Annex 1 – Information Requirements for the Rook I Project draft Environmental Impact Statement

Table 1 – Federal Indigenous Review Team – Technical Review Comments of NexGen draft Environmental Impact Statement for the proposed Rook I project

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
1.	CNSC	IMPACT Model	General	The model inputs used to construct the IMPACT model scenario(s) used in the ERA were not summarized in the Appendix to facilitate a comprehensive review.	Provide detailed information on the IMPACT model inputs used in the ERA. Alternatively provide the model scenario file(s).	
2.	MN-S	Environmental Stewardship	Section 1.1.7 Section 17.2.9 Section 18.2.1	Section 1.1.7 of the EIS states: "… working with local Indigenous Groups to implement independent environmental monitoring." Status of independent environmental monitoring as of the draft EIS review period was unclear to MN-S. As a rights holder, MN-S should have the opportunity to contribute to the scoping, development, and implementation of all monitoring programs, not just the independent Indigenous Monitoring programs. While it is acknowledged that an independent Indigenous Monitoring program would be scoped and developed to meet the needs of the Indigenous Nation, NexGen should also be prepared to listen, learn, and apply the learnings of the independent Indigenous Monitoring program into operational practices and adaptive management approach.	NexGen to ensure that MN-S has the opportunity to contribute to the scoping, development, and implementation of all monitoring programs, not just the independent Indigenous Monitoring programs.	
3.	MN-S	Local indigenous Groups	Section 1.2.3	Section 1.2.3 of the EIS states: "The NexGen process to determine primary or other engagement requirements for Local Indigenous Groups included consideration of CNSC (2019) ..." NexGen centering its own perspective on "determining" engagement requirements with Indigenous Nations does not align with the spirit of the United Nations Declaration on the Rights of Indigenous People (UNDRIP), which is a part of the ongoing national conversation on Indigenous rights. NexGen deciding who it believes is interested in the Project does not align with current good practice on the recognition of Indigenous rights.	MN-S is requesting that NexGen amend the text on p. 1-24, to provide specifics on how Indigenous Nations expressed their interest in participating in the Impact Assessment process, rather than focusing on NexGen's process to determine Nations that it considered within scope.	
4.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 1.2.6	The Proponent proposes storing tailings underground as a cemented backfill material. ECCC agrees that storing cemented tailings as backfill material is an environmental design feature. However, it is not clear whether there has been an assessment to determine if there are fractures, faults or other discontinuities underground that may become conduits for seepage or contaminants from the cemented tailings backfill underground to Patterson Lake. It is also not clear what distance separates the reaches of the underground mine and Patterson Lake. This information will help to determine its proximity to Patterson Lake, which will indicate whether contaminants have a possibility of reaching Patterson Lake.	Regarding stored tailings used as cemented backfill material: 1. Confirm whether there has been an assessment for the presence of fractures, faults and other discontinuities underground that could become conduits for seepage and/or contaminant flow to Patterson Lake. 2. Provide information on the distance between the reaches of the underground mine location and Patterson Lake. 3. Demonstrate that no contaminants will migrate or seep into Patterson Lake from the cemented backfill material.	

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5.	ECCC	Wildlife and Wildlife Habitat	Section 2 Section 3 Section 14 Section 16 Section 20 Section 23 Section 24 Table 20.3-1 Table 23A-5	The Proponent has committed to developing a Caribou Monitoring and Offsetting Plan due to residual effects to caribou. This plan should consider ECCC's Biodiversity Offsetting Approach that is described in the Operational Framework for Use of Conservation Allowances (ECCC, 2012)[1]. ECCC is available to assist the Proponent in the determination of appropriate offsets that would balance against Project effects.	Provide the Caribou Monitoring and Offsetting Plan for review and clearly explain efforts to minimize, avoid, mitigate and offset impacts to caribou. **Suggestions for mitigation and follow-up measures** In the Caribou Monitoring and Offsetting plan, provide details on how severity of disturbance and vulnerability of the caribou population were considered in coming up with offsetting amounts relative to area disturbed. Important factors including time lag (the amount of time from restoration work to when the habitat would be considered caribou habitat) would need to be considered.	
6.	CNSC	Current use of lands and resources for traditional purposes	Table 2.4-4	**Context:** Under the rationale for Athabasca Chipewyan First Nation (ACFN) being included as an Indigenous group identified for information sharing, the EIS states "Potential overlap with traditional territory but no access link or known residency/land use". It is not clear how this was determined. ACFN provided comments on the Project Description for the Rook-1 Project and identified that they use the land in the vicinity of the project for hunting, fishing and trapping. It is not clear if NexGen has discussed this with ACFN to better understand their land use in the vicinity of the Project or how ACFN's comments on the Project Description were considered when making this determination. **Rationale:** Additional information regarding engagement with ACFN and the projects potential impacts on ACFNs Indigenous and/ or Treaty rights and interest is required.	Provide any additional information about any engagement NexGen has done with ACFN to understand their land use in the vicinity of the Project. Please provide additional information available related to ACFN's Lands and Resource use in Section 16.3.3 of the EIS and in the Indigenous Engagement Report (IER).	
7.	CRDN	Indigenous Peoples' health / Socio-economic conditions	Section 2.5.1	Section 2.5.1 General Communication Methods indicates NexGen exploring ways to further develop its use of social media for the Project and does not have a dedicated social media platform for communication in the Local Priority Area (LPA). Social media as mentioned in the EA is the most common form of communication among our entire demographic and this is especially true for Indigenous northern communities.	**Suggestions for mitigation and follow-up measures** CRDN recommends that NexGen hire a social media representative within the community and work with them to create an Instagram, Tik Tok and Facebook account to educate communities and ensure any workshops, presentations, interview selection, and all forms of communications and opportunities are not missed. Creating these social media accounts will help close the gap in sharing and providing important and valuable information in real time, capturing all LPAs.	
8.	MN-S	VC Scoping and Input	Section 2.5.2.1 Section 2.6.3.1.1	The EIS states: "Assist in the identification of valued components (VCs) …" "The VC Survey requested input on identifying the VCs to be evaluated for the Project and ideas about how to avoid or lessen potential Project effects on VCs.	The MN-S input into VCs cannot be considered thorough and meaningful under these circumstances. VC scoping should consider the reviews of this draft	

[1] https://www.canada.ca/en/environment-climate-change/services/sustainable-development/publications/operational-framework-use-conservation-allowances.html

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				Results from these surveys helped to inform future engagement, as well as the selection of VCs for the EIS." The Joint Working Group for MN-S did not have western science advice or individuals with impact assessment experience involved when NexGen approached the group to discuss VCs. MN-S, on several occasions, repeated a request for this conversation to be re-opened with the support of western science advice, beginning with a Joint Working Group meeting in late 2020.	EIS by western science advisors, as per MN-S' request.	
9.	MN-S	Indigenous Group Engagement Method Summary	Section 2.5.2.2, Table 2.5-1	As outlined in Table 2.5-1 of the EIS - Summary of Primary Indigenous Group Engagement Methods – the Table indicates that Joint Working Group meetings, Joint Working Group breakout sessions, and information presentations were used to capture "Indigenous Knowledge" Indigenous Knowledge is subject to the First Nations Principles of ownership, control, access, and possession (OCAP®) and Nations' consent. It is unclear from Joint Working Group meeting minutes when NexGen believes there was a discussion of which information sources should be considered Indigenous Knowledge, and how they should be used. Also, "capture" is a verb that leaves open the possibility as to whether "Indigenous Knowledge" was respectfully and accurately documented with Nations' knowledge and consent.	It is unclear from Joint Working Group meeting minutes and other documents when NexGen believes that it validated specific information that it understood to be "Indigenous Knowledge" to be documented in the draft EIS. Please provide additional context in the Joint Working Group meeting minutes to clarify NexGen's validation process.	
10.	CRDN	Indigenous Peoples' health / Socio-economic conditions	Section 2.5.4	Under section 2.5.4 Public Engagement Methods there are no Indigenous methodologies being used to access and gain Indigenous insight. For example, when providing the project information packages (under table 2.5-1: Summary of Primary Indigenous Group Engagement Methods)	**Suggestions for mitigation and follow-up measures** CRDN recommends that NexGen consider hiring a community member to contextualize and provide NexGen methodologies for all engagement opportunities including social media -e.g. photovoice, short creative videos, etc. Partnering to provide information updates on the Project, identify opportunities to engage with the Project. E.g., maps and models can be co-created and co-designed to what is culturally appropriate and understood. Providing context for fluent first nation speaking communities/nations. The models, maps and distribution of materials need to be accessible and transmitted in ways that meet the needs of try community engagement through a more inclusive messaging. There are proactive alternatives to cartography (digital technologies by decolonial Indigenous artists, Indigenous indicators of cumulative impacts, etc.) "A better map is one that I am part of, not as an object, but as a subject of my own future" – Alais Ole-Morindat. There are participatory continuums and collaboration quality to be considered.	

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11.	MN-S	Incorporation of Indigenous and Local Knowledge	Section 2.5.5	As stated in the EIS: "Incorporation of Indigenous and Local Knowledge…" "Incorporation" is a term typically not preferred, because it implies a secondary position afforded to Indigenous Knowledge within the draft EIS document. Indigenous Knowledge is a unique, but equal, way of knowing. As a rights holder, MN-S qualitative communication of impacts regarding the quality of resources and/or contamination levels should be acknowledged. Text, at a minimum, should reflect "real or perceived" impacts. The exclusive use of "perceived" implies that this Knowledge is not supported or equal in importance to scientific data collection.	Please revise text in the EIS to ensure MN-S qualitative communication of impacts regarding the quality of resources and/or contamination levels is acknowledged.	
12.	MN-S	Incorporation of Indigenous and Local Knowledge	Section 2.5.5	As stated in Section 2.5.5 of the EIS: "… as the Project has developed and provided additional opportunities to incorporate Indigenous and Local Knowledge throughout all phases of the EA." The TLUS is a key element of the Indigenous Knowledge related to the Project.	It is unclear from the draft EIS how specific contents of the TLUS were used in the EA process. It is unclear from Joint Working Group meeting minutes when NexGen believes it may have engaged with MN-S on the contents of the completed TLUS and how they would be used in the EIS. Please provide additional context to clarify.	
13.	CNSC	Human Health with respect to radiation exposure	Section 2.6	**Context:** NextGen mentions in various areas of section 2.0 "Indigenous, Regulatory and Public Engagement" that it recognizes the importance of feedback from different target audiences including the general public in the LPA communities for the design and development of the proposed Project, the EA process including the selection of VCs. There is information as to how the feedback from Indigenous Groups, stakeholder groups such as JWT, Trappers Associations to name a few, was incorporated where applicable and feasible. There is however no information as to how feedback from the general public was factored in development of the proposed Project, the EA process including the selection of VCs. **Rationale:** The regulatory document REGDOC-3.2.1, *Public Information and Disclosure* and Generic Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012 mention the proponent will indicate how the feedback from target audiences and concerns voiced will be incorporated in the design of the project as well as in the EIS, to the extent possible. There is an expectation that the views of the public are likely to influence the proponent's communications tools and information to deliver an effective public information and engagement program .	Provide information as to how feedback from the general public gathered from various engagement activities was factored in the development of the proposed Project, the EA process including the selection of VCs.	
14.	MN-S CNSC	Reasonably Foreseeable Development Case	Section 2.6.1.2, Section 6.5.3, p. 6-21	As stated in section 2.6.1.2 of the EIS: "Communities noted that the consideration of effects and effects studies completed at other project sites in the area is important in the assessment of the Project. Information about other project activities in the surrounding area was noted as important for better understanding potential cumulative effects that might occur. It was noted that cumulative effects from other industrial activities such as mining, forestry, and hydro-electric power generation and transmission projects should be taken into consideration. Indigenous Groups also noted concerns regarding increased access restrictions to traditional lands due to increasing project developments in the	It is clear that the Fission Patterson Lake South Project was designated for the RFD Case, however the section then says "*Additional RFDs were identified and included in the assessment of cumulative effects* for applicable VCs (e.g., woodland caribou)". It would be helpful to clearly list in this section what RFDs were identified and included, potentially through a table. Please provide rationale as to why the list of RFDs	

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				area." The list of Reasonably Foreseeable Developments (RFDs) included in NexGen's draft EIS includes only Fission's proposed Patterson Lake project, and does not include other industrial activities, such as NexGen's own exploration activities. It is also not clear from Joint Working Group meeting minutes when NexGen believes it may have engaged with MN-S	does not include other activities. Please provide additional information on when NexGen believes it may have engaged with MN-S on this.	
15.	CNSC	Current use of lands and resources for traditional purposes	Section 2.6.1.2.2 Other Indigenous Groups	**Context**: The EIS states "To date, no issues or concerns have been identified by ACFN or ERFN". ACFN submitted comments on the Project Description, which included concerns such as potential impact on their rights to hunt, trap and fish, the continuation of their culture and cumulative effects. **Rationale:** Concerns raised by ACFN, including those raised during their review of the Project Description, should to be included in the EIS and IER Summary tables.	Include a summary of issues table for ACFN with information about issues or concerns raised during the review of the Project Description and any issues or concerns ACFN has raised since then. Include information about how the issues have been responded to ACFN and any updates with regards to engagement on the Project with ACFN use of lands and resources for traditional purposes.	
16.	CNSC	Current use of lands and resources for traditional purposes	Section 2.6.1.3 and Appendix 2B	**Context:** The summary of issues tables does not appear to include all key issues identified by the Indigenous Nations and communities For example, some of Indigenous Nations and communities have shared concerns with respect to reduced access to cabins and cultural sites, lack of trust in the process and the road safety of highway #955 that were not captured in the issues and concerns and summary tables in Appendix 2B. The final EIS and IER supporting documentation should include further details on the validation of issues and concerns directly raised by Indigenous Nations and communities, and how NexGen is addressing them as per REGDOC-3.2.2 and CNSC's Generic EIS Guidelines. Particularly, those concerns related to impacts on any potential or established Indigenous and/or treaty rights. **Rationale**: Additional detail is required to understand the status of validation for each issue raised and the response provided.	Update the summary of issues and concerns tables to include all issues and concerns raised by each of the Indigenous Nations and communities to date, including concerns raised in the Traditional Knowledge studies, on the Project Description, and during engagement activities. Demonstrate that each Indigenous Nation and community has reviewed and validated their summary of issues and concerns table and/or a path forward to complete the validation throughout the EIS and the update in the IER. **Suggestions for mitigation and follow-up measures** It is recommended that NexGen creates a commitment tracking table, or adds a column to their issues table, that clearly articulates the specific mitigations that they have committed to for each Indigenous Nations and community to address the issues and concerns they have raised. Validation must be complete by the time the technical review of the EIS is complete, prior to submission of a final EIS. Should the proponent not be able to fully address issues, concerns or feedback raised by any Indigenous Nation or community, this must be clearly documented, and a rationale provided.	

