

Appendix M

Evaluation Matrix

Evaluation Matrix

Factor	Criteria	RESA 1 Minimum Landmass	RESA 2 Taxiway Improvements	RESA 3 Noise Wall and East Utility Conduit	Avoidance/ Mitigation/Compensation /Enhancement Measures	Rationale
A. Technical and Engineering						
A1. Airport Operations and Safety	A1.1. Potential to impact airport operational efficiency [in context of aircraft movements] considering changes to airplane movement at ground level, instrument approaches, visual and navigational aid.	<ul style="list-style-type: none"> RESA 1 maintains current operations and does not impact airport operational efficiency. 	<ul style="list-style-type: none"> RESA 2 improves Taxiway B and Taxiway D efficiency to runway. Relocation of Localizer 26 offers more traditional/standard straight-in approach capabilities for Runway 26 rather than a 3 degree offset. Offers more accurate precision approach visual guidance (Precision Approach Path Indicators) system for Runway 26. Permits relocation of existing Precision Approach Path Indicators for Runway 08 on north side of runway which is the more traditional/standard location of Precision Approach Path Indicators. 	<ul style="list-style-type: none"> RESA 3 improves Taxiway B and Taxiway D efficiency to runway, and permits unrestricted use of airside road, benefiting general airside mobility and enhancing efficiency of operations. Relocation of Localizer 26 offers more traditional straight-in approach capabilities for Runway 26 rather than a 3 degree offset. Offers more accurate precision approach visual guidance (Precision Approach Path Indicators) system for Runway 26. Permits relocation of existing Precision Approach Path Indicators for Runway 08 on north side of runway which is the more traditional/standard location of Precision Approach Path Indicators. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> RESA 2 and 3 are preferred as they both improve airport's operational efficiency by enhancing Taxiways B and D and upgrading visual approach guidance system for Runway 26. Both alternatives introduce a positive net effect overall, considering the operational and safety benefits provided. RESA 1 does not contribute to aircraft operational improvements; and had no net effect.
						
	A1.2. Potential for safety improvements and operational benefits for airfield access to lands external (i.e., Community) to the airport and internal to the airfield, on the island, without restrictions requiring control tower approval (i.e., reduction in potential runway incursions).	<ul style="list-style-type: none"> RESA 1 restricted access airside across the runway at both the east and west ends, similar to existing conditions. However, the new airside roads pass immediately behind the RESA rather than crossing the runway, slightly reducing risk and safety impact associated with potential incursions (i.e., conflict between aircraft on the runway and vehicles crossing the runway). 	<ul style="list-style-type: none"> RESA 2 maintains restricted access airside across the runway at both the east and west ends, similar to existing conditions. However, the new airside roads pass immediately behind the RESA rather than crossing the runway, slightly reducing risk and safety impact associated with potential incursions (i.e., conflict between aircraft on the runway and vehicles crossing the runway). 	<ul style="list-style-type: none"> RESA 3 allows for unrestricted access off both runway ends, benefiting City and other service vehicle access and public utilities, which can locate critical infrastructure within a designated utility conduit around the east runway end on lands outside the airfield, resulting in safety improvements. Significant reduction in risk of runway incursions. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> RESA 3 stands out as the most preferred alternative, offering operational improvements associated with the introduction of the unrestricted airside road around the runway ends. The addition of the unrestricted airside road offers significant reduction in risk of runway incursions (conflict between aircraft on the runway and vehicles crossing the runway), improving safety for airport personnel, travellers, and emergency vehicles, and essential service vehicles (including vehicles for the Toronto and Region Conservation Authority, utility services (e.g., Toronto Water, hydro, Bell, Rogers, garbage/recycling trucks), public service vehicles (e.g., mobile library units), food service vehicles, and event-related traffic (e.g., for sporting or cultural events). For context, in 2023, City of Toronto service vehicles crossed the main runway to access the Toronto Islands in excess of 3,700 times, which is not a standard procedure based on Safety Management System protocols, nor a practice at any other Canadian airport. RESA 3 introduces a strong positive net effect in terms of operational efficiency and safety. RESA 1 and RESA 2 slightly reduce the risk of potential incursions as they avoid runway crossing; however, they both require control tower approval, resulting in a modest positive net effect.
						

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	A1.3. Potential to make the runway approach safer and more precise, which will add to safety improvements at the airport.	<ul style="list-style-type: none"> RESA 1 maintains current operations and does not provide improvements to ancillary (non-RESA) airport operational safety. 	<ul style="list-style-type: none"> RESA 2 improves aviation safety by upgrading visual approach guidance system from abbreviated two-light system (APAPI) to a higher precision four light system (Precision Approach Path Indicators), and additional centreline approach lighting in the RESA landmass. 	<ul style="list-style-type: none"> RESA 3 improves aviation safety by upgrading visual approach guidance system from abbreviated two-light system (APAPI) to a higher precision four light system (Precision Approach Path Indicators), and additional centreline approach lighting in the RESA landmass. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> While all alternatives maintain existing operational efficiency and safety, RESA 2 and 3 are equally preferred due to their safety enhancements through the upgraded visual approach guidance system (Precision Approach Path Indicators) and additional approach centreline lighting, which provides greater approach slope precision for pilots. These enhancements contribute to a positive net effect for both RESA 2 and RESA 3. RESA 1 is considered to be neutral as they maintain current condition and offer no additional runway approach safety improvements. As such, it is considered to have no net effect in this area.
						
A2. Utilities and Servicing Infrastructure	A2.1. Potential opportunities for utility infrastructure co-ordination (City and Airport).	<ul style="list-style-type: none"> RESA 1 presents minimal opportunity for utility infrastructure coordination due to the reduced Project footprint and lack of additional airside improvements. 	<ul style="list-style-type: none"> RESA 2 presents minimal opportunity for utility infrastructure coordination due to the lesser Project footprint. Despite larger footprint, runway closure would still be required to accommodate utility works/maintenance. 	<ul style="list-style-type: none"> RESA 3 presents the greatest opportunity for utility infrastructure coordination due to its larger Project footprint and greater extent of airside and landside improvements, including a utility conduit. This alternative includes a utility conduit that remains outside the airfield and allows maintenance vehicles/equipment access without affecting aircraft operations. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> RESA 3 is most preferred as its larger footprint provides the greatest opportunity for integrating and improving utility systems and supporting essential public works. This alternative includes a utility conduit located outside the airfield around the eastern runway end that remains clear of aircraft operations, and could potentially facilitate public servicing upgrades at the Toronto Island by providing a dedicated route. These improvements contribute to the overall positive net effect of RESA 3, particularly in supporting infrastructure resilience and long-term service delivery. RESA 1 and 2 are considered to be neutral as they either offer no additional opportunities for utility co-ordination with the City, or future utility works/maintenance would still require runway closures even if they are located in the new RESA area limits. As such, both alternatives are considered to have no net effect in relation to utility infrastructure improvements.
						
	A2.2. Potential known utility conflicts. [clarification: external utilities only, non-airport utilities]	<ul style="list-style-type: none"> Deep Lake Water Cooling system and Cross Harbour Tunnel under review during RESA preliminary and detailed design (confirming potential east breakwater impacts). 	<ul style="list-style-type: none"> Deep Lake Water Cooling system and Cross Harbour Tunnel under review during RESA preliminary and detailed design (confirming potential east breakwater impacts). 	<ul style="list-style-type: none"> Deep Lake Water Cooling system and Cross Harbour Tunnel under review during RESA preliminary and detailed design (confirming potential east breakwater impacts). 	<ul style="list-style-type: none"> Detailed analysis will be conducted during the design stage to ensure all potential impacts are identified and mitigated properly. 	<ul style="list-style-type: none"> Airport utilities are known and their impact on all alternatives are considered equal and may be managed through design. Therefore, alternatives have been evaluated based on potential for conflict between the Deep Lake Water Cooling and/or Cross Harbour Tunnel and their impact on new breakwaters and landmass extensions -- awaiting confirmation of potential restrictions to the East Breakwater resulting from the Deep Lake Water Cooling system and/or Cross Harbour Tunnel. All breakwater / landmass extensions are projected to impact the Deep Lake Water Cooling, which must be assessed and mitigated. All alternatives are considered to have no net effect with respect to utility infrastructure, provided that appropriate coordination measures will be implemented.
						
A3. Ice Formation	A3.1. Potential ability to manage freezing spray from wind and wave.	<ul style="list-style-type: none"> Breakwater structures will effectively control any wave overtopping, water spray, ice accretion on the RESA. 	<ul style="list-style-type: none"> Breakwater structures will effectively control any wave overtopping and water spray, ice accretion on the RESA. 	<ul style="list-style-type: none"> Breakwater structures will effectively control any wave overtopping and water spray, ice accretion on the RESA. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> Breakwater structures for each alternative have been designed to different degrees to control wave overtopping and water spray to reduce effects of water and ice on the airfield. Additionally, lake level increase resulting from climate change considered and accommodated in design. The risk of wave overtopping and water spray, ice accretion is minimized in RESA 1, 2 and 3, therefore they are equally preferred, and have no net effect.
						

Note: Estimates of the Project footprint and impact areas are preliminary and will be confirmed as the design progresses.

