



Parks Canada Basic Impact Analysis

1. PROJECT TITLE & LOCATION

Lighthouse Dome Recapitalization, Cape Spear Lighthouse National Historic Site

2. PROPONENT INFORMATION

Glenn Keough – Manager, National Historic Sites and Visitor Experience (709) 772-6709

Jerry Feltham – Project Manager, FII, (709) 533-3122

3. PROPOSED PROJECT DATES

Planned commencement: Fall 2017

Planned completion: Winter/Spring 2018

4. INTERNAL PROJECT FILE #584

5. PROJECT DESCRIPTION

Cape Spear Lighthouse National Historic Site is one of the field unit's biggest attractions, accessible to the public 24/7. In 1962, the Cape Spear Lighthouse was designated a National Historic Site for its age and architecture. It is also designated as a Classified federal heritage building according to the *Treasury Board Policy on Management of Real Property* because of its historical associations, and its architectural and environmental values.

The building consists of the original lighthouse structure restored to its 1835-40 appearance. Much altered over its life, restoration of the lighthouse in 1970's involved the removal of several additions and replacement of approximately 25% of the building's original fabric. A Restoration Feasibility Study was undertaken in 1976, culminating in restoration work undertaken in the summers of 1970 and 1978.

The overall objective of the project is to remove and repair the dome structure that covers the lighthouse. The existing dome requires attention as over time it has been exposed to continuous extreme weather which has resulted in some structural weaknesses. These weaknesses are creating entry points for rain water that leaks into the lighthouse structure and penetrates into the wooden material present. Rot and deterioration of the wood has begun which, unless addressed, will result in further structural degradation of the lighthouse tower. Notably, the building requires some lead abatement due to the presence of lead paint.

The project includes (refer to Appendix 1 for 99% Review Drawings):

- 1) Staging area to be located on an existing disturbed area (e.g., section of the access road).
- 2) Removal of the dome in a single lift operation and transportation offsite for restoration and re-instated once complete.
- 3) Interior and exterior upgrades (e.g., Exterior - paint removal, painting, removal of wood cladding for off-site restoration and re-instatement once complete, restoration of windows, removal of lead flashings, replacement of door and hardware; Interior – repair of wallboards and trims around windows, removal and replacement of wallpaper).
- 4) Excavation work on the perimeter of the lighthouse including:
 - a. Re-grading perimeter of the building to achieve a 2% grade away from the building; reinstate with 150mm screened topsoil and nursery sod.





- b. Removal of 15m of the existing fence at the back of the lighthouse, re-grading a minimum of 2% grade away from the lighthouse and re-instating the fence.
- 5) Sorting of waste material and disposal in accordance with industry standards.
- 6) Use of machinery: large and small excavators, graders, crane, trucks.
- 7) Transport of materials and equipment along Blackhead Road to the staging area and the lighthouse site via the lighthouse access road.

The site is located on an exposed, rocky headland with grass, low scrubby vegetation, minimal trees and points of exposed bedrock. It is subjected to extreme weather events (e.g., high winds, freeze thaw cycles, frequent rain, snow, and ocean wave spray). The project will take place over the Fall of 2017 and Winter 2018.

There are no known flora or fauna species at risk in the area. Fox are occasionally observed but there are no known denning sites in the vicinity of the project. The project will take place outside of the migratory bird nesting season. The lighthouse is located at high elevation from but adjacent to the marine environment. There are no freshwater fish-bearing watercourses in the area.

6. VALUED COMPONENTS LIKELY TO BE AFFECTED

The project will potentially affect *Natural Resources* including Water, Soil and Landforms, Flora and Fauna. It may also affect *Cultural Resources* and *Visitor Experience*.

7. EFFECTS ANALYSIS

The primary effects for all valued components will occur during the construction phase of the project.

