



## **Oral presentation**

**Submission from  
W. Turner, D. Raman and J. Walker**

In the Matter of the

**Canadian Nuclear Laboratories**

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Application for the renewal of the Nuclear  
Research and Test Establishment Operating  
Licence for the Chalk River Laboratories

**Commission Public Hearing**

**January 23-25, 2018**

## **Exposé oral**

**Mémoire de  
W. Turner, D. Raman et J. Walker**

À l'égard des

**Les Laboratoires Nucléaires Canadiens**

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Demande de renouvellement du permis  
d'exploitation d'établissement de recherche  
et d'essais nucléaires pour les Laboratoires  
de Chalk River

**Audience publique de la Commission**

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# **An Evaluation of Canadian Nuclear Laboratories' Qualifications to Perform Licenced Activities**

A written submission in the matter of the  
Licence Renewal for  
Canadian Nuclear Laboratories,  
Chalk River Laboratories

Commission Public Hearing  
January 24-25, 2018

Submitted by  
W. Turner, D. Raman & J Walker  
11 December 2017

***An Evaluation of CNL's Qualifications to Perform the Licenced Activities***  
***by***  
***W. Turner, D. Raman, & J. Walker***

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## **1 Clarification of the Responsibilities Under the Licence**

There is significant confusion as to which entity is ultimately responsible for the activities at the Chalk River site. This is a problem with the GoCo (Government Owned, Contractor Operated) model implemented by the Government of Canada about four years ago. Canadian Nuclear Laboratories (CNL) is the private company, and in September 2015, Canadian National Energy Alliance (CNEA) became the contractor selected by the Government of Canada to operate that company. Which of these two entities (CNL or CNEA) has the ultimate responsibility for the operations at the Chalk River site?

Here is the issue; CNL is the holder of the Nuclear Research and Test Establishment Operating Licence (NRTEOL) for Chalk River. Yet CNL is not ultimately responsible for the management of that licence. The government assigned that responsibility to CNEA through a 10-year contract. In other words, CNEA is making decisions under the licence for which few of the consequences will occur during this 10-year contract. This is unacceptable, especially as most of the activities conducted under the renewed licence will affect the activities long after the end of that contract.

### ***1.1 Disclaimer***

Because the GoCo model inherently conflates the contractor (CNEA) with the company (CNL), one cannot easily separate out the responsibilities of these two entities with respect to the licence renewal application. Therefore, in the discussion below, unless CNEA is specifically identified, the use of the acronym "CNL" includes the contractor, CNEA

## **2 Introduction**

The current operating licence for Chalk River Laboratories expires on March 31, 2018. As such, the Canadian Nuclear Safety Commission (CNSC) has to consider Canadian Nuclear Laboratories' application for the renewal of its Nuclear Research and Test Establishment Operating Licence (NRTEOL).

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To quote from the CNSC's June 9, 2017 licence renewal notice,

*"... CNL is seeking approval to continue operation of the site for a 10-year period during which it will modernize and consolidate its CRL operations, including the shutdown of the National Research Universal reactor and various infrastructure and site improvements."*

Further, that notice states:

*"The Commission will not accept any submission or make any decision related to CNL's proposed Near Surface Disposal Facility (NSDF) at the CRL site during the public hearing to consider CNL's application for the renewal of its nuclear research and test establishment operating licence for the Chalk River Laboratories"*

### **2.1 This Evaluation is Not a Review of CNL's Proposed Waste Disposal Facilities**

In accordance with the licence renewal notice quoted above, this review is not a submission intended to evaluate CNL's three disposal facilities in accordance with either CNL's or the CNSC's public review process. This evaluation is not a submission related to any public review of the future licensing for any of the three undertakings used as examples in the discussions below.

In the following evaluation of CNL's licence qualifications, the three proposed radioactive waste disposal undertakings are specially chosen as examples of CNL's approach to its plans, public engagement, and execution of the three projects. The primary reason for this choice is that the information about these undertakings is readily available to the public.

### **2.2 The NSCA Requirements for a Licencee**

In accordance with the Nuclear Safety and Control Act (NSCA), the CNSC is required to evaluate CNL's application against the provisions of Section 24(4) of that Act. The following quotation is from the Act:

*(4) No licence shall be issued, renewed, amended or replaced — and no authorization to transfer one given — unless, in the opinion of the Commission, the applicant or, in the case of an application for an authorization to transfer the licence, the transferee*

*(a) is **qualified to carry on the activity** that the licence will authorize the licensee to carry on; and*

*(b) **will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.*** [emphasis added]

From this section, the three requirements in 24(4)(b) are:

- Protection of the environment;
- Protection of the health and safety of persons; and
- The maintenance of measures required to maintain and implement international obligations.

Section 24(4)(b) commences with the verb "*will*", thus requiring an evaluation of the future capabilities of the applicant. It includes more than just predicting future performance from evaluating past operations. It also requires an examination of what the applicant proposes for that future, and their current approach to those undertakings. Past activities are no guarantee of future performance.

### **2.3 The Three Questions**

With respect to CNL's application for the licence [1] there are three major questions that need to be answered.

- Should CNL be the licence holder? Section 2.4 below includes an assessment of the implications of the GoCo model to answer this question.

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[1] Canadian Nuclear Laboratories, *Commission Member Document for Licensing Decision CRL Site Licence Renewal for 2018*, CMD 18-H2.1 /CRL-508760-134-000, 2017 November

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- Whether or not CNL should be the licence holder, is CNL qualified to carry on the activities authorized by the licence?
- Is CNL's management up to the task?

The second question leads to another question.

- How are CNL's qualifications evaluated?

Determining whether CNL is qualified means selecting the evidence to support that determination. We suggest that evidence from past performance is insufficient and likely misleading. Therefore, we suggest an additional question:

- Which is the best predictor, the evidence from past performance, or the evidence from CNL's plans for its future activities?

The discussion in Section 4 below specifically addresses the issues raised by this latter question.

### ***2.4 Additional Concerns with Respect to CNL's Licence Renewal Application***

As discussed in Section 3.1 below, there is an inherent conflict with the GoCo model in that there will always be contracts and all those contracts will have end dates. Thus, matching the expiry date of the licence to a contract end-date will always present problems. This is especially true since the GoCo model means the activities of the contractors will always be project oriented.

Given that a typical contract ends when it is delivered, that timeframe never addresses the operations that follow the commissioning and turn over (see also Section 3.1 below). Thus once a project is completed, the licence for that project should also end and a new licence be issued for the operational phase.

#### **2.4.1 The Contract End Date Does Not Match the Licence Expiry Date**

The current contract for CNEA to manage CNL is six years with a provision for an extension of a further four years. If CNEA gets the 4-year extension, then their responsibility for CNL ends September 2025. The proposed expiry date for this renewal is April 1, 2028 [1], about two and a half years after the CNEA contract ends.

Note that the end of the six-year contract minimum is September 2021, seven years before the proposed expiry date of the renewed licence.

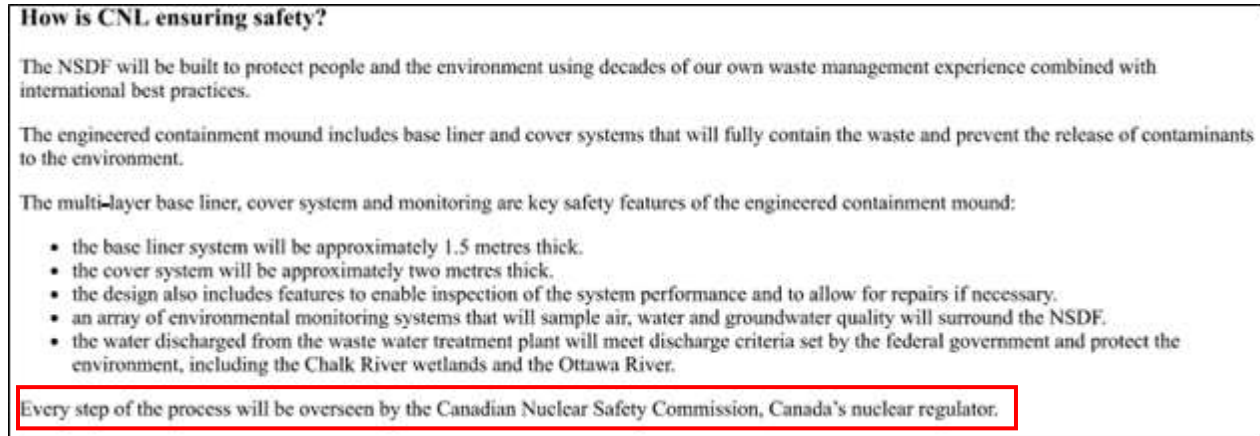
If CNEA's contract is not renewed at the end of the 6-year minimum, who will be responsible for the licence? The expiry date for the licence must coincide with the end of the current minimum, or September 2021.

As discussed in Section 3.1 below, this issue is inherent in the GoCo model. Therefore, all decisions regarding licence renewal should account for the short-term aspects for the contract.

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### **2.4.2 CNL's Approach to the Regulator**

Figure 1 describes the process by which CNL will ensure safety.



***Figure 1 - Ensuring Safety (From CNL's Website)***

What is disturbing from this figure is the highlighted statement in which CNL's description of the role of the CNSC in ensuring safety. This statement suggests that CNSC is the gatekeeper.

This is analogous to the complying with a highway speed limit. Most people exceed the speed limit since the likelihood of being caught is small. This means that if an enforcement officer does not catch the violation, there is no infringement. However, when it comes to meeting the provisions of the NSCA, the CEAA, and/or any other safety and environmental regulation or guideline, the reliance on after-the-fact enforcement to determine whether a breach occurred is not acceptable.

As an example of CNL's approach, consider the following statement of CNL's Vice-President, Decommissioning and Waste Management (see also *Attachment B, Open and Transparent Public Engagement*):

*"The ultimate ruler on this would be the Canadian Nuclear Safety Commission (CNSC), who will need to approve and licence the project."* [2]

While the consequence to an exceedance of a speed limit is small (essentially the individual violator) and short-term (the duration of the trip), the non-compliance with NSCA or any other applicable regulations and guidelines has the potential to cause adverse consequences to the environment and to the public in the long-term. Therefore, the licensee cannot rely on the regulator for "a ruling".

### **2.4.3 The Stability of the Proponent's Management Organization**

The ability to discharge their assigned responsibility is directly dependant on the stability of a proponent's management structure. As such, a separate section evaluating the Question 3: Is CNL's Management Up To the Task? is included below (see Section 5)

## **3 Question 1: Who Should be the Licence Holder?**

### ***3.1 The Underlying Conflict with the GoCo Model Itself***

In 2014, CNL was incorporated as a private company and a wholly owned subsidiary of AECL. This was done in preparation for the implementation of the GoCo model. The search for a contractor to operate and manage CNL resulted in the awarding of the contract to CNEA, in 2015.

[2] See the full report at - <http://www.thedailyobserver.ca/2017/07/17/concerns-about-cnl-project-aired>.



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Given the good intentions of the government in setting up the GoCo model, an underlying conflict appears never to have been identified or anticipated. A contract has an end-date. Thus, it is not an appropriate tool for managing operations into the future (see also Section 2.4). Although one could conceivably develop a contract for the long-term operations of a facility, it is not clear how one would define finite deliverables for such a contract. Without defined deliverables, on what basis would the contractor submit invoices for payment? A contract cannot be open-ended, thus cannot address any changes beyond its end-date. A contract can only address short-term fixed goals.

That conflict should have been obvious. Although never explicitly identified as such, the evidence has been there all along. A thorough review of international experience with the GoCo model would have revealed this weakness. For example, in the UK, at the time the AECL/CNEA contract was signed there were serious questions being raised about UK NDA's reliance on the GoCo model for the decommissioning of nuclear sites within its mandate. For whatever reason, the Government chose not to examine that experience. Recently, the UK NDA has revisited that model resulting in the cancellation of the decommissioning contracts for Sellafeld Ltd. and Magnox Ltd. [3]

The underlying conflict is between the purposes of Government (the "Go" part) and the Contractor (the "Co" part). That conflict colours all activities such as planning, setting of priorities, decisions, management oversight, and implementation.

The "Go" part specifically identifies that it is the Government, which has the ownership. This leads to three questions (with possible answers):

1. What does the Government own? (answer - both the assets and liabilities)
2. What does the Government wish to achieve from those assets? (answer – long-term viability)
3. How does the Government wish to manage the liabilities? (answer – minimize as fast as possible)

Note the inherent conflict between Questions #2 and #3.

The "Co" part specifically identifies that the contractor operates and manages those assets and liabilities. However, the contractor must make a profit. That profit can only be realized within the terms of the contract, and those terms include specified end-dates.

Which of the two questions above, #2 or #3, is best addressed by implementing a contract? Since the answer to Question #2 includes the long-term vision that no contract can address, the obvious answer is Question #3.

Since the long-term vision cannot be addressed through a contract, and the GoCo model specially assumes that it can, the GoCo model is fundamentally flawed. It is not clear how the Government can address this underlying defect without dispensing with the model itself.

Aside from identifying the problem with the GoCo model, we present no solutions in this evaluation. The following evaluation assumes the GoCo model will continue with little or no changes over the long-term.

### **3.2 Conclusion: Who should be the Licence Holder?**

Because of the conflict inherent in the GoCo model (see Section 3.1 above), the oversight body (AECL) has special obligations to ensure that the interest of Canadians receive the highest priority, and ensure that the contractor's short-term obligations address the longer-term vision of the Government. This includes ensuring the safety of all Canadians into the far future. While the CNSC also has a very similar role, its role is reactive, and cannot include contract oversight.

However, from a cursory examination of CNL's application [1] and the CNSC staff responses [4], this licence renewal application appears to put the CNSC into the role of the contract overseer. One only has to look at the contents of the draft Licence Conditions Handbook to come to this conclusion. This draft handbook specifically addresses the "how". Yet it is role of the overseer (that is, AECL) to ensure the "how" is executed as per the long-term obligations defined by the Government of Canada.

When it comes to this renewal application, CNL is in a conflict of interest. It cannot address both the long-term vision (Question #2 above) and its short-term contractual obligations (Question #3 above) at the same time.

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[3] See link - <https://www.gov.uk/government/speeches/nda-settlement-contract-termination-and-inquiry>

[4] CNSC, *A Licence Renewal, Canadian Nuclear Laboratories Chalk River Laboratories*, CMD 18-H2, November 10, 2017

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The role of a licence holder is to ensure all regulations, guidelines and standards applicable to the operations are addressed appropriately such that the potential for long-term adverse consequences are kept to within or better than what are explicitly defined in the legislative and guidance requirements (i.e. Question #2). The role of a contractor is to deliver its contractual obligations within the time and costs defined in that contract. Any responsibility for any long-term consequences is outside that contract. Thus, the contractor role is in direct conflict with the licence holder role.

To conclude, CNL should not be the licence holder. The role of licence holder should be assigned to an entity with a much longer vision than specified by a time-constrained contract.

