Northwatch Comments

Draft Integrated Tailored Impact Statement Guidelines Geological Repository (DGR) for Canada's Used Nuclear Fuel Project

IAAC Ref# 88774

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Introduction

Northwatch provided preliminary comments on the Draft Integrated Tailored Impact Statement Guidelines for the impact assessment of the Nuclear Waste Management Organization's proposed "Deep Geological Repository for Canada's Used Nuclear Fuel Project" on May 5, 2026 (Ref#806).

On the same day, Northwatch provided comments on the draft Public Participation Plan (Ref#807).

Northwatch had previously commented on the NWMO's Initial Project Description and described Northwatch and Northwatch's areas of interest in that document, and will not repeat those introductions in this submission, given that our earlier comments are available on the public registry.

The first section of this submission provides general comments on the draft guidelines.

The second section of this submission provides a section-by-section review of the draft guidelines.

The third section provides a review of the draft guidelines relative to the listing of issues which Northwatch generated during our review of the Initial Project Description and which we presented in summary version in our preliminary comments on the draft guidelines.

The final section provides conclusions and closing remarks.

General Comments

In general, we found the guidelines to be – in many instances – lacking the precision and clarity required, and to be overly ambiguous or open to interpretation. In some instances, we found what seem to be internal contradictions.

The Integrated Tailored Impact Statement Guidelines must provide the NWMO with direction that is sufficiently detailed to result in a detailed impact statement which must support an evidence-based assessment of the NWMO's proposal and its potential effects. The Agency must ensure that the guidelines are sufficiently thorough and comprehensive in order to achieve a credible and scientifically and socially rigorous review process. The guidelines must be clear in their directions and not left open to interpretation or as a window to obfuscation.

We found the draft guidelines to be inadequate in that, among other things, they did not:

- Require the NWMO to clearly outline areas of responsibility in the deliver of their project, such as division of tasks and responsibilities between the NWMO and their agents (contractors, consultants, suppliers, etc.); for example, will the NWMO deliver project elements such as facility design, used fuel waste transportation, construction and operation directly, or contract these work packages to third parties; if the latter, what is the chain of command and where does responsibility lie for project oversight
- The guidelines as a package do not pay enough attention to the radiological nature of the hazard, or the long time frames of the hazard; with only a small number of exceptions, the guidelines are more aligned with the requirements for a mining operation than for a nuclear facility
- The guidelines do not currently require the proponent to provide a detailed description of their project; the guidelines should require that the NWMO provide a detailed description of the many various facilities and functions that will be performed as part of the DGR project, including but not limited to
- The guidelines need to require specific descriptions of the various and different project components and activities at the repository site, including but not limited to the concrete batch plant, the sealing material (bentonite) compaction plant, the used fuel packaging / processing plant, the shafts and ventilation systems for the underground operations, the deep geological repository
- The guidelines must require specific descriptions of the various and different project components and activities that may be carried out both on and off site, including materials procurement (in particular for the used fuel containers, the bentonite, and any other materials that form part of the multi-barrier system) and the transportation of both used fuel waste and materials to the site; in particular, the guidelines should require the NWMO to describe the transportation system and

volume for procurement of bentonite, and the contribution to total traffic volume into the site of the transportation of the bentonite materials, the used fuel containers, and the used fuel waste (as well as worker transportation numbers)

- There is inadequate attention to assessment of the long-term safety of the repository, and the development and assessment of the long-term safety case, the pre-closure safety assessment and the post-closure safety assessment; in the current draft these appear as an "also mentioned" in Section 11 "Effects of the Project on the Environment", whereas the examination of the safety case is one of the subject areas that is most central to the assessment – or should be.
- The draft guidelines do not currently appear to require a detailed examination of closure, decommissioning and abandonment, which are important parts of the project delivery and are the precursor to the long period when post-closure safety is in question
- There is a significant Gap is with respect to quality assurance and quality control (QA/QC) with the sole mention we found of Quality Assurance / Quality Control being in *Section 5.2.1 Baseline conditions* describing the approach and methods for the prediction of acid rock drainage and COPCs leaching (lines 489 to 493); a Quality Assurance / Quality Control program is necessary and should be described in detail in the impact statement for multiple areas where quality of product and performance will be a determent in the ability of the deep geological repository project to meet its objective, i.e. of isolating the radioactive waste elements from the environment into perpetuity; areas were a QA/QC program is required and should be detailed in the impact statement include but are not limited to the production of the used fuel containers, the production of the bentonite blocks and sealing materials, the capping and sealing of the used fuel containers after the waste has been placed in the containers including but limited to the welds and the application of copper to the join, the visual and other inspections of the loaded used fuel containers prior to movement into the repository, the emplacement of the buffer boxes holding the used fuel containers, the sealing and closure of the emplacement rooms, the shaft collars for each of the shafts at time of closure, the air filtration systems for the various operations, the water treatment and filtration systems for all radiologically contaminated water, etc.
- As was the case with the NWMO's Initial Project Description, the draft guidelines completely fail to address the key issue of Excavation Damaged Zones and their creation / minimization during repository construction; Excavation Damaged Zone (EDZ) in repository construction is the area of rock surrounding underground openings; limiting the Zone is critical for long-term safety, especially in high-level radioactive waste, due to its increased permeability due to the spalling or fracturing and is characterized by a zone where micro-fracturing occurs, often within 0.1 m to 1.5 m of the excavation face, especially with drill-and-blast methods. In deep

geological repositories, the EDZ can create a preferential flow path for fluid, potentially creating a faster, unintended pathway for radioactive contaminants. Northwatch raised this issue in our comments on the NWMO's IPD and had fully expected the issue to be identified in the guidelines and are surprised and disappointed to find that it has not. This issue is key to the long-term safety of the DGR operation and must be addressed and discussed in detail in the Impact Statement.[1]

- The guidelines fail to direct the NWMO to establish performance measures or threshold against which performance will be measured
- The draft guidelines are at points ambiguous and / or contradictory in the direction to examine long-distance transportation of the used fuel waste; this will be discussed in the section-by-section review, but is raised here as a key and overarching issue
- Throughout the guidelines the NWMO must be directed to include downstream and transportation route effects, receptors and communities when discussing potential impacts or project operations
- The direction on examination of alternative means (of carrying out the project) must be more explicit; for example, the guideline must direct the NWMO to examine a variety of alternative means of carrying out the project, including but not limited to three alternative means related to the Used Fuel Packaging Plant
    - Repackaging into a final (used fuel) container as the reactor station prior to transportation[2]
    - Sub-aqueous versus in-air (hot cell) transfer of used fuel wastes at the repository site[3]
    - Monitor the doses of all on-site personnel (versus a subset of personnel monitored on the basis of NWMO's determination that this subset of employees has "a reasonable probability of receiving a dose greater than 5 mSv in a one-year dosimetry period).[4]

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[1] See, for example, the report *Excavation Damaged Zones Assessment*" (NWMO DGR-TR-2011-21) as found at https://iaac-aeic.gc.ca/050/documents/56216/56216E.pdf or *Fracture Initiation and Propagation in Low Porosity Crystalline Rocks: Implications for Excavation Damage Zone (EDZ) Mechanics* (Ghazvinian, Ehsan, Queens University, 2015) as found at https://queensu.scholaris.ca/items/096e228b-32a8-406b-9ae9-c41070fbbac3