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B. Natural Environment						
B1. Effect on Vegetation	B1.1 Potential impact on vegetation communities including plant Species of Conservation Concern and Species at Risk, provincially and regionally rare vegetation communities, and regionally rare vascular plant species.	<ul style="list-style-type: none"> No plant Species of Conservation Concern, Species at Risk or regionally rare plants identified in RESA 1 footprint. Total vegetation removal: 575 m² limited to Cultural Willow Deciduous Thickets adjacent to west and east runway ends. The Cultural Willow Deciduous Thickets are low-quality secondary growth vegetation with a low Floristic Quality Index. On the east runway, this vegetation is low secondary growth on armour stone rip rap that is actively cut and mowed. No removal of the Mineral Open Beach Bar and Cottonwood Treed Dune as the construction footprint does not extend beyond existing security fence line. Therefore, no edge effects on these communities are anticipated. 	<ul style="list-style-type: none"> No plant Species of Conservation Concern, Species at Risk or regionally rare plants identified in RESA 2 footprint. Total vegetation removal: 2,935 m², limited to Cultural Willow Deciduous Thickets adjacent to west and east runway ends. The Cultural Willow Deciduous Thicket removal is increased on the east of the runway compared to RESA 1 but is limited to the low secondary growth on the armour stone rip rap. No removal of the Mineral Open Beach Bar and Cottonwood Treed Dune as the construction footprint does not extend beyond existing security fence line. Therefore, no edge effects on these communities are anticipated. Vegetation removal is approximately 5 times that of RESA 1 (or 2,935 m² greater). 	<ul style="list-style-type: none"> No Species of Conservation Concern or Species at Risk plants identified in the RESA 3 footprint. Total vegetation removal: approximately 4,480 m², including: <ul style="list-style-type: none"> Approximately 1,080 m² of the regionally rare Mineral Open Beach Bar representing 0.99 % of the total Mineral Open Beach Bar on Hanlan's Point Beach. Approximately 730 m² of the provincially rare Cottonwood Treed Dune 0.006 % of the total Cottonwood Treed Dune on Hanlan's Point Beach. Potential removal of regionally rare vascular plant species associated with the Cottonwood Treed Dune and Mineral Open Beach Bar communities (American Beachgrass, American Sea-Rocket and Slender-leaved False Foxglove). Vegetation removal is approximately 8 times that of RESA 1 (or 3,905 m² greater). Minimal and short-term edge effects along the Cottonwood Treed Dune and Mineral Open Beach Bar post-construction of RESA. 	<ul style="list-style-type: none"> Enhancement/restoration measures proportional to the amount of vegetation removal of each RESA alternative to be developed with the City of Toronto and PortsToronto during detail design. Delineating vegetation clearing zone on-site to prevent accidental damage or intrusion to adjacent vegetation communities. Refueling and equipment/material storage staged 30 m from Mineral Open Beach Bar and Cottonwood Treed Dune. Development and implementation of an Erosion and Sediment Control Plan and sediment control measures for land-based construction activities. Development and implementation of a Spill Prevention and Contingency Plan including preventative measures and emergency procedures in case of a spill. Adherence to Clean Equipment Protocol for Industry (Halloran et al., 2013). Weekly environmental monitoring during construction for all RESA alternatives and post-construction monitoring of planting survival rate as part of enhancement/restoration measures. For RESA 3 only, implementation of Dune/beach Edge Management Plan, regionally rare plant and tree inventory pre-construction and regionally rare plant transplantations, where feasible. 	<ul style="list-style-type: none"> No Species of Conservation Concern or Species at Risk plant identified in the study area. RESA 1 is the most preferred as it has the lowest total vegetation removal limited to the low quality, secondary growth Cultural Willow Deciduous Thickets along the end of each existing runway. With implementation of appropriate mitigation measures and compensation plans, no net negative effect is anticipated. RESA 2 is moderately preferred as it has the second lowest total vegetation removal limited to the low quality, secondary growth Cultural Willow Deciduous Thickets along the end of each existing runway. Increased vegetation loss can be offset by increased size or equivalency of compensation plantings of native vegetation. No impacts to the Cottonwood Treed Dune or Mineral Open Beach Bar are anticipated. With implementation of appropriate mitigation measures and compensation plans RESA 2 has negligible net negative effect. RESA 3 is the least preferred as it results in removal of the provincially rare Cottonwood Treed Dune and regionally rare Mineral Open Beach Bar, which host regionally rare vascular plant species. While RESA 3 has the greatest impact on the Mineral Open Beach Bar and Cottonwood Treed Dune relative to RESA 1 and RESA 2, the overall loss compared to the extent of the remaining communities along Hanlan's Point Beach is minimal (0.99 % and 0.006 %, respectively). Increased vegetation loss can be offset by increased size or equivalency of compensation plantings of native vegetation. Compensation or equivalent enhancement measures to beach and dune communities can ensure the vegetation removal does not result in long-term impacts to the remaining habitats and key ecological functions of these communities. The edge effects are not anticipated to be long-term with the implementation of the Beach and Dune Edge Management and Monitoring Plan and enhancement/restoration measures. RESA 3 will have low net negative effect.
						

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<p>B2. Effect on Wildlife, including Significant Wildlife Habitat, Species of Conservation Concern and Migratory Birds</p>	<p>B2.1. Potential impact on terrestrial species, including wildlife, Migratory Birds and Species of Conservation Concern: Long-tailed Duck, Redhead, Canvasback, Monarch, Semipalmated Sandpiper, Snapping Turtle.</p> <p>Potential impact on Significant Wildlife Habitat.</p>	<ul style="list-style-type: none"> ■ General habitat loss for wildlife and migratory birds is approximately 575 m²; however, the Billy Bishop Toronto City Airport actively conducts bird deterrence on the airport grounds, so impacts are considered low because birds and wildlife are deterred from using airport grounds and adjacent areas as part of baseline conditions. ■ Lake infill and loss of Confirmed Waterfowl Stopover and Staging Areas and habitat for Waterfowl Species of Conservation Concern (Long-tailed Duck, Redhead and Canvasback) represents approximately 0.12% of available open water staging and stopover habitat identified as 1 km from the shoreline between Humber Bay Shores Park and Woodbine Beach, encompassing the Toronto Islands and Tommy Thompson Park. ■ Minimal (0.7%) loss for Snapping Turtle overwintering habitat off the existing east runway due to lake infill relative to available habitat elsewhere in the Toronto Islands. ■ No habitat loss for confirmed Migratory Butterfly Stopover Area, confirmed Monarch habitat, Candidate Shorebird Migratory Stopover Area or confirmed Semipalmated Sandpiper Habitat as no vegetation removal is proposed in the Cottonwood Treed Dune or the Mineral Open Beach Bar along Hanlan's Point Beach. ■ Minimal and temporary disturbance to wildlife, including migratory birds, bats and monarch at night due to noise and light from construction activities between 11:00 pm and 6:45 am for a duration of 18 months. Most wildlife are adapted to urban disturbances and no changes in light pollution levels against the backdrop of the metropolitan Toronto which is the main source of light pollution in the local area. ■ Potential injury/death of wildlife or destruction of migratory birds nests during construction. ■ Post-construction, additional runway lighting will not change baseline light pollution levels as there will be no changes in airport operations (airport is closed and runway lighting is turned off between 11:00 pm and 6:30 am normally unless for emergency situations). 	<ul style="list-style-type: none"> ■ General habitat loss for wildlife and migratory birds is approximately 2,935 m²; however, the Billy Bishop Toronto City Airport actively conducts bird deterrence on the airport grounds, so impacts are considered low because birds and wildlife are deterred from using airport grounds and adjacent areas as part of baseline conditions. ■ Lake infill and loss of Confirmed Waterfowl Stopover and Staging Areas and Habitat for Waterfowl Species of Conservation Concern (Long-tailed Duck, Redhead and Canvasback) represents approximately 0.19% of available open water staging and stopover habitat identified as 1 km from the shoreline between Humber Bay Shores Park and Woodbine Beach, encompassing the Toronto Islands and Tommy Thompson Park. ■ Minimal (1.5%) loss for Snapping Turtle overwintering habitat but greater than that of RESA 1 off the existing east runway due to lake infill relative to available habitat elsewhere in the Toronto Islands. ■ No habitat loss for confirmed Migratory Butterfly Stopover Area, confirmed Monarch habitat, Candidate Shorebird Migratory Stopover Area or confirmed Semipalmated Sandpiper Habitat as no vegetation removal is proposed in the Cottonwood Treed Dune or the Mineral Open Beach Bar along Hanlan's Point Beach. ■ Minimal and temporary disturbance to wildlife, including migratory birds, bats and monarch at night due to noise and light from construction activities between 11:00 pm and 6:45 am for a duration of 21 months. Most wildlife are adapted to urban disturbances and no changes in light pollution levels against the backdrop of the metropolitan Toronto which is the main source of light pollution in the local area. ■ Potential injury/death of wildlife or destruction of migratory birds nests during construction. ■ Post-construction, additional runway lighting will not change baseline light pollution levels as there will be no changes in airport operations (airport is closed and runway lighting is turned off between 11:00 pm and 6:30 am normally unless for emergency situations). 	<ul style="list-style-type: none"> ■ General habitat loss for wildlife and migratory birds is approximately 4,480 m²; however, the Billy Bishop Toronto City Airport actively conducts bird deterrence on the airport grounds, so impacts are considered low because birds and wildlife are deterred from using airport grounds and adjacent areas as part of baseline conditions. ■ Lake infill and loss of Confirmed Waterfowl Stopover and Staging Areas and Habitat for Waterfowl Species of Conservation Concern (Long-tailed Duck, Redhead and Canvasback) represents approximately 0.29% of available open water staging and stopover habitat identified as 1 km from the shoreline between Humber Bay Shores Park and Woodbine Beach, encompassing the Toronto Islands and Tommy Thompson Park. ■ Minimal (2.6%) loss for Snapping Turtle overwintering habitat but greater than that of RESA 1 and RESA 2 off the existing east runway due to lake infill relative to available habitat elsewhere in the Toronto Islands. ■ Minimal habitat loss for confirmed Migratory Butterfly Stopover Area, confirmed Monarch habitat, Candidate Shorebird Migratory Stopover Area and confirmed Semipalmated Sandpiper Habitat in the Cottonwood Treed Dune (730 m² or 0.006%) and the Mineral Open Beach Bar (1,080 m² or 0.99%) along Hanlan's Point Beach. ■ Minimal and temporary disturbance to wildlife, including migratory birds, bats and monarch at night due to noise and light from construction activities between 11:00 pm and 7:00 am for a duration of 24 months. Most wildlife are adapted to urban disturbances and no changes in light pollution levels against the backdrop of the metropolitan Toronto which is the main source of light pollution in the local area. ■ Potential injury/death of wildlife or destruction of migratory birds nests during construction. ■ Post-construction, additional runway lighting will not change baseline light pollution levels as there will be no changes in airport operations (airport is closed and runway lighting is turned off between 11:00 pm and 6:30 am normally unless for emergency situations). 	<ul style="list-style-type: none"> ■ For habitat loss, refer to mitigation measures proposed for effect on vegetation (B1.1). ■ Refer to mitigation measures proposed for effect on aquatic habitats (B2.5). ■ Billy Bishop Toronto City Airport has active wildlife deterrence plans in place to follow Transport Canada and Canadian Aviation Regulations, preventing wildlife from using the airport and nearby areas. ■ Nest sweeps if vegetation removal cannot avoid bird nesting period of April 1 to August 31 of any year. ■ Construction lighting at night will be shielded and pointed downward. Consideration of using lower-intensity or wildlife-friendly lighting within 30 m of Hanlan's Point Beach. ■ Installation of temporary wildlife exclusion fencing. ■ Implementation of Wildlife and Species at Risk Encounter Protocol. ■ Enhancement/restoration measures proportional to the amount of impacted habitat for each RESA alternative to be developed as required in consultation with regulatory agencies during detail design. 	<ul style="list-style-type: none"> ■ Both RESA 1 and RESA 2 have negligible net negative effects, because the active wildlife deterrence plans at the airport deters wildlife from using airport grounds and adjacent areas; and with mitigation and compensation measures in place the potential effects will be negligible. However, RESA 1 is more preferred than RESA 2 as it has the least amount of wildlife habitat loss. ■ RESA 3 is the least preferred as it has the greatest wildlife habitat loss relative to RESA 1 and RESA 2 and includes habitat loss in the Mineral Open Beach Bar and Cottonwood Treed Dune. However, the overall loss of habitat in these communities compared to their remaining extent along Hanlan's Beach is minimal (0.99 % and 0.006 % for Mineral Open Beach Bar and Cottonwood Treed Dune, respectively). Compensation or equivalent enhancement measures to beach and dune communities can ensure no long-term impacts to the remaining habitats and key ecological functions of these communities. Therefore, RESA 3 will have low net negative effect. ■ All three RESA alternatives will result in no net effects to changes in light pollution because despite minimal additional runway lights installed for each RESA to meet Transport Canada safety requirements, these will be turned off at night as part of normal airport operation. ■ Minimal and temporary disturbance to wildlife, including migrating birds and bats, is anticipated for all RESA alternatives at the same levels for RESA 1 and 2 and slightly more for RESA 3 accounting for more construction lighting at night to accommodate a bigger footprint relative to the other alternatives.

