Preapproved Routine Impact Assessment Geotechnical and Environmental Investigations

Parks Canada National Office
IAA 2019

Preapproved Routine Impact Assessments (PRIA) are pre-determined environmental management and mitigation measures for a defined class of routine, repetitive projects or activities with well understood and predictable effects. Approved PRIAs are an acceptable Impact Assessment pathway as they fulfill Parks Canada's obligations as a manager of federal lands under the *Impact Assessment Act* (IAA).

This PRIA applies to routine geotechnical or environmental investigations of the subsurface characteristics of a site for the purpose of scientific research or of assessing or monitoring the site for contamination. This may include drilling programs, digging test pits or soil and water sampling.

Borehole collectively describes all of the various types of holes drilled as part of a geotechnical investigation. This includes holes advanced to collect soil samples, water samples or rock cores.

Test well is a borehole drilled to determine aquifer and/or water table properties in the area.

Test pit is a shallow excavation of the ground, typically 1-4 meters in depth, to determine the geology and water table of the site.

Water body includes a lake, a canal, a reservoir, an ocean, a river and its tributaries and a wetland, up to the annual high water mark, but does not include sewage or waste treatment lagoon, a mine tailings pond, an artificial irrigation pond, a dugout or a ditch that does not contain fish habitat as defined in subsection 2(1) of the *Fisheries Act*.

High water mark is the usual or average level to which a body of water rises at its highest point and remains for a sufficient time so as to leave a mark on the land. (Fisheries and Oceans Canada, 2015). Upper Controlled Water Elevation (UCWE) is used as the definition of high water mark in managed waterways.

Scope of Application:
This PRIA includes:

- Construction, operation or decommissioning of test wells.
- Drilling boreholes and excavation of test pits.

Conditions and Exceptions:
This PRIA does not apply under the following exceptions/conditions:

Location:

- Work in an unstable environment, such as a land slide zone, unless approved by a professional engineer.
- Work in the vicinity of an earthfill dam, unless approved by a professional engineer.
- Projects that involve the placement of temporary or permanent fill in a waterbody.

General:

- The project permanently alters the characteristics of a water body (e.g., temperature, pH, turbidity, flow, water level, water body bed).
  - This includes, fill placed in a water body or permanently increasing a physical work's footprint below the high water mark; dredging; and construction of a permanent diversion channel.
- The project results in **residual** adverse effects on migratory birds or their nests.
  - Refer to the draft- *Parks Canada Guidance on Reducing Risk to Migratory Birds* and associated draft- *Conservation Measures for Minimizing Impacts to Migratory Birds During the Nesting Period*.
- The project results in **residual** adverse effects on an individual, a residence or the critical habitat of a listed species at risk under the *Species at Risk Act*.
  - Determine if mitigations are needed to ensure no residual adverse effects to species at risk. Such mitigations should be included in the Supplementary Mitigations section.
- The project is likely to require an approval under the *Canadian Navigable Waters Act* (s. 5(1)). Check if your project is a Major Works in any Navigable Water or Works in Navigable Waters Listed on the Schedule.
- The project is likely to require an authorization under the *Fisheries Act* (s.35(1) or 36(3)). Check if your projects needs a review.
- The project involves the removal of or causes damage to cultural resources of heritage value, for example, heritage buildings designated by the Federal Heritage Buildings Review Office, archaeological sites, historical and archaeological objects, or cultural landscapes.
- The project involves the removal of or causes damage to paleontological resources.
- The project results in loss or reduction in size of a wetland.
- The project adversely impacts sites of significance to Indigenous peoples or current access and use of areas where hunting, fishing or gathering rights are exercised by Indigenous peoples.

Other considerations:
Use of the PRIA may not be appropriate in circumstances such as:

- Work is taking place in an area where aquatic invasive species or parasitic diseases (e.g., whirling disease) are a serious issue.
- Work is taking place in a natural, previously undeveloped area.

Approved geographic area of application:
This PRIA is intended for use in all Parks Canada administered protected heritage places, including national historic sites and canals.

Parks Canada Specialists:
Impact Assessment:
If there are any questions on how to apply this PRIA, consult a member of the Impact Assessment Team.

Species at Risk:
If there is any uncertainty regarding potential adverse effects to species at risk, consult a member of the Species Conservation Team.

Environmental Management:
If there are questions on environmental management issues (e.g., treated wood, contaminated sites, hazardous materials or greening operations), consult a member of the Environmental Management Team.

Cultural Resources:
If there is any uncertainty regarding potential adverse effects to known or potential cultural resources, consult a member of the Cultural Resource Management Protection Team or, if applicable, the local Field Unit specialist.