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17.	MN-S	Summary of Trappers Workshop		As stated in the EIS "The N-19 Trappers Association expressed an interest in reviewing the baseline studies and EA results when available." NexGen does not describe what actions it did or did not take to facilitate this review. The EIS' efforts to characterize trappers' activities as commercial are at odds with trapping as a harvesting practice as protected under s. 35 of the Constitution Act (1982).	NexGen should include a detailed response of the actions they took to facilitate trappers' access to baseline studies and EA results, particularly on the understanding that MN-S citizens are among the association's members, and harvest is a constitutionally protected right under s.35 of the Constitution Act.	
18.	MN-S	Summary of indigenous Group Engagement Activities	Table 2A-2	Table 2A-2 Métis Nation – Saskatchewan 5 May 2021 meeting and subsequent email exchanges dated 5 May 2021 and 7 May 2021 regarding MN-S' expectations for engagement. The characterization of the exchange of MN-S' documented expectations for engagement with a formal response from NexGen as answering "many of" MN-S requests regarding engagement is not a faithful summary of the exchange of views. Among the key aspects of engagement that MN-S documented was a discussion of effects and mitigation measures before submission of the EIS. MN-S' expectations documented on May 5, 2021, included community meetings where effects and mitigation measures would be discussed with community members. This expectation is foundational to having a clear understanding of the Project and its potential to affect Métis rights and interests, but its omission gets erased through NexGen's characterization "many of" MN-S' expectations having been met. Not all expectations are equal, nor could NexGen cherry pick the expectations that suit it and call this "collaboration". Understanding that NexGen's timelines for EIS submission were rapidly approaching, MN-S and its consultants instead asked for courtesy copies of the EIS to be sent to MN-S in parallel with submission to regulators. NexGen refused this as well. These are not examples of a collaborative form of engagement but meet a minimum regulatory threshold. This summary also omits the Joint Working Group subcommittee meetings in which MN-S and its consultants gave extensive guidance to NexGen on the nature, pace, and sequence of Joint Working Group meetings. NexGen was able to "suggest" to MN-S certain topics because subcommittee meetings were the vehicle for doing so. 19 August 2021, Video conference communication The summary of this meeting omits the fact that the key barrier to collaboration through the Joint Working Group process was building trust, and that this was a primary topic of conversation on this date. The current summary describes the meeting as discussing the procedural aspects of the Joint Working Group process, which is only a partial description of the conversation.	MN-S is requesting that NexGen re-word the 19 August 2021 meeting summary to include trust-building, and introduction of more culturally appropriate ways of sharing such as cultural values and Métis history shares, including the fact that these were introduced at MN-S' request. MN-S also requests that NexGen describe the "remaining 2021 and 2022 funding" accurately in the Table 2A-2 record of engagement.	
19.	MN-S	Public Engagement Materials	2F, all	This appendix and its contents use globalizing language such as "Joint Working Group summary" to imply that any or all of the Joint Working Groups may have advanced through a collaborative conversation on the content described in the	The content of Appendix 2F should be renamed and repackaged to indicate which Nations engaged on which topics at which times. The globalizing nature	

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				summary documents compiled in Appendix 2F. As Appendix 2A notes, each Joint Working Group progressed at different paces on different topics. Appendix 2F provides a misleading picture of the content shared through Joint Working Groups and the dates on which it was shared and with whom.	of these summaries erases Nation-by-Nation specificity, which is important in establishing an understanding of engagement.	
20.	MN-S	Gathering Indigenous and Local Knowledge	Section 3.6.2.1	As stated in the EIS :"...Between April and June 2021, NexGen presented information and requested feedback and input from Indigenous Groups on the topics of traffic accidents and malfunctions, EA methods (i.e., pathway analysis, residual effects classification, determination of significance, prediction confidence and uncertainty, and monitoring and follow-up programs). Mail-out documentation on these topics was presented in documents entitled "Joint Working Group Summary" that are included as appendices for Section 2 of the draft EIS but meetings on these topics over this timeframe did not take place with MN-S, based on review of Joint Working Group meeting minutes. Again, the global nature of wording such as “Indigenous Groups” allows NexGen to give the impression that the same approach was followed for all Nations, which as NexGen notes in 2.0 Indigenous, Regulatory, and Public Engagement, is not the case. It is also misleading to indicate that summary documents mailed out, to which MN-S did not provide a detailed response, constitutes "incorporation of Indigenous Knowledge".	MN-S requests that NexGen change the text of Section 3.6.2.1 to indicate what is local knowledge versus Indigenous Knowledge. Indigenous and local knowledge should be described separately. Also, the draft EIS should describe OCAP® processes related to KP interviews.	
21.	CNSC **MN-S**	Current use of lands and resources for traditional purposes	Section 3.6.2.2	**Context:** The EIS indicates that sources of Indigenous knowledge were shared with each EA discipline specialist for review and incorporation into their respective assessments and that a coordinator reviewed for accuracy and consistency. It is not clear whether NexGen has validated the inclusion of Indigenous knowledge in the EIS with the Indigenous Nations and Communities. **Rationale**: Additional detail is required to determine if Indigenous Nations and communities have validated their inclusion of Indigenous Knowledge in the EIS.	Provide detail to demonstrate how NexGen has validated the inclusion of Indigenous Knowledge in the EIS with the Indigenous Nations and communities.	
22.	CRDN	Indigenous Peoples' health / Socio-economic conditions	Section 4.1	Under section 4.1 Indigenous Engagement table 4.1-1: Summary of Primary Indigenous Group Key Engagement Activities, how is CRDN defined? Is the correspondence, meetings, joint working group, site tours data coming directly through engagement with Chief and Council members only? Or does this include CRDN leadership and community members? If community members are included, at what level? Treaty members? Local members? Community members that are considered hunters, trappers, gatherers and/or environmental advocates? On page 78, the job descriptions are identified within community, but they are not categorized with attached numbers/data. I recognize the summary sections of 2.6.3.1.3, 2.6.3.1.4 and 2.6.3.1.5. but believe the data collected under section 4.1 could be categorized into special groups, to show the number of trappers, hunters, gatherers, knowledge keepers, Elders, environmental community advocates, educators, local business owners, local cabin owners, etc. were all considered to provide information in all community engagement aspects/participate in the survey collection, interviews, and workshops. For example: key person interviews conducted with community members to cover health, education, economic development, social services, and community well-being: x amount of trappers participated, x amount of hunters	Please provide additional information on how CRDN is defined in section 4.1. Please revise section 4.1 so that data collected is categorized, including the identification of demographic, educational background, way of living etc. in order to identify any information gaps.	

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				participated, x amount of gatherers participated, x amount of local educators participated. It would be helpful to identify what demographic, educational background, and way of living the data is being generated from and for. This could help identify real gaps in all types and methods of data collection and land use studies. There may not be enough participants identified and/or considered for both Indigenous and local trappers, hunters, gatherers, etc. that carry Indigenous-local land intelligence no one else can claim (as these are intrinsic, inherent, and diverse ways of knowing) and this would be considered a massive loss and missed opportunity of vital local-traditional knowledge and deep understandings of the geography and biodiversity.		
23.	CRDN	Indigenous and Local Knowledge	Section 4.4	Indigenous knowledge has been defined by "input from Indigenous Groups, and relevant literature". This is very vague and there are no sources being cited/referenced to the relevant literature. In 2021, CRDN Elders, language workers, trappers, hunters, gatherers, and community care advocates developed a definition of what Indigenous Traditional Knowledge (ITK) means "a network of knowledges, beliefs, and traditions intended to preserve, communicate, and contextualize Indigenous relationships with culture and landscape over time. Indigenous epistemologies (how knowledge can be known), pedagogies (how knowledge can be taught), and ontologies (our wans of life in the world) include the holistic, empirical data and knowledge in historical, geographical, cultural, spiritual, social economic, environmental, and experiential studies of the natural world. Our diverse knowledges are portable, in that they call for reliance upon local resources and careful observations of the interactions between living beings and natural processes within an ecosystem (any ecosystem) to ensure human survival."	CRDN recommend that NexGen include clear definitions of Indigenous and local knowledge. CRDN recommend NexGen use the definition of what ITK means as developed in 2021 by CRDN Elders, language workers, trappers, hunters, gatherers, and community care advocates.	
24.	CNSC	Alternative Assessment	Section 4.4.2.1	As outlined in Section 4.2 of the *Generic Guidelines for the preparation of an Environmental Impact Statement pursuant to the CEAA 2012*, the alternative means assessment should take into consideration " the level of concern expressed by the public and Indigenous groups". Section 4.4.2.1 states that the alternative assessment did take into account input from Indigenous nations and communities and members of the public, however this section is lacking details on areas of concern, levels of concern and how this information was used in the alternative means assessment.	Please revise Section 4.4.2.1 to include details on the feedback that was heard from Indigenous nations and communities and members of the public, and how the alternative means assessment took this feedback into consideration when moving forward with preferred project design/options.	
25.	CNSC	Alternative Assessment	Section 4.5.4 Process Stripping Method	**Context:** After screening-level assessment, the proponent states that the more preferred alternative for process stripping was strong acid stripping as it would provide better environmental performance for the process plant and reduce health and safety concerns for the Project. A strong acid will be used as the stripping agent in the process plant solvent extraction circuit to extract Uranium and will be transported to the project site. However, the proponent does not provide information on the strong acid, e.g., type and quantity, to be used. **Rationale:** As the strong acid will be transported to the project site, different acid may pose different impacts on the environment and human health and safety when an	Provide information on the strong acid to be used for process stripping.	

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				accident occurs in association with the transportation and/or storage of such an acid.		
26.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 4.5.6	The Proponent indicates that "One specific underground location, U-4 was carried forward for screening for technology; U-4 is located outside of known major geologic structure and potential areas of mineralization." Looking at figure 4.5.4, ECCC notes that the U-4 location is quite close to, and some portions of it overlap with, parts of Patterson Lake. It is unclear what the actual distance between the U-4 underground storage and Patterson Lake will be upon construction, and the probability that contaminants from the U-4 underground location will seep into Patterson Lake is not stated.	1. Provide the distance from the U-4 underground storage location to Patterson Lake. 2. Demonstrate that no contaminants will migrate or seep into Patterson Lake from the U-4 underground storage location.	
27.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 4.5.6.4 Section 4.5.6.4.1	The Proponent selected the option of segregated, non-potential acid generating (NPAG) unlined, potentially acid generating (PAG) engineered source control. The Proponent states that "Source control layers are layers of lower permeability material to control air and water flow through a waste rock pile and reduce potential for material acidification." The Proponent stated that PAG material contains less than 0.03% U_3O_8 (triuranium octaoxide) and greater than or equal to 0.1% sulphur and NPAG is clean material with less than 0.03% U_3O_8 and less than 0.1% sulphur. Besides these criteria, the Proponent did not explain the rationale or the method for how the criteria cutoff was determined. The neutralization potential that was used to determine the segregation of PAG and NPAG was not described by the Proponent, although it is stated that the dominant waste rock units contain limited buffering capacity as they are deficient in carbonate materials. Acid rock drainage (ARD) and metal leaching (ML) may still occur at low sulphur content when there is no buffering material available.	Provide details on how the waste rock was characterized to determine PAG and NPAG classifications and provide information on how the U_3O_8 and sulphur cutoff criteria were determined.	
28.	CNSC	Alternatives Assessment Surface Water Quality	Section 4.5.6.4 TSD XVIII-SWWBM Report-section 5.2.2.4	**Context:** Under section 5.2.2.4-*Sensitivity to Design Alternatives* of TSD XVII, only one design alternative was assessed as part of the sensitivity case to assess how concentrations in the final points of control and treated effluent ponds change when an alternate design option is carried forward for the project. The scenario assessed included an unlined WRSA facility, which showed increased exceedances of environmental release targets compared to the chosen alternative which includes a liner for PAG waste rock. One could expect this would be the case, and it is not clear if there are other alternative assessment scenarios in which the water quality would be improved by choosing different alternatives (for example assessing a dual liner system for PAG waste rock). It is not clear why only this one design option was assessed and why the focus was on WRSA alternatives, and not on any other section of the alternatives assessment (e.g., tailings, gypsum, effluent treatment, waste disposal). **Rationale:** NexGen should justify the choice to only assess the predicted final points of control and treated effluent ponds water quality for one WRSA design alternative, or justify why this one alternative is sufficient to capture the sensitivity of design alternatives for impacts on water quality. NexGen should highlight which design	Provide justification for only assessing one design alternative as part of the "Sensitivity to Design Alternatives" section to assess how concentrations in the final points of control and treated effluent ponds change when an alternate design option is carried forward for the project. Justify the chosen alternative assessed and assess additional alternatives if there are others with potential to impact run off and effluent quality.	

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				choices throughout the entire alternatives assessment could have the largest potential to impact run off and effluent water quality and include these assessments under section 5.2.2.4.		
29.	CNSC	Alternative Assessment	Section 4.5.6.4 Waste Rock	**Context:** Pre-screening for general location was conducted for five general locations: underground, in-pit, surface (on site), off-site, and in-lake. Underground, in-pit, off-site, and in-lake general locations were eliminated during pre-screening. The storage of waste rock underground and in-pit were not considered feasible due to volume incompatibility. The only general location, surface (on site) was carried forward for specific location screening and further multiple accounts analysis (MAA). The waste rocks to be stored include potentially acid generating (PAG) waste rock, non-potentially acid generating (NPAG) waste rock, and a smaller quantity of special waste rock that would be processed prior to closure. The PAG waste rock would pose higher risks to the environment and human health due to its potential acid generation. It appears that screening out general location of underground and in-pit by considering the volume of the PAG and NPAG waste rock together is not well justified. The volume of the PAG and the NPAG waste rock is also associated with waste rock segregation criteria (i.e. concentrations of U3O8 and sulphur) that appears to have not been rationalized. CNSC staff is of the opinion that pre-screening of general location for waste rock management could separate the PAG waste rock from the NPAG waste rock, and only consider the PAG waste rock to be backfilled. **Rationale:** The PAG waste rock is considered as mineralized/special waste rock [1] and could significantly harm human health or the environment. Therefore, the PAG waste rock should be segregated properly and managed adequately in both short term and long term. CNSC RegDoc 2.11.1 vol 2 requires that the design of mineralized waste rock and tailings management systems shall minimize the reliance on active institutional controls post decommissioning. Management of the PAG waste rock on surface, comparing with underground and in pit, would need more active institutional controls post decommissioning. Section 6.2.5.1.1 of TSD XXI-ERA states that “For arsenic and uranium, the estimated non-radiological dose was highest during Operations, whereas for cobalt and copper, the estimated non-radiological dose was highest during the far-future projection. That is due to the additional load of cobalt and copper from groundwater flows (infiltration and seepage), primarily from the waste rock storage area and secondarily from the UGTMF in the far-future projection.” It appears that the waste rock stockpiles are the primary sources of contaminants cobalt and copper that would pose negative impacts on surface water quality in long term. For the waste rock management, it is also not clear what is the opinion of Indigenous Groups and the public. In Section 3.7.2, page 3-31, members of JWGs	1. Consider the PAG and NPAG waste rock separately for pre-screening of general location for waste rock management; 2.Conduct alternative means assessment of managing the PAG waste rock underground and in pit with justification of the criteria for waste rock segregation; 3.Provide summary information on the public and Indigenous consultation outcomes for waste rock management.	

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				stated that "….[NexGen] mentioned some will go into the shaft and other places. Any opportunity, even during operations, to store waste rock in mined-out areas should be maximized. (BNDN-JWG 2021)" It appears that Indigenous Groups and the public prefer to manage the waste rock in the mined-out areas. Reference: 1. RegDoc-3.6, Glossary of CNSC Terminology. May 2022.		
30.	ECCC	Alternatives Assessment	Section 4.5.7	**Context:** The electricity demand for the Project is estimated to be 24.1 MW. However, there is no information provided on the power ratings for equipment and there is no context around whether the estimate reflects a maximum demand. **Rationale:** Emission effects associated with power generation depend on power demand. The electrical load information will enable independent estimation of the Project's power and energy demand. The information is needed in order to verify the overall power demand information presented in the EIS, and to understand the impacts of the Project on air quality, particularly NOx, and GHG. Including information based on maximum demand will ensure that all impacts are encompassed.	Provide quantitative details of power consumption by equipment operating at the site. Ensure that all equipment is included, and that power consumption at maximum demand is expressed.	
31.	CNSC	Alternative Assessment	Table 4.5-8	**Context:** Table 4.5-8 contains categories, sub-categories, and set of criteria for four alternatives for tailings storage. For the construction risk and complexity Sub-category of Technical category, the criteria include geotechnical stability considering foundation conditions and waste placement. For the underground tailings storage using the UGTMF, there are concerns of geotechnical stability of the UGTMF caverns as the UGTMF caverns have large dimensions. **Rationale:** Any failures of UGTMF caverns during construction could pose significant risks to workers' safety and might also cause significant underground water inflow and should be considered in the alternative means assessment for underground tailings storage.	Include geotechnical stability of the UGTMF caverns in criteria for construction risk and complexity sub-category and provide supportive information on geotechnical conditions of the UGTMF.	
32.	CNSC	Alternative Assessment	Section 4.5.9 Camp Location	**Context:** The Rook I project is to be developed as an on-site camp-based operation with the workforce typically working 12-hour shifts on a rotational basis. Three on-site locations were selected for a screening-level assessment for camp location by considering environmental, technical, economic, and social categories. After evaluation of the relative advantages and disadvantages of the range of feasible alternatives, the preferred alternative for camp location for the Project was the west location. The west location is located west of, and adjacent to, mine buildings for the Project, and would be integrated into the general mine and mill terrace areas. The camp location alternative assessment appears to have not considered the workers safety, in particular, the impact of accidents on the workers safety. **Rationale:**	Provide further justification and assessment on camp location by considering workers' health and safety during all phases of the project taking into account accidents and malfunctions.	