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B3. Effect on Terrestrial Species at Risk	B3.1. Potential impact to terrestrial Species At Risk and associated habitats: Piping Plover, Bank Swallow, bat Species at Risk.	<ul style="list-style-type: none"> Terrestrial Species At Risk potentially impacted include Piping Plover and Bank Swallow and bat Species at Risk. No impact on Mineral Open Beach Bar (i.e., Piping Plover habitat). Minimal and temporary disturbance to Piping Plover due to construction activities at night that may result in displacement; this species is unlikely to nest immediately adjacent to the existing west runway because of active bird deterrent activities at the airport and there is ample suitable nesting and foraging habitat along Hanlan's Point Beach available for Piping Plover. Suitable bat Species at Risk habitat not present. Temporary disturbance to migrating bat Species at Risk due to construction lighting at night. No changes in light pollution during operation are anticipated. No nesting habitat for Bank Swallow was identified on the airport grounds but stockpiled materials during construction can inadvertently create new nesting habitat for this species. 	<ul style="list-style-type: none"> Terrestrial Species At Risk potentially impacted include Piping Plover and Bank Swallow and bat Species at Risk. No impact on Mineral Open Beach Bar (i.e., Piping Plover habitat). Minimal and temporary disturbance to Piping Plover due to construction activities at night that may result in displacement; this species is unlikely to nest immediately adjacent to the existing west runway because of active bird deterrent activities at the airport and there is ample suitable nesting and foraging habitat along Hanlan's Point Beach available for Piping Plover. Suitable bat Species at Risk habitat not present. Temporary disturbance to migrating bat Species at Risk due to construction lighting at night. No changes in light pollution during operation are anticipated. No nesting habitat for Bank Swallow was identified on the airport grounds but stockpiled materials during construction can inadvertently create new nesting habitat for this species. 	<ul style="list-style-type: none"> Terrestrial Species At Risk potentially impacted include Piping Plover and Bank Swallow and bat Species at Risk. Removal of (1,080 m² or 0.99%) Mineral Open Beach Bar (i.e., Piping Plover habitat) and minimal, short-term edge effects post-construction. Minimal and temporary disturbance to Piping Plover due to construction activities at night that may result in displacement; this species is unlikely to nest immediately adjacent to the existing west runway because of active bird deterrent activities at the airport and there is ample suitable nesting and foraging habitat along Hanlan's Point Beach available for Piping Plover. Suitable bat Species at Risk habitat not present. Temporary disturbance to migrating bat Species at Risk due to construction lighting at night. No changes in light pollution during operation are anticipated. No nesting habitat for Bank Swallow was identified on the airport grounds but stockpiled materials during construction can inadvertently create new nesting habitat for this species. 	<ul style="list-style-type: none"> Same as above mitigation for habitat loss for RESA 3 only. Same as above for all RESA alternatives for disturbance and displacement on general wildlife, including Significant Wildlife Habitat and Migratory Birds. If Piping Plover nest is found within 50 m of work zone, all construction activities will stop until next steps provided by a qualified Biologist and/or appropriate regulatory agency that will be notified within 24 hours of confirmed sighting. Regular scans for trained staff or working with local environmental groups to monitor for Piping Plover within 500 m of construction activities between April 1 to August 31. For RESA 3 only, consideration of contributing to Piping Plover monitoring and stewardship initiatives as part of enhancement/restoration measures. 	<ul style="list-style-type: none"> None of the alternatives are considered to have high impact on terrestrial bird Species at Risk habitat because nesting of all bird species (including Species at Risk) is actively prevented at Billy Bishop Toronto City Airport. RESA 1 and RESA 2 are equally preferred, as neither are anticipated to remove the Mineral Open Beach Bar (i.e., Piping Plover habitat); as such no net effect is anticipated for RESA 1 and RESA 2. RESA 3 is the least preferred alternative as it removes a portion (0.99 %) of potential Piping Plover habitat in the Mineral Open Beach Bar. Previous Piping Plover observation records were located beyond the Terrestrial Study Area on Hanlan's Beach. Considering that removal of Piping Plover potential habitat is temporary and limited to the construction period and will be further minimized through implementation of mitigation measures, RESA 3 will have low net negative effect. No impacts to Bank Swallow are anticipated for all RESA alternatives provided mitigation measures are implemented. No impacts to bat Species at Risk are anticipated for all RESA alternatives provided mitigation measures are implemented during construction.
B4. Natural Heritage Features and Associated Policies (Natural Heritage System, Provincially Significant Wetlands; Areas of Natural and Scientific Interest, Environmentally Significant Areas)	B4.1. Potential impact on natural heritage features and their functions.	<ul style="list-style-type: none"> No impact to Provincially Significant Wetland. No impact to City of Toronto Environmentally Significant Areas. No impact to the candidate Toronto Islands Area of Natural and Scientific Interest. Falls within the City of Toronto Natural Heritage System. 	<ul style="list-style-type: none"> No impact to Provincially Significant Wetland. No impact to City of Toronto Environmentally Significant Areas. No impact to the candidate Toronto Islands Area of Natural and Scientific Interest. Falls within the City of Toronto Natural Heritage System. 	<ul style="list-style-type: none"> No impact to Provincially Significant Wetland. No impact to City of Toronto Environmentally Significant Areas. Removal of approximately 2,285 m² (0.16%) of candidate Toronto Islands Area of Natural and Scientific Interest. Falls within the City of Toronto Natural Heritage System. 	<ul style="list-style-type: none"> Same as above mitigation for effect on vegetation communities and wildlife habitat for all RESA alternatives. Refueling and equipment/material storage staged 30 m from candidate Toronto Islands Area of Natural and Scientific Interest for all RESA alternatives. For RESA 3 only, implementation of Dune/beach Edge Management Plan, regionally rare plant and tree inventory pre-construction and regionally rare plant transplantations and enhancement/restoration measures; where feasible. 	<ul style="list-style-type: none"> RESA 1 and RESA 2 are equally preferred, as neither are anticipated to remove vegetation from the candidate Toronto Islands Area of Natural and Scientific Interest. With mitigation and compensation measures in place, RESA 1 and RESA 2 will have negligible negative net effects. RESA 3 is the least preferred as it removes a portion (0.16 %) of the candidate Toronto Islands Area of Natural and Scientific Interest, which contains the regionally rare Mineral Open Beach Bar and provincially rare Cottonwood Treed Dune. However, with implementation of enhancement/restoration measures the net negative effect will be low.

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<p>B5. Effect on Aquatic Habitat</p>	<p>B5.1. Potential impact on aquatic habitat including areas that could potentially support key life cycle stages such as spawning areas, or those potentially supporting sensitive species.</p>	<ul style="list-style-type: none"> ■ West end footprint: Approximately 20,770 m². <ul style="list-style-type: none"> - Predominantly shallow, with 'Hard' (69 % by area) to 'Very Hard' (31% by area) sandy substrate. - Submergent aquatic vegetation abundance is very low throughout the entire area. ■ East end footprint: Approximately 15,225 m². <ul style="list-style-type: none"> - Primarily consists of silt with some sand, and the substrate hardness ranges from 'Mixed' (31 % by area) to 'Hard' (68% by area). - Depth: Ranging between 3-12 m. - 'Low' submergent aquatic vegetation abundance throughout the area (95% by area), except for a small portion (5 % by area) which contains 'Moderate' submergent aquatic vegetation abundance. 	<ul style="list-style-type: none"> ■ West end footprint: Approximately 26,995 m². <ul style="list-style-type: none"> - Approximately 1.3 times larger footprint compared to RESA 1. - Mostly shallow, with 'Hard' (67% by area) to 'Very Hard' (33% by area) sandy substrate. - Submergent aquatic vegetation abundance is very low throughout the entire area. ■ East end footprint: Approximately 31,860 m². <ul style="list-style-type: none"> - Approximately 2.1 times larger footprint compared to RESA 1. - Primarily consists of silt with some sand, and substrate hardness ranges from 'Mixed' (48% by area) to 'Hard' (50 % by area), with small areas of 'Soft' (2 % by area) and 'Very Hard' (0.3 % by area) bottom. - Depth: Ranging between 3-12 m. - Submergent aquatic vegetation abundance is generally 'Low' (65% by area) to 'Moderate' (33% by area) across most of the area, but a small section (1.7% by area) noted to include 'High' to 'Very High' submergent aquatic vegetation abundance. 	<ul style="list-style-type: none"> ■ West end footprint: Approximately 30,380 m². <ul style="list-style-type: none"> - Approximately 1.46 times larger footprint compared to RESA 1. - Mostly shallow with 'Hard' (68% by area) to 'Very hard' (32% by area) sandy substrate. - Submergent aquatic vegetation abundance is very low throughout the entire area. ■ East end footprint: Approximately 57,870 m². <ul style="list-style-type: none"> - Approximately 3.8 times larger footprint compared to RESA 1. - Primarily consists of silt with some sand, and substrate hardness ranges from 'Mixed' (51% by area) to 'Hard' (47% by area), with small areas of 'Soft' (1.9% by area) and 'Very Hard' (0.2% by area) bottom. - Depth: Ranging between 3-12 m. - Submergent aquatic vegetation abundance is generally 'Low' (64% by area), though a considerable portion (35% by area) has 'Moderate' submergent aquatic vegetation abundance, and a small area (0.9% by area) has 'High' to 'Very High' submergent aquatic vegetation abundance. 	<ul style="list-style-type: none"> ■ Adherence to applicable timing windows. Should the Project compliance timeline require construction during this timing window, authorization from Fisheries and Oceans Canada will be required. ■ Isolate the work area through implementation of an Isolation / Containment plan (including use of measures such as turbidity curtains or acoustic deterrents). ■ Development and implementation of an Erosion and Sediment Control Plan and sediment control measures for land-based construction activities, including management of surface water runoff and dewatering effluent. ■ Development and implementation of a Spill Prevention and Contingency Plan including preventative measures and emergency procedures in case of a spill. ■ Consultation with regulatory agencies (Fisheries and Oceans Canada and the Ministry of Environment, Conservation and Parks) and other stakeholders to determine offsetting and/or compensation / enhancement requirements. ■ Enhancement and / or restoration measures will be determined during detailed design, and will cover an area equal in size or impact for each RESA alternative. 	<ul style="list-style-type: none"> ■ Impact to submergent aquatic vegetation on the west end is negligible across all alternatives. ■ Rock infill across all alternatives has the potential to create interstitial spaces which could be beneficial for fish species (including American Eel) depending on breakwater design and rock sizing; however, this potential habitat creation does not negate or counteract the impact of permanent infill and loss of habitat within the footprint of each alternative and therefore does not influence the overall evaluation of alternatives for this factor. ■ RESA 1 is the most preferred, as it has smallest in-water footprint (approximately 35,995 m²), and smallest impact to aquatic vegetation on east end, followed by RESA 2 which has the second largest total in-water footprint (approximately 58,855 m²) which is approximately 1.6 times larger compared to RESA 1, and only slightly more impact (1.7% by area) to areas of 'High or Very High submergent aquatic vegetation abundance'. ■ RESA 3 is least preferred. It has the largest total in-water footprint (approximately 88,250 m², which is approximately 2.4 times larger compared to RESA 1; however, it has slightly less impact (0.9% by area) to areas of 'High or Very High' submergent aquatic vegetation abundance compared to RESA 2. ■ Moderate net negative effect for Fish Habitat based on loss (i.e., removal) of habitat required under all RESA alternatives, which cannot be avoided or mitigated. Although some potential impacts related to construction are anticipated to be mitigated through implementation of identified mitigation measures, the proposed works will remove a substantial amount of fish habitat within the aquatic study area under each RESA alternative. Given the amount of habitat loss anticipated and considering the potential value of the habitat (as described in the Natural Heritage Assessment Report (Appendix B), a Moderate Net Negative Effect is anticipated. ■ By implementing aquatic habitat compensation measures, to be developed in consultation with Fisheries and Oceans Canada, and the Ministry of Environment, Conservation and Parks the moderate net negative effect associated with the loss of fish habitat is expected to be compensated for.
						

Note: Estimates of the Project footprint and impact areas are preliminary and will be confirmed as the design progresses.