Natural Resources

Water – the area is subject to high winds and storm events so wastes (e.g., garbage, litter, construction materials) may be blown into the marine environment. Sedimentation from excavation activities may also enter the marine environment. Operation of heavy machinery may result in a fuel spill with potential to contaminate the marine environment. Effects are expected to be low but secure storage of materials will be important.

Soil and Landforms - excavation activities and operation of heavy machinery may result in soil compaction and rutting, soil erosion, loss of topsoil, exposure of subsoils, and soil contamination from waste (e.g., garbage, fuel). The area is historically a disturbed area so effects are expected to be low. Effective restoration of the site will be important for erosion control.

Flora - excavation will require removal of grass around the perimeter of the building and operation of heavy machinery for the lift operation may disturb adjacent areas, cause potential root exposure and physiological stress of native vegetation in the area. Ground disturbance may result in the further introduction of invasive alien species, or expansion of existing populations. Effects are expected to be low given that the site is historically a disturbed area, there are currently a number of invasive species existing on the site and the grass around the building is non-native. Effective restoration, however, will be important.





Fauna - operation of heavy equipment, increased human presence and noise may result in temporary habitat displacement/ preferred habitat avoidance (e.g., birds); artificial food sources such as garbage and litter may cause wildlife habituation/attraction (e.g., seabirds, fox); and potential fuel spills, sedimentation and runoff may contaminate marine habitat. Effects are expected to be low given that construction will take place outside the migratory bird nesting season and this is a disturbed area with, at times, high levels of human activity.

Cultural Resources

Archaeological site - An Archaeological Overview Assessment (Appendix 2) was completed for the project. The area targeted by the proposed work around the lighthouse foundations has the potential to disturb and damage in situ archaeological features and presumed archaeological resources.

Building – This project focuses directly on the Cape Spear Lighthouse, a cultural resource of national historic significance and a FHBRO Classified heritage building. A FHBRO Review of Intervention (ROI) Process was completed for the project (Appendix 3). The FHBRO ROI report assessed the potential impact of the proposed intervention on the heritage character of the Lighthouse and recommended mitigation measures as defined by *Standards and Guidelines for the Conservation of Historic Places in Canada*. It will not be possible to evaluate the condition of many components (e.g., windows, doors) until they are removed, posing a challenge. The intent is to preserve all elements of the building wherever possible.

Objects – The Lighthouse contains historical objects formally identified as cultural resources or those from the Parks Canada collection (period artifacts and furnishings) required for program purposes and enhancing visitor experience. The work may impact the security and condition of these objects on display inside the Lighthouse if not handled and protected appropriately.

Landscape and Landscape Features - Removal of 15m of the existing fence at the back of the lighthouse, and re-installing the fence after re-grading is required as part of the work. Impact on the landscape feature is expected to be low given that the original fence will be re-installed.

Visitor Experience

The potential effects on Visitor Experience are anticipated to occur during the construction period, including: reduced quality of visitor experience due to noise and presence of construction equipment; decreased aesthetic appeal and impacted viewscape; and potential hazard to visitors during restoration activities (e.g., heavy equipment operation). The project will temporarily decrease the quality of the overall visitor experience but this is limited to the restoration period, the project will take place outside the operational season, and trails will remain accessible to visitors.

8. MITIGATION MEASURES

General

Work Site Conditions/Staging/Laydown:

1. A project start up meeting will be held with the key people working onsite to review the mitigation measures, Parks Canada contact information and any site specific considerations with Parks Canada staff before work begins.





2. Staging and parking areas for material and equipment will be located on an existing disturbed area (e.g., a section of the lighthouse access road approved by Parks Canada) and used for project start up and construction only.
3. The existing access road and other existing disturbed areas approved by Parks Canada staff will be used to access the site.
4. Clearly mark staging area, work site and restricted areas with stakes, biodegradable flagging tape, fencing, temporary gates or other means; remove when project is completed.
5. Isolate operations and ground intrusion activities to the footprint of the immediate construction area and limit vehicle access to essential vehicles only.
6. Confirm presence of buried infrastructure prior to excavation and take precautions to avoid damage.