Valued Components and Effects Analysis

Soil/Land Resources

- Slope instability, due to increased soil exposure, settling of the area around a borehole/excavation site and/or surface water entering the borehole/excavation site and adversely affecting landslide mobility
- Soil compaction and rutting
- Increased sedimentation and erosion
- Loss of topsoil, topsoil and subsoil mixing, slope instability, due to increased soil exposure or improper excavation and storage techniques
- Contamination from equipment leaks, contaminated leachate, or accidental spills

Water Quality

- Adverse modifications to surface drainage patterns
- Reduced water quality due to increased erosion, sedimentation, transport of debris and contamination (i.e. from leaks and accidental spills, etc.)
- Reduced groundwater quality from transportation of debris and contamination via a borehole

Wildlife and Vegetation

- Wildlife sensory disturbance causing displacement/habitat avoidance
- Wildlife habituation/attraction to artificial food sources
- Loss or fragmentation of habitat where development occurs in or adjacent to previously undisturbed areas (including nesting, roosting, feeding and resting areas)
- Potential safety hazard for wildlife

- Disturbance or damage to nests, roosts and/or dens and disruption of nesting, roosting and/or denning animals
- Introduction of or spread of non-native and invasive plant species
- Damage to and removal of vegetation, disturbance of adjacent natural areas, root exposure and physiological distress

Visitor Experience and Safety

- Reduced quality of visitor experience due to noise and presence of equipment
- Reduced accessibility to portions of the site where work is taking place
- Hazard to visitors and staff due to the activities
- Damage to buried utilities and disruption of service

Cultural Resources

- Adverse effects to the heritage value or character defining elements of a cultural resource or a heritage place, including:
  - Impacts to archaeological resources (known or potential) from displacement or destruction, resulting in loss of heritage value
  - Impacts to cultural landscapes, buildings, objects, engineering works

Mitigation Measures

Pre-Project Planning:

1) Notify designated Parks Canada staff prior to work commencing and ensure they are available for onsite consultation before work begins.
2) Confirm that all borehole and/or test pit locations ensure worker safety and protection of any underground infrastructure and sensitive environmental resources. Consult with Parks Canada staff as required.
3) Work within the vicinity of waterbodies or wetlands may require a site specific Erosion and Sediment Control Plan.
4) All work and activities will comply with Fisheries and Oceans Canada measures to protect fish and fish habitat and will not release deleterious substances into a waterbody.
5) Clearly identify and avoid sensitive environmental features and habitats in the work area and schedule work to avoid critical wildlife life stages. If useful, complete the Environmental Timing Windows Table.
6) Schedule work to avoid wet, windy and rainy periods or very dry periods that may increase erosion and sedimentation.
7) In consultation with a Parks Canada terrestrial archaeologist, compare drilling and test pit plans (including vehicular access routes, proposed staging areas and areas to be stripped to allow for filling) to local archaeological resource inventories.
8) Work with a Cultural Resource Management (CRM) Advisor and CRM specialists (archaeologists, historians, and built heritage advisors) to assess the impact of intervention to cultural resources and identify necessary mitigation measures.
9) A Spill Response Plan should be developed prior to work starting.

Example: Environmental Timing Windows Table (to be deleted or adapted)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fish	AVOID INSTREAM WORK					Least risk window for work in and around freshwater, June 15 – Sept 15				AVOID INSTREAM WORK		
Birds	Reduced risk for harm to birds			AVOID VEGETATION REMOVAL Bird Nesting Period: April - Mid August					Reduced risk for harm to birds			
Bats	Bat in Hibernacula				Bats Nursing Pups						Bat in Hibernacula	
Turtles	Hibernation		Road Mortality		Nesting -avoid disturbance		Road Mortality		Hatchlings – avoid disturbing	Road Mortality	Hibernation	
Snakes	Avoid disturbance of Hibernacula				Road Mortality		Peak : breeding, live young Mitigate road mortality			Migration Road mortality	Avoid disturbance of Hibernacula	

Work Site Preparation/Staging/Laydown:

10) People working on the project/activities must review the mitigation measures and any site specific considerations with designated Parks Canada staff before work begins.
11) Clearly mark the work site and restricted areas with stakes, biodegradable flagging tape or other means to minimize the disturbance footprint; remove when the project is completed.
12) Staging areas, material/equipment drop sites, and parking areas must be identified, including duration of use, within an existing disturbed footprint (e.g., roadway, gravel surface, previously disturbed area with high resiliency) or approved by designated Parks Canada staff.
13) Use existing roadways, trails, disturbed areas or other areas as approved by designated Parks Canada staff for site access, travel within the site and construction activities.