### **4 Question 2: Is CNL Qualified to “Carry On” the Licenced Activities?**

#### ***4.1 The “Hindsight Fallacy”, Projecting the Future from Past Performance***

As any financial manager will tell you, one cannot base the future performance of an investment on its history. Yet, many people do exactly that. The entity that argues that the past is the best indicator of the future is committing the “Hindsight Fallacy”.

With respect to predicting CNL's future, committing the “Hindsight Fallacy” is even more troubling. The focus of site management has changed from an operational view to a contractual view (see also Section 3.1 above). This transformation results in rendering all evidence from past performance largely irrelevant.

##### **4.1.1 A Fundamental Change in the Management of Chalk River Laboratories**

As discussed in Section 3.1 above, the change that has happened at the Chalk River Laboratories is not simply the change to a GoCo-style of site management. Under the contract, the operator no longer takes ownership for the long-term stewardship of the assets and the long-term viability of the organization. CNEA's focus is on short-term project goals and rewards. This is analogous to car ownership - there is a difference between the care afforded a car that an individual owns for an extended period and that given to a short-term rental.

This change is not all bad. For example, this situation offers the opportunity for a prudent approach to regulation. Under the GoCo contract, the NRU reactor and its associated medical isotope production facilities will be shut down. Thus the regulator is no longer constrained by time sensitive responses to address potentially adverse human health impacts that require immediate responses. For any future undertakings, none will require the regulator to make time-sensitive responses. The regulator is no longer constrained by time

In its evaluation of the past performance of the Chalk River site, the regulator has identified a set of 14 Safety and Control Areas [4]. These are depicted in Figure 2. A cursory review of this list demonstrates that they are heavily biased toward the operation of the NRU reactor and its associated facilities, a facility that will be shut down in 2018 March.

The shutdown of NRU should be a sufficient change to call into question the predictive value of any evaluation of these SCAs. Until they are revised to address the situation after the shutdown, any prediction based on them is pure speculation.

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<b>Table 2: Safety and control areas relevant to the Chalk River Laboratories</b>			
<b>Functional Area</b>	<b>Safety and Control Area</b>	<b>Relevant to CMD?</b>	<b>Performance Rating*</b>
<b>Management</b>	Management System	Yes	SA
	Human Performance Management	Yes	SA
	Operating Performance	Yes	SA
<b>Facility and Equipment</b>	Safety Analysis	Yes	SA
	Physical Design	Yes	SA
	Fitness for Service	Yes	SA
<b>Core Control Processes</b>	Radiation Protection	Yes	SA
	Conventional Health and Safety	Yes	SA
	Environmental Protection	Yes	SA
	Emergency Management and Fire Protection	Yes	SA
	Waste Management	Yes	SA
	Security	Yes	SA
	Safeguards and Non-Proliferation	Yes	SA
	Packaging and Transport	Yes	SA

\*As of June 30, 2017

**Figure 2 - SCAs Relevant to CRL (from Reference 4)**

### **4.1.2 Assessing Future Performance Based on Safety and Control Areas**

To demonstrate the speculative nature of any SCA evaluation, consider a single example, the rating given to Environmental Protection in Figure 2. The regulator assigned this SCA a rating of "SA" or "Satisfactory". Since the rating is based on the activities on the Chalk River site, and managing those activities is the responsibility of the site management, then this rating will be dependant on management decisions [5].

However, that past performance rating of this SCA is of no value what so ever in predicting the future. NRU will be shutdown in 2018. Thus, the only reason there will be any improvements in the radioactive emissions and subsequent radiation exposures at the site is the fact there is no operational NRU reactor. Here is the issue. The shutdown was not an internal CNL management decision. It is a decision made by the Government of Canada. Thus, any improvements in this SCA are a direct result of a decision over which CNL's management had no control.

### **4.2 If not SCA's, What?**

CNL is currently undertaking several initiatives that are focused on achieving the approval for three radioactive waste disposal facilities. An examination of the publically available documentation could provide the required prediction as to CNL's future performance.

[5] Further details supporting this rating are provided in Section 2.1 of Reference 4.

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### **4.3 Better Predictors, Additional Evaluation Criteria**

To preclude speculating about the future based on the “Hindsight Fallacy”, there are activities currently underway that are specifically future oriented. These are CNL's three proposals for various radioactive waste disposal facilities, all of which are somewhere in the planning and review stage. Presently there is more than enough information about these undertakings that is publically available and that is useful in providing a considerable insight into CNL's approach to planning, complying with regulations, and engaging the public. The additional criteria that address these insights are discussed in more detail in Section 4.3.1 below.

Although none of these criteria is explicitly identified as a SCA in Figure 2, they are all implicit in any assessment of performance within the 14 SCA's. Thus, assessing each of these criteria will provide a much better indication of CNL's future performance.

#### **4.3.1 The Additional Evaluation Criteria**

From CNL's history since the consortium took over, three questions keep reoccurring. These are:

- Does CNL have the knowledge of applicable regulations/guidelines?
- Is CNL open and transparent with respect to public engagement?
- Does CNL exercise the appropriate oversight to ensure the long-term protection of the environment and the health and safety of persons is consistent?

In order to answer these questions, one needs to evaluate the publically available evidence comes from CNL's public record. That record consists of various items (such as, their documentation, presentations, public engagement sessions, and website) through which CNL has described their three proposed waste disposal activities: the NSDF (better known as the Mound); WR-1 entombment; and NPD Closure. These three questions are the additional evaluation criteria.

Most of the discussion below centers on the proposed Mound since that is the one project that has significant impact to the current licence application and the future activities subject to the Chalk River licence. That said, the discussions below also include examples from the other two proposed waste disposal facilities.

**The first bullet** is evaluated in *Attachment A, Knowledge of Regulations/Guidelines*. In summary, CNL's management does not demonstrate the applicable understanding of the regulations and guidelines applicable to its activities. This is especially true with respect to the three proposed waste disposal undertakings. Since these activities are currently underway and will not be completed until sometime in the future, they are critical to an evaluation of whether CNL is “... **qualified to carry on the activity that the licence will authorize the licensee to carry on ...**”

CNL's understanding of the environmental assessment process is discussed in more detail in *Attachment B, Knowledge of CEAA*. To quote its conclusion:

*With respect to the three criteria outlined above, with respect to all three waste disposal proposals, CNL has failed address:*

- *An adequate communication strategy that addresses engagement not just announcing*
- *The public comments received on the three project description documents*
- *Any alternative means as required under CEAA.*

*Since CNL lacks the appropriate understanding of the future oriented environmental assessment process, it is not clear that it is qualified to plan for and carry on any future activities that are part of licence renewal.*

**The second bullet** is discussed in *Attachment C, Open and Transparent Public Engagement*. To quote from the conclusion

*Whether these issues around public engagement are a result of a lack of knowledge, selective knowledge, an intent to mislead, or any combination thereof, does not matter. What matters is whether CNL is “Open and Transparent”. As the discussion above demonstrates, when it comes to its engaging the public, CNL fails this test.*

*Therefore when evaluating CNL's licence renewal application, from the evidence presented above one can only conclude that that CNL is “... [NOT] ... qualified to carry on the activity that the licence will authorize the licensee to carry on ...” [emphasis added]*

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Essentially CNL does not attempt to engage the public. This metric speaks directly to whether CNL is a reliable and trustworthy applicant.

**The third bullet** is discussed in Section 4.3.2 below. Since the long-term consequences of any radioactive waste disposal facility is of concern to the regulator, and to the public, one would expect that the proponent of all these facilities would ensure that these consequences are identified and evaluated consistently. However, as discussed below, that is not the case.

### **4.3.2 Lack of Project Oversight**

Two observations regarding CNL's lack of oversight for the three proposed waste disposal facilities is somewhat disturbing. These observations relate to the long-term consequences that could be result from these projects. As the single proponent for these, one would expect to see consistency specifically related to defining the expectations for the end-state.

#### **4.3.2.1 An Inconsistent Definition used in CNL's Waste Disposal Projects**

*Attachment B, Knowledge of CEAA*, does not address the inconsistencies among these three project environmental impact statement reports. These inconsistencies are somewhat disturbing since CNL is the proponent for all three undertakings.

Comparing the three reports [6, 7 & 8], one notices the differences with respect to the format, the aspects included in the evaluation, and references used (among other issues). It is not within the scope of this evaluation to point out all these inconsistencies.

However, one issue stands out. That issue concerns the long-term consequences of the proposed undertakings. Common to all three CNL projects (the Chalk River facility, and both the WR-1 and the NPD entombment projects) is the concept of "an institutional control period". Essentially, this is when the environmental, health and safety risks be will low enough to allow for unrestricted land-use, or abandonment of the site.

In the Chalk River project report, the IC period is given as 300 years [6], whereas that for the NPD project is 100 years [7]. For the WR-1 project, it is totally unclear [8]. What is somewhat difficult to understand is that if CNL is the single proponent for each of these projects, why are there three different definitions of this single concept? Abandonment is abandonment.

#### **4.3.2.2 Inconsistent Evaluation of the Long-term Risks of Radioactive Waste Disposal**

One definition of risk is "consequence" multiplied by "likelihood". Applying the formula to CNL's proposed disposal projects,

- the "consequence" is any unacceptable exposure to radiation and/or hazardous materials, and
- at the end of the institutional control period, there will be no barriers left so the "likelihood" of an exposure will be one hundred percent

Since there are no barriers to prevent exposure, the residual risk at the end of the IC period will be completely dependent on the radioactive (and hazardous material) content of the facility. In other words, to ensure the risk from exposure is acceptable, at that time, all radioactivity remaining in the disposal facilities must be below clearance levels and the concentration of hazardous substances must be below "green fields" criteria.

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[6] CNL, *Near Surface Disposal Facility, Environmental Impact Statement*, 232-509220-REPT-004, March 2017

[7] CNL, *Environmental Impact Statement Nuclear Power Demonstration Closure Project*, 64-808760-ENA-004, 2017 September (CNSC Reference Number 121057E)

[8] CNL, *Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site*, WLDP-26000-ENA-001, Rev 1, 2017 September 13 (CNSC Reference Number 120753E)

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By CNL's own admission, as described in the draft EIS for the WR-1 project, there can be no end for the IC period [9]. This raises a substantial question. How can CNL be "... *qualified to carry on the ...*" the future activities associated with their proposed waste facilities, when its entombment facilities can have no closure?

The short discussion above suggests that CNL does not understand how to identify, to evaluate and/or to address the long-term risks from its future undertakings. More details of these shortcomings can be found in the comments posted on the CEAA Registry for the three projects [10].

### **4.4 Conclusion – Is CNL Qualified?**

As stated above, the use of the "Hindsight fallacy" to predict the future is not acceptable. Thus, three alternative evaluation criteria are proposed. These all relate to CNL's proposed disposal projects and include: compliance, engaging the public and project oversight

With respect to ensuring compliance, CNL appears to lack the required knowledge and understanding of the regulatory environment that affect the operations at Chalk River (and the other sites within its contractual mandate). This is especially true with respect to Canada's environmental assessment process.

Then there is CNL's approach to public engagement. As discussed in Attachment C, it is practically non-existent.

CNL is the only proponent for all three waste disposal facilities. Because all three have the potential for long-term adverse consequences, CNL's lack of project oversight is not acceptable.

In conclusion, CNL is "... **[NOT]** ... *qualified to carry on the activity that the licence will authorize the licensee to carry on ...*" (NSCA, Section 24(4)(a))

## **5 Question 3: Is CNL's Management Up To the Task?**

This section addresses Section 2.2 of CNL's licence renewal application [1]. It also addresses aspects of the CNSC staff's assessment of past performance of CNL that were omitted from Section 3.1.3.1 of the CNSC document [4].

For a nuclear company, where mistakes, misjudgements, and inexperience can lead to unacceptable consequences to the environment, and to the safety of the workers and the public (both in the short-term and the long-term), management stability is crucial.

CNL's application is for a renewal of their licence for 10 years. As discussed in Section 2.4 above, that duration does not match the end date for CNEA's GoCo contract. In itself, the discrepancy between these two end dates is problematic in determining the long-term stability of the CNL's management over the 10-year lifetime of the licence.

If one assumes that the request for a 10-lifecycle is approved, then implicitly one has to presume CNL's management will be stable over that 10-year period. However, even if the licence covers a period as short as 1 year, the current stability of CNL's management is disturbing. The current licence covers the period of July 2016 to March 2018, less than 2 years. Even in that short timeframe, CNL's management has undergone substantial changes (see Table 1 below). As discussed in Section 5.3 below, there is little evidence of the required permanency.

To predict that future stability, one cannot include any assessment prior to the implementation of the contract in September 2015. Therefore, the scope of this assessment is limited to CNL's past practices over the 2 years from the start date of the contract (September 2015), to the present.

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[9] For the WR-1 entombment project, the institutional control period is "forever". To quote from CNL's draft EIS for this project: *The use of ISD as the decommissioning method for the WR-1 Building will change the proportion of the site that can be released for unrestricted use.* (See Reference 8)

[10] For those comments, follow the following links:

- For the NSDF Project - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80122>
- For the NPD Project - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80121>
- For the WR-1 Project - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80124>

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### **5.1 The Effectiveness of the CRL Management System**

Figure 2 provides a listing of SCAs relevant to the Chalk River operations. The first one is "Management System". According to the figure, the performance rating is assigned "SA" (or "Satisfactory"). However, we suggest that this performance rating is somewhat dubious, and is likely the result of assessing incorrect parameters.

For many years, beginning before the present site licence, the Chalk River Laboratories have had management systems in place, variously based on ISO 9000, ISO 14001 and the CSA N286 series standards. An explicit assumption in all of these programs is the concept of improving performance. By now, marked improvements in performance should be appearing in the observable results of the Safety and Control Areas [4].

When reviewing the observable results presented in Reference 1, the data used covers many more years than the contractor can be held responsible. Using data that predates the contract is misleading. As discussed in Section 4.1.1 above, the change to management of the site (from operational to contractual) is immense. It will take several years before any trending data will be available.

If one forgets these the last two years have been subject to this immense change in CNL's management direction, and includes both pre- and post- contract data, what can be said about the past performance at the Chalk River site? The answer is that whatever trends are evident, there is no overall trend to consistent. The following examples were selected from Reference 1:

- in Figure 18 (Event-Free Day Resets) there is no real trend,
- in Figure 23 (Impacts) and Figure 24 (Reportable Events) and Tables 4 and 5 (Personnel Radiation Exposures) and Table 6 (Injury Rates) show an improving trend.
- in Table 7 (Radiological Emissions) shows results that seem to have plateaued.

Essentially, any improvements to operational performance at Chalk River resulting from management oversight are mixed at best. Thus, the effectiveness of the management of the Chalk River cannot be assigned a performance rating of "SA". That said, management effectiveness is one of the metrics included in evaluating this SCA [4].

