

Date: December 20th 2017

From: Brennain Lloyd (Northwatch)

To: Candida Cianci, Environmental Assessment Specialist
Canadian Nuclear Safety Commission

By email: cncs.ea-ee.ccsn@canada.ca

Subject line: Northwatch Comments on CNL's Whiteshell "In-situ" Decommissioning Project DRAFT EIS

CEAA Reference number: 80124

Comments:

Good evening,

Please find attached Northwatch's comments and related information requests further to our review of the draft Environmental Impact Statement for Canadian Nuclear Laboratories' Proposed In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site in Pinawa, Manitoba.

Thank you for your consideration.

Brennain Lloyd

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Northwatch Project Coordinator

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Northwatch
www.northwatch.org

Canadian Nuclear Laboratories Proposed
In Situ Decommissioning of WR-1 at the
Whiteshell Laboratories Site, Manitoba

Northwatch Comments

CNL's Draft Environmental
Impact Statement 2017

December 2017



Comments prepared and provided by Northwatch

19 December 2017

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1. Introduction

Canadian Nuclear Laboratories (CNL) is proposing to revise their CNSC-approved approach to decommissioning the Whiteshell Reactor # 1 (WR1), which is located within the Whiteshell properties at Pinawa, Manitoba. CNL is describing their revised decommissioning approach as one that “includes partial dismantling and demolition, along with passive, permanent disposal of the below-grade portions of the facility (the Project). The disposal approach is referred to as In Situ Decommissioning (ISD).”¹

Branded as “In-Situ Decommissioning” by the proponent, the proposal is to entomb the highly radioactive subsurface components of the reactor by filling the lower levels with a grout of unspecified composition and then constructing a cover. Entombed reactor components would include the reactor core (i.e. calandria, fuel channels, thermal shield, and biological shield).²

The proposal includes permanent deposition of the below-grade reactor systems, structure and associated radiological and non-radiological hazards in the subsurface, but the draft EIS indicates that “consideration will be given to place some equipment from the heat transport system that is currently located on the ground-level reactor floor to a below-grade position for incorporation in the disposal system.”³

Northwatch’s Interest

Northwatch is a public interest organization concerned with environmental protection and social development in northeastern Ontario. Founded in 1988 to provide a representative regional voice in environmental decision-making and to address regional concerns with respect to energy, waste, mining and forestry related activities and initiatives, we have a long term and consistent interest in the nuclear chain, and its serial effects and potential effects with respect to northeastern Ontario, including issues related to uranium mining, refining, nuclear power generation, and various nuclear waste management initiatives and proposals as they may relate or have the potential to affect the lands, waters and/or people of northern Ontario.

¹ Draft Environmental Impact Statement, p. 1-1

² Draft Environmental Impact Statement, e.g. p. 7-6, 12-2

³ Draft Environmental Impact Statement, p. 12-1

The Whiteshell Laboratories' project at Pinawa is outside Northwatch's geographic area, which is comprised of the six federal districts of northeastern Ontario. Northwatch's direct interest is in the potential for decisions related to CNL's three concurrent environmental assessments for large-scale radioactive waste projects to be precedent-setting. CNSC decisions on many of the issues associated with Canadian Nuclear Laboratories proposed entombment project have potential implications for northern Ontario in the event that practices, policies and / or regulatory decision-making with respect to the management of radioactive wastes become precedent-setting or normative in Canada.

2. Project Development Over the EA Phases

Notice of the commencement of the environmental assessment was issued in May 2016, and a project description was released on June for a 30 day comment period. In October 2017 a draft Environmental Impact Statement was posted on the public registry for comments by December 19th, 2017. A final EIS and an environmental assessment report to be prepared by CNSC staff is currently expected to be released for public comment in mid-2018.⁴

On 4 July 2016 Northwatch provided comments on the Project Description for the “In Situ Decommissioning of the WR-1 Reactor at the Whiteshell Laboratories Site” produced by Canadian Nuclear Laboratories.⁵ In general, we found the Project Description to be insufficient or inadequate in a number of respects, in terms of both form, substance, and the degree to which statements were substantiated (or, more specifically, the unsubstantiated nature of many of the statements).