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				In the assessment of accidents and malfunctions, bounding scenario 6-acid plant tail gas scrubber failure, the modeling results show that distance to (Acute Exposure Guideline Level) AEGL-3 is 261 m and to AEGL-2 is 2500 m under worst-case weather conditions, while distance to AEGL-3 is 122 m and to AEGL-2 is 849 m under typical weather conditions. AEGL-3 means that the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals could experience life-threatening health effects or death while AEGL-2 means that the airborne concentrations of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. Given the close proximity of the camp location to the mine process plant, the likely accident from the mine process plant could pose significant risks to workers' health and safety.		
33.	CNSC	Alternatives Assessment Surface Water Quality	Section 4.5.12	**Context:** NexGen has proposed four different effluent treatment technology options in the EIS. NexGen states that all four technologies can meet environmental protection requirements. It is not clear from the EIS the difference in effluent quality the different treatment options were expected to produce. The EIS reads "All treatment alternatives considered in this assessment could meet environmental protection requirements in terms of water quality and discharges to the receiving environment (i.e., Patterson Lake). As such, the overall rankings between the alternatives were driven by relative differences in capital cost, and long-term operational, management, and surveillance costs, as well as factors associated with operational risk/complexity." However, with the proposed two-stage precipitation with lime option, some COPCs are predicted to be above water quality guidelines at the edge of the mixing zone (e.g., chloride, sulphate). **Rationale:** NexGen does acknowledge in this section that CNSC draft REGDOC 2.9.2, *Controlling Releases to the Environment*, was released during the preparation of the Draft EIS, and that the multiple accounts assessment (MAA) is considered preliminary and likely to be refined as part of a forthcoming licensing submission that will meet the requirements of the final REGDOC-2.9.2, when released. However, it is not clear to what degree each effluent treatment technology considered in the assessment could treat each COPC relative to one another. It is also not clear why NexGen has not considered more advanced effluent treatment technologies as part of the alternatives assessment if not all COPCs can meet environmental protection targets, as there are other more advanced treatment options that could have been considered.	1.Describe the expected effluent quality in all options assessed in the alternative assessment for effluent treatment technology. 2.Consider other more advanced effluent treatment technologies options in the alternatives assessment that would be considered industry best practices. Describe the expected effluent quality for the more advanced options.	
34.	CNSC	Change to an environmental component due	Section 4.5.12	**Context:** Toxicity testing is a requirement under the *Metal and Diamond Mine Effluent Regulations* and CNSC REGDOC-2.9.1.	NexGen must implement measures and programs to ensure that the treated discharged effluent is not acutely lethal to rainbow trout and to *Daphnia Magna*	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		to hazardous contaminants		**Rationale:** The following is an excerpt from REGDOC-2.9.1. The applicant or licensee shall assess for acute lethality any effluents that are released to water frequented by fish and that contain hazardous substances that could be considered deleterious under the Fisheries Act. Meeting existing federal or provincial requirements for toxicity testing shall be considered as satisfying this requirement. The EIS does not appear to show how NexGen plans to demonstrate that the treated discharged effluent is not acutely lethal to rainbow trout and to *Daphnia Magna*.	NexGen must demonstrate that the treated discharged effluent is not acutely lethal to rainbow trout and to *Daphnia Magna*.	
35.	CNSC	Human health with with respect to hazardous contaminants	Section 4.5.13	**Context:** One of the potential risks of a uranium mine or mill facility is the leakage in the pipes that will be transporting the untreated influent and the treated effluent. **Rationale:** The EIS does not appear to document preventative measures that will in place to prevent a potential spill from the pipes that will be transporting the untreated influent and the treated effluent.	Identify any preventive measures that will be implemented to prevent a potential spill from the pipes that will be transporting the untreated influent and the treated effluent. **Suggestions for mitigation and follow-up measures** NexGen should ensure that the pipes with treated effluent are heat traced to prevent freezing. NexGen should ensure there are programs in place to prevent a potential spill from the pipes that will be transporting the untreated influent and the treated effluent.	
36.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 4.5.16 Section 11.4.2	**Context:** Section 4.5.16 provides an alternatives assessment of sewage treatment technologies and provides the rationale for the selected treatment technology. However, there is no assessment of alternatives or discussion of any treated sewage discharge options. Within Section 11.4.2 the treated sewage discharge location is discussed, but there is no alternatives assessment for potential options such as a combined treated effluent and sewage discharge location and how that may affect the chosen sewage/effluent treatment technologies. **Rationale:** An evaluation of treated sewage discharge that goes beyond location siting and considers potential options, such as combined treated effluent and sewage discharge location, should be completed. This assessment should provide information on how this may affect the chosen effluent and sewage treatment technologies and how this may reduce impacts to surface water quality and fish and fish habitat.	1. Provide an alternatives assessment for treated sewage discharge options, which includes options that investigate a combined treated sewage and effluent discharge. 2. Provide an assessment of how combining treated sewage and effluent may affect the chosen treatment technology and water quality in the receiving environment. 3. Update the surface water quality modelling, effluent and sewage dispersion modelling, environmental risk assessment and aquatic health assessment as needed to reflect any changes that may arise if a combined discharge is selected.	
37.	CNSC	Alternatives Assessment Mine Waste	Section 4.5.17.3.1	**Context:** NexGen is proposing on-site incineration as the primary industrial waste disposal method for industrial waste. While assessed as a neutral alternative in the MAA due to the relative requirement for on-site infrastructure (i.e., surface disturbance) and emissions potential, this option was selected as the availability of preferred	Provide additional justification to why on-site incineration is the best option for industrial waste disposal.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				option (off-site facilities) to accept certain waste types or volumes could not be confirmed at the time of the assessment. Both on-site incineration and underground disposal alternatives were considered neutral in the assessment, and it is not clear in the EIS why on-site incineration was chosen as the preferred option over underground disposal. **Rationale:** In the assessment, underground disposal ranked most preferred in the categories change in land use, population at risk, community effect, air quality, and ecological integrity, which are all important topics to stakeholders. NexGen should provide additional justification to why on-site incineration is the preferred option for disposing of industrial waste.		
38.	ECCC	Wildlife and Wildlife Habitat	Section 5 Section 10 Section 14.4.2 Appendix 23A Table 5.4-4 Table 23A-5	**Context and Rationale:** The draft EIS states there will be water management ponds, an effluent treatment plant and a sewage treatment plant on site. The potential toxicity of these waters was not discussed in the context of SAR and aquatic migratory birds. The Proponent states that deterrents will be used to prevent migratory birds from contacting stored water and states wildlife patrols will occur during nesting season (late April to mid-August) to monitor effectiveness of deterrents and apply adaptive management as necessary. Migratory birds may use these stored water ponds outside of the nesting season (i.e., during migration) and it is unclear what mitigation measures will be used to deter migratory birds during other times of year (i.e., outside of the nesting period).	1. Identify the potential toxicity of water management ponds to aquatic migratory birds and SAR. 2. Describe what measures will be taken if the waters are found to be toxic to migratory birds and SAR. 3. Explain how the proposed timing of use of deterrents will reduce risk of migratory birds making contact with treatment waters outside of the nesting season (i.e., during migration and stop over use). D. Explain which deterrents will be used, which deterrents were considered, and what alternative, adaptive measures will be considered if deterrents are unsuccessful.	
39.	NRCan	Geology	5.2.6 8.3.1.1 5.1.3.2	**Context:** Current interpretations of geology **Rationale:** NRCan recommends the use of Athabasca Supergroup (versus Group versus group) as this is based on current interpretations (Bosman and Ramaekers, 2015) and published in recent journal articles of the regional geology (e.g., Card, 2021; Johnstone et al., 2021; Tschirhart et al., 2021). This is inconsistent within the text (Supergroup vs Group vs group). NRCan also recommends using the modern age constraints on the Athabasca Basin (ca. 1.85 Ga to ca. 1.54 Ga) from Bosman and Ramaekers, (2015). References: Bosman, S.A. and Ramaekers, P. (2015): Athabasca Group + Martin Group = Athabasca Supergroup? Athabasca Basin multiparameter drill log compilation and interpretation, with updated geological map; *in* Summary of Investigations 2015, Volume 2, Saskatchewan Geological Survey, Saskatchewan Ministry of the Economy, Miscellaneous Report 2015-4.2, Paper A-5, 13p.	There is no specific question/or information to ask. **Suggestions for mitigation and follow-up measures** NRCan recommends referencing recent publications for nomenclature and age constraints.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				https://pubsaskdev.blob.core.windows.net/pubsask-prod/92005/92005-A-5_Bosman_and_Ramaekers.pdf Johnstone, D.D., Bethune, K.M., Card, C.D. and Tschirhart, V., 2021. Structural evolution and related implications for uranium mineralization in the Patterson Lake corridor, southwestern Athabasca Basin, Saskatchewan, Canada. *Geochemistry: Exploration, Environment, Analysis*, *21*(1). https://doi.org/10.1144/geochem2020-030 Tschirhart, V., Pehrsson, S., Card, C., Potter, E.G., Powell, J. and Pană, D., 2021. Interpretation of buried basement in the southwestern Athabasca Basin, Canada, from integrated geophysical and geological datasets. *Geochemistry: Exploration, Environment, Analysis*, *21*(1). https://doi.org/10.1144/geochem2019-061 Card, C.D., 2021. The Patterson Lake corridor of Saskatchewan, Canada: defining crystalline rocks in a deep-seated structure that hosts a giant, high-grade Proterozoic unconformity uranium system. *Geochemistry: Exploration, Environment, Analysis*, *21*(1). https://doi.org/10.1144/geochem2020-007		
40.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.3.3.5	**Context and Rationale:** The Proponent states, "Based on results from ongoing kinetic (i.e., longer-term tests over many weeks) testing on representative waste rock samples, material with greater than 0.1% sulphur content has been defined as PAG, and material with less than 0.1% sulphur content has been defined as NPAG. Further, a delay to onset of acidic conditions is expected in PAG material with low sulphide content (i.e., below approximately 1% sulphide). Geochemical depletion calculations indicate that acidic conditions are not expected to develop for decades in PAG material with low sulphide content; the low-sulphide PAG material is expected to have near neutral pH during Operations, with acidic conditions forming after Closure." ECCC notes that acidity can occur if there is not enough neutralization potential. As indicated earlier by the Proponent, there is little neutralization potential available (pdf page 651). Therefore, the classification of rocks with less than 0.1 % sulphur content as NPAG appears to be based only on kinetic testing, without any other verification testing. Based on MEND, 2009[2], both kinetic and static tests are the industry norm.	Provide details on how the cutoff criteria were established for sulphur and if they were based on test results or some other information. If tests were used, provide details on what tests were conducted and the test results.	
41.	CNSC	EIS Geochemical conditions	Section 5.3.3.5 Geochemical conditions, waste rock	**Context:** It is indicated in the EIS that kinetic testing on representative waste rock samples is still ongoing. Delay to onset of acid leaching is expected for the long-term disposal in post-closure stage. **Rationale:** Leachate chemistry analyses, including all significant dissolved cations and anions and parameters like pH, are fundamental model inputs to run geochemical simulations of speciation and mineral saturation. For the geochemical condition of waste rocks, the current EIS and corresponding TSD lack the necessary completeness for type of elements, length of test duration, and description of testing procedures and QA/QC procedures.	Provide further information on static and kinetic leaching testing results (including all significant dissolved cations and anions and parameters like pH). The industrial best practice such as MEND 2009 should be followed. MEND (Mine Environment Neutral Drainage). 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geological Materials. MEND Report. Canada.	

[2] MEND. 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material. Mend Report. 1.20.1. 2009.

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
42.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.4.3	**Context:** Approximately 13.7 Mm^3 of waste rock is predicted to be produced over the proposed Project lifespan, which will be processed in the paste plant and then deposited underground within the Underground Tailings Management Facility (UGTMF). The Proponent states that "Three empty chambers would be required when the process plant begins to produce tailings; from this point, chambers would be progressively mined and backfilled." It is not clear where the tailings will be stockpiled or how they will be managed before space has been created for backfilling. It is also unclear if there is any storage capacity built into the tailings management system to contain tailings from processing if there are any delays in the mining of chambers within the UGTMF. **Rationale:** It is important to have tailings management system contingency planning in place in the event that there are any issues with the UGTMF or paste delivery system for backfilling the UGTMF. Contingency planning should be considered in the event that there are any delays in the mining of chambers, or issues with the paste tailings delivery system/paste plant.	1. Provide clarification on where tailings will be stockpiled before the mined-out underground spaces are ready to receive backfill, and clarify how tailings will be managed to prevent movement of contaminants 2. Provide clarification regarding how tailings will be managed or stored if there are any issues with the UGTMF, paste delivery system or paste plant (such as delays in mining chambers or maintenance required for the paste delivery system/paste plant). 3. Confirm if processing will need to be halted if tailings cannot be deposited into the UGTMF. 4. Confirm if an additional storage contingency system or management plan will be devised in the event there are any issues with depositing tailings into the UGTMF.	
43.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.4.4	**Context:** This section discusses the ore storage stockpile, the special waste rock stockpile, and the waste rock storage areas. The waste rock storage areas are divided into potentially acid generating (PAG) and non-potentially acid generating (NPAG). There is not enough detail provided in this section to assess the management of contact and non-contact water, flood risk, drainage and leak-detection. Within the main EIS there is no information on how water is intended to flow between the storage stockpiles, where monitoring wells for leak detection will be located, how contact water will be pumped from within storage areas to monitoring ponds/collection areas, or the estimated volume for maximum water capacity within each storage area. A flow diagram is provided in TSD XVIII (Section 3.4 Figure 5 pg. 24) however, this is very difficult to interpret and no reference is made to it in the EIS. There is no information on how the liner system and leak detection systems will be designed. **Rationale:** More information would enable the assessment of the sufficiency of the mine rock management in order to understand site water management, containment of contact water, potential for leaks from stockpiles and flood risk potential.	1. Provide and describe a simplified diagram of the flow of contact and non-contact water from mine rock stockpiles to the monitoring ponds/collection areas and how this system will be designed. 2. Describe how water management within lined stockpiles will be conducted including the volume of water that can be held within each stockpile area, how they will be drained and how the liner systems and leak detection systems will be designed. 3. Describe how monitoring for the leak detection system will be designed. Include details for how monitoring of the leak detection system will be conducted, including how contaminants will be monitored. **Suggestions for mitigation and follow-up measures** Include details for how monitoring of the leak detection system will be conducted, including how contaminants will be monitored.	
44.	ECCC	Fish and fish habitat Change to an environmental component due	Table 5.4-4	The Proponent states "The west bermed runoff collection area would be located on the west side of the Project site. This collection area would receive runoff from the local contributing area as well as overflow from contact water pond #2, if required. This bermed area would prevent suspended solids entrained in runoff water from entering Patterson Lake by natural filtration through an unlined berm".	Confirm that all effluent, as defined in the MDMER, will be discharged through a FDP.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		to hazardous contaminants		The Proponent is reminded that as required by the *Metal and Diamond Mining Effluent Regulations* (MDMER) all effluent and seepage from the mine site that contains deleterious substances needs to be discharged through a final discharge point (FDP). From the description of the west bermed runoff collection area, it is not clear whether runoff that filters through the unlined berm will be discharged through the FDP or go directly to Patterson Lake without being discharged through the FDP.		
45.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.4.4.3 Section 5.5.3.1 Table 11.4-1	The Proponent states that "The top of the finished PAG and NPAG WRSAs would be tied into the hill to the south of the mill terrace, and the overall height would not exceed the highest nearby topography. At closure, an engineered cover system (e.g., growth medium) would overlay the final PAG WRSA and NPAG WRSA landforms." It is unclear how the PAG and NPAG WRSAs would be impacted by wind or water erosion due to their height or elevation. In Section 5.4.4.3 it is stated that "At Closure, an engineered cover system (e.g., growth medium) would overlay the final PAG WRSA and NPAG WRSA landforms." Table 11.4-1 indicates that an "engineered cover of compacted clean material and growth medium layer" will be installed over the PAG WRSA. A growth medium cover will be installed over the NPAG WRSA. It is unclear whether "compacted clean material" may include NPAG waste rock. If NPAG waste rock or other materials are used as cover for the PAG rock, information should be provided on the thickness of the cover so as to ensure that the PAG material is contained within the frozen layer, below the active layer, thereby minimizing ARD. It is also not indicated whether the ditches and the seepage and runoff collection system will be functional or present post-closure.	1. Provide information on how the PAG and NPAG WRSAs will be impacted by wind and water erosion as a function of their height or elevation. 2. Provide clarification on what other types of cover systems have been considered for the PAG rock cover, including whether NPAG may be used as cover. 3. Provide details on what the thickness of the cover system will be to ensure that the PAG rock will be contained in the frozen layer below the active layer. 4. Provide details on how the seepage from the PAG and NPAG WRSA will be managed post-closure if the ditches and runoff collection system are decommissioned.	
46.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.4.5.2 TSD XVIII, Section 3.4	**Context:** There is not enough information provided within the EIS and site water infrastructure designs to determine if the design will sufficiently contain mine site contact and non-contact water runoff to be protective of the environment. It is stated that contact water ponds and collection areas can contain specified Probable Maximum Precipitation (PMP) events for select ponds/areas, however the actual volume and dimensions of these ponds/areas are not provided. There are no estimates on the total volume of water that may be drained from the overall site infrastructure (i.e. the mine terrace, the camp area etc.) during a 24-hr PMP event and if contact water ponds can contain that drainage. On pg. 1567 a list of potential Project activities that would have the potential to affect surface water quality and sediment quality during the Project lifespan is provided, however runoff from the site airstrip and roads is not included in this list. Runoff from both of these Project activities can have impacts on surface water quality and sediment quality and should be considered as potential effect pathways.	1. Provide the dimensions and maximum volume capacity of each pond and collection area for all site water management infrastructure. 2. Provide a map marking the locations of proposed surface drainage structures including collection ditches, culverts, diversion ditches, perimeter berms and swales. 3. Provide estimated volumes of water to be drained from overall site infrastructure (such as the mine terrace, airstrip, camp area etc.), during a 24-hr PMP event and an analysis of the capacity of the water infrastructure to contain and treat this water.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				The site layout and locations of surface drainage structures including collection ditches, culverts and diversion ditches are not provided on a map. Figure 5 pg. 24 of TSD XVIII was reviewed, however the locations of infrastructure in this flow diagram do not necessarily correspond to geographic locations. Drainage of the site airstrip is not described as part of the infrastructure in the EIS. For lined ponds and collection areas, there is no description of how leak detection monitoring will be completed. For the potentially acid generating (PAG) runoff collection area, it is stated that "The contained water will be tested before release to the environment based on regulatory requirements; water that does not meet the release specifications would report to the ETP for treatment". There are no details provided on how often this water would be tested or how it would be released to the environment (i.e. straight to the Effluent Treatment Plant (ETP) discharge). For contact water pond two, no water volume capacity is provided, and there is no information on frequency of monitoring to determine if water will require treatment or be released to the west bermed runoff collection area. There is also no information regarding water quality monitoring of the west bermed runoff collection area and its capacity. Additionally, the west bermed runoff collection area is described as being unlined to allow natural filtration of collected non-contact water to the environment. However the *Metal and Diamond Mining Effluent Regulations* (MDMER) pursuant to the *Fisheries Act* requires all mine effluent and seepage from the mine site that contains deleterious substances be discharged through a final discharge point. **Rationale:** In order to be able to understand site water management and flood risk potential, more information needs to be provided regarding the site water infrastructure designs. More information on the volume of water expected to be captured within the site water management infrastructure during PMP events, and the probability that site infrastructure can contain that water would help ECCC to understand how contact and non-contact water will be conveyed throughout the site. Further information on proposed monitoring locations would assist in the assessment of adverse effects to the receiving environment. Runoff from roads and the site airstrip will contain contaminants from vehicles, heavy machinery, aircrafts and de-icing practices. Additional information on the runoff collection systems for the site airstrip and roads would aid in understanding if the collection of runoff from this site infrastructure is properly managed.	4. Provide information on how runoff water from the site airstrip will be managed and how monitoring for contaminants within this runoff (ex. hydrocarbons, etc.) will be conducted. 5. Describe how leak detection monitoring from lined ponds and collection areas will be conducted. 6. Provide additional information on the frequency of water quality monitoring and which contaminants will be tested for in the PAG runoff collection area, contact water pond two and the west bermed runoff collection area. 7. Provide further information on how water will be released into the receiving environment from the PAG runoff collection area and west bermed runoff collection area with consideration of MDMER requirements.	
47.	ECCC	Fish and fish habitat	Section 5.4.5.2 Section 22.6.3	**Context:** The Proponent states in Section 5.4.5.2 that the 24-hour 100-year event will result in 89.4 mm accumulation of precipitation. However, in Section 22.6.3 Major Precipitation Events the value quoted is 75.8 mm, which represents a 15% difference. In Section 5.4.5.2 the Probable Maximum Precipitation (PMP) is quoted as 489.2 mm in 24 hours. In Section 22.6.3 Major Precipitation Events, the PMP value quoted is 490 mm in 24 hours. It is unclear if the PMP values correspond to the 24-hour 2000-year return period.	1. Provide details on the dataset used to generate the accumulation of precipitation values (89.4 mm and 75.8 mm), which generated value is used in each of the assessments (hydrology and climate change), and which elements of Project design were informed by these assessments and why. 2. Confirm if the PMP quoted in the draft EIS (489.2mm and 490 mm in 24-hours) correspond to the 24-hour 2000-year return period and clearly show the datasets from which this value was generated.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: Based on the discrepancies noted in the values presented for the accumulation of precipitation and for the PMP, it is unclear which datasets were used to generate these values, which values were used in the hydrology and climate change assessments or in which elements of Project design. While the discrepancies may be small, over the long term this could result in much larger differences for predicted effects.		
48.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.4.5.3	**Context:** This section describes the amount of water expected to be produced within the underground dewatering facilities and sent to the surface for treatment. However, it is unclear if the water from the underground dewatering facilities will go straight to the Effluent Treatment Plant (ETP) for treatment or if it will be held in a contact water pond or settling pond to await treatment. **Rationale:** Understanding how the water from the underground dewatering facilities will be managed will aid ECCC in understanding if the proposed site water management infrastructure can contain this water during a flood risk event and in assessing effects on the receiving environment.	1. Describe if water from the underground dewatering facilities will be sent straight to the ETP or if it will need to be held within a contact water pond or settling pond prior to treatment. 2. Confirm if there is the potential for water from the underground dewatering facilities to be temporarily stored underground if the site water infrastructure or ETP cannot immediately contain/treat that water.	
49.	ECCC	Fish and fish habitat Change to an environmental component due to radiological contaminants	Section 5.4.5.4	**Context:** There is currently not enough information provided about the Effluent Treatment Plant (ETP) design to determine if the design is sufficient for treating mine effluent. ECCC notes the following information gaps provided within this section: no schematic for the treatment process within the ETP facility; no information on the two-stage treatment process; and no flow rates, capacity details, effluent characterization information, proposed effluent discharge targets; no Final Discharge Point (FDP) location information. The Proponent plans to install a pipeline to discharge effluent, but it is unclear where the final discharge point (FDP) will be located. Note that the *Metal and Diamond Mining Effluent Regulations* (MDMER) define the FDP as "in respect of an effluent, means an identifiable discharge point of a mine beyond which the operator of the mine no longer exercises control over the quality of the effluent." **Rationale:** Further information about the proposed ETP will assist ECCC in determining if the design will be sufficient to treat mine effluent and that the capacity of the ETP will be sufficient for the site. Effluent characterization information and proposed discharge targets will enable ECCC to assess adverse effects to water quality and aquatic biota.	1. Provide a schematic demonstrating flow through the ETP including flow rates, capacity of system tanks and clarifiers, locations and average and maximum treatment capacity of the ETP. 2. Provide a more in-depth overview of the treatment processes within the proposed ETP and how the ETP is designed to remove the chemical and radiological constituents from effluent, including the expected efficiency of treatment. 3. Provide the expected effluent characterization and final effluent discharge targets, as well as effluent discharge flow rates and estimated volume per batch release to the environment. 4. Describe how waste generated from the effluent treatment process (ex. solids and sludge) that is not discharged as treated effluent be managed? 5. Include the effluent monitoring plan details in Section 5.4.5.4 including contaminants that will be monitored for. 6. Provide the specific location of the FDP.	
50.	ECCC	Air Quality	Section 5.4.7.5	In the EIS the Proponent references the *Off-Road Compression-Ignition Engine Emission Regulations* (previous Regulations). These regulations have been	1. Indicate if the Project site is considered "remote" based on the definition in the *Off-Road Compression-*	

