

Preliminary Decommissioning Plan

Cameco Corporation’s (Cameco) Port Hope Conversion Facility (PHCF) processes uranium that is used in the fuel for nuclear generating stations and holds an operating licence from the Canadian Nuclear Safety Commission (CNSC). The PHCF is comprised of the following properties shown in Figure 1: the area of the plant operations (Main Site at 1 Eldorado Place) and storage facilities located at 158 Dorset Street East in the Municipality of Port Hope (MPH).

The CNSC requires Cameco and all owners of licensed nuclear facilities to prepare a Preliminary Decommissioning Plan (PDP) in order to ensure that taxpayers are not left responsible for cleaning up a facility if the owner/operator were to become insolvent. CNSC REGDOC-2.11.2 *Decommissioning* and CSA N294-19 *Decommissioning of facilities containing nuclear substances* describes requirements of decommissioning planning. This includes guidance on reasonable assumptions to be made for the purpose of estimating the cost to decommission the facility. The PDP includes an estimate of the cost of decommissioning the facility in present day dollars and provides a high-level concept of how the facility would be decommissioned.

CNSC REGD-3.3.1 *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* describes the requirements of the financial guarantee to the Government of Canada that covers the estimated cost of decommissioning activities described in the PDP. It is important to note that the PDP is a planning tool that forms the basis for establishing a financial guarantee for decommissioning and the structural outline of subsequent detailed decommissioning plans.

The detailed decommissioning plan will be developed in the future following engagement with Indigenous communities and the public. The level of detail required for a detailed decommissioning plan and decommissioning licence may only be determined once the operations have ceased. Decommissioning of the facility occurs following the development of detailed decommissioning plans which form part of the application for a decommissioning licence from the CNSC following the public licensing process.

Cameco PDP Review Process

Cameco is required to update the PDP every five years to account for changes at the facility, potential changes to the technical decommissioning options and other factors that may impact the cost estimate used to derive the financial guarantee for the decommissioning of the facility. The PDP update is completed by subject matter experts based on changes to the site since the last review. A third-party engineering firm with expertise in decommissioning, demolition, remediation and cost estimating revises the cost estimate based on the updated PDP. It is then approved by Cameco senior leadership and submitted to CNSC staff for review and acceptance.

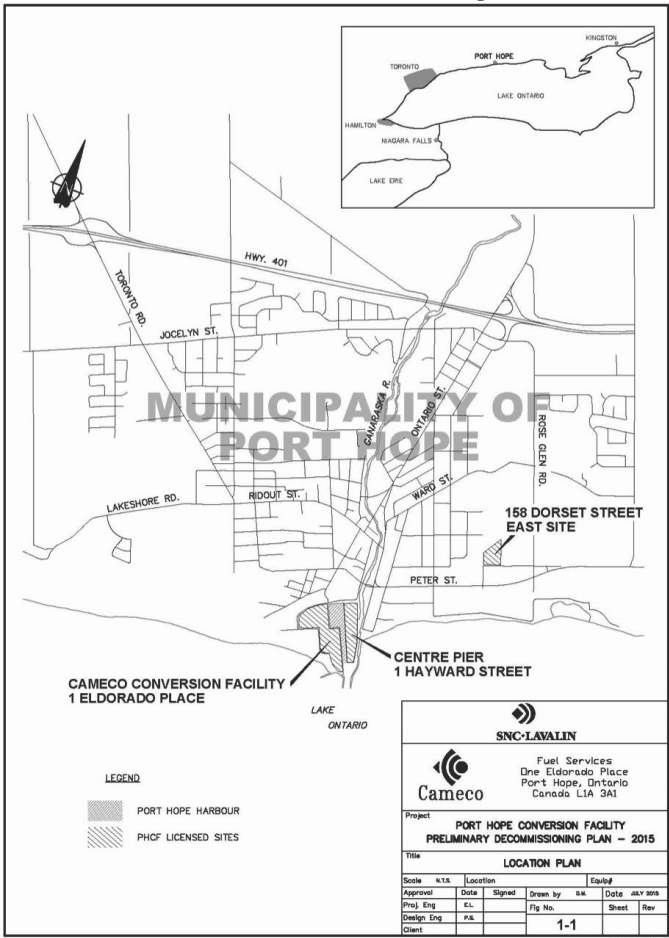


Figure 1: (Location of PHCF Facilities)

The proposed changes to the PDP and the financial guarantee are then presented to the Commission for approval, following which Cameco secures the appropriate financial instrument(s) for the total amount of the decommissioning cost estimate.