In reviewing the Draft Environmental Impact Statement, we had expected these shortcomings to be resolved; upon review of the Draft EIS we have concluded that to a large degree they have not been resolved. Additional details will be provided in later sections, but in summary our conclusions on progress between the Project Description and the Draft EIS are as follows:

- Like the Project Description, the Draft EIS provides no clear and detailed statement of the Project’s purpose. Nor does it provide a clear statement on the basis for bringing forward an alternative approach at this time, mid-point in the implementation of the already approved decommissioning plan
- Like the Project Description, the draft EIS provides no clear delineation between which activities under the already approved plan are to be retained and which are to be replaced with a “*new approach*”
- Like the Project Description, the document is tedious in its over-generalization and failure to provide basic information in a straightforward fashion

⁴ [CEAR # 21](#)

⁵ [CEAR # 14](#)

- Like the Project Description, the document claims that In Situ Decommissioning of the WR-1 Reactor will meet the project criterion of isolating and containing contamination and ensuring that the potential effects on humans and the environment both during and after decommissioning are within acceptable limits, but the draft EIS provides information – albeit limited - that contradicts that claim
- Like the Project Description there are numerous statements that the underground structures will be sealed by grouting, but there draft EIS lacks adequate descriptions of the grouting, the grouting material or the grouting methods
- Like the project description, the Draft EIS utilizes non-sequiturs and attempts to assign relationships to unrelated statements; this occurs in what are some of the most fundamental aspects of the decommissioning project
- Like the Project Description, the document provides inadequate information about the site, site conditions, past land uses, and related residual hazards; in particular, it provides inadequate information about how the new proposed project of “in situ decommissioning” for the reactor at Whiteshell interacts with other decommissioning activities at the Whiteshell property; a cumulative effects assessment is required

In two respects we noted general improvements from the Project Description to the Draft EIS, the first being that the draft EIS does provide an improved discussion of alternatives to the proposed approach, although still incomplete. The second area of improvement from the Project Description to the Draft EIS is that in the latter document CNL consistently refers to grout as such, and has relented in its use of concrete as an interchangeable term; that said, there is so little information provided about the grout and its characteristics that it could well simply be standard residential or industrial grade concrete, and using the terms of concrete and grout interchangeably might not be inaccurate.

3. Review of Draft Environmental Impact Statement

3.1 Focus of Northwatch Review

Consistent with Northwatch’s primary interest in the project and as an outcome of collaboration with other public interest groups participating in this review (including the Canadian Environmental Law Association and members of the longstanding group Concerned Citizens Committee of Manitoba, and others). Northwatch intends to focus our review in two key areas:

- CNL’s presentation and technical evidence with respect to their proposed decommissioning standard, including an evaluation of CNL’s end-state objectives for the decommissioning project and the ability for the proposed in-situ approach of the WR-1 Decommissioning Project to achieve those objectives, and
- CNL’s intended use of grout and reliance on it as a barrier in the entombment of the Whiteshell Reactor#1, including an evaluation of evidence CNL provides with respect to the effectiveness of their proposed grout formulation and application in containing and isolating nuclear wastes from the environment.

Northwatch’s review of the draft Environmental Impact Statement is just that – a review. Northwatch’s intent at this point in the environmental assessment process is to evaluate the draft EIS for the adequacy, quality and comprehensiveness of the information provided, and to provide the tribunal with that evaluation to assist in the tribunal determining next steps in the review process. It is not Northwatch’s intent at this point in the process to identify a preference for one option or alternative over another or to place before the tribunal an argument with respect to the merits of the project (or lack thereof).

General comments of the draft Environmental Impact Statement are also provided in Section 3.4 of this submission.

3.2 CNL’s Proposed Decommissioning Standard

The statement “The end-state plan for the WL site will be to return lands disturbed by site activities to a condition that is physically stable, safe, and in keeping with the post-closure land use classification and release criteria to achieve the planned end-states” appears 24 times in

Sections 6 through 8, sometimes appearing twice on the same page. Despite the quantity of these statements, the draft EIS lacks quality in the discussion of end-state objectives of the proposed decommissioning approach.

Additional statements are more specific, and even more pointedly identify gaps in the Draft EIS. For example:

- The draft EIS states that “the facility structure would be decontaminated and then demolished to achieve unrestricted release criteria” but does not indicate what the release criteria is or would be, or the basis for developing release criteria
- The draft EIS states that “final radiological surveys to verify that release criteria are met” will be undertaken, but does not describe any methodology for undertaking those radiological surveys or provide any description of what the release criteria is that the survey is verifying has been met, and
- “Following removal and decontamination, the facility would be subjected to a radiological survey to confirm that facility release criteria have been met”, but as indicated above no release criteria has been described⁶