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			Appendix 7A3.2.10.2	repealed, and replaced by the *Off-road Compression-Ignition (Mobile and Stationary) and Large Spark-Ignition Engine Emission Regulations.* ECCC encourages the Proponent to use engines that meet the most stringent emission standard, which is Tier 4 for compression-ignition engines (mobile and stationary), during all phases of the Project. The Regulations require that all stationary compression-ignition engines in Canada that were manufactured after June 4, 2021 must meet US EPA Tier 4 emission standards, with the exception of backup or emergency engines, and engines used in remote locations[3]. In these cases engines may be Tier 3, or Tier 2 under specific conditions. The Proponent must provide information on whether or not the Project site meets the definition of "remote location". The Proponent provided the model number of the Jenbacher J620 gas engine, but ECCC has been unable to determine the emission rating of this engine. The mine fleet has a combination of Tier 2, 3 and 4 off-road engines. The Proponent stated that they would use Tier 4 diesel mobile equipment for underground operations whenever practical. The Proponent should provide justification for use of any engine that is lower than Tier 4. The requested information will enable ECCC to better assess project emissions and potential impacts to the environment.	*Ignition (Mobile and Stationary) and Large Spark Ignition Engine Emission Regulations.* 2. Provide the emission ratings (e.g. Tier 3 or 4) and the air pollutant emission estimates, which includes NOx emissions, of the stationary Jenbacher J620 engine, and any other off-road engines to be used during each phase of the project. 3. Provide justification for the selection of lower-Tier stationary and mobile engines that meet the emission standards of a lower stringency over higher-Tier, cleaner, commercially-available engines.	
51.	ECCC	Wildlife and Wildlife Habitat	Section 5.4.7.7	The Proponent states that a communication tower will be erected at the Project site but does not include any details about height of the tower, the support system, or lights. There is no discussion of potential effects of the tower on migratory birds and SAR or the proposed mitigation measures to minimize these effects.	Provide details regarding how the communication tower will be designed, the potential effects to migratory birds and SAR including bats and the mitigation measures that will be used to reduce these effects.	
52.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 5.5	The Proponent indicated that "clean waste rock" will be permanently stored on the surface and where possible will be used as a source of aggregate material for construction activities. It is not clear what is meant by "clean waste rock." The segregation criterion indicate that even non-potentially acid generating (NPAG) waste rock may contain some amount of sulphide mineral and/or U_3O_8 (triuranium octaoxide). Clean waste rock could be mistaken to be waste rock devoid of any contaminants, which could lead to potential effects on the environment..	Provide a clear and concise definition of "clean waste rock", including the segregation criteria.	
53.	ECCC	Fish and fish habitat Change to an environmental component due	Section 5.5.1.5	The Proponent stated that "All mine rock would be analyzed by gamma radiometric scanners, which would measure the radioactivity of the material, and depending on the scan results, the material would be defined as ore, special waste, or waste rock (Table 5.4.2)".	1. Provide clarification as to whether there are any mitigation measures in place to ensure that the remaining U_3O_8 content in the PAG and NPAG WRSAs poses no danger to the environment.	

[3] Remote location means a geographic area that is serviced neither by
(a) an electrical distribution network that is under the jurisdiction of the North American Electric Reliability Corporation or the main Newfoundland and Labrador electrical distribution networks; nor
(b) a natural gas distribution network.