Factor	Criteria	RESA 1 Minimum Landmass	RESA 2 Taxiway Improvements	RESA 3 Noise Wall and East Utility Conduit	Avoidance/ Mitigation/Compensation /Enhancement Measures	Rationale
<p>B6. Effect on Aquatic Species At Risk</p>	<p>B6.1. Potential temporary and/or long-term effects on aquatic Species At Risk and associated habitats.</p>	<ul style="list-style-type: none"> ■ West end footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Characterized by 'Hard' to 'Very Hard' bottom with very low potential cover provided by aquatic vegetation, unlikely to be suitable habitat for American Eel life processes (e.g., overwintering). ■ East End footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Largest impacts are to 'Hard' and 'Mixed' bottom hardness, and areas with 'Low' aquatic vegetation abundance. - Smallest impacts are to 'Soft' and 'Very Hard' bottom or 'Moderate' aquatic vegetation abundance areas. - Moderate probability of American Eel within Aquatic Study Area, but lowest impact to suitable habitat features for American Eel life processes (e.g., overwintering) compared to other alternatives. - Removal of approximately 4,781 m² of potential overwintering habitat. ■ Maximum depth of 12 m, unlikely to be used by Shortnose Cisco. 	<ul style="list-style-type: none"> ■ West end footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Characterized by 'Hard' to 'Very Hard' bottom with very low potential cover provided by aquatic vegetation, unlikely to be suitable habitat for American Eel life processes (e.g., overwintering). ■ East End footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Largest impacts are to 'Hard' and 'Mixed' bottom hardness and areas with 'Low' and 'Moderate' vegetation abundance. - Smallest impacts are to 'Soft' and 'Very Hard' bottom areas and areas with 'High' and 'Very High' aquatic vegetation abundance. - Moderate probability of American Eel within Aquatic Study Area but slightly more impact to suitable habitat features for American Eel life processes (e.g., overwintering) compared to other alternatives. - Removal of approximately 16,002 m² of potential overwintering habitat. - Approximately 3.4 times larger area of potential overwintering habitat removed compared to RESA 1. ■ Maximum depth of 12 m, unlikely to be used by Shortnose Cisco. 	<ul style="list-style-type: none"> ■ West end footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Characterized by 'Hard' to 'Very Hard' bottom with very low potential cover provided by aquatic vegetation, unlikely to be suitable habitat for American Eel life processes (e.g., overwintering). ■ East End footprint: <ul style="list-style-type: none"> - See B5. for description of habitat composition based on assessed parameters. - Largest impacts are to 'Hard' and 'Mixed' bottom hardness, and areas of 'Low' and 'Moderate' vegetation abundance. - Smallest impacts are to areas of 'Soft' and 'Very Hard' bottom and areas with 'High' and 'Very High' vegetation abundance. - Moderate probability of American Eel within Aquatic Study Area but largest impact to suitable habitat features for American Eel life processes (e.g., overwintering) compared to other alternatives. - Removal of approximately 30,456 m² of potential overwintering habitat. - Approximately 6.4 times larger area of potential overwintering habitat removed compared to RESA 1. ■ Maximum depth of 12 m, unlikely to be used by Shortnose Cisco. 	<ul style="list-style-type: none"> ■ See B5. for description of avoidance, mitigation, compensation / restoration, and enhancement measures applicable to aquatic habitat (including suitable habitat for American Eel). ■ Other enhancement and / or restoration measures specific to American Eel that may be considered as alternatives to address habitat loss include, but are not limited to: <ul style="list-style-type: none"> - Consultation with Aquatic Habitat Toronto to identify appropriate enhancement measures. - Contribute to American Eel monitoring and stewardship initiatives. 	<ul style="list-style-type: none"> ■ Two aquatic Species At Risk identified as potentially occurring within Project limits: American Eel and Shortnose Cisco. ■ West end contains generally harder bottom with very low potential cover provided by submergent aquatic vegetation. Unlikely to be suitable habitat for American Eel life processes (e.g., overwintering). ■ East end contains higher proportions of softer bottom and higher submergent aquatic vegetation abundance, indicating a higher likelihood of suitable habitat for American Eel life processes (e.g., overwintering). ■ Shortnose Cisco prefers deep water (>22 m). Since the aquatic study area only reaches a maximum depth of 12 m, all alternatives are unlikely to be used by Shortnose Cisco. Further, changes in water currents and associated erosion or sediment deposition as a result of landmass expansion are anticipated to be negligible for all RESA alternatives and therefore, no long-term impacts to Shortnose Cisco within or outside of the aquatic study area are expected. ■ Rock infill associated with the breakwater structure across all alternatives has the potential to create interstitial spaces (i.e., habitat) which could be beneficial for fish species (including American Eel); however, the potential habitat creation does not negate or counteract the permanent infill and loss of habitat within the footprint of each alternative. Therefore, this consideration does not influence the overall evaluation of alternatives for this factor. ■ RESA 1 is the most preferred alternative, as it impacts the smallest area of softer bottom hardness with no impact to areas with 'High' to 'Very High' submergent aquatic vegetation abundance. ■ RESA 2 and RESA 3 are both less preferred than RESA 1 due to greater impact on mixed and soft bottom areas, and a slight impact on areas with 'High' to 'Very high aquatic vegetation abundance. ■ Although some potential construction-related impacts are expected to be mitigated through the implementation of appropriate measures and adherence to applicable timing windows, the proposed works will result in the removal of a substantial amount of fish habitat, including habitat for American Eel (Species at Risk). As such, the impact is considered a moderate net negative effect. Consultation with regulatory agencies—including Fisheries and Oceans Canada and the Ministry of the Environment, Conservation and Parks—will be undertaken to determine the need for habitat compensation to offset this loss. By implementing aquatic habitat compensation measures developed through this consultation, the moderate net negative effect is expected to be offset.

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B7. Sediment Transport and Accumulation	B7.1. Potential impact on sediment deposition or accumulation (Western Channel and vicinity of RESA).	<ul style="list-style-type: none"> An approximately 50 m expansion from the seawall at the west end is expected to positively impact sediment transport due to sediment deposition at the northern end of Hanlan's Point Beach on the southern side of landmass expansion. Over time, sediment transport processes will generate a lakeshore morphology that has adapted to the barrier and sediment will continue to be transported into the Western Channel. Effects on sediment erosion and deposition within the Inner Harbour are likely to be minor and may be considered negligible. 	<ul style="list-style-type: none"> The approximately 80 m expansion from the seawall at the west end, as well as the landmass expansion along the north side of the east end are expected to positively impact sediment transport due to sediment deposition at the northern end of Hanlan's Point Beach on the southern side of landmass expansion. Over time, sediment transport processes will generate a lakeshore morphology that has adapted to the barrier and sediment will continue to be transported into the Western Channel. Effects on sediment erosion and deposition within the Inner Harbour are likely to be minor and may be considered negligible. 	<ul style="list-style-type: none"> The approximately 80 m expansion from the seawall at the west end, as well as the landmass expansion along the north side of the east end are expected to positively impact sediment transport due to sediment deposition at the northern end of Hanlan's Point Beach on the southern side of landmass expansion. Over time, sediment transport processes will generate a lakeshore morphology that has adapted to the barrier and sediment will continue to be transported into the Western Channel. Effects on sediment erosion and deposition within the Inner Harbour are likely to be minor and may be considered negligible. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> Any landmass expansion at the west end RESA will have some impact on sediment transport in the vicinity, but these impacts are considered beneficial, as the expansion reduces sedimentation in the Western Channel and provides a possible source for nourishment of Hanlan's Point Beach under the Gibraltar Point Sediment Management Plan. Longer expansions in RESA 2 and 3 will extend the duration of these benefits, allowing for longer-term sediment management. Both alternatives have a moderate net positive effect, making them equally preferred over RESA 1. RESA1 offers shorter benefit window compared to RESA 2 and 3, but still contribute positively to sediment transport, resulting in a low net positive effect.
B8. Changes to Water Circulation and Quality	B8.1. Potential impact on water circulation within the Inner Harbour.	<ul style="list-style-type: none"> Extension on east side may inhibit circulation of flow in the south part of the inner harbour, increasing hydraulic residence time and making water quality slightly worse. Conversely, this may very slightly improve near-shore water quality of the inner harbour. Overall, slightly negative impacts which can be considered negligible. 	<ul style="list-style-type: none"> Extension on east side may inhibit circulation of flow in the south part of the inner harbour, increasing hydraulic residence time and making water quality slightly worse. Conversely, this may very slightly improve near-shore water quality of the inner harbour. Overall, slightly negative impacts which can be considered negligible. 	<ul style="list-style-type: none"> Extension on east side may inhibit circulation of flow in the south part of the inner harbour, increasing hydraulic residence time and making water quality slightly worse. Conversely, this may very slightly improve near-shore water quality of the inner harbour. Overall, slightly negative impacts which can be considered negligible. 	<ul style="list-style-type: none"> Erosion and Sediment Control Plan for the work site shall be developed and implemented prior to the start of construction and shall be inspected and maintained during all phases of construction and especially following precipitation. 	<ul style="list-style-type: none"> RESA 1, 2 and 3 are all equally moderately preferred. While any expansion of the landmass to the east could affect water circulation in the small part of the harbour in the 'shadow' of the landmass (as currents flow through the harbour from the Western Channel), AECOM's 3D modeling of the harbour flows (2018) has indicated that this effect is minimal. Additionally, these alternatives may provide some potential for localized improvements in near-shore water quality. No net effect on water circulation within the Inner Harbor is anticipated from any of three alternatives.
B8. Changes to Water Circulation and Quality	B8.2. Potential temporary impact associated with sedimentation and erosion during construction.	<ul style="list-style-type: none"> There is a risk of revetment core material being damaged by wave action after it has been placed and before it has armoured. Placing stone material in the water will cause turbidity due to the fines mixing with the stone. Rain and overtopping waves or wave spray can cause surface erosion of fine materials within a construction site. Any in-water construction activity has the potential to exacerbate any turbidity issues. 	<ul style="list-style-type: none"> There is a risk of revetment core material being damaged by wave action after it has been placed and before it has armoured. Placing stone material in the water will cause turbidity due to the fines mixing with the stone. Rain and overtopping waves or wave spray can cause surface erosion of fine materials within a construction site. Any in-water construction activity has the potential to exacerbate any turbidity issues. 	<ul style="list-style-type: none"> There is a risk of revetment core material being damaged by wave action after it has been placed and before it has armoured. Placing stone material in the water will cause turbidity due to the fines mixing with the stone. Rain and overtopping waves or wave spray can cause surface erosion of fine materials within a construction site. Any in-water construction activity has the potential to exacerbate any turbidity issues. 	<ul style="list-style-type: none"> Erosion and Sediment Control Plan for the work site shall be developed and implemented prior to the start of construction and shall be inspected and maintained during all phases of construction and especially following precipitation. 	<ul style="list-style-type: none"> All in-water works present risk of sedimentation, but risk may be managed to a reasonable degree with appropriate construction means and methods, to be confirmed during detailed design. Erosion and sedimentation risk for each alternative is the same. Provided that the erosion and sediment control plan is adhered to and adjusted when necessary, and proper control measures are in place at all times, all three alternatives are expected to have no net effect.
B9. Groundwater Resources	B9.1. Potential impact to groundwater resources (Highly vulnerable Aquifer, Intake Protection Zone, Source Protection Area, etc.).	<ul style="list-style-type: none"> Located within Highly Vulnerable Aquifers, with Intake Protection Zone 2 near the study area. Minimal airside improvements, therefore less potential need for dewatering during construction, less potential for groundwater contamination during construction. If dewatering is required, it is expected to be highly localized and will be compliant with regulatory requirements. 	<ul style="list-style-type: none"> Located within Highly Vulnerable Aquifers, with Intake Protection Zone 2 near the study area. Pavement structures built above water table, minimizing the need for dewatering, and potential risk of groundwater contamination. If dewatering is required, it is expected to be highly localized and will be compliant with regulatory requirements. 	<ul style="list-style-type: none"> Located within Highly Vulnerable Aquifers, with Intake Protection Zone 2 near the study area. Pavement structures built above water table, minimizing the need for dewatering during construction, and potential risk for groundwater contamination. If dewatering is required, it is expected to be highly localized and will be compliant with regulatory requirements. 	<ul style="list-style-type: none"> Any local dewatering must comply with the Ministry of the Environment, Conservation and Parks permits and approvals in accordance with the Environmental Activity Section Registry and will meet regulatory requirements for daily volumes and dewatering effluent treatment/disposal. 	<ul style="list-style-type: none"> All alternatives are within Highly Vulnerable Aquifers, with Intake Protection Zone 2 near the study area. The potential need for localized dewatering and risk of groundwater contamination may be mitigated with engineered measures, and any potential dewatering will comply with regulatory dewatering requirements. RESA 1 is slightly preferred over RESA 2 and 3 because it has less potential need for dewatering during construction; however, provided that the regulatory requirements will be followed and mitigation measures are implemented, no net effect on groundwater resources is anticipated from any of the three RESA alternatives.