Equipment Operations:

14) Use low pressure or rubber tracked equipment or access matting where feasible to minimize soil compaction and ground disturbance.
15) Select equipment appropriate to the nature of work being conducted (e.g., avoid using large scale machinery when hand tools or smaller scale machinery could be used).
16) Heavy equipment operating on paved surfaces should be equipped with street pads; damage to paved surfaces must be restored to original conditions.
17) Equipment must be properly tuned, clean and free of contaminants, in good operating order, free of leaks (e.g., fuel, oil or grease), and fitted with standard air emission control devices and spark arrestors prior to arrival on site.
18) Machinery must be stored, maintained and refuelled on a flat surface, outside the dripline of trees (The area defined by the outermost circumference of a tree canopy where water drips from and onto the ground) and a minimum of 30 meters from waterbodies, as measured from the high water mark. Increase the buffer zone depending on the level of risk and site-specific conditions.
19) Refuelling must take place on an impermeable fuel mat with a berm or within a container. Leaks and spills during refuelling must be cleaned up and contaminated materials must be

disposed of appropriately. Fuel must never be dispelled or deposited into the environment or any water body.

20) Any required cleaning of tools and equipment should be done off-site. If it must be on-site, it must be in an appropriate area at least 30m from a waterbody.
21) Gas generators must be secured to prevent movement during the operation and set up on an impermeable fuel mat with a berm or within a container that can contain 110% of the volume of fuel in the generator.

Water Quality:

22) Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that does not disturb the banks and bed of the waterbody.
23) Comply with the CCME Criteria for the Protection of Aquatic Life, which allows for a maximum increase in suspended solids of 25 mg / l (or 8 NTUs) over background. If necessary, monitor turbidity in real time during drilling.
24) In the event that a barge is used:
    - Ensure it is equipped with watertight borders to recover any potential oil spills from equipment and machinery. If not, implement measures to prevent contaminant release to the waterbody.

Wildlife:

25) When possible, conduct work outside critical wildlife timing windows such as the bird nesting period.
26) On-site workers must receive any required wildlife awareness training, according to field unit policy.
27) On-site workers must be made aware of and subsequently report any incidental sightings of species at risk immediately to designated Parks Canada staff.
28) If active nests, dens or roosts are discovered, stop work and contact designated Parks Canada staff immediately for direction.
29) When possible, conduct activities during daylight hours, avoiding critical foraging times (dusk and dawn). Consult with Parks Canada staff for site-specific advice.
30) Never approach or harass wildlife (e.g., feeding, baiting, luring). If wildlife is observed at or near the work site, allow the animal(s) the opportunity to leave the work area.
31) Designated Parks Canada staff must be alerted immediately to any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality.

Vegetation:

32) Clear minimum area necessary; trees should be removed only if necessary for project completion or visitor/staff safety and vegetation must not be trimmed more than necessary.
33) When felling trees, precautions must be taken to minimise damage to surrounding vegetation.
34) Employ pruning techniques to minimise risk of tearing the bark and harming the tree; ensure that only branch tissue is removed and stem or trunk tissue is left undamaged (refer to Appendix 1)
35) Retain a 15-30 meter vegetated buffer, from the high water mark of waterbodies. In sloped areas, buffers should increase in width as the slope increases.

36) Removal of riparian vegetation should be kept to a minimum and undertaken only when absolutely required. Ensure the root structure and stability are maintained.
37) Protect roots of trees to drip line to prevent disturbance or damage. Avoid traffic, dumping and storage of materials over root zone.
38) Where re-vegetation is required, use native plants/soils/seed mix approved by Parks Canada staff.

Invasive Alien Species:
39) All construction equipment and boats from outside the Parks Canada protected heritage place must be cleaned and inspected before arrival and following work to minimize risk of introducing or spreading invasive weed or aquatic species (e.g., zebra mussels), or parasitic diseases (i.e., whirling disease). Proof that this mitigation was applied may be requested before equipment is permitted into the protected heritage place.
40) If invasive species are a serious issue, consider more effective cleaning methods such as pump and high pressure hose or high pressure water unit.
41) Work in uninfested sites before moving to infested sites.
42) Minimize ground disturbance, vegetation removal and bare soil exposure and stabilize and re-vegetate disturbed areas as soon as possible.

Cultural Resources:
43) Apply additional mitigation measures (in supplementary mitigation section) that may have been previously identified by a Parks Canada archaeologist or cultural resource advisor for the immediate area of work.
44) The designated Parks Canada staff should ensure that on-site workers receive appropriate cultural resource awareness training.
45) Avoid known and potential cultural resources and archaeological sites.
46) Stockpiled material must not be permitted to damage or bury known cultural resources.
47) If cultural resources (i.e., structural remains and/or artifact concentrations) are encountered, work must cease in the immediate area, the site secured and the designated Parks Canada staff contacted for further direction.

