Comments on the NWMO Deep Geological Repository (DGR) for Canada's Used Nuclear Fuel Project

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January 19, 2026

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The Art Borups Corners Arts Collective wishes to thank the Impact Assessment Agency of Canada (IAAC) and the Canadian Nuclear Safety Commission (CNSC) for the opportunity to participate in this public submission process.

As the closest community to the Revell site, and the most impacted of all, we recognize the significance of this integrated assessment in evaluating the environmental, economic, social, and health impacts of a project of this magnitude. We look forward to additional opportunities to provide feedback as this multi-generational project progresses through its lifecycle.

Statement on the Consultation Period

While we appreciate the opportunity to provide input, we must formally contest the adequacy of the 30-day consultation window. This project is proposed to span over 160 years—a multi-generational undertaking with profound technical, environmental, and socio-economic implications for Northwestern Ontario.

Offering a mere 30 days to review thousands of pages of highly specialized technical documentation is fundamentally disproportionate to the project's scale and risk profile.

This abbreviated timeframe creates an insurmountable barrier for small organizations, volunteer-led groups, and local communities with limited resources. It forces a choice between a rushed, superficial review or the total exclusion of meaningful community voices.

To ensure a transparent and equitable assessment, the consultation period must be extended to reflect the project's complexity and the actual capacity of stakeholders to provide the 'informed' feedback that the Impact Assessment Act requires.

Overview of Submission

The following submission provides an initial narrative assessment of the NWMO's proposal, based on a section-by-section review and community discussions of the proponent's Initial Project Description (IPD). Our evaluation, public comments and recommendations focused on the IPD's internal consistency and technical rigor against its aspirational claims of "informed consent" and "social license".

Through this initial analysis, our collective has identified several critical "transparency gaps" and "points of tension" that we believe the Impact Assessment Agency must address:

- **Data Incompleteness**: The IPD explicitly acknowledges that Indigenous social, cultural, and health data are not yet fully represented in the baseline studies. This omission creates significant "transparency gaps," making it impossible to validate the assertion of "informed" consent when the proponent admits their own data does not yet represent the characteristics of on-reserve communities.
- **Regulatory Uncertainty**: The 160-year project timeline introduces extreme long-term uncertainty regarding the evolution of the "licensing basis," post-closure monitoring, and the effectiveness of institutional controls. The current proposal assumes that "willingness" expressed today remains valid across multiple generations, yet appears to lack a framework for re-evaluating consent or managing the long-term responsibilities associated with nuclear waste.
- **Regional Impacts**: Our review identifies several instances of "primary vs. secondary" stakeholder biases. While the proponent highlights the willingness of the host and potential willing host communities, the narrative remains largely silent on the perspectives of neighboring municipalities closest to the Revell site, other communities and Indigenous nations along transportation routes or within the shared watershed who may have different perceptions of risk.
- **Technical Rationale**: The proposal often relies on generalities or conclusions from unrelated historical studies to justify site-specific safety. There is an urgent need for the proponent to move beyond promotional language and provide granular, site-specific geological, hydrological, and technical data that can be independently verified.

Our collective offers these comments to strengthen the project design and ensure that the assessment remains a neutral, rigorous, and evidence-based review of the long-term safety and social license of the proposed repository.

Comments and Feedback

Acknowledgment of Truths

The Initial Project Description presents a highly aspirational and conciliatory tone, framing the project within the context of a 'reconciliation learning journey.' While the acknowledgement of Section 35 rights and the commitment to FPIC are positive indicators of corporate responsibility, there is a notable tension between the claim of having 'willing and informed hosts' and the subsequent admission that the data used to characterize these populations is incomplete. This creates a transparency gap; it is difficult to validate the 'informed' nature of the consent if the proponent simultaneously acknowledges that their own data does not fully represent the Indigenous identity or the characteristics of on-reserve communities.

The reliance on WLON as the primary 'proximate' group may also overlook the broader regional impacts on other First Nation and Métis communities who may have unresolved claims or different perceptions of risk.

Furthermore, the document relies on emotive language such as 'grateful,' 'honours,' and 'great fortune,' which, while respectful, can serve to obscure the technical and socio-economic burdens the project imposes. The admission that federal acts are being 'imposed' on Indigenous peoples is a significant ethical acknowledgement, yet the text lacks a concrete framework for how Anishinaabe values will be weighted against Western regulatory requirements in the event of a conflict.

The mention of MMIWG Call for Justice #13 is a critical inclusion, but without specific actionable items or monitoring programs, it remains a performative high-level commitment rather than a verifiable mitigation strategy. The overall narrative suggests a project that is socially aware but technically premature in its socio-cultural data integration.

Recommendations & Mitigation Strategies

The proponent must prioritize completion of the Indigenous identity and on-reserve community data sets before proceeding to the next phase of the Impact Assessment. This should involve a co-developed data collection protocol that respects data sovereignty and ensures that the 'informed' component of FPIC is based on a comprehensive understanding of the local and regional demographics. Without this baseline, any assessment of socio-economic or cultural impact remains speculative and potentially biased toward the proponent's existing relationships.

Additionally, the NWMO should transition from high-level commitments to a detailed 'Indigenous Rights and Interests Mitigation Framework.'

The proponent must explicitly define how Anishinaabe values will be integrated into technical decision-making and provide a clear roadmap for actioning MMIWG Call for Justice #13. This should include specific measures such as gender-based analysis plus (GBA+) in workforce planning, community safety protocols for extractive industries, and a transparent mechanism for resolving potential conflicts between traditional governance systems and federal regulatory mandates.

Executive Summary

The Initial Project Description presents a highly structured and confident framework for the DGR project, yet it exhibits a notable tension between its claims of 'consent-based' siting and the admitted lack of Indigenous data. While the document highlights the willingness and potential willingness of host communities, the confidentiality of the Wabigoon Lake Ojibway Nation (WLON) hosting agreement creates a transparency barrier for public and regulatory scrutiny.

This lack of transparency is compounded by the explicit admission that Indigenous social, cultural, and health data are not yet represented in the baseline studies.

Consequently, the assertion that the project carries a low risk of adverse effects appears premature, as the impacts on Indigenous Rights and traditional land use remain largely uncharacterized. Furthermore, the text adopts a promotional tone when linking the project to Canada's climate change commitments. In framing the DGR as a necessary enabler for 'clean' nuclear energy, the proponent risks introducing bias into what should be a neutral technical submission.

The 160-year timeline also introduces significant long-term uncertainty regarding the evolution of the 'licensing basis' and the effectiveness of post-closure monitoring, which are described in generalities rather than specific, enforceable protocols. The reliance on 'perception' as a factor in land-use changes is a critical observation, yet the document fails to provide a methodology for quantifying or mitigating the socio-economic stigma often associated with nuclear waste facilities.

Recommendations & Mitigation Strategies

The proponent must immediately address the identified data gaps by completing Indigenous-led baseline studies before the submission of the final Impact Statement. These studies should be developed through a collaborative framework that respects Indigenous data sovereignty and integrates traditional law into the project's technical decision-making processes.

To improve transparency, the NWMO should provide a public summary of the financial, environmental and social safeguards contained within the confidential WLON hosting agreement, ensuring that all stakeholders can evaluate the rigor of the 'consent' obtained.

Additionally, the proponent should develop a comprehensive Risk Communication and Stigma Mitigation Strategy. This strategy must go beyond 'industry-standard' measures to specifically address the 'perception-based' land-use restrictions mentioned in the text. This should include a long-term community-led environmental monitoring program that empowers local and Indigenous residents to independently verify safety data, thereby mitigating potential socio-economic decline caused by public concerns over radiation.

Clearer definitions of the 'graded approach' to risk and specific thresholds for 'significant' versus 'somewhat significant' impacts are also required to ensure regulatory clarity over the project's 160-year lifespan.

i. Statutory Regulatory and Oversight Framework for the Project

The document presents a highly structured regulatory roadmap but exhibits a notable tension between transparency and confidentiality. While it emphasizes "consent-based" siting, the confidentiality of the Wabigoon Lake Ojibway Nation (WLON) Hosting Agreement creates a significant information gap for public and regulatory scrutiny. This lack of transparency makes it difficult to independently verify the "social, economic, and cultural aspirations" the NWMO claims to uphold.

Furthermore, the NWMO’s assertion that Section 7 of the Impact Assessment Act (IAA) should not apply to its social and economic programs—based on existing obligations under the Nuclear Fuel Waste Act (NFWA)—suggests a potential effort to limit the scope of federal oversight.

This jurisdictional argument requires careful examination to ensure that the "one project, one assessment" goal does not result in a less rigorous evaluation of socio-economic impacts. The 160-year project timeline introduces extreme long-term uncertainty.

While the text mentions "intergenerational equity," it assumes that current "willingness" and "hosting agreements" will remain valid and effective across multiple generations and changing political landscapes. The reliance on "natural analogues" and "safety cases" that are still evolving suggests that while technical confidence is high, the project remains in a state of significant flux.

Recommendations & Mitigation Strategies

To address the transparency gap, the proponent should provide a redacted version or a detailed summary of the confidential Hosting Agreement with the Wabigoon Lake Ojibway Nation. This summary must outline the specific commitments to community well-being and environmental protection to allow for a meaningful public and regulatory assessment of the project's social and cultural impacts. Without this, the claim of a "consent-based" process remains partially shielded from the very oversight the IAA is intended to provide.

Additionally, the NWMO should develop and disclose a formal framework for "intergenerational consent" that details how willingness will be re-evaluated or reaffirmed over the 160-year lifecycle. This framework should include specific triggers for community re-engagement and mechanisms for future generations to influence project operations or closure. This would move the project beyond a one-time "willingness" milestone toward a truly adaptive and sustainable social license that accounts for the long-term risks and responsibilities associated with nuclear waste management.

ii. The Nuclear Waste Management Organization and Selection of Adaptive Phased Management

The Initial Project Description serves as a foundational justification for the project, framing it as a logical and necessary progression of federal policy and public consultation. However, the narrative exhibits a strong promotional bias, utilizing terms like 'leadership,' 'pivotal step,' and 'vital role' to characterize the project and its proponents. While it mentions a 'consent-based' site selection process, it lacks a clear definition of what constitutes consent or how it was measured, which is a significant transparency gap. The reliance on a 20-year-old dialogue (2005) to justify current APM priorities may overlook evolving societal values or technical advancements since that period.

Furthermore, the text focuses heavily on the 'willingness' of the two (one “potential”) host communities but remains silent on the perspectives of neighbouring regions or Indigenous groups whose traditional territories might be impacted by the project or the transportation of waste.

The assumption that the Hosting Agreements equate to broad social license is an oversimplification that could lead to future conflict. The proposal successfully establishes the legal mandate but fails to provide a balanced view of the technical risks or the potential for community dissent, which are critical for a neutral impact assessment.

Recommendations & Mitigation Strategies

The proponent should provide a detailed 'Willingness and Consent Framework' that explicitly defines the metrics, cost and methodologies used to determine community support in Wabigoon Lake Ojibway Nation and the Township of Ignace. This should include data on participation rates, the handling of dissenting voices, and the specific legal thresholds for 'consent' used in the Hosting Agreements. Providing this level of detail will enhance transparency and allow reviewers to assess the robustness of the social license claimed in the document.

Additionally, the proponent must expand the scope of its socio-economic and environmental impact analysis to include regional stakeholders beyond the immediate “host” communities. This should involve a comprehensive engagement plan for unorganized territories, municipalities and

Indigenous nations along the proposed transportation routes and those sharing the watershed. Addressing these broader regional concerns is essential to mitigate potential social friction and ensure that the 'comprehensive' nature of the APM is reflected in current practice, not just historical intent.

iii. Wabigoon Lake Ojibway Nation Story

The Initial Project Description presents a narrative of transformation, moving from a position of involuntary inclusion to one of asserted sovereignty and jurisdictional oversight. A significant portion of the text focuses on the social and cultural 'byproducts' of the engagement process, such as identity reclamation and the reconnection of Sixties Scoop survivors.

While these are positive social outcomes, their inclusion in a project description for a nuclear waste repository serves to frame the project as a catalyst for community healing, and may inadvertently downplay the inherent risks and long-term burdens associated with high-level radioactive waste. The tone is aspirational and emphasizes community unity, yet it lacks transparency regarding the internal diversity of opinion that typically accompanies such high-stakes projects.

There is a notable tension between the 'technical studies' mentioned and the lack of specific criteria for what constitutes 'proven safe.' The proposal relies heavily on qualitative descriptions of 'Ceremony' and 'learning' without providing a summary of the technical findings that led to the 87.4% approval rating.

The description of the Regulatory Assessment and Approval Process (RAAP) is vague regarding its legal standing and how it will interface with federal and provincial regulatory bodies. This creates a potential for future jurisdictional conflict or public confusion if the RAAP's findings diverge from the Impact Assessment Agency of Canada's (IAAC) conclusions.

The narrative successfully establishes the Nation's intent to lead, but leaves significant gaps regarding the evidentiary basis of their current 'willingness' to proceed.

Recommendations & Mitigation Strategies

The proponent should provide a detailed technical annex summarizing the 'technical studies' conducted by WLON over the past 12 years. This should include the specific safety parameters, environmental indicators, and Anishinaabe cultural criteria used to evaluate the DGR proposal. Clarifying the 'proven safe' threshold, the proponent can demonstrate a more rigorous and transparent link between community learning and the referendum outcome, ensuring that 'informed support' is backed by accessible data.

Additionally, the proponent must clarify the operational and legal relationship between the WLON RAAP and the federal Impact Assessment process. It is essential to outline how

discrepancies in findings or conditions between these two very different regulatory paths will be resolved. Providing a clear roadmap for how WLON's conditions, monitoring, and enforcement mechanisms will be integrated into the project's lifecycle will mitigate risks of regulatory uncertainty and ensure that the Nation's sovereignty is practically rather than just rhetorically recognized.

iv. Township of Ignace Story

The Initial Project Description exhibits a high degree of promotional language that obscures the objective complexities of a nuclear waste repository. Framing the NWMO as an 'anchor institution' and a 'catalyst for positive change,' the proposal adopts a paternalistic tone that assumes the project's presence is inherently beneficial to the Township of Ignace. This framing potentially overlooks the risks of economic mono-dependence on a single waste management entity. The narrative also relies heavily on the 'Hosting Agreement' as a proxy for community consent and well-being, without detailing how dissenting voices or long-term social impacts will be managed beyond the six foundational pillars mentioned.

Transparency issues arise regarding the technical safety of the project. The text cites 'two previous environmental assessments' for other DGRs as evidence that the technology is safe and acceptable. This is a significant logical leap, as it assumes that conclusions from different geological and social contexts are universally applicable to the Ignace site.

Additionally, while the proposal mentions the project is subject to WLON's assessment outcomes, it does not clarify the hierarchy of decision-making should the Indigenous assessment conflict with the Township's Hosting Agreement or the NWMO's technical findings.

The emphasis on 'regulatory efficiency' via Cabinet Directive also raises concerns that the speed of the approval process is being prioritized over the depth of the impact assessment.

Recommendations & Mitigation Strategies

The proponent should provide a detailed framework for the 'Community Well-being' metrics mentioned in the Hosting Agreement. This framework must include specific, measurable indicators for each of the six pillars (People, Economics, Infrastructure, Community/Culture, Natural Environment, and Governance) and establish a baseline against which future impacts can be objectively measured. This would move the discussion from abstract 'visions' to concrete socio-economic data, allowing the IAAC to better evaluate the project's long-term effects on the Township of Ignace.

To address technical and ethical gaps, the proponent must decouple the safety justification of this specific DGR from previous, unrelated environmental assessments. The Impact Statement should focus exclusively on site-specific geological, hydrological, and technical data. Furthermore, the proponent should explicitly outline the 'adaptive management' protocols that will be triggered if

WLON's assessment outcomes or ongoing monitoring programs identify risks that contradict the current 'in-design' mitigation measures. This clarification is essential to ensure that reconciliation efforts are not merely procedural but have the power to influence project design and viability.

Building Relationships with Anishinaabe Peoples of Wabigoon Lake Ojibway Nation and Other Indigenous Groups in Canada

The Initial Project Description presents a highly structured and polished narrative of corporate responsibility and Indigenous partnership, yet it contains several points of tension that merit critical scrutiny.

A primary concern is the reliance on a secretive 'confidential' Hosting Agreement with the Wabigoon Lake Ojibway Nation. While the text asserts that WLON is a 'willing, informed, and supportive host,' the lack of transparency regarding the terms of this agreement complicates the ability of external reviewers and neighboring Indigenous groups to assess the equity and long-term implications of the arrangement. This confidentiality can increase distrust among regional stakeholders who are also impacted by the project but are not parties to the specific agreement.

Furthermore, there is a notable temporal gap in the engagement record. Table 3.1 reveals that 'Learn More Agreements' for nearly all regional Indigenous nations, including Eagle Lake, Lac Seul, and the Métis Nation of Ontario expired in late 2024 or early 2025. Simultaneously, the text notes that several letters sent to these nations in July 2025 regarding the Initial Project Description (IPD) have received 'no formal response.' This suggests a breakdown in formal engagement or a lack of capacity among regional nations to respond within the proponent's timeline, which contrasts with the NWMO's narrative of 'continuous dialogue.'

The use of emotive language such as 'Reconciliation Journey' and 'birthed through ceremony' serves to frame the project in a positive ethical light, but without actual granular data on how Indigenous Knowledge has actually altered technical designs or site characterization, these claims remain largely process-oriented rather than outcome-verified.

Recommendations & Mitigation Strategies

The proponent should provide a non-confidential summary of the WLON Hosting Agreement's key pillars, particularly those related to environmental oversight, community safety, and long-term socio-economic benefits. This would enhance transparency and allow neighboring communities to understand the precedent being set for regional impacts. Transparency is essential to ensure that 'willingness' is viewed as a collective regional consideration rather than an isolated bilateral transaction, especially given the shared nature of water systems and traditional territories.

Additionally, the NWMO must address the status of the expired 'Learn More Agreements' with regional Indigenous groups. The proponent should actively commit to renew these formal frameworks to provide the necessary resources and capacity for these nations to participate meaningfully in the upcoming regulatory and impact assessment phases.

Relying on unanswered letters sent shortly before the IPD submission is grossly insufficient for demonstrating robust engagement; a proactive plan to re-establish formal dialogue with regional nations is required to mitigate risks of future litigation or social license challenges.

3.2 Key Issues Raised in Engagement Activities to Date

The Initial Project Description presents a highly structured and professional approach to Indigenous engagement, yet it exhibits a clear hierarchy of consultation that may pose risks to the project's social license.

While the depth of the relationship with the Wabigoon Lake Ojibway Nation (WLON) is extensively detailed, there is a stark contrast in the level of detail provided for the other four identified First Nations (Eagle Lake, Lac Seul, Lac des Mille Lacs, and Seine River). This disparity suggests a potential 'primary vs. secondary' stakeholder bias that could lead to friction or legal challenges regarding the duty to consult and accommodate all affected rights-holders equitably. The document relies heavily on positive terminology such as 'harmonization,' 'equitable partnership,' and 'co-design,' which, while commendable, lacks the underlying technical or legal frameworks necessary to understand how conflicts between Indigenous law and federal/provincial regulations will be resolved.

Furthermore, the text introduces specific infrastructure elements, such as an 800 worker accommodation camp and a firewater pipeline within the context of 'values' and 'ceremony' rather than addressing their direct physical and social impacts. For instance, the mention of a worker camp lacks a discussion on the potential socio-economic pressures or safety concerns typically associated with temporary large-scale labor forces in proximity to neighbouring communities.

The commitment to 'data governance' is a significant ethical inclusion, but the proposal remains vague on the practical application of 'Anishinaabe Inaakonigewin' in a regulatory environment governed by the Impact Assessment Act.

Overall, the narrative is aspirational and leans toward a 'socially responsible' corporate tone, which may obscure the complexities of integrating two distinct legal and knowledge systems.

Recommendations & Mitigation Strategies

The proponent should develop and publish a formal 'Inter-Nation Consultation Framework' that explicitly outlines how the concerns of the four other identified First Nations will be integrated

with the same level of rigor as those of WLON. This framework must move beyond the 'toolbox' of engagement methods to define specific milestones where these nations have direct influence over project design and environmental mitigation strategies. This will mitigate the risk of perceived favoritism and ensure that the cumulative impacts on all sovereign territories are addressed comprehensively during the Impact Assessment phase.

Additionally, the NWMO must provide a detailed 'Regulatory Harmonization Protocol' that clarifies the hierarchy of decision-making when Anishinaabe Inaakonigewin (Indigenous law) and Western regulatory requirements diverge. This protocol should include specific dispute resolution mechanisms and define how 'Indigenous-led monitoring' will be funded and integrated into the official compliance reporting for the DGR. Formalizing these processes now, the proponent can provide the transparency needed to substantiate claims of 'co-development' and 'data sovereignty,' moving these concepts from abstract commitments to enforceable project requirements.

4. Public and Interested Parties Engagement

The document presents a highly structured and professional account of a multi-decade engagement process, yet it exhibits certain characteristics common to proponent-led descriptions.

While the NWMO emphasizes 'transparent and inclusive' engagement, there is a notable reliance on the 'Learn More' agreements and Community Liaison Committees (CLCs) as primary vehicles for capacity building. This approach can be perceived as a 'top-down' information dissemination model rather than a neutral educational framework, potentially influencing the 'willingness' it seeks to measure. The proposal acknowledges the presence of 'critical voice organizations' like Northwatch and We the Nuclear Free North, which suggests a level of transparency; however, it fails to detail how the substantive technical or ethical objections from these groups have influenced or altered the project design beyond being 'documented.'

Furthermore, the transition from a twenty-year siting process to the specific Initial Project Description (IPD) phase appears relatively narrow in scope, citing only six engagement events.

For a project of this magnitude and duration, six events, primarily concentrated in Ignace and Dryden, cannot sufficiently capture the concerns of the broader regional 'Nearby communities' listed in Table 4.1. The narrative also touches upon significant socio-economic risks, such as housing shortages and impacts on community cohesion, but frames these largely as 'pre-existing challenges' or 'interests' rather than direct potential impacts of the project that require rigorous mitigation strategies. The generally neutral tone leans toward a 'social license' narrative by emphasizing the gratitude for the community's willingness, but in reality may gloss over the complexities and divisions often inherent in nuclear waste siting decisions.

Recommendations & Mitigation Strategies

The proponent should develop and publish a comprehensive 'Comment Disposition Table' that specifically tracks feedback from the identified 'critical voice organizations' and regional municipalities. This table must move beyond thematic summaries to show exactly how specific technical, environmental, or social concerns resulted in tangible changes to the project design or the proposed monitoring programs. This would demonstrate that engagement is an active influence on the project rather than a passive reporting requirement, thereby increasing transparency and trust with skeptical stakeholders.

Additionally, the NWMO should expand its socio-economic impact assessment to include a dedicated 'Regional Readiness and Mitigation Plan.' This plan should provide concrete, quantified strategies for addressing the identified housing shortages and the increased demand on health and social services. Rather than framing these as existing regional issues, the proponent must clearly delineate the project's incremental impact on these services and commit to specific, time-bound investments or partnerships that ensure the local infrastructure can support both the project workforce and the existing population without degrading the quality of life for current residents.

4.3.2 Areas of Focus and Shared Commitments with the Township of Ignace

The Initial Project Description presents a highly collaborative and idealized partnership between the proponent and the Township of Ignace, utilizing language that emphasizes 'shared commitments' and 'mutual respect.' While this suggests a high level of community engagement, the narrative blurs the lines between a regulatory document and a promotional partnership agreement.

The mention of 'co-developing' sections of the IPD with the municipality is notable for transparency but raises questions about the independence of the assessment if the host community is also a primary author of the project's justification. There is a visible tension between the community's aspirational goals, such as 'thinking outside the box' to secure grocery stores and airport upgrades and the technical, high-risk nature of a nuclear waste facility.

Furthermore, the document acknowledges significant technical anxieties from the community, particularly regarding the repository's design (vertical shafts vs. ramps) and the safety of concurrent blasting and fuel emplacement. While the NWMO 'commits to dialogue,' the proposal appears to lack specific technical resolutions or preliminary safety data to address these concerns. The request from residents to revisit the Hosting Agreement suggests that the existing socio-economic framework may already be perceived as inadequate or outdated by the community.