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		to radiological contaminants		As described in table 5.4.2, both potentially acid generating (PAG) and non-potentially acid generating (NPAG) rock contain some amount of U_3O_8 (triuranium octaoxide). It is unclear whether there are any mitigation measures to ensure that the remaining U_3O_8 content in both PAG and NPAG waste rock material poses no danger to the environment, or if the classification of NPAG means that the remaining amount of U_3O_8 does not pose any danger or risk to the environment.	2. Confirm if the classification of NPAG means that the remaining amount of U_3O_8 poses no risk to the environment.	
54.	MN-S	Incorporation of Indigenous Knowledge	Section 6.2	As stated in the EIS: "Indigenous and Local Knowledge was integrated into the development of the Project, including EA process. Indigenous and Local Knowledge was incorporated into the EIS by integrating the results from Indigenous Knowledge and Traditional Land Use (IKTLU) Studies and from engagement with local priority area (LPA) community members."	Please provide an explanation for how knowledge gained during "engagement" was verified as being suitable for use and "integrating" Indigenous and Local Knowledge (Indigenous Knowledge) Please provide an explanation on how Indigenous Knowledge was used in the development of the Project. What was the methodology? Did Métis confirm accuracy? Is there a summary of how Indigenous Knowledge influenced Project design or mitigation in the document. Has it been recorded as part in discrete section? If yes, please include this information.	
55.	ECCC	Fish and fish habitat Change to an environmental component due to radiological contaminants	Section 6.2.3 Section 11.4.2 Section 11.5.1.2 TSD XXI ERA	**Context**: The Proponent followed CSA N288.6-12 for the assessment of risk to aquatic biota from radionuclide and non-radionuclide Constituents of Potential Concern (COPCs). This is the 2012 version, and a more recent 2022 version was publicly released. **Rationale**: The Proponent should review the most up-to-date version of the standard to ensure no changes to the methodology of the COPC exposure assessment are required.	Update the COPC exposure assessment methodology with the most recent CSAN288.6-22.	
56.	MN-S	Valued Components-methodology	Section 6.3.1	There is no indication if it was general practice to ask Indigenous groups for their concepts of VCs Good practice would include a step of verifying VCs together with Indigenous Nations. Minutes of Joint Working Group meetings indicate that NexGen presented a draft list of VCs to the Joint Working Group members for comment, but there is no record of an occasion on which NexGen asked open-ended VC questions or validated the VC identification together with MN-S based on engagement and Indigenous Knowledge.	This section should include a description of engagement related to VCs with Métis, as well as a description of Métis concepts of VCs having been confirmed. This will be relevant to the pathways analysis. Text under section 6.3.1, p. 6-9 should be revised to reflect the outcomes of more fulsome engagement between NexGen and MN-S on Valued Components (VCs) and Indigenous Knowledge.	
57.	MN-S	Assessment Endpoints and Measurement indicators	Section 6.3.2	It needs to be confirmed the extent to which Indigenous Knowledge was considered in defining these measures and how (or if) Indigenous Nations were part of the definition development. Table 6.3-1 implies that Indigenous Knowledge was not a consideration for indicators and endpoints or separated out as in "changes in availability and quality of fish, plants, ...". This then calls into question the nature of the Indigenous Knowledge integration.	Text under section 6.3.2, p. 6-10 to 6-13 should be revised to reflect the outcomes of more fulsome engagement between NexGen and MN-S on endpoints and indicators.	
58.	CNSC MN-S	Current use of lands and resources for	Section 6.4.1, Section 14	**Context:** It is not clear whether Indigenous Nations and communities were engaged on the spatial boundaries for all VCs of interest. Indigenous and/or traditional	Provide further detail to demonstrate whether NexGen discussed the spatial boundaries for all valued components of interest (such as Wildlife	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		traditional purposes		knowledge is not listed as one of the criteria for defining spatial boundaries in Section 6.4.1 of the EIS. Some sections of the EIS (such as Fish and Fish Habitat, Indigenous land and resource use) indicate that Indigenous and/or local knowledge was considered when defining the spatial boundaries. However, this is not included in other sections, such as Wildlife and Wildlife Habitat. It is not clear whether Indigenous Nations and communities did not have any comments on the spatial boundaries of these other sections or if they were not engaged on the topic including the wildlife section **Rationale:** CNSC's Generic EIS Guidelines require that spatial boundaries be defined by considering, but not limited to, the following criteria: Community and Indigenous traditional knowledge, ecological and technical considerations.	Section 14) with the Indigenous Nations and communities. Provide detail about how any comments or concerns raised were considered in defining the spatial boundaries with Indigenous Nations and communities.	
59.	CNSC	Fish and fish habitat Aquatic species Migratory birds	Section 6.3.2, Table 6.3-1, page 6-12 Section 6.4, page 6-18	In section 6.4 states: "**Although additional spatial scales are possible for individual VCs and intermediate components**, spatial scales typically include a minimum of a site study area, a local study area (LSA), and a regional study area (RSA; CNSC 2021)."	It would be helpful to include spatial scales in table 6.3-1, either as it's own column or in relation to specific items. For example, it is unclear from reading the table at what spatial scale habitat and ecosystem availability is considered at.	
60.	CNSC	Indigenous Peoples' health / Socio-economic conditions	Section 6.3.2, Table 6.3-1, page 6-12	Table 6.3-1 includes a "Subsistence harvester" as a VC, which is linked to the rationale for selection including "potential exposure to changes in air quality, soil, surface water, plants, fish and wildlife from Project activities". Furthermore, "traditional and/or current food source security" and "socio-economic/cultural importance" were also included as rationales for selection of this VC. The measurement indicators for this VC included "Hazard quotients, lifetime cancer risk, and radiation dose".	Did NexGen collect information on the current subsistence habits, and traditional foods and wildlife consumption of communities that harvest in areas affected by of the Rook 1 project as baseline information? If so, some information on this topic in this section would be helpful and should link to the appropriate section where it is discussed in more detail. This information could then be used to compare current vs. future habits and consumption once the project is operational to see how the project impacts traditional practices. With the expected psycho-social effects of fear and avoidance of the project, a useful measurement indicator could be current vs. future harvesting and consumption practices.	
61.	CNSC	Other Potential Emission Sources	Figure 7.1-3, 7.2-4, 7.2-22	There are other potential source of contaminant emissions to air that should be considered and discussed in the EIS (e.g., Sewage Treatment Lagoon, airplanes arriving/departing on airstrip).	Include discussion of other potential releases from the site, or rationale for their exclusion from further assessment.	
62.	HC	Human health with with respect to hazardous contaminants	Section 7.2.3, page 7-30	**Context:** The proponent describes a baseline field and desktop study to characterize air quality within the LSA and RSA. Passive sampling was used to collect data on nitrogen dioxide (NO_2) and sulphur dioxide (SO_2). Two years (2019 and 2020) of	To increase the accuracy of any risk assessment, measured baseline data including the exceedances of 1-hour NO_2 CAAQS, as well as 24-hour SAAQS (Saskatchewan Ambient Air Quality Standards) for PM_{10} and TSP at the location of certain receptors	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				sampling from a single monitoring station in Buffalo Narrows were used to establish background conditions. Annex I (Atmospheric Baseline Report) also included 24-hour $PM_{2.5}$ monitoring results at the Buffalo Narrows station, one of the two stations (along with Fort Chipewyan) used to describe air quality at the regional level. The proponent has indicated its intention in Section 7.2.8 of the EIS to continue air quality monitoring for NO2, SO2, Total Suspended Particles (TSP), and fine particulate matter (PM2.5) through all phases of the Project. **Rationale:** Table 7.2-7 of the EIS identifies a24-hour $PM_{2.5}$ maximum daily concentration of 28.5 micrograms per metre cubed ($\mu g/m^3$) as background pre-project levels of $PM_{2.5}$ measured at the on-site (Rook I) station in July 2019. The evaluation of COPCs should include project-related emissions and the baseline/background concentrations established in the baseline field study, in order to be more representative of the total expected exposure by nearby human receptors. High baseline conditions should be discussed in order to understand potential exceedances at the monitoring locations.	should be collected and input into predictive models to evaluate future potential health risks. Monitoring during project operations can then be used to validate model predictions and monitor/evaluate changes to avoid increasing health risks. If increased health risks are identified, additional mitigation would then be necessary. **Suggestions for mitigation and follow-up measures** Provide a discussion of the potential impacts of exceedances on human health or a description of the mitigation measures to be employed to address any exceedances or near-exceedances of guidelines based on cumulative effects from the Project combined with baseline exceedances.	
63.	HC	Human health with with respect to hazardous contaminants	Section 7.2.4, page 7-37	**Context:** Onsite material handling and transportation is not listed as a project activity, with the potential to affect ambient air quality by generating fugitive dust and other air pollutant emissions, such as from diesel combustion,, during the Project lifespan. **Rationale:** Health Canada notes that expectations of 100% efficiency in dust suppression on haul roads are not realistic. Health Canada considers PM_{10} and $PM_{2.5}$ to be non-threshold substances, meaning that health effects may occur at any level of exposure. The International Agency on Cancer Research (IARC) has recently classified particulate matter as being carcinogenic to humans (Group 1). Health Canada considers that the risk associated with fine particles, particularly $PM_{2.5}$, is higher than the health risks associated with coarse PM or total suspended particulates (TSP) which includes liquid and solid particles, without particle size differentiation.	Health Canada recommends assessing the human health risks due to changes in exposure to project-related dust associated with on-site material handling and transportation. In addition to the health effects of exposure to $PM_{2.5}$ and PM_{10}, dust can have soiling effects that may be of concern to communities and may contribute to deposition of contaminants onto soil and country-foods that can be ingested by nearby receptors. **Suggestions for mitigation and follow-up measures** 1.Health Canada recommends monitoring of $PM_{2.5}$/PM_{10} levels at sensitive receptor locations, and implementing additional mitigation measures if the levels are elevated in comparison with applicable guidelines (e.g. CAAQS, SAAQS). Additional mitigation measures should also be implemented if $PM_{2.5}$/PM_{10} are predicted or measured to be elevated compared to baseline levels, as there is no threshold under which there are no health effects for these air contaminants. 2.According to Table 7.2-10 (p.7-39), the proponent plans to use Tier 4 engines in the underground hauling operations to limit the effects of the project on air quality in the underground workings. Health Canada suggests expanding the use of Tier 4 engines to surface operations as an effective measure for	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
					reducing particulate matter associated with diesel emissions.	
64.	HC	Human health with with respect to hazardous contaminants	Section 7.2.5, page 7-41	**Context:** Concentrations of NO_2, TSP and PM_{10} are predicted to be greater than the short-term (1-hour) SAAQS within a few hundred metres of the maximum disturbance area for the Project, where traditional land users may be present. The human health risks associated with these exceedances are not discussed in the HHERA. The proponent states: *"As discussed in Section 7.2.2.8.2, Comparison to Canadian Ambient Air Quality Standards, the comparison to CAAQS is provided for information only and does not represent a compliance metric or environmental risk."* **Rationale:** NO_2 and PM_{10} are non-threshold pollutants (meaning that any increment in concentrations presents an increased risk for health effects). Health Canada recommends the use of the CAAQS for project-associated air quality assessments, as they are the appropriate comparison targets for measured, modeled or estimated ambient air concentrations. The CAAQS are some of the most stringent air quality criteria, especially for long-term project emissions after 2025. It is recommended that the proponent take into consideration that NO_2 and $PM_{2.5}$ are non-threshold pollutants. The Canadian Air Quality Management System (AQMS) explicitly recognizes that health effects occur below the CAAQS values, and proposes additional management levels in recognition of the health and environmental benefits that can be realized by taking actions to decrease or maintain background levels of air pollution.	Discuss the impacts of these short-term air quality exceedances (NO_2, TSP and PM_{10}) on human health.	
65.	HC	Current use of lands and resources for traditional purposes	**Reference to EIS:** Section 7.3.2.5, page 7-99, pdf page 119	**Context:** The Fission Patterson Lake South Property is listed as a Reasonably Foreseeable Development Case. For the assessment, it was assumed that the duration of active decommissioning for the Fission Patterson Lake South Property would be similar to the Active Closure Stage for the Project (i.e., five years). **Rationale:** Health Canada has participated in the Designation Request for Fission Patterson and noted that the Indigenous Groups in the area are concerned about cumulative effects, in particular, acoustic impacts. A nearby project of similar scope could potentially lead to increased noise issues for the public.	Provide evidence that the cumulative noise effects have been considered with regard to nearby Indigenous communities. **Suggestions for mitigation and follow-up measures** Health Canada recommends that the proponent have a community engagement plan in place that includes consulting with the public prior to any particularly noisy activities, understanding work/life schedules and working around those schedules to the extent possible. When the community receives information about expected changes in sound levels through a consultation process, and feels that concerns with respect to noise will be addressed, the incidence of noise-related complaints is frequently reduced (Health Canada, 2017).	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
					The proactive community engagement is intended to minimize public complaints and provide an open and transparent means to communicate regularly with potentially impacted receptors.	
66.	HC	Change to an environmental component due to hazardous contaminants	Section 7.3.2.8, page 7-106 pdf page 126	**Context:** The proponent did not include the Project airstrip and the Fission Patterson Lake South Property airstrip when analyzing noise effects. While Transport Canada is responsible for regulating airport operations, the noise assessment should include all noise sources, including aircraft noise, as per Health Canada guidance (2017). **Rationale:** Health Canada (2017) provides guidance specific to aircraft noise when evaluating impacts on sleep disturbance, calculating %HA and applying adjustment factors.	1.Evaluate the effects of airplane noise (take-offs and landings) as infrequent but impulsive noise sources at nearby human receptor locations. 2.Discuss the timing of any aircraft noise, particularly if it may impact sleep or result in increased annoyance at receptor locations. The proponent may find the following Transport Canada resources specific to noise from airport operations useful: https://www.tc.gc.ca/en/services/aviation/operating-airports-aerodromes/managing-noise/exposure-forecast.html **Suggestions for mitigation and follow-up measures** Health Canada recommends providing aircraft arrival and departure times in advance of their occurrence to any potentially impacted receptors in order to reduce the likelihood of complaints regarding aircraft noise.	
67.	ECCC	Air Quality, Noise, and Climate Change	Section 7.4.5	**Context:** In Section 7.4.5 the Proponent states that the land use change emissions include the annual loss of carbon sinks. It is anticipated that there will be 897.8 ha of new disturbance added to the Project area. **Rationale:** While ECCC recognizes that this Project falls under CEAA 2012, the principles of the SACC and Draft Technical Guide should be followed by the Proponent in order to support Canada's ability to meet its environmental obligations and commitments in respect of climate change. There is a distinction between direct GHG emissions from land use change and the effects on carbon sinks. The GHG emissions from land use change should be evaluated, however the effects on carbon sinks should be considered separately. An effect to a carbon sink implies the interruption of the land's natural process that results in the net absorption of carbon from the atmosphere. The Proponent should refer to the Strategic Assessment of Climate Change (SACC) section 5.1.2 and the associated Draft Technical Guide section 4 for guidance on how to perform an assessment of the impact on carbon sinks. This assessment should be qualitative and quantitative.	Provide separate assessments for GHG emissions due to land use change and for GHG emissions due to the effects on carbon sinks. **Suggestions for mitigation and follow-up measures** The Proponent should consider mitigation measures for the disturbance of carbon sinks. The Proponent can refer to the Draft Technical Guide section 3.5.3 for additional guidance.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
68.	ECCC	Air Quality, Noise, and Climate Change	Appendix 7A3.1	**Context:** Section 7A3.1.3.2 includes Table 7A-88, which is titled ”AERMET Derived Temperature Summary (2012 to 2016)”, however the accompanying text indicates the comparison is only for 2016. There are significant differences in the monthly averages of the temperatures; for example, the average February daily minimum temperature is -19.2C for the site but -24.6C and -27.6C for the AERMET data sets. In Section 7A3.1.1.1 the Project-specific AERMET dataset was extracted from the Weather Research and Forecast (WRF) model at the grid 12 km west of the Project location while there are WRF grids with 4 km resolution available. **Rationale:** Given the inconsistency between the title of Table 7A-88 and the accompanying text, it is possible that model averages are in fact for the 2012-2016 period, as average February temperatures for the 2012-2016 period are about 3C colder than normal for just 2016 at Buffalo Narrows and Fort McMurray according to climate.weather.gc.ca. It is more appropriate to compare the average values for 2016 rather than the five-year average for the model. Wintertime minimum temperatures may vary significantly between locations a few km apart due to cold air pooling depending on local terrain. Surface temperature values relative to temperatures aloft influence vertical stability, which in turn affects dispersion and concentrations of surface-based Project emissions.	**Specific Question/ Request for Information:** 1. Clarify which dataset (i.e., 2012-2016 five-year average or average values for 2016) were used for comparison with the model. If the five-year average was used provide the actual 2016 average values. 2. Provide rationale for why the Project-specific AERMET dataset was not extracted from the WRF model for a location closer to the Project location.	
69.	HC	Human health with with respect to hazardous contaminants	Section 7A3.2.13.3 Table 7A-114, Page 116	**Context:** Several tables, such as Table 7A-114 (Page 116), show the predicted concentrations of some metals for the operations phase; however, the toxicological reference values (TRVs) used to determine the risk quotient in the HHRA section do not appear in these tables. **Rationale:** To assess health risk, HHRAs compare predicted chemical exposures TRVs defined by regulatory agencies such as Health Canada or US Environmental Protection Agency. TRVs represent the amount of a substance below which adverse effects are not expected to be observed in a population. These are not regulatory limits, but are thresholds meant to be used as a decision aid.	1.Where toxicological reference values are available or could be derived, identify these chemicals as COPCs and carry them into the modelling predictions. 2.Revise the table to include TRVs which are applicable to the general public, including sensitive receptors or provide rationale as to how the selected TRVs provide an adequate level of health protection for the general public including sensitive receptors.	
70.	CNSC	Geology	Section 8.3.1	**Context:** Section 8.3.1 provides a brief description of Bedrock Geology with a statement that “Additional details on the bedrock geology can be found in the Geology Baseline Report (NexGen 2021a).” However, the Geology Baseline Report was not provided. **Rationale:** Information about the geological environment is not sufficiently documented in the EIS especially for a new mine proposal that also proposes to develop an underground TMF. REGDOC 2.9.1 appendices describe the expected geological information to be assessed - B.4.1 baseline geological information; and C.4.1 on the description of any changes to the geology as a result of the project.	Provide NexGen 2021a Geology Baseline Report. Assess the geology as a valued component or justify its exclusion as a valued component.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				In addition, the EIS does not assess the geology as a valued component for the Project with no justification for its exclusion.		
71.	ECCC	Fish and fish habitat	Section 9.2.3 Section 9.2.6 Section 9.3.2 Appendix 9A	**Context**: In Section 9.2.3 Spatial Boundaries of the EIS it is stated "There are five larger lakes in the Local Study Area (LSA) including Broach, Patterson, Forrest, Beet and Naomi lakes, as well as several smaller waterbodies including Lake G, Lake H, and wetlands." It is clearly stated that there are wetlands present within the LSA, and at least two wetlands can be seen within the Project footprint in Section 9.1 Figure 9.1-4 pg. 1337 of the EIS. The location of these wetlands within the Project footprint, as well as the other wetlands existing within the LSA can be confirmed from Annex V11.2: Vegetation Baseline Report 2 (Inventory, Rare Plants and Wetlands), including the wetland classifications. However, beyond the above statement from Section 9.2.3, there is no consideration of wetlands or potential effects to wetland hydrology throughout the remainder of the hydrological assessment and hydrological modelling. Potential effects to flow rates, water levels or sediment transport to wetlands within the LSA are not considered. **Rationale:** There is currently not enough information provided for ECCC to provide advice on the potential risks of the proposed Project to wetland hydrology within the LSA. This pathway of effects is important to assess in terms of potential effects to wetland habitat availability due to changes in flow rates, water levels and sediment transport, and potential effects to terrestrial and aquatic receptors. It is necessary to evaluate if draw down from mine dewatering or changes in surface water runoff flows and routing will affect water levels and habitat availability within wetlands.	Provide baseline information regarding wetland characterization within the LSA, including: locations, wetland type, size, water surface elevation, depth, water flow pathways, and the presence of wildlife receptors including presence of fish/fish habitat within the main body of the EIS. Provide further information on mitigation measures and monitoring that would be applied for the protection of wetlands. If this information is available in annexes or technical supporting documents, summarize it within the main body of the EIS with references to respective documents for review.	
72.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 9.3.2.2 TSD VIII, Section 6.2 Section 7.4 Annex IV.3 Figure 13 Figure C4 Annex IV.2, Table 9	**Context:** In Section 6.2 of the Accidents and Malfunctions report, the width of the Clearwater River at the crossing is 6 m with an average depth of 30 cm and an assumed water velocity of 1 m/s for a flow rate of 1.8 m^3/s. These dimensions and rates do not match the channel widths of the Clearwater River presented in Annex IV.3 Geomorphology Characterization Report. According to Figure 13, Transect #4 is right at the bridge crossing, and field measurements at Transect #4 are presented in Figure C4. The stream width was ~12 m and the average depth ~40 cm in late September/early October 2018. According to measurements reported in table 9 of Annex IV.2 Hydrometric Monitoring Characterization Report, discharge at hydrometric station CR-WC-MS-03, adjacent to Transect #4, on 29 September 2018 was 0.983 m^3/s, which is low for open water at this station. In Section 7.4, potential effects of a diesel spill from the bridge over the Clearwater River are discussed with calculations using the river width, depth and flow ~1.5 km downstream from the spill site, between Forrest and Beet Lakes. In this case a channel width of 100-400 m, a depth of less than 2 m, water velocity of 1 cm/s and flow rate of 2.3 m^3/s are used. These dimensions are close to those found in Section 9.3.2.2 of the Environmental Impact Statement, where the Clearwater River between Forrest and Beet lakes is described as being more like a water body with width ranging from 100 m to 600 m.	Provide rationale for the accident scenario stream dimensions that differ from the field measurements, or revise the calculations with dimensions reported in the Geomorphology Characterization Report and update the assessment of potential effects.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: Of the six bounding scenarios considered in the Accidents and Malfunctions, two are traffic accidents at the bridge over the Clearwater River on the Project access road, with release of contaminants in the river (uranium concentrate and diesel). The parameters of the river are not the same in both scenarios even though the spill location is the same. Since the stream width is a parameter used in calculating the uranium dissolution rate and long term release rates, doubling its width to match the measured value would increase the potential effects. For the diesel spill scenario, since the stream is narrower and has higher water velocity at the spill location than what was used for calculations, the potential area of impact could be underestimated.		
73.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 9.5 Section 9.5.1 Section 11.4.1	**Context:** The Project effect pathway H-06 Culverts have been designated as a no-effect pathway after implementation of environmental design features and mitigation Table 9.5-2 pg. 1401. In Section 9.5.1 further information is provided about the maintenance of culverts throughout the different life stages of the proposed Project. In Section 11.4.1 the potential effects of drainage infrastructure to fish and fish habitat are discussed, and it is stated that there are 23 locations along the existing access road where culverts may need to be constructed, replaced or extended. Additionally, culverts are to be sized for a 1:100 year 24-hour storm event, but no further details are provided on how this was determined. There currently is not enough information provided to confirm the assessment of no effects. **Rationale:** ECCC requests further information regarding the number, location, design, flow ratings and habitat considerations in order to assess flood risk and potential effects to water quality. There is currently not enough information provided about water flow pathways and conveyance of contact water and run-off water from site infrastructure to make an evaluation of risk to surface waters from potential Constituents of Potential Concern (COPCs) and flooding.	1. Provide a map demonstrating the number and locations of all proposed culverts for the Project. 2. Provide further information on the design, flow ratings, capacity and habitat considerations for the construction and maintenance of culverts throughout the different phases of the proposed Project.	
74.	ECCC	Fish and fish habitat	Section 9.5	**Context:** In Table 9.5-2 pg. 1401 H-06 for culverts, the Proponent states that the design cross drainage maximum flow was considered for a 24-hour 100-year event. No rationale was provide for the selection of the maximum instantons flow used for culvert design. **Rationale:** Culverts function primarily as hydraulic conduits but serve the dual purposes of functioning as hydraulic structures as well as acting as load bearing structures. As a result, the amount of precipitation becomes secondary to the intensity of precipitation. Considering the lifetime of the Project, a 100-year return period is not considered conservative. A risk analysis for a shorter event duration and longer return period should be considered for precipitation intensities.	Provide rationale for the selection of the 24-hour 100-year maximum flow used for culvert design considering both the lifetime (i.e., 43 years) of the Project and the likelihood of an extreme precipitation event occurring.	
75.	ECCC	Fish and fish habitat	Section 9.6 Section 9.7	**Context:**	1.Explain why the rating curve formulae for stations CR-WC-MS-02 and CR-WC-MS-06 do not match the	