In later sections of the draft EIS, the report authors indicate that the proponent is in the process of developing a *Closure Land-use and End-state Plan* which will include criteria for site remediation and clean-up, definitions of post-closure end-states, and the release criteria:

Future use of the WL site will depend on the ability of AECL to release parts of the site for unrestricted use upon completion of the Project. CNL is developing the WL Closure Land-use and End-state Plan, along with appropriate criteria for site remediation and clean-up activities. The Plan defines the post-closure end-states, the post-closure land-use classifications and allocation, and the physical release criteria that must be met at the site closure. These end-state definitions, land-use classification and allocation, and physical release criteria are applicable to all project decommissioning activities being carried out under the WL Closure Project.⁷

What is unclear is how the proponent could have developed a decommissioning approach – which it repeatedly claims will achieve the required end-state – before post-closure end-states

⁶ 1-7, 2-13, 2-17 1.1, 2.5.2, 2.5.3

⁷ 3-38 3.5.4.2 Post-Closure Activities

have been defined. What is wholly clear is that what CNL is attempting to engage in is a private process of standard-setting.

The development of standards and guidelines is the responsibility of the Canadian Nuclear Safety Commission, not of licensees. The appropriate means of developing standards and guidelines for decommissioning is through a public process which engages a full range of stakeholders and relies on sound science and accepted federal policies, such as the Precautionary Principle.

A key outcome of the current process to review CNL's draft EIS for their revised Whiteshell decommissioning approach should be a suspension of the environmental assessment process to allow the CNSC adequate time to fill the current regulatory gaps related to decommissioning, including definitional gaps such as for end-state objectives and site-release criteria.

3.3 Grout CNL's Proposed In-Situ Approach to Decommissioning

While the terms "grout" and/or grouting appear hundreds of times in the Draft EIS document, only a single page is fully assigned to a description of the grout and grouting in proposed decommissioning approach.⁸ Despite the very limited amount of information actually provided about the grout, its formulation and application, grouting is fundamental to the proposed approach:

The decommissioning activities for the WR-1 Building proposed as part of the Project and assessed in this EIS include:

- preparing for ISD;*
- establishing temporary and supporting infrastructure;*
- grouting of below-grade structures and systems;*
- removing above-grade structures and systems (excluding the east and service wings);*
- installing an engineered cover over the grouted below-grade structures and systems;*
- final site restoration;*
- preparation for Institutional Control; and*
- Institutional Control (includes both passive and active controls).⁹*

The draft EIS makes repeated statements about the proponent's expectations of the grout, such as:

⁸ Section 3.5.1.2, "Grouting of Below Grade Structures and Systems" Draft EIS p 3-32

⁹ Draft EIS p 1-10

“Grout is used to impede the migration of contaminants out of the confines of the structure”¹⁰

and

“Grout is used for filling void spaces and because of its flowable nature, can be introduced into the ‘nooks and crannies’ of most structures easier than other fill materials. In addition, the grout is used to impede the migration of contaminants out of the confines of the structure. Grout is also used to provide shielding for workers filling areas and/or components that contain high radiological source terms.”¹¹

But more attention is given the production of air emissions from the operation of batch mixing plant for grout production and hauling of the cement and aggregate¹² than is given to the actual formulation, application, and functions of the grout. The document acknowledges that the grout will degrade with time and will fail as a barrier between the radiological contamination entombed subsurface and the surrounding groundwater and biosphere¹³ but avoids providing clear estimates of time or consequence related to this failed barrier. The same section of the EIS is one example of the inconsistencies throughout the document, claiming that the in situ approach will “isolate” the radioactive hazards in one paragraph, and two paragraphs later acknowledging that the barriers (i.e. the grout) will fail and radionuclides will “leak” to groundwater.¹⁴

The Draft EIS purports that grout has the following functions: void fill, stabilization, and shielding.¹⁵ While we do not argue the point that grout can provide shielding, including for workers during decommissioning activities, we would speculate that the capacity and degree of shielding would be largely if not wholly depending on the formulation of the grout, including density and composition. No information is provided on the formulation of the grout.

¹⁰ Draft EIS p 2-22

¹¹ Draft EIS p 3-32

¹² Draft EIS p 2-21

¹³ Draft EIS p 2-21

¹⁴ Draft EIS p 2-21

¹⁵ Section 2.5.4.3

The Draft EIS goes on to state that “In addition, the grout is used to impede the migration of contaminants out of the confines of the structure. Various sequestering agents can be added to the grout formulation to enhance the immobilization of selected contaminants” but again provides no information on what agents will be added to the grout formulation.¹⁶

In Section 3.5.1.2 “Grouting of Below Grade Structures and Systems”, the draft EIS provides a very general description of the function of the grout – largely repeated from earlier sections – and includes an “I wish” statement that CNL will correctly formulate grout for various applications during the implementation of the decommissioning project: .