[2] As per the US Department of Energy department decision in 2005 to utilize *Transportation, Aging, and Disposal (TAD*) canisters for the packaging of spent nuclear fuel at reactor sites, reducing the need for repackaging upon arrival at the repository; this system was designed to simplify the handling of nuclear waste, as the canister would be sealed at the reactor, transported, and then disposed of without being opened to reduce costs and worker exposure

[3] In-air transfer of used fuel, particularly defective fuel bundles, will result in greater releases and worker exposures; see, for example*, Commercial Spent Fuel Handling in Air Study* (US DOE, 2005)

[4] See, for example, page 41 of the report *Deep Geological Repository Conceptual Design Report Crystalline / Sedimentary Rock,* APM-REP-00440-0211-R000 (NWMO, September 2021)

- Similarly, the guidelines should provide the NWMO with much more explicit direction to examine alternative means with respect to the design and construction of the deep geological repository, including but not limited to:
    - Access through ramps versus shafts[5]
    - Excavation using tunnel boring methods versus drill and blast methods[6]
- The guidelines do not adequately address worker health and safety; the revised guidelines must explicitly direct the NWMO to present a detailed examination of their intended means of protecting worker health and safety and their program for industrial hygiene, including but not limited to measures to prevent and avoid worker exposures and to measure and monitor all on-site workers (including contractors) for exposures and measure of absorbed and effective dose, and to report on these monitoring results in real time, with monthly, quarterly and annual summaries which include average, mean and maximum doses / exposures received; more detail is also required on the placement, access, equipping and utilization rooms in the repository and the equivalent to refuge rooms in the Used Fuel Packaging Plant
- Another key subject area that was relegated to a passing mention in the direction to carry out an alternative means analysis is "potential for the used nuclear fuel to be retrieved in the future" (line 310); this is a key issue, and NWMO should be directed through the guidelines to provide a detailed presentation on this topic, including the means of retrieval over various time frames, the trigger or conditions that would result in a decision to retrieve the wastes, and the methods for containing and isolated the wastes during and after retrieval
- Two additional subject areas that are not given adequate coverage in the guidelines – and were also not adequately addressed in the Initial Project Description are temperature and heat in the underground environment, and radiation effects throughout the operation; information is required on related topics including but not limited to the following:
    - Anticipated temperatures at repository depth prior to waste placement
    - Anticipated temperatures in emplacement rooms during waste placement
    - Anticipated temperatures in emplacement rooms following waste placement

[5] See, for examples, proposed repository designs in Finland and Sweden

[6] The construction of Deep Geological Repositories (DGRs) for nuclear waste requires high-precision excavation to minimize damage to the host rock, making the choice between controlled drill and blast and mechanical boring (including boring machines or borehole methods) critical for long-term safety. Controlled Drill and Blast (D&B) is often used in crystalline rock for its flexibility in complex geological conditions. Tunnel Boring Machines (TBMs) / Borehole Drilling offer superior speed and reduced damage to the surrounding rock, often preferred for long, linear tunnel sections.

    - Anticipated temperatures in access tunnels in the vicinity of emplacement rooms in which waste placement is being placed during waste placement
    - Anticipated temperatures in access tunnels in the vicinity of emplacement rooms in which waste placement has been placed after waste placement but before tunnel closing
    - Anticipated temperatures of rock and soil at surface at time of repository construction, and at 25, 50, 100, 500 and 1,000 years after commencement of operation
    - Anticipated effect of increased temperatures of rock and soil at surface at time at 25, 50, 100, 500 and 1,000 years after commencement of operation on vegetation communities and wildlife and wildlife habitat and fish and fish habitat
    - The basis for selecting 100 C as the maximum temperature for the underground repository and the means of determining required spacing to maintain temperatures below 100 C both in theory and in real time operation
    - Known and anticipated radiation effects on local geology, including related to embrittlement of rock
    - Known and anticipated radiation effects on underground equipment, including container placement equipment, monitoring equipment and ventilation systems
- The Guidelines must direct the NWMO to provide a full examination of the potential and the potential consequences for malevolent acts including terrorism and acts of sabotage by internal and external actors; this examination should include the potential for such incidents and consequences during transportation and at the repository site; in the current draft there is a single passing mention of sabotage in Section 9.1 on Risk Assessment (line 2021) and not even a single mention of terrorism, malevolent acts, or mischief.
- The draft guidelines would have benefited from the addition of a glossary or set of definitions; the only reference to a glossary is in Appendix A, with the reference to Regulatory document REGDOC-3.6 which is a Glossary of CNSC Terminology; Northwatch prepared a glossary for distribution at workshops we provided to support the public in preparing comments on the draft guidelines and it is attached for reference by the Agency; the Agency's feedback on the glossary is welcome and we would encourage the Agency to make this or another glossary available on their web site for all future comment periods and for the public's use more generally

Section by Section Review

Section / Page	Line	Topic / Comment
Page 1	65-69	The guidelines indicate that the current version of guidance, referred to in this document, may not reflect current practices and that the NWMO remains responsible for following applicable legislation and regulations; we have found it problematic in this review process that there is not a clear outline of the process available, that there are conflicts between guidance documents currently available online and what we are told is current practice, and that Agency staff have on more than one occasion not been able to answer our questions about how the review process will be carried out; we understand that the Agency's front line staff are operating in a changing environment, but the statement in the guidelines referenced above and other similar statements are an indication of regulatory dysfunction that must be addressed, albeit perhaps at higher levels in government.
	72 104	It is unclear if certain terms are being interchangeably or if the Agency assigns different meaning to similar terms. For example, on line 72 the term "significant adverse effects" is used while in line 104 in the same section but several paragraphs later, the term "non-negligible adverse effects" is used. It is unclear if these are the intended to have the same or different meanings.
	90	The draft guidelines include a statement that "the review panel will use the proponents impact statement along with other available information to prepare and impact assessment report" ; the document should specify what that other available information the review panel will use or may rely upon, and whether there is an extent to that other information, and if that other information must be posted on the project registry.
S 1	91	The document refers to Government of Canada's objective of "one project one review" and states that the integrated guidelines identify where federal impact assessment and the licensing process of the CNSC have shared information needs. This raises several issues related to the integration of review processes under both the Impact Assessment Act and the Nuclear Safety Control Act. First, to achieve the objective of 'one project, one review" the impact assessment must consider the activities, operations and potential impacts of activities that will carried out throughout project delivery, including matters which will be considered at later licensing stages (such as operational and closure issues and activities). Second, to avoid project-splitting – which would be antithetical to the objective of "one project, one review", the whole project must be evaluated in the impact assessment process,