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B10. Stormwater and Drainage	B10.1. Potential to impact on flooding and potential to reduce risk.	<ul style="list-style-type: none"> RESA 1 provides breakwater structures on both the east and west, which help shelter the landmass from wave action and ice; however, it does not address the low elevation of Taxiway D, meaning the risk of flooding remains. 	<ul style="list-style-type: none"> RESA 2 increases the elevation of Taxiway D mitigating flood risk and provides breakwater structures on both the east and west, which help shelter the landmass from wave action and ice. 	<ul style="list-style-type: none"> RESA 3 increases the elevation of Taxiway D, mitigating flood risk, and provides breakwater structures on both the east and west, which help shelter the landmass from wave action and ice. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> RESA 2 and 3 are most preferred because they mitigate flood risk by elevating Taxiway D. Therefore, they will have moderate net positive effect. RESA 1 is neutral and considered moderately preferred in comparison with RESA 2 and 3 as it does not address the flood vulnerability of Taxiway D. RESA 1 has no net effect.
	B10.2. Potential impact to stormwater quantity and quality.	<ul style="list-style-type: none"> RESA will be a combination of paved surface with turf. The paved surface area is approximately equal to existing pre-threshold conditions, resulting in neutral impact to quality of runoff. Breakwater constructed of permeable materials, resulting in neutral impact to quality of runoff. Flat slopes (0 -1.5%) – design maximizes water infiltration. 	<ul style="list-style-type: none"> RESA will be a combination of paved surface with turf. The paved surface area is approximately equal to existing pre-threshold conditions, resulting in neutral impact to quality of runoff. Breakwater constructed of permeable materials, resulting in neutral impact to quality of runoff. Flat slopes (0-1.5%) design maximizes water infiltration. Taxiways realignments are considered neutral assuming the decommissioning of old taxiways. 	<ul style="list-style-type: none"> RESA will be a combination of paved surface with turf. The paved surface area is approximately equal to existing pre-threshold conditions, resulting in neutral impact to quality of runoff. Breakwater constructed of permeable materials, resulting in neutral impact to quality of runoff. Introduces a longer airside gravel laneway which is assumed to have permeable surfaces, helping reduce the runoff potential. Taxiways realignments are considered neutral assuming the decommissioning of old taxiways. Flat slopes (0-1.5%) design maximizes water infiltration. 	<ul style="list-style-type: none"> A detailed grading plan will be developed during detailed design, which will align with existing drainage patterns and airfield stormwater management infrastructure to the extent possible. Stormwater will be collected, treated and discharged in compliance with the applicable legislated airfield stormwater management requirements. 	<ul style="list-style-type: none"> RESA construction will increase amount of turf off end of runways, resulting in neutral impact to quality of water run-off. Per qualitative assessment, expect quantity of run-off to be relatively neutral in RESA 1, 2 and 3 given the permeability of surfacing and flat slopes (0.5-1.5%) which maximizes water infiltration. With implementation of appropriate grading and drainage design, alongside operational adherence to legislated airfield stormwater management requirements, all three alternatives are expected to have no net effect on stormwater quantity and quality.
B11. Excess Soil and Sediments	B11.1. Potential to encounter contaminated soil and sediment and need for offshore sediment dredging and disposal.	<ul style="list-style-type: none"> There is a potential to encounter offshore soil and sediment contamination. Low potential for dredging disposal on the east and west RESA. 	<ul style="list-style-type: none"> There is a potential to encounter offshore soil and sediment contamination. Low potential for dredging disposal on the east and west RESA. 	<ul style="list-style-type: none"> There is a potential to encounter offshore soil and sediment contamination. Low potential for dredging disposal on the east and west RESA. 	<ul style="list-style-type: none"> Efforts should be made to minimize the displacement of sediment. Silt containment or curtains should be used to prevent sediment from migrating into nearby water bodies. Leak-proof containment should be implemented for liquid soils prior to processing to prevent spills. The management of liquids should be implemented to control and properly handle any liquid waste generated during construction. The Erosion and Sediment Control Plan should be tailored to meet construction requirements following identification of risks. Key objectives will include limiting soil disturbance, minimizing exposure, stabilizing surfaces, and controlling sediment displacement through adaptive measures to weather and site conditions. 	<ul style="list-style-type: none"> All alternatives have potential to encounter soil and sediment contamination and/or requiring dredging due to introduction of landmass and breakwaters. Provided that appropriate avoidance and mitigation measures will be implemented, all three alternatives are expected to have no net effect.

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C. Socio-Economic						
C1. Use and Enjoyment of Residential Properties	C1.1. Potential consequences for residents' use and enjoyment of their property (indicators considered are airport operational levels and potential benefits to residents as a result of design elements).	<ul style="list-style-type: none"> No change in use and enjoyment of residential properties given airport operations (flight numbers, frequency, times etc.) will remain consistent with current operations. 	<ul style="list-style-type: none"> While airport operations (flight numbers, frequency, times etc.) will remain consistent, potential for modest increases in use and enjoyment of residential properties due to modifications to Taxiway B and Taxiway D, which aim to reduce taxi times and associated emissions. 	<ul style="list-style-type: none"> While airport operations (flight numbers, frequency, times etc.) will remain consistent, potential for modest increases in use and enjoyment of residential properties during the operation from several improvements: <ul style="list-style-type: none"> - Modifications to Taxiway B and Taxiway D, reducing taxi times, associated emissions. - A noise wall to mitigate aircraft noise while on the ground. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> As all RESA alternatives have no change in airport operations (flight numbers, frequency, times etc.) and therefore no additional corresponding negative impacts (e.g. noise and air quality), alternatives are ranked by potential benefits they deliver for residents to better use and enjoy their properties. RESA 3 is the most preferred reducing noise from taxiway operations (for some receptors) and air emissions, resulting in a net positive effect. RESA 2 is moderately preferred reducing air emissions, resulting in a net positive effect. RESA 1 is less preferred as it does not provide any reduction on noise or air emissions, and has no net effect.
C2. Use and Enjoyment of Recreational Spaces	C2.1. Potential consequences for recreational uses on the Toronto Islands and within the Harbour (considers permanent change or disruption to use and enjoyment of current recreational spaces on mainland, Island and in harbour) and benefits to recreational users as a result of design elements).	<ul style="list-style-type: none"> No permanent change or disruption to land-based recreational spaces as there are no changes in airport operations (flight numbers, frequency, times etc.). While Marine Exclusion Zone area remains unchanged, the public's enjoyment of the harbour and waterfront may be negatively affected as a result of the infill on both west and east ends. 	<ul style="list-style-type: none"> No permanent change or disruption to land-based recreational spaces as there are no changes in airport operations (flight numbers, frequency, times etc.). While Marine Exclusion Zone area remains unchanged, the public's enjoyment of the harbour and waterfront may be negatively affected as a result of the infill on both west and east ends. 	<ul style="list-style-type: none"> No permanent change or disruption to land-based recreational spaces as there are no changes in airport operations (flight numbers, frequency, times etc.). While Marine Exclusion Zone area remains unchanged, the public's enjoyment of the harbour and waterfront may be negatively affected as a result of the infill on both west and east ends. 	<ul style="list-style-type: none"> Negative effects may be indirectly mitigated by community initiatives to enhance other areas of the waterfront important to recreational users. Possible enhancements to recreational use and enjoyment may be achieved in collaboration with environmental and community groups, including initiatives for clean water along the waterfront and sand renourishment for Hanlan's Point Beach . 	<ul style="list-style-type: none"> All RESA alternatives have some negative impact due to some infill, so ranking is based strictly on the amount of infill required. RESA 1 is most preferred as it requires the minimal landfill, preserving public enjoyment of the water. RESA 2 is less preferred as it requires more infill than RESA 1 but less than RESA 3. RESA 3 is least preferred as it requires the most infill. Some recreational users may experience net negative effects due to changes in viewshed related to lake infill across all three alternatives, with the net negative effect increasing incrementally from RESA 1 to RESA 3 due to the amount of lakefill.
C3. Use of Public Facilities, Services and Institutions	C3.1. Potential consequences for use and access to public facilities, emergency services and institutions (indicators considered are any permanent change to use of public facilities, services, and institutions).	<ul style="list-style-type: none"> No change in use of public facilities, services, institutions given airport operations (flight numbers, frequency, times etc.) will remain consistent and no change in Marine Exclusion Zone means no change in access/use of the harbour for Emergency Medical Services or other services. 	<ul style="list-style-type: none"> No change in use of public facilities, services, institutions given airport operations (flight numbers, frequency, times etc.) will remain consistent and no change in Marine Exclusion Zone means no change in access/use of the harbour for Emergency Medical Services or other services. 	<ul style="list-style-type: none"> No change in use of public facilities, services, institutions given airport operations (flight numbers, frequency, times etc.) will remain consistent and no change in Marine Exclusion Zone means no change in access/use of the harbour for emergency medical services or other services. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> None of the RESA alternatives change the use of or access to public facilities, services, institutions given airport operations (flight numbers, frequency, times etc.) will remain consistent and there is no proposed change in the Marine Exclusion Zone, no change in access or use of the harbour for Emergency Medical Services or other services such as water-taxies or ferries. Given the neutral impact across all alternatives, use and access to Public Services and Institutions is not a differentiating factor, and no net effect is anticipated.