Ethically, the reliance on the project for 'revitalization' and 'growth' places a heavy socio-economic burden on a single industrial project, which could lead to 'economic hostage' dynamics where safety concerns are secondary to the promised infrastructure benefits.

Recommendations & Mitigation Strategies

The proponent should conduct and publish a formal comparative safety and feasibility study regarding the repository access design, specifically addressing expressed preferences for a ramp system versus the proposed vertical shafts. This study must explicitly detail evacuation protocols, fire scenarios, and hoist failure contingencies to provide the 'design rationale' requested by the Township, which is almost 50km away. Transparency in this technical area is critical to ensuring that the community's safety concerns are met with engineering data rather than just 'ongoing dialogue.'

Additionally, the NWMO and the Township of Ignace should develop a clear 'Infrastructure and Services Roadmap' that distinguishes between project-essential infrastructure and general community revitalization goals. This roadmap should clarify the proponent's legal and financial boundaries regarding non-project amenities like grocery stores and airport upgrades to manage community expectations and prevent future grievances. This should be coupled with a transparent protocol for environmental baseline monitoring that includes independent, third-party verification of well-water and lake samples to ensure the 'credible baseline data' requested by residents is beyond reproach.

Roles and Engagement with Federal and Provincial Departments, Ministries and Agencies

The project presents a highly structured administrative overview of the NWMO's engagement efforts, yet it reveals several critical gaps in regulatory continuity and stakeholder alignment. A major concern is the admission that engagement with Transport Canada (TC) has been 'sporadic' due to 'capacity constraints' and the long-term nature of the project.

For a project where the transportation of used nuclear fuel is a central risk factor, the lack of consistent federal oversight at this stage suggests a serious disconnect between repository siting and the logistics of waste movement. This creates a risk where technical route assessments may proceed without adequate regulatory integration until it is too late to influence fundamental design choices.

Furthermore, the text highlights a significant ethical and transparency challenge regarding the 'Duty to Consult' with Indigenous Peoples. The MOU between NRCan and NWMO, which clarifies roles in consultation, and the delegation of formal consultation requirements for borehole drilling from the Ministry of Natural Resources (MNR) to the NWMO, raise questions about the neutrality of the process. When a proponent is delegated the responsibility of the Crown's constitutional obligations, there is an inherent risk of perceived or actual bias, as the proponent's primary goal is project advancement. The narrative lacks detail on how the Crown will independently verify the adequacy of these consultations.

Finally, the mention of non-binding resolutions passed by US lawmakers opposing the project due to Great Lakes safety concerns indicates a significant transboundary social and political risk. The NWMO's response, characterized as providing 'introductory briefings' and 'navigating legislative challenges,' appears more focused on diplomatic management than on addressing the underlying technical or environmental anxieties of neighbouring jurisdictions. This administrative tone downplays the intensity of international opposition and the potential for future legal or diplomatic hurdles that could impact the project's viability.

Recommendations & Mitigation Strategies

The proponent should immediately establish a formalized, multi-year engagement framework with Transport Canada to address the current 'sporadic' nature of their involvement. This framework must include dedicated resources or a joint task force to ensure that transportation safety standards, emergency response protocols, and route assessments are developed in lockstep with the repository design. Relying on TC's future regulatory authority decades from now is insufficient; proactive integration is required to mitigate public safety risks and ensure that the transportation program is as robust as the repository itself.

Additionally, the federal and provincial governments should provide a transparent oversight mechanism for all consultation activities delegated to the NWMO. To maintain the integrity of the 'Duty to Consult,' the Crown must issue public-facing audit reports that independently evaluate the NWMO's engagement with Indigenous communities. This would address potential biases and ensure that community concerns are being recorded and addressed by the government, not just the proponent. The NWMO should expand its technical reporting to specifically address the safety concerns raised by US lawmakers regarding the Great Lakes, providing a publicly accessible, peer-reviewed rebuttal or mitigation plan to resolve transboundary environmental anxieties.

Plan for Future Public and Interested Parties Engagement

The provided text outlines a structured but hierarchical engagement strategy that raises serious questions regarding the depth of participation for stakeholders outside the primary host community. Categorizing the Township of Ignace under 'Involve' and all other nearby communities and interest groups under 'Inform,' the proponent establishes a clear preference for bilateral collaboration with the host municipality while expressly limiting the influence of regional stakeholders. This 'Inform' designation for nearby communities may be perceived as a passive marketing and communication strategy rather than a meaningful consultative process, which is critical in the context of nuclear waste management where impacts, such as transportation risks or environmental concerns, often transcend municipal boundaries.

Furthermore, the Initial Project Description relies on broad commitments to 'transparency' and 'accessibility' without clearly defining the mechanisms for how public input will actually

influence project design or mitigation strategies. The mention of 'Learn More agreements' is an example of an ambiguous term that lacks clear definition within this context, masking the true nature of these arrangements. While the commitment to plain-language materials is a positive step for accessibility, the overall tone is somewhat self-assured, assuming that the current tiered approach is 'proportionate' without providing the criteria used to determine that proportionality. There is a risk that this framework prioritizes administrative efficiency over comprehensive regional social license.

Recommendations & Mitigation Strategies

The proponent should redefine the engagement levels to ensure that 'nearby communities' and regional interest groups are moved from a passive 'Inform' status to a more active 'Consult' or 'Involve' status. This is particularly important for communities located along transportation corridors or within the same watershed, as their exposure to project risks may be comparable to the host community. Clearly defining the criteria for 'proportionality' in engagement will help demonstrate that the NWMO is not arbitrarily limiting the participation of concerned regional parties.

Additionally, the NWMO should provide a transparent 'Feedback-to-Action' framework that explicitly details how input gathered during public sessions and collaboration with Ignace will be documented, analyzed, and integrated into the Project's design or the Impact Assessment. This should include a commitment to publishing 'What We Heard' reports with explanations of why certain suggestions were or were not adopted. Clarifying the legal and functional nature of 'Learn More agreements' is also essential to ensure that these instruments are not perceived as barriers to critical inquiry or as a replacement for meaningful and formal regulatory participation.

5. Regional Assessment

The proponent's statements regarding the absence of regional assessments is notably brief and relies exclusively on a review of 'public information sources.' This approach is insufficient as it potentially overlooks non-publicized Indigenous-led studies, local community environmental monitoring, or academic research that has not been formalized into public sources/databases. Focusing only on large-scale 'Regional Assessments' as defined by regulatory bodies, the proponent risks ignoring the granular environmental and social data necessary for a robust baseline.

Also concerning is the inclusion of the Ring of Fire assessment, located over 500 kilometers away, which serves little analytical purpose for the project's specific site. This suggests a critical gap in the proponent's current understanding of the local regional context, as the distance renders the Ring of Fire study irrelevant to the immediate ecological or socio-economic impacts of the

proposed nuclear waste project. The lack of a defined search radius for 'proximity' further obscures the thoroughness and strains the credibility of their review.

Recommendations & Mitigation Strategies

The proponent should provide a comprehensive list of the 'public information sources' consulted and define the specific geographic 'proximity' used during their search. To mitigate the risk of missing critical local data, the proponent must engage with local municipalities and Indigenous nations to identify any community-led environmental studies, traditional land-use assessments, or regional socio-economic reports that may not be available in federal or provincial databases. This will ensure a more inclusive and accurate regional baseline.

Given the confirmed absence of formal regional assessments, the proponent should proactively propose a framework for a project-specific regional study. This framework should outline how they will collect and integrate new baseline data to evaluate cumulative effects, particularly concerning the long-term storage of nuclear waste. This is essential for addressing the concerns of local stakeholders who may feel that the lack of existing regional data undermines the project's safety and environmental impact projections.

B. PROJECT INFORMATION

The Initial Project Description presents a highly structured and professional justification for the project, yet exhibits a distinctly promotional tone that obscures critical complexities. Framing the project as an essential component of Canada’s 'transition to net-zero emissions,' the proponent aligns nuclear waste management with popular climate goals, which could be perceived as a strategic bias to garner public support.

While the project description emphasizes 'transparency and accountability' through CNSC licensing, it lacks any balanced discussion of the inherent risks associated with deep geological disposal, such as potential containment failure or the complexities of transporting 5.9 million fuel bundles to northwestern Ontario.

Furthermore, the 'adaptive' nature of the management system is mentioned but not defined, leaving an ambiguity regarding how the project would respond to new scientific data or community opposition once construction begins. The claim of 'enduring benefits' for host communities is presented as a certainty, yet the text does not address the potential for 'boom-bust' economic cycles or the social strain on small regional infrastructures.

The reliance on the 2024 Nuclear Fuel Waste Projections Report assumes a static nuclear landscape; however, it does not account for the potential influx of waste from Small Modular Reactors (SMRs) or other new technologies, which could significantly alter the project's scope and the validity of the current environmental impact assumptions.

Recommendations:

The proponent should provide a detailed 'Adaptive Management Framework' that explicitly defines the criteria and thresholds for project modification, suspension, or reversal. This would address the ambiguity of the 'adaptive' label and provide the community with a clearer understanding of how unforeseen technical or social issues will be managed. This framework must include specific mechanisms for integrating Indigenous Traditional Knowledge alongside Western science to ensure that 'inclusive' engagement translates into meaningful influence over project outcomes.

Additionally, a comprehensive socio-economic impact study specific to northwestern Ontario is required to substantiate the claims of long-term local benefits. This study should analyze the existing labor market capacity, housing availability, and infrastructure readiness to prevent negative socio-economic externalities. The proponent should also clarify the project's scalability; specifically, how the DGR design would accommodate waste from future nuclear technologies not included in the current 5.9 million bundle projection, ensuring that the 'permanent solution' remains viable under changing national energy policies.

Related Provisions in the Physical Activities Regulations

The Initial Project Description presents a highly compartmentalized view of the project lifecycle, which raises concerns regarding the holistic nature of the impact assessment.

In strictly limiting the IAA's scope to construction and operation, the proponent effectively silos the decommissioning and post-closure phases, arguably the most critical periods for nuclear waste management under the CNSC's regulatory framework alone.

While legally grounded in the Physical Activities Regulations, this approach has been perceived by public and Indigenous groups as an attempt to fragment the project to avoid broader federal scrutiny of long-term environmental and social risks.

Furthermore, the assertion that site characterization is not subject to IAA prohibitions because it is 'required' for the assessment creates a potential transparency gap. Site characterization often involves significant physical activities, such as deep drilling and land clearing, which can have localized environmental and cultural impacts. The reliance on a 'graded approach' for post-closure safety analysis suggests that detailed design and safety data may be deferred to later licensing stages, potentially limiting the ability of stakeholders to fully evaluate the project's long-term viability during the initial impact assessment phase. The tone is technical and regulatory-focused, but it lacks acknowledgment of how these jurisdictional divisions might impact the comprehensiveness of community consultation.

Recommendations & Mitigation Strategies

The proponent should develop a comprehensive 'Lifecycle Integration Plan' that explicitly demonstrates how the environmental, social, and cultural findings from the IAA-led construction and operation phases will be reconciled with the CNSC-led decommissioning and closure phases. This plan must ensure that the 'cradle-to-grave' impacts are evaluated as a single continuum, preventing the loss of critical socio-economic or environmental data during the transition between regulatory oversight bodies.

Additionally, the proponent should provide a detailed sub-report on the physical scale and potential impacts of site characterization activities. Even if these activities are not 'designated' under the IAA, providing transparent data on borehole locations, water usage, and land disturbance will build trust with local communities and Indigenous groups. This would mitigate the risk of characterization work being viewed as 'pre-construction' activity that bypasses the spirit of the Impact Assessment Act's environmental protections.

Activities, Infrastructure, Structures and Physical Works

The Initial Project Description presents a highly structured and technically optimistic overview of the DGR, yet it relies heavily on conceptual frameworks that lack or omit specific detail. While the multi-barrier safety system is clearly defined, the text acknowledges that the design 'may evolve,' which introduces uncertainty regarding the final environmental footprint and the accuracy of current impact predictions. The tone is professional but leans toward a promotional narrative by emphasizing 'safety' and 'collaboration' while failing to address potential technical failures or the specific nature of community disagreements that might arise during the 170-year lifecycle.

Ethical and transparency concerns emerge regarding the long-term 'institutional control' phase. The Initial Project Description suggests a transition of responsibility to federal and provincial governments after 100 years of monitoring, but it provides no clarity on the financial or legal mechanisms that ensure this transition is seamless or that the public is protected from long-term liabilities. While the commitment to Indigenous collaboration is stated, the text treats 'ceremonial requirements' and 'cultural protocols' as future checklist items rather than integrated components of the engineering and scheduling process. This creates a risk that Indigenous input may be relegated to a reactive role rather than a proactive design influence.

Recommendations & Mitigation Strategies

The proponent should provide a detailed 'Design Evolution Framework' that specifies the parameters within which the conceptual design may change. This should include a sensitivity analysis of how changes in the 340-hectare surface footprint or underground layout would alter the environmental and socio-economic impact assessments. By defining these boundaries early, the proponent can provide the IAAC and local communities with greater certainty regarding the

maximum potential impact of the project, rather than relying on a 'conceptual' placeholder that may underrepresent future site intensity.

Additionally, the proponent must clarify the 'Institutional Control' transition plan. This should include a preliminary outline of the financial assurance requirements and the specific criteria that must be met for the Canadian Nuclear Safety Commission (CNSC) to release the site from licensing. To address social and cultural concerns, the proponent should formalize how Indigenous Knowledge will be weighted against technical engineering data in the event of a conflict, ensuring that 'collaboration' translates into tangible influence on project outcomes and long-term environmental stewardship.

Activities, Infrastructure, Structures and Physical Works

The Initial Project Description provides a comprehensive list of physical activities but suffers from significant spatial and quantitative ambiguity. While the document lists 'what' will be built, it frequently defers the 'where' and 'how much' to future design evolutions.

A recurring concern is the use of the qualifier 'where practicable' regarding environmental mitigations, such as material reuse and timing of clearing. This language provides the proponent with significant discretionary leeway, which undermines the rigour of the impact assessment by making commitments difficult to enforce or monitor.

The document adopts a confident tone regarding the use of 'best available' technologies without defining the benchmarks or specific technologies being considered, which limits the ability of reviewers to verify these claims against industry standards.

From an ethical and transparency perspective, the mention of an 800-bed worker accommodation camp is a critical socio-economic factor that is presented with minimal detail regarding its impact on local municipal services, social cohesion, or regional infrastructure.

The plan to source water from 'local water bodies or groundwater' without identifying specific sources or volumes is a notable gap, as it prevents an objective assessment of potential competition with existing community water needs or ecological requirements.

Additionally, the 2 to 10 km radius for treated water discharge is too broad for a precise environmental impact analysis. The reliance on future engagement for fundamental project components, such as water sourcing, suggests a reactive rather than proactive approach to Indigenous and community consultation.

Recommendations & Mitigation Strategies

The proponent should immediately provide specific geographic coordinates and estimated volumes for proposed water withdrawals and treated water discharge points. Without this data,

the baseline environmental studies cannot accurately reflect the potential impacts on local watersheds or aquatic habitats. Furthermore, the proponent must replace the 'where practicable' terminology with clear, measurable performance standards and commitment windows (e.g., specific dates for clearing that align with local migratory bird patterns) to ensure accountability during the site preparation phase.

A detailed Socio-Economic Management Plan specifically for the 800-bed worker accommodation camp is required. This plan should include a quantitative analysis of the anticipated strain on local emergency services, healthcare, and transportation infrastructure, as well as a clear strategy for integrating the temporary workforce into the community. The proponent should also clarify the 'graded approach' to security and substance use management to ensure it aligns with both nuclear regulatory requirements and local community safety expectations, providing evidence of how these measures will be monitored and reported to local stakeholders.

Construction

The construction overview provides a logical sequence of technical activities but exhibits a notable lack of specificity regarding environmental and social safeguards.

While the document references the Finnish Onkalo facility to bolster the credibility of its 'hot cell' technology, it relies on this international precedent as a proxy for site-specific safety evidence. A significant transparency concern arises from the vague description of water discharge locations, which are placed anywhere within a 2 to 10 km radius; this ambiguity prevents a meaningful assessment of impacts on local aquatic ecosystems.

Furthermore, the tone is occasionally non-committal, using phrases like 'being considered' for the rail spur and 'if suitable' for water reuse, which obscures the project's actual footprint and resource requirements.

The document also prioritizes 'economically achievable' technologies for water treatment, a qualifier that may suggest a potential compromise between financial constraints and environmental protection.

Finally, there is a total absence of discussion regarding the social and cultural disruptions—such as noise, dust, and vibration, that local communities will face during the intensive 'drill and blast' phase.

Recommendations & Mitigation Strategies

The proponent should develop and submit a comprehensive Water Discharge and Ecological Impact Plan that identifies specific receiving water bodies and provides baseline data for those locations. This plan must move beyond the vague 2-10 km radius and define strict effluent limits

for nitrogen compounds (from explosives) and salinity (from deep groundwater), ensuring that 'best available technology' is defined by environmental necessity rather than just economic feasibility. Additionally, a formal Construction Mitigation and Community Engagement Framework is required to address the physical disruptions of the construction phase. This framework should include a comparative analysis of mechanical excavation versus drill-and-blast methods, specifically evaluating the reduction in seismic vibration and noise for nearby residents. It should also detail the specific routes and schedules for heavy vehicle traffic to minimize the socio-economic burden on local road infrastructure and ensure community safety during the multi-year build.

9.5 Construction

The Initial Project Description presents a technically confident but conceptually high-level overview of the DGR's underground operations. While the layout and traffic segregation strategies appear logical for risk mitigation, the document relies on several optimistic projections that require closer scrutiny.

For instance, the choice of 'controlled drill and blast' excavation is presented as a settled decision, yet the analysis lacks a discussion on the potential for an Excavation Damage Zone (EDZ) which could compromise the long-term integrity of the host rock compared to mechanical boring.

Furthermore, the text adopts a reassuring tone regarding environmental impacts, particularly concerning the Excavated Rock Management Area (ERMA). By stating that 97% of the rock is non-acid generating, the proponent glosses over the geochemical risks associated with the remaining 3%, which in a project of this scale represents a significant volume of potentially reactive material.

Transparency issues arise regarding the concurrent excavation and emplacement activities. The document asserts that safety and logistical reasons dictate separate panels, but it does not provide a robust risk assessment of how blasting vibrations might affect the stability of previously sealed placement rooms or the sensitive handling equipment for Used Fuel Containers (UFCs). Additionally, the mention of on-site storage for LLW and ILW is vague; there is no clear timeline or strategy for the ultimate disposal of these secondary waste streams, which could lead to 'de facto' permanent storage on-site without the same level of rigorous assessment applied to the DGR itself.

The reliance on 'conceptual' descriptions allows the proponent to bypass specific commitments, which hinders the ability of local communities and regulators to fully grasp the long-term socio-economic and environmental footprint of the facility.

Recommendations & Mitigation Strategies

The proponent should provide a comprehensive geochemical and mineralogical characterization of the 3% of excavated rock not classified as biotite granodiorite-tonalite. This must include a specific management plan for any reactive or metal-leaching materials to prevent groundwater contamination at the ERMA. Furthermore, the proponent should conduct and publish a comparative study on excavation methods, specifically evaluating the impact of drill and blast vibrations on the structural integrity of the bentonite seals and the long-term stability of the host rock's containment properties.

To address safety and community concerns regarding concurrent operations, the proponent must develop a detailed 'Simultaneous Operations' (SIMOPS) protocol. This protocol should explicitly outline the safety buffers, vibration monitoring thresholds, and emergency response procedures required when blasting occurs in proximity to active nuclear emplacement zones.

Additionally, a clear management strategy for the LLW and ILW generated during operations is required, including defined timelines for its removal from the site to prevent the accumulation of secondary waste streams without a permanent disposal solution.

List of Major Activities During Operations

The proponent provides a structured overview of the operational phase, yet several areas lack the specificity required for a comprehensive impact assessment. A significant concern is the parallel nature of ongoing underground development alongside active waste emplacement.

This dual-track approach introduces complex safety and logistical risks, such as managing excavated rock and dust in proximity to radiological operations, which are not fully explored in this summary. Furthermore, the mention of co-emplacing Low-Level Waste (LLW) appears as a late-stage addition with design details deferred to future applications, obscuring the total volume and cumulative impact of the waste to be sequestered.

The language regarding environmental protection is aspirational, using terms like 'suitable receiving waterbody' without defining ecological benchmarks or specific treatment technologies. While the text mentions Indigenous engagement, it is largely relegated to the decommissioning phase, suggesting a potential gap in collaborative oversight during the decades-long operational period. The reliance on battery-powered vehicles is a positive technical claim for air quality, but the document lacks a contingency plan should these technologies or the remote handling systems for bentonite buffer boxes face operational failures.

Recommendations & Mitigation Strategies

The proponent should provide a detailed integrated safety and logistics plan that specifically addresses the risks of concurrent excavation and waste emplacement. This plan must include mitigation strategies for dust management, vibration impacts on sealed rooms, and the physical separation of construction traffic from radiological transport. Additionally, the criteria for

'suitable receiving waterbodies' must be explicitly defined with baseline water quality data and specific discharge limits that align with both federal standards and local Indigenous environmental stewardship goals. To enhance transparency and community trust, the proponent should establish an Operational Environmental Monitoring Program (OEMP) that includes direct participation and oversight by potentially affected Indigenous communities. This program should not be deferred to the decommissioning phase but should be active from the start of commissioning.

Furthermore, the proposal for LLW co-emplacement requires a preliminary impact analysis now, rather than in future submissions, to ensure the DGR's total footprint and long-term thermal and chemical stability are accurately modeled for the full waste inventory.

Listing of Major Activities for Decommissioning and Closure

The decommissioning plan presents a highly technical and sequential approach to closure, yet it is characterized by significant temporal and procedural ambiguities. Projecting the final closure 100+ years into the future, the proponent shifts the burden of finality and safety verification to future generations.

While the 'adaptive' approach is framed as a benefit, it lacks a defined framework for how 'society's desire' will be measured or what specific criteria would trigger a refusal to close the site. This creates a transparency gap regarding the long-term socio-political stability required for such a project.

The IPD exhibits a lack of specificity regarding the disposal of Intermediate-Level Waste (ILW). Stating that ILW will be moved to a 'Licensed facility' without identifying such a facility or the criteria for its selection introduces a significant regulatory and environmental unknown.

The tone is generally professional, but the reliance on future 'subsequent regulatory submissions' to fill in critical gaps, such as the design of permanent markers for future generations suggests a 'wait-and-see' strategy that may undermine current community confidence in the project's long-term feasibility and ethical responsibility.

Recommendations & Mitigation Strategies

The proponent should develop and disclose a formal framework for 'intergenerational consent' and social monitoring. This framework must define how 'society's desire' will be assessed over the 100-year monitoring period, ensuring that local and Indigenous communities have a continuous, legally recognized role in the decision-making process leading up to final closure. This would mitigate the risk of social license erosion over the century-long timeline and provide clarity on the governance of the site post-emplacement.

Additionally, the proponent must provide a more detailed contingency plan for Intermediate-Level Waste (ILW) management. Relying on an unspecified 'Licensed facility' is insufficient for a comprehensive impact assessment. The proponent should identify potential pathways for ILW disposal, including the technical and safety criteria required for co-emplacement versus off-site transport. This would address the current ambiguity regarding waste streams and ensure that the environmental impacts of transporting or storing ILW are fully accounted for in the present assessment.

10. Estimated Maximum Production Capacity of the Project

The proposal provides a technical overview of the project's scale and mechanical workflow, yet it exhibits several areas where transparency and detail are lacking.

While the 5.9 million bundle capacity is presented as a definitive limit based on current reactor lifecycles, the document acknowledges that 'alternative used fuel container designs' and 'throughput optimization' may be explored. This introduces a level of technical ambiguity; changes in container design could significantly alter the safety case, thermal loading, or the physical footprint of the repository, yet the criteria for these optimizations are not defined. The reliance on 'remote handling' to minimize worker dose is a standard claim, but the proposal lacks a discussion on the management of secondary waste streams generated within the UFPP, such as contaminated machinery, filters, or failed weld components.

From a community and ethical perspective, the 160-year project timeline is a multi-generational commitment that is described here primarily in engineering terms. The mention of 'temporary dry storage' for fuel modules at the UFPP site is a critical observation; the proposal does not specify the maximum capacity or the duration of this 'temporary' storage.