		including transportation, design, operation, and closure. If the project is not mature enough for the impact assessment – and the public hearing of the impact assessment – to evaluate fully at the time of the impact statement being accepted as having conformed to the guidelines, then there are two options: terminate the impact assessment on the basis of the proponent being unable to fully describe their project, or to move to a staged or phased impact assessment review, with the impact assessment process and the review panel – and government decision-makers – rendering decisions only on those matters which have been fully examined by the review panel. Of course, this introduces risk to the proponent, in that by presenting only a partial project in the first phase they may receive an approval, only to fail in later stages or phases when the nuclear safety issues are more dominant. We note that – to the best of our knowledge – such a staged or phased approach to impact assessment is unprecedented. Nevertheless, under the Impact Assessment Act it is not possible to approve an incomplete project, and it is unacceptable to refer matters which should be adjudicated under an impact assessment process and public hearing to a later licensing review. Note that while the CNSC describes their licensing process as including "public hearings" these public hearings a) provide no opportunity to question the evidence b) limit intervenors to 10 minutes for oral presentation, c) in some instances are limited to hearings in writing without oral interventions or a commission hearing and d) in some cases those hearings-in-writing are limited to written interventions from the applicant and CSNS staff and do not include even written submissions from the public. The CNSC hearings are not equivalent to a public hearing under the Impact Assessment Act and it would be disingenuous of IAAC or CNSC staff to attempt to create any impression that the two hearing types are equivalent.
	93	The draft guidelines state that the integrated guidelines, in addition to the resources and appendix A, "include, all of the information necessary to make a decision". That statement should read that the guidelines provide direction to the proponent to provide all of the necessary information. The Guidelines themselves do not provide the information; they direct the proponent to provide the information. Also, we note that the draft guidelines to not provide sufficient direction to the proponent to result in an impact statement would provide all of the information necessary to make a decision.
	99	We are concerned with the suggestion in lines 96-99 that it is up to te proponent to determine what information is required related to licensing and that only the license to prepare the site can (specific information found in appendix A) is referenced. The impact assessment must consider activities and effects throughout the

		project lifetime, which includes several licensing stages. Northwatch will be providing comment on appendix A under separate cover.
	104	It is unclear if certain terms are being interchangeably or if the Agency assigns different meaning to similar terms. For example, on line 72 the term "significant adverse effects" is used while in line 104 in the same section but several paragraphs later, the term "non-negligible adverse effects" is used. It is unclear if these are the intended to have the same or different meanings.
S 1.1	123	Line 123 states that the scope of the impact assessment must consider each project phase over the life cycle of the project. It is unclear what is meant by "project phase" and the degree to which "project phase" aligns with licensing stage. This was a question raised during the online information session, but a response was not available at the time and has not been received since that. This requires clarification and definition.
S 1.2	Table	This section is largely comprised of a a two-page table of "valued, components". The column line "Groundwater and surface water" would benefit frp, the addition of a identification of the processing plant, the bentonite plant, and the concrete plant as specific sources of impacts to surface water; the top and bottom column line in the second page of the table would benefit from addition of potential adverse effects or stresses in the job market with other area employers unable to match the NWMO's wages, given that other employers must operate in the economic market (competitive, need for profit, budget constraints, etc.) whereas the NWMO is not similarly constrained, and will be able to offer wages above market rate as a means of drawing employees away from other work places. More generally, we have a concern that the "valued components" approach produces a silo effect in the assessment process and reduces the evaluation of synergistic, cross-cutting and cumulative effects.
S 1.3 Page 5	156-158	The draft guidelines state that "where the proponent is of the opinion that certain information is not required or cannot be provided. It should contact IAAC prior to submitting the impact statement to confirm, whether the proponent's rationale for excluding the information is appropriate." This statement is inappropriate and should be removed. The proponent should be required to meet all the information requirements of the guidelines. There should not be private negotiations between the Agency and the proponent on whether the proponent is going to meet the information requirements. Should the proponent choose to approach the Agency on this matter that approach and any request of this nature should be posted on the registry and subject to comment by the public and Indigenous people.

		It is essential that the process be transparent open and accountable, including to the public and Indigenous peoples, who are participants in this review process.
S 1.3 Page 6	178, 183-184	The draft guidelines state that "the impact statement must take into account where relevant .... (3rd bullet) any relevant assessment of the effects of the project that is conducted by or on behalf of an Indigenous governing body and that is provided to the proponent with respect to the project." It is unclear if this is a general and conceptual statement, or if it is a specific reference or takes into account the sovereign Regulatory Assessment and Approvals Process" announced by Wabigoon Lake Ojibway Nation in November 2024 which they have indicated will be WLON's means of making a decision as to whether or not they support / will consent to the process. The guidelines should set out very clearly how the Impact Assessment Process will interact with WLON's sovereign process, and which will be paramount in decision-making with respect to the project and its assessment process.
Page 6	190	Line 190 refers to a gender-based analysis plus lens. This must apply specifically and in particular – but not solely - to radiation effects on women and girls, given the greater vulnerability of women versus men and the greater vulnerability of children, including girls, versus adults and the greatest vulnerability of babies in utero to radiation effects.
	195-196	The draft guidelines state that "the proponent is encouraged to engage IAAC and the CNSC as early as possible to clarify, requirements and integrated guidelines, and to support early resolution of issues". This requires clarification: what is the early resolution of issues? How is the public informed and engaged in any efforts towards early resolution of issues? How would transparency and openness be achieved and maintained through an exercise in which the proponent is seeking an "early resolution" of issues?
	196-197	The draft guidelines state that "IAAC may establish technical advisory groups". It's not clear if this technical advisory group would be advisory to IAAC or to the review panel, or what the mandate or role would be of such an advisory group. We support the idea in principle, conditional on it being open, transparent, unbiased, and the interactions being placed on the public record. Further, we support the establishment of a science or technical advisory group being established by the Review Panel, with the same caveats. However, it is not clear how that establishment of technical advisory groups relates to the matter of "early resolution of issues". In the case of either a scientific advisory group or technical advisory group to the IAAC or to the Joint Review Panel the body must be independent, unbiased, and established for the purpose at hand.

		The advisory committees group(s) must not be pre-existing or established or another purpose, such as – for example and specifically – the Independent Advisory Group (IAG) on Geoscience established by the Canadian Nuclear Safety Commission (CNSC) in 2013 to provide advice on the geoscientific aspects of the Nuclear Waste Management Organization's (NWMO) Adaptive Phased Management (APM) initiative. The process must be transparent open and accountable.
	199-202	The draft guidelines state that "The proponent is also encouraged to submit draft documents for review by IAAC and the CNSC(e.g. proposed study plans, draft sections of the impact statement) prior to submitting, the formal impact statement". As per our comments ion the public participation plan, while the current status and details are not available to us, we have been aware for some time that the NWMO's intention is to submit core documents and seek early feedback from the regulators in advance of submitting the full integrated submission (i.e. the impact statement).[7] Like the "issue resolution" opportunity being afforded to the NWMO (as per lines 195-196) are are concerned that such a process would fully lack transparency and potentially render public participation in later stages of the impact assessment process meaningless. As a remedy, the public participation plan – and Agency practices – should set out the following: - Pre-submission documents provided by the NWMO to the Impact Assessment Agency of Canada (IAAC) or the Canadian Nuclear Safety Commission (CNSC) will be posted to the public registry - Feedback or commentary provided by IAAC or the CNCS in response to those pre-submission documents will be posted to the public registry - A mechanism will be established for the public to submit written information requests or provide feedback on these pre-submission documents via the Impact Assessment Agency
		The draft guidelines state that "he proponent is expected to provide IAAC and the CNSC with a work plan for the impact assessment, phase of the project within three months of the notice of the commencement". The guidelines should confirm that this workplan will be posted to the Posted to the registry. More generally, the Agency should clarify and confirm that all exchanges of documents between the Agency and the