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			Annex IV.2, Section 5.3.1	Rating curves represent an approximation of the stream discharge at a location based on the water levels. This allows the estimation of streamflow from continuous water levels that are relatively easy to measure. Inconsistencies with best practices (WSC, 2016) used in developing the rating curves, as well as some general inconsistencies, led ECCC to question their accuracy (Section 5.3.1 of Annex IV.2 Hydrometric Monitoring Characterization Report). Specifically: 1. The open water rating curves for hydrometric stations CR-WC-MS-02 and CR-WC-MS-06, plotted in Figures 15 and 27 respectively, do not correspond to the equations printed in the same figures. 2. Different methodologies were used to develop rating curves for different stations without justification. An open water rating curve developed through a HEC-RAS model (as described in Appendix 9B Hydraulic and Sediment Transport Modelling Summary Report) was used for station CR-WC-MS-03. 3. Eight of the ten rating curves developed are preliminary since a subset of two to five data points with the lowest water elevations for discharges were used when WSC (2016) recommends at least six data points for curves with a single segment; 4. Rating curve stage shifts due to aquatic plant growth in the streambed might be expected to follow an increasing pattern through the summer, and to be similar at the same period of different years. Neither of these signals is present in the stage shifts for the hydrometric stations, rather the shifts jump without following a pattern; 5. Rating curve stage shift above the base curve are expected due to backwater, however shifts below the base curve would need to be well documented as these might be caused by scour in the control section. Figure 18 shows three measurements (15-May-19, 18-May-19 and Jun-19) below the base curve at station CR-WC-MS-03 with no explanation offered. The text states that no levelling or discharge error or physical cause was identified for May 2020 and June 2020 readings below the base curve, but they are not plotted below the curve. 6. Rating curve equations are power relationships between the effective depth and discharge with a multiplier and an exponent. The exponent depends on geometry of the control section and is typically between 1.3 and 3 (WSC, 2016), with similar values for control sections with similar shapes. The open water rating curve for CR-WC-MC-04 has an exponent of 4.5, well above the typical range and no explanation has been provided for this unusual value. **Rationale:** The rating curves are used within the hydrologic model to create stream discharge time series. In turn, the model is used to determine baseline conditions and Project effects on water levels and flow. Using more data points to fit the open water rating curve (see point 3), would likely result in lower estimates of baseline flows. If the baseline flows were lower, the proportional increase in flows due to the Project discharging mine water to the surface would be greater, changing the results in tables 9.6-5 to 9.6-7, 9.6-14 to 9.6-16 and 9.6-23 to 9.6-25 of the EIS and potentially the residual effects classification in Section 9.7. The stream width is an important factor when considering the river's navigability and wetted area contributes to describing fish habitat. Changes to both these stream channel parameters are discussed in Sections 9.4.3, 9.6.1.3, 9.6.2.3 and	plotted lines, specify where this data was used further, and if applicable, discuss effects of correcting the formulae. 2. Provide justification for the use of different methods for determining rating curves at different sites, detailing how they are comparable. 3. Clarify if the comment in the text regarding measurements below the open water rating curve in May and June 2020 at station CR-WC-MS-03 refer to those plotted as May and June 2019 in Figure 18 and provide supporting arguments for keeping the station location since there are indications of channel instability. 4. Provide rationale for the inconsistencies with best practices identified in points 3, 4 and 6 in the context and rationale column. Discuss any effects to the confidence in the rating curve. 5. Discuss how backwater effects are integrated into model predictions including lake levels, discharge estimates and wetted stream areas. 6. Discuss how uncertainty from the rating curves propagates in the hydrologic and subsequent models, and influences the confidence in the conclusions on effects. **Suggestions for mitigation and follow-up measures** The hydrometric monitoring program could be made more robust by including: • hydrometric stations to measure lake levels, particularly in Patterson Lake; • a regular schedule of field visits to monitor rating curve applicability and backwater; and under-ice flow measurements where possible, since discharge from the Project occurs year round and currently under ice flows are only estimated. **Discussion Required:** Yes Measurements of water level and discharge will rarely allow a perfectly fitted rating curve, particularly in low gradient streams. However, the noted inconsistencies with best practices (WSC, 2016)	

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				9.6.3.3 for various scenarios in the EIS. There is no mention of variability of channel parameters due to backwater, so it is not clear if the percent change in wetted area of Tables 9.6-8, 9.6-17 and 9.6-26 account for these effects. The inconsistencies with best practices (WSC, 2016) contribute to larger than expected uncertainty in the rating curves, in subsequent studies that use that information, and ultimately the description of baseline conditions. The effect of this uncertainty on the Project residual effects is unclear. **Reference:** WSC - Water Survey of Canada, 2016, Hydrometric Manual – Data Computations, Stage-Discharge Model Development and Maintenance	contribute to larger than expected uncertainty in the rating curves. The rating curves are at the base of a very complicated model and the impact to overall results is very difficult to ascertain.	
76.	ECCC	Fish and fish habitat	Appendix 9A3.6.4 Current Climate Total precipitation data – model input	**Context:** Clarification on some of the climate input data and methods used in the hydrological assessment would help in understanding the Proponent's predictions for the Project, particularly into the far future. The hydrology assessment describes existing conditions and predicts Project effects on the hydrological regime. A hydrological model, which uses various inputs (e.g., historical climate data, hydrometric data, , precipitation etc.) was used to characterize the existing conditions and make predictions on future effects in order to inform the assessment of Project effects. Appendix 9A describes the methods used to conduct the hydrology assessment including hydrological modelling. . The following areas is describe where additional information will assist ECCC in assessing the model: -Medium-Range Weather Forecasts (ECMWF) Reanalysis database provides synthetic hourly climate data. The European Reanalysis Interim (ERA1) database consists of data spanning from January 1979 to July 2018 on a 50km spacing grid. The European Reanalysis 5 (ERA5) database consists of data spanning 1950 to present on a 30 km spacing grid. It is unclear which datasets were used, if a combination of the datasets were used or how the datasets were compiled. There was no detail provided on how longer timeframes (e.g., 24-hour) were inferred from the hourly data. -The synthetic data was verified by comparison with a locally collected data set spanning only 2 years but no rationale for the use of this methods was provided. Verification of the synthetic data using available observed data sets in combination with a weighted average algorithm for the Project location will yield more accurate data. -An assembly of climate time series data was also used in the hydrological model. It is not clear if the probability distribution of the sequential times series is the same, if the probability distribution was verified or how the time series distribution errors were considered. Understanding how probability distribution for the times series was verified helps to understand how the bias, which is directly related to time series and probability distribution was addressed. By forcing the modelled future data to maintain the past synthetic data, time series PD statistical errors of the past	1. Confirm if the ERA1, the ERA5 database or a combination of the databases was used for climate data. If both databases were used provide details on how the databases were compiled and where the complied dataset was used throughout the draft EIS. 2. Describe the procedure by which longer timeframes were obtained from ECMWF Re-analysis data. Provide this information for 12 and 24-hour periods. 3. Provide rationale as to why a data set spanning two years was used for verification of the synthetic data rather than using available observed datasets in combination with a weighted average algorithm for the Project location. 4. Confirm that the sequential time series have the same probability distribution. Confirm if the time series sequences were verified for best fit probability distribution or if they were assumed to have the same probability distribution. 5. Clarify if the potential size of time series probability distribution errors was estimated due to statistical assumptions. 6. Describe where time series analysis versus climate data points were used in the hydrology and climate change assessments. **Discussion Required:** Yes. The hydrology assessment is based on a complicate hydrological model that has a number of inputs	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				time series are propagated into the future generated data set model. Without an understanding of the limitations of the past data (which in itself was modeled), it is not possible to understand the limitations in the future modeled data. The same applies for value-biased corrections. -In several areas of the draft EIS both climate points (average over 30 years) and time series analysis were referenced. It is unclear where climate points and where time series analysis were used in the assessments. **Rationale:** The draft EIS does not provide enough detail surrounding the current climate data used in the hydrology assessment for ECCC to assess the predicted effects of the Project particularly into the far future.	sources. Further discussion would help ECCC to assess the potential effects of the Project.	
77.	ECCC	Fish and fish habitat	Section 9A3.6.4.5 Historical Climate – model input	**Context and Rationale:** The Proponent states that precipitation is the main input in the watershed and Figure 9A8 shows precipitation variations of 20% (i.e., more 10% in the mean). Based on this, ECCC would expect to see a corresponding variation in surface water elevations, however, Table 9.4-2 shows minimal water surface elevation variations. **Rationale:** A clear understanding of the current hydrological regime would assist ECCC in understanding how predicted changes in precipitation will affect surface water elevations and how the projected climate change will affect hydrology.	Explain the discrepancies between Figure 9A8 and Table 9.4-2. Describe if the discrepancies can be interpreted as a flooding of the natural shoreline.	
78.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.2.6 Section 10.4.2 Section 10 Appendix 10A	**Context:** Baseline surface water and sediment quality throughout the Local Study Area (LSA) and Regional Study Area (RSA) are discussed within this section and sampling locations are presented in Figure 10.2-4 pg. 1601 of the EIS. However, no baseline information is provided about wetlands within the LSA and Project footprint. The location of wetlands within the Project footprint, as well as the other wetlands existing within the LSA can be confirmed from Annex V11.2: Vegetation Baseline Report 2 (Inventory, Rare Plants and Wetlands), including the wetland classifications. There is no consideration of wetlands or potential effects to wetland surface water or sediment quality throughout the surface water and sediment quality assessments and surface water quality modelling report in Appendix 10A. **Rationale:** There is currently not enough information provided for ECCC to provide advice on the potential risks of the proposed Project to wetland surface water and sediment quality within the LSA. This pathway of effects is important to assess in terms of potential impacts to wetland habitat availability and effects to terrestrial and aquatic receptors. Potential effects from Constituents of Potential Concern (COPCs) and radionuclides to surface water and sediment, or potential effects to ecological receptors within wetlands have not evaluated.	1. Provide baseline information on wetland surface water and sediment quality characterization for wetlands within the Project footprint, including physiochemical parameters and particle size for sediment. 2. Provide an assessment of potential effects to surface water and sediment quality for wetlands within the LSA and potential effects to ecological receptors during all phases of the proposed Project.	
79.	ECCC	Fish and fish habitat	Section 10.2.8.2.1	**Context:** This section discusses the elimination of chemical constituents from further analysis in water quality modelling for the Project. ECCC acknowledges the rationale provided by the Proponent for eliminating thallium and Dissolved Organic	Assess un-ionized ammonia, thallium and DOC in the pathways analysis and surface water quality modelling for the surface water quality assessment.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		Change to an environmental component due to radiological contaminants		Carbon (DOC) as Constituents of Potential Concern (COPCs) for further assessment in the pathways analysis. Total ammonia is included for assessment, but un-ionized ammonia is not. Despite the provided rationale, due to requirements under the *Metal and Diamond Mining Effluent Regulations* (MDMER) for effluent testing and receiving environment monitoring, it is recommended that thallium, DOC, and un-ionized ammonia be carried forward for a complete assessment of all required monitoring parameters under the MDMER. **Rationale:** ECCC recommends that thallium, DOC and un-ionized ammonia be screened in as COPCs for further assessment in the pathways analysis and water quality modelling due to requirements under the MDMER Schedule 4 and Schedule 5 Sections 4(1), 7(1) and 12(1)(ii) for environmental effects monitoring. ECCC recommends that these parameters, as well as hydrocarbons, be included in the larger set of constituents that surface water quality monitoring would be conducted for.	**Suggestions for mitigation and follow-up measures** Un-ionized ammonia, thallium, DOC and hydrocarbons should be included in follow-up surface water quality monitoring.	
80.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.2.8.2.1 Section 10.3.1.2 Section 10.5.1.1.3, Section 10.5.1.1.1	**Context:** In Section 10.2.8.2.1 the Proponent provides the list of Constituents of Potential Concern (COPCs) carried forward for further assessment in the pathways analysis and water quality modelling. Both mercury and sulphate are included as COPCs. In Section 10.3.1.2 pg. 1633 the Proponent states that sulphate is one of the dominant ion concentrations in the Local Study Area (LSA) and Regional Study Area (RSA) for existing conditions. Table 10.3-4 pgs. 1635-1637 provides data on existing water quality conditions for the LSA and RSA, including values for sulphate and mercury. There is no baseline data on methylmercury provided in this table. Due to the existing conditions and expected inputs of both sulphate and mercury to the receiving environment from the proposed Project via liquid and air emissions. Table 10.5-3 pg. 1659-1660 displays the predicted concentrations of metals at the edge of the proposed Effluent Treatment Plant (ETP) Regional Mixing Zone (RMZ) at the beginning and end of operations for the Project Application Case. Table 10.5-3 suggests that mercury concentrations are expected to increase by a degree of magnitude throughout Project operations due to effluent and atmospheric deposition, and Table 10.5-1 pg. 1657 suggests an increase in sulphate concentrations in the receiving environment, which could potentially lead to an increase in mercury methylation rates. **Rationale:** Increased sulphate availability can lead to increased methylation rates of mercury and methylmercury in sediment and surface water. Methylmercury is a toxin that can bioaccumulate within the food chain and present risks to aquatic biota and wildlife consuming aquatic biota. Potential changes to methylmercury concentrations in water quality, sediment and fish tissues should be assessed due to the proposed sulphate and mercury loadings in effluent.	1. Provide baseline data on the concentrations of methylmercury in surface water, sediment and fish tissues (i.e. large-bodied sports fish and small-bodied forage fish) in the LSA and RSA receiving environment to establish a baseline prior to potential Project impacts. 2. Provide an assessment of risk from methylmercury to ecological receptors due to changes in sulphate and mercury concentrations in the receiving environment related to Project discharges.	
81.	ECCC	Fish and fish habitat	Section 10.2.8.2.2 Section 10.3.2	**Context**: The Proponent has provided a list of total metals and radionuclides that were carried forward for the quantitative sediment quality assessment and modelling in the Environmental Risk Assessment (ERA). The Proponent states that these were	1. Include TOC in further assessments in the ERA and sediment quality modelling for the sediment quality assessment.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		Change to an environmental component due to hazardous contaminants		determined based on the corresponding water quality constituents having the potential to exceed baseline values and availability of guidelines. Due to requirements for environmental effects monitoring under the *Metal and Diamond Mining Effluent Regulations* (MDMER) total Organic Carbon (TOC) must be screened for further assessment and modelling. Additionally, based on baseline condition data provided in Section 10.3.2 for sediment quality, barium, iron, manganese and vanadium should be screened in for further assessment as these metals had the highest concentrations in sediment within Patterson Lake and Naomi Lake. **Rationale**: Due to requirements under the MDMER Schedule 5 Sections 12(1)(ii) for environmental effects monitoring of benthic invertebrate communities, TOC must be screened in for further assessment and modelling . Due to elevated concentrations of barium, iron, manganese and vanadium in sediment concentrations within Patterson Lake and Naomi Lake, it is recommended that these metals be included for further sediment quality assessment and modelling.	2. Include barium, iron, manganese and vanadium in further sediment quality assessment and modelling.	
82.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.2.8.3.1 Section 10.3.1.2 Appendix 10A-2	**Context**: Table 10.2-5 pg. 1620-1622 demonstrates Constituents of Potential Concern (COPCs), their respective water quality guidelines from applicable sources, and proposed Project thresholds that have been selected based upon the most stringent guidelines. General parameters such as temperature, pH, conductivity, etc. that would require Project thresholds and monitoring under the *Metal and Diamond Mining Effluent Regulations* (MDMER) have not been provided in this table. Phosphorous and its respective guidelines and Project threshold is missing from this table. All COPCs that require calculations based on other parameters such as hardness, pH, or temperature to derive guidelines (i.e. ammonia, cobalt, zinc, etc.) should be calculated and added to the table, with a note specifying the parameter values used in the calculation. For nitrate (as N) the Canadian Council of Ministers of the Environment (CCME) chronic guideline provided in the table is 3.0 mg/L however, the correct value is 13 mg/L. For molybdenum, the most stringent water quality guideline is the CCME guideline of 0.073 mg/L, not the provincial guideline of 31 mg/L. For vanadium it appears the federal water quality guideline was suggested, however the correct value is 120 ug/L or 0.120 mg/L, not 0.00012 mg/L. In Appendix 10A-2 pg. 1946 modelled surface water concentrations of molybdenum for the application and upper bound modelling scenarios at all downstream lakes are displayed. There is a significant increase in surface water concentrations in the far future, and it is difficult to discern if there are any exceedances of the 0.073 mg/L CCME chronic guideline. There has been no discussion of these increases within the results of the EIS. Table 10.3-3 pg. 1634-1636 displays the existing baseline water quality conditions for all the areas within the LSA and RSA. General parameters (ex. temperature, pH, conductivity, etc.) and nutrients (ex. total and un-ionized ammonia, nitrate, phosphorus etc.) that would require Project thresholds and monitoring under the	1. Update Table 10.2-5 to include all general parameters required for environmental effects monitoring: pH, temperature, hardness, alkalinity, and conductivity. 2. Update Table 10.2-5 to include phosphorous and its respective guidelines and Project threshold. 3. Verify that all COPCs that require calculations based upon other parameters such as hardness, pH, temperature, etc. are calculated and input as values into the table with notes specifying the parameter values used in the calculations. 4. Update Project nitrate and vanadium guidelines and thresholds to the correct values, update molybdenum assessments and consider applying the most stringent molybdenum water quality guidelines as the Project threshold. 5. Provide additional information to justify the use of selected water quality guidelines on any water quality guideline exceedances for molybdenum for all Project phases including post-closure. 6. Update Table 10.3-3 to include the baseline data for general water quality parameters and nutrients that would require monitoring under the MDMER.	