Without clear parameters, there is a risk of 'function creep' where the UFPP becomes a de facto long-term storage facility if processing or emplacement faces technical delays. Additionally, while the proponent notes that inventory increases would require community approval, the document is silent on the socio-economic infrastructure required to maintain a specialized workforce and institutional knowledge over a century and a half.

Recommendations & Mitigation Strategies

The proponent should provide a detailed contingency plan and capacity limit for the 'temporary dry storage' mentioned in the UFPP workflow. This should include an assessment of the environmental and safety implications of extended storage durations in the event of repository emplacement delays. Clarifying these limits is essential for local communities to understand the maximum potential surface inventory of radioactive material at any given time, ensuring that 'temporary' measures do not evolve into unassessed long-term risks.

Furthermore, the proponent must elaborate on the management and disposal pathways for secondary waste generated during the packaging process, such as contaminated tools, copper machining scraps, and failed containers. The current description focuses exclusively on the primary fuel bundles, leaving a gap in the environmental impact assessment regarding the total waste volume and the classification of non-fuel radioactive waste. Providing a comprehensive waste balance sheet will improve the transparency of the project's total environmental footprint and assist regulators in evaluating the adequacy of the proposed onsite facilities.

Anticipated Schedule

The anticipated schedule presents a project lifecycle of approximately 163 years before entering an indefinite period of institutional control. While the table provides a clear chronological framework, the extreme duration of the 'Decommissioning and Closure' phase (100 years) is notable and requires further justification. The proposal assumes a high degree of institutional and regulatory stability over nearly two centuries, which introduces significant uncertainty regarding long-term governance and financial oversight. There is a lack of detail regarding the specific milestones that trigger the transition between 'Extended Monitoring' and 'Decommissioning and Closure' within that century-long block.

Furthermore, the document adopts a clinical tone that may mask the socio-cultural implications of such a long-term commitment. Projecting activities into the year 2193, the proponent implicitly assumes that current regulatory frameworks (like CNSC REGDOC-3.6) and social licenses will remain valid or adaptable across multiple generations. The transition to 'Institutional Control' is particularly sensitive, as it shifts the burden of residual risk management to future generations. The analysis suggests that while the technical phases are logically sequenced, the document fails to address the practical challenges of maintaining site knowledge, technical expertise, and community engagement over a 160-year horizon.

Recommendations & Mitigation Strategies

The proponent should provide a more granular breakdown of the 100-year Decommissioning and Closure phase. Specifically, the IAAC should require a detailed sequence of activities that distinguishes between active decommissioning and the 'Extended Monitoring' period. This breakdown is necessary to evaluate the intensity of environmental impacts over time and to ensure that the 100-year estimate is based on technical requirements rather than being a placeholder for deferred action.

Additionally, the proponent must develop a robust framework for 'Intergenerational Knowledge Management' and financial assurance. Given that the project extends into the 22nd century, the proponent should outline how they intend to maintain records, site markers, and community consultation mechanisms across multiple human generations. This should include a preliminary

plan for the funding of institutional controls to ensure that the costs of monitoring and potential remediation do not become an unfunded liability for future taxpayers or local communities.

12. Alternatives To and Alternative Means

*T*he proposal provides a structured overview of the decision-making process leading to the selection of Adaptive Phased Management (APM). However, there is a notable reliance on a study from 2005 ('Choosing a Way Forward'), which raises questions about whether the comparative analysis of benefits, risks, and costs has been updated to reflect contemporary environmental data, technological advancements, or evolving social expectations over the last two decades. While the document claims to have considered ethical and social factors, the summary provided is heavily weighted toward technical and procedural descriptions, leaving the specific nature of 'social' and 'cultural' considerations largely opaque in this section.

A significant transparency concern arises from the exclusion of the 'no-action' alternative. While the proponent justifies this through its legal mandate under the NFWA, the absence of a 'no-action' baseline in an Impact Assessment context can make it difficult to objectively measure the relative environmental and social impacts of the proposed project. Furthermore, the proposal acknowledges that the technology for retrieving used fuel from a DGR 'would need to be further developed and demonstrated,' which introduces technical uncertainties that contrast with the otherwise confident tone regarding long-term safety. The 'phased' nature of APM is presented as a benefit for flexibility, but it is also interpreted as a way to defer definitive answers on high-risk technical challenges, such as container retrieval or long-term sealing performance, to future generations.

Recommendations & Mitigation Strategies

The proponent should provide an updated comparative analysis of the four alternatives that incorporate modern environmental standards, including the potential impacts of climate change on surface storage versus deep geological disposal. This update should explicitly reference how the selection of APM aligns with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), particularly regarding free, prior, and informed consent, which has gained significant legal and social weight since the original 2005 study. Providing a modernized rationale will ensure the project remains relevant to current regulatory and social landscapes.

Additionally, the NWMO must provide a concrete research and development roadmap for the 'retrieval technology' mentioned as a requirement for the DGR. Since retrievability is a key claim supporting the 'adaptive' nature of the project, the current lack of demonstrated technology represents a significant gap in the project's technical feasibility. The proponent should detail the specific milestones, testing protocols, and success criteria for this technology to substantiate the claim that the waste remains accessible to future generations without compromising the integrity of the repository sealing systems.

OBJECTIVES CONSIDERED IN COMPARATIVE ANALYSIS

The NWMO's comparative analysis framework is structured around a broad set of ethical and technical goals, yet it exhibits a reliance on qualitative and subjective terminology that may complicate objective assessment. While the inclusion of 'Fairness' and 'Community Well-Being' as primary objectives demonstrates an awareness of the social license required for such a project, the definitions provided are often circular or aspirational. For example, fairness is defined as 'fair sharing,' which lacks a concrete methodology for determining equity among diverse stakeholders. The proposal acknowledges significant social risks, such as community polarization and stigma, but fails to provide a framework for how these qualitative impacts will be weighed against quantitative technical data.

There is also a potential internal tension between the objectives of 'Security' and 'Adaptability.' A system designed to be secure against 'societal breakdown' and 'terrorism' over the very long term may inherently limit the 'flexibility to future generations to change decisions' as promised under the adaptability objective. Furthermore, the document relies heavily on 'current safety standards' as a benchmark for future acceptability. This assumes that future societal values and scientific understandings of risk will remain static, which is a significant ethical and logical assumption. The mention of climate change is a positive inclusion, but it is treated as an external variable rather than a fundamental stressor that could redefine environmental integrity and economic viability over the project's multi-decadal implementation phase.

Recommendations & Mitigation Strategies

The proponent should develop and disclose specific, measurable indicators for 'Community Well-Being' and 'Fairness' that are co-created with potentially affected communities, including Indigenous groups and those along transportation corridors. This would move the assessment from subjective descriptions of well-being to a more rigorous, evidence-based framework. Specifically, the proponent needs to define how 'community polarization' will be monitored and what specific thresholds of social discord or 'stigma' would trigger a re-evaluation of the project's implementation strategy or site selection.

Additionally, the proponent must provide a more detailed analysis of how 'Economic Viability' will be maintained over the multi-generational lifespan of the project, particularly regarding the 'reasonable cost' threshold. This should include sensitivity analyses for long-term funding models that account for potential economic shifts, societal breakdowns, or changes in the regulatory landscape. By clarifying these financial parameters and providing transparent contingency plans for funding shortfalls, the proponent can better demonstrate how they will avoid placing an undue financial or administrative burden on future generations.

SUMMARY OF FINDINGS AND RECOMMENDED OPTION

The Initial Project Description presents a highly optimistic and structured justification for Option 4, framing it as an 'optimal balance' between immediate flexibility and long-term isolation. While the logic of adaptive management is sound, the narrative relies heavily on qualitative descriptors such as 'very small' risks and 'robust' designs without providing the quantitative thresholds or comparative data necessary for a rigorous impact assessment.

There is a notable tension between the claim that the system will not require active human management in the long term and the emphasis on 'social learning' and 'active monitoring' in the near term; the transition point between these two states remains undefined.

Furthermore, the document uses broad terminology like 'communities of interest' and 'Canadians' without explicitly addressing the unique legal and cultural rights of Indigenous peoples, which is a significant oversight in the context of Canadian impact assessments.

The tone is promotional, suggesting that public acceptance is a byproduct of the process rather than a hurdle to be cleared through rigorous, independent verification. The assumption that future generations might 'lose interest' if the process is too slow serves as a rhetorical driver for momentum but lacks a sociological basis in the text.

Overall, while the strategy is internally consistent, its transparency is hampered by a lack of specific criteria for 'success' or 'failure' during the monitoring phases.

Recommendations & Mitigation Strategies

The proponent should provide a detailed framework for Indigenous engagement that moves beyond the generic 'communities of interest' label. This framework must specify how Traditional Knowledge will be integrated into the 'social learning' and 'adaptive management' phases of the project. Clearly defining the roles of Indigenous nations in the decision-making process for moving between implementation stages will mitigate risks of social exclusion and legal challenges, ensuring that 'fairness' is not just an assumption but a documented outcome.

Additionally, the proponent must quantify the 'very small' radiological and non-radiological exposure estimates by providing baseline data and clear safety margins. To address the ambiguity regarding long-term performance, the proponent should outline specific contingency protocols for 'unforeseen events' detected during the 90-year monitoring period. This should include a clear definition of what constitutes a 'failure' of an engineered barrier and the technical feasibility of retrieving fuel once backfilling and sealing have commenced, thereby providing a more transparent assessment of the 'real options' mentioned in the text.

FEDERAL DECISION AND SUPPORT

The Initial Project Description presents a narrative of inevitability and broad consensus, heavily relying on top-down federal mandates and historical decisions to justify the project's current

status. In citing a 2007, 20-year-old decision as the primary driver, the proponent appears dismissive of how social, environmental, and regulatory expectations have evolved over the years.

The claim that site selection is 'satisfied' based on the 'willingness of the most proximate communities' is a significant point of contention; it uses a vague term ('willingness') without defining the threshold or methodology for measurement, nor does it clarify if this includes the free, prior, and informed consent of all impacted Indigenous Nations.

Furthermore, the document equates a 2024 parliamentary vote (324-0) with 'broad agreement' and 'unanimous backing' for the project. This framing may be perceived as a serious bias that conflates political alignment in Ottawa with localized social license in the affected regions.

The section on Indigenous engagement is particularly high-level, asserting that the process was 'collaborative' and 'inclusive' without providing concrete evidence of how Indigenous Traditional Knowledge actually influenced the project's technical design or site selection.

This creates a serious transparency gap, as the reader is asked to accept 'social acceptability' as a completed milestone rather than an ongoing, complex social process.

Recommendations & Mitigation Strategies

The proponent should provide a comprehensive 'Willingness Framework' that explicitly defines the criteria, metrics, and verification methods used to determine community and Indigenous support. This framework must distinguish between municipal 'willingness' and Indigenous 'consent,' ensuring that the latter is evaluated according to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) standards. Transparency would be greatly enhanced by including a summary of dissenting views or unresolved concerns raised during the 'Choosing a Way Forward' study and subsequent engagement phases, rather than presenting the outcome as a singular, unanimous conclusion.

Additionally, the proponent must move beyond general statements regarding the inclusion of Indigenous perspectives and provide specific case studies or examples where Traditional Knowledge (TK) resulted in tangible changes to the project's engineering, environmental monitoring plans, or site characterization activities. To address the age of the original mandate, the proponent should include a 'Gap Analysis' comparing the 2007 APM recommendation against current 2024 IAAC standards and modern environmental best practices to demonstrate that the project remains the most 'socially acceptable' and 'environmentally responsible' option in a contemporary context.

12.1.3.1 A RESPONSIVE STUDY PROCESS

The Initial Project Description presents a highly structured and idealized account of the NWMO's consultation process, framing it as a model of 'responsive' and 'transparent' dialogue. Using phrases like 'thinking out loud' and 'fair, transparent and trustworthy,' the proponent adopts a self-validating tone that emphasizes procedural adherence over substantive outcomes.

While the four-phase approach appears logical, the narrative lacks critical reflection on the challenges encountered during these dialogues. There is an inherent tension in the claim that the process was 'grounded in knowledge and expertise' while simultaneously being driven by 'societal direction'; the proponent does not explain how technical requirements were reconciled with potentially conflicting public values or Indigenous traditional knowledge.

Furthermore, the description of Indigenous engagement, while mentioning 15 organizations, remains at a high level of abstraction. It fails to detail how the 'needs and preferences' of these diverse groups were specifically integrated into the final management approach, or how the NWMO addressed the historical and political complexities of nuclear waste on Indigenous lands.

The reliance on 'illustrative conceptual engineering designs' as the basis for discussion suggests that the technical scope may have been pre-defined, potentially limiting the public's ability to influence the fundamental direction of the project. The analysis reveals a potential bias toward presenting the consultation as a completed success rather than an ongoing, contested process.

Recommendations & Mitigation Strategies

The proponent should develop and include a detailed 'Consultation Impact Table' that explicitly maps specific feedback received from the public and Indigenous Peoples to the resulting changes in the project's design, management structure, or implementation plans. This would provide concrete evidence for the claim that the process was truly 'responsive' and would allow reviewers to see where public input directly influenced technical or ethical decisions. Without this evidence, the claim of responsiveness remains an unsubstantiated assertion that undermines the transparency of the Impact Assessment.

Additionally, the proponent must provide a more rigorous analysis of the 'representative' nature of the feedback collected. This should include a demographic and geographic breakdown of participants compared to the broader Canadian population, as well as a transparent discussion of any groups that were underrepresented or whose concerns were not fully resolved. To improve the neutrality of the submission, the proponent should replace self-congratulatory language with objective metrics of engagement success and a candid assessment of the limitations of the three-year study period in addressing long-term social and cultural impacts.

PROCESS OF COLLABORATIVE DEVELOPMENT WITH THE CANADIAN PUBLIC AND INDIGENOUS PEOPLES PHASE 1

The Initial Project Description presents a highly structured and professional overview of the NWMO's initial engagement efforts, yet it exhibits notable imbalances between the description of activities and the reporting of actual outcomes.

While the heading promises a summary of 'activities and outcomes,' the content focuses almost exclusively on the former. The narrative relies on positive, process-oriented language such as 'listening and learning' and 'wisdom and insight,' which, while professional, tends to frame the engagement as inherently successful without providing evidence of the specific feedback received or how that feedback influenced the project's direction. This creates a potential transparency gap regarding the actual influence of public and Indigenous input on the decision-making process.

Furthermore, the reliance on a 'Scenarios Exercise' involving only 26 individuals to project conditions up to 10,000 years raises serious questions about the representativeness and methodological breadth of such a small group for such a significant task.

The text mentions the commissioning of 70 specialist papers, which suggests a robust technical foundation, but it remains unclear how these expert perspectives were reconciled with the 'public values' and 'Indigenous knowledge' mentioned later.

The lack of specific data such as the number of participants, the specific Indigenous nations involved, or the geographic distribution of the 'face-to-face meetings' makes it difficult to assess the true inclusivity and reach of Phase 1. Without detailing the conflicting views or challenges encountered during these dialogues, the narrative risks appearing as a curated success story rather than a critical assessment of a complex consultation process.

Recommendations & Mitigation Strategies

To improve the transparency and rigor of the Impact Assessment, the proponent should provide a detailed 'What We Heard' report that explicitly links the feedback gathered in Phase 1 to specific changes or refinements in the project's scope and methodology. This should include a summary of conflicting viewpoints or concerns raised by the public and Indigenous Peoples, rather than only highlighting the 'augmentation' of the information base. Clearly demonstrating how public input altered the study's trajectory would validate the 'listening and learning' claim and provide a more objective basis for evaluating the consultation's effectiveness.

Additionally, the proponent should provide demographic and geographic data regarding participation to ensure that the 'Canadian public' and 'Indigenous Peoples' were represented in a statistically and culturally significant manner. Specifically, the selection criteria for the 26

individuals in the Scenarios Exercise and the 70 specialist paper authors should be disclosed to mitigate concerns regarding expert bias.

Providing a more granular breakdown of the 'Indigenous dialogues'—including which communities were consulted and how Traditional Knowledge was ethically handled and integrated—would strengthen the cultural and social validity of the submission.

PROCESS OF COLLABORATIVE DEVELOPMENT WITH THE CANADIAN PUBLIC AND INDIGENOUS PEOPLES: Phase 2—Exploring the Fundamental Issues

The Initial Project Description presents a structured approach to public engagement, yet it suffers from significant transparency gaps that hinder a thorough impact assessment.

While it mentions the identification of 10 key questions and six fundamental values, it fails to define what these actually are. This omission makes it impossible for a reviewer to determine if the 'right questions' truly address the environmental, social, or safety concerns of the public. The reliance on a 'National Citizens Dialogue' of 462 participants as a primary driver for an assessment framework for a project of this magnitude raises questions about statistical representativeness and the potential for selection bias.

Furthermore, the document adopts a self-validating tone, asserting that the NWMO 'reported back' and 'heard' the public without providing evidence of how conflicting viewpoints were reconciled. The mention of Indigenous Peoples is frequent but lacks specificity regarding how traditional knowledge or unique treaty rights influenced the 'overarching requirement' or the technical shortlist.

The transition from 14 technical methods to a 'short list' is described as being based on what the NWMO 'heard hold the most promise,' which lacks technical rigor and suggests that public preference may have been weighted over scientific or geological feasibility without a clear explanation of the trade-offs involved.

Recommendations & Mitigation Strategies

To improve the transparency and credibility of the assessment, the proponent must explicitly list the 10 questions, the six fundamental values, and the 'overarching requirement' identified during Phase 2. Providing the full list of 14 technical methods alongside the specific criteria used to shortlist them is essential for stakeholders to understand why certain management options were excluded. This documentation should include a technical justification for each exclusion to ensure that safety and environmental protection were not compromised by social preference.

Additionally, the proponent should provide a detailed demographic and geographic breakdown of the 462 participants in the National Citizens Dialogue to demonstrate that the values

identified are truly representative of the Canadian population, including remote and Indigenous communities. Future submissions should also detail the specific methodologies used to integrate Indigenous traditional knowledge into the assessment framework, moving beyond general statements of engagement to demonstrate how this input altered the project's technical or ethical trajectory.

The IPD also describes a process that appears robust in its commitment to public engagement, yet it relies heavily on procedural metrics rather than substantive outcomes. By highlighting the quantity of sessions (120) and locations (34), the proponent attempts to establish a narrative of broad consensus and thoroughness.

However, the document lacks transparency regarding the '10 questions' and 'ethical principles' that supposedly anchor the entire assessment framework. Without defining these core elements, the reader cannot independently verify if the framework is truly representative of the diverse values of the Canadian public and Indigenous Peoples. There is a risk that the framework acts as a closed loop, where the NWMO defines the questions and then confirms they are the right ones through its own dialogue sessions.

Furthermore, the introduction of 'specialists' and 'independent consultants' to conduct 'rigorous assessments' and 'risk quantification' introduces a potential technocratic bias. The IPD does not clearly explain how these technical findings were reconciled with the value-based feedback from the public. The mention of 'illustrative economic regions' is particularly vague, leaving it unclear whether the socio-economic impacts studied are applicable to the actual communities that might host a repository.

The tone is professional but self-validating, often asserting the 'rigor' of its processes without providing the underlying data or methodologies to support such claims. This creates a serious transparency gap that undermines trust with stakeholders who require more than just a summary of activities.

Recommendations & Mitigation Strategies

The proponent should explicitly list the '10 questions' and the 'ethical principles' within the project description to allow for a transparent review of the assessment framework's foundations. Providing a detailed breakdown of the feedback received during the 120 public sessions, including a summary of dissenting views or unresolved concerns, would significantly improve the document's credibility. This would demonstrate that the NWMO is not only listening but is also prepared to address the complexities and conflicts inherent in nuclear waste management.

Additionally, the proponent must provide greater detail on the 'rigorous assessment' performed by specialists. This should include the methodology for risk quantification and the specific criteria used to select 'illustrative economic regions.' To mitigate potential socio-economic impacts, the proponent should clarify how local Indigenous Knowledge was integrated into these

technical assessments, ensuring that the 'ethical principles' mentioned are not merely Western-centric but reflect a genuine synthesis of diverse worldviews. Providing the names of the independent consultants and their specific areas of expertise would also enhance the perceived objectivity of the technical findings.

In Phase 4, the Initial Project Description presents the selection of Adaptive Phased Management (APM) as a settled conclusion, utilizing highly affirmative language such as 'most socially acceptable' and 'rigorous, inclusive, and values-driven.'

While this tone aims to project confidence, it borders on promotional rather than objective, deliberately obscuring the complexities and dissenting views inherent in nuclear waste siting. A significant transparency gap exists regarding the 'eight key objectives' mentioned; without defining these objectives or explaining how APM outperformed other alternatives against them, the claim of being the 'most' feasible option remains unsubstantiated within this excerpt.

Furthermore, there is a notable tension between the 'finalized' nature of the study report and the 'preliminary' status of the alternative means. While the high-level strategy is framed as complete, the specific local impacts such as water discharge points, energy sources, and accommodation camps are still being studied.

This creates a disconnect for stakeholders who may support the concept of APM in theory but have significant concerns regarding its local physical footprint. The reliance on workshops with individuals 'who had been involved in earlier phases' also raises troubling questions about selection bias and whether the NWMO is reaching a truly representative cross-section of the current public or merely reinforcing consensus with a pre-engaged group.

Recommendations & Mitigation Strategies

To improve the transparency and scientific rigor of the submission, the proponent should explicitly define the 'eight key objectives' used during the three-year study and provide a comparative matrix showing how APM scored against other discarded alternatives (such as at-reactor storage or non-geological disposal). This would move the claim of 'technical soundness' from an assertion to a verifiable conclusion. Additionally, the proponent must provide the specific criteria and weighting factors that will be used to evaluate the ten 'alternative means' listed in Table 12.5. Clearly defining how environmental impact versus economic cost will be balanced in choosing water discharge points or energy sources is essential for regulatory and public trust.

The proponent should also expand its engagement strategy for the 'Alternative Means' phase to include stakeholders not previously involved in the initial study. Since the project is moving from a conceptual phase to a site-specific implementation phase, the potential for new socio-economic impacts—such as the location of accommodation camps and transmission lines—requires a fresh round of consultation. This will ensure that the 'social acceptability' claimed at the national level

translates to the local level where the physical infrastructure will reside, mitigating the risk of late-stage project opposition.

LOCATION INFORMATION AND CONTEXT

The IPD provides a clinical geographic and legal overview of the project site but leaves several critical areas open to interpretation. While it lists 'community willingness' as a primary factor for site selection, it does not define the metrics or the specific outcomes of the consultation process that led to this conclusion. This is particularly relevant given the project's location within Treaty #3 territory and its proximity to multiple First Nations. The mention of 'social and cultural perspectives' as a selection criterion is vague, lacking a description of how these perspectives were weighted against technical requirements. There is a potential for perceived bias in the presentation of land status; the text frames the transfer of Crown land as a planned arrangement, which may downplay the complexity of provincial-Indigenous-proponent negotiations.

Furthermore, the proximity data reveals a potential gap in community engagement focus. While the Township of Ignace is frequently cited as a primary hub, the unorganized communities of Borups Corners and Dyment are significantly closer to the project centroid (less than 10 km and 13 km respectively). The narrative does not address whether these smaller, non-incorporated entities have been afforded the same level of 'willingness' assessment as the municipalities.

Additionally, the overlap with the Wabigoon and Dryden Forest Management Units suggests a potential conflict with existing economic activities and ecological management plans that is not explored. The reliance on straight-line distance measurements for proximity may also be seen as an oversimplification of environmental and social impact zones, which often follow transport routes or watersheds rather than radial lines.

Recommendations & Mitigation Strategies

The proponent should provide a detailed 'Willingness and Consultation Report' that explicitly defines the criteria used to determine community support. This report must differentiate between the consent of Indigenous nations (WLON and Treaty #3 signatories) and the 'willingness' of municipal bodies like Ignace. It is essential to clarify how the project will address the concerns of the residents in Borups Corners and Dyment, who are the closest to the site, ensuring they are not marginalized in favor of larger population centers. This should include specific socio-economic impact assessments for these immediate neighbors, focusing on noise, traffic, and potential changes to land value.