[7] Adaptive Phased Management Deep Geological Repository Project Integrated Regulatory Submission Plan, APM-Plan-05000-0202 DRAFT, October 2024, NWMO

		NWMO with respect to this review process will be posted to the registry (the same should apply to exchanges between the NWMO and the CNSC).
	205-207	Similarly lines 205 to 207. When the proponent considers an alternative approach or methodology would achieve the same intent, they encouraged to engage early with ayak and a CNSC to discuss the proposed app. Again, posting to the registry. Both of the requests end of the response and an opportunity for public comment.
	209-212	The draft guidelines state that "*When the proponent considers a certain information or studies may be generated progressively over time, they should clearly demonstrate how the information available at the integrated assessment stage is sufficient to support sound conclusions and decision making. This includes explaining how any remaining uncertainties will be understood and managed and how subsequent information would be incorporated in a manner that maintains the integrity and objectives of the assessment. This is the major issue*." This statement being included in the draft guidelines is <u>very</u> concerning. It appears to message to the proponent that they can proceed with an immature application, provide minimal information in the impact assessment process, and fill in the gaps later. If this is not the intention, then the section needs to be reworked and reworded for clarity. The project must be fully defined and describable at the time of submitting the impact statement; if it is not, then the application is premature. The impact assessment cannot be completed and an impact assessment approval cannot be granted when gaps remain in the description of the project and the assessment of the safety case – including the pre-closure and postclosure periods. The long-term safety of the project must be examined during the Impact Assessment and the long-term safety of the project must be established. Evidence must be presented, tested by the Review Panel and hearing participants, and adjudicated by the review panel. The guidelines must be absolutely clear on this fundamental matter.
S 1.4	232	Section 2.1, line 232, refers to a new <u>facility</u>. This should be <u>facilities,</u> in plural. The project is comprised of several components or facilities and activities, such as the Concrete Batch Plant, the Sealing Material (bentonite) Compaction Plant, the Used Fuel Packaging plant, the deep geological repository, the rock management area, the administrative buildings, the worker accommodation, etc.
S 2.1	239	Section 2.1, line 239, directs that the proponent must describe and quantify the waste to be managed at the site and identify the current location of waste at interim storage facilities. This section needs to be

		much more detailed and require a waste inventory that includes volumes, characterization, dimensions, packaging and shielding requirements for the used fuel waste that is to be imported to the site and the low and intermediate level radioactive wastes (including any liquid wastes) that will be generated at the site. This section should also reinforce the limit to waste quantities or volumes, such as the limit of 5.9 million bundles of CANDU waste in the Initial project description, and clearly describe the basis for that waste projection (and provide, for example, clarification as to whether it includes the fuel waste that will be generated through extended operation at Pickering following refurbishment, should approval be granted) and set out what the mechanism would be post-Impact Assessment to amend that volume to a larger number or expanded inventory, such as wastes from the Bruce C, Peace River or Wesleyville New Nuclear Projects which are all currently undergoing impact assessments.
S 2.2	243	The draft guidelines state that the Impact Statement should "describe project components and activities to be carried out during each project phase with a focus on components activities with the greatest potential for adverse federal effects and impacts..." The qualifier " greatest" should we be removed, leaving the statement to direct the proponent to describe all potential adverse effects; activities needs to be understood to include all project stages including activities such as transportation, excavated rock management, and industrial production on site such as the concrete plant, and the bentonite compaction plant.
	246	The draft guidelines state that the Impact Statement should "at a minimum include project components and activities (direct and incidental) listed in the initial project description", but reliance on the initial project description is not appropriate, given the shortcomings of the IPD. The project components and activities must be listed in the Guidelines, particularly given the poor quality of the initial project description and its failure to identify many of the project components and activities, and that those that it did mention were often inadequately described.
	258	The draft guidelines state that the Impact Statement should include maps of the project foot footprint and project components. We support this requirement but note that the mapping should be accompanied by a listing of coordinates. The mapping should also be accompanied by mapping and a clear definition of the project site / study area and the local study area and the regional study area. These should be located in the same section of the Impact Statement or – at minimum - should include cross referencing to support comparison and consideration of the various delineations – project site / study

		area (including a delineation of the protected area within the site), locals study area and regional study area.
S 2.3	269-270	The draft guidelines state that "The proponent must identify the purpose of a need for the project as well as alternatives to the project and alternative means of carrying it out." We support this clear statement of what is required under the Impact Assessment Act.
S 2.3.1	272-273	The draft guidelines state that "the impact statement must outline what is to be achieved by carrying out the project from the proponents perspective". This raises a question as to how the proponent's perspective might differ from the mission assigned to them under the Nuclear Fuel Waste Act; this should be a statement of fact not a statement of opinion. It's not from the proponent's perspective, but rather what is expected to be achieved by carrying out the project.
S 2.3.3		Section 2.3.3 "Alternatives to the project" is a contradiction to the direction in Lines 269-270, which were in accordance with the Act. The extra verbiage in Section 2.3.3 is unhelpful and in conflict with the requirements of the Act. Relying on the "Choosing a Way Forward" report by the NWMO to the federal government on their 2002-2005 study period does not meet the requirements of the Act. Northwatch adopts the submissions made by the Canadian Environmental Law Association on behalf of We the Nuclear Free North on this matter (Ref#873).

S 2.3.4	288-289 287-330	The draft guidelines state that "The Impact Statement must … determine the preferred means of carrying out the project"; this should be revised to read "describe the preferred means of carrying out the project. This section should more clearly set out the range of alternative means that must be examined by the proponent and presented in the impact statement. On a related matter, as per our comments on the Initial Project Description, there must be a full and detailed stand-alone description of the project itself, and than also a description of the preferred means of carrying out the project, not simply In the context of alternative means discussion but in and of itself. Further to a description of the proponent's intended or preferred means of carrying out the project, there can be an examination of alternatives to the project and alternative means of carrying out the project. Each of these descriptions - the preferred or intended project, alternatives to the project, and alternative means of carrying out the project – must be detailed and comprehensive, with a consistent use of terminology. In section 2.3.4 there are several missing elements related to the proponent's project. Under alternative means of carrying out the project, there should be a section-by-section of the proponent's main premise, that their project employs a "multi multiple barrier approach". Each of these barriers should be described in the description of the project, including the role and reliability of the barrier, and then each of these barriers (or project components) discussed in detail in the context of alternative means of carrying out the project by describing alternatives related to each barrier; for example, alternative used fuel container design (titanium versus steel, a thicker copper coating versus the very thin coating selected by NWMO), the selection of bentonite as a buffer, the selection of grouting and / or sealing materials, the selection of crystalline rock formation versus a sedimentary rock formation, etc.
S 3	334-349	Engagement with Indigenous Nations and communities must include engagement with all nations downstream and along the transportation route, including all nations of Treaty 3 (not a subset of six nations) and those nations in Treaty area along the transportation route, including Treaty 9, Robison-Superior Treaty, Robinson-Huron Treaty, Williams Treaty, and the territory of Saugeen Ojibway Nation, and the Algonquins, Abenaki people and the Wabanaki Confederacy and the Wendat (en route from the Gentilly and Lepreau reactors) and the Wolastoqey (Maliseet), Mi'kmaq, and Peskotomuhkati