All of Cameco's Ontario facilities licensed by the CNSC have their own PDP, each of which uses a common assumption that waste from the Port Hope Conversion Facility (PHCF), Cameco Fuel Manufacturing (CFM) and Blind River Refinery (BRR) would be consolidated at a low-level radioactive waste management facility at the Blind River site. This location is proposed because the licensed facility in Blind River has available land, an excellent operating record and strong community support. This proposal is used for the purposes of developing the cost estimate and does not represent a decision on the actual location of the future facility. The decision for the future location of this facility would not be finalized until all aspects of Indigenous and public consultation are completed during the detailed design phase. The detailed decommissioning plan and long term waste management facility design would then require a waste nuclear substance licence that would follow the CNSC licensing process, which includes public participation. A separate financial guarantee is set aside for the PDP from each facility. A provision is in the Blind River PDP for care and maintenance of the waste management facility in perpetuity.

Planning and Consultation

The planning for the decommissioning of the Cameco PHCF is an ongoing and complicated process that involves consultation with:

- the CNSC;
- other interested federal departments;
- the provincial Ministry of Environment, Conservation and Parks (MECP);
- other provincial ministries;
- the Municipality of Port Hope and Town of Blind River;
- Indigenous rights holder communities; and
- other interested stakeholders

Basic Decommissioning Principles

The broad scope of the proposed decommissioning process is described in the PDP, including a detailed description of the physical properties of the site, summary of previous environmental site characterization, a description of the areas and buildings to be decommissioned and the general structure and sequence of the main decommissioning work packages. This information is summarized below.

The decommissioning planning process requires the following activities:

- Preparation of documentation in support of obtaining a formal decommissioning licence, including:
 - Impact Assessment, monitoring and reporting;
 - Radiological assessment, monitoring and reporting;
 - Conventional health safety, monitoring and reporting that is associated with the decommissioning project;
- Decontamination and segregation of chemicals, materials and equipment;
- Final disposition of chemicals, materials and equipment;
- Site restoration; and,
- Ongoing monitoring and maintenance of any institutional controls.



The PHCF PDP considers all of the above activities with the exception of ongoing monitoring and maintenance of any institutional controls. This activity will not be required as all structures and contaminated material will be removed from the PHCF as part of the decommissioning process and transferred to a single engineered containment facility. The costs of this facility are included in the BRR PDP.

The cost estimates and schedule are based upon a “decommissioning tomorrow” scenario, so that financial assurances will be based upon the current estimated cost of decommissioning. This will ensure that sufficient finances are available, even if the licensee (i.e., Cameco) is not available to fulfill its obligations for decommissioning. The cost estimate for decommissioning is completed by a third party engineering firm following the guidance of CNSC REGD-3.3.1 *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*.

PHCF Decommissioning Strategy

The PHCF PDP addresses all near-term decommissioning activities that are underway as a part of the Vision in Motion (VIM) and Port Hope Area Initiative (PHAI) programs (Stage I), and those long-term decommissioning activities (Stage II) that will be required after shutdown of the PHCF at the end of its operating life many years from now.



Figure 2: (Planned VIM Activities)



Stage I – Near Term Decommissioning Plan: Vision in Motion Activities

VIM is a major plant site remediation project which involves demolition of old, surplus buildings, excavation of contaminated soil at the Main Site and former Centre Pier properties, and disposal of eligible accumulated waste from the Main Site and Dorset Street properties. Canadian Nuclear Laboratories (CNL) manages a long-term waste management facility (LTMWF) in the Municipality of Port Hope which receives the waste from these activities.

