sunk cost) would need to be constructed for future maintenance.</p> <p>Significant dredging of the Holborn drainage ditch would be required to develop the shape of the outlet channel.</p> <p>Future maintenance of the channel would be restricted to operations by barge.</p>	<p>The alignment and elevation provide for a gravity discharge and requires improved hydraulic grade to permit peak flows under 2031.</p> <p>Least amount of backwater events.</p>

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<b>4 Future Bradford Bypass</b>	Linear infrastructure within existing road right-of-way along 2nd Concession, and within the proposed Bradford Bypass alignment to the East Holland River.	No. While the Ministry of Transportation has completed an Environmental Assessment for the Bradford Bypass, it is not their current expansion plans (including post 2016 long-term planning). This outfall location would require easements from private landowners, and approval from the Ministry of Transportation. The Ministry of Transportation has told York Region that it would not allow conveyance infrastructure within provincial Highway right of ways, as it creates future risks to both the highway and the conveyance infrastructure, specifically in regards to repair, maintenance, and replacement of both the highway and the conveyance infrastructure.	<p>The area of potential ice melt would extend approximately 1 km to 2 km downstream of the Bradford Bypass depending on conditions. However, no residential properties have direct backyard access to the East Holland River in the area of potential ice melt.</p> <p>Use of the East Holland River as a snowmobile route to Cook's Bay would be affected during periods when the treated clean water contributes to ice melt conditions.</p>	<p>Improved water quantity, quality, and clarity in the East Holland River would provide a benefit to aquatic habitat in the third longest stretch of river water, compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity, quality, and clarity in the East Holland River.</p> <p>Discharge at this location would provide the third longest stretch of river water improvement since the Water Reclamation Centre outfall occurs at the fourth furthest upstream point.</p>	<p>The length of the piped outfall is between approximately 3,200 and 4,200 metres from Sites 24, WH1 and WH2, and approximately 6,200 metres from Site 30 having a depth of less than 2.5 metres BGS.</p> <p>This is a longer route and does not minimize the conveyance infrastructure length compared to other locations.</p> <p>Detailed design for the Bypass Bypass has not developed by the Ministry of Infrastructure and conflicts with other infrastructure could not be resolved.</p>	<p>The alignment and elevation may provide for a gravity discharge and requires improved hydraulic grade to permit peak flows under 2031.</p> <p>Least amount of backwater events.</p>
<b>5 Hydro Corridor (south of Queensville Sideroad)</b>	Linear infrastructure within existing road right-of-way along 2nd Concession, Queensville Sideroad, south on Old Yonge Street to the Hydro Corridor.	No. Use of the Hydro Corridor would require additional permitting and an easement from Hydro-One with the potential risk of non-approval.	<p>The area of potential ice melt at 2031 would extend from the Hydro Corridor to between Willow Street and from approximately 1 km to up to 4 km downstream of Queensville Sideroad depending on conditions, and would potentially span a distance where approximately 25 to 71 residential properties on Sand Road, Bowers Road, River Drive and Old Yonge Street are located.</p> <p>Use of the East Holland River as a snowmobile route between Queensville Sideroad and Cook's Bay</p>	<p>Improved water quantity, quality, and clarity in the East Holland River would provide a benefit to aquatic habitat in the second longest stretch of river water, compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity and quality in the East Holland River.</p> <p>Discharge at this location would provide the second longest stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the second furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 3,400 and 4,400 metres from Sites 24, WH1 and WH2, and approximately 8,400 metres from Site 30 having a depth of less than 2.5 metres.</p> <p>This is one of the longest routes and does not minimize the conveyance infrastructure length compared to other locations.</p> <p>Access would need to be coordinated with Hydro-One.</p>	<p>The alignment and elevation will not provide for a gravity discharge.</p> <p>The outfall location would be in direct contact with the East Holland River ice.</p>