The grout will be designed to achieve the required physical properties to provide adequate resistance to damage, and release of contamination. The design will take into account the effects of using local fill materials (e.g., sand and gravel) and the materials the grout will interact within the WR-1 below grade structure (e.g., aluminium). Multiple grout formulations may be necessary to achieve complete filling of the below grade structure, but all formulations will adhere to the same minimum requirements to ensure the final end state performs as expected.¹⁷ ... Quality control measures on grouting operations will be implemented to ensure all requirements for the grout are met and the final product will perform as expected.

In the final EIS, CNL must be directed to provide clear descriptions of the grout(s), and their formulation, characteristics and required performance, including but not limited to the following:

- the required physical properties of the grout(s)
- the degree of isolation required to be considered acceptable
- the “final end state” performance expectations, stated in measurable terms over various time frames
- the quality control measures that will be in place

The descriptions must be supported by technical papers that demonstrate the basis for the CNL statements and the means by which they have been demonstrated (laboratory tests, field observations, or other means). Broad generalizations and sweeping statements to not provide a basis for project approval.

¹⁶ Section 2.5.4.3

¹⁷ Draft EIS p 3-32

The Draft EIS acknowledges that “the grout will slowly degrade over time, allowing water movement to increase as it degrades, though this is expected to occur over thousands of years, and not at all once”,¹⁸ but decouples this acknowledgement from the consequence of water movement including radionuclide migration (i.e. migration to groundwater and the biosphere) and from providing the reader with any meaningful estimates of time. For this information to be meaningful, it must include evidence-based estimates of how the rate of releases would increase over time. Those estimates of the rate of releases - of both radiological and other hazardous releases – must then be placed in the context of potential consequence to human health and the environment. Again, this should be stated over various time frames.

To some degree, this information need is approached in later sections of the draft EIS, as in Section 6.3.2.6.2, but while some additional information is provided there, it is a very summary description of information readers are to presume is available in a report (Golders 2017) which is itself not made available.¹⁹ No references were provided for key assumptions, such as that post-decommissioning groundwater elevation will recover to the top of (or above) the reactor Materials, and that mean advective groundwater travel times to the Winnipeg River were estimated to be on the order 100 years. Additionally, it is not clear on what basis the report author is able to calculate such matters as additional time required for solute mass to migrate through the grout when the formulations for grout have not yet been devised (at least according to statements in the Draft EIS).

As noted above, the Draft EIS was an improvement on the Project Description in that the draft EIS consistently refers to grout as grout, rather than having used the terms grout and concrete interchangeably, as was the case in the Project Description. That said, there is so little information provided about the grout and its characteristics that – based on the available information – the grout could well be standard residential or industrial grade concrete, and so

¹⁸ Draft EIS Section 3.5.4.1.2

¹⁹ Draft EIS p 6-139

using the terms of concrete and grout interchangeably might not seem to be inaccurate in this very limited context.

3.4 Additional Comments

As a general observation, we found the draft environmental impact statement submitted by Canadian Nuclear Laboratories in October 2017 to be of poor quality and inadequate to the task of describing and providing an evidentiary basis and technical defence of the CNL proposal.

The following comments provide examples of the deficiencies Northwatch identified in our review of the draft environmental impact statement:

- The document is not identified as the draft environmental impact statement; the administrative protocol, the public registry and other sources accurately identify it as a draft document, but the document itself does not
- The document does not identify its authors or provide their credentials or areas of expertise (other than the application of the logos of three consulting firms to the cover page)
- Descriptions throughout the draft EIS are overly generalized and lack the specificity and technical basis to be useful in understanding or evaluating the project design and implementation
- The EIS repeatedly uses subjective terms which are unclear in their meaning and so not only lack meaning but take on the tone of the draft EIS being an advocacy versus a technical document; for example the draft EIS states that
*“Protective measures against the hazards of ionizing radiation will be considered to be optimized when further reductions in radiation doses are outweighed by the additional efforts and costs required for their implementation. This principle applies to all phases throughout the life cycle of the Project, from decommissioning and closure to post-closure, and is a particularly important consideration when developing the decommissioning procedures”*²⁰