Visitor Experience and Safety:
48) Minimize the time boreholes and test pits remain open.
49) Close and mark the work site and safety hazard with appropriate signage while active construction, repair or maintenance is underway; consider temporary detours or reroutes as appropriate.
50) If closing the area is not possible, maintain a safe working distance between work activities and visitors.
51) Visitor access trails and roads outside the construction area must be free of construction materials, waste, machinery and equipment.

Erosion and Sediment Control:
52) Select erosion and sediment control measures that correspond with the nature and duration of the project and install before starting work, especially within 30 meters of a waterbody.
53) Regularly inspect and maintain erosion and sediment control structures during all phases of the project and alter measures when necessary.

54) Use erosion and sediment control products that reduce potential for wildlife entanglement and are made of 100% biodegradable materials (e.g., jute, sisal or coir fibre) when possible. Ensure backing materials are also biodegradable. Use of hay or straw in erosion and sediment control must be approved by designated Parks Canada staff.
55) Limit duration of soil exposure; phase activities whenever possible and restore disturbed areas as soon as possible.
56) Contain and stabilize waste material above the high water mark or top of bank of nearby waterbodies. Cover any stockpiled material with heavy-duty plastic or filter cloth to prevent erosion during inclement weather (e.g., winter conditions, heavy rain).
57) Stabilize slopes as appropriate for local site conditions. Possible methods include: armor stones, crib walls or erosion control blankets.
58) Reuse excavated material on site, unless there are any indicators of potential contamination
59) Maintain effective sediment and erosion control measures until any required re-vegetation of disturbed areas is achieved.
60) Remove temporary erosion and sediment control products, especially non-biodegradable materials, when they are no longer required.

Excavation (test pits):
61) Where possible, test pit sites should be on or immediately adjacent to existing roadways or previously disturbed areas (with respect to archaeological resources, an area is considered 'disturbed' if the soil in the area of work has been significantly disturbed to the depth of the excavation or drilling).
62) Strip topsoil/sod mats, set aside and use during backfilling/reclamation. Usually the upper 15 centimeters of soil, below the sod layer (if present) is considered topsoil. Where depths exceed 15 centimeters, salvage the entire depth of topsoil.
63) No stripping shall occur outside of the delineated work area or within 1 meter of the drip line of existing forest.
64) Remove stumps and woody debris from topsoil, wherever possible.
65) Topsoil will be stockpiled separately from subsoil material on hardened surfaces, geo-textile material, or directly on undisturbed vegetation. Where space is available, separate stored topsoil from spoil and adjacent standing forest cover by at least 1 meter; use appropriate material (e.g., geotextile) to separate soil components. It should be placed on relatively smooth, well drained terrain wherever possible, to facilitate clean up. On sloped terrain, topsoil should be stockpiled on the uphill side of the disturbance.
66) Stockpiled material will not be pushed into adjacent vegetation outside of approved work space.
67) Consult with Parks Canada staff to confirm whether topsoil brought from outside the Parks Canada protected heritage place is acceptable (e.g., free of invasive weed species).
68) Surplus spoil may be used to fill depressions (confirmed not to be an archaeological feature) around the project site providing topsoil is stripped before filling, with approval from Parks Canada staff.
69) Soils (e.g., spoil, topsoil, subsoil) stored on undisturbed vegetation will be removed with hoe-mounted boards, clean-up buckets or other method which reduces scalping of underlying vegetation.

70) Remove excess excavated material from the site where it cannot be used for the final grading of the area. In consultation with Parks Canada staff, site specific arrangements must be made for disposal locations and procedures of overburden.
71) Excavations must be drained (but not directly into a waterbody), back-filled and compacted as soon as possible. The site must be returned as closely as possible to original condition (e.g., return sod mats and topsoil to the site and re-seed with Parks Canada approved native seed mix as needed). Re-vegetation must be undertaken in consultation with Parks Canada staff after excavations have settled and are level with surrounding landscape.
72) Backfill material will be kept free of large rocks and wood material.
73) Surface drainage should be diverted around disturbed areas; where this is not possible, unconsolidated material must be protected by erosion control materials such as coco mats, or some other acceptable means.
74) Under thawed conditions, backfill material will be compacted prior to topsoil replacement. Topsoil will then be distributed evenly over the excavated area.
75) Under frozen ground conditions, material will be sufficiently roached over the excavated site to allow for settlement under thawed conditions. Where practical, topsoil replacement will be postponed until the backfill has thawed, settled and dried out.
76) In consultation with Parks Canada staff, re-establish, or make improvements to, original site drainage on completion of the project.