		(Passamaquoddy) peoples en route from the Lepreau nuclear generating station.
S 4	364-365	The draft guidelines state that the general requirements address methodological areas for the impact assessment related to spatial and temporal boundaries; in the instance of this project, the temporal boundaries are exceptionally long at one million years; this should be included in the guidelines, as this is not a generic requirement but one very specific to this project.
	369-371	The draft guidelines state that, related Transportation activities, at a minimum the geographic bounding encompassing the railway spur and highway 17 turnoffs into the project site; this is much too limited and must be revised to encompass the entire transportation route, from the current locations to the Revell site.
Page 12	385-386	The draft guidelines state that "the temporal boundaries for the assessment should consider, where applicable, the total time frame of the project, which is nominally 1 million years (with a pre-closure period that includes site preparation, construction, operation and decommissioning, lasting a few hundred years, and a post-closure phase that last one million years). We accept the one-million year time frame as a nominal time frame, although some radionuclides (such as Uranium-238 or Iodine-129) have half lives that greatly exceed the one million year mark.
S 4.1	401-406	The draft guidelines state that "During the site selection process, as outlined in Moving Forward Together: Process for Selecting a Site for Canada's Deep Geological Repository for Used Nuclear Fuel, the proponent carried out various studies to determine that the preferred site was potentially suitable for a Deep Geological Repository (DGR), both from the perspective of identifying a willing host community, and from the perspective of identifying a site with the requisite technical characteristics to safely contain used nuclear fuel at depth over long periods of time (e.g., Confidence in Safety – Revell Site – 2023 Update)" and that "IAAC recognizes the work carried out to date". The Agency must be advised that many of the reported produced by the NWMO with respect to the site selection process used a cookie cutter approach, often repeating the same or very similar reports for community after community. Further, these reports have not been peer reviewed or presented in any forum where the factual basis could be tested or examined by the public or Indigenous people. The guidelines must clarify that any past work that is to be relied upon to support the project proposal must be presented in the context of the impact assessment process and must be open to questioning through written information requests / interrogatories, at technical sessions convened in advance of the main hearing where the public

		and Indigenous people have the opportunity to pose questions to the proponent or their agents on the material presented, and during the course of the public hearing.
	407-413	The draft guidelines state that "The proponent is encouraged to leverage the early information". The guidelines need to clarify what they mean by "leveraging" early information, and clarify which sets of "early information" they are referring to. Is this in reference to the 2002-2005 studies? The pre-2010 reports? The 2010-2020 period? The post 2020 period? The Phase 3 studies? Phase 3a or Phase 3b or both? Much of the NWMO's past work has little evidentiary value, and many of their reports were largely promotional in nature. There is a risk that the NWMO could simply "flood the zone" with past and more recent reports, making it difficult for the Panel and the public and Indigenous people to readily discern which were actually current and relevant to the impact assessment process. The impact statement must be comprised of the main impact statement and support documents specific to the impact assessment process. Past reports can be referenced, footnoted, or hyperlinked, but should not be allowed to take up valuable shelf space by being repackaged as one of the actual impact assessment report.
P14	431-432	The draft guidelines state that (referencing past reports) "the impact statement must ….provide these resources on the Canadian impact assessment registry so they are accessible to the public, Indigenous Nations and communities, government experts and the review panel". Again, we have a concern that the NWMO will attempt to overpopulate the registry with past reports which are of little evidentiary value. Further, the guidelines should direct the NWMO to limit the digital size of their report so they can be downloaded in areas with slow internet and shared by email (which was not the case with their Initial Project Description). Any information of value and relevance to the impact assessment process must be incorporated into the impact statement or presented in a supporting document specific to the impact assessment documents, which will all be subject to evaluation and examination in the impact assessment process and subject to questioning.
S 5 S 5.1	435-451	Section 5 must include the transportation route, including weather conditions and weather events likely to be encountered *en route*, including but not limited to floods fires, and weather-related road closures. This section must pay particular attention to the growing size and frequency of forest fires, discuss the Revell site and its selection in the context of the boreal forest being a fire-driven ecosystem and a

		changing climate increasing the frequency, size and duration of forest fires.
S 5.2.2	510-521	This section does not – and must – include a discussion of Excavation Damage Zones, and the relationship between the excavation damaged zones, and the rate and opportunities for migration of radionuclides and gasses through the geological barrier; related to this, here or in another section the NWMO must be required to provide a rationale for the selection of drill and blast vs tunnel boring in light of the different consequences these two method have for excavation damaged zones
S 5.3.2	539-545	Notably absent from this section is any requirement for the NWMO to present a discussion of heat that will be generated in the repository and temperature changes at surface and near surface in rock, soil and small surface water bodies (including ponds, creeks, streams, ephemeral streams). Related to that, information is required on the effects of that heat and heat transfer on vegetation, ground and surface water, fish and fish habitat, wildlife and wildlife habitat, ecosystem function. This was a studied phenomena in the assessment of the now-cancelled Yucca Mountain project, and the Agency is advised to look to the State of Nevada and the Agency for Nuclear Projects for assistance in framing this and other issues for the impact assessment process in general and the preparation of the guidelines in particular.
S 5.4	547-551	The draft guidelines directs the proponent to refer to health Canada's guidance for evaluating Health impacts saying that "the proponent should complete the checklist provided in those guides to assist participants in verifying that the main elements have been completed". These checklists, or the requirements contained within them, should form part of the guidelines. As has been already noted by the Agency, directions change, and it is important that the public and proponent – and the review panel – have common understanding of what is required. This can be better achieved by incorporating the requirements into the guidelines – or, at minimum – an appendix to the guidelines. Hyperlinks change, online directives change; the guidelines should be clear and consistent over the several years of the impact assessment process.
		. 5.51. Baseline conditions.
5.5.1	572-622	Radionuclides should be included in the baseline studies to provide a comparative basis for study if and when and after the project is underway and radio-contaminants are being released into the local environment as a result of the project. listed to provide a comparative. Uh, Between Baseline and future.
5.5.2	627-676	The section with respect to affects to the atmosphere acoustic and visual environment should be further detailed to explicitly identify the

		bentonite compaction plant and the concrete plant as sources of releases to air, noise and light. The ventilation from the used fuel packaging plan and from the deep geological repository must also be described, including a rationale for all design decisions related to ventilation, filtering and monitoring.
	644	This section should include details of all assumptions associated with related mitigation measures and their achievability. Specific to this section, NWMO should identify the use of filters in ventilation, for example in the used fuel packaging plan and in the deep geological repository and provide a rationale for all related design decisions.
	696	This section should be refined to include all receiving waters, retention ponds, the rock piles. the ventilation shafts and the use fuel facilities. The list of all water bodies and water courses should be mapped with coordinates and they should be named.
P 23	717-718	The guidelines direct the NWMO to use traditional field and mapping techniques provide a delineation in characterization of groundwater surface-water interactions including an identification of groundwater dependent ecosystems. This section should include mapping of estimated ranges / zones where groundwater at various depths would report to surface.
		Part 3
P 25 S 5.6.2	803-805	The section on effects to groundwater and surface water should be made more specific and should clarify that the migration of groundwater from the deep geological repository is to be examined and considered in various sections throughout the document, including but not limited to the discussion of groundwater flow. It should be made clear that the contaminants referenced are all contaminants associated with the project and associated with all project components activities (including the bentonite plant, the concrete plant, the used fuel packaging plant, the deep geological repository, and the mining operation including the waste rock piles.
	840-841	The guidelines require the proponent to describe the contaminant attenuation capacity within the hydrological units in the project area. and use this input to assess off-site groundwater and surface water contamination. It should be clarified that this includes but is not limited to attenuation from the deep geological repository and includes other sources of groundwater contamination.
S 6.1.2	849	The guidelines direct the description of potential changes to surface water and physiochemical parameters, including temperature. This is the first reference in the guidelines to temperature changes related to the project (although not the first reference to heat related impacts of the project in our comments on the guidelines).