### **5.2 CNSC Staff's Evaluation of CNL's Management Incomplete**

Two aspects of the CNSC's evaluation of CNL's Management suggest several aspects of their assessment of the future stability of CNL's management is missing. While an examination of CNL's management system documentation is essential, an assessment of documentation cannot be considered sufficient. To quote from the results of the assessment of that documentation

*CNL has submitted level 1 and 2 documents as required. CNSC staff have reviewed a sample of the level 1 and 2 documents from a management system perspective for consistency and appropriateness. CNSC staff conclude that the changes to the CNL management system have met the appropriate CNSC requirements. (see Reference 4, Page 17).*

The following is also quoted from Reference 4 and addresses the organization,

#### ***Organization***

*As part of the Go-Co transformation management, CNL created new:*

- *corporate profile, mission, vision and values*
- *governance model/Board of Directors/Executive Team*
- *organization structure*
- *roles, responsibilities, accountabilities and authorities*

*aligned to the restructured management system for future operations.*

What is missing from the quote above is what the transformation to the GoCo model actually means with respect to the four bullets above. As discussed in Section 1.1 above, that transition has drastically changed the nature of all four items.

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The following continues with this quotation:

*CNSC staff conducted regular compliance verification activities including meetings, interviews, and document reviews during the transformation period to ensure that changes related to the organization were understood by all levels of CNL management and workers. CNSC staff verified through these activities that CNL's change control procedures were applied appropriately. Based on these compliance verification activities and ongoing discussions, CNSC staff confirmed that CNL has appropriately documented the changes to the CNL organizations. CNSC staff has no concerns regarding the changes to the CNL organization and have confirmed CNL's organization is suitable to ensure continued safe operation and compliance with regulatory requirements. (see Reference 4, Pages 17 and 18)*

While the CNSC staff verified "... that changes related to the organization were understood by all levels of CNL management and workers ... through ... CNL's change control procedures ..." this cannot be seen as adequate. Whether or not CNL staff understands these changes is not sufficient to judge whether those changes will have a significant impact to future operations on the Chalk River site (see also Section 5.1 above).

Since the changes to CNL's executive over the last two years have been extensive it is unlikely that confining the assessment of those changes by verification against CNL's change control procedures address all the implications of those substantial changes. As discussed in Section 5.4.1 below, even CNL own management do not understand the changes.

Of more concern is that CNL's new management do not understand the regulatory environment in which the operations for which they are responsible. This criterion is discussed in *Attachment A, Knowledge of Regulations/Guidelines*. With respect to the planning and execution of future activities, *Attachment B, Knowledge of CEAA*, provides a more detailed assessment of CNL's approach to the three future radioactive waste disposal facilities.

What follows is a discussion of CNL's executive based on publicly available information.

### **5.3 Substantial Changes to CNL's Executive**

Usually it takes about 3 years for the new management of a company to become familiar with the organization's business, its operations and its management structure. With respect to CNL, this 3-year period is yet to be completed. In fact, within less than a year, CNEA brought in major changes to CNL's management structure and personnel.

Table 1 is a summary of the changes to CNL's executive management from the initiation of the GoCo contract in September 2015 to October 2017, a period of about 2 years.

From that table, there are several notable observations. These are:

- Less than a half a year into the contract, two GM positions were changed to VP positions and a GM was replaced. Further, the role of the Chief Engineer was eliminated.
- Less than one year into the contract, the position of Transformation Director was eliminated (which is understandable).
- Less than one and a half years into the contract, both the VP Operations and Chief Nuclear Officer, and the VP Legal were changed.
- A little over one and half years into the contract, several other changes occurred:
  - the VP Finance and the Chief Financial Officer, the VP Research and Development, and VP Business and Commercial Ventures changed.
  - The roles of GM Engineering and Project Management Office were eliminated.
  - The VP of Capital Projects was created.

In total, nine members of the CNL's Executive have left to be replaced by five new members (excluding the one short-term acting member and the one filling a new position). Of the original 15 positions, there are now only 13 (including one new position), of which 6 (or 46%) were not part of the original management team. In percentage, there has been a total change of 60% in the original executive [11] in about 2 years.

With respect to any company, the replacements of the VPs of Finance, Business Development, and Legal are significant issues associated with the day-to-day running of that company. Stability in these management roles is

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[11] Calculation - (3 eliminated positions plus 5 replacements plus 1 new position divided by 15) times 100 = 60%



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critical for the long-term survival of that entity. Instability in these roles would be reflected in a significant drop in share price. We suggest it is indicative of deeper problems with the stability of CNL's management.

The elimination of the GM, Engineering (and before that, the role of the Chief Engineer), raises questions as to whether CNEA is committed to ensuring that its contractual obligations receive the appropriate technical oversight.

**Table 1 - Changes to CNL Executive (Sep 2015 to Oct 2017)**

<b>Role</b>	<b>Sep 2015</b>	<b>Jan 2016</b>	<b>July 2016</b>	<b>Jan 2017</b>	<b>Mar 2017</b>	<b>Jun 2017</b>	<b>Sep 2017</b>	<b>Oct 2017</b>
President and Chief Executive Officer	Mark Lesinski	Mark Lesinski	Mark Lesinski	Mark Lesinski	Mark Lesinski	Mark Lesinski	Mark Lesinski	Mark Lesinski
Vice-President, Research & Development	Thomas Blejwas	Thomas Blejwas	Thomas Blejwas	Thomas Blejwas	Kathryn McCarthy	Kathryn McCarthy	Kathryn McCarthy	Kathryn McCarthy
Vice-President, Finance and Chief Financial Officer	Barry Casselman	Barry Casselman	Barry Casselman	Barry Casselman	Monica Steedman	Monica Steedman	Monica Steedman	Monica Steedman
Vice-President, Decommissioning and Waste Management	Kurt Kehler	Kurt Kehler	Kurt Kehler	Kurt Kehler	Kurt Kehler	Kurt Kehler	Kurt Kehler	Kurt Kehler
Vice-President, Business Development and Commercial Ventures	Bill Mangan	Bill Mangan	Bill Mangan	Bill Mangan	→	Corey McDaniel	Corey McDaniel	Corey McDaniel
Acting Vice-President, Business Development and Commercial Ventures	→	→	→	→	Wayne TerMarsh			
Vice-President, Operations and Chief Nuclear Officer	William Pilkington	William Pilkington	William Pilkington	David Cox	David Cox	David Cox	David Cox	David Cox
Vice-President, Legal	Mark Richards	Mark Richards	Mark Richards	Doug McIntyre	Doug McIntyre	Doug McIntyre	Doug McIntyre	Doug McIntyre
Vice-President, Human Resources	Esther Zdolec	Esther Zdolec	Esther Zdolec	Esther Zdolec	Esther Zdolec	Esther Zdolec	Esther Zdolec	Esther Zdolec
Vice-President, Corporate Affairs	→	Lou Riccoboni	Lou Riccoboni	Lou Riccoboni	Lou Riccoboni	Lou Riccoboni	Lou Riccoboni	Lou Riccoboni
Vice-President, Health, Safety, Security, Environment and Quality Assurance	→	Kevin Daniels	Kevin Daniels	Kevin Daniels	Kevin Daniels	Kevin Daniels	Kevin Daniels	Kevin Daniels
Vice-President, Capital Projects	→	→	→	→	→	→	→	Ted Preisig
General Manager, Whiteshell Laboratories Closure Project	Daniel Coyne	Daniel Coyne	Daniel Coyne	Daniel Coyne	Daniel Coyne	Daniel Coyne	Daniel Coyne	Daniel Coyne
General Manager, NPD Closure Project	Patrick Daly	Patrick Daly	Patrick Daly	Patrick Daly	Patrick Daly	Patrick Daly	Patrick Daly	Patrick Daly
General Manager, Health, Safety, Security, Environment and Quality Assurance	Kevin Daniels							
General Manager, Corporate Affairs	Lou Riccoboni							
General Manager, Engineering & Chief Engineer	Colette Taylor							
General Manager, Engineering	→	Jeff Stone	Jeff Stone	Jeff Stone	-			
Project Management Office	Angie Padgett	Angie Padgett	Angie Padgett	Angie Padgett	-			
Transformation Director	Terry Keown	Terry Keown	-		-			
<b>NOTES</b> – Dates are approximate and not intended to be definitive. New management role – Yellow Eliminated management role - Blue Change in management personnel - Green								

### **5.4 Management Instability Limits CNL's Ability to Manage**

As stated above, it takes about 3 years for a new manager to become familiar with the organization's business, its operations and its management structure. Without that experience and understanding, management is essentially blind. It lacks the ability to foresee issues and address them proactively. As such, it is always in reactive mode.

At Chalk River, this reactive stance is evident from CNL's approach to their proposal for a waste disposal facility. Decisions have been made that demonstrate that CNL's management understands neither the history of the Chalk River site, nor the regulatory environment to which the activities on the Chalk River site must comply.

With respect to Chalk River's history, essentially CNL has ignored the implications of those legacies in their draft EIS report (see the comments on the draft EIS posted on the CEA Registry [10])

Their lack of understanding of the regulatory requirements is discussed in Attachments A and B.

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Further evidence of their reactive approach is evident from their approach to public engagement (see *Attachment C, Open and Transparent Public Engagement*).

### **5.4.1 Even CNL is Confused About its Own Management Structure**

The following two examples were taken from the draft EIS for the WR-1 Decommissioning Project [8]. This report is dated September 13, 2017, before the latest management change in October 2017.

#### **5.4.1.1 CNL's Management as described in the Draft WR-1 EIS Report**

The following paragraph below is quoted from this report. Of interest is the number of Vice Presidents.

##### ***"1.4.2 Management Structure***

*CNL is led by an Executive Team and a Board of Directors. The President and Chief Executive Officer, along with seven Vice Presidents are responsible for different aspects of the business. An organizational chart outlining CNL's internal structure relevant to the Project is provided on Figure 1.4-1. A full listing of CNL's Board of Directors and Executive Team can be found online at [www.cnl.ca](http://www.cnl.ca). ..."* [emphasis added] [12]

The number "seven" is puzzling. Since January 2016 until the recent creation of a new VP position, there were nine VP's (see Table 1 above). The only time CNL had seven VP's was in September 2015 long before this report was issued. What is more disturbing is that this is "Revision 1" of the draft report. This suggests that it has been reviewed and revised, yet no one identified this discrepancy.

#### **5.4.1.2 Incorrect Title for a Management Position**

In Figure 1.4-1 of CNL's draft EIS report, the title for third level senior manager is identified as "WL GM Site Head". The list of titles given on the CNL website and copied above in Table 1, that position title is entitled as "General Manager, Whiteshell Laboratories Closure Project". As shown in Table 1 above, that title has not changed September 2015.

If CNL cannot identify its management positions consistently throughout its own documentation, a relatively simple task, one wonders about how it manages much more complex activities.

## **5.5 Conclusion – Licencee Organization**

CNL's licence renewal application is for 10 years. While that may be reasonable for an organization with a history of a management that performs consistently over a period of 5 years, and whose future activities are not subject to extensive changes (see also Section 2.4.1 above), obviously this is not the case for CNL.

With approximately 60% change in the executive in two years, one can safely predict that within the 10-year life of the renewed licence, there will be a total turnover in the management at CNL. This is especially true since the GoCo contract has only seven years left in its 10-year term. Further, if CNL does not meet its performance targets, that contract is unlikely to be renewed within the next three years.

In other words, the conclusion of this assessment of CNL's management stability means that it "... is **[NOT]** qualified to carry on the activity that the licence will authorize the licensee to carry on ..."

## **6 Summary and Conclusions**

### **6.1 Question: Who should be the Licence Holder?**

#### **6.1.1 Implications of the GoCo Model**

The GoCo model explicitly changes the focus of CNL's operations to a series of contracts that are likely to be from five to ten years in duration. The current contract with CNEA is a minimum of six years with the option to extend it to ten years. To fulfil the contract, CNL and the contractor CNEA become conflated. It is extremely challenging to determine which of these entities, the company, CNL, or the contractor, CNEA, is actually responsible for the operations at the Chalk River site.

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[12] See Reference 8, Page 1-13

## ***An Evaluation of CNL's Qualifications to Perform the Licenced Activities***

Some of the implications of concept of contract include:

- a limited scope (the contract cannot be open-ended)
- a deliverable focus (the items specifically defined)
- a focus to deliver on time and on budget
- a specified end-date

This last bullet is the real issue with respect to the licencing of the operations at Chalk River because of the implementation of the GoCo model. The contractor cannot be held responsible for the long-term consequences of any work they do. Whether they complete the work within the specifications on the contract, or whether they fail to meet those provisions, at the end of the contract, they “walk away”.

Thus, CNL cannot be the licence holder.

### **6.2 Other Issues of Concern**

#### **6.2.1 Mismatch Between the Contract End-Date and the Licence Expiry Date**

CNL is applying for a 10-year licence (ending March 2028), however, the contract with the consortium will end in September 2025, if CNEA receives the 4-year extension. If it does not obtain that extension, then the contract will end in September 2021.

As a minimum, the licence expiry date should address the contract end-dates.

#### **6.2.2 CNL's Approach to the Regulator**

As discussed in Section 2.4.2 above, CNL appears to see the role of the regulator as akin to a traffic cop. For example, in the discussion on whether CNL has the appropriate knowledge of regulations, guidelines and standards that are applicable to its activities, CNL appears to wait for the regulator (and the public) to enforce compliance. CNL does not take the responsibility to ensure that its proposals meet those obligations before being presented to the regulator and the public for comment.

While it is the role of the regulator to ensure compliance, a proactive licensee would make discharging that responsibility very much easier.

**NOTE:** It cannot be role of the public to point out the deficiencies of CNL's apparent lack of knowledge of these obligations. The regulator must ensure that what CNL is proposing meets their regulatory responsibilities before being released to the public for review and comment.

### **6.3 Question 2: Is CNL Qualified to “Carry On” the Licenced Activities?**

#### **6.3.1 The “Hindsight Fallacy”**

As discussed in Section 4.1.1 above, the closure of the NRU reactor early in 2018 will have considerable impacts to the operations on the site. Consequently, using past performance based on the assessment of *Safety and Control Areas* (SCAs) to predict the future is problematic.

Suffice it to say, past performance cannot be used as a predictor

#### **6.3.2 Better Predictors, Additional Evaluation Criteria**

Since the “Hindsight Fallacy” cannot be used as a predictor of future performance under the renewed licence, we propose three additional evaluation criteria listed below.

- Does CNL have the knowledge of applicable regulations/guidelines?
- Is CNL open and transparent with respect to public engagement?
- Does CNL exercise the appropriate oversight to ensure the long-term protection of the environment and the health and safety of persons is consistent?

As discussed in Section 4.3 above, the answers to these questions challenge the conclusion that CNL is a qualified licensee.

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### **6.4 Question 3: Is CNL's Management Up To the Task?**

As discussed in Section 5 above, the management of the Chalk River site (under both AECL pre 2015 and CNL after the Contract, September 2015) has been remiss in implementing improvements that would demonstrate compliance with the Management Standards, ISO 9000, ISO 14000, and CSA N286.