²⁰ Draft EIS p 2-4, Section 2.4.1

but provides the reader with no understanding of how CNL would make a determination as to how CNL would quantify that “*further reductions in radiation doses are outweighed by the additional efforts and costs required*”; the statement is wholly undefined and subject to completely subjective interpretation

- There are numerous internal inconsistencies in the document; for example, in some sections where the EIS is hypothesizing on the future availability of off-site waste facilities the statement is open-ended, timelining “final disposal at an unspecified future date”²¹ while other sections use 30 years²²
- The “alternatives” section is incomplete; for example, it does not include a null/do nothing alternative; in addition, it does not consider what Northwatch would characterize as “Alternative # 5”, which would be based deferred decommissioning and on-site storage; with no assurance that off-site storage will become available at a future date – certainly not within the 30 year estimate referenced – Alternative #5 may prove to be the most realistic and the most protective
- There are numerous statements that mis-represent the level of information that CNL has available by suggesting a conclusion that has not yet been reached, at least not based on evidence; for example, in the discussion of Alternative #3 the draft EIS concedes that risks associated with this alternative will be highest in the post-closure period (i.e. higher than the other alternatives) but goes on to purport that “*However, the in situ structure will safely isolate the radioactive material that remains in the WR-1 Building, and allow the material to continue to decay naturally*”²³ which CNL has simply not presented evidence to support such a statement; missing information includes estimates of decay periods for the subject radionuclides and a description of the loss of containment over time; at minimum the draft EIS requires references or links to later sections in the report that provide related information

²¹ Section 2.5.3.1.1

²² Section 2.5.2.1.1

²³ Section 2.5.4.1.2

- The document lacks clarity on several points; for example, at one point the document states that “Canadian Nuclear Laboratories anticipates employment to peak at 400 employees in 2021, when grouting of below grade systems and structures is anticipated to occur”²⁴ but at a later point indicates that “CNL may contract with a Manitoba-based contractor for the grouting work provided one with the necessary qualifications is available”²⁵ which introduces confusion over the employment numbers CNL has provided; are the estimates of CNL employees or of all potential employment, in various capacities, that might be associated with the project

Another significant failing of the Draft EIS is the absence of Technical Support Documents being made publicly available as companions to the Draft EIS. While six appendices provided summaries of technical information, there were numerous technical documents listed in the references which were not provided and are not publicly available, but by reference are reasonably expected to provide relevant technical information in support of the EIS. Particularly when reviewing the final Environmental Impact Statement – should the process proceed to that phase – these documents will be necessary to many public intervenors and technical experts who are assisting them. Examples include:

AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project Comprehensive Study Report. WLDP-03702-041-000 Revision 2. March 2001. Pinawa, Manitoba.

AECL (Atomic Energy of Canada). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000 Revision 2. March 2001.

CNL (Canadian Nuclear Laboratories) 2015. Whiteshell Laboratories Detailed Decommissioning Plan: Volume 6 – Whiteshell Reactor #1: Building 100. WLDP-26400-DDP-001. Revision 3. February 2, 2015.

CNL (Canadian Nuclear Laboratories). 2016a. Annual Safety Report: Environmental Monitoring in 2015 at Whiteshell Laboratories. WL-509243-ASR-2015. June 2016.

CNL (Canadian Nuclear Laboratories). 2016a. Water Chemistry for the Winnipeg River Intake Water for Whiteshell Laboratories and Winnipeg River Levels at Whiteshell Laboratories Data.

²⁴ Section 3.5.5, P 3-38

²⁵ Draft EIS P 6-435

CNL (Canadian Nuclear Laboratories). 2017. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. WLDP-26000-SAR-001. Prepared by Golder Associates Ltd. September 2017.

CNL (Canadian Nuclear Laboratories). 2017a. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. WLDP-26000-SAR-001. Prepared by Golder Associates Ltd. September 2017.

CNL (Canadian Nuclear Laboratories). 2017a. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. WLDP-26000-SAR-001. Prepared by Golder Associates Ltd. September 2017.

CNL (Canadian Nuclear Laboratories). 2017a. Program Requirement Document Environmental Protection Management System Documents. 900-509200-PRD-001. Revision 1. February 2017.

CNL 2016b. Annual Safety Report 2015 Progress Report on the Environmental Assessment Follow-up Program for Whiteshell Laboratories. WL-509246-ASR-2015 Rev. 0. June 2016.

CNL 2016b. Annual Safety Report: Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-ASR-2015 June 2016.

CNL. 2013. Fire Response Involving Radioactive Material at WL. 151-508720-PRO-036. Revision 0. June, 2013. Chalk River, Ontario.