Additionally, the proponent must elaborate on the land transfer process and the resolution of existing encumbrances. Specifically, a mitigation plan is required for the private landholders and mining claim holders whose interests overlap with the withdrawal area. The proponent should also engage with the managers of the Wabigoon and Dryden Forest Management Units to

produce a 'Forestry and Biodiversity Integration Plan.' This plan should justify the removal of land from active timber production and outline how the project will maintain ecological connectivity within the Canadian Shield ecosystem, moving beyond simple geographic coordinates to address functional environmental impacts.

14. Biophysical Environment

The document presents a structured and professional overview of the site characterization process, yet it exhibits a notable tension between claiming 'fundamental suitability' and acknowledging significant data gaps. A primary concern is the proponent's assertion that remaining uncertainties are merely quantitative rather than qualitative regarding the site's ability to contain nuclear fuel.

This claim, made before the completion of the federal Impact Assessment (IA) and full licensing process, suggests a potential 'confirmation bias' where the proponent assumes the outcome of the safety case.

Furthermore, the reliance on meteorological data from the Dryden station, located 55 km away is a significant technical weakness. In the complex terrain of the Canadian Shield, 55 km can represent substantial variations in micro-climates, wind patterns, and precipitation, which are critical for modeling atmospheric dispersion and surface water impacts.

While the text emphasizes collaboration with Indigenous communities, it remains vague on how Traditional Ecological Knowledge (TEK) was specifically integrated into the scientific methodology, beyond 'field verification of land use.' This lack of detail makes it difficult to assess the true depth of the collaboration or the transparency of the environmental program's design.

Recommendations & Mitigation Strategies

The proponent should immediately establish and report data from on-site meteorological stations to replace or supplement the Dryden station data. Relying on a station 55 km away introduces unnecessary uncertainty into the baseline environmental model, particularly for air quality and hydrological modeling. Providing site-specific data will enhance the scientific defensibility of the Impact Statement and ensure that local climatic extremes are accurately captured. Additionally, the NWMO should provide a detailed 'Uncertainty Registry' that explicitly lists the 'quantitative' uncertainties mentioned in the text. This registry should explain the potential impact of these uncertainties on the safety case and the specific technical measures planned to resolve them. To improve transparency and community trust, the proponent should also include a dedicated section detailing how specific inputs from the Anishinaabe peoples of WLON and local residents led to changes in the environmental program design, moving beyond general statements of collaboration to demonstrate meaningful engagement.

Biophysical Environment

The Initial Project Description exhibits notable tensions between its assertions of 'extensive understanding' and the technical limitations revealed in its data collection processes. While the proponent is transparent about equipment failures and data gaps, the reliance on regional data from Dryden to validate on-site conditions is undermined by their own findings.

Specifically, the July 2022 rainfall discrepancy, where the regional station recorded nearly triple the on-site precipitation suggests that localized microclimates may be more significant than the proponent acknowledges. Attributing such a large variance simply to 'localized' weather without further investigation weakens the argument that regional stations are truly representative of the site.

Furthermore, the geological assessment adopts a highly confident tone regarding long-term stability, projecting safety for 'several million years.' While this is based on the historical stability of the Canadian Shield, the transition from a few years of microseismic monitoring to multi-million-year forecasting lacks a transparent discussion of uncertainty or the limitations of short-term observation. The document focuses heavily on technical metrics but lacks any mention of how these findings have been communicated to or validated by local and Indigenous communities, which is a critical component of an Impact Assessment. The admission of underestimating snow water equivalent is a significant technical gap that could impact future hydrological and safety modeling if not corrected with more robust instrumentation.

Recommendations & Mitigation Strategies

The proponent should immediately upgrade on-site meteorological instrumentation to include high-precision weighing precipitation gauges equipped with wind shields and heating elements. This is necessary to correct the admitted underestimation of snow water equivalent and total winter precipitation. Accurate hydrological baselines are essential for designing site drainage and assessing potential contaminant transport; relying on flawed data or distant regional stations could lead to significant under-design of safety infrastructure.

Additionally, the proponent must provide a detailed methodology for how the short-term microseismic data (collected since 2021) will be integrated with paleoseismological evidence to support the claim of multi-million-year stability. A three-year data window is insufficient to characterize long-term seismic risks in a cratonic setting where 'rare' events are the primary concern. This analysis should be presented in a way that explicitly addresses the uncertainties inherent in geological forecasting to ensure transparency for regulators and the public.

14. SURFACE BEDROCK GEOLOGY

The geological description provided by the NWMO presents a highly optimistic view of the Revell batholith's suitability for a Deep Geological Repository. While the technical data

regarding bedrock units and age is well-documented, the narrative relies heavily on the assumption that surface-level homogeneity is a reliable proxy for deep-subsurface stability. The text frequently uses qualifying language such as 'potentially suitable' and 'presently inferred,' which introduces a degree of uncertainty that is not fully explored in the subsequent claims of 'sufficient volume' and 'competent rock.' This creates a tension between the cautious scientific terminology and the definitive conclusions drawn about the site's viability.

Furthermore, the reliance on only six boreholes to characterize a rock unit of 40 km by 15 km raises serious questions about the statistical representativeness of the data.

The mention of 'larger-scale structures presently inferred to be fracture zones' is a critical point of concern; the text suggests the repository can simply be 'positioned between' these zones, but it lacks a discussion on the connectivity of these fractures or their potential for hydraulic conductivity. From a transparency perspective, the document would benefit from a more rigorous acknowledgment of the limitations of 3D geophysical modeling and the potential for encountering unforeseen heterogeneities at the 750 m level. The tone is professional but shows a confirmatory bias, emphasizing the 'good bedrock exposure' while downplaying the complexities of the 'several metres' of overburden in sensitive wetland areas.

Recommendations & Mitigation Strategies

To improve the technical rigor of the submission, the proponent should implement a high-density borehole drilling program and advanced seismic reflection surveys. This is necessary to transition from 'inferred' fracture zones to a verified structural map. Understanding the precise geometry and connectivity of these fractures is vital, as they represent the primary pathways for potential radionuclide migration. A detailed hydrogeological characterization of these zones should be prioritized to justify the claim that the repository can be safely isolated from the surrounding environment.

Additionally, the proponent must provide a more comprehensive analysis of the overburden in valleys and wetland areas. Given that these areas show significantly thicker overburden, the potential for localized groundwater recharge and its impact on the underlying bedrock stability must be addressed. The proponent should also include a sensitivity analysis of the 3D geophysical model to demonstrate how variations in rock density or undetected minor faulting could alter the current 'homogeneous' interpretation. This would enhance the transparency of the assessment and provide the regulatory body with a clearer understanding of the geological risks.

14.2.2 Summary

The Initial Project Description presents a highly confident outlook on the geological suitability of the site, yet it relies on several qualifiers that merit closer scrutiny and further investigation.

The use of the term 'inferred' regarding fracture zones (FZs) suggests a level of uncertainty in the subsurface mapping that contrasts with the definitive claim of rock 'homogeneity.' In geological terms, the presence of large-scale structural features like FZs inherently contradicts the description of the rock as homogeneous, indicating a potential bias in how the proponent characterizes the site's complexity. Furthermore, the assertion that there is 'no evidence' of risks like landslides or liquefaction is a negative proof; the absence of evidence in 'studies to date' does not necessarily equate to the absence of risk over the long-term lifecycle of a nuclear waste repository.

Transparency is also limited by the vague reference to 'studies to date' without citing specific methodologies or data sets. This lack of supporting detail makes it difficult for independent reviewers to validate the claim that the volume of competent rock is 'sufficient.' The tone, while professional, exhibits a confirmatory bias, emphasizing favorable conditions (minimal overburden, good exposure) while potentially downplaying the technical challenges of positioning a DGR between inferred structural failures. The narrative would be strengthened by a more balanced discussion of geological uncertainties and the specific criteria used to define 'competent' and 'sufficient' in the context of long-term radioactive waste containment.

Recommendations & Mitigation Strategies

The proponent should provide a detailed inventory and summary of the 'studies to date,' including geophysical surveys, borehole data, and peer-reviewed geological assessments. This documentation must clarify the degree of uncertainty associated with 'inferred' fracture zones and provide a 3D geological model demonstrating the spatial relationship between these structures and the proposed repository footprint. Without this, the claim of 'sufficient volume' remains an unsubstantiated technical assumption that could lead to significant design changes or safety concerns if subsurface conditions differ from surface inferences.

Additionally, the proponent should conduct and present a comprehensive long-term seismic and geomorphological stability analysis. While the text dismisses risks like liquefaction and landslides based on current evidence, a DGR requires stability over thousands of years. The proponent must justify how current surface observations and 'minimal overburden' translate to long-term subsurface stability, specifically addressing how potential seismic events or climate-induced changes could reactivate inferred fracture zones or impact the integrity of the granitoid host rock at the 750-meter depth.

14.2.3 Planned Work: Surface Bedrock and Deep Geology and Seismicity

The Initial Project Description presents a technical roadmap for site characterization that acknowledges significant geological uncertainties while maintaining a tone of procedural confidence. A primary concern is the tension between the claim that only a 'limited amount of additional data' is needed for the initial license application and the subsequent list of substantial

unknowns, such as the geometry of water-conducting fracture zones and the likelihood of post-glacial faulting. In labeling these critical safety factors as 'additional future planned work,' the proponent is downplaying the fundamental importance of these data points to the initial Impact Statement's validity.

The iterative nature of the 'Descriptive Geoscientific Site Model' is a standard scientific approach, yet in a regulatory context, it can create a 'moving target' for public and indigenous reviewers. There is a lack of transparency regarding the thresholds or 'stop-work' criteria if future data contradicts the current assumption of a 'low seismic hazard' region.

As well, the text focuses exclusively on technical data collection without addressing how these geological uncertainties might impact community perceptions of safety or the long-term integrity of the cultural landscape.

Recommendations & Mitigation Strategies

The proponent should provide a detailed matrix that explicitly links each 'data gap' to specific safety functions of the DGR. For instance, the 'gently inclined and water-conducting features' should be characterized with preliminary risk thresholds before the initial license application, rather than being deferred to future phases. This would ensure that the Impact Statement is based on a sufficiently robust baseline that accounts for the most credible worst-case scenarios of radionuclide transport through the geosphere.

Additionally, the proponent must clarify the timeline and integration of the Probabilistic Seismic Hazard Assessment. To improve transparency and community trust, the results of the microseismic monitoring and the investigation into post-glacial faulting should be released in a plain-language format as they become available.

This should include a clear explanation of how 'low seismic hazard' is defined and what specific geological findings would necessitate a fundamental redesign or relocation of the project components to protect the local environment and regional safety.

14.3 Geochemistry of Mined or Excavated Materials

The geochemical assessment presented in the project description exhibits a high degree of technical confidence, yet it relies heavily on preliminary data and internal NWMO documentation. While the use of the Mine Environment Neutral Drainage (MEND) framework provides a recognized methodological basis, the conclusion that the rock is 'not anticipated' to be acid-generating or possess metal-leaching potential is made while kinetic testing is still underway.

This suggests a confirmation bias, where the proponent anticipates a favorable outcome before the scientific process is complete. The reliance on only six boreholes to characterize the

lithological homogeneity of a site intended for a deep geological repository raises questions about the statistical representativeness of the sampling, particularly regarding the 5% of 'subordinate rock types' like amphibolite and felsic dykes which may possess different geochemical profiles.

Furthermore, the IPD links low porosity directly to the retardation of radionuclide movement without discussing the potential for fracture-controlled flow, which is a common feature in crystalline rock environments. The tone is generally professional but leans toward a 'favourable' narrative, emphasizing the durability of the copper barriers and the non-toxic nature of the rock. Transparency could be improved by providing more specific data from the ongoing kinetic tests rather than relying on qualitative predictions.

The transition from preliminary findings to planned work acknowledges the need for more data, yet the document's current state leaves gaps regarding the variability of the rock and the specific impacts of the 'subordinate' lithologies on long-term environmental safety.

Recommendations & Mitigation Strategies

The proponent should complete and publish the results of the kinetic geochemical testing before finalizing the impact assessment. Relying on 'anticipated' results for acid rock drainage and metal leaching potential introduces regulatory risk and may undermine public trust. It is recommended that the proponent provide a detailed sensitivity analysis of the 5% subordinate rock types (amphibolite and dykes) to ensure that localized concentrations of sulfur-bearing minerals or metals do not exist in quantities that could impact the repository's integrity or surface water quality upon excavation.

Additionally, the proponent should expand the geochemical baseline to include a broader spatial distribution of boreholes beyond the initial six to confirm the lithological homogeneity claimed. To improve transparency, the 'Confidence in Safety' reports and other internal NWMO citations should be made easily accessible to the public and independent reviewers. Future submissions should also clarify how the measured 'connected porosity' relates to macro-scale fracture networks, as these features are often more critical for radionuclide transport than the matrix porosity of the rock core samples themselves.

14.4 Topography, Soil and Sediment

The provided summaries present a technical overview of the physical environment but exhibit several weaknesses regarding data robustness and transparency. A primary concern is the proponent's reliance on a relatively small sample size—40 soil samples and 23 sediment sites—to characterize a project of this magnitude. While the text attributes various chemical exceedances (such as chromium, iron, and hexavalent chromium) to 'natural geology,' it lacks the comparative geochemical data or statistical rigor to definitively separate anthropogenic or

historical impacts from natural background levels. This 'natural' attribution appears as a recurring bias that may prematurely dismiss potential environmental risks.

Furthermore, there is a notable technical failure regarding the detection limits for polycyclic aromatic hydrocarbons (PAHs) and semi-volatile organic compounds in sediments. The admission that laboratory detection limits were higher than or equal to sediment quality guidelines renders the current 'below detection' results scientifically inconclusive.

From an ethical and transparency perspective, the document lacks any mention of how these baseline conditions intersect with Indigenous land use or traditional ecological knowledge. The focus is strictly on biophysical metrics, ignoring whether the 'naturally elevated' metals in soil and sediment affect the safety of traditional food sources or cultural practices in the area.

Recommendations & Mitigation Strategies

The proponent should immediately rectify the technical deficiency regarding sediment analysis by re-sampling and utilizing high-resolution laboratory methods with detection limits significantly lower than the most conservative federal and provincial guidelines. Without conclusive data on PAHs and semi-volatile organic compounds, the baseline remains incomplete, preventing an accurate assessment of future project-related contamination. This is a critical step to ensure regulatory compliance and public trust in the environmental monitoring framework.

Additionally, the NWMO should expand the soil sampling program to include deeper profiles beyond the current 0.3-meter limit and increase the total number of sampling locations to ensure statistical significance across all identified ecosites. To improve the socio-economic and cultural relevance of the data, the selection of future sampling sites should be co-developed with local Indigenous communities. This would ensure that areas of high cultural or subsistence value are prioritized, and that the 'naturally elevated' claims are validated through a transparent, peer-reviewed geochemical characterization that is accessible to the public.

14.5 Atmospheric, Acoustic and Visual Environment

The proponent's submission reveals a significant historical data vacuum regarding the local environment, particularly concerning air quality. Relying on monitoring stations in Thunder Bay and Winnipeg, located 240 km and 350 km away, respectively is scientifically inadequate for establishing a site-specific baseline in a complex northern airshed.

While the proponent has initiated a local monitoring program, the delay in establishing this baseline until 2023 suggests that early project planning may have lacked site-specific atmospheric context. Furthermore, the description of the visual environment is notably thin. Characterizing the visual baseline as 'sufficiently complete' based on a general description of tree species and a single photograph is a reductive approach that fails to account for professional viewshed modeling or the cultural significance of the landscape to Indigenous communities.

There are also methodological concerns regarding the proposed noise and light studies. The noise monitoring plan utilizes only two-week snapshots, which may fail to capture the full range of seasonal variability or specific atmospheric conditions that affect sound propagation in northern climates. Similarly, the light monitoring plan is restricted to summer months. This ignores the significant impact of 'sky glow' during winter months when snow cover significantly increases ground albedo, potentially magnifying the impact of artificial light.

The tone of the document is professional, yet it exhibits a degree of overconfidence regarding the sufficiency of existing visual data, which could be perceived as dismissive of stakeholder concerns regarding landscape alteration.

Recommendations & Mitigation Strategies

The proponent should expand the scope of the light and noise monitoring programs to ensure they are representative of the full annual cycle. Specifically, light monitoring must include winter assessments to account for snow-covered ground albedo, which significantly alters how artificial light impacts 'intrinsically dark' environments. Noise monitoring should also be extended or synchronized with key biological windows for local wildlife to ensure that baseline acoustic data reflects sensitive periods for fauna, rather than just arbitrary two-week seasonal windows.

Additionally, the proponent must revisit the 'sufficiently complete' status of the visual environment baseline. A formal Viewshed Analysis should be conducted, utilizing digital elevation modeling to identify specific points of visibility from surrounding transportation corridors, water bodies, and areas of Indigenous land use. This study should be supplemented by qualitative consultations with the Wabigoon Lake Ojibway Nation and the Ignace community to identify and protect culturally or aesthetically significant landmarks that may not be captured by a standard biological classification of the forest.

14.6 Groundwater and Surface Water

The proponent's description of the hydrogeological environment relies heavily on the concept of isolation, using low transmissivity and high salinity as primary indicators of stability. However, there is a notable tension between the 'confidence' expressed and the admitted scarcity of data. With only six deep boreholes and only five instances where deep groundwater flow was sufficient for sampling, the characterization of the entire project site's subsurface may be premature. The text tends to frame technical limitations, such as the inability to collect large water samples as positive evidence of low permeability, which may overlook the potential for undetected preferential flow paths in fractured crystalline rock.

The surface water analysis identifies several exceedances of water quality guidelines for mercury, E. coli, and phosphorus. The narrative characterizes the environment as 'normal' and

'healthy' despite these exceedances, which could be perceived as a bias that minimizes existing environmental stressors.

There is also a complete absence of socio-economic or cultural context regarding how local and Indigenous communities utilize these water sources, which is a significant gap in a holistic impact assessment.

Recommendations & Mitigation Strategies

To improve the technical robustness of the assessment, the proponent should increase the density of the borehole network to better characterize the spatial variability of the rock mass and ensure that the current six boreholes are truly representative of the site's complex fracture network. A more comprehensive sampling program for deep porewater is required to validate the 'ancient' age of the groundwater across the entire repository footprint, rather than relying on limited horizons.

This will help mitigate the risk of unexpected radionuclide transport through undetected hydraulically conductive features. Additionally, the proponent must conduct a detailed source-term investigation for the existing surface water exceedances, particularly mercury and E. coli. Understanding whether these levels are naturally occurring or the result of anthropogenic activity is crucial for establishing a defensible baseline.

The proponent must also initiate a formal program to integrate Indigenous Knowledge regarding local hydrology and water use. This should involve collaborative monitoring with local communities to ensure that the assessment accounts for seasonal variations and cultural dependencies on specific waterbodies, thereby addressing the current lack of social and cultural considerations in the baseline data.

14.6.2 Planned Work: Hydrogeology and Hydrogeochemistry

The Initial Project Description presents a technical overview of baseline data collection activities, yet it exhibits several areas where clarity and transparency could be improved.

While the document lists specific monitoring frequencies and parameters, it lacks a clear rationale for the spatial distribution of the monitoring 'nests' and boreholes. This omission makes it difficult to assess whether the sampling network is truly representative of the complex hydrogeological environment surrounding an almost 1,000-meter deep repository. Furthermore, the mention of 'select study areas' for semi-volatile organic compounds without defining the selection criteria introduces a level of ambiguity that may be perceived as a lack of transparency or potential bias in the sampling design.

From an ethical and community engagement perspective, the reliance on 'gross alpha and gross beta' as the primary radionuclide indicators in the baseline phase is a notable simplification. For

a project involving used nuclear fuel, stakeholders may expect more granular data on specific isotopes of concern.

The narrative also fails to address how the monitoring program will adapt to extreme weather events or long-term climate shifts, which could significantly impact the 'quarterly or monthly' sampling reliability. Overall, while the tone is professional and descriptive, the document functions more as a list of tasks than a comprehensive strategy, leaving significant gaps regarding the scientific justification for the chosen methodologies.

Recommendations & Mitigation Strategies

The proponent should provide a comprehensive spatial rationale and mapping for all current and planned monitoring locations. This should include a detailed explanation of how the placement of shallow 'nests' and deep boreholes corresponds to the repository's footprint and potential contaminant migration pathways.

Clarifying why specific locations were chosen and others were not, the proponent can improve the transparency of the groundwater model and build greater confidence in the baseline data's integrity.

It is also recommended that the proponent expand the baseline radionuclide suite beyond gross alpha and beta measurements to include specific isotopes associated with used nuclear fuel, such as Iodine-129 and Cesium-137.

Additionally, the proponent should explicitly define the criteria for 'select study areas' regarding semi-volatile organic compounds and treated sewage effluent. Providing a clear framework for these selections will ensure that the environmental assessment is seen as rigorous and inclusive of all potential socio-economic and environmental impacts.

14.7 Vegetation, Riparian and Wetland Environment

The IPD exhibits a tension between the preliminary nature of the data and the definitive conclusions drawn regarding the site's ecological value.

A significant concern is the proponent's assertion that the project site likely possesses lower biodiversity than the surrounding region. This claim is based on the relative scarcity of marshes at the site compared to the broader area, yet the text admits that field surveys (AHM and eDNA) were not targeted in the surrounding region for a direct comparison.

This represents a bias where the lack of data in the surrounding area is used to minimize the perceived ecological importance of the project site. Furthermore, the statement that wetland loss in Northern Ontario has not reached 'critical levels' serves as a subjective justification that downplays the significance of localized wetland degradation.

Transparency issues arise regarding the eDNA detection of the American eel, a species of high conservation priority. Labeling the detection as 'potential' and 'outside known distribution' without immediate follow-up validation creates an ambiguity that could delay necessary regulatory triggers.

Additionally, while 'species of interest' to rights holders are mentioned, the text lacks a clear framework for how these cultural values were identified or how they will be protected. The reliance on a single year of baseline data (2022) is a substantial technical weakness, as ecological systems and species presence can fluctuate significantly annually, making 'early conclusions' regarding the likelihood of impacts premature and potentially misleading for stakeholders.

Recommendations & Mitigation Strategies

The proponent should commit to a multi-year field validation program to account for inter-annual variability in vegetation and aquatic species presence. Relying on a single year of data, particularly for eDNA results that indicate the presence of endangered species like the American eel, is insufficient for a robust Impact Assessment.

Physical netting or trapping surveys must be conducted to confirm or refute the eDNA findings, as the presence of a federally threatened species would necessitate significant changes to project design and mitigation strategies.

Furthermore, the proponent must move beyond 'desk-based' identification of culturally significant species and engage in direct, collaborative mapping with Indigenous rights holders.

The identification of wild rice and medicinal plants like balsam fir requires a formal Traditional Land and Resource Use (TLRU) study to understand the frequency of use and the specific cultural value of these locations.

This should result in a co-developed management plan that ensures project activities do not impede access to or the health of these specific resources, rather than relying on generalized regional abundance as a proxy for low impact.

14.8 Fish and Fish Habitat

The proponent's submission exhibits a notable tension between its admission of data gaps and its assertion of readiness for impact assessment. The proponent acknowledges that 'important' fish habitat has not yet been documented within the project site, yet simultaneously claims the current baseline is 'sufficiently comprehensive' to support early conclusions on impact significance.

This creates a potential transparency issue, as the absence of evidence (due to limited local field data) appears to be framed as evidence of absence regarding critical habitats. The reliance on eDNA metabarcoding for species detection without completed ground-truthing introduces

technical uncertainty, as eDNA can indicate presence but not necessarily habitat use or population health.

The project description focuses heavily on desktop data and 'citizen science,' which does not capture the granular, site-specific nuances required for a project of this magnitude. There is also a conspicuous absence of Indigenous Knowledge or local harvester perspectives in this section, which are vital for identifying seasonal migration patterns or historical spawning grounds that desktop databases often overlook.

While the tone is professional it leans toward a 'low-risk' bias by emphasizing regional biodiversity while downplaying the lack of specific data for the local investigation area.

Recommendations & Mitigation Strategies

The proponent must prioritize the 'ground-truthing' of eDNA results with traditional netting or electrofishing surveys to confirm species presence and abundance within the local investigation area.