Drilling (boreholes, test wells):

77) Where possible, borehole sites should be on or immediately adjacent to existing roadways or previously disturbed (see definition above) areas.
78) All wells must be registered as per provincial/territorial standards.
79) Drilling shields/fluids must be environmentally friendly.
80) Any drilling in wetlands must be done on frozen or temporarily dry ground, or in other ways so as to not result in the destruction of wetland area.
81) Debris from drilling will be contained (screened or settle out) so it will not cover the surrounding area or enter any watercourse. All debris will be removed in consultation with Parks Canada staff; site specific arrangements must be made for disposal locations and procedures of overburden.
82) If deemed to be contaminated (e.g., drilling through asphalt or in a suspected contaminated site), the cuttings from drilling will be contained, removed from the site and disposed at an approved waste disposal facility. Drilling mud will not be disposed within a Parks Canada protected heritage place.
83) Control of spoil and sediment loaded water is required on the drill site. Dyking will be required to retain the deposit on non-vegetated surfaces. If contaminated, the spoil pile must be disposed at an approved waste disposal facility.
84) Surface drainage should be diverted around disturbed areas; where this is not possible, unconsolidated material must be protected by erosion control materials such as coco mats, or some other acceptable means.
85) Re-establish, or make improvements to original site drainage on completion of the project, in consultation with Parks Canada staff.
86) During aquifer tests, the water must be piped so it does not erode any soil or any part of the ground. If the water from the tests is piped to a creek, stream, or river, the pipe is to be

situated so that there is no erosion of the stream bank or bed. If any sand or similar material is discharged during the aquifer test, care must be taken that the sand does not cover any vegetation.

87) All test wells will be filled after the investigations are complete. Properly seal and cap boreholes and fit PVC pipes as per provincial/territorial standards.

88) The borehole surface and any surrounding area is to be returned as closely as possible to original condition (e.g., return sod mats and topsoil to the site and re-seed with Parks Canada approved native seed mix as needed).

89) Any standpipes or piezometers left in place shall be appropriately marked.

90) A copy of the drilling log, including the location of any standpipes or piezometers left in place, will be submitted to the appropriate Parks Canada staff member when complete.

Spill Response Plans and Hazardous Material Management:

91) Ensure that all on-site workers receive a briefing about the Spill Response Plan and are aware of the location and use of spill kits and containment devices.

92) Follow all applicable regulations and codes for the management and handling of hazardous waste.

93) Spill containment equipment must be present on-site. A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill related to the work must be available on site at each location of potential spills (sites where equipment is working and at refuelling, lubrication, and repair locations).

94) All spills must be contained and cleaned-up as soon as it is possible to safely do so. In the event of a major spill, all other work must stop until the spill has been adequately contained and cleaned up.

95) Notify the designated Parks Canada staff and the emergency contact immediately of any spill. In the event of a major spill, call the first contact authority.

96) Contaminants must be recovered at the source and disposed of according to applicable laws, policies and regulations. The site will be inspected by Parks Canada staff to ensure completion to expected standards.

97) Petrochemical products, paints and chemicals must be used and stored in such a way as to prevent any deleterious substances from entering the water.

98) If hazardous waste or potentially contaminated material is uncovered during excavation / construction, work must stop and excavated materials must be secured onsite in a manner that prevents contamination of the surrounding environment, including leaching. The designated Parks Canada staff must be contacted for further direction.

Site Clean-up and Waste Management:

99) All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) in wildlife-proof containers, a secure building or vehicle. When possible, keep food waste separate from construction waste and remove daily.

100) Secure all waste materials (e.g., construction waste and materials, excavation, vegetation) above the high water mark of nearby waterbodies to prevent entry.

101) Contain wastes and transport to an approved waste landfill site outside the Parks Canada site unless otherwise directed; cover waste loads during transportation.

102) Dispose of contaminated materials at provincially or territorially certified disposal sites outside of Parks Canada site.

103) All construction materials must be removed from the site on project completion. Burning is not permitted unless approved by Parks Canada.

Supplementary Mitigations

104) A few supplementary mitigation(s) may be required to ensure all potential impacts are mitigated.

Approvals

Original signed by Julie Tompa	Dec 13, 2019
_____	_____
Julia Tompa Director, Natural Resource Management Branch	Date
Original signed by Kalvin Mercer	Dec 09, 2019
_____	_____
Kalvin Mercer Director, Asset Management and Project Delivery Branch	Date

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