An evaluation against these standards is not included in the CNSC report [4]. Thus, their conclusions related to this topic are somewhat dubious.

However, the issue that is of more concern is the stability of CNL's Executive. With a turnover of more than 60% in the senior management within two years suggests significant issues with CNL's management.

This confusion is manifest in at least one report [8] in which CNL staff had erroneously described CNL's management.

Suffice it to say, the evidence presented in suggests that CNL's management is not up to the task.

## **7 Overall Conclusion**

This evaluation raises questions as to whether CNL "... *is qualified to carry on the activity that the licence will authorize the licensee to carry on ...*" (NSCA, Section 24(4)(a))

We respectfully submit that a decision by the Commission to grant a 10-year licence to CNL would be an unsafe and unsound decision.

**Attachment A**  
**An Evaluation of CNL's Knowledge of the Applicable Regulations/Guidelines**  
**(An Evaluation of CNL's Qualifications to Perform the Licenced Activities)**

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## **1 Introduction**

In order to demonstrate that it is complying with the Nuclear Safety and Control Act (NSCA), CNL must also address the Purpose of the Act, as given in Section 3 of the Act. This section states,

*3 The purpose of this Act is to provide for*

*(a) the limitation, to a reasonable level and in a manner that is consistent with Canada's international obligations, of the risks to national security, the health and safety of persons and the environment that are associated with the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and prescribed information; and*

*(b) **the implementation in Canada of measures to which Canada has agreed respecting international control of the development, production and use of nuclear energy**, including the non-proliferation of nuclear weapons and nuclear explosive devices. [emphasis added]*

Section 24(4) of the Act states that a licensee must be qualified and specifically addressed Section 3(b) quoted above. This section states

*(4) No licence shall be issued, renewed, amended or replaced — and no authorization to transfer one given — unless, in the opinion of the Commission, the applicant or, in the case of an application for an authorization to transfer the licence, the transferee*

*(a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and*

*(b) **will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations** to which Canada has agreed. [emphasis added]*

CNL's Environmental Policy (Figure 1 copied from CNL's Website) states explicitly that it will comply with its legal and other requirements. These requirements will include international regulations, guidelines and standards since both Sections of NSCA quoted above refer to these "international obligations". Therefore to be qualified to carry on the licenced activities, CNL must demonstrate their compliance with these obligations.

The following is an assessment that addresses whether CNL has the appropriate understanding of these various regulations, guidelines and standards. As discussed elsewhere, the examples are drawn from CNL's three proposed waste disposal undertakings since that information is readily available to the public.

**Attachment A**  
**An Evaluation of CNL's Knowledge of the Applicable Regulations/Guidelines**  
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**Figure 1 - CNL's Environmental Policy**

## **2 Knowledge of Applicable Regulations/Guidelines**

To evaluate CNL's knowledge of the applicable regulations/guidelines there are two different metrics. These are

- An obvious lack of knowledge, and
- Having the knowledge but only selectively applying that knowledge.

Lack of knowledge is problematic in and of itself. This is summed up by the saying, "ignorance of the law is no excuse".

Having the knowledge and selecting only those provisions that support a chosen position is not only problematic, but is deliberately misleading. It suggests that the perpetrator cannot be trusted to meet its own stated goals.

Discriminating between these two motives may not be easy. For example, if in their documentation, CNL omits to cite a specific regulation, guideline or standard, does that mean they do not know? Or does it mean the deliberately omitted that citation?

On the other hand, if CNL cites a specific regulation guideline or standard then omits to addressing all provisions of those requirements, that conclusion that CNL is selective in its compliance.

Either way, this lack of knowledge is not acceptable.

### **2.1 Criterion 1 – Obvious Lack of Knowledge**

There is a saying that "ignorance of the law is no excuse". As the contractor in charge of the operations of CNL, the consortium, CNEA, must be knowledgeable of the laws, regulations, and guidance applicable to the activities for which it is under contract.

CNL's Environmental Policy (See Figure 1) states explicitly that it will comply with its legal and other requirements. This figure is taken from CNL's website.

Thus, if CNL is not aware of the just one of the applicable laws, regulations and guidance, then CNL's management has failed the "due diligence" test.

This speaks to another issue, that of management stability (see *An Evaluation of CNL's Competence*). If the management of CNL is frequently changing, it becomes difficult to determine "who is responsible for what". That confusion is likely a consequence of those frequent changes.

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## **2.2 Criterion 2 - Selective Knowledge**

Selective knowledge is choosing only those provisions in the legislation and/or guidelines that support specific decisions while deliberately ignoring those that do not. This means that CNL must be aware of all the other obligations.

This speaks to another issue, that of openness and transparency (For a more detailed assessment of this issue, see Attachment B, *Open and Transparent Public Engagement*).

To be open, one must be prepared to comply with all requirements of the applicable regulation or guideline. One cannot select only those provisions that support a particular decision. Again, this is an issue of "due diligence".

## **2.3 A partial list of Applicable Laws, Requirements, and Recognized Standards and Guidelines.**

The fourth clause from Figure 1 forms one of the criteria for evaluating CNEA's activities as they relate to their proposed undertaking for the radioactive waste disposal facilities. In order to comply with this clause, CNEA must have to identify the "... *environmental laws, requirements, and recognized standards and guidelines applicable to ... [the] activities*" associated with their proposed projects.

The following is a list of some "... *environmental laws, requirements, and recognized standards and guidelines applicable to ...*" CNL's three proposed waste disposal facilities. This list is not intended to be complete, but as obvious examples where CNEA's knowledge about and/or compliance with is lacking.

- Canadian Environmental Assessment Act (See Attachment A, *Knowledge of CEAA*)
- CNSC, P-290, *Managing Radioactive Waste* [1]
- CNSC, G-320, *Assessing the Long Term Safety of Radioactive Waste Management* [2]
- CSA N292.0-14, *General Principles for the Management of Radioactive Waste and Irradiated Fuel* [3]
- CSA N294-09, *Decommissioning of Facilities Containing Nuclear Substances* [4]
- IAEA, GSG-1, *Classification of Radioactive Waste* [5]
- IAEA, GSR Part 6, *Decommissioning of Facilities* [6]
- IAEA, SSG-23, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste* [7]
- IAEA, SSG-29, *Near Surface Disposal Facilities for Radioactive Waste* [8]
- IAEA, SSR-5, *Disposal of Radioactive Waste* [9]

Since the majority of the actions undertaken by CNL since September 2015 are related to their proposed radioactive waste disposal facilities, the analysis of those activities can be simplified by focussing the compliance to the guidance documents above since they address the guidance CNL should be following with respect to those projects.

Thus, if CNL can be shown to be out of compliance with any one of these, then CNL is noncompliant with its own Environmental Policy.

## **2.4 Noncompliance with International Requirements & Treaty Obligations**

CNSC Policy P-290 [1] states that it is policy of the CNSC to consult and cooperate with provincial, national and international agencies to:

- 
- [1] CNSC, *Managing Radioactive Waste*, Regulatory Policy P-290, 2004.
  - [2] CNSC, *Assessing the Long Term Safety of Radioactive Waste Management*, G-320, 2006.
  - [3] Canadian Standards Association, *General Principles for the Management of Radioactive Waste and Irradiated Fuel*, N292.0-14, 2014
  - [4] Canadian Standards Association, *Decommissioning of Facilities Containing Nuclear Substances*, N294-09 (R2014), 2009.
  - [5] IAEA, *Classification of Radioactive Waste*, General Safety Guide GSG-1, 200
  - [6] IAEA, *Decommissioning of Facilities*, General Safety Requirements Part 6, GSR Part 6, 2014
  - [7] IAEA, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, Specific Safety Guide SSG-23, 2012.
  - [8] IAEA, *Near Surface Disposal Facilities for Radioactive Waste*, Specific Safety Guide SSG-29, 2014.
  - [9] IAEA, *Disposal of Radioactive Waste*, Specific Safety Requirements SSR-5, 2011.

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- Promote harmonized regulation and consistent national and international standards for the management of radioactive waste; and
- Achieve conformity with the measures of control and international obligations to which Canada has agreed concerning radioactive waste.

With respect to the Mound facility at Chalk River, it is noncompliant with Canadian and international requirements and guidance, for example

- Landfill disposal is not acceptable for low level waste [5]
- Failure to meet the requirements for the disposal of radioactive waste [1 through 3, & 5 through 9]

Similarly, the proposed facilities at Whiteshell and Rolphton [10,11] are also out of compliance with these requirements, for example:

- Entombment is not acceptable as a decommissioning strategy [6];
- Near surface disposal is not acceptable for intermediate level waste [5]; and
- Perpetual institutional control is not acceptable [2, through 9].

Following Canada's ratification, the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* [12] entered into force with respect to Canada in 2001. Canada has been an active participant since that time.

With respect to the safety of radioactive waste management, the Joint Convention [12] has *General Safety Requirements and requirements for Siting, Design and Construction, Assessment, Operation, and Institutional Measures after Closure* in articles 11, 13, 14, 15, 16, and 17, respectively. For example, the Joint Convention [12] requires Canada (as a Contracting Party) to take appropriate steps to:

- provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;
- strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;
- aim to avoid imposing undue burdens on future generations.

With respect to their disposal projects, CNL needs to show compliance with the Joint Convention in a comprehensive and detailed manner, so that Canada can demonstrate that it has met its international obligations.

### **3 Conclusion - Knowledge of Applicable Regulations/Guidelines**

CNL's application of both Canadian and international standards and guidance would seem to be selective, at best.

For example, the definitive IAEA safety requirements document on decommissioning [6] is not mentioned in the draft EIS documents for the decommissioning of both the WR-1 and the NDP reactors. It is difficult to avoid the conclusion that this might be because that IAEA safety requirements document [6] states that entombment is unacceptable as a decommissioning strategy.

Similarly, other Canadian and international safety requirements (e.g., P-290, G-320, SSR-5, SSG-23, SSG-29) are either not applied or are selectively applied in each of the three CNL draft EIS documents.

CNL has failed to demonstrate that it will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

---

[10] CNL, *Environmental Impact Statement: In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site*, WLDP-26000-ENA-001, Revision 1, 2017 September 13.

[11] CNL, *Environmental Impact Statement Nuclear Power Demonstration Closure Project*, 64-808760-ENA-004, 2017 September (CNSC Reference Number 121057E)

[12] IAEA, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, International Law Series No. 1, 2006.



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**An Evaluation of CNL's Knowledge of the Environmental Assessment Process**  
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## **1 Introduction**

The following assessment addresses whether CNL has the appropriate understanding of the environmental assessment processes as required under the Canadian Environmental Assessment Act, and the Nuclear Safety and Control Act. The examples are selected from CNL's three radioactive waste disposal proposals. Since the Environmental Impact Statement for CNL's proposal for the Chalk River disposal site [1] was the first to be published, this project provides most of the data and examples evaluated. The other two initiatives (the entombment of the two reactors, WR-1 [2] and NPD [3]) illustrate that CNL continues to disregard the issues raised on the review of their Mound proposal.

## **2 The Environmental Assessment Process**

Figure 1 is a description of the EA process taken from CNL's website. This description suggests CNL is familiar with the process although one major issue is missing from this figure, the assessment of "alternative means".

If CNL understood the planning tool aspect of the EA process, then one should be able to find evidence that as CNL incorporated changes as they proceeded through the process. As discussed below, there is little evidence that CNL took this approach and incorporated any changes when substantive issues were raised.

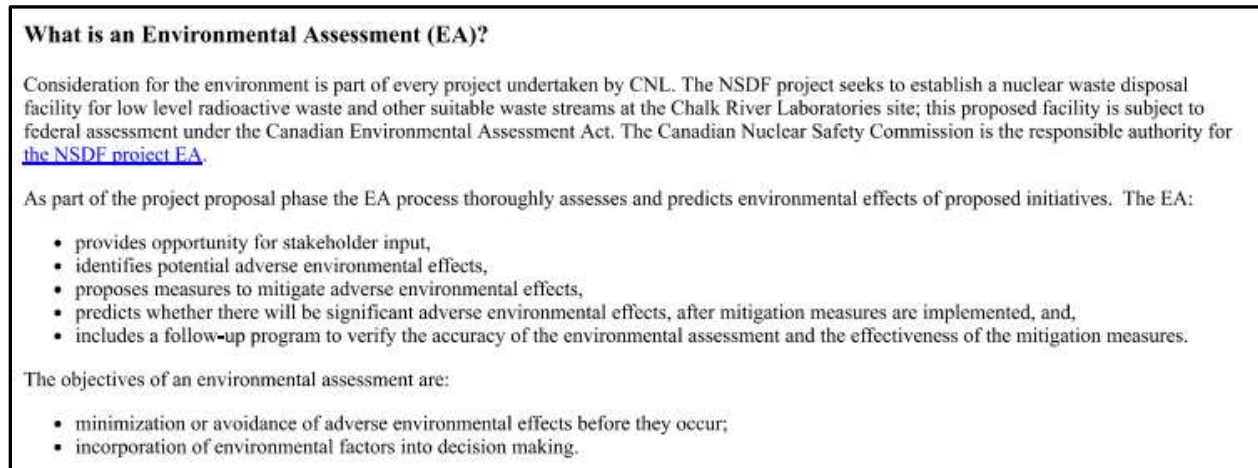
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[1] CNL, *Near Surface Disposal Facility, Environmental Impact Statement*, 232-509220-REPT-004, March 2017.

[2] CNL, *Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site*, WLDP-26000-ENA-001, Rev 1, 2017 September 13 (CNSC Reference Number 120753E)

[3] CNL, *Environmental Impact Statement Nuclear Power Demonstration Closure Project*, 64-808760-ENA-004, 2017 September (CNSC Reference Number 121057E)

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**Figure 1 - Description of EA (From CNL's Website)**

## **2.1 Assessment Criteria**

The following assessment is divided into an assessment of each of CNL's three waste disposal proposals, the Chalk River Facility, and the WR-1 and the NPD entombments. Each example considers the evidence with respect to

- Communication strategy
- Addressing public comments
- Assessing alternative means.

Since, in the licence renewal application, the Chalk River proposal is identified as one of the future activities planned for Chalk River site, the discussion below includes many more examples from that proposed undertaking.

## **2.2 “Decide-Announce-Defend” as a Communication Strategy**

As discussed in more detail in *Attachment B, Open and Transparent Public Engagement*, the “Decide-Announce-Defend” precludes consideration of any public feedback into all proposed undertakings subject to an environmental assessment. The phrase says it all. The decision has been made, that decision is announced, and the proponent is left to defend their decision if the public is not satisfied with their decision choice.

For the three projects discussed below, the evidence presented confirms CNL's DAD approach to its “public engagement” related to these proposals. The specific evidence is that none of the three Environmental Impact Statements address the public comments received with respect to any of three Project Description documents.

In other words, in its proposals, CNL has not considered public input. Bullet 1 in Figure 1 has been ignored.