This is critical because eDNA can yield false positives or detect DNA transported from outside the immediate area, leading to an inaccurate characterization of the project site's ecological value. Additionally, the proponent should conduct targeted multi-season field studies, specifically focusing on overwintering and spring-spawning activities in the unnamed watercourses and wetlands proximal to the site, as these are currently identified as data gaps.

To address the lack of socio-cultural integration, the proponent should formally incorporate Indigenous Traditional Ecological Knowledge (TEK) regarding fish movements and historical habitat use.

This would provide a more robust baseline than desktop databases alone and ensure that the assessment accounts for species of cultural and subsistence importance to local communities.

Finally, the proponent should revise the 'early conclusions' on impact significance once these local, field-verified data points are integrated, ensuring the Impact Statement is based on empirical evidence rather than preliminary assumptions.

14.9 Birds, Migratory Birds and their Habitat

The proponent exhibits notable tensions between its claim of having 'sufficiently comprehensive' data and the subsequent list of extensive field studies required to actually understand the site's ecology.

In relying heavily on desktop mapping and eDNA, the latter of which the proponent admits is 'difficult' to interpret due to limited data the submission risks underestimating the actual

biodiversity and habitat use of the area. The assertion that the absence of 'designated' critical habitat for the Eastern Whip-poor-will equates to a lack of impact is a potential logical fallacy; habitat can be ecologically essential for a local population's survival regardless of its current federal designation status.

The mention of the wild rice stand at Mennin Lake introduces a significant socio-economic and cultural factor that is underdeveloped. While the proponent acknowledges its importance for both birds and local community members, there is no discussion of how project activities like dust generation, water discharge, or noise might disrupt this sensitive resource.

The tone is generally professional, but the self-assessment of the data's 'comprehensiveness' is clearly biased toward moving the project forward into the assessment phase before robust, multi-season field validations are complete. This creates transparency gaps regarding the certainty of the 'early conclusions' presented in the document.

Recommendations & Mitigation Strategies

The proponent should prioritize the completion of multi-year, multi-season field surveys—including point counts and acoustic monitoring—prior to finalizing the Environmental Impact Statement.

Relying on 'Tier 1' habitat mapping and eDNA is insufficient for a project of this scale and duration. These field studies must specifically target the migratory windows and breeding cycles of the identified Species at Risk (SAR) to provide a baseline that accounts for inter-annual variability, which desktop models cannot capture. This will ensure that the 'risk-informed assessment' is based on empirical evidence rather than predictive modeling.

Additionally, a dedicated study on the Mennin Lake wild rice stand must be conducted in direct consultation with local Indigenous communities.

This study should evaluate the potential for indirect project impacts, such as changes in hydrology, water quality, and atmospheric deposition, on the health and productivity of the wild rice.

Given its identified role as a food source for both wildlife and humans, the proponent must move beyond simple detection and provide a mitigation plan that ensures the continued accessibility and safety of this resource for community harvesting.

14.10 Terrestrial Wildlife and Wildlife Habitat

The proponent's submission presents a structured but preliminary overview of the biological landscape, relying heavily on first-year data and desktop studies.

A significant tension exists between the proponent's claim that current data is 'sufficient to support a risk-informed assessment' and the repeated admissions of data gaps, such as unoptimized eDNA for reptiles and reliance on invertebrate records from the 1980s.

This creates a serious transparency issue, as it downplays the necessity of comprehensive baseline data before drawing conclusions about project significance. The focus on moose due to their importance to Indigenous communities is appropriate, yet the report notes a low calf:cow ratio without a clear commitment to investigating how project-related stressors might exacerbate this existing vulnerability.

The dismissal of project-related impacts on tick distribution appears premature given the lack of a detailed ecological pathway analysis for how land clearing or habitat fragmentation might alter host-parasite dynamics. The reliance on 'candidate' habitats and 'potential' occurrences suggests that the ecological risks are not yet fully characterized, making the 'early conclusions' regarding impact significance appear biased toward project advancement.

Recommendations & Mitigation Strategies

The proponent should prioritize a multi-year population health study for moose to determine the drivers of the low calf:cow ratio and assess how project-related noise, dust, and habitat fragmentation might impact this sensitive demographic.

This study must integrate Indigenous Knowledge with western science to ensure that 'community importance' translates into robust, culturally relevant mitigation strategies.

Additionally, the proponent must optimize and re-run eDNA and field surveys for reptiles and invertebrates, as the current reliance on unoptimized methods and 40-year-old data is absolutely and unacceptably insufficient for a modern impact assessment.

A formal justification or pathway analysis should also be provided to support the claim that project activities will not influence tick abundance or distribution, particularly regarding how changes in forest edge habitat might affect host species like white-tailed deer.

14.11 Species at Risk and their Habitat

A significant concern is the proponent's reliance on 'opportunistic identification' for Significant Wildlife Habitat (SWH) and the dismissal of certain high-profile species, such as woodland caribou and wolverine, based solely on current regulatory boundaries (61 km and 80 km respectively).

This approach fails to account for potential migratory corridors, climate-induced range shifts, or the cumulative effects of infrastructure development that may extend beyond static map lines.

There is a notable tension between the claim that studies are 'sufficiently advanced' for risk assessment and the admission that critical data, such as the verification of American eel presence and the characterization of upland breeding birds is still missing.

The uncertainty regarding eDNA results for the American eel is treated with skepticism because it falls 'outside the typical range,' which may indicate a bias toward expected results rather than an objective acceptance of emerging data.

The reliance on “desktop studies” for several provincial SAR bats and invertebrates shows a clear gap in active field verification that could lead to an underestimation of the project's ecological footprint.

Transparency regarding the 'uncertainty' of eDNA methods is appreciated, but it must be met with rigorous, traditional sampling to ensure the precautionary principle is upheld in this sensitive nuclear waste context.

Recommendations & Mitigation Strategies

The proponent should transition from 'opportunistic' identification of Significant Wildlife Habitat to a systematic, grid-based survey methodology. This is essential to ensure that candidate habitats for maternity colonies, hibernacula, and nesting sites are not overlooked due to the timing or location of general terrestrial mapping.

Systematic surveys provide a statistically defensible baseline that is required for a project of this magnitude and long-term impact. Additionally, the proponent must conduct a connectivity analysis for wide-ranging species like woodland caribou and wolverine.

Relying on static distance buffers from known ranges is insufficient for an impact assessment; the study should evaluate whether the project site serves as a movement corridor or if secondary impacts, such as increased noise or traffic, could affect these species' regional recovery. Finally, the uncertainty surrounding the American eel detection must be resolved through immediate, targeted traditional netting or electrofishing surveys.

If the eDNA detection is valid, the presence of a critically endangered species would fundamentally alter the project's mitigation requirements and regulatory triggers.

The proponent should also expand the scope of terrestrial invertebrate surveys beyond 'potential' presence to include active sampling for the Yellow-banded Bumble Bee and Monarch butterfly, given their federal status and the likelihood of habitat disruption during construction.

14.12 Climate Change

The proponent's submission provides a technical foundation for climate and radiological baselines but exhibits several areas of potential concern regarding data robustness and methodology.

The climate baseline relies on a temporary weather station installed only in 2021; while the proponent claims this data aligns with regional stations, a single year of on-site data is clearly insufficient to capture local micro-climatic variability or long-term trends necessary for a project of this magnitude.

Furthermore, the projected 6°C temperature increase by the 2080s represents a significant environmental shift that could fundamentally alter the hydrological and ecological context of the site, yet the text lacks specific details on how the project design will adapt to such extreme shifts beyond general 'water management' considerations.

Regarding ambient radioactivity, the reliance on a 'participatory' tissue sampling program—where First Nation and community members donate samples—introduces potential biases and inconsistencies. While culturally inclusive, voluntary donations may not provide a statistically representative or geographically comprehensive baseline of traditional foods and medicinal plants.

The detection of Plutonium-238, Plutonium-239, and Strontium-90 in soil, though attributed to historical global fallout, is mentioned without providing the specific 'trace' concentrations or a comparison to national averages, which may lead to public apprehension.

The commitment to 'best available technologies' for GHG reduction remains a vague promise without defined targets or benchmarks.

Recommendations & Mitigation Strategies

The proponent should significantly bolster the climate resilience strategy by integrating the projected 6°C temperature increase and increased precipitation into specific engineering and water management stress tests.

This should include a detailed vulnerability assessment of how extreme weather events and altered ice dynamics might impact site access, waste transport, and long-term containment integrity. To ensure scientific rigor, the proponent must also extend the on-site meteorological data collection period to establish a more reliable baseline that accounts for inter-annual variability.

To address gaps in the radiological baseline, the proponent should transition from a purely donation-based tissue sampling model to a systematic, co-designed sampling program with Indigenous communities. This program should establish clear protocols for species selection,

sample size, and geographic distribution to ensure a statistically valid baseline for all traditional foods and medicinal plants.

Additionally, the proponent should provide a more transparent disclosure of the detected soil radionuclides, including precise measurements and a comparative analysis against other Canadian non-industrial sites to contextualize the 'historical fallout' claim for the public.

15. Health, Social & Economic Context

The provided text exhibits a significant internal tension between its claims of 'comprehensive' sufficiency and its admitted gaps in Indigenous engagement.

The proponent asserts that the baseline report is 'sufficiently advanced' to support risk-informed assessments, yet explicitly states that the report has not been verified by the First Nation and Métis communities most directly affected, including the WLON on whose territory the project sits.

This creates a transparency concern: drawing 'early conclusions' on the significance of impacts before the rights-holders have validated the data suggests a top-down approach that may undervalue Indigenous traditional knowledge and self-determination. Furthermore, the reliance on a 'western scientific perspective' and municipal-focused data potentially marginalizes the unique socio-economic and cultural realities of on-reserve and unincorporated populations.

While the NWMO acknowledges the importance of Indigenous data control, proceeding with impact significance conclusions in the absence of this data suggests a bias toward maintaining project timelines over ensuring a truly inclusive baseline.

The use of May 2023 as a data cut-off also raises questions about the currentness and reliability of the findings in a region that may experience rapid socio-economic shifts due to the project's own development activities.

Recommendations & Mitigation Strategies

The proponent should immediately prioritize the verification and co-creation of baseline data with the Wabigoon Lake Ojibway Nation and other Treaty #3 communities before finalizing any impact significance conclusions.

Relying on unverified Statistics Canada data for Indigenous populations risks misrepresenting community health and economic status; therefore, the proponent must integrate community-led research and traditional knowledge to ensure the assessment reflects the actual conditions of on-reserve and Indigenous residents.

This corrective measure will align the project with the stated goal of respecting Indigenous self-determination and data sovereignty. Additionally, the proponent should expand the socio-economic assessment to include a more robust analysis of unincorporated areas and seasonal residents. The current focus on municipal centers like Ignace and Dryden may overlook the specific vulnerabilities of smaller settlements like Borups Corners and Dyment.

Conducting targeted qualitative studies in these smaller communities and updating the data cut-off to reflect 2024-2025 conditions, the NWMO can provide a more accurate and equitable representation of the human environment, mitigating the risk of unforeseen social or infrastructure pressures during the project's early phases.

15.1 Currently Available Baseline Data for Health Conditions

The baseline report presents a concerning health profile for the Ignace and NWHU regions, characterized by higher-than-average rates of chronic disease, mental health struggles, and a significantly lower life expectancy compared to the rest of Ontario.

A critical tension exists in the document: the proponent asserts that health outcome characterization is 'sufficient' and that 'no further work is planned' for non-Indigenous populations, yet the data reveals specific local vulnerabilities, such as Ignace's high cancer-related hospitalization rates and an average age of death of only 63.6 years. This declaration of sufficiency appears premature given the project's long-term nature and the potential for cumulative stressors on an already burdened healthcare system.

Furthermore, the reliance on aggregated NWHU data may mask localized health clusters or specific community needs, particularly as data for smaller communities were subjected to suppression. The lack of disaggregated data for Indigenous communities is a significant transparency and ethical gap, as these populations often face unique health challenges and are primary stakeholders in the region.

The admission that data on gender-based violence is currently unavailable, yet concluding that the baseline is 'sufficient' for a risk-informed assessment, suggests a bias toward project timelines over comprehensive social safety analysis.

The underlying assumption that regional data can substitute for granular, community-specific health monitoring remains a point of concern for a project of this magnitude.

Recommendations & Mitigation Strategies

The proponent should reconsider the decision to cease health outcome baseline work. It is recommended that a localized, longitudinal health monitoring program be established specifically for Ignace and surrounding communities.

This program should move beyond aggregated regional data to identify specific environmental or social drivers behind the high rates of cancer-related hospitalizations and the low average age of death. Establishing a more granular baseline now will be essential for distinguishing project-related impacts from pre-existing conditions during the operational phase.

Additionally, the proponent must prioritize the collection of disaggregated data for Indigenous communities and the missing statistics on gender-based violence before finalizing the Impact Statement.

Relying on future 'planned work' for these critical areas creates a risk that the initial project design and mitigation strategies will not adequately account for the most vulnerable populations. Integrating Traditional Knowledge with clinical health data through collaborative studies with First Nations and Métis health authorities would ensure a more holistic and ethically sound assessment of the project's potential socio-economic and health impacts.

15.3 Access to Community Health Care

The proponent’s assessment of community healthcare reveals a significant internal tension between the documented baseline conditions and the claim of readiness for impact assessment. Explicitly stating that the Mary Berglund Community Health Centre Hub (MBCHCH) in Ignace is 'operating near capacity and does not have space to dedicate to additional service provision,' the proponent identifies a critical vulnerability.

However, the subsequent claim in Section 15.3.2 that the baseline study is 'sufficiently advanced to support a risk-informed assessment' appears premature. Without a detailed projection of the workforce size and the anticipated secondary population growth (families and service workers), the assertion that the current data is sufficient to evaluate the impact on a saturated system lacks transparency and scientific rigor.

Furthermore, the document exhibits bias in bifurcating the readiness of 'non-Indigenous' versus 'Indigenous' baseline data. By delaying the integration of First Nations and Métis health data until the formal regulatory process begins, the proponent risks overlooking cumulative impacts on shared regional resources.

The reliance on regional centers like Dryden and Thunder Bay for specialized and emergency care suggests that the project's footprint will extend far beyond Ignace, yet there is no evidence of a regional capacity 'stress test.' The tone is professional, but the reliance on qualitative 'Key Person Interviews' without quantitative modeling of service-to-population ratios limits the objective utility of the submission for impact forecasting.

Recommendations & Mitigation Strategies

The proponent should immediately undertake a quantitative Health Impact Assessment (HIA) that models various population growth scenarios against the existing capacity of the MBCHCH and regional hospitals. This study must specifically address how the influx of a temporary and permanent workforce will affect wait times and access for current residents, given the admitted lack of physical space for expansion in Ignace.

To mitigate these impacts, the proponent should explore the feasibility of providing on-site primary and emergency medical services for project employees to alleviate the immediate burden on local community health hubs.

Additionally, the NWMO must accelerate the collaborative health baseline studies with First Nations and Métis communities rather than waiting for the formal Impact Statement phase. Early integration of Indigenous health priorities and traditional healing approaches is essential to ensure that the project does not exacerbate existing jurisdictional gaps or cultural barriers in healthcare delivery.

This should include a dedicated strategy for supporting regional ambulance and crisis response services, which are currently identified as having very limited resources (e.g., only two ambulances in Ignace).

15.4 Traditional Foods and Medicines

The IPD provides a broad overview of traditional land use but relies heavily on regional data that may be outdated or lack site-specific precision. By citing studies from 2014 and 2016, the proponent assumes that ecological and contaminant conditions have remained static over the last decade.

While the inclusion of Indigenous-led studies is positive, the acknowledgement of 'low sample sizes' in these references suggests a weakness in the current baseline. There is a notable reliance on 'participatory' sampling for future data collection; while this encourages community engagement, it may introduce selection bias or result in inconsistent data if not supplemented by a rigorous, systematic scientific sampling design.

Furthermore, the text quickly dismisses the project's impact on existing contaminants like mercury and PCBs. While the project may not release these specific substances, the analysis fails to address how project activities—such as land disturbance or hydrological changes—might interact with or mobilize existing environmental stressors. The tone is professional, yet the lack of specific details on the cultural protocols for gathering medicinal plants suggests a need for deeper integration of Indigenous Knowledge beyond simple species lists.

Recommendations & Mitigation Strategies

The proponent should conduct a contemporary, site-specific baseline study to supplement the decade-old regional data currently cited. This study must include systematic sampling of soil, water, and biota within the immediate project footprint and downstream areas to ensure a statistically robust baseline that accounts for current environmental conditions.

Relying on voluntary participatory sampling alone is insufficient for a high-stakes impact assessment; a standardized monitoring framework is required to ensure data quality and representativeness across all seasons and species.

Additionally, the proponent must provide a detailed cumulative effects framework that explicitly analyzes how project-related activities might interact with existing environmental burdens, such as mercury. Even if the project does not release mercury, the potential for physical disturbances to mobilize existing contaminants in sediments or soil must be rigorously evaluated.

This should be coupled with a transparent consultation process regarding the specific locations and cultural significance of medicinal plants to ensure that mitigation measures are culturally appropriate and protective of Indigenous rights.

15.5 Population and Demographics

The demographic profile presented exhibits a high degree of transparency regarding data limitations, yet these very limitations undermine the reliability of the baseline.

The proponent explicitly states that the data for Indigenous populations has not been verified by the communities themselves and acknowledges significant discrepancies between Statistics Canada and ISC figures.

This lack of verification is a critical gap; without an accurate count of on-reserve and off-reserve members, the assessment of project impacts on local infrastructure, healthcare, and social services remains speculative. Furthermore, the suppression of data for Lac Des Mille Lacs First Nation due to small population size effectively renders this community invisible in the quantitative baseline, which is an ethical concern for an impact assessment.

There is a potential for bias in the 'optimistic' growth scenarios provided for municipalities like Ignace and the Kenora Census Division. Applying the Ontario historical average growth rate (1.16%) to a remote northern context that has seen a -1.56% annual decline in Ignace, the proponent may be overestimating the region's inherent growth capacity to make the project's socio-economic integration appear more seamless.

Additionally, the text notes a 53% decline in youth in Ignace, which suggests a looming labor shortage and a high dependency ratio. The narrative relies heavily on the project as a potential

reversal of this decline, but it fails to address the social risks of a sudden influx of workers into an aging, shrinking community.

The reliance on 'Key Person Interviews' to suggest that Indigenous populations are undercounted in Dryden indicates that the proponent is aware of the data's inadequacy but has not yet implemented a rigorous methodology to correct it.

Recommendations & Mitigation Strategies

The proponent should collaborate directly with the leadership of Wabigoon Lake Ojibway Nation, Eagle Lake First Nation, Lac Seul First Nation, Lac Des Mille Lacs First Nation, and Seine River First Nation to conduct community-led demographic surveys.

This is necessary to resolve the discrepancies between ISC and Statistics Canada data and to provide a verified baseline that includes off-reserve members who may return to the community for project-related opportunities. Accurate data is fundamental to planning for housing, education, and Community Safety and Well-Being (CSWB) plans, ensuring that the project does not overwhelm local capacities.

Additionally, a specialized 'Social Integration and Infrastructure Study' should be commissioned to analyze the specific impacts of project-induced migration on aging communities like Ignace. This study should move beyond 'optimistic' provincial growth averages and instead model local scenarios that account for the 53% youth decline.

It must identify how the project will attract and retain a young workforce without displacing the existing elderly population or straining the limited service hub of Sioux Lookout. This would provide a more realistic framework for mitigating the socio-economic pressures of the DGR construction and operation phases.

15.6 Community and Culture

Reference: Initial Project Description, Pages 159-165
The document presents a bifurcated view of community readiness and project acceptance. While it emphasizes the 'willingness' of the host nation through a confidential agreement, it simultaneously notes a Judicial Review launched by Eagle Lake First Nation, indicating a significant lack of regional consensus that is not fully explored.

The reliance on the Community Well-Being (CWB) Index is problematic; the proponent admits these metrics are census-based, unverified by Indigenous communities, and fail to reflect local values, yet they serve as the primary quantitative evidence for social health. This creates a transparency gap where the 'sufficiently advanced' baseline claimed by the NWMO may actually rest on flawed or incomplete data.

Furthermore, the narrative regarding food insecurity is particularly concerning. The text identifies food insecurity as a critical, growing issue across all studied municipalities and Indigenous communities, linked to high costs and limited competition. However, the IPD fails to provide a preliminary analysis of the project, which will likely bring an influx of high-salaried workers and increased demand for services and might exacerbate local inflation and further marginalize vulnerable populations. The tone is professionally neutral but tends toward optimism, potentially downplaying the socio-economic risks associated with large-scale industrial development in a region already struggling with basic needs and service gaps.

Recommendations & Mitigation Strategies

The proponent should immediately conduct a targeted Socio-Economic Impact Study focusing on 'Project-Induced Inflation' and its specific effects on regional food security.

Given that food insecurity is already a cited crisis, the proponent must move beyond baseline descriptions and propose concrete mitigation strategies, such as supporting local food cooperatives or supply chain enhancements, to ensure the project does not inadvertently increase the cost of living for low-income residents and seniors in Ignace and Dryden.

Additionally, the NWMO must address the 'transparency deficit' regarding Indigenous consultation. To improve the integrity of the Impact Statement, the proponent should establish a collaborative framework for verifying CWB Index data with all affected First Nations and Métis communities.

This should include a public-facing summary of the 'willingness' criteria that accounts for the concerns raised in the Judicial Review by Eagle Lake First Nation, ensuring that 'community well-being' is defined by the residents themselves rather than external census metrics.

15.6 Community and Culture: Local Services Board of Melgund

The text provides a qualitative snapshot of Melgund's social fabric, emphasizing a high degree of community spirit and a reliance on volunteerism. However, from an impact assessment perspective, the description is notably and unacceptably thin on quantitative data.

While it establishes a 'quiet' and 'nature-focused' baseline, it entirely fails to define the demographic profile or the economic drivers of the area. There is a potential bias toward a romanticized, nostalgic or idealized view of the community ('neighbours are willing to lend a helping hand'), which, while valuable for cultural context, lacks any objective metrics needed to measure social resilience or vulnerability to large-scale projects.

A significant internal tension exists regarding community infrastructure: the text notes that residents enjoy gathering at the local hall, yet simultaneously lists a 'lack of community gathering spaces' as a primary challenge. This ambiguity makes it impossible to determine if the

existing infrastructure is simply at capacity, in disrepair, or if the community requires entirely new types of facilities.

Furthermore, the mention of 'lack of funding for development' suggests a high sensitivity to external economic pressures, yet the proponent does not elaborate on what forms of development are desired or resisted by the population living closest to the Revell DGR site.

This lack of specificity obstructs a transparent evaluation of how a proposed project might align with or disrupt local development goals.

Recommendations & Mitigation Strategies

The proponent should provide a detailed infrastructure audit and a needs assessment to resolve the contradiction regarding community gathering spaces. This should include the current capacity, condition, and usage frequency of the 'local hall' versus the specific types of spaces the community feels are missing.

Clarifying this gap is essential for determining whether a project might exacerbate the strain on existing facilities or provide an opportunity for community investment that aligns with local needs. Additionally, the proponent must include demographic and socio-economic baseline data, such as population age distribution, employment sectors, and average household income. Understanding the 'lack of funding' claim requires context—specifically, whether the LSB's budget is insufficient for basic maintenance or if the community lacks the capital for growth.

This data will allow for a more rigorous assessment of how project-related socio-economic changes might impact a volunteer-dependent governance structure and the overall cost of living for residents in Melgund which is the closest township in proximity to the Revell DGR site and the most impacted of all communities.

15.7 Infrastructure and Services

The provided text offers a candid look at the precarious state of municipal infrastructure in the proposed project area, yet it suffers from a significant disconnect between the identified baseline deficiencies and the potential pressures of a large-scale nuclear project.

While the proponent acknowledges that wastewater systems in Ignace and Sioux Lookout are nearing the end of their lifespans or are in 'poor' condition, there is a lack of preliminary analysis regarding how the project’s workforce influx will exacerbate these existing vulnerabilities. The document relies heavily on 2021-2022 data, which may not reflect the rapid inflationary and post-pandemic shifts in the construction and service sectors.

Furthermore, the tone regarding social services—specifically childcare and emergency medical services—reveals a high risk of systemic failure.