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				Metal and Diamond Mining Effluent Regulations (MDMER) have not been provided in this table. **Rationale**: The recommended changes for Table 10.2-5 are based upon providing all the information needed for reviewers to assess the characterization of effects Proposed changes incorporate the usage of correct, up-to-date and the most stringent chronic water quality guidelines. It is difficult to discern if there is an exceedance of the water quality threshold for molybdenum, which should be discussed more in-depth in the results of the EIS. The recommended changes for Table 10.3-3 are based on providing baseline conditions in order for comparisons to determine if there are Project related effects that could cause changes to these parameters over the course of the Project's lifespan.	7. Update assessments as necessary according to changes in thresholds applied as described in ECCC-SW-13.	
83.	CNSC	Radiological Threshold Selection for water quality	Section 10.2.8.3.1	**Context:** The EIS states that thresholds for radionuclides in surface water for risk to aquatic life were calculated from a biota dose benchmark, following the USDOE document: A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota. **Rationale:** Typically, dose is cumulatively assessed from all sources of radiation by applying a recommended dose benchmark (100 µGy/hr for terrestrial biota and 400 µGy/hr for aquatic biota). It is unclear from the text if the selected concentrations for the radiological COPCs is reflective of the concentration of each individual radionuclide required to reach the threshold, or if the cumulative dose from all the radiological COPCs was considered in the calculation when deriving the concentration threshold in water.	1.Provide clarification of which dose benchmarks were considered when deriving the radiological concentration threshold in surface water. 2.Provide clarification on whether the thresholds derived only considered dose from the individual radionuclide or were they derived considering cumulative dose from all radiological COPCs? 3.Provide an example calculation on how these thresholds were derived to understand the process undertaken	
	CNSC	Selected surface water threshold for some COPCs	Section 10.2.8.3.1, 10.2.8.3.2	**Context:** The text in section 10.2.8.3.1 states that the most stringent chronic thresholds were selected for each COPC in the surface water, however it looks like the selected threshold for Molybdenum was the provincial objective of 31 mg/L, instead of the CCME objective of 0.073 mg/L (table 10.2-5). Similarly, table 10.2-7 shows less stringent Health Canada drinking water thresholds were selected for cadmium, selenium, lead-210, and radium-226 when there were lower World Health Organization thresholds available. **Rationale:** There is a disconnect between the stated process for selecting threshold values in section 10.2.8.3.1 and the selected thresholds for some COPCs. The proponent should provide an explanation for the inconsistencies between the process for threshold selection in the EIS and the selected thresholds.	Please explain why the less stringent surface/drinking water quality threshold was selected for molybdenum, cadmium, selenium, lead-210, and radium-226 when more stringent thresholds were referenced.	
84.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.2.8.3.4	**Context**: The residual effects analysis measures the effects of the Project on surface water and sediment quality against existing conditions and thresholds. Thresholds were set to identify if projected surface water and sediment quality over the lifespan of the project and the far-future projection had the potential to adversely affect aquatic life and waterbody productivity health. In Table 10.2-9 pg. 1626 it is unclear why several parameters for sediment quality do not have a Project threshold identified despite there being potential sediment quality guidelines available (ex.	Update Table 10.2-9 to incorporate the selection of the most stringent sediment quality guidelines for all parameters with available sediment quality guidelines. If this cannot be done, provide rationale as to why.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				cadmium, lead, nickel, selenium, vanadium and zinc). It is also unclear why Project thresholds that have been identified for some parameters (ex. arsenic, copper, and molybdenum) are not based upon the most stringent guidelines available with no rationale provided. **Rationale**: The recommended changes for Table 10.2-9 are based upon incorporating the use of the most stringent chronic sediment quality guidelines for the protection of the receiving environment. Use of the most stringent guidelines will allow for the most protective assessment to analyze risks to the receiving environment.		
85.	CNSC	Selected sediment thresholds for some COPCs	Section 10.2.8.3.4	**Context:** The text in section 10.2.8.3.4 states that thresholds from Burnett-Seidal and Liber 2013 were prioritized when selecting thresholds for sediment, as they are reflective of data from Canadian uranium mines. However, there are some COPCs with no threshold selected for the project, even when there is data available (cadmium, lead, nickel, selenium, vanadium). Furthermore, the LEL from Thompson et al. 2005 was selected for copper, when values from Burnett-Seidal and Liber 2013 exist, which is inconsistent with the stated process **Rationale:** Selection of sediment thresholds is inconsistent with the process outlined in the EIS, the proponent should provide an explanation for the exceptions pointed out in the context.	1.Please explain why some sediment COPCs have no project threshold associated with them, even when there is data available. 2.Please explain why the LEL was the preferred threshold for copper instead of the REF value 3.Please explain why the REF value for arsenic is highlighted	
86.	CNSC	Indigenous groups noting decreased water quality from exploratory work	Section 10.3.1	**Context:** It is stated that Indigenous groups noted a decrease in water quality coinciding with exploratory work in the area prior to 2013. **Rationale:** It is possible that exploratory work for the project altered the baseline of Patterson Lake, it is important to know when baseline data was collected to ensure exploratory work did not alter the undisturbed baseline	Please explain when baseline data for water and sediment quality was collected for the project, when compared to other activities carried out on the site. Provide rationale as to how baseline data was uncompromised by other activities or disturbances which have occurred in the project area.	
87.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.4.2	**Context:** In Table 10.4-2 pg. 1651-1652 for Pathway SWQ-11 (Treated effluent and treated sewage affecting sediment quality), predicted sediment quality concentrations in the Patterson Lake North Arm West Basin are provided for the different modelling scenario cases for the Project in order to compare predicted sediment concentration exceedances of Constituents of Potential Concern (COPCs) to environmental guidelines and Project thresholds established in Section 10.2.8.3.4 Table 10.2-9 pg. 1626. However, the guidelines and Project thresholds have not been included in Table 10.4-2, making it difficult for reviewers to compare the exceedances to guidelines. Additionally, the assessment of exceedances and risk to receptors has not been made against the most stringent sediment quality guidelines for arsenic and molybdenum (see Comment ECCC-SW-14). Arsenic and cobalt were evaluated further within the Environmental Risk Assessment (ERA) but the results are not discussed within this section of the EIS, and molybdenum was not evaluated further.	1. Incorporate IR from comment ECCC-SW-12 to consider Total Organic Carbon, barium, iron, manganese and vanadium for further assessment in the ERA and sediment quality modelling for the sediment quality assessment. 2. Incorporate IR from comment ECCC-SW-14 to update Table 10.2-9 to incorporate the selection of the most stringent sediment quality guidelines for all parameters with available sediment quality guidelines. 3. Update the risk assessment of molybdenum in the ERA for sediment quality.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: Arsenic has CCME Interim Sediment Quality Guideline (ISQG) of 5.9 ug/kg dw and a Probable Effect Level (PEL) of 17 ug/kg dw. However, the less stringent Saskatchewan Reference Values for Uranium Operations Reference (REF) value of 20.8 ug/kg dw and No-Effect (NE2) value of 522 ug/kg dw were used as Project thresholds. Molybdenum has a 'Uranium Mining and Milling in Canada guideline' for Lowest Effect Level (LEL) of 13.8 ug/kg dw and Severe Effect Level (SEL) of 1239 ug/kg dw. However, the less stringent 'Saskatchewan Reference Values for Uranium Operations' REF value of 22.6 ug/kg dw and NE2 value of 245 ug/kg dw. The most stringent guidelines, including molybdenum as a parameter for further evaluation in the ERA, and including the results from the sediment quality risk assessment in the ERA should be used in the assessment of potential effects to aquatic biota and wildlife. Use of the most stringent guidelines will allow for the most protective assessment to analyze risks to the receiving environment.	4. Include the ERA results for the quantitative risk assessment for sediment quality in the EIS for review.	
88.	CNSC	Screening out of the sediment pathway in the EIS	Section 10.4.2 and general throughout section 10	**Context:** Interactions between the project and sediment were classified as a secondary pathway and therefore not carried forward in the assessment. The only area looked at in depth in the EIS was therefore the surface water pathway **Rationale:** Screening out the sediment pathway as a means of contamination discounts the inherent interconnectedness of the entire aquatic ecosystem and removes an important aspect of it from analysis. There are several reasons the sediment pathway should not have been screened out of the analysis after pathways screening: -That discharge to surface water is considered a primary pathway, this should automatically qualify the sediment pathway as requiring additional analysis that was conducted for the surface water environment, given their interconnectedness. -Cobalt and copper are expected to exceed surface water thresholds into the future, mostly from a groundwater pathway, this groundwater must travel through sediment to reach the surface water environment, sediments in the path of the groundwater will most likely increase as well. A groundwater pathway to sediment should be considered. -Several COPCs are expected to increase throughout the life cycle of the project, with some predicted to potentially exceed surface water thresholds into the far-future. It is well established in other uranium mines that as surface water concentrations of COPCs increase in surface water, it will also increase in the sediments due to settling or uptake of plankton which also settle to the sediment after death or are preyed upon by benthic invertebrates. COPCs in sediment can represent a major source of trophic bioaccumulation in aquatic biota. Screening out the sediment pathway discounts the influence COPC concentrations in surface water could have on sediment quality. -Several sources indicate that thresholds in the sediment will be exceeded:	The proponent must apply the precautionary approach, and provide additional analysis of the sediment pathway, commensurate with that conducted for the surface water pathway, or provide strong justification for screening out sediment pathways from the additional analysis like that conducted for surface water. The changes to sediment concentrations from the project also qualify it to be analysed for a residual effects analysis.	

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				- Table 10.4-2 of the EIS indicates molybdenum, lead-210 and polonium-210 will exceed thresholds in sediment, showing a possible effect to sediment from the project - The ERA indicated copper exceeded relevant hazard quotients for zooplankton, benthic invertebrates, and lake whitefish While these may not inherently indicate effects to aquatic biota, the precautionary approach must be applied and additional analysis of the sediment pathway must be considered.		
89.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 10.5.1.1.1	**Context**: Table 10.5-1 pg. 1657 depicts the chloride and sulphate concentrations in surface water at the edge of the proposed mixing zone for the Application Case. The water quality threshold for Aquatic and Terrestrial Life for sulphate is predicted to change from 128 mg/L at the beginning of operations to 429 mg/L near the end of operations due to changes in hardness levels in Patterson Lake surface water. It is unclear why hardness levels are expected to change over the lifespan of the Project and if this is a Project-related effect. **Rationale**: If Constituents of Potential Concern (COPC) water quality thresholds are dependent on other water quality parameters, such as hardness, and are predicted to change over the course of the Project lifespan, an explanation of why these changes occur must be provided with clarification whether it is a Project-related effect.	1. Clarify if changes to hardness in surface water quality of Patterson Lake is an expected effect of the proposed Project. 2. Confirm if changes to hardness levels will affect any other COPC thresholds such as cobalt over the course of the Project. 3. Confirm if there are any other general water quality parameters that are expected to change over the course of the Project lifespan that may change COPC thresholds? 4. Include, in the potential COPC exceedances, an evaluation against thresholds that are calculated using baseline condition data during assessments of risk if threshold changes are caused by Project effects.	
90.	CNSC	Increase in sulphate thresholds throughout life of project	Section 10.5.1.1.1	**Context:** Table 10.5-1 indicates that the sulphate increases ~3.3 times from start of operation to end of operation. Sulphate concentrations at the end of operation will also increase above what the threshold would be under baseline conditions. **Rationale:** The sulphate threshold is hardness driven, which is expected to increase throughout the life of the project from effluent, this in turn allows a larger release of sulphate without exceeding thresholds. The modification of hardness represents an effect on the surface water environment, as it is changing it in such a way that more sulphate is allowed into the system than would be sustainable under baseline conditions. This appears to be in contradiction with the pollution prevention principle, which does not seem to have been considered for the control of sulphate.	Please provide information on how the principle of pollution prevention and the application of BATEA has been considered in the control of sulphate. Please provide additional justification, to demonstrate application of the precautionary approach as to why it is appropriate to release an amount of sulphate into the environment that could potentially cause adverse effects under natural conditions. **Suggestions for mitigation and follow-up measures** Principles of pollution prevention and the precautionary approach should be applied for the control of sulphate, with the application of BATEA for wastewater treatment in order to keep environmental concentrations of COPCs ALARA.	
91.	CNSC	Exceedances of Copper and Cobalt predicted in the far-future	Section 10.5.1.2.3 and throughout section 10	**Context:** The EIS predicts cobalt will exceed aquatic protection and drinking water quality threshold into the far-future in and downstream from Patterson Lake (potentially into the RSA). Copper will also exceed the aquatic protection threshold in Patterson	Propose additional mitigation measures the ensure the potential irreversible contamination of Patterson Lake and downstream does not occur. The EIS currently indicates this will be a source of monitoring,	

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				Lake. The suspected source of this ongoing contamination is from leeching of surface and subterranean waste-rock piles. **Rationale:** The prediction that Patterson Lake and downstream aquatic environments could be impacted for as long as models predict, represents an unacceptable compromise of the environment and violation of the CNSC mandate of protection people and the environment. Every measure should be taken to prevent this outcome and a concrete plan needs to be in place to ensure the environment is able to be returned to baseline conditions after the end of the project. The site must be passively safe after decommissioning, and a permanent leaching of select COPCs into the receiving environment, resulting in long-term exceedances of thresholds, and potential long-term and irreversible impacts to the receiving environment, does not demonstrate a passively safe site.	follow-up, and adaptive management activities; however, these conditions are not expected to occur until after decommissioning of the project which could be too late to prevent this from occurring. **Suggestions for mitigation and follow-up measures** Installation of impermeable and long term effective membranes/barriers on waste rock piles or consideration of other waste rock management approaches to control cobalt and copper migration.	
92.	CNSC	Potential shift of Patterson Lake North Arm from Oligorophic to Mesotrophic	Section 10.5.1.2.6	**Context:** The sensitivity analysis indicated that the trophic state of the North Arm of Patterson Lake could temporarily shift from oligotrophic to mesotrophic during the operations phase of the project **Rationale:** Measures should be taken to ensure a trophic shift does not occur in the lake. This was a specific issue raised with local Indigenous groups, who indicated the clear waters of Patterson Lake and surrounding waterbodies was of significant importance to them, as well as noting algae would indicate compromise of water quality.	Provide additional justification and commitments that lake eutrophication will be monitored and prevented during the operation of the project. **Suggestions for mitigation and follow-up measures** Installation of BATEA for the wastewater treatment in order to keep environmental concentrations of COPCs ALARA.	
93.	CNSC	Aquatic environment	Section 10.5.2.1.3 TSD XXI- ERA-section 6.3.1.1	**Context:** The EIS states that in the far future, the average monthly cobalt concentrations are predicted to consistently exceed the threshold value in Patterson Lake North Arm – West Basin and Patterson Lake South Arm, peaking at 0.0015 mg/L (1.5 ug/L) and 0.0011 mg/L (1.1 ug/L), respectively. The threshold for cobalt used is 0.465 ug/L (as can be seen in table 4-2 of the ERA), and is based on the FEQG for cobalt which takes hardness into account. Patterson Lake is considered to have soft hardness (e.g., often less than 25 mg/L $CaCO_3$). Although the EIS predicts exceedances of the cobalt threshold, the ERA does not predict any effects from cobalt on aquatic or terrestrial populations as a result of releases from the project (i.e., all HQ values are below 1). The ERA uses TRVs for cobalt from Stubblefield et al., 2020 that are adjusted to an EC_{20}. It is not clear if these TRVs take the study area's low hardness into account. **Rationale:** The TRVs for cobalt from Stubblefield et al., 2020 presented in table 6-15 of the ERA do not appear to be adjusted to take low hardness into account. For example, table 6 of Stubblefield et al., 2020 indicates that the hardness in the chronic toxicity test results ranges from 27.4 to 250.3 mg/L. Since the project area is known to have low hardness, this would mean that cobalt could be more toxic at lower concentrations, therefore making the TRVs presented in the ERA less conservative. For example, the lowest TRV for cobalt in the ERA is 9.8 ug/L for aquatic plants	Please provide additional information/justification on the cobalt TRVs chosen for use in the ERA, and ensure the TRVs used to predict effects are conservative and take the soft hardness of the project area into account.	