CNL. 2016. Technical Document WR-1 Reactor Radiological Characterization Summary and Radionuclide Inventory Estimates. WLDP-26100-041-000-0001. August 2016

CNL. 2016a. Environmental Assessment (and/or Environmental Effects Review), In Situ Decommissioning of the WR-1 Reactor at the Whiteshell Laboratories Site. WLDP-03700-ENA-001. Revision 0. April 26, 2016.

CNL. 2016a. Technical Document WR-1 Reactor Radiological Characterization Summary and Radionuclide Inventory Estimates. WLDP-26100-041-000-0001. August 2016.

CNL. 2016b. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 3. August, 2016. Chalk River, Ontario.

CNL. 2016b. Environmental Assessment (and/or Environmental Effects Review), In Situ Decommissioning of the WR-1 Reactor at the Whiteshell Laboratories Site. WLDP-03700-ENA-001, Revision 0. CNL, Chalk River, ON. 34 pp.

CNL. 2016c. Emergency Procedures: Building 100 WR-1 Reactor Building WL-508730-EP-002 Revision 2. April 2016. Chalk River, Ontario.

CNL. 2016c. Regulatory Requirement Document: Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. August 2016.

CNL. 2016d. Water chemistry for the Winnipeg River Intake Water for Whiteshell Laboratories and Winnipeg River Levels at Whiteshell Laboratories data. Received 28 Nov 2016 from Golder Associates.

CNL. 2017b. Annual Safety Report: WL Annual Safety Review for 2016. WL-00583-ASR-2016. Revision 0. April 2017. Chalk River, Ontario.

CNL. 2017b. Canadian Nuclear Laboratories Integrated Waste Strategy Summary Document. CW-508600-PLA-006 Revision 0. April 2017.

CNL. 2017b. Non-Rad Inventory Estimate for WR-1 ISD. WLDP-26400-038-000-0001 Revision 2. March, 2017.

CNL. 2017c. Waste Management. 900-508600-PDD-001 Revision 0. February 3, 2017.

CNL. 2017d. Program Description Document Environmental Protection Management System Documents. 900-509200-PDD-001. Revision 1. February 2017. CNL. 2015. Whiteshell Laboratories Detailed Decommissioning Plan: Volume 6 – Whiteshell Reactor #1: Building 100. WLDP-26400-DDP-001. Revision 3. February 2, 2015.

Dillon (Dillon Consulting Ltd). 2017. WR-1 Hydrogeological Study Report. WLDP-26000-REPT-004. Prepared for Canadian Nuclear Laboratories. April 2017.

EcoMetrix (EcoMetrix Incorporated). 2017a. Results of Aquatic Toxicity Testing on Non-irradiated HB-40. Memo to Alyson Beal and Robin Kusch of Golder Associates Ltd. January 20, 2017.

EcoMetrix (EcoMetrix Incorporated). 2017. Whiteshell WR-1 Environmental Risk Assessment. WLDP-26000- REPT-006. Prepared for Canadian Nuclear Laboratories. August 2017.

EcoMetrix. 2017b. Whiteshell WR-1 Environmental Risk Assessment. WLDP-26000-REPT-006. Prepared for Canadian Nuclear Laboratories. August 2017.

Golder (Golder Associates Ltd.) 2017. CNL WR-1 In Situ Decommissioning – Screening Level Solute Transport Simulations (DRAFT 0). GAL-022-1656897. January 2017.

Golder (Golder Associates Ltd.). 2017. WR-1 Groundwater Flow and Solute Transport Modelling. WLDP-26000- REPT-005. Prepared for Canadian Nuclear Laboratories. August 2017.

Golder (Golder Associates Ltd.). 2017. WR-1 Groundwater Flow and Solute Transport Modelling. WLDP-26000-REPT-005. Prepared for Canadian Nuclear Laboratories. August 2017. Government of Manitoba. 2013.

Golder (Golder Associates Ltd.). 2017a. Climate Change Assessment for WR-1 In Situ Decommissioning. WLDP-26000-REPT-007. Prepared for Canadian Nuclear Laboratories. August 2017.

Golder. 2017b. WR-1 Groundwater Flow and Solute Transport Modelling. WLDP-26000-REPT-005. Prepared for Canadian Nuclear Laboratories. August 2017.

4. Conclusions

As illustrated by the many failings of the draft EIS identified in this submission and in the submissions of many other intervenors and review participants, the proponent and their consultants have failed to produce a credible environmental impact statement and set of supporting documents; what CNL has submitted as a draft environmental impact statement simply does not provide the basis for proceeding in the environmental assessment process.