		There must be a full examination and description of heat and temperature related changes to the environment related to the project, including increased temperatures of rock, soil, surface water and subsequent potential effects on vegetation, fish and fish habitat, wildlife and wildlife habitat, and ecosystem function.
S 6.1.2		Temperature related changes to the environment related to the project must be described, including increased temperatures of rock, soil, surface water and subsequent potential effects pm terrestrial, riparian and wetland environments.
S 6.2.2		Temperature related changes to the environment related to the project must be described, including increased temperatures of rock, soil, surface water and subsequent potential effects on fish and fish habitat.
6.3.2		Temperature related changes to the environment related to the project must be described, including increased temperatures of rock, soil, surface water and subsequent potential effects on wildlife and their habitat.
6.4.2		Temperature related changes to the environment related to the project must be described, including increased temperatures of rock, soil, surface water and subsequent potential effects on terrestrial wildlife and their habitat.
6.5.2		Temperature related changes to the environment related to the project must be described, including increased temperatures of rock, soil, surface water and subsequent potential effects on species at risk and their habitat.
S 7	1276-1281	This section identifies communities the proponent should work with but leaves out Dinworic and the Dinworic Local Services Board.
S 7.1 S 7.2.1		This section identifies communities the proponent should work with but excludes downstream and transportation route communities.
S. 7.2.2		This section on the effects on health conditions should clarify that it includes mental health.
S 7.2.2.1 Page 44	1414	This section directs the proponent to estimate radiological doses. The section should be further detailed to require that the proponent describe and document the method used to estimate effective and equivalent doses. The section should also include downstream and transportation route communities and their residents, and estimates should be for both normal operations and accident or failure conditions.
S 7.3.1	1517-1518	The guidelines focus transportation studies on school transportation routes and intersections along Highway 17 between Ignace and Dryden; we support these study areas, but note that there are school transportation routes along the entire corridor which also warrant attention and the local studies cannot be at the exclusion of the

		transportation route in total. The study also needs to look at road conditions, collision rates, collisions involving transport (commercial) trucks, and highway conditions, including a comparative study of collision rates and fatalities comparing the sections of road with 2 lates, three lanes and four lanes.
S 7.3.2.1	1553-1554	The guidelines state that "the impact statement must document and take into account tolerance thresholds for potential adverse effects identified by Indigenous nations and communities and local communities". This section needs clarification and the Agency should provide a rationale. How are these "tolerance thresholds" to be established? What is the Agency's definition of "Tolerance thresholds?[8] How is the information to be collected and how is it to be used? What is the spatial scope of these studies?
S 4.7.4.2.1		This section should also address issues of NWMO being able to outcompete other employers in the area who are unlikely to have the ability to match NWMO wages which are not subject to market competition. Similarly, the assessment should look at likely effects on employee availability for other sectors and employers, particularly in light of NWMO's unfettered ability to provide above market rate wages.
S 7.4.2.2	1688-1690	Similar issues are at play as in the immediately previous sectin; specifically lines, an examination is needed of situations when the project may directly or indirectly create economic hardships for or the displacement of other Industries, businesses and companies in the region because of an uneven playing field in terms of ability to offer above-market rate wages.
S 7.5	1696-1707	As per the above, an examination is needed of the potential effect on construction, mining and forest industry sectors, service sector, and low-wage jobs due to likely wage and workplace benefit inequities between the NWMO and other employers in the region.
	1708 1711-1718	The focus of these sections should be on estimated / calculated dose to persons both on and off-site; the key comparison is between pre-project levels and levels during and post-operation; BATEA and ALARA are arbitrary constructs of the nuclear industry and nuclear regulators and are not of direct relevance to effects of the dose / exposure on human health and well-being; while they should be described, they should be describe relative to pre-operational level and biological effects of ionizing radiation.
	1731-1732	This section requires the proponent to describe the proposed mitigation enhancement measures that will be implemented for all

[8] The National Instituted of Health's definition is "A social tolerance threshold is the limit of behavior or diversity that individuals or groups are willing to accept before adopting new norms, responding to a violation, or experiencing interpersonal conflict. It acts as a tipping point in social dynamics, balancing conformity with the acceptance of differences"

		economic effects but there appears to be is no corollary requirement to describe proposed mitigation and enhancement effects for all environmental, human health and social adverse effects.
Section 8		This section should clearly set out the proponents intentions with respect to the United Nations Declaration of the Rights of Indigenous People and in particular their readiness to commit to not proceeding with the project if at the end of the assessment period there has not been a freely given declaration of Free, Prior and Informed Consent by the affected Indigenous peoples, including the Nations of Treaty 3 and those of the treaty areas and unceded territories along the transportation route.
S 9	2003	Section 9 sets out very general requirements for the consideration of the effects of potential accidents or malfunctions, but there is not any reference to terrorist attacks or acts of malevolence or sabotage; there should be an equivalent section to address these topics.
	2003-2004	In addition to barrier loss this section should reference barrier failure, and should address the potential and consequence of barrier loss / failure from multiple causes, including but not limited to design basis failures, operational failures, accidents, operator error, accidents, terrorist action, malevolent acts and / or sabotage. These potential causes and the consequences – including to human health, the environment and the local and regional economy - should be described in detail.
S 9.1		The identification of hazards for each project phase that could lead to events of accidents or malfunctions should be detailed and should include descriptions of potential consequences and planned responses. The current draft includes under the section heading of "risk assessment" the "potential for vandalism, sabotage and other malicious acts"; this should be included in the guidelines as a detailed stand-alone section. There should be an additional discussion of "mischief" as the potential for accidents and malfunctions; incidents of mischief observed at nuclear generating stations include incidents like blocking the public address system, blocking fire doors, etc. all of which could have serious consequences under certain conditions.
P 63	2028	The draft guidelines direct an examination of "worst case scenarios" a "lower consequence scenarios"; this section should be expanded to ensure that the impact statement addresses both on-site and off-site scenarios, and includes radiation exposures including during transportation and worker exposures