The mention of 'burnout' among EMS staff and the total lack of licensed full-time childcare in Ignace are critical red flags. The proponent's claim that the baseline is 'sufficiently complete' appears premature given that these service gaps could become insurmountable barriers to project execution and community well-being.

There is also a notable lack of detail on how unincorporated communities, which rely on private wells and septic systems, will be protected from potential groundwater impacts or increased service demands. The analysis is descriptive but lacks the predictive rigor necessary to understand the project's cumulative socio-economic footprint.

Recommendations & Mitigation Strategies

The proponent should immediately undertake a quantitative 'Project-Induced Demand' study that overlays projected workforce numbers and their dependents onto the identified infrastructure capacities.

This study must specifically address the 10-year window for Ignace's sewage plant replacement and Sioux Lookout's failing wastewater assets. By providing clear projections on how the project will accelerate the depreciation of these assets, the proponent can work with the IAAC and provincial authorities to establish a cost-sharing or infrastructure investment framework that ensures the project does not leave the host communities with a deficit of essential services.

Additionally, a comprehensive Social Infrastructure Mitigation Plan is required to address the 'burnout' in emergency services and the 'at capacity' status of regional childcare. The proponent should consider direct investments in community service capacity, such as funding for additional paramedic positions or the establishment of a project-linked childcare facility that also serves the local community.

This would mitigate the risk of the project displacing local residents' access to essential services and demonstrate a commitment to the 'aging in place' concerns highlighted in the baseline report.

15.7 Infrastructure and Services: Unincorporated Communities (Wabigoon, Melgund, Dinorwic)

The IPD provides a baseline descriptive profile of local infrastructure but lacks any critical assessment of how these decentralized systems might be impacted by a large-scale project.

Emphasizing that water, wastewater, and property drainage are the sole responsibility of homeowners, the proponent implicitly shifts the burden of environmental monitoring and infrastructure maintenance away from a central authority. This raises significant concerns regarding groundwater protection and the cumulative impact of potential industrial activity on private wells.

The reliance on 'Key Person Interviews' for housing and infrastructure data, while useful, introduces potential subjectivity and may lack the technical rigor required for a formal impact assessment.

Furthermore, the description of waste management reveals a system that is already fragmented and reliant on external municipal or provincial facilities. There is no discussion regarding the remaining capacity of these landfills or their ability to absorb project-related waste.

The mention of volunteer fire departments is particularly concerning in the context of a nuclear or large-scale industrial project; the text fails to address whether volunteer-led services have the specialized training, equipment, or personnel to respond to complex industrial emergencies.

Overall, the proposal is unacceptably superficial, omitting critical data on infrastructure resilience and the socio-economic vulnerability of these unincorporated areas.

Recommendations & Mitigation Strategies

The proponent must conduct a comprehensive hydrogeological study to establish a baseline for groundwater quality and quantity across these communities.

Given that residents rely entirely on private wells, any project-induced changes to the water table or contamination would have immediate and severe socio-economic and health impacts. This study should include a plan for long-term monitoring and a clear protocol for homeowner compensation or alternative water provision should private systems be compromised.

Additionally, a formal capacity assessment of the volunteer fire departments and local landfills is required. The proponent should outline specific investments or partnership agreements intended to upgrade local emergency response capabilities to meet industrial safety standards.

This must include specialized training for volunteer firefighters and a waste management strategy that ensures project-generated waste does not shorten the lifespan of existing community landfills or increase costs for local residents.

15.8 Non-Indigenous Land and Resource Use

The proponent's description of land and resource use exhibits a bias toward minimizing the perceived impact of the project. Labeling the site as having 'minimal important features' and 'minimal land and resource use activity,' the NWMO risks pre-empting the findings of a formal impact assessment. This characterization is particularly concerning given that the site overlaps with active traplines, bait harvest areas, and unofficial recreational trail systems that are acknowledged as vital to the local 'sense of place' and economy.

The reliance on a 'Stage 1' desktop archaeological assessment to conclude that no further data collection is required for non-Indigenous land use is a significant transparency and methodology gap. Desktop studies only identify 'known' sites; they do not account for undiscovered physical evidence that a field-based Stage 2 assessment would uncover.

Furthermore, there is a lack of clarity regarding how 'unofficial' land uses, such as the forestry roads used by ATVs and snowmobiles, will be mitigated or compensated if access is restricted. The text acknowledges that hunting and fishing are both a 'lifestyle and source of food' for residents, yet it simultaneously dismisses the need for further study.

This creates an internal inconsistency: if the land is central to the community's quality of life and economy, a decision to cease data collection before the formal regulatory process fully matures appears premature. The tone, while professional, leans toward a foregone conclusion that the project's footprint is negligible, which may undermine community trust during the consultation phase.

Recommendations & Mitigation Strategies

The proponent should reconsider its decision to forgo additional non-Indigenous land-use baseline data collection. Specifically, a Stage 2 archaeological assessment involving physical field surveys should be conducted across the 342-hectare site.

Relying solely on the Ontario Archaeological Sites Database is insufficient for a project of this magnitude, as many historical and cultural sites in remote regions remain unrecorded. Physical verification is essential to substantiate the claim that no cultural or historical resources will be impacted, thereby ensuring regulatory compliance and community confidence.

Additionally, the NWMO should perform a quantitative socio-economic impact study on the 'unofficial' trail systems and the specific traplines (DR024, IG033) and bait harvest areas (DR0046) affected. Rather than qualitatively labeling use as 'minimal,' the proponent should provide data on the frequency of use and the potential economic loss to outfitters and trappers.

A clear mitigation plan or 'Access Management Plan' should be developed in consultation with local recreational clubs and commercial land users to address the displacement of activities from the project site to the surrounding broader area.

15.9 Economic Conditions

The economic baseline presentation is statistically dense but reveals significant reliance on secondary data sources that may not fully capture the regional realities.

While the use of Statistics Canada data provides a standardized framework for comparison, the proponent explicitly admits that on-reserve data is 'interim' and potentially unrepresentative due to small sample sizes and data suppression.

This creates a transparency concern, as the communities most likely to be impacted by the project are the ones with the least reliable baseline data. The document identifies a staggering 98.9% income disparity between males and females in Ignace, yet attributes this almost entirely to sectoral choices without exploring systemic barriers or the potential for the project to exacerbate or mitigate this gap.

Furthermore, the assumption that the workforce will reside within a one-hour drive of the project site is a critical pivot point for the entire socio-economic impact model, yet it lacks a supporting rationale regarding local housing capacity or transportation infrastructure.

The tone is professional and clinical, which aids neutrality but occasionally masks the severity of the economic decline described in the participation and employment trends.

There is a risk of bias in the 'Planned Work' section, where the proponent suggests the baseline is 'sufficiently advanced' for risk-informed assessment despite the acknowledged gaps in Indigenous-specific data. This suggests a potential rush to move past the baseline phase before establishing a truly collaborative and validated economic profile with local First Nations.

Recommendations & Mitigation Strategies

The proponent should prioritize the execution of community-led socio-economic studies in collaboration with the affected First Nations to replace the current 'interim' census data.

Relying on Statistics Canada figures for small, on-reserve populations is insufficient for an impact assessment because these figures often fail to account for traditional economies, informal trade, and the specific barriers to employment faced by Indigenous members. Validated data is essential to ensure that mitigation strategies for unemployment and income disparity are based on reality rather than statistical approximations.

Additionally, the proponent must develop a detailed 'Regional Human Resources and Infrastructure Strategy' that addresses the identified challenges of youth out-migration and the 'one-hour drive' residency assumption.

This strategy should include specific commitments to local training programs and educational partnerships to ensure the 30-year labour demand is met by local residents rather than solely through in-migration. It should also include a feasibility study on the impact of a sudden influx of workers on the cost of living and housing availability in small municipalities like Ignace, where the current population is less than 1,000 people.

18. Indigenous, Federal and Provincial Environmental Approvals

The Initial Project Description presents a highly structured but legally complex regulatory roadmap.

A significant strength is the explicit recognition of Indigenous jurisdiction through the WLON RAAP, which signals a commitment to Anishinaabe law. However, the document acknowledges a degree of 'uncertainty' regarding the extent to which provincial laws apply to this federal undertaking.

This ambiguity will lead to regulatory friction or delays if provincial and federal requirements conflict, particularly regarding environmental compliance and land use. While the proponent lists numerous potential permits, the document lacks a clear mechanism for harmonizing these disparate processes into a single, cohesive timeline.

Furthermore, the reliance on 'potential' lists for provincial authorizations suggests that the project's regulatory footprint is not yet fully defined. The IPD leans heavily on the 'peace, order and good government' power to assert federal dominance, which may complicate local and provincial relations. The inclusion of international guidance (IAEA/ICRP) adds technical credibility, but the text remains vague on how these high-level standards will be operationalized at the site-specific level. There is also a notable absence of detail regarding how other Indigenous communities, beyond WLON, might interact with this regulatory framework.

Recommendations & Mitigation Strategies

The proponent should develop a formal Jurisdictional Coordination Plan that explicitly maps the overlaps between federal, provincial, and Indigenous regulatory requirements. This plan must address the 'uncertainty' mentioned in Section 18.4 by establishing a clear hierarchy or equivalency framework for environmental standards, particularly for water taking, sewage works, and species at risk.

By proactively defining these boundaries, the proponent can mitigate the risk of conflicting conditions that could arise from different levels of government, ensuring a more predictable and transparent assessment process.

Additionally, the proponent should provide a detailed procedural roadmap for the integration of the WLON RAAP with the federal Impact Assessment process. This should include specific timelines for information sharing and a clear description of how Indigenous-led findings will be weighted in the final federal decision-making process.

To enhance transparency, the proponent should also clarify if and how other potentially affected Indigenous nations will have their own regulatory or assessment processes recognized, ensuring that the project adheres to the broader principles of informed consent and regional inclusivity.

E. POTENTIAL EFFECTS OF THE PROJECT

The provided text functions more as a procedural roadmap than a substantive disclosure of potential impacts. While it successfully identifies the legal and regulatory pillars supporting the project, there is a notable reliance on future assessments (such as the HHERA) to provide actual data.

A significant transparency concern arises from the mention of a 'confidential' hosting agreement with Wabigoon Lake Ojibway Nation (WLON). In the context of a project with multi-generational implications, the lack of public access to the terms of Indigenous partnership may undermine the proponent's claims of 'social licence' and 'respectful relationships.'

Furthermore, the tone is occasionally self-congratulatory, describing the site selection as a 'successful completion' and asserting 'informed and willing' status without providing the evidence used to measure that willingness.

The text assumes that the CNSC's graded approach and the NWMO's internal reporting will be sufficient to address community concerns, yet it lacks a clear mechanism for how dissenting voices or evolving community sentiments will be managed over the project's long lifecycle. The focus on 'federal jurisdiction' also risks minimizing the complex interplay between federal authority and local/provincial environmental realities.

Recommendations & Mitigation Strategies

To improve transparency and public trust, the proponent should provide a high-level summary of the confidential hosting agreement with WLON, specifically outlining the environmental and social safeguards contained therein without compromising sensitive financial or proprietary details. This would bridge the gap between the claim of 'social licence' and the current lack of public visibility into the terms of that licence.

Additionally, the proponent must move beyond describing the 'process' of assessment and provide a preliminary list of anticipated 'non-negligible adverse effects' based on existing site characterization data.

This would allow the IAAC and the public to evaluate the proponent's internal risk screening methodology more effectively. The proponent should also clarify how the 'triennial' socio-economic reporting under the NFWA will be integrated into the IAAC's ongoing monitoring framework to ensure that socio-economic impacts are not just reported, but actively mitigated in real-time.

Finally, a clear definition of 'willingness' should be provided, including the metrics used to determine that the host communities remain 'informed and willing' as the project transitions from planning to construction and operation.

Table 19.1: Valued Components and Associated Measurement Indicators and Assessment Endpoints

The table demonstrates a structured approach to impact assessment but reveals significant gaps in readiness and specific criteria. A primary concern is the designation of 'Not applicable' for assessment endpoints across all Intermediate Components, such as Air Quality, Hydrogeology, and Surface Water Quality.

By treating these strictly as pathways to other Valued Components, the proponent risks overlooking the intrinsic value of these environmental media and may bypass established regulatory thresholds that should serve as objective endpoints. This approach could lead to a fragmented understanding of environmental health where physical degradation is only addressed if a secondary biological or social impact is proven.

Furthermore, the document relies heavily on the assumption that the project's greenhouse gas emissions will not directly affect other VCs, a claim that simplifies complex ecological interactions and cumulative effects. While the tone is professional and neutral, the lack of defined metrics for Indigenous VCs creates a procedural vacuum. The proponent acknowledges the need for Indigenous-led definitions for heritage, land use, and health, yet the absence of even preliminary frameworks or examples of how these will be integrated into the broader scientific assessment suggests that the current project description is more of a placeholder than a comprehensive plan.

This creates an imbalance where non-Indigenous economic and social conditions are already mapped to specific indicators like 'procurement' and 'population levels,' while Indigenous concerns remain abstract and undefined. This disparity could lead to biases in early-stage data collection and resource allocation for the impact assessment.

Recommendations & Mitigation Strategies

The proponent should immediately transition from the 'To be defined' status for Indigenous Valued Components to a collaborative framework that establishes preliminary indicators. This requires the formalization of a co-development process with potentially impacted Indigenous Nations to ensure that traditional knowledge and cultural values are integrated into the baseline studies from the outset.

Without these definitions, the subsequent impact predictions will lack the necessary cultural context and scientific rigor required for a project of this magnitude. The proponent must also provide a clear methodology for how these community-defined indicators will be weighted alongside standard technical metrics to ensure equitable consideration in the final assessment. Additionally, the proponent must revise the assessment framework to include specific endpoints for Intermediate Components.

Relying on 'Not applicable' for components like Hydrogeology and Air Quality is insufficient for a nuclear waste repository where long-term monitoring of physical parameters is critical. The proponent should adopt established federal and provincial environmental quality guidelines as assessment endpoints for these components.

This will provide a transparent baseline for compliance and ensure that any degradation of the physical environment is identified and mitigated regardless of whether a direct link to a secondary Valued Component is immediately observable.

19.2.2 Methods

The methodology presented by the NWMO relies heavily on the premise that the construction phase of a Deep Geological Repository (DGR) is functionally analogous to conventional mining projects, such as the Hardrock or Goliath gold projects.

While the physical acts of excavation and surface facility development share similarities, this comparison may downplay the unique geotechnical and long-term safety requirements inherent in nuclear waste isolation.

In framing the project as 'conventional' during its early phases, the proponent risks underestimating the specialized oversight and public concern associated with nuclear infrastructure. Furthermore, the document claims to follow the precautionary principle by overestimating effects when information is limited. However, overestimation is a mathematical buffer, not a substitute for the rigorous application of the principle, which requires avoiding harm in the face of uncertainty.

There is also a bias in the assertion that regulatory compliance automatically translates to a 'high degree of confidence' in effectiveness. While standards like CSA and CNSC REGDOCs are robust, they are minimum requirements, and their effectiveness in a first-of-a-kind DGR context in Canada remains to be proven.

The mention of 'social license' as a reason for previous project failures is a candid admission, yet the IPD clearly lacks specific, measurable criteria for how 'trust and legitimacy' will be quantified or achieved beyond 'collaboration' with specific communities. This creates an ambiguity regarding what happens if consensus is not reached.

Recommendations & Mitigation Strategies

The proponent should conduct and present a specialized comparative analysis that identifies the specific differences between conventional mining and DGR construction, particularly regarding rock mass integrity and long-term containment requirements.

This would address the potential inadequacy of using gold mine mitigation measures as a direct proxy for a nuclear repository. Additionally, the proponent should provide a more transparent framework for how Anishinaabe, Indigenous, and Local Knowledge will be integrated into the 'Pathways of Change' screening.

Currently, it is listed as an input, but the methodology does not explain how traditional knowledge will be weighted if it conflicts with desktop scientific data. To improve transparency, the NWMO should define the specific thresholds for 'social license' and 'community acceptance.'

Since the document acknowledges that previous projects failed due to a lack of social license, providing a clear, public-facing roadmap for how this project will measure and maintain consent throughout the multi-decadal lifecycle is essential.

This should include clear protocols for dispute resolution and independent community-led monitoring to validate the 'high degree of confidence' claimed in the mitigation measures.

Table 19.4: Pathways of Change Screening for Intermediate and Valued ComponentsGeneral

The proponent's submission presents a highly structured and systematic approach to impact screening, yet it exhibits a recurring pattern of optimistic forecasting that warrants critical scrutiny.

The proponent frequently transitions from identifying 'moderate to high' potential adverse effects to predicting 'low-degree' or 'negligible' residual effects. This leap is often predicated on the successful implementation of mitigation measures described with qualitative qualifiers such as 'to the extent practicable' or 'as required.'

Such language introduces significant ambiguity, as it provides the proponent with discretionary latitude that may undermine the rigor of the environmental protection commitments. Furthermore, the claim that the multi-barrier system will 'eliminate' potential radioactive contamination is an absolute statement that lacks the nuance typically required in nuclear safety assessments, where 'minimization' or 'reduction to as low as reasonably achievable' (ALARA) is the standard.

From an ethical and transparency perspective, the socio-economic and health assessments appear somewhat reductive.

The proponent assumes that physical environmental mitigations (e.g., dust and noise control) are the primary drivers for protecting Indigenous and non-Indigenous health, potentially overlooking complex psychosocial impacts associated with hosting a nuclear waste repository.

While the mention of 'Hosting Agreements' and 'Implementation Committees' suggests a framework for community engagement, the document lacks detail on how these bodies will influence project governance or what recourse communities have if predicted 'negligible' impacts manifest as significant disruptions.

The reliance on 'best management practices' and 'regulatory guidelines' as the sole benchmarks for success assumes these standards are sufficiently protective of the specific local ecosystems and cultural landscapes involved, which may not always be the case in sensitive northern environments.

Recommendations & Mitigation Strategies

The proponent should replace qualitative descriptors of impact (e.g., 'low-degree,' 'moderate,' 'high') with a quantitative framework that defines specific thresholds for each Valued Component.

For instance, air quality and noise impacts should be tied to specific decibel levels or particulate matter concentrations (PM2.5/PM10) that trigger immediate corrective actions. By establishing objective, measurable benchmarks, the IAAC and local communities can more effectively monitor compliance and hold the proponent accountable to its 'negligible' impact predictions.

This should be formalized in an Adaptive Management Plan that outlines specific 'if-then' scenarios for mitigation failure.

To address the potential for socio-economic and cultural disruption, the proponent must expand its mitigation strategy beyond 'Hosting Agreements' to include a community-led independent monitoring program.

This program should be funded by the proponent but governed by local Indigenous and non-Indigenous representatives, with the authority to conduct independent audits of environmental and social data.

This would mitigate the inherent bias in self-reporting and provide a transparent mechanism for addressing community concerns regarding health, land use, and social well-being that may not be captured by standard regulatory monitoring of physical parameters.

19.2.3.1 AIR QUALITY

The proponent's assessment presents a notable tension between its stated 'high level of confidence' and the admitted absence of site-specific data. By assigning a 'low risk' rating to air quality impacts before completing dispersion modelling or the HHERA, the text risks appearing dismissive of potential local impacts.

The reliance on 'well-established' industry experience serves as a placeholder for evidence, which may not account for the unique micro-climates or topographical features of the Ignace region.

Furthermore, the document's suggestion that further assessment under the Impact Assessment Act (IAA) should be limited to components with 'moderate to extreme risks' is a pre-emptive scoping attempt that undermines the thoroughness of the regulatory review.

This approach prioritizes administrative efficiency over a data-driven understanding of environmental consequences, potentially eroding community trust regarding the transparency of the assessment process. The tone, while professional, leans toward optimism rather than objective caution, particularly in its assumptions about the limited range of dust and emission dispersion.

Recommendations & Mitigation Strategies

The proponent should immediately prioritize the completion and public release of site-specific air dispersion modelling and the HHERA.

These studies must be finalized before the risk levels are formally categorized in the Impact Statement to ensure that the 'low risk' designation is based on empirical evidence rather than industry generalizations.

This data should include specific scenarios for various weather conditions to validate the claim that emissions will settle within a 1 km radius.

Additionally, the proponent should establish a community-led air quality monitoring committee involving the Wabigoon Lake Ojibway Nation, Melgund Township and the Township of Ignace.

This committee should be involved in defining the 'receptors' for the HHERA, ensuring that culturally significant sites and local health concerns are integrated into the monitoring plan. This collaborative approach would mitigate the risk of overlooking localized impacts that general regulatory standards might miss and would enhance the social license of the project through increased transparency.

19.2.3.3 NOISE, VIBRATION AND LIGHT

The proponent's assessment of noise, vibration, and light presents a significant methodological tension: it concludes that residual risks are 'negligible' and expresses 'high confidence' in this outcome despite explicitly stating that site-specific modelling has not yet been completed. This approach risks pre-empting the results of the scientific studies it promises to deliver.

By labeling the risk as negligible before data is gathered, the text may appear to be downplaying potential impacts to streamline the approval process, which raises concerns regarding the transparency and objectivity of the Initial Project Description. Furthermore, the reliance on the project's 'remote location' as a primary justification for low impact is a subjective claim.

While 10 to 12 kilometers may be distant from permanent municipal residences, this distance may be highly significant for Indigenous land users, sensitive wildlife, or specific cultural practices that require silence and darkness. The text fails to define 'sensitive receptors' beyond a narrow focus on permanent human dwellings, potentially overlooking the socio-cultural and ecological value of the existing baseline conditions in a wilderness environment.

The IPD is overly optimistic, emphasizing 'proven' and 'well-established' mitigation strategies without discussing the specific challenges of implementing these measures in a northern, potentially rugged terrain.

This lack of critical self-reflection regarding the limitations of standard mitigation in unique environments could be perceived as a bias toward project feasibility over environmental precaution.

Recommendations & Mitigation Strategies

The proponent should prioritize the completion and public disclosure of preliminary noise, vibration, and light modelling before finalizing the risk screening. This modelling must account for site-specific topography, prevailing atmospheric conditions, and the cumulative impact of simultaneous construction activities.

By providing data-driven evidence rather than relying on 'anticipated' outcomes, the proponent can better justify the 'high confidence' rating and ensure that the risk screening is a reflection of scientific reality rather than an optimistic projection. Additionally, the definition of 'sensitive receptors' must be expanded in consultation with the Wabigoon Lake Ojibway Nation (WLON), Melgund Township and the Township of Ignace.

This expansion should include specific locations of traditional land use, migratory corridors, and habitats for Species at Risk (SAR). The proponent should then develop a tiered mitigation strategy that addresses the specific needs of these diverse receptors, ensuring that 'negligible risk' is defined not just by provincial decibel limits, but by the preservation of the cultural and ecological integrity of the region.

19.2.3.4 HYDROGEOLOGY

The proponent's submission exhibits a significant logical tension by concluding that residual risks to hydrogeology are 'low' while simultaneously admitting that the conceptual groundwater model—the primary tool for such a determination—is not yet completed.

This 'conclusion-first' approach undermines the scientific rigor of the document, as it relies on industry experience and general assumptions rather than site-specific data. The assertion that drawdown effects will be limited to 'a few hundred metres' lacks a quantitative basis in the absence of the aforementioned model, making it difficult for reviewers to assess the potential impact on nearby wetlands or private wells.

Furthermore, the tone of the document is notably optimistic, frequently using terms like 'well-established' and 'not anticipated' to minimize perceived risks.

While the proponent mentions sharing information with the Wabigoon Lake Ojibway Nation (WLON) and the Township of Ignace, the text describes a one-way flow of information rather than a collaborative or consultative process.

There is no mention of how Indigenous Traditional Knowledge might inform the hydrogeological model or the definition of 'acceptable' risk. This lack of transparency regarding the data gaps and the reliance on future regulatory processes to fill those gaps may reduce public confidence in the assessment's objectivity.

Recommendations & Mitigation Strategies

The proponent should prioritize the completion and independent peer-review of the conceptual groundwater model before finalizing risk characterizations.

This model must explicitly define the 'few hundred metres' of anticipated drawdown with high-resolution mapping and provide sensitivity analyses for various climate and geological scenarios. By providing the quantitative data that supports the 'low risk' claim, the proponent can move from speculative assertions to evidence-based conclusions, which is essential for a robust Impact Assessment.

To address social and cultural concerns, the proponent should establish a collaborative groundwater monitoring program that includes direct participation from the Wabigoon Lake Ojibway Nation and local community members.