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			would be affected during worst case conditions when the treated clean water contributes to ice melt conditions.					
<b>6 Holland Landing Water Pollution Control Plant (WPCP) Outfall</b>	Linear infrastructure within existing road right-of-way along 2nd Concession, Queensville Sideroad, south on Old Yonge Street to the existing Holland Landing WPCP outfall at Cedar Street.	Yes	<p>Since the volume of discharge cannot be accommodated within the East Holland River watercourse potential ice melt conditions would span a distance where approximately 71 residential properties on Sand Road, Bowers Road, River Drive and Old Yonge Street would be potentially affected depending upon the re-engineered watercourse (i.e., width, depth, etc).</p> <p>Use of the East Holland River as a snowmobile route between Queensville Sideroad and Cook's Bay would potentially be affected during worst case conditions when the treated clean water contributes to ice melt conditions.</p>	<p>The existing channel at the Holland Landing WPCP outfall could not accommodate 40 MLD of flow and a new channel would have to be constructed.</p> <p>The East Holland River could not accommodate 40 MLD of flow at this location and would require extensive stream bank erosion protection</p> <p>Improved water quantity, quality, and clarity in the East Holland River would provide a benefit to aquatic habitat in the second longest stretch of river water, compared to the other outfall locations.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The treated clean water would improve water quantity and quality in the East Holland River.</p> <p>Discharge at this location would provide the second longest stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the second furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 3,000 and 4,000 metres from Sites 24, WH1 and WH2, and approximately 8,000 metres from Site 30 having a depth of less than 2.5 metres.</p> <p>This is a longer route and does not minimize the conveyance infrastructure length compared to other locations.</p>	<p>The alignment and elevation will not provide for a gravity discharge.</p> <p>The outfall location would be in direct contact with the East Holland River ice.</p> <p>The alignment would require a forcemain to accommodate for the difference in elevation.</p>	

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<b>Doane Road</b>	Linear infrastructure within existing road right-of-way along 2nd Concession, Queensville Sideroad, south on Old Yonge Street to Doane Road.	Yes	<p>Use of the existing snowmobile route crossing at Doane Road (operated by the Holland Landing Snowmobile Club) would be affected during periods when the treated clean water contributes to ice melt conditions.</p> <p>Since the volume of discharge cannot be accommodated within the East Holland River watercourse ice melting may span across a length of the East Holland River where approximately 71 residential properties on Sand Road, Bowers Road, River Drive and Old Yonge Street would be potentially affected depending upon the re-engineered watercourse (i.e., width, depth, etc)</p> <p>Use of the East Holland River as a snowmobile route between Queensville Sideroad and Cook's Bay would potentially be affected during worst case conditions when the treated clean water will contribute to ice melt conditions.</p>	<p>The East Holland River could not accommodate 40 MLD of flow at this location and would require extensive stream bank erosion protection</p> <p>Improved water quantity, quality, and clarity in the East Holland River provide a benefit to aquatic habitat in the longest stretch of river water.</p> <p>Thermal effects of the treated clean water on the East Holland River would not affect aquatic life.</p>	<p>The Water Reclamation Centre discharge would improve water quantity and quality in the East Holland River.</p> <p>Discharge at this location would provide the longest stretch of river water improvement compared to the other outfall locations since the Water Reclamation Centre outfall occurs at the furthest upstream point.</p>	<p>The length of the conveyance infrastructure is between approximately 4,300 and 5,300 metres from Sites 24, WH1 and WH2, and approximately 9,300 metres from Site 30 having a depth of less than 2.5 metres.</p> <p>This is the longest route and does not minimize the conveyance infrastructure length compared to other locations.</p>	<p>The alignment and elevation will not provide for a gravity discharge.</p> <p>The outfall location would be in direct contact with the East Holland River ice.</p> <p>The alignment would require a forcemain to accommodate for the difference in elevation.</p>	



Supporting Documentation for the Queensville  
Sideroad WRC Outfall Location  
Upper York Sewage Solutions EA