Essentially, as discussed in Section 3 below, CNL has recognized their “announce” strategy has not worked. They are now faced with an attempt to engage the public far too late in the environmental assessment process.

## **2.3 Examples from CNL's Proposed Chalk River Disposal Facility**

With respect to whether CNL incorporated environmental factors into its decision making, the following is a list of examples taken from the EIS for the Chalk River disposal facility [1]. This list is not intended to be complete.

### **2.3.1 CNL's approach to communications is “Decide-Announce-Defend”**

All public interaction sessions as described in the EIS and the associated Appendices are entirely “announcement” format. Further, even though CNL was aware of all the comments on the project description, since they are publicly available in the Agency Registry

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website [4], the EIS does not address any in a substantial way. In other words, CNL's public engagement activities are all one-way, "It is safe", "It is proven", "It is cost effective", implying that "You have nothing to worry about".

A consequence of this approach is the reluctance of CNL to provide responses to questions from the public in a timely manner [5]. Thus there is a lack of any evidence to demonstrate CNL has adjusted its decision making process.

**2.3.1.1 No substantive change to the original proposed mound**

In Appendix 4.0-5, Environmental Stewardship Council Meeting #29, October 29, 2015 [1], a "disposal facility" is depicted that is somewhat similar to their current proposal (see Figure 2). Comparing this figure to all other depictions of the facility in the EIS, no substantial difference among any of the figures can be found. This is in spite of comments received that raised questions on the two versions of the Project Description, at the Public Information sessions, and at the January 2016 Technical Meeting (see Section 4.3.1.1.6 of Reference 1).



**Figure 2 - An Early View of CNL's LLW Disposal Facility (From the Draft EIS [1])**

**2.3.1.2 No change to the proposed mound even though the justification for the disposal facility changed**

In the March 2016 project description [6], the problem, as stated, focused along the lines of "reducing the legacy liabilities and saving tax payers money". Subsequently the justification became "enabling the transformation of the Chalk River Laboratories into a world class centre for science and technology ..." (see the April 12th edition of the NRT and the April 13th edition of "The News", and the April 2017 edition of "Contact").

These are two very different problem statements that should result in two very different solutions. However, the proposed solution has not changed.

[4] For the comments on the Mound project, see <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80122>

[5] CNSC, *Consolidated Near Surface Disposal Facility Project EIS Review Comment Tables*, (CNSC Reference number, 119841E), comment number FC-35, EIS Section 4.3.1.2.1 Public Feedback

[6] CNL, *Project Description: Near Surface Disposal Facility at Chalk River Laboratories*, 232-509200-ENA-001, Revision 0, 2016 March

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**2.3.1.3 Site selection process flawed**

The following are two examples of the flawed site selection process for CNL's proposal. Neither example was included as one of the criterion for site selection.

**First:** The "East Mattawa Road" site straddles the Emergency Road 3, thus potentially impacting the evacuation of the site during a significant emergency. Further, that road is identified as an "historic" road. Neither the Emergency Road nor the "historic" aspects of this road apply to the alternative location, identified as the "Alternative Site".

**Second:** In the EIS, there is no evidence that the impacts to blanding's turtle habitat was incorporated in the site selection process. According to the EIS, the selected site will reduce turtle habitat by 22 hectares. In its EIS, CNL identified this as "...*significant residual adverse effect*..." [7]. Again, this potential adverse impact was not included as a site selection criterion.

**2.3.2 Public comments not addressed**

As pointed out by the CNSC [5], CNL did not address public comments.

**2.3.3 Assessment of Alternative means**

The assessment of alternative means in the EIS of the Chalk River project is confusing as a minimum. We will not present the evidence here, but refer the reader to W. Turner's comments numbered 30 through to 55 on the EIS [8]. Criteria such as economic and technical feasibility, facility location, facility design, facility type, proven technology, are completely irrelevant when assessing alternative means under the CEAA, 2012. None of these are environmental factors. Essentially, CNL's assessment of alternative means does not comply with the Section 19(1)(g) of the CEAA 2012 which states:

*(g) alternative means of carrying out the designated project that are technically and economically feasible and **the environmental effects of any such alternative means**; [emphasis added]*

**2.4 Examples from CNL's Proposed WR-1 Entombment Project**

With respect to whether CNL used the EA process as a planning tool, the following is a preliminary examination of CNL's approach to their WR-1 entombment project. This assessment is not intended to be complete.

**2.4.1 CNL's approach to communications is "Decide-Announce-Defend"**

All public interaction sessions as described in the EIS and the associated Appendices are entirely "announcement" format [2]. Further, even though CNL was aware of all the comments on CNL's Project Description [9] (since they are publicly available in the Agency Registry website [10]), the EIS does not address any of the comments in a substantial way. In other words, CNL's public engagement activities are all one-way, "It is safe", "It is proven", "It is cost effective", implying that "You have nothing to worry about".

**2.4.2 Public comments not addressed**

Several comments on CNL's Project Description [9] make reference to the IAEA guidance with respect to decommissioning nuclear facilities [11,12]. These two IAEA documents specifically state that

*Entombment is not relevant for a facility that contains long lived isotopes because these materials are not suitable for long term surface disposal.*

---

[7] See Page ES-xvii of the Executive Summary from Reference 1.

[8] W. Turner to The Canadian Nuclear Safety Commission re: *Comments on the Environmental Impact Statement for the Near Surface Disposal Facility*, CNSC Reference number 119179E., May 31, 2017

[9] CNL, *Project Description, In Situ Decommissioning of the WR-1 Reactor at the Whiteshell Laboratories Site*, WLDP-03700-ENA-001, Revision 0, 2016 April (CNSC Reference number, 118863E)

[10] The link for comments on the WR-1 Project Description - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80124>

[11] IAEA, *Decommissioning Strategies For Facilities Using Radioactive Material*, Safety Report Series #50, IAEA, Vienna, 2007

[12] IAEA, *Decommissioning of Facilities*, General Safety Requirements Part 6, IAEA, Vienna, 2014

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Suffice it to say, even with many reminders included in the comments on the WR-1 Project Description [10] CNL has deliberately chosen to ignore these documents, and proceed with their proposal for the entombment of the WR-1 reactor.

**2.4.3 Assessment of "Alternative Means" is Flawed**

Table 2.5.1-2: *Criteria for Evaluating Alternatives Means of Carrying Out the Project*, of CNL's EIS report [1] include two criteria, "Technical Feasibility" and "Economic Feasibility". Including these criteria is somewhat disingenuous. These two conditions are explicitly included in the definition of "Alternative Means". Thus, any alternative means that are not technically or economically feasible would be eliminated from further consideration.

In addition, these two criteria are not environmental factors, and are not included in Section 19(1)(g) of the Canadian Environmental Assessment Act as factors to be considered when evaluating alternative means. (See also Section 2.3.3 above)

The EA process and specially the EIS report are not a feasibility studies.

**2.5 Examples from CNL's Proposed NPD Entombment Project**

With respect to whether CNL used the EA process as a planning tool, the following a preliminary examination of CNL's approach to their NPD entombment project [3]. This assessment is not intended to be complete.

**2.5.1 CNL's approach to communications is "Decide-Announce-Defend"**

All public interaction sessions as described in the EIS are entirely "announcement" format. Further, even though CNL was aware of all the comments on CNL's Project Description [13], since they are publicly available in the Agency Registry website [14], the EIS does not address any in a substantial way. In other words, CNL's public engagement activities are all one-way, "It is safe", "It is proven", "It is cost effective", implying that "You have nothing to worry about".

**2.5.2 Public comments not addressed**

Several comments on CNL's Project Description [13] make reference to the IAEA safety requirements and guidance with respect to decommissioning nuclear facilities [11, 12]. These two IAEA documents (neither of which are included in the reference list in the EIS report [3]) specifically state that

*Entombment is not relevant for a facility that contains long lived isotopes because these materials are not suitable for long term surface disposal.*

Suffice it to say, even with the reminders included in the comments on the NPD Project Description, CNL has deliberately chosen to ignore these guidance documents, and proceed with their proposal for entombment.

**2.5.3 Assessment of "Alternative Means" is Flawed**

According to CNL's virtually all of CNL's documentation and public information regarding this project, one of the alternative means is identified as "Storage with Surveillance". [15]. This is somewhat strange since "Storage with Surveillance" cannot address the purpose of the project.

To quote from an Agency document on "Alternative Means" [16]:

*Considerations in Addressing the "Purpose of" the Designated Project*

*The purpose of the designated project is defined as the rationale or reasons for which the designated project would be carried out from the proponent's perspective. It conveys what the proponent intends to achieve by carrying out the designated project. It is often described concisely in terms of:*

---

[13] CNL, *Project Description - NPD Closure Project*, 64-509200-ENA-003, Revision 1, 2016 March 31 (CNSC Reference number, 114473E)

[14] Link to information about the NPD Project - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80121>

[15] For example. see References 3 and 13

[16] Canadian Environmental Assessment Agency, *Operational Policy Statement: Addressing the "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act*, 2012. ISBN: 978-1-100-22964-5, Ottawa 2015

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- *the problems that the project is intended to address ...* “

But then, CNL states:

*The purpose of the project is to safely carry out the decommissioning of the NPDWF using the in-situ decommissioning approach to isolate the contaminated systems and components inside the below-grade structure. (See page 2-3, of Reference 3)*

**First:** “Storage with Surveillance” does not result in a decommissioned facility.

**Second:** Since CNL includes in its definition of the purpose of the project, “in-situ decommissioning”, none of the alternatives can achieve that purpose as stated. All the other alternatives, “storage with surveillance”, “partial dismantling and removal”, and “full dismantling and removal”, cannot address their stated purpose. Essentially, CNL has ensured that the stated purpose of the project will preclude the selection of any other alternative.

In other words, CNL's definition does not meet the requirements of the Agency guidance document, since it does not provide “... *the rationale or reasons for which the designated project would be carried out ...*” [16].

CNL has to answer the question as to why one needs to decommission the NPDWF such that alternative means to address that problem can be identified and assessed.

CNL's purpose statement for the NPD undertaking is further confirmation of the “Decide-Announce-Defend” approach to communications.

### **3 Implications of Recent Announcements With Respect to CNL's Proposed Chalk River Disposal Facility**

Recently there have been three recent announcements with respect to CNL's Mound project. These are:

- the announcement to remove ILW from the wastes to be disposed of in the mound [17];
- the notice that CNL requested an extension of the deadline to address comments on their draft EIS report [18]; and
- the invitation to participate in technical sessions as shown in Figure 3.

What can explain the three recent announcements about CNL's Mound project?

**First:** Consider the notice that CNL decided to remove intermediate level waste (ILW) from the wastes to be disposed of in this facility [17]. Given that several comments posted on the Registry [4] concerning CNL's Project Description for this project [6] questioned CNL's proposal to include ILW, one is left to wonder why it took over a year for CNL to remove this waste class.

**Second:** Consider the notice that CNL requested an extension to allow them to address the comments submitted on this project [18]. This is somewhat understandable since the over 200 submissions on the project contain over 500 comments. The previous deadline was likely unattainable

**Third:** Consider the recent initiation depicted in Figure 3 below. What will CNL do if as a result of these technical sessions the feedback received recommends that the current proposal for the Chalk River Disposal Facility be totally redesigned?

Essentially all these announcements demonstrate CNL did and does not understand the importance of public consultation in the Environmental Assessment process.

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[17] CEA Agency, *Public Notice, Near Surface Disposal Facility – Recharacterization of Waste*, November 2, 2017, link - <http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=120908>

[18] CEA Agency, *Public Notice, Near Surface Disposal Facility Project – Update on the Status of the Environmental Assessment Process*, November 24, 2017, link - <http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=121131>



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<b>Subject:</b> Invitation: Canadian Nuclear Laboratories (CNL) is hosting two technical sessions on the Near Surface Disposal Facility (NSDF) <b>From:</b> ">Communications" <commacecl@cnl.ca> <b>Date:</b> 17-11-22 4:43 PM <b>To:</b> ">Communications" <commacecl@cnl.ca> <b>CC:</b> "Quinn, Pat" <pat.quinn@cnl.ca>; "LeBlanc, Nicole" <nicole.leblanc@cnl.ca>; "Thompson, Marg" <margot.thompson@cnl.ca>	
UNRESTRICTED / ILLIMITÉE	
Good afternoon,	
Canadian Nuclear Laboratories (CNL) is hosting two technical sessions at the Morison Campus, Auditorium the Near Surface Disposal Facility (NSDF) for interested members of the local community.	
The objective of these sessions is to open a discussion on themes drawn from the public comments on the draft Environmental Impact Statement.	
The sessions will be facilitated by two independent facilitators, Joan Miller and Lawrence Lupton, both with extensive experience in the nuclear industry.	
The following is an outline of the themes that will be covered each day:	
<b>Wednesday, December 6, 2017</b> <b>Morison Campus, Auditorium</b> 9:00 a.m. – 3:00 p.m.	<b>Thursday, December 14, 2017</b> <b>Morison Campus, Auditorium</b> 9:00 a.m. – 4:00 p.m.
<b>Session 1</b>	<b>Session 2 Part A Facility siting</b>
Introduction	Introduction
General Design	Environmental Effects
Liner Integrity	• Proximity to Ottawa River, Contaminant Migration, Regional Study Area, Extreme Weather Events, Alternative Sites
Inventory Bounding	
Lunch (45 minutes)	
Performance Assessment	<b>Session 2 Part B Waste Management Arrangements</b>
Waste Acceptance Criteria – General Aspects	Waste Management Arrangements
Session Wrap Up	Waste Acceptance Criteria – Monitoring
	Lunch (45 minutes)
	Waste Characterisation
	Management of Engineered Containment Mound Inventory
	Tracking Database
	Waste Emplacement

**Figure 3 - CNL's Invitation to Technical Sessions on the Mound**

#### **4 Conclusion – CNL Lacks an Appropriate Understanding of the EA Process**

With respect to the three criteria outlined above, with respect to all three waste disposal proposals, CNL has failed address:

- An adequate communication strategy that addresses engagement not just announcing
- The public comments received on the three project description documents
- Any alternative means as required under CEEA.

Further evidence that CNL has difficulty with the EA process are the latest two updates to the Mound project that are discussed in Section 3 above.

Since CNL lacks the appropriate understanding of the future oriented environmental assessment process, it is not clear that it is qualified to plan for and carry on any future activities that are part of licence renewal.

**Attachment C**  
**Open and Transparent Public Engagement**  
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## **Attachment C**

### **Open and Transparent Public Engagement**

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### **1 Open and Transparent Public Engagement**

Misinformation is inaccurate information provided by mistake. Disinformation is inaccurate information whose intent is to mislead. Discriminating between these two motives is not always easy since attributing intention can be speculative without clear evidence.

However, Canadian National Energy Alliance (CNEA), the contractor that is engaged in managing and operating CNL, has extensive experience in managing large undertakings [1]. Therefore, any examples of inaccurate information that could be attributable to genuine mistakes should be minimal. Thus, unless it is very clear that the example cited is a genuine mistake, the default conclusion is that examples of inaccurate information must be intentional.