Equipment Operation:

7. Equipment from outside the national historic site must be washed prior to arrival.
8. 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.
9. During construction, any required cleaning of tools and equipment must be done greater than 30 meters from the shoreline to prevent the release of wash water that may contain deleterious substances.
10. Equipment operators must be fully trained and experienced.
11. Use low pressure/rubber tracked equipment or access matting where feasible to minimize soil compaction and ground disturbance.
12. Minimize idling of engines, contingent on operating instructions and temperature consideration.
13. Machinery (e.g., excavators, generators) must be stored, maintained and refuelled on a flat surface at least 100 meters from the ocean and any wetland areas.
14. Only minor repairs and maintenance (e.g., lubrication) of 'non-mobile' equipment such as flatbeds or shovels are permitted; all major repairs must be undertaken at an appropriate offsite location.

Waste:

15. All solid waste will be securely stored and handled according to applicable federal/provincial regulations.
16. All waste materials (e.g., construction material, refuse material, waste petroleum, and demolition waste) shall be removed from the site on project completion and considered, prior to disposal, for reuse, resale or recycling and then disposed of at an approved facility; cover waste loads during transportation.
17. Portable sanitary facilities must be serviced on a regular basis and accumulated waste disposed of at a sanitary waste disposal facility. The facilities must have sufficient capacity and be managed to ensure waste is not discharged to the receiving environment.
18. Burning of waste is not permitted at the National Historic Site.

Hazardous Materials:

19. Prevent the release of hazardous substances into the environment, including but not limited to, products containing lead (e.g., lead paint chips), petroleum products and their derivatives and chemicals.
20. All on-site personnel must be briefed on reporting requirements for hazardous materials spills; spills must be reported immediately to the designated Parks Canada contact.





21. The site must be equipped with containers suitable for the secure, temporary storage of hazardous wastes, separated by type.
22. A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill (i.e., fuel or other toxic liquids) related to the work must be available on site at all times. On-site personnel must be aware of its location and trained in its use. Any contaminants must be recovered at source and disposed of according to applicable laws, policies and regulations.
23. Handle and store hazardous materials as per applicable federal legislation/regulations. The contractor must have all relevant and current Material Safety Data Sheets available onsite.
24. Petrochemical products, paints and chemicals must be stored 100 meters from the shoreline. They must be secured overnight in a Parks Canada approved enclosed area under lock and key.
25. Any hazardous waste or contaminated material uncovered during excavation / construction, must be investigated, source identified, removed and disposed of outside the protected heritage place at an approved facility. Disposal documentation must be provided to the designated Parks Canada contact.

Natural Resources

Water:

26. Ensure all materials (e.g., organic materials, soil stockpiles, construction waste and materials) are securely stored in place, especially during high wind/storm conditions and at the staging area; materials must not enter the marine environment.

Soil and Landforms:

27. Avoid excavation activities during periods of heavy rain.
28. Erosion and sediment control measures must be implemented during the excavation activities as required to prevent runoff sedimentation from going into the ocean.
29. Regularly inspect and maintain erosion and sediment control structures during all phases of the project and modify measures as necessary.
30. Limit duration of soil exposure and restore disturbed areas as soon as possible.
31. Topsoil separation is required; stockpile topsoil away from subsoils and spoil material and more than 15 meters away from the shoreline, drainage features and/or the top of steep slopes.
32. Excavations must be drained (but not directly into the ocean), back-filled and compacted as soon as possible.
33. Under thawed conditions, backfill material will be compacted prior to topsoil replacement; distribute topsoil evenly over the excavated area as per Parks Canada specifications.
34. Under frozen ground conditions, material will be sufficiently spread 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.
35. Surface water shall be directed away from work areas. Runoff must not enter the ocean; sediment must be removed by filtration or other suitable methods and be directed a minimum of 30 meters away from waterbodies.
36. Remove temporary erosion and sediment control products, especially non-biodegradable materials, when they are no longer required.
37. When excavation is complete, shape loosened soils to match the local terrain and ensure noticeable construction impacts (e.g., ruts, holes, depressions, compacted areas) are appropriately re-graded, back-filled with topsoil, re-contoured and capped in preparation for restoration.
38. During grading, ensure that materials are not pushed, or permitted to enter or erode into the ocean and stay within delineated limits.





