



# Technical Reports

Public Summary

Port Hope Conversion Facility

## 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); storage facilities on the Centre Pier at 1 Hayward Street; 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. The PDP includes an estimate of the cost of decommissioning the facility in present day dollars and also provides a high-level concept of how the facility would be decommissioned. The licensee is required to provide a financial guarantee to the Government of Canada that covers the estimated cost of decommissioning activities described in the PDP. CNSC regulatory guide G-219 Decommissioning Planning for Licensed Activities provides guidance to licensees on the development of a PDP. Aspects of CSA N294-14 Decommissioning of facilities containing nuclear substances describes requirements of final decommissioning planning, aspects of which have been incorporated into the PDP.

It is important to note that the PDP is a planning tool, as it forms the basis for establishing a financial guarantee for decommissioning and the structural outline of subsequent detailed decommissioning plans. Decommissioning of the facility requires the development of detailed decommissioning plans and the licensee to submit an application for and to obtain a decommissioning licence from the CNSC. This level of detail required for a decommissioning licence may only be determined once the operations have ceased.

### 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 a third party engineering firm with expertise in decommissioning, demolition, remediation and cost estimating. It is then reviewed and revised as appropriate before it is approved by Cameco and

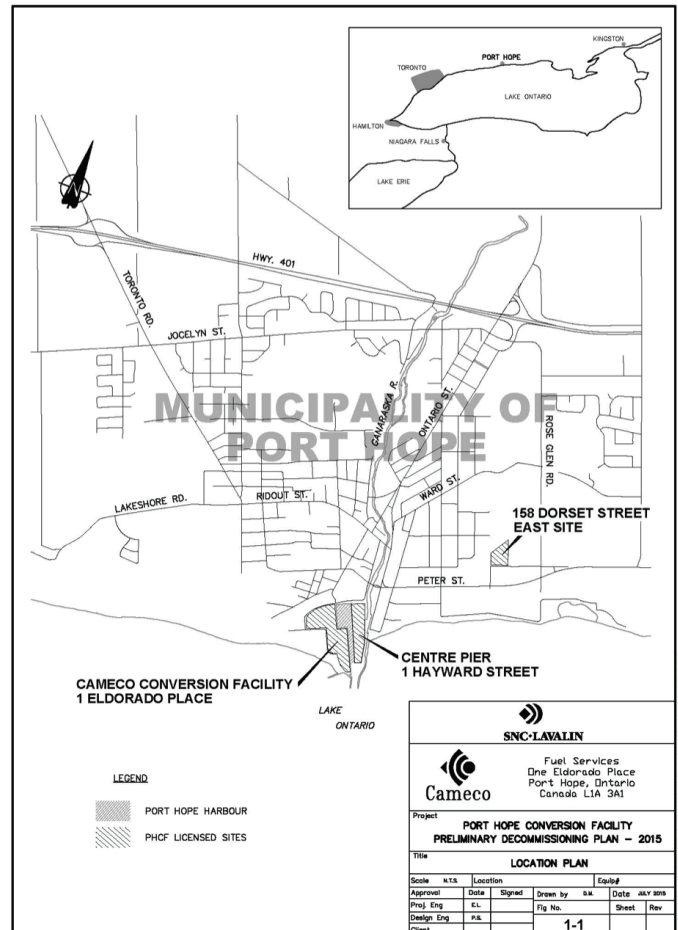


Figure 1: (Location of PHCF Facilities)

submitted to CNSC staff for review and acceptance. The proposed changes to 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 cell 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. In addition to the decommissioning licence approvals required for each of the facilities described above, this proposed waste management cell would also require a waste nuclear substance licence that would follow the CNSC licensing process, which includes public participation.

## Planning and Consultation

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

- land owners where leased land is involved;
- the CNSC;
- the Canadian Environmental Assessment Agency (CEAA);
- other interested federal departments;
- the provincial Ministry of Environment and Climate Change (MOECC);
- other provincial ministries; and,
- the Municipality of Port Hope.

## 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:
  - Environmental 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 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 as part of the decommissioning process.

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 G-206 Financial Guarantees for the Decommissioning 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.



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

One important aspect of the PHCF PDP, is that a major plant site remediation project is planned to be implemented in conjunction with the Port Hope Area Initiative (PHAI) Project. The PHAI is in the process of establishing a long term waste management facility (LTWMF) in the Municipality of Port Hope. The Cameco remediation project, which is referred to as “Vision in Motion” (VIM), will consist of removal of some older or redundant buildings on the Main Site and Center Pier, the excavation of approximately 33,000 m<sup>3</sup> of contaminated soil from the Main Site and approximately 35,000 m<sup>3</sup> of soil from the Center Pier, the removal of approximately 30,000 drums of wastes that pre-date Cameco’s operation of the facility and the transfer of these materials to the LTWMF. 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 is estimated from that project’s engineering designs and information available in 2015 when the update to the PDP was initiated.

These volumes may change as detailed engineering for VIM is completed, but will remain within the Cameco allocation of approximately 150,000 m<sup>3</sup> in the Port Hope LTWMF.



Figure 2: (Planned VIM Activities)

### 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 97,000 m<sup>3</sup> of contaminated materials that could be incorporated into a conceptual long term waste management facility to be constructed at the Blind River Refinery site. The PDP assumes that BRR will undergo a similar decommissioning process in the proposed scenario. 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 objective is to return the site to the conditions that existed prior to the processing and storage of radioactive materials, to the extent practical.

## 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 Centre Pier and Dorset St. East Site (including that with an Eldorado legacy); 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 – from the PHCF Main Site, Centre Pier and Dorset St. E. Site; 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 G-206 *Financial Guarantees for the Decommissioning of Licensed Activities*. The current estimated cost for final decommissioning of the PHCF Main Site, Centre Pier and 158 Dorset Street East properties is \$128.6 million, which represents an increase of \$26.9 million from the PDP and financial guarantee approved during the 2012 licence renewal. The \$128.6 million includes allocations of \$36,671,000 for demolition, \$27,912,000 for soil excavation, fill replacement and landscaping, \$17,033,000 for waste management and \$46,984,000 for project related costs including engineering, construction management, radiological, and other monitoring as well an escalation provision and contingency funds. These proposed changes to the financial guarantee will be presented to the Commission for approval in the November 2016 licence renewal hearing. 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.