There are several potential causes for this failure; we offer three:

- The proponent is seeking to avoid the scrutiny that would come from a rigorous assessment process by simply starving the process of necessary information
- The project is not sufficiently developed to provide an adequate description with sufficient supporting information
- The project is simply not viable, and evidence in its support cannot be presented due to the fundamental flaws with the project concept and design

The way forward for this project is not clear. Yes, the EIS needs to be revised and to a large degree redone, and several supporting documents need to be provided or developed and then provided. Clearly, there is a large investment of effort required of CNL before they will be in a position to complete a revised EIS; what is unclear is whether CNL has the commitment and the capacity to meet these challenges.

As the responsible authority, the Canadian Nuclear Safety Commission must ensure that the review is rigorous, that the social and technical scientific findings presented by CNL in support of any eventual project are sound, and that public and indigenous engagement and scientific investigation are not sacrificed to meet the Canadian Nuclear Energy Alliance / Canadian Nuclear Laboratories business needs.

In the immediate, we make three requests of the Canadian Nuclear Safety Commission:

- Require CNL to respond to information gaps and deficiencies and questions raised by public intervenors and review participants before the review proceeds

- Require CNL to resubmit a revised draft EIS after the above step has been completed, and make it subject to a public review and review by the federal departments in a manner similar to the review closing December 19th
- Review the protocol between CNSC and CNL in an open and transparent manner, engaging the public and indigenous peoples in a process that leads to a revision of the protocol, including and particularly the timeline, to improve the review process and better accommodate the level of public and indigenous interest and better reflect lessons learned in this process to date

In particular, Northwatch requests that the a full suite of technical support documents be made publicly available in advance of the public review period for the revised draft EIS (examples provided above) and that the information requests forwarded by Northwatch receive a response from CNL in a timely fashion.

Northwatch looks forward to continued engagement in this review process and additional opportunities to provide input into the review of this project.

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Site, Manitoba

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Northwatch Information Requests Following Review of Draft Environmental Impact Statement Environmental Impact Statement for the Proposed “In Situ” Decommissioning of WR-1 at the Whiteshell Laboratories, Pinawa, Manitoba

IR#	EIS Page	EIS Section	Description / EIS Excerpt	Discussion	IR
1	1-10	1.2	“During decommissioning, consideration will be given to place some equipment from the heat transport system that is currently located on the ground-level reactor floor to a below-grade position for incorporation in the disposal system.”	Placing additional radioactive materials in the sub-surface area of WF#1 would be a significant change to the project, and would require careful study and recalculations to understand the potential consequences.	Provide a detailed analysis of the contaminant release consequences of adding these materials to the waste inventory to be placed sub-surface for each alternative.
2	1-12	1.4	“AECL, a federal Crown corporation, is responsible for its radioactive waste liabilities, including the WL site. AECL has contracted CNL to manage and operate its sites on its behalf, including completing the decommissioning of the WL site. As such, CNL is the proponent for the Project”	The respective roles and the decision-making functions of AECL and CNL remain ambiguous, particularly given CNL’s short term contract and AECL’s long term responsibilities.	Provide a full and detailed description of the how CNL’s decision-making process for this project has involved AECL and how it will do so in the future phases.
3	1-12	1.4.1	AECL and the GoCo process bring in world class nuclear decommissioning expertise.	This is one of several statements in the draft EIS that are devoid of actual information.	Provide a factual description of how the GoCo process have brought expertise to decommissioning projects.
4	2-1, 2-2	2.3	The implementation of the GoCo model provides an opportunity for AECL to leverage the experience and expertise of the private sector to optimize work and increase efficiencies and effectiveness, including taking action to address risks sooner and advancing the commissioning of waste disposal facilities.	This is one of several statements in the draft EIS that are devoid of actual information.	Provide a comparative analysis of how the expertise of the consulting firms utilized by CNL for this project (e.g. Golders) has been enhanced or “leveraged” through the GoGo model.
5	2-4	2.4.1	Protective measures against the hazards of ionizing radiation will be considered to be optimized when further reductions in radiation doses are outweighed by the additional efforts and costs required for their implementation. This principle applies to all phases throughout the life cycle of the Project,	This statement appears to be inconsistent with the ALARA principle.	Provide tangible examples of when further reductions in radiation doses would be outweighed by the additional efforts and costs required for their implementation.