Flora:

- 39. Sources of topsoil, gravel, and erosion and sediment control products must be approved by Parks Canada prior to arrival at the site.
- 40. Minimise bare soil exposure (e.g., cover stockpiled material with tarps).
- 41. Minimise ground disturbance and vegetation removal, as practical and within project requirements.
- 42. Avoid traffic, dumping or storage of materials over vegetated areas.
- 43. Lay sod as soon as possible after excavation is complete and as soon as it arrives onsite. Should the work be completed at a time of the year that is not ideal for laying sod, erosion control measures must be installed until sod can be laid.
- 44. Use of pesticides, herbicides or fertilizers is not permitted at the site.

Fauna:

- 45. All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) within wildlife-proof containers, in a secured building or a vehicle. Keep food waste separate from construction waste and remove daily. Notify the designated Parks Canada contact immediately should wildlife gain access to the above mentioned attractants.
- 46. Never approach or harass wildlife (e.g., feeding, baiting, luring).
- 47. Alert the designated Parks Canada contact, immediately to any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality. In the case of aggressive behaviour or persistent intrusion, stop work and evacuate the area.

Cultural Resources

Archaeological site:

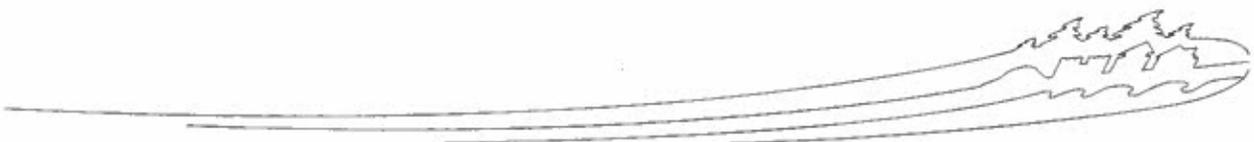
- 48. Archaeological monitoring of the area is required during the sod removal and earthworks activities (i.e., excavation, re-grading and contouring), if the work will be performed mechanically.
- 49. If cultural or archaeological resources are encountered, work must cease in the immediate area and the Parks Canada project manager notified immediately. They will then notify Martin Perron (Tel: 819-420-9558), Parks Canada. If features (i.e., structural remains and/or artifact concentrations) are encountered, leave in place, mark the location (e.g. with prominent flagging) and do not disturb prior to archaeological assessment of nature and significance being completed.

Building;

- 50. The Federal Heritage Buildings Review Office (FHBRO) recommendations in the Review of Intervention Reports must be followed (Appendix 3).
- 51. The contractor must contact Parks Canada (Alex English, 709-351-0730) to ensure inspection and evaluation of the windows and the general building elements (e.g., roof, siding, doors, foundation, chimney) as soon as these elements are removed to determine what to restore and what is to be replaced.

Landscape and Landscape Features:

- 52. Carefully remove only required sections of the existing fence without causing any damage. Temporarily store fence components in a secure location approved by Parks Canada so that it can be re-instated in exactly the same place and condition after re-grading. Any damage must be reported





to Parks Canada (Alex English, 709-351-0730) and is the responsibility of the contractor to replace at no additional cost to Parks Canada.

Objects:

53. The objects and cultural resources within the Lighthouse must be protected and kept safe during the work so that they are not damaged or altered in any way. Parks Canada staff will ensure all objects are removed and safely stored prior to work commencing.