This program should go beyond 'sharing' results and instead involve these groups in selecting monitoring well locations and defining the thresholds for 'material departures' from baseline conditions. Integrating local and traditional knowledge into the hydrogeological framework will ensure that the assessment respects the cultural significance of water and provides a more comprehensive understanding of potential impacts on traditional land use.

19.2.3.5 HYDROLOGY AND SURFACE WATER QUALITY

The proponent’s assessment of hydrology and surface water quality presents a significant methodological tension: it assigns a 'low risk' rating to residual effects while simultaneously admitting that critical site-specific modeling has not yet been conducted.

This reliance on 'industry experience' and 'regulatory guidance' as a proxy for site-specific data introduces a potential bias toward optimistic outcomes. By labeling risks as low before completing the integrated site-wide water balance and water quality modeling, the proponent may be underestimating the unique hydrogeological complexities of the Ignace region.

Furthermore, the document mentions that regulatory guidelines are expected to be met within a 'regulated mixing zone,' which implicitly acknowledges a zone of localized environmental degradation that is not fully explored in terms of its impact on local aquatic life or traditional land use.

Transparency is also a concern regarding the 'moderate likelihood' of residual effects. While the degree of impact is labeled 'low,' the admission of a moderate likelihood suggests that changes to the water system are probable.

The narrative lacks a detailed discussion of how extreme weather events, exacerbated by climate change, might stress the proposed water management infrastructure beyond its design capacity. The commitment to share results with Indigenous communities (WLON), neighbouring communities and the Township of Ignace only after modeling is complete suggests a reactive rather than proactive approach to community consultation on technical environmental risks.

Overall, the text prioritizes regulatory compliance over a precautionary, data-driven assessment of local environmental sensitivity.

Recommendations & Mitigation Strategies

The proponent should prioritize the completion and public release of the integrated site-wide water balance and water quality modeling prior to the finalization of the Impact Statement. This modeling must explicitly account for climate change variables, such as increased frequency of extreme freshet events and prolonged drought conditions, to validate the claim that 'low risk' status can be maintained under stress.

Without this data, the current risk characterization lacks the necessary scientific foundation to be considered conclusive by regulatory bodies and affected communities.

Additionally, the proponent should provide a detailed definition and spatial mapping of the proposed 'regulated mixing zones' for effluent discharge. This should include an assessment of the potential for bioaccumulation of contaminants within these zones and the resulting implications for fish health and traditional Indigenous harvesting practices.

To improve transparency, a robust contingency and adaptive management plan should be developed that outlines specific corrective actions to be taken if monitoring detects exceedances of Provincial Water Quality Objectives, ensuring that 'short-term changes' do not evolve into long-term environmental degradation.

19.2.3.6 TOPOGRAPHY, SOILS AND SEDIMENT

The Initial Project Description presents a largely optimistic outlook on the management of environmental impacts, relying heavily on the assertion that mitigation measures are 'well-established' and 'proven' without providing specific evidence or case studies relevant to the unique scale of a nuclear waste repository.

There is a notable tension between the admission of a 'moderate likelihood' of residual effects on soil and sediment and the final 'low risk' classification. This suggests a potential bias toward minimizing the perceived impact to facilitate regulatory progression.

The IPD lacks specific baseline data regarding soil composition or sediment chemistry, instead deferring detailed analysis to future modeling (HHERA) and licensing phases.

Furthermore, the document exhibits a significant internal consistency error: Table 19.11 is titled 'Preliminary Residual Effects Risk Screening Associated with the Surface Water Quality Intermediate Component,' yet the preceding text explicitly states it presents the risk assessment for 'topography, soils and sediment.'

Such clerical errors in a high-stakes regulatory submission raise concerns regarding the rigor of the internal review process.

Additionally, the claim that no 'unique or rare' topographical features exist because the area is 'typical of the Canadian Shield' is a broad generalization that may overlook site-specific ecological or cultural nuances.

The reliance on 'natural variability' as a benchmark for effluent impact is also problematic without a defined baseline, as it allows for a wide range of interpretations regarding what constitutes an acceptable change.

Recommendations & Mitigation Strategies

The proponent should provide a detailed technical appendix or reference list that substantiates the claim that the proposed mitigation measures are 'proven' and 'effective' specifically for DGR-scale blasting and excavation activities.

This should include empirical data from similar geological settings to move beyond generalized industry assertions. Additionally, the proponent must correct the labeling and content of Table

19.11 to ensure it accurately reflects the topography, soils, and sediment component rather than surface water quality, ensuring all data points within the table align with the specific metrics of soil compaction and sediment mobilization.

To improve transparency, the proponent should define the specific parameters of 'natural variability' and 'immediate vicinity' used to justify the low-risk rating.

Establishing clear, quantitative thresholds for soil and sediment contamination prior to the HHERA phase would provide the IAAC and local communities with a more objective framework for evaluating future impacts.

Finally, the proponent should conduct a more granular assessment of topographical features to ensure that 'typical' Canadian Shield characteristics do not mask localized areas of high ecological or Indigenous cultural value that could be impacted by site clearing and blasting.

19.2.3.7 FISH AND FISH HABITAT

The Initial Project Description presents a standard procedural approach to risk assessment but exhibits a high degree of reliance on the perceived efficacy of 'well-established' mitigation measures. While the proponent acknowledges that project activities could result in moderate to high adverse effects, the swift transition to a 'low risk' conclusion lacks site-specific empirical support within this summary.

There is a notable tension between the claim of 'negligible' impact and the admission of a 'moderate likelihood' of residual effects; this suggests that while the proponent expects impacts to occur, they are self-defining the significance of those impacts as minor without providing the quantitative thresholds used for such a determination.

Furthermore, the document uses the ALARA (As Low As Reasonably Achievable) principle—a concept typically rooted in radiological protection—to describe general water and air quality mitigation. This application may obscure specific ecological requirements for sensitive aquatic species by prioritizing technical feasibility over biological thresholds. The transparency of the assessment is also hindered by the absence of a specific list of Species at Risk (SAR) or local fish populations that would be directly affected, making the 'negligible' claim difficult to verify independently. The tone is professional but leans toward a confirmatory bias, assuming that regulatory compliance and standard industry practices will inherently prevent significant ecological degradation in a complex, long-term nuclear waste context.

Recommendations & Mitigation Strategies

The proponent should provide a comprehensive, site-specific inventory of fish species and aquatic Species at Risk (SAR) present in the affected waterbodies, accompanied by clear, quantitative definitions for 'negligible,' 'low,' and 'moderate' impact degrees. This data must

include baseline health indicators and population estimates to move beyond the current qualitative assertions.

Establishing transparent, measurable thresholds for habitat loss and water quality changes, the proponent can provide a more rigorous basis for the 'low risk' designation and allow for objective third-party verification during the impact assessment process. Additionally, the NWMO should develop a formal Community-Led Environmental Monitoring Program that integrates Indigenous Knowledge (IK) alongside Western science.

This program should specifically involve local Indigenous communities in the design and execution of monitoring for fish health and water quality. Given that the project impacts traditional land use and Indigenous health, incorporating traditional ecological indicators will ensure that 'adaptive management' is not merely a reactive regulatory exercise but a proactive measure that respects the cultural and socio-economic values of the local and regional stakeholders.

19.2.3.8 VEGETATION, RIPARIAN AND WETLAND ENVIRONMENTS

The proponent's assessment exhibits a significant internal tension between the acknowledged certainty of environmental destruction and the characterization of that destruction as negligible.

By stating that the likelihood of residual effects is high because vegetation removal is certain, yet labeling the degree of effect as negligible, the text potentially minimizes the localized ecological impact. The reliance on the argument that Northern Ontario has not reached critical levels of wetland loss serves as a regional justification for local degradation, which may overlook the specific ecological functions of the site-specific wetlands.

Furthermore, the commitment to avoid species of conservation concern and culturally significant plants like wild rice and balsam fir is qualified by the phrase 'to the extent practicable.' This creates an analytical ambiguity, as it provides no clear criteria for when avoidance would be deemed impracticable, leaving a gap in the protection framework for Indigenous cultural resources. The use of ALARA (As Low As Reasonably Achievable), typically a radiological protection principle, to describe air and water quality mitigation suggests a technical rigor that is not fully supported by the qualitative descriptions provided.

Recommendations & Mitigation Strategies

The proponent should provide a detailed, quantitative breakdown of the total area of each vegetation community and wetland type to be permanently lost or altered, rather than relying on regional abundance to justify local impacts.

This should include a specific 'No Net Loss' plan for wetlands that outlines compensatory mitigation strategies where avoidance is not possible. Additionally, the proponent must define the

specific technical and economic criteria that determine the 'extent practicable' for avoiding species of conservation concern and culturally significant vegetation.

To address socio-economic and cultural concerns, the proponent should engage in site-specific co-mapping with Indigenous communities to identify and protect traditional medicine gathering areas.

This engagement should result in a formal agreement on how balsam fir, balsam poplar, and wild rice will be managed, including potential relocation or restoration efforts led by traditional knowledge holders to ensure that the 'low risk' designation aligns with community values and ecological reality.

19.2.3.9 MIGRATORY AND SPECIES AT RISK BIRDS

The proponent's assessment of migratory and SAR birds presents a comprehensive list of species but relies heavily on the assumed efficacy of standard mitigation measures to justify a 'negligible' residual impact rating.

While the identification of 64 upland species and multiple SAR (e.g., Eastern Whip-poor-will, Canada Warbler) indicates a high level of biodiversity, the text lacks quantitative data regarding the specific acreage of habitat loss or the carrying capacity of adjacent lands to which displaced birds are expected to move.

There is a notable tension between the admission that project activities could cause 'moderate to high' adverse effects and the subsequent conclusion that residual effects will be 'negligible.' This leap in logic assumes that mitigation measures, such as timing windows, are 100% effective at preventing long-term population declines, which may not account for the cumulative stress of sensory disturbances like noise and light over the project's multi-decade lifespan.

Furthermore, the tone of the document is occasionally over-confident, using phrases like 'high level of certainty' and 'well-established' without providing site-specific evidence or case studies involving the specific SAR identified.

The use of the ALARA (As Low As Reasonably Achievable) principle—traditionally a radiological protection standard—to describe the mitigation of noise and air quality impacts on birds is somewhat unconventional and requires clearer definition in an ecological context. Additionally, while the text mentions pathways of change affecting Indigenous land use, it fails to integrate Indigenous Traditional Knowledge (ITK) regarding bird migration patterns or the cultural significance of specific species, representing a gap in the holistic assessment of the project's impact.

Recommendations & Mitigation Strategies

The proponent should provide a quantitative habitat loss assessment that specifies the total area of each habitat type (e.g., wetlands, upland forest) to be removed or altered.

This should be accompanied by a species-specific displacement analysis for the identified SAR, evaluating whether suitable adjacent habitat is available and capable of supporting displaced individuals without increasing competition or mortality.

This data is essential for validating the claim that residual effects will be 'negligible' at a population level.

It is also recommended that the proponent formally incorporate Indigenous Traditional Knowledge (ITK) into the bird monitoring and mitigation plans. This should involve consultation with local Indigenous communities to identify culturally significant bird species and to refine sensory disturbance buffers based on traditional observations of bird behavior.

Furthermore, the proponent should establish a transparent, long-term monitoring framework with specific 'trigger' thresholds that, if exceeded, would mandate immediate adaptive management actions beyond the standard best practices currently cited.

19.2.3.10 TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT

The document presents a structured approach to risk screening but exhibits a high degree of confidence in mitigation efficacy that may not fully account for the complexities of a long-term nuclear project.

While it identifies several Species at Risk (SAR), the leap from moderate-to-high potential impact to negligible residual impact relies heavily on the assumption that standard mitigation measures are universally effective.

The dismissal of certain carnivores, such as the wolverine and cougar, based on regional distance or low density lacks a discussion on habitat fragmentation or the potential for the site to serve as a migratory corridor. Furthermore, the application of the ALARA (As Low As Reasonably Achievable) principle to sensory disturbances like noise and light is unconventional; ALARA is traditionally a radiological safety standard, and its use here requires clearer technical definitions to ensure it is not being used as a catch-all for unquantified impacts. The reliance on future permitting and adaptive management to address potential failures in mitigation introduces a level of uncertainty regarding the actual protection of the five endangered bat species identified.

Recommendations & Mitigation Strategies

The proponent should develop and disclose a comprehensive Species at Risk (SAR) Management Plan that includes specific, quantified habitat offset ratios and detailed mitigation measures for the five endangered bat species.

This plan must move beyond general best management practices to include site-specific actions such as the installation of maternity roosting structures and strict seasonal restrictions on clearing that are verified by independent biological monitors. Clearly justifying the potential impact on these species is necessary to ensure that the negligible risk conclusion is supported by empirical data rather than procedural assumptions.

To improve transparency and scientific rigor, the proponent must define the specific quantitative thresholds used to distinguish between negligible, low, and moderate degrees of effect.

This should include a commitment to a long-term, peer-reviewed monitoring program that utilizes baseline data to trigger specific, pre-defined adaptive management actions if wildlife population indicators deviate from predicted levels.

This would mitigate the risk of unforeseen population declines and provide the local community and regulators with a clear framework for accountability throughout the project lifespan.

19.2.3.11 NON-INDIGENOUS HEALTH CONDITIONS

Reference: Initial Project Description, Pages 242-245
The document exhibits a significant reliance on jurisdictional partitioning to limit the scope of the Impact Assessment Act (IAA).

In asserting that direct health effects are the sole province of the NSCA, the proponent risks creating a fragmented assessment where the holistic 'one project, one assessment' principle is undermined. This approach assumes that the CNSC's licensing process will satisfy all public concerns regarding health, potentially overlooking the integrated socio-economic and biophysical health pathways that the IAA is designed to capture.

Furthermore, the tone is notably optimistic, frequently using terms like 'well-established' and 'high level of confidence' to describe mitigation strategies that have not yet been applied to this specific local context. There is a logical tension between the admission that local communities lack sufficient substance abuse and addiction services and the subsequent claim that the project's impact on these issues will be 'negligible.'

The reliance on internal corporate mechanisms, such as a 'Code of Conduct' and 'Employee Assistance Programs,' to mitigate broad regional social issues like gender-based violence and substance abuse appears unsubstantiated.

These measures address workplace behavior but do not necessarily account for the complex, off-site social dynamics introduced by a large, non-local workforce and increased disposable income in a vulnerable regional setting. The transition from 'moderate to high' potential effects to

a 'negligible' residual risk rating lacks a transparent, evidence-based bridge, appearing more as a predetermined conclusion than a rigorous derivation.

Recommendations & Mitigation Strategies

The proponent should provide a more integrated health impact assessment that bridges the gap between the NSCA's radiological focus and the IAA's broader social health mandates. Specifically, the NWMO must demonstrate how it will support regional health and social infrastructure, given the acknowledged lack of existing services.

Relying on internal employee programs is insufficient for mitigating community-wide impacts; therefore, a formal commitment to funding or augmenting local mental health and addiction services should be detailed to justify the 'negligible' risk claim. Additionally, the proponent should conduct a more granular analysis of the 'accommodation camp' model's impact on local social safety.

This should include specific, measurable agreements with local law enforcement and social service providers to monitor and respond to potential increases in gender-based violence and substance abuse.

The current reliance on a corporate Code of Conduct is an internal administrative tool and does not constitute a comprehensive community-level mitigation strategy. Evidence from comparable large-scale infrastructure projects should be cited to validate the effectiveness of these proposed social mitigations.

19.2.3.12 NON-INDIGENOUS ECONOMIC CONDITIONS

The text exhibits a significant proponent bias by pre-emptively categorizing economic impacts as exclusively positive, thereby bypassing a formal risk screening for economic VCs.

This approach ignores well-documented 'boom-bust' phenomena, local inflation, and income inequality that often accompany large-scale infrastructure projects in rural settings.

By assuming that 'positive' changes do not require risk assessment, the proponent fails to account for the potential socio-economic strain on vulnerable populations who may not benefit from direct employment but will face higher costs of living. Furthermore, the reliance on the Ontario Power Generation (OPG) DGR Joint Review Panel findings as a benchmark is potentially misleading, as that project involved different waste classifications and geographic contexts.

The narrative frequently uses the NFWA's three-year reporting cycle as a safety net, yet this statutory requirement is a retrospective monitoring tool rather than a proactive mitigation strategy. There is a palpable tension between the admission that 'quantitative modelling' is incomplete and the 'high level of confidence' expressed in the low-risk conclusions.

This suggests a desire to limit the scope of the Impact Assessment Agency of Canada (IAAC) review before the full evidence base is established, which could undermine public trust and the rigor of the regulatory process.

Recommendations & Mitigation Strategies

The proponent should conduct a comprehensive risk screening for economic conditions that specifically addresses potential adverse 'positive' effects. This must include an analysis of local housing market inflation, the displacement of existing low-wage workers, and the long-term economic stability of the region post-construction.

Relying on the Hosting Agreement as a catch-all mitigation tool is insufficient; the Impact Statement should provide a granular breakdown of how benefits will be distributed across the broader regional population beyond the Township of Ignace.

Additionally, the proponent must provide site-specific social impact data rather than relying on general 'best practices' or precedents from unrelated projects. The social risk assessment should be updated to include quantitative modeling of service capacity (e.g., healthcare, emergency services, and education) in all affected local communities.

This will ensure that the 'low risk' designation is supported by empirical evidence rather than optimistic projections of mitigation effectiveness.

20. Potential Changes to the Environment on Federal Lands or Lands Outside Ontario

The Initial Project Description presents a definitive and somewhat dismissive stance regarding transboundary and federal land impacts. By stating that the project 'will not result' in changes before modeling has been conducted, the proponent adopts a pre-emptive tone that may undermine the perceived objectivity of the upcoming Impact Assessment.

This creates a potential transparency issue, as it suggests the conclusion has been reached before the evidence has been fully gathered or reviewed. Furthermore, the reliance on administrative land status (provincial vs. federal) and simple linear distance as the primary metrics for impact assessment is a narrow approach. It fails to account for ecological connectivity, such as shared watersheds or migratory patterns, which do not adhere to political or ownership boundaries.

There is also a notable lack of detail regarding the 'Reserve lands' mentioned. While the text claims no changes are expected, it does not explain the criteria used to reach this conclusion or whether Indigenous communities were consulted to define what constitutes a 'change' to their environment.

The distinction made between the NWMO being 'federally regulated' but not a 'federal authority' appears to be a legalistic effort to minimize federal oversight requirements. Overall, the narrative prioritizes jurisdictional arguments over environmental and social risk analysis, which may lead to gaps in the assessment of distal or cumulative effects.

Recommendations & Mitigation Strategies

The proponent should revise its claims to reflect the current stage of the assessment process, replacing definitive 'will not' statements with 'is not expected to' until modeling is complete.

This adjustment would demonstrate a more objective and scientifically rigorous approach. Additionally, the proponent must provide a preliminary conceptual model that justifies why 140 km and 210 km are sufficient buffers for a nuclear waste repository. This should include a high-level discussion of regional hydrogeology and atmospheric conditions to support the claim that no transboundary pathways exist.

Furthermore, the proponent should explicitly clarify the scope of its assessment regarding Indigenous interests. It is recommended that the proponent move beyond the administrative definition of 'Reserve lands' to include potential impacts on traditional territories and Treaty rights that may extend across provincial borders.

A detailed plan for how modeling results will be shared with and validated by neighboring jurisdictions (Manitoba and the United States) would also improve transparency and address potential concerns regarding distal environmental and socio-economic impacts.

21. Potential Effects on Anishinaabe People of Wabigoon Lake Ojibway Nation and Other Indigenous Groups Identified in Section 3

The provided text exhibits a significant reliance on future engagement to define the core parameters of the impact assessment. By stating that Valued Components (VCs), measurement indicators, and assessment endpoints are 'to be defined,' the proponent acknowledges that the current submission is a procedural placeholder rather than a substantive analysis of Indigenous impacts.

This creates a transparency gap, as the public and regulators cannot evaluate the rigor of the assessment until these metrics are established. Furthermore, the claim of 'positive' economic impacts is underpinned by a confidential Hosting Agreement.

While respecting community privacy is important, the lack of even high-level, non-confidential indicators makes the claim of positive socio-economic benefit unsubstantiated within this document. There is also a notable tension between the technical assurance that the project 'does not pose adverse effects' on health and the admission that 'perceptions of risk' may alter

traditional land use. This suggests a potential bias where technical safety is prioritized over the lived experience and psychological well-being of the community.

Finally, the NWMO's admission that current data does not fully capture the diversity of Indigenous identities or on-reserve communities highlights a critical gap in the baseline data necessary for a robust Impact Assessment.

Recommendations & Mitigation Strategies

To address the lack of substantive detail regarding Indigenous Valued Components, the proponent should establish and publish a clear, time-bound framework for the co-definition of these metrics. This framework must include specific milestones for community validation to ensure that the 'informed and willing host' status is based on a shared understanding of impact, rather than a preliminary assumption.

Providing a public summary of the categories of benefits included in the Hosting Agreement, without disclosing sensitive financial figures, would also help substantiate the claims of positive economic impact and allow for a more objective socio-economic assessment. Additionally, the proponent must address the identified data gaps regarding Indigenous diversity and on-reserve characterization.

This should involve a commitment to supporting Indigenous-led baseline studies that go beyond existing provincial databases, which the text admits are insufficient.

Integrating Indigenous Knowledge and data sovereignty principles into the primary data collection phase, the NWMO can mitigate the risk of an incomplete assessment that fails to account for the specific social and cultural nuances of the WLON and surrounding nations.

24. Environmental Management System

The Initial Project Description presents a highly formalized and regulatory-centric approach to environmental management. While it successfully identifies the necessary legal and technical frameworks (CNSC and CSA standards), the narrative relies heavily on the concept of 'adaptive management' as a primary safeguard against unforeseen impacts.

This approach, while standard in complex projects, can sometimes be used to defer specific mitigation planning until after project approval, creating a lack of transparency regarding what specific actions will be taken if environmental thresholds are exceeded. The tone is optimistic, asserting that mitigation measures are 'expected to avoid' adverse effects, which may downplay the inherent uncertainties of long-term nuclear waste management.

Furthermore, the document is notably silent on the integration of local community perspectives or Indigenous Knowledge into the monitoring and management framework.

Focusing almost exclusively on technical standards and regulatory compliance, the proponent misses an opportunity to demonstrate how the EMS will address site-specific social and cultural values. There is a risk that the 'best available technology' mentioned remains undefined, leaving stakeholders without a clear understanding of the actual technical rigor to be applied. The reliance on 'best management practices' is a general claim that requires more granular detail to be fully credible in a high-stakes nuclear context.

Recommendations & Mitigation Strategies

The proponent should provide a detailed Adaptive Management Plan that defines specific 'action levels' and 'triggers' for intervention. This plan should move beyond generalities to explain exactly which environmental indicators will be monitored and what specific corrective actions will be pre-authorized if those indicators deviate from the baseline.

This would increase transparency and provide the Impact Assessment Agency and the public with greater confidence that 'unforeseen effects' are not merely being left to future discretion but are being rigorously anticipated.

Additionally, the NWMO should explicitly integrate Community-Based Monitoring and Indigenous Knowledge into the EMS governance structure.

To mitigate potential social and cultural impacts, the proponent should outline a collaborative process where local communities and Indigenous groups participate in the selection of monitoring sites and the interpretation of environmental data.

This would address the current gap in the text regarding social and cultural considerations and ensure that the environmental protection program is responsive to the values of those most directly affected by the project.

25. Overall Conclusions and Path Forward

The text exhibits a high degree of confidence in the project's safety and success, often using definitive language such as 'permanent and responsible solution' and 'negligible to low risk.' While this reflects the proponent's position, it introduces an overly optimistic bias that may downplay the inherent uncertainties associated with long-term nuclear waste isolation. A significant point of concern is the framing of Indigenous concerns regarding radioactive contamination as 'perceptions.'

This terminology can be interpreted as marginalizing legitimate environmental and health anxieties by categorizing them as subjective viewpoints rather than potential impacts requiring rigorous objective study. Furthermore, the claim that risks are 'negligible' is made prior to the completion of the full Impact Statement, which could be seen as pre-empting the regulatory process.

Transparency regarding the 'unavoidable changes to land use' is limited. The text does not specify the scale or duration of these restrictions, which is a critical gap for stakeholders assessing the project's impact on traditional activities.