VIM has completed demolition of the Centre Pier buildings, removal of equipment from surplus buildings and begun transfer of accumulated waste to the LTMWF. The project is expected to continue until at least 2027. Figure 2 illustrates the buildings that will be removed or partially decommissioned as part of Stage I. The total volume of material to be removed as part of VIM will be determined as detailed engineering for each stage is completed, will remain within the Cameco allocation of approximately 150,000 m³ in the Port Hope LTMWF.

Stage II Activities – Long Term Decommissioning Plan

It is anticipated that the decommissioning of the remainder of the PHCF facilities (illustrated in Figure 2, as well as the Dorset St. E site) would occur sometime in the future - these activities are defined in the PDP as “Stage II Activities”. Stage II Activities are anticipated to generate approximately 83,000 m³ of contaminated materials that could be incorporated into a conceptual long term waste management facility to be constructed at that time. The PDP assumes that all of Cameco’s Ontario operations will undergo a similar decommissioning process in the proposed scenario and a single engineered containment cell will be constructed at the Blind River Refinery site. Consolidating the waste from Cameco operations in a single engineered containment cell reduces construction and maintenance costs of containment cells in multiple locations and reduces the environmental footprint and number of locations which require on-going monitoring post-closure. The construction and operation of this facility is described in the BRR PDP. A separate financial guarantee is set aside for the PDP from each facility.

End State Objectives

The overall end state objectives are:

- to return the Main Site to the conditions that existed prior to the processing and storage of radioactive materials, to the extent practical for future development
- to return the Centre Pier property to the conditions that existed prior to the processing and storage of radioactive materials, to the extent practical for use by the Municipality of Port Hope. This work is being undertaken by CNL on behalf of Cameco.
- to clean-up the Dorset Street property and buildings for use as a non-licensed industrial site

Overall PDP Methodology

In the development of the PDP, the following information is compiled:

- The soil conditions at the sites including quantities of contaminated soil are summarized;
- An inventory of the buildings at each site summarizing the expected contamination associated with each building;
- Summary of the accumulated waste currently stored at the Dorset St. East Site (including legacy Eldorado waste); and,
- Summary of the equipment at the Main Site.

The information was used to develop high level plans for:

- Building Demolition:
 - removal of hazardous materials;
 - decontamination of structures;
 - stripping equipment and services;
 - demolition of structures;
 - dust control;
 - preparation and decontamination of debris;
 - monitoring; and,
 - recovery of materials.
- Soil Excavation –Further considerations include:
 - underground services;
 - temporary storage of excavated soil;
 - surface water control and water treatment;
 - backfilling; and,
 - restoration.
- Radiological Monitoring and Survey Commitments
- Waste Management Strategy – includes:
 - disposition of qualifying waste at the Port Hope LTWMF;
 - disposition of radioactive waste at a Waste Management Facility to be engineered and constructed in Blind River;
 - surplus material meeting free-release criteria;
 - waste diversion; and,
 - alternate commercial waste disposal.

Summary

This information was used to develop the cost for decommissioning following the guidance of CNSC REGD-3.3.1 *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*. The current estimated cost for final decommissioning of the PHCF Main Site, Centre Pier and 158 Dorset Street East properties is \$138.2 million, which represents an increase of \$9.6 million from the PDP and financial guarantee approved during the 2017 licence renewal.

The \$138.2 million includes allocations of \$37,090,000 for demolition, \$8,914,000 for soil excavation, fill replacement and landscaping, \$20,625,000 for waste management and disposal, and \$71,571,000 for project related costs including regulatory activities, Indigenous consultation, public consultation, engineering, construction management, radiological, and other monitoring as well as an escalation provision and contingency funds. These proposed changes to the financial guarantee will be presented to the Commission for approval in hearing in writing in December 2023. Once approved by the Commission, Cameco will secure the appropriate financial instrument(s) for the total amount of the decommissioning cost estimate and submit this information to the CNSC in accordance with licence requirements.