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C4. Impacts on Air Quality	C4.1. Potential impacts on air quality due to physical or operational changes.	<ul style="list-style-type: none"> Overall operational characteristics and emission sources remain unchanged, therefore no additional impact to air quality from aircraft operation is expected from regular operations. Additional air quality emissions are anticipated from longer new airside road. Construction will result in short-term, highly localized construction related air emissions (dust and combustion emissions), which are infrequent, and primarily overnight. Lowest negative impact during construction for short-term due to a smallest footprint, shorter construction duration (estimated 18 months), and lower expected emissions. 	<ul style="list-style-type: none"> Positive impact from Taxiway B and Taxiway D improvements, as shorter taxi time and reduced aircraft emissions are expected. Additional air quality emissions are anticipated from longer new airside road. Construction will result in short-term, highly localized construction related air emissions (dust and combustion emissions), which are infrequent, and primarily overnight. Second highest negative impact during construction for short-term due to second largest footprint, longer construction duration (estimated 21 months), and elevated expected emissions. 	<ul style="list-style-type: none"> Positive impact from Taxiway B and Taxiway D improvements, as shorter taxi times and reduced aircraft emissions are expected. Additional air quality emissions are anticipated from longer new airside road; however, the inclusion of an unrestricted access road for vehicle crossings could reduce idling emissions and contribute to air quality improvements. Construction will result in short-term, highly localized construction related air emissions (dust and combustion emissions), which are infrequent, and primarily overnight. Highest negative impact during construction for short-term due to largest footprint, longest construction duration (estimated 24 months), and highest expected emissions compared to other alternatives. 	<ul style="list-style-type: none"> Develop and implement an Air Quality Management Plan during the detailed design for the duration of the construction phase, which includes practices to minimize combustion emissions and fine particulate release from mobile equipment, materials handling, and wind erosion. Optimize vehicle routing along the airside perimeter road by limiting routine use to the east side only, where feasible. This would reduce total travel distances and associated on-road vehicle emissions. Implement idling reduction programs to limit vehicle emissions, particularly for trucks, tugs, and other vehicles operating at Billy Bishop Toronto City Airport and along the restricted airside perimeter road. 	<ul style="list-style-type: none"> RESA 1 is the least preferred alternative during operation due to an increase in on-road vehicle emissions. Without any emission reductions from taxiway improvements, this alternative has low net negative effects during operation. RESA 2 is moderately preferred during operation, offering positive effect associated with some air emission reductions due to shorter taxi time. However, it does not include the additional emission-reduction measures (reduced idling from the airside road) proposed in RESA 3. Therefore, for on-road vehicles it results in greater emissions due to the extended distance traveled associated with the new perimeter route. RESA 3 is the most preferred alternative due to its potential to reduce taxiway emissions and on-road idling during operation, resulting in a low-moderate positive net effect. All alternatives have negative short-term impact during construction, which will be mitigated through air quality management plan during the detailed design. Therefore, all alternatives will have low net negative effect during construction.
C5. Anticipated Noise Levels	C5.1. Changes to the noise levels due to potential physical and operational changes.	<ul style="list-style-type: none"> Aircraft flightpaths and resulting noise impacts remain unchanged during operations. The noise exposure forecast contours for airborne aircraft show that noise levels around the airport are within the limits set by Tripartite Agreement, indicating they meet the agreed standards to help limit disruption for the community. 	<ul style="list-style-type: none"> Runway 26 localizer relocated; with no notable difference in noise exposure forecasts at noise sensitive receptors. The noise exposure forecast contours for airborne aircraft show that noise levels around the airport are within the limits set by Tripartite Agreement, indicating they meet the agreed standards to help limit disruption for the community. 	<ul style="list-style-type: none"> Runway 26 localizer relocated; with no notable difference in noise exposure forecasts at noise sensitive receptors. The noise exposure forecast for airborne aircraft show that noise levels around the airport are within the limits set by Tripartite Agreement, indicating they meet the agreed standards to help limit disruption for the community. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> All alternatives are equally preferred, as no notable changes to the noise levels are anticipated due to potential physical and operational changes. RESA 2 and 3 involve relocating the localizer for Runway 26 which results in the changes to the flight path approach of some airplanes during adverse weather conditions. However, numerical noise modelling revealed no notable changes to the noise levels due to this change. No net effect is anticipated from any of three alternatives.
C5. Anticipated Noise Levels	C5.2. Potential changes to the anticipated noise levels from the aircraft on the ground (relocation of taxiways and installation of noise barriers).	<ul style="list-style-type: none"> Operational characteristics and noise levels during operations will not be changing. 	<ul style="list-style-type: none"> Change in taxiway operations noise levels at noise sensitive receptors is predicted to be negligible. 	<ul style="list-style-type: none"> Change in taxiway operations noise levels at noise sensitive receptors is predicted to range from insignificant increase to notable decrease with noise walls (6-8 m height). 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> With no changes to operational characteristics and noise levels during operations, RESA 1 will have no net effect. With marginal noise level reductions from taxiway operations at several sensitive receptors, RESA 2 is anticipated to have marginal net effect. RESA 3 is preferred as it is expected to result in significant (greater than 5 decibels) noise reductions in taxiway operations noise levels at several sensitive receptors. The overall net effect is anticipated to range from negligible to positive.

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	C5.3. Overall anticipated noise levels from construction.	<ul style="list-style-type: none"> Construction noise impacts at all receptor locations are predicted to be negligible. Noise emissions during construction will be short-term, frequent and highly localized, with efforts made to minimize them where possible, resulting in only temporary negative impacts. Smallest footprint will result in shorter period (18 months) of potential noise disturbance compared to RESA 2 and RESA 3. 	<ul style="list-style-type: none"> Construction sound levels are only predicated to exceed the existing night-time average background at the location of two points of two receptors during construction Stage 3 (onshore work only). The difference on sound level is predicted to be potentially negligible to marginal. Noise emissions during construction will be short-term, frequent and highly localized, with efforts made to minimize them where possible, resulting in only temporary negative impacts. Second largest footprint will result in longer period (21 months) of potential noise disturbance compared to RESA 1. 	<ul style="list-style-type: none"> Construction sound levels are only predicated to exceed the existing night-time average background at the location of two points of receptors during construction Stage 3 (onshore work only). The difference on sound level is predicted to be potentially negligible to marginal. Noise emissions during construction will be short-term, frequent and highly localized, with efforts made to minimize them where possible, resulting in only temporary negative impacts. Will result in longest period (24 months) of potential noise disturbance compared to other alternatives due to largest footprint. 	<ul style="list-style-type: none"> Develop construction noise management plan for the Project to include efforts to minimize community impacts by employing 'best practices for noise and sound induced vibration mitigation'. Maintain equipment in an operating condition that prevents unnecessary noise, including but not limited to, effective muffler systems, properly secured components and lubrication of moving parts. Restrict idling of equipment to the minimum necessary to perform the specific work. Ensure vehicles employed continuously on site for extended period of time (two days or more) are fitted with broad-band sound back-up alarms, rather than tonal alarms. Avoid unnecessary revving of engines and switch off equipment when not required (do not idle). Minimize drop heights of materials. Use construction equipment compliant with noise level specifications in the Ministry of the Environment, Conservation and Parks publications NPC-115 and NPC-118. 	<ul style="list-style-type: none"> Noise emissions during construction will be short-term, frequent and highly localized, with efforts made to minimize them where possible, resulting in only temporary negative impacts. Construction of alternatives will involve similar equipment and result in similar noise emissions. RESA 1 is most preferred, as its noise impacts during construction are predicted to be negligible at all receptor locations. Its smaller footprint also results in a shorter duration of disturbance, with a negligible net negative effect during construction. Both RESA 2 and RESA 3 will have negligible to marginal net negative effect during on-shore construction. However, RESA 2 is preferred over RESA 3 as it has a shorter construction duration. Mitigation measures may reduce the extent of noise impacts on potentially affected receptors.
						
C6. Public Health	C6.1. Impact of changes in air quality and noise levels on public health.	<ul style="list-style-type: none"> No significant public health effects are expected due to generally unchanged operational characteristics (flight numbers, frequency, times etc.). Noise levels during operation will not be changing. Additional annual greenhouse gas emissions are anticipated from longer new airside road. Noise from overnight construction activity may disturb the sleep of nearby residents. With the smallest footprint will result in shortest period of potential noise disturbance and air emissions compared to other alternatives. 	<ul style="list-style-type: none"> No significant public health effects are expected due to generally unchanged operational characteristics (flight numbers, frequency, times etc.). Noise levels during operation will not be changing. Additional annual greenhouse gas emissions are anticipated from longer new airside road. Improvements to Taxiway B and Taxiway D are anticipated to have a positive impact, with shorter taxi time and reduced aircraft emissions. Noise from overnight construction activity may disturb the sleep of nearby residents. Second largest footprint will result in longer period of potential noise disturbance and air emissions compared to RESA 1. 	<ul style="list-style-type: none"> No significant public health effects are expected due to generally unchanged operational characteristics (flight numbers, frequency, times etc.). Additional greenhouse gas emissions are anticipated from longer new airside road; however, the inclusion of an unrestricted access road for vehicle crossings could partially offset this increase by eliminating idling emissions. Improvements to Taxiway B and Taxiway D are expected to have a positive impact, with shorter taxi time and reduced aircraft emissions. Provision of noise walls in RESA 3 leads to a reduction in taxiway operations noise levels at most assessed noise-sensitive receptors. Noise from overnight construction activity may disturb the sleep of nearby residents. Will result in longest period of potential noise disturbance and air emissions compared to other alternatives due to largest footprint. 	<ul style="list-style-type: none"> Refer to mitigation measures provided above for C4.1 and C5.3. 	<ul style="list-style-type: none"> RESA 3 is the most preferred alternative during operation as it combines reduced noise levels and less air emissions for overall health benefits during operation. However, its longest construction duration will result in the longest period of disturbed sleep for residents, and highest construction emissions. RESA 2 is moderately preferred as it offers moderate improvements during operation but lacks RESA 3's operational benefits. During construction, it has the second highest short-term negative impact due to its longer estimated duration (21 months). RESA 1 is neutral during operation as it does not introduce operational improvements. It is the most preferred alternative during construction as its shortest duration minimizes construction-related impacts on public health. Overall, overnight construction noise may disrupt the sleep of nearby residents, and all alternatives have short-term negative impacts on air emissions during construction. However, RESA 3 is the most preferred alternative due to its long-term benefits of reduction in air emissions and taxiway noise levels during operation.
						