	2034	The reference to "contaminants spilled or released indirectly into water or air" needs to be clarified that this analysis also includes radiation and release of radioactivity and radiocontaminants. It also needs to specify that there must be address of damage to fuel bundles, which could release result in fuel defects which can in turn cause larger releases at later stages, due to damage to the fuel bundle invoking fuel defects. If impacts happen during transfer or transportation of a fuel bundle it may cause a fuel defect, which then results in greater releases when the transportation package is opened and so greater contamination and therefor greater doses to workers at the used fuel packaging plant. A related issue is increases to surface contamination, ie contamination of the surfaces of the used fuel in the used fuel transportation package; again, upon transfer this could result in increases to the indoor or outdoor environment, and so to workers and others more generally.
9.2	2062-2064	Section 9.2 on mitigation measures must be clarified to include both *en route* and on site. The direction in this section to the proponent to describe "repair procedures" as a mitigation measure needs to be clarified, as it implies that accidents and malfunctions have only minor consequences. The description must also include incidents with major consequences. This section should also include a discussion of evacuation and compensation. The direction to describe mutual Aid Arrangements in the event that the accident or malfunction exceeds proponent resources must be clarified. An explanation must be provided of the term or circumstance of "exceeding proponent resources" and the revised guidelines must clarify the relationship between these statements and the Nuclear Liability and Compensation Act. The revised section must also identify the parties with whom the Mutual Aid Arrangements would be undertaken, with, i.e. if it is "mutual" aid who are the partners with whom the sharing of aid would be mutual? Who are the other Aid providers and what is the nature of that Aid, financial or otherwise?
	2074-2113	Section 9.3 on emergency management must apply to both on-site and *en route*, including The second bullet line 2077.
	2089	Identify emergency response strategies and Emergency response zones must be identified for the entire transportation route. A description of the roles, responsibilities and expectations of First Responders along the transportation route, including volunteer and First Nation First Responders must be included in detail. Allocation of resources to First responders must be described, along with anticipated or potential exposure levels under various scenarios. The section must also describe the much larger permitted exposures – according to CNSC regulations – under accident conditions, and the

		relationship between this regulatory allowance and potential exposures for First Responders must be described.
S 9.3 Page 65	2094	The required description of "outreach efforts that the proponent has made and will continue to make to ensure the public and Indigenous Nations and communities understand, the risks associated with this type of project" must be detailed, specific and documented.
	2094 - 2113	This section needs to apply to both on-site and on route emergency conditions, and apply to emergency communications and public notification plans.
S 10	2118-2119 2020-2022	We concur with the agency's determination that project related transportation has a potential to result in adverse effects within areas of federal jurisdiction, and is incidental to the project. We concur that transportation activities related to this project include increased traffic to the project during site preparation and construction, as well as the transport of used nuclear fuel to the repository. These statements are consistent with the Impact Assessment Act.
S 10 S 10.1		There are a number of statements which potentially conflict both with the opening statements of section 10 and with the Impact Assessment Act. The draft guidelines describe CNSC and transport Canada's role and state that the CNSC is the life cycle regulator and the regulator will be responsible for any consultation and engagement processes and obligations for all future phases of the project, should there be a positive IA decision. In reality, what the CNSC will carry out is a very limited licensing hearing. To date, after decades of attention to this file, Northwatch is not aware of a single instance of the CNSC engaging with the public with respect to the road transportation of radioactive waste (there was a consultation held with respect to the proposed shipment of steam generators via the Great Lakes in approximately 2013). Recent shipments of high-level nuclear fuel waste from Gentilly to Chalk River were fully exempt from any public consultation or Indigenous engagement and took place outside of the previously announced schedule of transfer from Gentilly in 2050. It is not foreseeable that the CNSC will hold any public consultation on transportation matters, including transportation packaging, package certification, route planning, emergency response, or other related matters. The insertion of these paragraphs is diverting attention rather than informing.
		The impact assessment process must pay careful attention to the transportation containers, the safety testing of the transportation

		containers, the design and shielding provided by the transportation containers, the emergency response action plan for the transportation route, estimated doses from the transportation packages, including the used fuel transportation package, estimated doses from the other packages (such as the still conceptual basket transportation package).
		NWMO presented some preliminary dose estimates in two reports now over 10 years old; these could be updated and presented as part of the impact statement and then considered as part of the impact assessment process but update to the 2021 preliminary transportation plan will not support or accomplish that.
	2141-2145	The guidelines state that "More detailed transportation planning will occur as the project advances toward the operational phase (i.e., the phase when transportation of used nuclear fuel would be required) and as the proponent seeks the necessary licences from the CNSC." This might be taken as a suggestion to substitute the impact assessment process with a licensing hearing which will not likely take place until at least a decade after the IA hearing has been completed, and will be under different legislation and different procedural rules. Punting transportation to a far off hearing in a different venue with different adjudicators is contrary to the requirements of the Impact Assessment Act.
	2144-2146	The project assessment cannot be carried out without an evidence-based examination of the used fuel transportation from the reactor station to the Revell site.
		The draft guidelines that that the Impact Statement must provide an update to the 2021 Preliminary Transportation Plan for used nuclear fuel, based on "information reasonably available at this stage of project planning" including information related to "the modes of transport and route planning framework, including <u>concepts</u>, principles and criteria for selecting routes.... "the long-term plan for continuing to engage and educate the public and Indigenous Nations and communities on the transportation of used nuclear fuel, including future updates to this plan leading up to obtaining the appropriate licensing, and then subsequently during project operations". We note the following: - The "concept" review was in the 1990s; the NWMO is now seeking a project approval - The NWMO has had since 2002 to "educate" the public and indigenous people on the transportation of used nuclear fuel and has largely chosen not to do so; that is not a rationale for excluding transportation from the project review - There is no public process for licensing of used fuel transportation outside the Impact Assessment Process; the

		CNSC process does not provide for the testing of evidence and frequently excludes even the opportunity to make oral submissions.
S 11	2206-2210	This section is titled "Effects of the Environment on the Project", but omits that the project has been sited in a fire-drive ecosystem. This section must pay particular attention to the growing size and frequency of forest fires, discuss the Revell site and its selection in the context of the boreal forest being a fire-driven ecosystem and a changing climate increasing the frequency, size and duration of forest fires. The fire history in the area must be included, with an examination of the fire record over the last 100 years, as a minimum
	2215	We note that the section is titled "Effects of the Environment on the Project" and were surprised that this is the first instance of discussion of the "safety case". This is curious placement of the topic which is perhaps most central to the assessment of deep geological repository proposals. The draft states that the analysis of effects on the environment will form the basis of the safety case, that the impact statement must also meeting the requirements of REGDOC 2.11.1. The safety case, and pre-closure and post-closure safety assessments must be described in detail in in a stand-alone section of the impact statement.
	2227-2231	The draft guidelines set out that "in addition to the general requirements for impact statements, the following specific projects, specific requirements have been included due to the nature and time scale of the project. The proponent may <u>opt</u> to provide information in a format that allows for analysis over several time frames. For example (1) during donstruction and operation up to closure, (2) up to ten thousand years, and (3) beyond 10, 000 years over, repeat repeated glacial cycles. We are concerned with the suggestion that the proponent may "opt" in or out of providing the outlined information, and are very much of the view that the guidelines should set out required information, and this information should be required. Secondly, while we generally support the analysis at these three different time scales, we note that the lifetime of the project has in previous sections been established to be one million years (despite the half-lives of some radionuclides being considerably longer than one million years) therefore a fourth time frame of one million years should be added.
S 12		Section 12 refers to section 63 of the Impact Assessment Act and indicates that this section may inform the analysis of these factors, but it is unclear at what stage this "informing" would take place and

		with what decision-maker, i.e. the review panel, the Agency or the Government.
12.2	2297-2298	Oh wait, there is there's the environmental obligations. Environment and climate change commitments. Question. These requirements May inform the analysis of these factors at what stage at the IX stage, the panel stage, or the government decision stage. This is ambiguous and unclear. Under 12.2 environmental obligations lines, 2297 to 2298 it states that where the proponent is of the view that the likely affects of the project contribute to environmental obligations.
12.2.1		The directions in section 12.2.1 to discuss climate change commitments and greenhouse gas emissions must include greenhouse gas emissions from transportation of used fuel, transportation to the site of bentonite, transportation of the used fuel containers, transportation of material for the concrete batch plant, and all other construction materials and other material needed for operation. The section should also describe the project's energy needs – both electrical and non-electrical energy demands – the energy source, and the related greenhouse gas emissions. Other greenhouse gas emissions include from land clearing and countouring at the project site and related to access and route infrastructure required to carry out the project.