This attachment specifically addresses Section 16.9, *Communications Support for Facility Environmental Assessment Engagements of CNL's Application for the renewal of the Nuclear Research and Test Establishment Operating Licence*, CMD 18-H2.1, Edocs – 5390079.

Although this section specifically states:

*As stated in the Executive Summary, this CMD relates specifically to matters pertaining to renewal of the Nuclear Research and Test Establishment Operating Licence for the CRL site. Results of engagement for each environmental assessment project will be included in any applicable licence submissions as required.*

We suggest that this exclusion is a significant oversight when predicting the future performance of CNL. As discussed in *An Evaluation of CNL's Qualifications to Perform the Licenced Activities*, the only readily available public information pertaining to CNL's future performance is that concerning the environmental assessments of these projects.

### **2 Evaluating CNL's Current Communications Strategy**

Attachment A, *An Evaluation of CNL's Knowledge of the Environmental Assessment Process* includes several examples associated with CNL's EA communication strategy with respect to their three radioactive waste disposal undertakings. That assessment was limited to demonstrating that strategy amounted to "Decide-Announce-Defend".

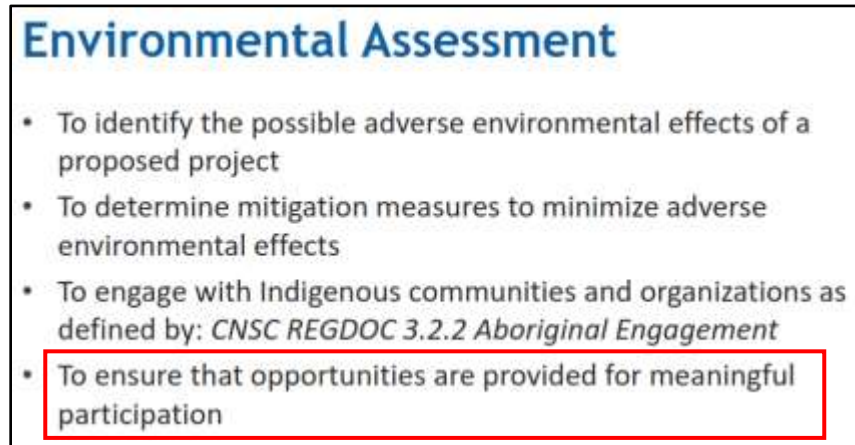
This Attachment provides considerably more detail as to CNL's communication strategy including examples taken from CNL's web page, various newspaper reports on CNL public presentations, and posters from CNL's public information sessions. Since almost all of the information publicly available for evaluation and relates to CNL's proposal for their Chalk River waste disposal facility, most of the examples are related to that undertaking.

According to CNL, the purpose of the EA is "*To ensure that opportunities are provided for meaningful participation*" (Figure 1). However, when it comes to achieving this objective, CNL's has significant difficulties.

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[1] See the CNEA website, link - <http://cnea.co/index.html>

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**Figure 1 - Definition of EA (From CNL's Presentation, Aug 3, 2017)**

## **2.1 The Activities of Two Members of CNL's Senior Management re: the Chalk River Waste Facility**

The activities of CNL's senior management can be attributed to either a lack of understanding of the environmental assessment process or a deliberate attempt to mislead. The evidence presented below suggests that two senior managers do not understand Canada's EA process.

Whether this represents an example of outright or selective ignorance is difficult to determine. Either way, the ignorance demonstrated by these activities is not acceptable. Further, since this project is a "first of its kind" in Canada, any precedent that could result cannot be based on the obliviousness shown by these two senior managers.

### **2.1.1 CNL's President and CEO**

In his talk to the Petawawa Town Council (early May 2016), Mr. Lesinski, President and CEO of CNL, is quoted as saying, "*There have been out there some non-scientific alternative truths.*" [2].

Then there is his article in the North Renfrew Times, July 12, 2017 in which he states, "*Your paper has taken an interest in one of the projects that is underway at Chalk River Laboratories, and I would like to provide you with more, factual, information.*" He then goes on to repeat the assertions about the project given at their Open Houses, in advertisements and on their website, without providing any additional facts or information.

Suppose we take these two public activities at face value, that is, the information out there is incomplete. If this were true, where would the public find that additional truthful information?

Within the EA process, the only way to ensure all members of the public have an equal opportunity to see that information is the official EA documentation, which includes CNL's Project Description, and its draft EIS report.

Unless that information is included in the official EA documentation, then the concerned public can never have complete information. Thus, incomplete information makes achieving the purpose highlighted in Figure 1 impossible.

### **2.1.2 CNL's Vice-President, Decommissioning and Waste Management**

Two very disturbing statements, attributed to Mr. Kehler, VP, Decommissioning and Waste Management, at his appearance at the July 15th meeting in Sheenboro, suggest a lack of respect for the EA process. [3]

[2] See the full report at - <http://www.thedailyobserver.ca/2017/05/04/nsdfwill-be-a-safe-operation-council-hears>

[3] See the full report at - <http://www.thedailyobserver.ca/2017/07/17/concerns-about-cnl-project-aired>.

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**Statement 1** - "*Kehler said their proposal is so technically sound 'there is no Plan B,' as they don't think any would be necessary.*" [3]

There are two aspects to his assertion, "technically sound" and "no Plan B ... necessary".

**First** - If this statement is true, then his assertion that the facility is technically sound is hubris at its worst. For example, in the EIS report, the design life is given as 500 years (on 24 occasions). However, that report also states that the cover will fail, "*due to natural evolution*" in 300 years (on 27 occasions). Can the discrepancy between design life and actual life be an example of a "technically sound" proposal? Unlikely.

Further, his assertion presupposes that the results of the EA and the Safety Assessment (both at present incomplete) will support the conclusion that the facility is "so technically sound" no other solution is appropriate.

**Second** - This assertion suggests that CNL has completed an assessment of "alternative means" as required under CEAA. In other words, they have selected the optimum solution from all the available alternatives. However, as an examination of the EIS demonstrates, there is very little (if any) evidence that an assessment of alternatives has been done.

What about the assertion that their proposal is "technically sound"? If any reasonable person were to review the over 200 submissions as posted in the CEA Registry, then the conclusion would be that the technical aspects remain questionable. (Note, at the time of Mr. Kehler's statement, there were over 100 documents posted. To make the assertion that the facility was "technically sound", he could not have taken any of those comments seriously.)

**Statement 2** - "*The ultimate ruler on this would be the Canadian Nuclear Safety Commission (CNSC), who will need to approve and licence the project.*"

While this is somewhat true, his use of the terms, "ultimate ruler" and "who will need", puts the entire onus on the regulator for the decision. Thus, if the project fails to obtain approval (as some comments on the EIS predict) the blame rests solely with the regulator. What this statement ignores is the responsibility of the proponent.

As outlined in Figure 1, CNL has the responsibility to:

- *identify the possible adverse environmental effects (including the socio-economic effects)*
- *determine mitigation measures to minimize adverse environmental effects*
- *engage with Indigenous communities and*
- *ensure that opportunities are provided for meaningful participation.*

In other words, the onus for approval is on the proponent, not the regulator. CNL has to demonstrate that their proposed undertaking is safe, and both technically and environmentally sound. That responsibility cannot be assigned to the regulator as is implied by Mr. Kehler's statement.

## **2.2 "Decide-Announce-Defend" Approach Prevents Engagement**

CNL's approach to public engagement with respect to their proposed waste disposal facility can be characterized as "Decide-Announce-Defend". This approach does not engender the public's trust since it does not allow for serious public discussion. Without the public's trust, CNL's only option is to defend its decision.

This means that virtually all CNL's public announcement activities are related to its defence of its decision.

### **2.2.1 A Definition of "Decide-Announce-Defend"**

The DAD method is often used in response to emergency situations, since decisions are generated through a top-down hierarchy thus do not require consensus. In general, the top is occupied by a group of experts who base their decision on scientific or technical analysis. For this reason, the DAD approach is not suited to situations:

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- *"Where a wide range of technical, social, cultural and economic factors are influencing the current situation and the various possible alternatives to it*
- *Where successful implementation involves a lot of people*
- *Where these people are not in an obvious command structure, but can choose whether to cooperate"* [4]

Since CNL's proposal for the waste disposal facility at Chalk River requires knowledge of a wide range of technical, social, cultural and economic factors, a large number of people to implement and potentially affected, and few if any of these people are within CNL's corporate structure, it begs the question as to why CNL chose this approach to engage the public with respect to the Chalk River waste facility.

### **2.2.2 Evidence for the DAD Approach**

What is the evidence that CNL has taken the DAD approach to public engagement?

**First**, the original concept for their proposed waste facility located on the Chalk River site was presented in the public, October 2015 (see Figure 2). This is somewhat disturbing since at that time, the contractor could not have any real understanding of the wastes and potential wastes on the Chalk River site.

If we compare this early depiction to the most recent one from the August 3<sup>rd</sup> presentation in Chapeau, Québec (more than one and half years later), we can see the overall concept for their proposed has remained unchanged (see Figure 3). The only changes is that more detail about the support facilities was added. (see also Section 2.2.3.1 below)

**NOTE:** See Section 2.2.3.5 below in which three other depictions of the mound are shown and discussed. What is surprising is the version most recently posted on CNL's website [5], Figure 8, bears very little resemblance to Figure 3. In other words, on its website, CNL chose not to be consistent and provide the "New Information" presented at its August 3 Public Information Session.

**Second**, all public interaction sessions as described in the EIS and the associated Appendices are entirely "announcement" format. By incorporating this approach, CNL has been reluctant to provide the public with answers to their concerns in a timely manner.

**Third**, the public interactions by the two senior CNL managers (described in Section 2.1.1 above) are defensive in nature. Additional evidence is discussed in Section 2.2.3 below.

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[4] <http://www.asset-scienceinsociety.eu/pages/decide-announce-defend-dad>

[5] Copied from CNL's Website, 2017-09-30.

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**Figure 2 - An Early View of CNL's LLW Disposal Facility (From the Draft EIS)**



**Figure 3 - View of the Mound (Overhead from CNL's Aug 3 Presentation)**

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**2.2.3 Public Information Sessions**

There are many examples that could have been used as examples of sessions in which CNL appears to be “economical with the truth”. Information about these is provided in Section 4 and Appendix 4.0 of the draft EIS report [6] and not discussed here.

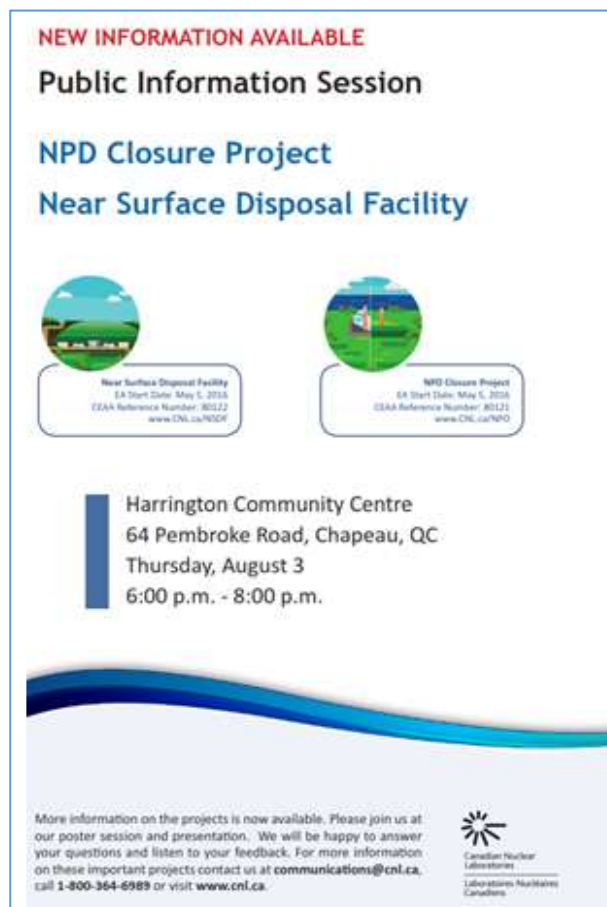
The following discussion focuses on the single session hosted by CNL in Chapeau Québec, August 3, 2017. This session was held after the draft EIS report was issued, and about two weeks before the public review period closed.

**2.2.3.1 Public Information Session, August 3, Chapeau, Québec**

Figure 4 (below), copied from CNL's website, is the notice for CNL's public information session that was held in Chapeau in Québec. This notice is no longer available from CNL's website.

With respect to this announcement, the obvious question: “What is this ‘New Information’?” One possibility is that “New Information” was only related to the NPD closure project and not CNL's proposed Mound.

In the following discussion, the focus is on the “New Information” as it relates to the Mound project since at the time, the EIS for the NPD project [7] had not been released for public comment.



**Figure 4 - CNL's Announcement for a Public Information Session (Aug 3, Chapeau QC)**

[6] CNL, *Near Surface Disposal Facility, Environmental Impact Statement*, 232-509220-REPT-004, March 2017

[7] CNL, *Environmental Impact Statement Nuclear Power Demonstration Closure Project*, 64-808760-ENA-004, 2017 September (CNSC Reference Number 121057E)



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**2.2.3.2 Is there a need for "New Information"?**

The answer to this question implies that the draft EIS for the proposed disposal facility is incomplete. Since CNL has made this conclusion, then they must have assessed ways in which to disseminate this "New Information".

The evidence presented by the announcement suggests that CNL decided to have an information session in Chapeau to provide that information.

**2.2.3.3 What was the "New Information"?**

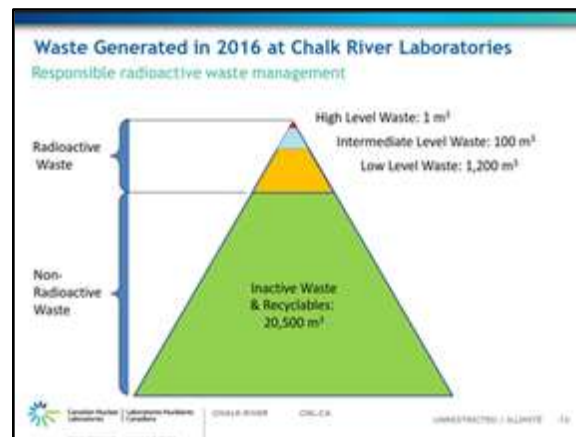
Several figures from the presentation are relevant to demonstrating whether CNL presented new information. These are:

- Figure 5 - Generated Waste Volumes from 2016 (Overhead from CNL's Aug 3 Presentation)
- Figure 6 - Plan View of the Location of the Facility (Overhead from CNL's Aug 3 Presentation) compared to Figure 7 - A Plan View of the Facility (From the Draft EIS report) and Figure 8 - Plan View of the Facility (From CNL Website, as of 2017-09-30)
- Figure 9 – Cross-Section of the Proposed Facility

**2.2.3.4 Waste Generated in 2016 at Chalk River Laboratories**

Figure 5 depicts a pyramid that purports to provide information about waste volumes generated at the CRL site during 2016. While interesting, it is problematic. The waste categories bear no relationship to the waste types as defined in the EIS. What it does suggest is that the waste problem at CRL is "Inactive Waste and Recyclables". Yet, CNL's proposed undertaking does not address this issue.