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C7. Maneuverability of Vessels and Navigation Safety	C7.1 Potential changes of waves, current and water depth (sedimentation in navigation area) along Western Channel, entrance to Western Channel and, east RESA area.	<ul style="list-style-type: none"> No change to Marine Exclusion Zone. The approximately 55 m expansion at the west RESA would reduce the width between the RESA and Ontario Place East Island, which could potentially affect waves and current within the Western Channel and its approach. No impact to large recreational boats is anticipated. Operators of small boats including paddle boats and kayaks may need to adjust to changed wave conditions. The new rock breakwater potentially reduces wave reflection, allowing for possible design optimization to mitigate impacts on vessels. No impact to boaters in the Inner Harbour except for moderately low impact on the water taxi and Hanlan's Point Ferry and other vessels that use docks south of the east RESA and may need to adjust their navigation path. 	<ul style="list-style-type: none"> No change to Marine Exclusion Zone. The approximately 80 m expansion the west RESA would reduce the width between the RESA and Ontario Place East Island, which could potentially affect waves and current within the Western Channel and its approach. No impact to large recreational boats is anticipated. Operators of small boats including paddle boats and kayaks may need to adjust to changed wave conditions. The new rock breakwater potentially reduces wave reflection, allowing for possible design optimization to mitigate impacts on vessels. No impact to boaters in the Inner Harbour except for moderately low impact on the water taxi and Hanlan's Point Ferry and other vessels that use docks south of the east RESA and may need to adjust their navigation path. 	<ul style="list-style-type: none"> No change to Marine Exclusion Zone. The approximately 80 m expansion from the west RESA would reduce the width between the RESA and Ontario Place East Island, which could potentially affect waves and current within the Western Channel and its approach. No impact to large recreational boats is anticipated. Operators of small boats including paddle boats and kayaks may need to adjust to changed wave conditions. The new rock breakwater potentially reduces wave reflection, allowing for possible design optimization to mitigate impacts on vessels. No impact to boaters in the inner harbour except for moderate impact on the water taxi and Hanlan's Point Ferry and other vessels that use docks south of the east RESA and may need to adjust their navigation path. 	<ul style="list-style-type: none"> Notifications regarding new lakefill should be sent to boating communities. Navigation markers should be moved to indicate the narrower entrance. New navigation lights should be installed to mark the edge of the landmass within the east and west Marine Exclusion Zone. Navigation markers and navigation lights will need to be more numerous or brighter with the larger landmass expansion in RESA 2 and even more so in RESA 3. 	<ul style="list-style-type: none"> Currently Marine Exclusion Zone restricts navigation channel widths for airport operations. None of the alternatives extend past the Marine Exclusion Zone. All three alternatives have moderately negative impact as the introduction of structures in the Marine Exclusion Zone will change wave conditions/patterns outside of the Marine Exclusion Zone. The new rock breakwater could potentially reduce wave reflection, allowing for possible design optimization to mitigate impacts on vessels. Considering that there will be no changes to the Marine Exclusion Zone MEZ boundary, no impact on vessel maneuverability is anticipated, and the net negative effect is expected to be negligible.
	C7.2 Changes to ability of boats to navigate the Western Channel and Inner Harbour during construction	<ul style="list-style-type: none"> No construction activities beyond Marine Exclusion Zone. There might be some temporary changes in the Western Channel and around the east RESA during in-water construction activities occurring during night-time. Night-time boaters will be advised to adjust to the activity around the RESAs. Some navigation lights that the boaters use may not be visible with the construction barges. 	<ul style="list-style-type: none"> No construction activities beyond Marine Exclusion Zone. There might be some temporary changes in the Western Channel and around the east RESA during in-water construction activities occurring during night-time. Night-time boaters will be advised to adjust to the activity around the RESAs. Some navigation lights that the boaters use may not be visible with the construction barges. 	<ul style="list-style-type: none"> No construction activities beyond Marine Exclusion Zone. There might be some temporary changes in the Western Channel and around the east RESA during in-water construction activities occurring during night-time. Night-time boaters will be advised to adjust to the activity around the RESAs. Some navigation lights that the boaters use may not be visible with the construction barges. 	<ul style="list-style-type: none"> Notifications should be sent out to boating communities in advance of the construction. Temporary signage should be installed during construction. Commercial ferries and private vessels may adjust their path to avoid getting close to the construction. Construction lighting should follow the guidance for lighting around waterways. Temporary navigation lights should be placed at the end of the construction area to mark the placement of new material. 	<ul style="list-style-type: none"> All alternatives are considered to have relatively negative impact during construction. All construction activities will stay within the Marine Exclusion Zone, with potential for some temporary night-time adjustments in the Western Channel. However, with the implementation of mitigation measures, no significant net negative effect is anticipated from any of the alternatives.

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C8. Planning Policies	C8.1. Conformity to City of Toronto planning policies.	<ul style="list-style-type: none"> Consistent with policy direction of the City of Toronto Official Plan including policies related to Heritage Conservation, and Natural Heritage Features including policies related to Natural Heritage System, Environmentally Significant Areas, and Provincially Significant Natural Heritage Features; Lakefilling in Lake Ontario; Site and Area Specific Policies 192 and 194. 	<ul style="list-style-type: none"> Incorporates the policy direction of the City of Toronto Official Plan policies on Heritage Conservation, and Natural Heritage Features including Natural Heritage System, Environmentally Significant Areas, and Provincially Significant Natural Heritage Features. May require an amendment to Official Plan for lakefilling in Lake Ontario, and altering the delineated boundary of the airport as designated in the Site and Area Specific Policies 192 and 194. 	<ul style="list-style-type: none"> Incorporates the policy direction of the City of Toronto Official Plan policies on Heritage Conservation, and Natural Heritage Features including Natural Heritage System, Environmentally Significant Areas, and Provincially Significant Natural Heritage Features. May require an amendment to Official Plan for lakefilling in Lake Ontario, and altering the delineated boundary of the airport as designated in the Site and Area Specific Policies 192 and 194. Plan. 	<ul style="list-style-type: none"> The Natural Heritage System to be impacted by all three RESA alternatives have been recognized, and all direct and indirect potential impacts have been assessed in the Natural Heritage Effects Assessment Report in Appendix B. For all impacts, mitigation measures, including compensation and enhancement measures have been identified to minimize adverse impacts and where possible, restore and enhance the natural heritage system. Commitments to completing compensation and/or enhancement/restoration measures proportional to the area of impact for each RESA alternative have been made and the details of such will be developed and confirmed during detail design with the City of Toronto, Ports Toronto and appropriate regulatory agencies. Where landmass expansion requires lakefilling and alters the delineated boundary of the Toronto Islands (as designated in Site and Area Specific Policies 192 and 194), an Official Plan Amendment may be required to update the land use to reflect the adjusted airport boundary; clarify that the new landmass is reserved for essential aviation and servicing infrastructure only; and confirm no expansion of flight operations or development unrelated to aviation safety will occur. 	<ul style="list-style-type: none"> RESA 1 is preferred over RESA 2 and RESA 3, as it complies with existing municipal policies and is recognized by the City as qualifying essential public works required to approve lakefill projects. RESA 2 and 3 may require amendments to Official Plan due to landmass expansion.
	C8.2. Conformity with the current Airport Master Plan, Airport's Environmental, Social and Governance Priorities, and Airport Strategic Plans.	<ul style="list-style-type: none"> Does not support the key priorities and guiding principles of the current Airport Master Plan, particularly in terms of operational efficiency, environmentally sustainable operations, infrastructure improvement and community benefits. 	<ul style="list-style-type: none"> Moderately supports with the key priorities and guiding principles of the current Airport Master Plan for operational efficiency and infrastructure improvement but offers less community and social benefits compared with RESA 3. 	<ul style="list-style-type: none"> Delivers additional operational efficiencies, infrastructure and community benefits (i.e., noise walls and utility conduit), exceeding the key priorities of the airport's current master plan, aligning with its broader strategic plans. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> RESA 1 does not support key priorities of the Airport's current Master Plan and broader strategic plans, and it has no effect. RESA 2 offers moderate support and some benefits but falls short in community benefit compared to RESA 3. RESA 3 is the most preferred, as it exceeds the key priorities and guiding principles of the current Airport master plan, aligning with its broader strategic plans.
C9. Existing and Planned Land Uses	C9.1. Potential impacts to current land use and potential future developments as per currently permitted uses.	<ul style="list-style-type: none"> No impact on areas planned or approved for future development in the Project Study Area. 	<ul style="list-style-type: none"> No impact on areas planned or approved for future development in the Project Study Area. 	<ul style="list-style-type: none"> No impact on areas planned or approved for future development in the Project Study Area. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> None of the alternatives impact any areas of planned or approved future development in the Project Study Area, and no effect is anticipated.
C10. Traffic on Mainland	C10.1. Potential impact on traffic movement during operations.	<ul style="list-style-type: none"> Traffic on mainland will not be affected by operations as airport activity (number of passengers, flights numbers, frequency, and schedules) remain unchanged. 	<ul style="list-style-type: none"> Traffic on mainland will not be affected by operations as airport activity (number of passengers, flights numbers, frequency, and schedules) remain unchanged. 	<ul style="list-style-type: none"> Traffic on mainland will not be affected by operations as airport activity (number of passengers, flights numbers, frequency, and schedules) remain unchanged. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> All three alternatives are equally preferred given that traffic on the mainland is not anticipated to change as a result of operations; and there will be no net effect.

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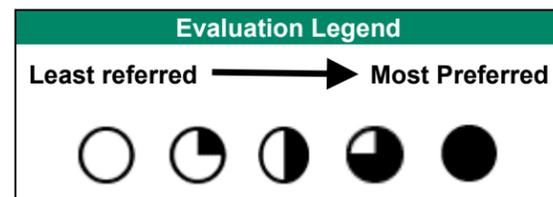
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	C10.2. Potential impact on traffic movement during construction.	<ul style="list-style-type: none"> Anticipated that materials will be barged to site to meet construction schedule and site restrictions, effectively minimizing road traffic and congestion. Shortest construction duration, off-peak construction works (estimated 18 months). 	<ul style="list-style-type: none"> Anticipated that materials will be barged to site to meet construction schedule and site restrictions, effectively minimizing road traffic and congestion. Second-longest construction duration, off peak construction works (estimated 21 months). 	<ul style="list-style-type: none"> Anticipated that materials will be barged to site to meet construction schedule and site restrictions, effectively minimizing road traffic and congestion. Longest construction duration, off-peak construction works (estimated 24 months). 	<ul style="list-style-type: none"> A detailed assessment of anticipated traffic impacts during construction works is required during the detailed design stage. Measures should be implemented to manage construction traffic effectively, minimizing disruptions to existing traffic and pedestrian flows. Adherence to the City of Toronto's traffic by-laws will be considered to ensure that construction activities do not unduly affect the surrounding traffic network, road users and local residents. 	<ul style="list-style-type: none"> During construction, all alternatives benefit from barging of the construction materials directly to the site, which helps minimize construction related traffic congestion compared to relying solely on ferry operations. RESA 1 is the most preferred during construction due to its shortest duration, resulting in the least impact. RESA 2 and 3 are moderately and least preferred, respectively, due to their longer construction timelines and the associated traffic congestion. Compliance with the City's by-laws and the implementation of a traffic management plan are expected to minimize net negative effects to a negligible level.
D. Climate Change						
D1. Carbon Footprint	D1.1. Expected change in greenhouse gas emissions (carbon dioxide, nitrous oxide, and methane).	<ul style="list-style-type: none"> Annual greenhouse gas emissions from on-road vehicle operations are projected to increase due to longer travel distances from rerouted vehicles to the new airside road, with current idling times still present. No changes to greenhouse gas emissions associated with the taxiways. 	<ul style="list-style-type: none"> Annual greenhouse gas emissions from on-road vehicle operations are projected to increase due to longer travel distances from rerouted vehicles to the new airside road, with current vehicle idling times still present. Improvements to Taxiway B and Taxiway D are expected to shorten taxi time, reducing aircraft greenhouse gas emissions. 	<ul style="list-style-type: none"> Annual greenhouse gas emissions from on-road vehicle operations are projected to increase due to longer travel distances from rerouted vehicles to the new airside perimeter road; however, the unrestricted airside road eliminates current vehicle idling time which further reduces greenhouse gas emissions. Improvements to Taxiway B and Taxiway D are expected to shorten taxi time, reducing aircraft greenhouse gas emissions. 	<ul style="list-style-type: none"> Implement idling reduction programs to limit vehicle emissions, particularly for trucks, tugs, and other vehicles operating at Billy Bishop Toronto City Airport and along the restricted airside perimeter road. Optimize vehicle routing along the airside perimeter road by limiting routine use to the east side only, where feasible. This would reduce total travel distances and associated on-road vehicle emissions. 	<ul style="list-style-type: none"> All three alternatives result in increased greenhouse gas emissions due to the extended distance traveled from the rerouting of vehicles to the airside perimeter road. However, the Project's greenhouse gas emissions contributions are negligible compared to the total Ontario Transportation 2021 carbon dioxide equivalent emissions, and the overall net negative effect is considered low. RESA 2 and RESA 3 decrease the greenhouse gas emissions (approximately 30%) due to improvements to taxiway operation (reduced taxi time). RESA 3 is the most preferred alternative due its dual benefits of reduced taxi times and additional reductions in vehicle idling emissions. RESA 2 offers similar taxiway operational improvements to RESA3, but without the added benefit of an unrestricted access road. RESA 1 is the least preferred due to its lack of operational improvements.
D2. Adaptability to climate change (stresses, increase in temperatures/he at waves and shocks, extreme weather events – e.g., July 16/24 storm)	D2.1. Level of preparedness including ability to respond to emergency situations (e.g., localized flooding).	<ul style="list-style-type: none"> The breakwater structures enhance the airport's adaptability to future climate conditions but will not provide the airport or other stakeholders with any additional preparedness. 	<ul style="list-style-type: none"> The breakwater structures enhance the airport's adaptability to future climate conditions. RESA 2 raises the elevation of Taxiway D, reducing flood risk and providing an additional adaptability measure. RESA 2 does not offer any additional preparedness benefits for the airport or other stakeholders. 	<ul style="list-style-type: none"> The breakwater structures enhance the airport's adaptability to future climate conditions. RESA 3 raises the elevation of Taxiway D, reducing flood risk and providing an additional adaptability measure. RESA 3 provides additional preparedness measures for climate conditions by including an unrestricted access road which would provide alternative access to the islands for other stakeholders if required in an emergency situation. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> The inclusion of airside road or utility reserves in RESA 3 would provide alternative unrestricted access to the islands by other stakeholders if required in an emergency situation. RESA 1 and 2 provide some adaptabilities to future climate conditions. RESA 2 provides partial benefit by offering some adaptability (increasing the elevation of Taxiway D) to future climate conditions. However, it still lacks preparedness measures of the unrestricted access roads that could be used by other stakeholders. RESA 3 provides a balanced approach, offering both adaptability and preparedness, albeit to a limited degree. All three alternatives are expected to result in positive net effects, with the degree of benefit incrementally increasing from RESA 1 through to RESA 3.
E. Cultural Environment						
E1. Marine Archaeology	E1.1. Potential for impact to marine archaeological resources related to lakefill.	<ul style="list-style-type: none"> No impact to marine archaeological resources is anticipated. 	<ul style="list-style-type: none"> No impact to marine archaeological resources is anticipated. 	<ul style="list-style-type: none"> No impact to marine archaeological resources is anticipated. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> All three alternatives are equally preferred in terms of marine archaeological impact, and have no negative net effect.
E2. Terrestrial Archaeology	E2.1. Potential for impact to terrestrial archaeological resources.	<ul style="list-style-type: none"> No impact to terrestrial archaeological resources is anticipated. 	<ul style="list-style-type: none"> No impact to terrestrial archaeological resources is anticipated. 	<ul style="list-style-type: none"> No impact to terrestrial archaeological resources is anticipated. 	<ul style="list-style-type: none"> No additional measures as the Project does not introduce negative effects. 	<ul style="list-style-type: none"> All three alternatives are equally preferred in terms of terrestrial archaeological impact, and have no negative net effect.