Draft Guidelines Delivery on Key Issues

The issues which Northwatch identified during the review of the Initial Project Description as being necessary information in the impact statement – and so requiring identification in the integrated impact statement guidelines - include the following:

Describe or otherwise demonstrate that the NWMO has adequately examined alternatives to the project or alternative means of carrying out the project	The guidelines are weak in delivering in this area.
Provide a clear statement of the need and purpose for the project	The guidelines do require a statement of the need and purpose of the project, although in a quite generic manner.
Present a contemporary examination of alternatives and alternative means (i.e. no substitution by simple reference to 2002-2005 studies)	The guidelines fail to require a thorough examination of alternatives to the project.
Present an examination of alternative that includes alternative sites, alternatives in repository access (ramp vs shaft), the alternative of transporting the irradiated fuel in used fuel containers instead of in transportation packages, the alternative means of in-water transfer of used fuel at repository site (vs "in air" ie. in hot cells), alternative mining methods, alternatives in waste emplacement (in-room vs in-floor) and alternatives in used fuel container design	The guidelines provide only very general direction to provide an examination of alternative means of carrying out the project, with no specific direction.
Provide an accurate and contemporary fuel waste inventory with a forecast that includes the Pickering refurbishment and various new build scenarios	The guidelines provide this in a very general manner, but do not provide specific direction, for example updating the inventory to reflect Pickering refurbishment intentions.
Describe the transfer of the used fuel waste from dry storage containers into transportation containers of (final) used fuel containers at the reactor site	The guidelines do not require this.
Provide a comprehensive examination of the activities and impacts associated with long-distance transportation of the fuel waste from current locations to the Revell site	The guidelines do not require this.
Include detailed discussion / description of excavation damage zones	The guidelines do not require this.

Describe or present the geoscientific verification plan or its independent oversight	The guidelines do not require this.
Describe contingency planning and contingency plans and how they will be implemented during operations (for example, when the degree of rock fracturing is greater than anticipated) and describe failure thresholds, i.e. what is the measure that will be used to determining that the fracturing is to such a degree that placement (of tunnels, placement arms or placement rooms) cannot proceed or how or when failure thresholds will be established prior to or during operation	The guidelines do not require this.
Describe major project components and activities, including the Used Fuel Packaging Plant, waste placement and repository design and construction and closure, decommissioning and monitoring.	The guidelines do not require this, beyond very general description to describe "alternative means"
Describe the Project Site, Location and Study Area(s) in detail, and in relationship to the project and to social, environmental and recreational values and land uses	The guidelines do require the description of the project site and location. It does not specifically require a description of land uses, etc.
Describe potential effects of the project's various stages, activities and components in detail	The guidelines do not require this in detail.
Describe the site selection process including social factors	The guidelines do not require this.
Describe how long-term safety will be evaluated or demonstrated or achieved.	The guidelines do not require this other than a general reference to the safety case in a section about effects of the environment on the project.
Describe emergency response and evacuation plans	The guidelines do not require this.
Describe accidents and malevolent acts and related security risks and measures	The guidelines do not require this.
Describe measures to protect workers in the underground environment; for example, the information provided on refuge stations is inadequate and is generic, i.e. does not specifically address risks to workers in a radiological environment and in the instance of	The guidelines do not require this.

upset conditions due to an unplanned radioactive release	
Describe the systems for underground ventilation and filtering, including during normal operations or under upset conditions	The guidelines do not require this specifically.
Describe shielding and remote handling processes required to prevent workers from being exposed to radiation	The guidelines do not require this specifically.
Describe the monitoring program for the used fuel processing (packaging) facility	The guidelines do not require this specifically.
Describe the monitoring program for the placement rooms	The guidelines do not require this specifically.
Explicitly describe the dewatering (pumping to surface) that will be required in the repository, and the quality and management of the pumped water	The guidelines do not require this specifically.
Describe the potential for acid mine drainage and metal leaching from the excavated rock in detail, including description of acid based accounting and other methods used to estimate the potential for acid generation and /or metal leaching over long time scales (beyond operation)	The guidelines do require an examination of Acid Mine Drainage and metal leaching potential.
Describe the approach and measures to be employed for the protection of human health	The guidelines do not require this.
Discuss key issues such as social division, nuclear anxiety, stigma effect of having a nuclear project imposed on the area, and effects on property values	The guidelines do not require this specifically.
Provide a detailed discussion of the liquid and solid low and intermediate level radioactive wastes that will be generated through implementation of the project	The guidelines do not require this specifically.
Describe the novel nature of the project and the lack of precedents or operating experience for deep geological repositories for high-level nuclear waste	The guidelines do not require this.
Describe site selection criteria, consultation, community identification, and consent and site characterization and clearly describe the technical basis for site selection	The guidelines do not require this.

Provide a detailed methodology for determining Long-Term safety and present supporting evidence	The guidelines do not require this other than a general reference to the safety case in a section about effects of the environment on the project.
Describe the Emergency response and evacuation plans	The guidelines do require in a general manner a description of emergency response plans. It does not require plans for evacuation.
Describe the potential adverse impacts and the response plan for accidents and malfunctions	This is required in a general manner.
Describe the potential adverse impacts and describe response plans for malevolent acts, security breaches and acts of sabotage and mischief (internal and external)	The guidelines do not require this.

Conclusions

The Integrated Tailored Impact Statement Guidelines must provide the NWMO with direction that is sufficiently detailed to result in a detailed impact statement which must support an evidence-based assessment of the NWMO's proposal and its potential effects. The Agency must ensure that the guidelines are sufficiently thorough and comprehensive in order to achieve a credible and scientifically and socially rigorous review process.

In the course of our review we determined that many (or most) of the issues we had raised during the previous comment period on the Initial Project Description have not been addressed in the draft guidelines.

We are concerned that the guidelines as drafted will not result in a robust assessment of the Nuclear Waste Management Organization's project, which will be to the general disadvantage of Canada and put those along the transportation route and in the vicinity of and downstream from the project at greater risk.

We urge the Impact Assessment Agency to give careful thought to the hundreds of submissions the Agency has received calling for strengthening of the Guidelines. In the case of a project whose agreed upon lifetime is one million years, some extra time, care and attention is warranted in producing guidelines which will direct the proponent in the preparation of an impact statement that will support an informed and evidence-based review of this unprecedented project.