This leads to the obvious question, what is the purpose of this overhead? It appears to be deliberately misleading.



**Figure 5 - Generated Waste Volumes from 2016 (Overhead from CNL's Aug 3 Presentation)**

**2.2.3.5 Comparing Three Plan Views**

Several differences are obvious when the plan view depicted in Figure 6 (from the presentation) is compared to that depicted in Figure 7 (from the draft EIS report) and that in Figure 8 (from CNL's website copied 2017-09-30).

One obvious difference is the depiction of the wetlands. In Figure 6 and Figure 8, it is impossible to distinguish the wetlands from the forested areas. In Figure 7, it is obvious that the location of the proposed facility is near wetlands.

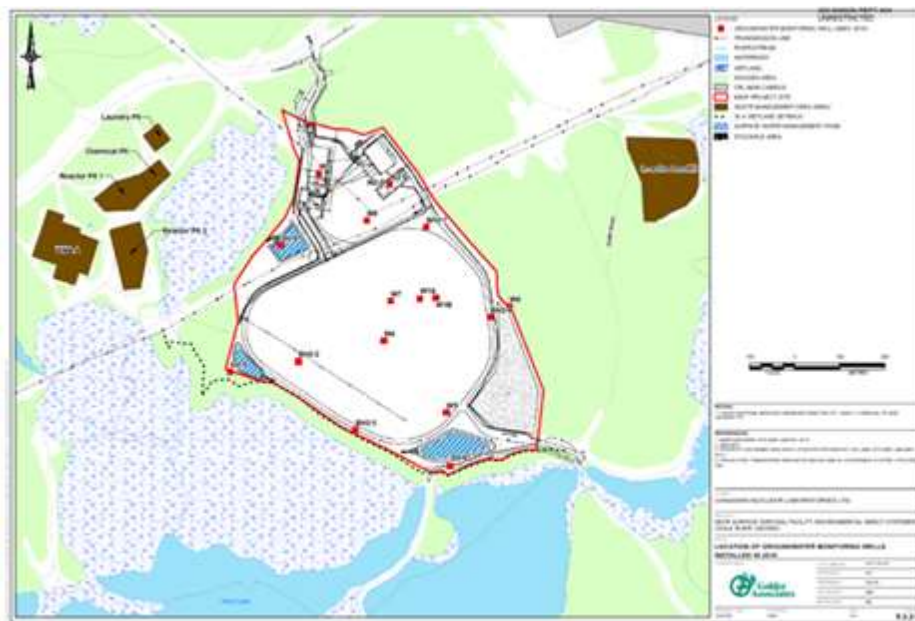
Aside from the difficulty in determining the facility's proximity to wetlands, there is the issue of its nearness to Perch Creek. Again, in Figure 6, this is difficult to determine. In Figure 8 the proximity to this environmental feature is not even depicted. However, in Figure 7, there is no doubt as to its location.

This leads to the obvious question, what is the purpose of this overhead? By overwhelming the wetlands and the creek with vegetation, it appears to be deliberately misleading.

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**Figure 6 - Plan View of the Location of the Facility (Overhead from CNL's Aug 3 Presentation)**



**Figure 7 - A Plan View of the Facility (From the Draft EIS report)**



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**Figure 8 - Plan View of the Facility (From CNL Website, as of 2017-09-30)**

**2.2.3.6 The Cross-Section of the Proposed Facility**

Figure 9 below appears to be the first depiction of the cross-section of the facility. This figure clearly depicts the slope of the mound. Further, the incline is towards the Perch Lake Basin.

What is disturbing about this figure is that nothing like it was included in the EIS, previous public information sessions, poster boards, CNL's website, and advertisements. All those previous figures are similar to another figure from the same August 3<sup>rd</sup> session in Chapeau Québec (see Figure 3). Without prior knowledge that the facility is inclined, it is difficult to discern this slope from an examination of Figure 3. Further, it is impossible to determine that the mound slopes towards the Perch Lake Basin.

The information contained in this depiction is critical to any environmental, technical and safety assessment of the proposed facility. One can clearly see that the mound is located on a slope. This has significant implications for the overall drainage of the site, and the stability of the mound during an earthquake.

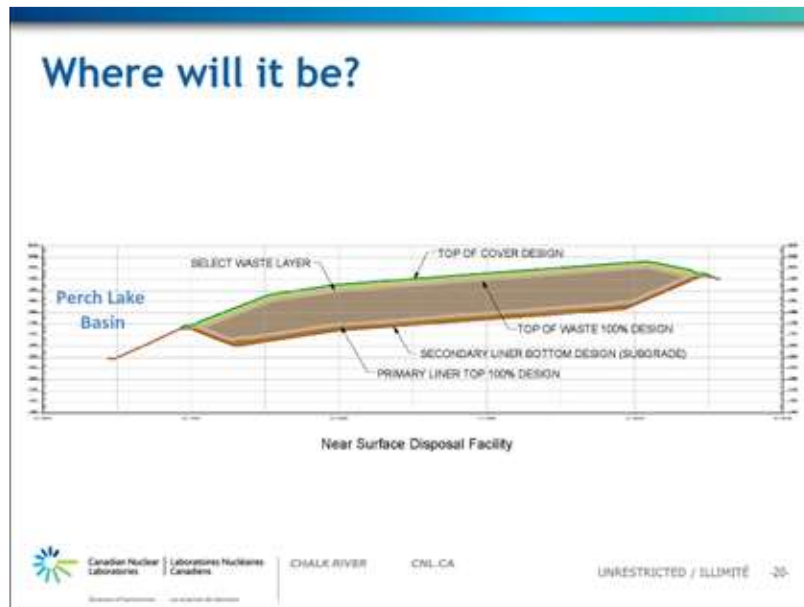
Omitting this new information until late in the review process has jeopardised both the safety and the environmental assessments, as neither evaluation would have included an assessment of the slope issue.

This leads to the obvious question, what is the purpose of this overhead? It appears to be an afterthought, and suggests that CNL decided it had to depict the hillside it described on its website (see Section 2.3.6.1 below) since it was not described in the draft EIS. [8]

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[8] A search of the draft EIS [6] found no occurrences for the term "hillside".

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**Figure 9 – Cross-Section of the Proposed Facility (Overhead from CNL's Aug 3 Presentation)**

**2.2.3.7 Did CNL Succeed In Presenting this “New Information”?**

The obvious answer is “possibly”. If CNL wanted to limit the number of persons privileged to receive the “news”, then the answer is “yes”.

The receivers of the “news” was limited to those that attended the August 3rd session. Further, the number of attendees was very small.

To quote from an article in the August 5, 2017 Pembroke Observer [9]:

*“Around a dozen people gathered inside Harrington Hall in Chapeau.”*

If CNL wished to ensure all local residents and other interested parties, extending all the way to Ottawa and beyond, then this session was a profound failure.

This failure jeopardizes the legitimacy of both the ongoing environmental assessment and licensing processes.

**2.2.4 Conclusion – August 3 Public Information Session was Misleading**

Presenting “new information” to a select few just before the EIS review period closed ignores the requirement “To ensure that opportunities are provided for meaningful participation” (see also Figure 1)

Presenting this additional information as late in the review process suggests that that CNL’s management lacks the appropriate understanding of what it is proposing and is focussed on announcing only.

**2.3 The Presentation of the Mound Facility on CNL’s Website**

The following discussion is based on selected examples from CNL’s website. Since CNL is constantly changing the information posed on its website, the information presented below was current as of November 27.

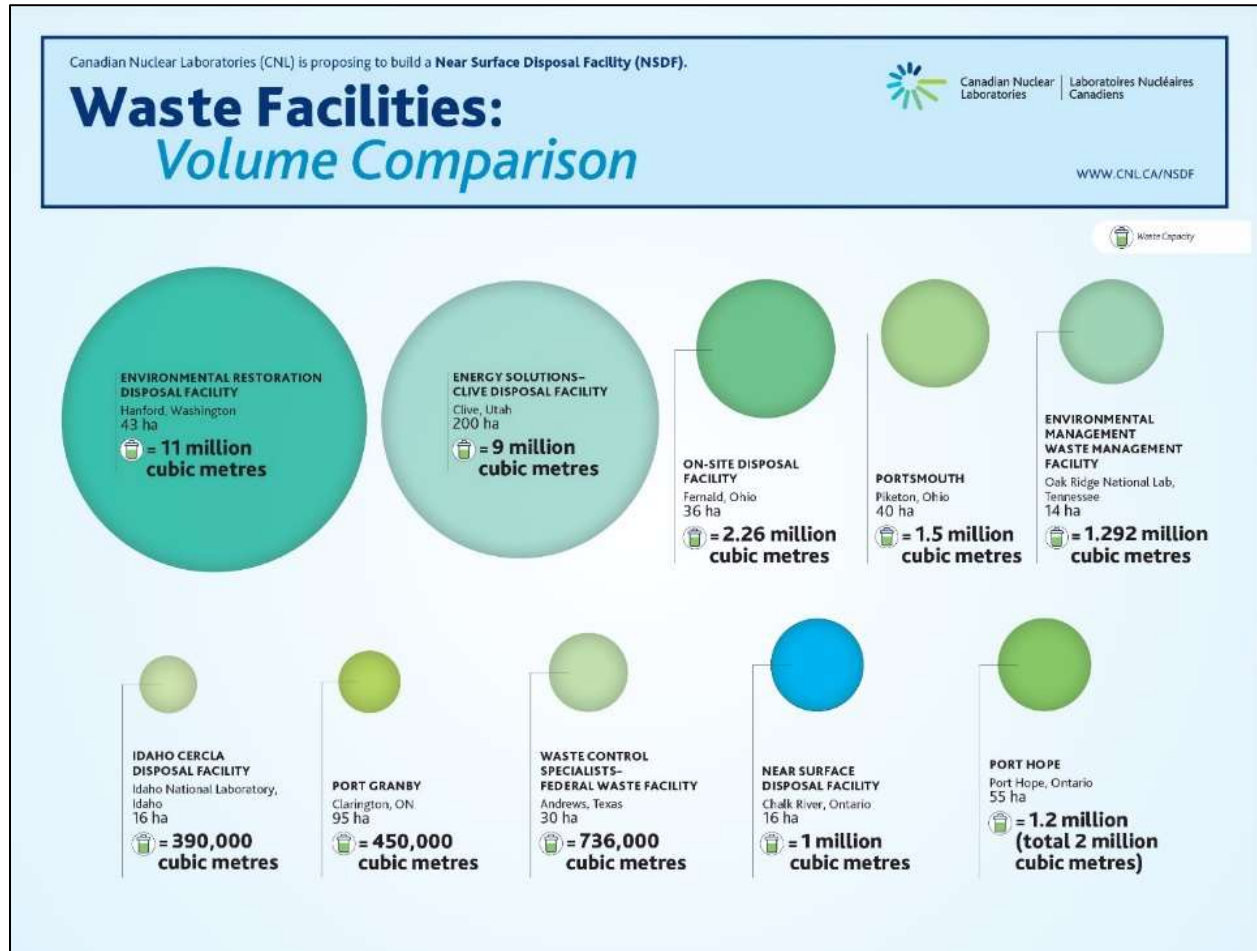
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[9] Link - <http://www.thedailyobserver.ca/2017/08/05/allumette-island-learns-about-nsdf>

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**2.3.1 Comparing Waste Volumes**

Figure 10, copied from CNL's website, provides a comparison of the volumes of various radioactive waste facilities. The following is an evaluation of this figure.



**Figure 10 - Comparison of the Volumes for Various Waste Facilities (from CNL's Website)**

**2.3.2 Facilities Depicted In the Figure Do Not Match Those Included in the Draft EIS**

With respect to this figure, there are several discrepancies between the selection of the facilities depicted, and those listed in Section 2.5.2.1.1, "Technical Feasibility", in the draft EIS [6]. Three facilities listed in this section of the EIS, not included in this figure include:

- "LLW Repository near the Village of Drigg in Cumbria ...";
- "Energy Solutions facility in Barnwell, South Carolina"; and
- "US Ecology Washington's site at Hanford, near Richland, Washington".

From this figure, one cannot determine the difference between "US Ecology Washington's site at Hanford, near Richland, Washington" and "Environmental Restoration and Disposal Facility at Hanford Site, Washington". That said, in the draft EIS, the former is listed along with three other "commercial LLW disposal facilities". The latter facility is included as a US DOE on-site facility

These discrepancies between the draft EIA and this figure observation alone are enough to question the validity of this depiction.

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**2.3.3 What Is the Value of Comparing Facility Volumes?**

Consider the following analogy. Suppose one was to compare comparing a 200-litre drum with a 22-litre pail. One of these containers has about one-tenth the capacity of the other. This is similar to comparing the Environmental Restoration Facility (volume 11 million cubic metres) with the Mound (volume 1 million cubic meters).

Of greater concern in the drum/pail comparison are factors such as; what is actually in the containers (gasoline versus water), where they are located (i.e. close to a heat source versus out in the open), and the materials that make up the drums (i.e. stainless steel versus plastic). Note, for each of the three factors, I have not attributed any to either of the two containers. So, what could you conclude from a volume comparison? The answer is "nothing".

With respect to CNL's figure, these aspects correspond to the radioactive content, the geographic location, and physical attributes of the facilities.

**2.3.4 Other Observations**

Just in case one is not convinced, here are some other observations about this figure.

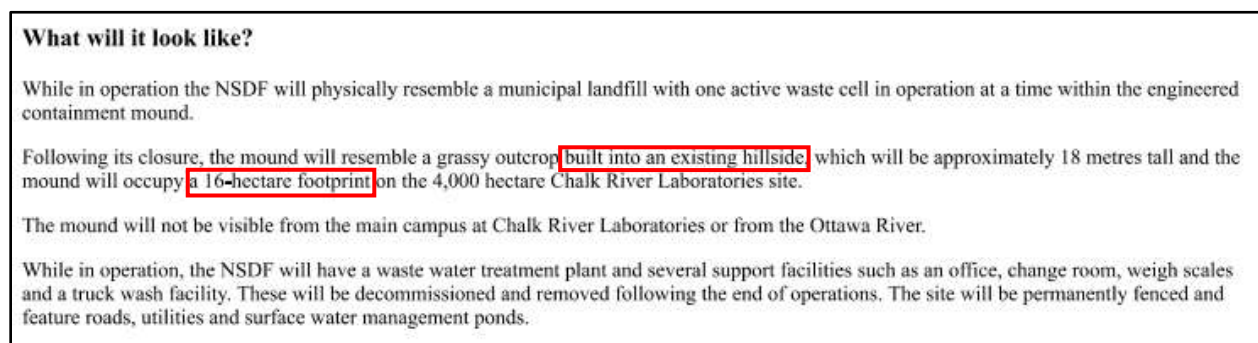
- Neither the Port Hope nor Port Granby facilities are disposal. They are licenced as long-term storage.
- Of the nine sites listed, seven are American. These sites are subject to a completely different regulatory regime.
- No information is provided
  - about the location of these sites. As far as can be determined, none of the other sites are located in the middle of wetlands.
  - as to the wastes to be included in the disposal facility. For example, what is the level of radioactivity? Will these sites handle mixed waste?
  - about the waste acceptance criteria
  - the institutional control period

**2.3.5 Conclusion – The Waste Volume Comparison is Deliberately Misleading**

What can one conclude from a figure that compares only the volumes of the various facilities? CNL's only purpose is to mislead. Otherwise, they would have provided information about the more relevant features of radioactive waste disposal facilities.