Note: Estimates of the Project footprint and impact areas are preliminary and will be confirmed as the design progresses.

Factor	Criteria	RESA 1 Minimum Landmass	RESA 2 Taxiway Improvements	RESA 3 Noise Wall and East Utility Conduit	Avoidance/ Mitigation/Compensation /Enhancement Measures	Rationale
E3. Cultural Heritage Resources	E3.1. Number and extent of cultural heritage resources, including structures and cultural heritage landscapes affected by construction and operations of RESA.	<ul style="list-style-type: none"> No impact on built heritage resources. Less sediment deposition is expected due to the shorter RESA extension on the west end (54 m), having less effect on long term sustainability along Hanlan's Point Beach, a potential cultural heritage landscape. 	<ul style="list-style-type: none"> No impact on built heritage resources. The longer landmass extension on the west end (82 m) means a greater influence on sediment transport and long term sustainability along Hanlan's Point Beach. 	<ul style="list-style-type: none"> No impact on built heritage resources. The longer landmass extension on the west end (82 m) mean a greater influence on sediment transport and long term sustainability along Hanlan's Point Beach. Potential impact to a portion of Hanlan's Point Beach Cultural Heritage Landscape (2,108.5 m²) during construction. 	<ul style="list-style-type: none"> Explore methods to facilitate access for construction personnel and machinery while completely avoiding temporary staging areas or conversion of Hanlan's Point Beach. Prioritize design solutions that minimize alterations to the natural landscape, ensuring that any proposed breakwater structure do not further disrupt the cultural heritage landscape valued by the Indigenous communities. If the above is not feasible, minimize direct and indirect impacts from land conversion and temporary staging by: <ul style="list-style-type: none"> Engage with Indigenous communities and other relevant stakeholders (i.e., City of Toronto, Friends of Hanlan's, etc.) when installing temporary fencing, establishing no-go zones on construction maps to delineate areas of the beach that must not be disturbed, and in the design and placement of breakwater structures. In instances where disturbance to Hanlan's Point Beach is unavoidable, restore the beach to its pre-construction condition upon completion of staging, including the reintroduction of native vegetation to enhance the area's ecological and cultural integrity. If the above noted measures are not feasible, minimize direct and indirect impacts from the new breakwater structures by: <ul style="list-style-type: none"> Engage with Indigenous communities and other relevant stakeholders (i.e., City of Toronto, Friends of Hanlan's, etc.) in the design and placement of breakwater structures. Explore breakwater design and materials that are sympathetic to the natural and cultural heritage of the waterfront valued by Indigenous communities, avoiding highly engineered, impermeable structures that further separate the water from the land. Engage with Indigenous communities to incorporate cultural markers to acknowledge the historical transformation of the landscape and the enduring connections of Indigenous communities to the site. 	<ul style="list-style-type: none"> None of RESA alternatives impact built heritage resources. RESA 3 will impact a portion of Hanlan's Point Beach (a potential cultural heritage landscape) during construction. This impact can be addressed during design and construction. The longer landmass extensions in RESA 2 and RESA 3 will have a greater effect on sediment transport, creating a barrier that leads to sediment deposition and potentially impacting the long-term sustainability of Hanlan's Point Beach. RESA 1, with its shorter extension on the west end, will have less impact on sediment transport and the beach's long-term sustainability. RESA 1 will have no net effect on Hanlan's Point Beach during construction, with some positive effect on its sustainability. RESA 3 has low net negative effect on Hanlan's Point Beach, with moderate positive effect on long-term sustainability of the beach. Overall, RESA 2 is slightly preferred over RESA 1 and RESA 3, as it has no impact on Hanlan's Point Beach during construction and its longer extension on the west side supports the long-term sustainability of the beach.
F. Cost and Constructability						
F1. Operation and Maintenance Costs	F1.1. Projected operations and maintenance costs.	<ul style="list-style-type: none"> Some additional maintenance associated with RESAs. No anticipated need for special equipment, nor special procedures. 	<ul style="list-style-type: none"> Some additional maintenance associated with RESAs, and a longer airside road. No anticipated need for special equipment, nor special procedures. Moderately increased time anticipated for inspection and maintenance related to increased airside hard surface infrastructure. 	<ul style="list-style-type: none"> Some additional maintenance associated with RESAs, a longer airside road and addition of a utility conduit. Noise wall will also require maintenance consideration. No anticipated need for special equipment, nor special procedures. Moderately increased time anticipated for inspection and maintenance related to increased airside hard infrastructure. 	<ul style="list-style-type: none"> Not applicable. 	<ul style="list-style-type: none"> RESA 1 is the most preferred due to its simplicity, low maintenance needs, and lack of specialized equipment, offering a minimal operational cost, followed by RESA 2 which provides slightly more infrastructure with additional maintenance requirements. RESA 3 introduces more complexity through the addition of a utility conduit and noise wall, but doesn't require specialized equipment, ranking

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Factor	Criteria	RESA 1 Minimum Landmass	RESA 2 Taxiway Improvements	RESA 3 Noise Wall and East Utility Conduit	Avoidance/ Mitigation/Compensation /Enhancement Measures	Rationale
						moderately preferred due to its increased operational time.
F2. Complexities including Agencies Approvals	F2.1. Extent of coordination with NAV CANADA airspace/marine radar land use approval program.	<ul style="list-style-type: none"> Only involves coordinating for the west breakwater. Engagement has confirmed breakwater will not impact airspace and electronic navigational aids. 	<ul style="list-style-type: none"> Coordination for west breakwater and relocating Localizer 26, which requires a somewhat greater level of co-ordination. Engagement has confirmed breakwater and Localizer 26 will not impact airspace and electronic navigational aids. 	<ul style="list-style-type: none"> Coordination for west breakwater and relocating Localizer 26, which requires a somewhat greater level of co-ordination. Engagement has confirmed breakwater and relocating Localizer 26 will not impact airspace and electronic navigation aids. 	<ul style="list-style-type: none"> Timely co-ordination with NAV CANADA is required for all alternatives due to regulatory requirements. 	<ul style="list-style-type: none"> All alternatives require NAV CANADA coordination by virtue of regulatory requirements. Any additional technical complexities associated with RESAs 2 and 3 are mitigated per pre-engagement feedback with NAVCANADA, and all relocation and coordination of this work is considered to be routine construction coordination.
	F2.2. Complexity associated with environmental permitting.	<ul style="list-style-type: none"> Potentially triggers Fisheries Act authorization, accompanied by an offsetting plan, or a letter of advice depending on the Fisheries and Oceans Canada's direction. Other Agency approvals and permits could be required. 	<ul style="list-style-type: none"> Potentially triggers Fisheries Act authorization, accompanied by an offsetting plan, or a letter of advice depending on the Fisheries and Oceans Canada's direction. Other Agency approvals and permits could be required. 	<ul style="list-style-type: none"> Potentially triggers Fisheries Act authorization, accompanied by an offsetting plan, or a letter of advice depending on the Fisheries and Oceans Canada's direction. Other Agency approvals and permits could be required. 	<ul style="list-style-type: none"> Timely co-ordination with regulatory agencies (Fisheries and Oceans Canada, Ministry of the Environment, Conservation and Parks, Ministry of Natural Resources, Environment and Climate Change Canada; and Transport Canada) is required for all alternatives due to regulatory requirements. 	<ul style="list-style-type: none"> All alternatives potentially trigger Fisheries Act authorization, accompanied by an offsetting plan, or a letter of advice depending on the direction from the Fisheries and Oceans Canada. All alternatives potentially require other agency review and approvals.
	F2.3. Construction complexity.	<ul style="list-style-type: none"> Moderate complexity due to constructing breakwaters on both sides. All construction work is anticipated to be completed during nightly airport closures to mitigate complexity. 	<ul style="list-style-type: none"> Greater construction activities required due to larger breakwater extensions on both sides. Introduction of airside improvements increases coordination complexity. All construction work is anticipated to be completed during nightly airport closures to mitigate complexity. 	<ul style="list-style-type: none"> Greater construction activities for coordination associated with larger breakwater extension on both sides. Introduction of airside improvements increases coordination complexity. All construction work is anticipated to be completed during nightly airport closures to mitigate complexity. 	<ul style="list-style-type: none"> Construction complexity will be addressed during detailed design with a Plan of Construction Operations (Construction Plan) outlining staging, approvals, lead times, etc. 	<ul style="list-style-type: none"> Each alternative has somewhat complex construction staging due to the introduction of breakwaters. However, the stone breakwater and steel sheet pile well are well known in the local construction community. RESA 1, 2 and 3 will require multiple construction crews to meet the Project schedule, which will introduce somewhat higher Project complexity. All construction work is anticipated to be completed at night during airport closures, so no significant operational complexities associated with an active airport are expected. RESA 1 is moderately preferred because of the added complexity for constructing breakwaters on both sides. However, absence of airside improvement might slightly reduce overall complexity. While RESA 2 and 3 offer greater long-term improvements, their higher complexity due to construction of breakwater on both ends, and addition of airside improvements rank them as less preferred.



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