Visitor Experience

54. Construction should be completed in as short a time period as is practicable.

55. Maintain the site in as tidy a condition as possible for the duration of work.

56. Safety risks to visitors during construction must be minimized:

- The work site must be closed and clearly delineated with fencing, barriers, temporary gates, caution tape, or combinations thereof.
- Appropriate bilingual signage must be posted at common visitor access points and strategic locations.
- Maintain a safe working distance between work activities and visitors, especially when transporting machinery and materials between the staging area and the site; consider the use of lookouts to manage traffic and direct visitors in this area.
- Secure and clearly mark unattended safety hazards with fencing, warning signs, caution tape or combinations thereof.

9. OTHER Considerations

- Public/stakeholder engagement
- Aboriginal engagement or consultation
- Surveillance (It is recommended that the environmental surveillance officer assigned to this project visit the site especially during the excavation portion of the project to ensure proper erosion control measures are in place as required and at other points during the project to ensure materials are being securely stored (e.g., fence components). He or she will be kept informed of project scheduling and will be notified of changes to the schedule at all times.)
- Follow-up monitoring, required to evaluate effectiveness of mitigation measures and/or assess restoration success
- Follow-up monitoring, required by legislation or policy (indicate basis of requirement e.g. required by the *Species at Risk Act*)
- SARA Notification

10. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

Given the magnitude of effects, the short term of the project, the timing and reversibility after construction, the project is not likely to cause significant adverse residual environmental effects to natural resources. The project is anticipated to have negligible to minor changes to cultural resources and visitor experience and as such is not likely to cause significant adverse residual effects to the same.

11. EXPERTS CONSULTED

Include Parks Canada experts. Add as many entries as necessary for the project.





| | |
|--|---|
| Department/Agency/Institution: Parks Canada | Date of Request: April 2017 |
| Expert's Name & Contact Information: Anne Desgagne Martin Perron Lydia Miller | Title: CRM Policy Advisor Archaeologist Built Heritage Advisor |
| Expertise Requested: cultural resources, archaeological resources | |
| Response: AOA (Appendix 2) and FHBRO ROI Reports (Appendix 3) | |

12. DECISION

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

- not likely to cause significant adverse environmental effects.
- likely to cause significant adverse environmental effects.

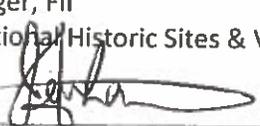
NOTE: If the project is identified as likely to cause significant adverse effects, CEAA 2012 prohibits approval of the project unless the Governor in Council (Cabinet) determines that the effects are justified in the circumstances. A finding of significant effects therefore means the project CANNOT go ahead as proposed.

FOR SARA REQUIREMENTS:

- There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required

13. RECOMMENDATION AND APPROVAL

(Add additional blocks as required)

| | |
|---|---------------------|
| Prepared by: Vanessa Rodrigues, Impact Assessment Specialist | Date: July 21, 2017 |
| Recommended by: Jerry Feltham, Project Manager, FII Glenn Keough, Manager, National Historic Sites & Visitor Experience  | Date: 07/24/17 |
| Approval signature: Glenn Keough For/ William Brake, Superintendent, Newfoundland East Field Unit  | Date: 07/24/17 |

14. ATTACHMENTS

- 99% Review Drawings – C1 Site Plan
- Archaeological Overview Assessment
- FHBRO Request for Review of Intervention Report





15. NATIONAL IMPACT ASSESSMENT TRACKING SYSTEM

- Project registered in tracking system
- Not yet registered (*CEAA 2012 requires PCA submit a report to Parliament annually. EIAs must be entered in the tracking system by the end of April to enable reporting.*)

*****Ensure that all required mitigation measures and conditions (e.g. follow-up monitoring requirements) are included in project permits and authorizations*****





Appendix 1: 99% Review Drawings – C1 Site Plan