**2.3.6 What Will the Mound Look Like?**

Figure 11, taken from CNL's website, describes the proposed mound. What is disturbing about this description is that several of the statements do not match the descriptions and/or the depictions of the mound included in the EIS.



**Figure 11 - Description of CNL's Proposed Waste Disposal Facility (from CNL's Website)**

**2.3.6.1 The "Hillside" Issue**

In the EIS report [6], the term "hillside" does not occur anywhere. However, the CNL's presentation in Chapeau, Québec, August 3, included a depiction of the cross-section of the facility (see Figure 9). That figure clearly shows the hillside.

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There are two problems here.

**First**, the "hillside" issue is not addressed in the EIS. This potentially jeopardizes the safety, the technical and environmental assessments.

**Second**, the first depiction of the cross-section of the mound did not occur until a few weeks before the close of the review period, August 2017.

Apparently, CNL was aware of the "hillside" issue and yet did not provide the appropriate information until extremely late in the EA process.

**2.3.6.2 The "Footprint" issue**

In Figure 11, the footprint of the facility is given as 16 ha. However, in the EIS [6], that same footprint is given as 34 ha, over twice that given this figure.

The discrepancy between these numbers is not easy to explain. It points to a lack of interaction between CNL's project and communications staff and the resultant mixed message.

**2.3.7 Conclusion – CNL's Website**

As discussed above, CNL's website includes a large number of mixed messages. The reason for this is not obvious. However, one can deduce the reason if one considers results of the approach. By mixing up the messages, it extremely difficult for the public to be engaged. They do not know which message to trust and which message is false. Further, the result is confusion.

**2.4 CNL's Invitation for a Technical Review Session**

Figure 12 is a copy of an invitation from CNL to participate in two technical sessions on their proposed waste disposal facility for the Chalk River site.

A perusal of the agenda reveals several items of note. All agenda items identify topics that are included in the EIS report [6] for this undertaking, but were not addressed adequately as evidenced by the public's submissions on that report [10].

What is striking about this invitation is that these sessions should have been held early on in the EA process. If that had occurred, CNL would have anticipated the reaction by the public, and would not have been swamped with over 200 submissions.

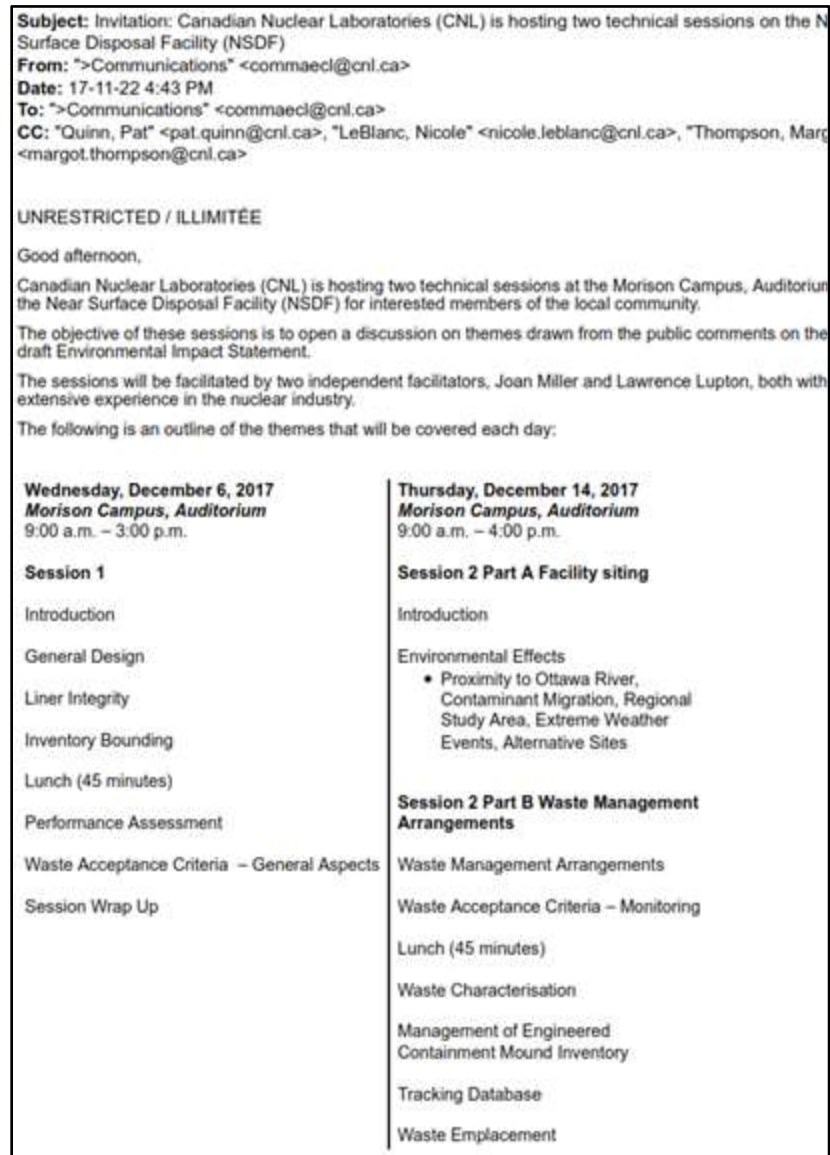
This provides tangible evidence that CNL's "Decide-Announce-Defend" approach to communications on this project have been a complete failure.

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[10] Link to the submissions posted on the CEA Registry - <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80122>



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**Figure 12 - CNL's Invitation to Technical Sessions on the Mound**

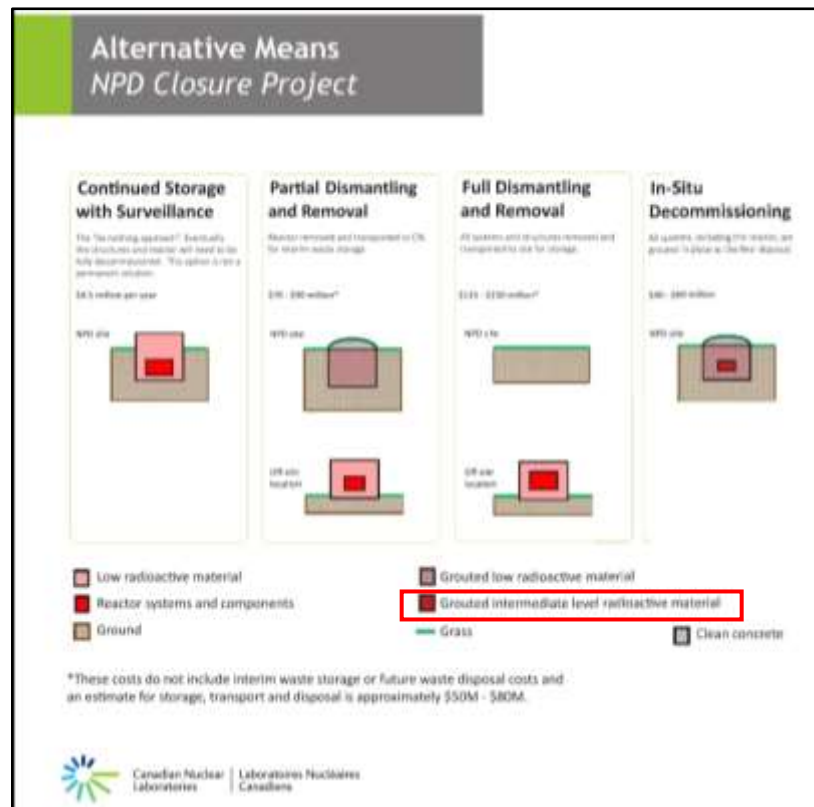
## **2.5 Comparing Posters for CNL's Proposed NPD Entombment Project**

CNL's Mound project is not the only undertaking by CNL that has some disturbing miscommunication issues. The following short discussion compares two posters outlining the alternative means for CNL's NPD entombment project. Figure 13 depicts the Poster 3 downloaded from CNL's website on November 1, 2016. Highlighted is the legend box, "Grouted intermediate level radioactive material". This poster is no longer available from the CNL website.

Figure 14 depicts the same poster (Poster 3) only it was downloaded from CNL's website January 10, 2017, approximately 2 months later. This time the highlighted legend box has changed from "Grouted intermediate level radioactive material" to "Grouted reactor systems and components".

It appears that CNL became somewhat sensitive to the term "intermediate level radioactive material" and toned down the terminology to something less controversial. This appears to be deliberately misleading.

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**Figure 13 - NPD Poster 3 (Downloaded from CNL Website, 2016-11-01)**

I note that, except in the table of definitions, the EIS for the NPD entombment project [11] does not include the term “intermediate level radioactive material” even though “reactor systems and components” will include radioactive materials that would meet the IAEA definition of “intermediate level wastes” [12]. In the following quotation from the EIS report, CNL confirms that “reactor systems and components” consists of intermediate level waste (ILW):

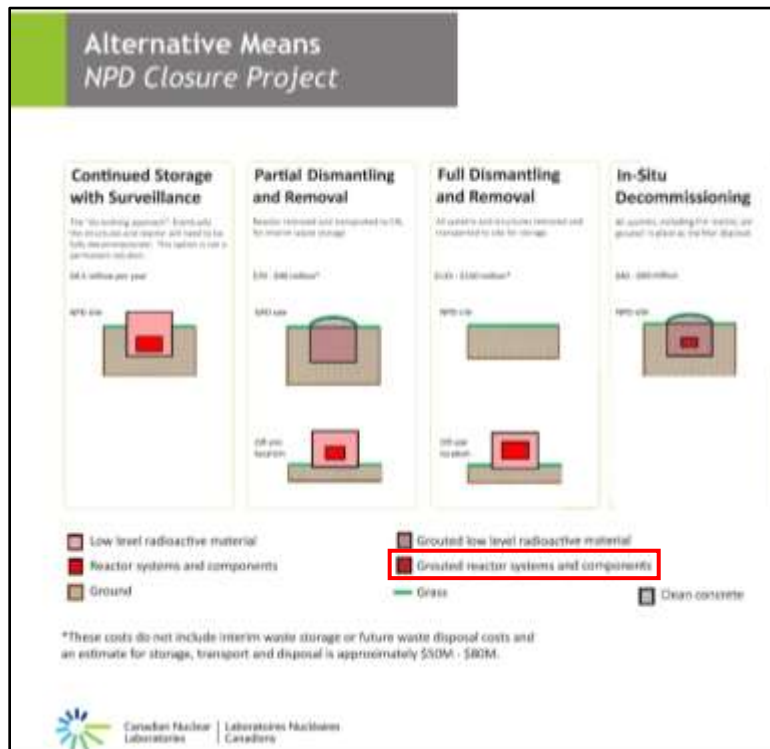
*It is difficult to specify alternative disposition pathways for the radioactive material within NPDWF, primarily for the reactor system and components, given that an alternate waste storage or disposal facility would require waste categorization dependent on the alternate facility's waste acceptance. For example, **the low level radioactive material within NPDWF meets the waste acceptance criteria of the CNL proposed Near Surface Disposal Facility (NSDF)**; however, the reactor system and components inventory does not and thus could not be accepted within the proposed NSDF. Currently, CNL only has interim waste storage for most ILW until a future ILW disposal facility becomes available (CNL 2017b). [13]*

[11] CNL, Environmental Impact Statement Nuclear Power Demonstration Closure Project, 64-808760-ENA-004, 2017 September (CNSC Reference Number 121057E)

[12] IAEA, GSG-1, Classification of Radioactive Wastes, 2009

[13] See Reference 11, Page 4-4

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**Figure 14 - NPD Poster 3 (Downloaded from CNL Website, 2017-01-10)**

The quote above raises several issues:

- This paragraph contains the only two occurrences of the term “ILW” in the EIS text.
- There are no waste acceptance criteria for the Mound
- The assumption appears to be the Mound is the only alternative for the disposal of the “reactor system and components” and that destination is unacceptable. While that is true, it is contradicted by the next statement, “Currently, CNL only has interim waste storage for most ILW until a future ILW disposal facility becomes available.” Obviously, CNL has plans for a facility that can.
- In Section 13 of the EIS report, Reference CNL 2017b is given as:

*Canadian Nuclear Laboratories (CNL). 2017b. Near Surface Disposal Facility – Environmental Impact Statement Executive Summary. Prepared by Golder Associates for CNL. Report No. 1547525. March.*

This last bullet requires its own analysis.

**First** – Since when does a document include a reference to itself? I thought that an Executive Summary (ES) was integral to the document. Given that CNL distributed the text both electronically and by hard copy and all copies included the ES, this self-reference is puzzling.

**Second** – The purpose of an ES is to provide a summary of what can be found the text. Therefore it should not contain any information not in the text. This is another reason why this self-references is puzzling.

**Third** – This last issue makes this self-reference even more puzzling. After an extensive search of the ES I could not find anything that discusses the issues raised by the quotation above.

This leads to the conclusion that this reference is incorrect, and may actually be a reference to CNL’s *Integrated Waste Strategy* (IWS). However, that is not likely to be true either. On page 4-1 of the text, the authors discuss the IWS but provide no reference to any CNL IWS document.



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**3 Conclusion – Open and Transparent Public Engagement**

Whether it is the public statements of CNL's senior managers or presentation of new information late in the review process for their Chalk River disposal project, CNL has not discharged its obligations for meaningful participation under the Canadian Environmental Assessment Act or the Nuclear Safety and Control Act.

This failure extends to their proposal for the entombment of the NPD reactor as the small example discussed in Section 2.5 above demonstrates.

Whether these issues around public engagement are a result of a lack of knowledge, selective knowledge, an intent to mislead, or any combination thereof, does not matter. What matters is whether CNL is "Open and Transparent". As the discussion above demonstrates, when it comes to its engaging the public, CNL fails this test.

Therefore when evaluating CNL's licence renewal application, from the evidence presented above one can only conclude that that CNL is **NOT** "... *qualified to carry on the activity that the licence will authorize the licensee to carry on ...*" [emphasis added]