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			from decommissioning and closure to post-closure, and is a particularly important consideration when developing the decommissioning procedures.		
6	1-7, 2-13, 2-17	1.1, 2.5.2, 2.5.3	The facility structure would be decontaminated and then demolished to achieve unrestricted release criteria.” and “final radiological surveys to verify that release criteria are met” and “Following removal and decontamination, the facility would be subjected to a radiological survey to confirm that facility release criteria have been met” are statements related to release criteria found throughout the draft EIS.	The draft EIS references “release criteria” at numerous points, but does not provide the criteria.	Provide a current copy of the site release criteria that will apply in this project.
7	3-38	3.5.4.2 Post-Closure Activities	Future use of the WL site will depend on the ability of AECL to release parts of the site for unrestricted use upon completion of the Project. CNL is developing the WL Closure Land-use and End-state Plan, along with appropriate criteria for site remediation and clean-up activities. The Plan defines the post-closure end-states, the post-closure land-use classifications and allocation, and the physical release criteria that must be met at the site closure. These end-state definitions, land-use classification and allocation, and physical release criteria are applicable to all project decommissioning activities being carried out under the WL Closure Project.	This section of the Draft EIS indicates that release criteria and end-state definitions that would apply in the subject project are currently under development.	Provide a copy of the most recent version of the WL Closure Land-use and End-state Plan. Provide a copy of the public engagement program that supports the development of the Plan, and a record of how the public and Indigenous peoples have been engaged to date in the Plan’s development. Provide a timeline for the completion of the Plan.
8	6-161	6.4.1.5.2.2	The end-state plan for the WL site will be to return lands disturbed by site activities to a condition that is physically stable, safe, and in keeping with the post-closure land use classification and release criteria to achieve the planned end-states.	This statement appears repeatedly throughout the Draft EIS.	Provide a definition of “end states” and a discussion of how planned end-states are measured and in what instances they have been achieved in other decommissioning projects.
9	2-14	2.5.2.2, similar in 2.5.3.3	After decommissioning is complete, residual radiation may still be present, but it is expected to be of very low levels (below the clearance and	This statement suggests that the proponent has knowledge of clearance and release levels and the soil cleanup	Provide a statement of release levels and the soil cleanup criteria as they will apply to this project

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			release levels and the soil cleanup criteria) that will not pose a risk to the natural environment at the WL site in the post-closure phase (i.e., all radioactive and contaminated materials have been removed and disposed of off-site).	criteria as they will apply to this project.	
10	2-15	2.5.2.3 Technical	There are numerous examples of complete decommissioning projects of nuclear reactors in the U.S., United Kingdom, Japan, France, and Germany. Canada has not performed a reactor dismantling project yet, other than simple SLOWPOKE reactors. Lessons learned from previous decommissioning work would be used in preparing and executing this decommissioning plan, including the World Association of Nuclear Operators, Institute of Nuclear Power Operations, and CNL.	This statement suggests that international experience will be applied in preparing and executing a decommissioning plan for the Whiteshell Reactor #1.	Provide a clear and detailed explanation as to how decommissioning experience in each of the listed countries has been – and will be – applied to preparing and executing a decommissioning plan for the Whiteshell Reactor #1.
11	2-15	2.5.2.3 Technical	However, it is assumed that an approved waste management facility will exist at the time of decommissioning (i.e., in 30 years), and that it will have the capacity to accept the wastes to be generated by the Project.	The draft EIS makes numerous statements expressing an expectation that an approved waste management facility will be in place in approximately thirty years.	Provide additional details on the type of waste management facility being referred to (e.g. waste type, storage or disposal, private or public ownership)
13	2-20	2.5.4	Alternative #3 involves the complete ISD of the WR-1 Building, where below-grade WR-1 systems, components and structures will be permanently encased with grout, and associated radiological and non-radiological hazards will be immobilized. The internal void spaces within the WR-1 will be grouted and the external portions of the facility are of robust construction with reinforced concrete that will provide a migration barrier between the internal contamination and the environment.	The draft EIS makes numerous references to grout, grouting, and the functions of grout, but provides little detail about the grout and grout characteristics.	Provide details on the grout and its formulation and characteristics. Clarify if “external portions of the facility are of robust construction with reinforced concrete” are as-built or as to be modified for ISD
18	Throughout	Throughout	The draft EIS is not accompanied by a sufficient level of detail or technical supporting documents.	Insufficient detail and supporting technical information is provided.	Provide the list of documents included in Section 3.4 of the Northwatch submission.