While the commitment to integrating Indigenous knowledge and laws is stated, the methodology for resolving potential conflicts between Western scientific data and Indigenous knowledge systems remains undefined. The narrative strongly links the project to Canada's net-zero goals, which, while factually relevant to the nuclear lifecycle, serves as a rhetorical device to bolster the project's social license. Overall, the text provides a clear roadmap of the proponent's intent but lacks the granular detail necessary to substantiate its claims of minimal impact.

Recommendations & Mitigation Strategies

The proponent should provide a more detailed framework for how 'Indigenous knowledge, values, and laws' will be weighted alongside technical data during the Impact Statement phase. This should include specific protocols for dispute resolution in cases where traditional knowledge contradicts technical modeling.

To address the 'perception' of risk, the NWMO should move beyond engagement and implement a participatory monitoring program where community members are trained and equipped to independently verify environmental safety data, thereby shifting the focus from managing perceptions to building empirical trust.

Additionally, the proponent must clarify the 'negligible to low risk' assertion by providing the specific criteria and thresholds used to define these terms. A comprehensive 'Land Use and Access Management Plan' should be developed in the next phase to explicitly detail the geographic extent of restricted areas and propose concrete compensation or alternative access arrangements for affected Indigenous and local land users.

This would move the discussion from abstract commitments to tangible mitigation strategies, providing a more robust basis for the IAAC and CNSC review.

Acknowledgement of Truths from the Initial Project Description (IPD) Consolidated Engagement Report: Public and Interested Parties (Appendix)

The NWMO's 'Acknowledgment of Truths' presents a self-aware but aspirational framework for Indigenous engagement.

In acknowledging that the project is governed by federal acts 'imposed' on Indigenous people, the proponent demonstrates a high level of transparency regarding the colonial context of the regulatory process. However, this admission creates a logical tension with the stated goal of respecting WLON sovereignty; it remains unclear how sovereignty is maintained when the underlying legal framework is admittedly non-consensual.

The tone is heavily influenced by corporate social responsibility (CSR) language, using terms like 'learning journey' and 'great fortune,' which may obscure the technical and environmental gravity of nuclear waste management.

A significant ethical and procedural concern is the explicit admission that the IPD lacks a full representation of Indigenous identity and on-reserve characteristics. This is a critical gap in an impact assessment document, as it suggests that the baseline data used to predict social and cultural impacts is currently insufficient.

Furthermore, the framing of impacts on traditional land use as 'perceived risks' is potentially problematic. It risks pathologizing community concerns as psychological rather than acknowledging them as legitimate responses to physical or ecological changes.

While the commitment to the MMIWG Calls for Justice is commendable, the text lacks specific mechanisms for implementation, leaving the commitment at a high level of abstraction.

Recommendations & Mitigation Strategies

The proponent must immediately address the admitted data deficiencies by conducting comprehensive, community-led baseline studies that fully characterize the Indigenous identity and socio-economic conditions of on-reserve populations.

This data must be integrated into the Impact Statement to ensure that the assessment of potential impacts is based on a complete and accurate representation of the affected communities. Without this, the 'informed' component of FPIC is compromised, as the community and regulators are operating with incomplete information regarding the project's social footprint.

Additionally, the NWMO should transition from high-level commitments to a concrete, actionable framework for implementing MMIWG Call for Justice 13.

This should include specific protocols for workforce conduct, community safety monitoring, and gender-based analysis plus (GBA+) integrated into the project's lifecycle. To address the tension between federal imposition and Indigenous sovereignty, the proponent should co-develop a governance agreement with WLON that defines how traditional knowledge and governance systems will hold veto power or decision-making authority over specific environmental protection measures, moving beyond 'alignment' toward true co-management.

Introduction, Purpose and Engagement Tools: Initial Project Description (IPD) Consolidated Engagement Report (Appendix)

The report presents a highly procedural account of engagement, prioritizing the 'how' of the process over the 'what' of the outcomes.

While the NWMO emphasizes transparency and respect, the narrative is characterized by a significant disconnect between outreach efforts and actual participation. The claim that the communication campaign 'effectively raised public awareness' is supported by a metric of 2.2 million digital impressions, yet this translated to only 89 total participants across eight events.

This discrepancy raises questions about the quality of the 'impressions' and whether the outreach strategy successfully reached the intended local audience or merely generated high-volume digital traffic without meaningful conversion.

Furthermore, the report adopts a somewhat self-congratulatory tone regarding its methodology, using tools like Mentimeter and Zoom to suggest a modern, participatory approach. However, the exclusion of Indigenous perspectives from this specific consolidated report creates a fragmented view of the regional social landscape.

By siloing 'Public' and 'Indigenous' feedback, the proponent risks overlooking the intersections of social, cultural, and environmental concerns that define the local context. The document functions more as a log of activities than a critical reflection on community sentiment, leaving the reader with little understanding of the actual level of public support or the specific nature of the concerns raised by the 89 attendees.

Recommendations & Mitigation Strategies

The proponent should perform a detailed evaluation of the engagement gap to determine why a campaign reaching millions resulted in fewer than 100 participants.

This evaluation should investigate potential barriers to participation, such as 'engagement fatigue,' the timing of sessions, or a lack of trust in the process. To demonstrate true transparency, the NWMO should provide a demographic breakdown of participants to ensure that the feedback collected represents a diverse and inclusive cross-section of the regional population, rather than a narrow group of already-engaged stakeholders.

Additionally, future iterations of this report should include a cross-referenced thematic analysis that integrates findings from both public and Indigenous engagement streams.

While the processes for these groups may differ, the impacts on land, water, and socio-economic structures are shared. Providing a unified summary of regional priorities and conflicting viewpoints would allow the Impact Assessment Agency of Canada to better understand the cumulative social impact and ensure that the project design reflects a holistic understanding of the community's needs.

5. Identification of Public and Interested Parties: Initial Project Description (IPD) Consolidated Engagement Report (Appendix)

The Initial Project Description presents a structured taxonomy of stakeholders, yet it establishes a clear hierarchy by distinguishing 'Host Communities' from 'Other Communities and Interested Parties.' This categorization is largely predicated on the existence of signed Hosting Agreements, which the document uses as a primary indicator of project status.

While the inclusion of critical civil society organizations like 'We the Nuclear Free North' suggests an attempt at transparency, the text remains silent on how the concerns of these dissenting groups are weighted against the formal agreements of the host municipalities. This creates a potential bias where 'host' status might be conflated with broad social license, potentially overlooking the complexities of regional opposition.

A significant transparency gap exists regarding the Wabigoon Lake Ojibway Nation (WLON). By deferring the summary of engagement with WLON to a separate report, the proponent prevents a holistic assessment of Indigenous consultation within this consolidated document. Furthermore, the description of 'Unorganized Township Property Owners' and 'Local Service Boards' lacks detail regarding the specific mechanisms for their participation, despite these groups often having unique land-use interests that fall outside traditional municipal structures.

The tone is professional but leans toward a bureaucratic checklist, focusing more on the identification of groups than on the quality or outcomes of the engagement process.

Recommendations & Mitigation Strategies

The proponent should integrate a high-level summary of the Wabigoon Lake Ojibway Nation (WLON) engagement within the main IPD report to ensure that Indigenous perspectives are not siloed.

This integration is crucial for reviewers to understand the cultural and social context of the project's primary Indigenous host without having to cross-reference disparate documents. Providing this context ensures that the assessment of 'Host Community' status is supported by a transparent account of the consultation journey and any outstanding concerns raised by the community.

Additionally, the NWMO should clarify the engagement framework for 'Other Communities' and 'Unorganized Township Property Owners' to address potential regional inequities. Since these groups may be located along transportation routes or within the same watershed as the proposed site, their socio-economic and environmental concerns are as vital as those of the host communities.

The proponent should explicitly outline how feedback from critical civil society organizations is being documented and addressed to demonstrate that the engagement process is not merely an exercise in identification, but a meaningful dialogue that influences project planning.

6. Summary of Issues and Areas of Interest: Initial Project Description (IPD) Consolidated Engagement Report (Appendix)

The provided text offers a comprehensive catalog of community concerns, yet it reveals a significant tension between the proponent's technical framework and the public's lived experience.

A primary ethical concern is the 'trust gap' regarding radiation and water safety; the text acknowledges that medical and safety assurances are met with skepticism, suggesting that the proponent's current communication strategy may be overly reliant on technical jargon rather than relational transparency.

Furthermore, the mention of 'intermediate-level waste' and 'used fuel from other countries' introduces a potential scope-creep issue that could undermine community consent if not addressed with absolute clarity. The document honestly reports frustrations with past engagement methods, such as the digital divide created by desktop-only surveys, which indicates a historical lack of inclusivity in the consultation process.

There is a notable bias toward 'economic growth' as an 'imperative' that regulatory efforts 'must align with.' This phrasing suggests a potential attempt to prioritize economic outcomes over environmental or social precautionary principles. Additionally, the ambiguity surrounding the 'pipeline' and the 'Lake Malagon quarry' suggests that the project's physical footprint and secondary impacts are not yet fully defined or disclosed.

The reliance on 'perception-based impacts' as a category of concern highlights a critical methodological gap: the proponent appears to struggle with integrating qualitative social data into a traditionally quantitative regulatory process. Overall, while the report is structured and clear, it underscores a community that feels vulnerable to infrastructure strain and environmental risk, requiring more than just 'information-sharing' to reach a state of informed support.

Recommendations & Mitigation Strategies

The proponent should immediately publish a definitive policy framework regarding the inventory of the repository, specifically addressing the concerns about intermediate-level waste and foreign nuclear fuel. This framework must clarify whether the site is strictly for domestic used fuel or if the project scope includes other waste streams.

Providing this clarity will mitigate the risk of 'scope creep' and address the community's fear of the site becoming a global waste hub, which is essential for maintaining the integrity of the social license to operate.

To address the identified strain on local health and emergency services, the proponent must move beyond 'anticipating' impacts and commit to a co-developed Socio-Economic Mitigation Plan with the Township of Ignace and the City of Dryden.

This plan should include specific financial or infrastructure commitments to expand healthcare capacity and emergency response services prior to the commencement of the construction phase. By formalizing these supports, the proponent can demonstrate a proactive approach to community wellbeing that transcends simple data collection and addresses the tangible fears of residents regarding service degradation.

7. Next Steps: Future Public Engagement Activities: Initial Project Description (IPD) Consolidated Engagement Report (Appendix)

The provided text presents a conventional roadmap for public engagement but remains at a high level of abstraction. While it identifies specific tools like open houses and workshops, it fails to define the 'interested parties' or provide a methodology for how diverse community perspectives will be weighted against technical requirements.

The tone is aspirational and assumes a linear, positive progression of the regulatory process. There is a notable absence of detail regarding how the NWMO will address potential conflict, engagement fatigue, or the specific needs of Indigenous communities, which are critical in the context of nuclear waste management.

The reliance on 'sharing information' suggests a top-down communication style rather than a truly collaborative or co-designed engagement process. Furthermore, the text lacks a commitment to independent oversight of the engagement process, which may lead to perceptions of bias in how feedback is collected and reported.

Recommendations & Mitigation Strategies

To improve the transparency and effectiveness of the engagement process, the proponent should develop and publish a 'Feedback Integration Framework.' This document should explicitly detail the criteria used to evaluate public input and provide a clear audit trail showing how specific community concerns resulted in tangible changes to the project design or mitigation strategies. This would move the process from passive information sharing to active, accountable participation, ensuring that the community sees the direct impact of their contributions.

Additionally, the proponent must broaden its engagement scope to include targeted, culturally appropriate outreach strategies for Indigenous nations and marginalized local groups. Moving beyond standard open houses to include community-led forums and independent technical reviews would help build trust and ensure that technical data is accessible to non-experts.

General

The provided IPD functions as a procedural framework rather than a substantive disclosure of project impacts. While the organization of commitments into six distinct themes suggests a structured approach to project management, the document's utility is currently limited by its introductory nature. The claim that it consolidates 'all' commitments is a significant assertion that places a high burden of transparency on the proponent; however, without the specific details of these commitments, it is impossible to verify if they are substantive or merely aspirational.

There is a potential for bias in how the proponent defines a 'commitment' versus a general statement of intent. For instance, the inclusion of 'Reconciliation' as a thematic category is a positive step, but without seeing the underlying methodology, there is a risk that engagement is being framed as a checkbox exercise rather than a meaningful partnership.

Furthermore, the document emphasizes 'risk-informed planning,' yet it remains unclear how the NWMO intends to weigh technical data against social and cultural concerns. The tone is professional and administrative, which is appropriate for a regulatory submission, but the lack of specific performance indicators in this overview makes it difficult to assess the project's actual accountability to the public and Indigenous communities.

Recommendations & Mitigation Strategies

The proponent should ensure that every commitment listed in the subsequent sections of the appendix is defined using SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) criteria. This is particularly critical for the 'Monitoring' and 'Climate Change' sections, where vague commitments can lead to regulatory ambiguity.

By providing clear benchmarks and thresholds for success, the NWMO can improve the transparency of the assessment process and provide the Impact Assessment Agency of Canada with the concrete data needed for risk-informed decision-making.

To strengthen the 'Reconciliation and Engagement' commitments, the proponent should explicitly detail the mechanisms for incorporating Indigenous Traditional Knowledge into the 'Baseline Data Collection' and 'Environmental Design' phases. It is recommended that the proponent move beyond consultation toward a model of co-management or collaborative oversight.

This would involve defining how local and Indigenous communities will have a direct role in verifying that the 'Mitigation, Protection and Enhancement' measures are functioning as intended, thereby addressing potential social and cultural impacts with greater legitimacy.

Section 2: Commitments Made in the Initial Project Description Appendix (APM-REP-05000-0217-R000)

The IPD presents a comprehensive list of future data collection activities, yet it exhibits a subtle but persistent bias toward pre-determined outcomes. For instance, the commitment to 'confirm the non-acid generating and non-toxic nature' of repository rock suggests a conclusion has been reached before the testing program is complete.

This phrasing undermines the perceived objectivity of the scientific process. While the document claims previous work was 'technically rigorous,' the extensive list of necessary 'additional' studies across almost every environmental parameter suggests that the current baseline may have significant gaps that require mitigation before a robust impact assessment can be conducted.

Furthermore, the document's approach to social and cultural data is somewhat reactive. By stating that studies will be updated 'as required by regulatory processes,' the proponent risks appearing to meet minimum compliance rather than proactively seeking deep integration of community values.

The mention of 'participatory tissue sampling' and 'engagement' with First Nations and Métis communities is positive, but the text lacks specific details on how Indigenous Knowledge will be weighted or integrated into the technical design of the DGR. The use of vague qualifiers such as 'as warranted' or 'appropriate survey methods' provides the proponent with significant discretion, which may lead to transparency issues during the public review phase if the criteria for these decisions are not clearly defined.

Recommendations & Mitigation Strategies

The proponent should revise the language in the geochemistry and environmental sections to reflect a truly exploratory and objective scientific approach. Instead of committing to 'confirm' specific positive attributes (e.g., non-toxicity), the commitment should be framed as 'characterizing' or 'evaluating' these attributes to avoid the appearance of confirmation bias.

Additionally, the proponent must provide clear, predefined criteria for what constitutes 'as warranted' regarding terrestrial wildlife and invertebrate studies. Establishing these thresholds in advance will increase transparency and allow regulators and community stakeholders to understand the triggers for more intensive sampling.

To improve the socio-economic and cultural baseline commitments, the NWMO should explicitly outline the methodology for integrating Indigenous Knowledge (IK) into the environmental media and biodiversity studies.

This should go beyond 'engagement' to include a formal framework for how IK will influence baseline interpretations and subsequent impact predictions. Furthermore, the proponent should clarify the contingency plan if the 2026 Census data or specific community-led studies are delayed, ensuring that the impact assessment timeline does not compromise the depth or accuracy of the socio-economic baseline.

Section 3. Environmental Design Features: Commitments Made in the Initial Project Description Appendix (APM-REP-05000-0217-R000)

The Initial Project Description presents a highly structured and technically confident overview of the DGR's environmental safeguards. Categorizing these as 'design features' rather than 'mitigation,' the proponent attempts to establish the project as inherently safe by design. This approach is effective for demonstrating technical foresight; however, it risks appearing dismissive of the uncertainties inherent in nuclear waste management.

The claim that the host geosphere and engineered barriers will ensure safety for 'thousands to millions of years' is a significant projection that lacks a discussion of the modeling uncertainties or the potential for unforeseen geological shifts. While the technical descriptions of 'hot cells' and 'bentonite buffers' are clear, the document adopts a top-down tone that assumes regulatory compliance is synonymous with absolute environmental safety.

There is a notable lack of transparency regarding the 'baseline and site characterization activities' mentioned in the site layout section. The text states that sensitive areas were identified and avoided, but it does not specify the criteria for 'sensitivity' or whether local and Indigenous communities were involved in defining these areas.

This omission suggests a bias toward Western scientific metrics over traditional ecological knowledge. Furthermore, the reliance on 'certified transportation packages' as a primary safety feature shifts the burden of proof to the Canadian Nuclear Safety Commission (CNSC) without detailing the specific stress-test parameters these packages must meet for this specific project's geography.

Recommendations & Mitigation Strategies

The proponent should release a comprehensive 'Sensitivity Criteria Report' that details the specific biological, hydrological, and cultural metrics used to identify 'environmentally sensitive features.'

This report must explicitly demonstrate how Indigenous Traditional Knowledge was incorporated into the site layout and infrastructure routing. By providing the data behind the 'compact footprint' and 'avoidance' claims, the proponent can move from vague assertions to verifiable environmental stewardship, allowing local communities to validate that their specific concerns regarding land use and habitat protection have been addressed.

To address the long-term safety claims, the NWMO should provide a 'Redundancy and Failure Mode Analysis' for the multi-barrier system. This document should move beyond the 'fail-safe' narrative to explain what happens if a single barrier (e.g., the copper coating or the bentonite seal) fails prematurely.

Additionally, the proponent should clarify the energy source for the 'battery-powered fleet' and the 'energy-efficient systems' to ensure that the project's carbon footprint reduction is not offset by carbon-intensive electricity procurement.

Providing a lifecycle analysis of these 'green' features would enhance the credibility of the project's sustainability claims.

4. Mitigation, Protection and Enhancement Measure Commitments: Commitments Made in the Initial Project Description Appendix (APM-REP-05000-0217-R000)

The provided text presents a standard suite of mitigation measures typical of large-scale infrastructure projects, yet it exhibits significant reliance on qualifying language that may undermine the perceived strength of these commitments. Phrases such as 'to the extent practical,' 'where feasible,' and 'as required' appear frequently, particularly regarding sensitive environmental actions like avoiding high-flow periods or protecting rare plants.

While these qualifiers provide operational flexibility, they create ambiguity regarding the threshold at which environmental protection might be sacrificed for project expediency. This lack of concrete triggers or 'if-then' scenarios makes it difficult for regulators and the public to assess the actual residual risk.

Furthermore, the document demonstrates a hierarchical approach to social and Indigenous engagement. While the Wabigoon Lake Ojibway Nation (WLON) and the Township of Ignace are explicitly named, other Indigenous groups are often grouped into a secondary 'other' category.

This could signal a potential bias in the consultation framework that may not fully account for the diverse traditional land uses or treaty rights of all affected communities. Additionally, the socio-economic mitigation measures are notably high-level, focusing on internal corporate policies like Codes of Conduct and Employee Assistance Programs, rather than addressing broader community-level impacts such as housing inflation, increased demand on local healthcare, or long-term social cohesion. The reliance on future 'detailed studies' to define site-specific measures effectively defers the most critical technical details to a later stage, limiting the ability of the current Impact Assessment phase to rigorously evaluate the effectiveness of the proposed mitigation strategy.

Recommendations & Mitigation Strategies

To improve the rigor of the mitigation framework, the proponent should replace vague qualifiers with specific, measurable performance standards and 'hard' thresholds. For instance, instead of stating that work will be scheduled to avoid sensitive periods 'to the extent practical,' the

proponent should define the specific environmental or technical conditions under which avoidance is mandatory versus optional.

This should include a clear hierarchy of controls where avoidance is prioritized over minimization and compensation, supported by a transparent decision-making matrix that explains how 'feasibility' is determined in the field.

Additionally, the proponent must broaden the scope of its socio-economic and cultural mitigation measures to address regional impacts beyond the immediate host communities. This includes developing a comprehensive Cumulative Effects Management Plan that accounts for the combined pressure of the DGR and other regional developments on local infrastructure and Indigenous traditional practices.

The proponent should also provide more detail on how Traditional Knowledge from all engaged Indigenous groups—not just the primary host nation—will be weighted and integrated into the design of environmental protection programs to ensure that mitigation is culturally appropriate and ecologically sound.

5. Monitoring Commitments- Commitments Made in the Initial Project Description Appendix (APM-REP-05000-0217-R000)

The proponent's submission exhibits a professional and structured tone, yet it contains a notable tension between its assertions of 'high confidence' and the admission that quantitative modelling of effects is incomplete.

This creates a transparency gap; the proponent asks reviewers to trust in 'proven practices' before the specific impacts of this unique project are fully quantified. While the commitment to a 70-year monitoring period is significant, the deferral of its specific scope until the end of the operations phase—decades into the future—limits the ability of current regulators and stakeholders to evaluate the adequacy of long-term safety verification.

Ethically, the explicit commitment to Free, Prior, and Informed Consent (FPIC) and the recognition of WLON sovereignty are progressive.

However, the text lacks clarity on the procedural 'off-ramps' should consent be withdrawn or if monitoring reveals impacts that exceed the capacity of adaptive management. The reliance on 'adaptive management' as a primary tool for addressing uncertainty can sometimes be used to bypass rigorous pre-emptive mitigation planning.

Furthermore, while the document mentions 'other Indigenous groups' and 'interested parties,' the level of detail provided for their engagement is significantly less robust than that for the primary host communities, suggesting a potential gap in regional consultation depth.

Recommendations & Mitigation Strategies

The proponent should provide a preliminary conceptual framework for the 70-year extended monitoring program during the current impact assessment phase, rather than deferring it to the end of operations.

This framework should identify the specific thermal, seismic, and radiological indicators that will be used to confirm repository safety before final sealing. Providing this detail early would substantiate the 'high confidence' claim and allow for a more rigorous scientific review of the long-term closure plan.

Additionally, the NWMO should formalize the process for integrating Indigenous Knowledge (IK) with technical modeling, particularly for resolving potential contradictions between the two. A clear protocol should be established that defines how IK will influence project design and what specific 'social determinants of health' will be monitored.

This would move the commitment from a high-level policy statement to a measurable, accountable component of the Environmental Protection Program, ensuring that community well-being is tracked with the same rigor as biophysical indicators.

7. Climate Change Commitments - Commitments Made in the Initial Project Description Appendix (APM-REP-05000-0217-R000)

The Initial Project Description presents a professional but narrow view of climate impact. By focusing exclusively on Scope 1 and 2 emissions and labeling them 'negligible' relative to national totals, the proponent may be downplaying the localized or cumulative impact of the project.

The claim that the project's role in facilitating nuclear power is 'considerable' introduces a pro-project bias without providing a comparative lifecycle analysis to support such a weight. Furthermore, the commitment to develop a Greenhouse Gas Management Plan (GHGMP) 'prior to operation' leaves a significant gap during the construction phase, which actually has higher estimated annual emissions (14,480 tonnes) than the operations phase.

The reliance on 'best available technologies' is a vague placeholder without specific examples of how the heating plant—the source of approximately 90% of emissions—will be decarbonized or transitioned to renewable energy sources.

Recommendations & Mitigation Strategies

The proponent should expand the emission reporting to include Scope 3 emissions, specifically those related to the transportation of nuclear waste and the carbon footprint of construction materials like concrete and steel.

This would provide a more transparent and comprehensive understanding of the project's total climate impact, ensuring that 'negligible' claims are based on the full lifecycle rather than a subset of data.

The Greenhouse Gas Management Plan should be moved forward to the pre-construction phase rather than the pre-operation phase.

Since construction emissions are higher and the heating plant is identified as the primary contributor, the proponent must demonstrate specific, actionable strategies for utilizing low-carbon heating technologies, such as geothermal or electric heat pumps, during the initial build to align with the stated goal of prioritizing best available technologies.