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				(based on conversion to EC_{20}) . The SSD curve derived from Stubblefield et al., 2020, calculated a value of 1.8 ug/L for cobalt for 5% of species effected. The FEQG for cobalt (based on a hardness of 52) is 0.78 ug/L, and would be even lower for the project area due to softer waters. Based on the information presented it is not clear if the TRVs for cobalt used in ERA are adequately conservative.		
94.	CNSC	Aquatic Environment	Section 10.5 TSD XXI- ERA-section 4.2.2	**Context:** It is not clear if the pathway for groundwater to sediment was considered in the EIS/ERA for the far future modelling when exceedances for cobalt and copper are predicted in surface water (caused in large part by WRSA and tailing management seepage and infiltration). The Federal Environmental Quality Guidelines (FEQG) for cobalt states that cobalt binds strongly with sediments and suspended particulate matter and that high sediment-water partition coefficients suggest that cobalt will remain for the most part in bottom sediments after entering this compartment. **Rationale:** It is difficult to follow the methodology used in the EIS/ERA related to the sediment pathway, particularly if sedimentation for copper and cobalt present in surface water (caused by WRSA/tailing management GW seepage/infiltration) was considered for the far future.	Please clarify if the sediment pathway was considered from groundwater in the far future (caused by seepage and infiltration from WRSA and tailing management) for copper and cobalt.	
95.	CNSC	Surface Water quality Cumulative effects	Section 10A6.3.2.2	**Context:** The EIS determined potential cumulative effects on water quality by estimating the combined impacts of the project activities under the Application Case and the activities related to the Fission Patterson Lake South Property. The EIS states that "*as the Fission Patterson Lake South Property has not been approved and expected quality of the discharges is not within the public domain, the treated sewage quality was set equal to the treated sewage discharge quality from the Project. Additionally, the treated mine effluent discharge quality during the assumed three-year construction period and six-year operating period of the Fission Patterson Lake South Property was assumed to be equal to the median treated effluent quality predicted for the Project during the corresponding mine life phases. The quality assigned to site surface runoff from the Fission Patterson Lake South Property above-ground tailings management facility and covered waste rock storage facility in the far future was set to equal to the median treated effluent quality predicted for the Project during Operations.*" The EIS also states that the cumulative effects from the Project and the Fission Patterson Lake South Property on surface water quality in general would include an increase of COPC concentrations in the South Arm of Patterson Lake compared to the Application Case, however COPCs would remain below water quality thresholds. It is not clear how conservative these assumptions on water quality from the Fission Patterson Lake South Property project are to support this conclusion. **Rationale:** It is not clear from the EIS if the surface runoff from the Fission Patterson Lake South Property above-ground tailings management facility and covered waste rock storage facility will be collected, treated, and released as effluent, or if it is a separate source-term that is not being collected/treated and is being released directly into Patterson Lake, and this distinction will impact what assumptions for	For the cumulative effects assessment, please apply the precautionary approach, and consider treated mine effluent and surface runoff quality estimates conservatively based on existing operating mines OR include information on how using the assumptions under section 10A6.3.2.2 of the EIS is conservative to determine cumulative effects on water quality, and how it respects the precautionary approach. Please clarify if Fission Patterson Lake South Property surface water runoff will be treated as effluent and provide rationale that the median treated effluent quality predicted for the NexGen Project is appropriate for estimating effluent and run-off from a facility with above-ground tailings management.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				predicted water quality should be used. Furthermore, the quality assigned to the treated mine effluent discharge and site surface runoff from the Fission Patterson Lake South Property above-ground tailings management facility and covered waste rock storage facility was set to equal to the median treated effluent quality predicted for the Project during Operations, however the NexGen Project is proposing underground tailings management, and therefore the NexGen effluent quality may not be representative of Fission's effluent or surface water runoff. It is unclear how similar the effluent from the NexGen Project would be to a project that includes an above-ground tailings management facility. In this case, the precautionary approach should be applied, whereby effluent and surface water runoff quality estimates from other operational above-ground tailings management facilities would be more conservative, and hence more appropriate for predicting cumulative effects than using the median treated effluent quality predicted for the NexGen Project.		
96.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section Appendix 10A7.4.1	**Context**: It is incorrectly stated that only chloride concentrations exceed water quality thresholds at the edge of the mixing zone from the Effluent Treatment Plant (ETP). Table 10A-34 pg. 1777 demonstrates that both sulphate and chloride exceed water quality thresholds at the edge of the mixing zone. Additionally, this table should be updated to include all parameters of interest from the *Metal and Diamond Mining Effluent Regulations* (MDMER) and their respective water quality thresholds. **Rationale**: ECCC advice is to include the general water quality parameters that influence water quality thresholds in this table and parameters in Schedule 4 of the MDMER, so that any changes over the lifespan of the Project can be reviewed.	1. Include all general water quality parameters (ex. pH, temperature, hardness, total suspended solids, etc.) and un-ionized ammonia in Table 10A-34. 2. Include all water quality thresholds for each parameter in Table 10A-34. 3. Update the conclusions on water quality threshold exceedances at the edge of the mixing zone in this section to address sulphate exceedances and any other changes to general water quality parameters over the Project lifespan.	
97.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Appendix 10A7.4.2	**Context**: This section states that the Total Suspended Solids (TSS) concentration for the Effluent Treatment Plant (ETP) and Sewage Treatment Plant (STP) were set to 25 mg/L for the modelling of the near-field area. The maximum allowable discharge limit under the *Metal and Diamond Mining Effluent Regulations* (MDMER) Schedule 4 is 15 mg/L monthly mean concentration from any final discharge point. **Rationale**: It remains the Proponent's responsibility to adhere to the MDMER to ensure that effluent at the end-of-pipe from the final discharge points meets the requirements of Section 4 and Schedule 4 of the regulations.	1. Update modelling to reflect changes to TSS concentration limits to adhere to MDMER discharge limits. 2. Update conclusions in this section to reflect any changes in results.	
98.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Appendix 10A7.5.1	**Context**: Modelling results should be provided for all Constituents of Potential Concern (COPCs) and water quality parameters required under the *Metal and Diamond Mining Effluent Regulations* (MDMER) and any parameters expected to have elevated concentrations in effluent or that have elevated baseline concentrations. There is no information provided in this section on effluent concentration inputs used for the modelling. A water quality threshold of 429 mg/L for sulphate has been applied but in Section 10.2.8.3.1 Table 10.2-5 pg. 1620-1622 the proposed threshold for the Project is 128 mg/L.	1. Provide modelling results for all COPCs and water quality parameters required under the MDMER and any parameters expected to have elevated concentrations in effluent or elevated baseline concentrations. 2. Provide the expected effluent discharge concentrations for all parameters used as inputs for the modelling.	

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				Rationale: A review all modelling results of all COPCs under the MDMER will assist ECCC in understanding the potential risks to the receiving environment. Additionally, ECCC advises that all Project thresholds and water quality guidelines are adhered to throughout the lifespan of the Project, with reasoning provided for any changes to those thresholds.	3. Provide an explanation for the discrepancy in the sulphate water quality threshold.	
99.	DFO	Fish and fish habitat	Sections 11 & 13	**Context:** No mention in Section 11 (Fish and Fish Habitat) or Section 13 (Vegetation) of whether wetlands are providing fish habitat. It could be that the types of wetlands present do not have sufficient standing water or connectivity to waterbodies to provide fish habitat; however, this should be stated explicitly. **Rationale:** Wetlands can provide valuable habitat for fish; therefore, if the wetlands predicted to be impacted have the potential of providing fish habitat, they must be evaluated for presence of fish and be appropriately included in the quantification of impacts to fish and fish habitat.	Describe whether there is standing water in any of the wetlands that could be providing fish habitat. If there is the potential for wetlands in the study area to support fish, further investigation into fish presence/absence is required. If the wetlands do not have sufficient water to support fish life processes, explicitly state this in the report. **Suggestions for mitigation and follow-up measures** If there are found to be fish in wetlands that will be impacted by the project, the proponent will be required to develop an offsetting plan to counterbalance the loss.	
100.	ECCC	Fish and fish habitat	Section 11.2.2.1 Section 11.5.2.4.1	**Context**: Table 11.2-1 pg. 1997 of the EIS provides the chosen fish species as Valued Components (VC) for further assessment. Lake Whitefish were chosen as a VC and representative species for forage fish species. However, Lake Whitefish are a large-bodied, cold, deep-water, transitory benthivorous fish species that does not share similar life history traits with many small-bodied forage fish species. Lake Whitefish should not be used as the representative species for forage fish. **Rationale**: EEM monitoring recommends using a large-bodied and small-bodied fish species to capture potential effects across different trophic levels within the exposure area. Large-bodied fish species are often very transitory and may not exist within the exposure area for long enough periods of time for effects to be accurately measured (i.e. may not be in exposure area during sampling, may only use exposure area during spawning, etc.), whereas small-bodied forage fish are more likely to be located in large numbers within the exposure area consistently and during monitoring. The additional a small-bodied forage fish species that is well studied as a VC would ensure potential effects across different trophic levels within the exposure area are captured in the assessment.	Include a small-bodied forage fish species as a VC for the risk assessment in the ERA.	
101.	CNSC	Assessment and Measurement Endpoints	Section 11.2.2.3 and 11.2.2.2	Assessment endpoints (e.g., 7.4.2.2.3, 11.2.2.3) should be discussed in the section preceding measurement indicators (e.g., 7.4.2.2.2, 11.2.2.2), since measurement indicators are used to predict overall effects on assessment endpoints.	Reorganize the sections so that assessment endpoints precedes measurement indicators section.	
102.	CNSC	Habitat Productivity	Section 11.2.6 (pg 11-29)	**Context and Rationale:**	Consider addition of available fish habitat productive capacity metrics in their assessment or provide rationale for exclusion.	

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				There are metrics available to measure productive capacity of fish habitat (e.g., Habitat Productivity Index, Index of Biotic Integrity), but during review, only qualitative ranges in the NexGen EIS could be identified. For example: Comparison of a Habitat Productivity Index (HPI) and an Index of Biotic Integrity (IBI) for Measuring the Productive Capacity of Fish Habitat in Nearshore Areas of the Great Lakes - ScienceDirect (Free)		
103.	CNSC	Lower trophic community sampling	Section 11.2.6.4 (pg 11-36)	**Context and Rationale:** There is currently no discussion identifying species that are resilient and those that are sensitive to chemical or physical stressors. As this information could provide early indicators of potential changes to aquatic community, it should be captured in the EIS.	Consider addition of discussion of resilient and sensitive lower trophic community species and their use as an early indicator of potential changes to aquatic community or provide rationale for exclusion.	
104.	DFO	Fish and fish habitat	Section 11.4.1 Pg. 92	**Context:** The EIS states that 'All applicable DFO-recommended measures to avoid causing harm to fish from the use of explosives would be followed for the proposed Project (DFO 2019b). The DFO guidelines for the use of explosives in or near fish-bearing waters (Wright and Hopky 1998) provide a maximum allowable limit for overpressure (i.e., peak pressure level; 100 kilopascals) and peak particle velocity (i.e., 13 mm/s).' **Rationale:** These guidelines are not currently accepted as a code of practice by DFO, and more recent research suggests the 100 kPa threshold may not be appropriate to ensure that fish are not harmed. DFO's previous Western and Arctic Region has recommended a maximum overpressure threshold of 50kPa (Cott and Hannah 2005). More recent research suggests this value is protective of fish including sensitive life stages (Koden and Aimone 2013). Cott P., and B. Hanna. 2005. "Monitoring explosive-based winter seismic exploration in waterbodies, NWT 2000–2002." In *Offshore Oil and Gas Environmental Effects Monitoring: Approaches and Technologies*, edited by S.L. Armsworthy, P.J. Cranford, and K. Lee, 473-490. Columbus: Batelle Press. http://dx.doi.org/10.13140/2.1.2312.7688. Kolden, K. D., and C. Aimone-Martin. 2013. "Blasting Effects on Salmonids." *Alaska Department of Fish & Game*. https://www.adfg.alaska.gov/static/home/library/pdfs/habitat/blasting_report.pdf.	The blasting assessment should be updated using the 50 kPa threshold. If the threshold is exceeded, mitigation measures should be proposed to reduce harmful effects. If measures to reduce impacts are predicted to be ineffective due to project design or site limitations, the potential impacts should be quantified and accounted for in the offsetting plan. A monitoring plan to confirm predictions and adaptively manage effects from blasting should be developed.	
105.	ECCC	Wildlife and Wildlife Habitat	Table 11.4-1 Table 23A-4	The draft EIS states that water crossing structures will be designed to limit the area disturbed and in a manner that protects the banks from erosion (Table 11.4-1 path ID F-10), particularly when moving equipment across the river using cranes. There was no discussion of the potential effects of these activities to SAR, migratory birds or wetland function.	Describe the methods that will be used to minimize erosion of stream banks and how success of these measures will be evaluated. Explain any risks to migratory birds, SAR and wetland function as a result of these crossings.	
106.	ECCC	Fish and fish habitat Change to an environmental	Section 11.4.2	**Context**: The movement of heavy equipment and infrastructure across the Clearwater River below Patterson Lake at the existing bridge crossing is discussed in this section. The Proponent proposed two options, (1) the use of a crane to maneuver equipment across the river, and (2) upgrading the existing bridge to provide additional	1. Provide further information on the existing conditions and bridge crossing including dimensions, capacity, footprint and information about the Clearwater River at that specific location (i.e., flows, depth, width, etc.).	

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		component due to hazardous contaminants		capacity. The Proponent's preferred approach is the use of a crane but the bridge will be upgraded in the event that it is deemed necessary. The Proponent concludes that upgrading the bridge will have negligible changes to fish habitat availability and thus is not further assessed., More information on the current bridge crossing would assist in the assessment of the amount of risk to the receiving environment from both options. **Rationale**: Currently there is no information provided on the current bridge crossing for dimensions, capacity and river flows. There is also no information provided regarding the amount of equipment expected to be brought across the river, and which best management practices would be used. Further information on proposed spill management and monitoring would assist in analyzing the options presented.	2. Provide more information on the number and types of equipment that would need to be lifted over the river and the footprint for both options. 3. Provide further information on which best management practices will be applied for spills management and monitoring.	
107.	CNSC	Summary of key information sources considered in the fish and fish habitat residual effects assessment	Figure 11.5-1 (pg 11-117)	For Key Findings it mentions that both cobalt and copper concentrations in Patterson Lake are predicted to exceed surface water quality thresholds for the protection of aquatic life, but in boxes that follow there is no mention of cobalt, only copper.	Revise Figure 11.5-1 to indicate if/how cobalt was removed from further consideration in second step (EcoRA) (Cobalt HQ<1).	
108.	CNSC	Surface water quality guidelines	Section 11.5.1.1 (pg 11-118), Table 115-1	Report mentions that surface water quality predictions were compared to CCME guidelines (2021) and SK provincial WQ objectives (WSA 2015), but not upper limit of background.	Provide reference to where in EIS and how the upper limit of background was calculated and taken into consideration.	
109.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 11.7	**Context**: There is the potential for a low level of risk to aquatic biota in the far future due to elevated copper concentrations in surface water due groundwater inputs from the Potentially Acid Generation Waste Rock Storage Area (PAG WRSA). Forage fish, benthic invertebrates and planktonic species are predicted to be at higher risk than predatory fish species. The Proponent states that they are "developing an adaptive management plan to reduce uncertainty and manage risks related to this pathway". **Rationale**: Further information on this topic would assist ECCC in assessing the risk to aquatic receptors.	Provide the adaptive management plan, and include details on the monitoring and management of copper loadings to Patterson Lake for all Project stages including post-closure from the PAG WRSA.	
110.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 11A2.3	**Context**: Table 11A-2 pg. 2155 provides the input values for the Biotic Ligand Model (BLM) and Multiple Linear Regression (MLR) models for the assessment of copper. Hardness values were predicted based upon predicted calcium and magnesium concentrations rather than baseline values. **Rationale**:	Provide additional information on the parameter inputs used for the BLM and MLR models and if concentrations are related to Project effluent inputs to Patterson Lake.	

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				As per comment ECCC-SW-16, clarity is would assist in understanding if changes in concentrations of hardness and other parameters are a Project-related effect.		
111.	ECCC	Wildlife and Wildlife Habitat	Section 12 Table 14.4-1	The draft EIS states that erosion control techniques will be utilized but does not provide details on what these techniques are or how these techniques will prevent sediment from entering waters frequented by migratory birds or SAR.	Provide details on what methods will be used for erosion control and how they will prevent sediment from entering waters frequented by migratory birds and/or SAR. Explain what actions will be taken if the erosion control measures are not successful. **Suggestions for mitigation and follow-up measures** In development of the Environmental Protection Plan, ensure that clearing and grubbing activities are not conducted during the breeding bird season.	
112.	ECCC	Wildlife and Wildlife Habitat/Wetland Function	Section 13 Section 14 Table 23A-5	The draft EIS states that the Project will avoid wetlands as much as practical, but there will be a permanent "loss of availability of approximately 28 ha of wetland ecosystems". The mitigation measures propose adherence to the Federal Policy on Wetland Conservation to have no net loss of wetlands, however the draft EIS also states in multiple places that reclamation rarely works or restores original function. The draft EIS also states that offsets may be required to meet the requirements of the Federal Policy on Wetland Conservation, but does not provide clear explanation of how offsets will be applied. It is unclear how the Proponent will ensure no net loss of wetlands with this Project.	Provide a wetland mitigation and offset plan that will describe how no net loss of wetland function will be achieved.	
113.	MN-S	Assessment Endpoints	Section 13.2.2.3 Table 13.2-1 Valued Components, Rationale, Measurement Indicators, and Assessment Endpoints	Please explain why “ecosystem condition” was not used as a measurement indicator for the traditional use plant species VC. As defined in Section 13.2.2.24, ecosystem condition is “primarily affected by changes in the amount of moisture and sunlight, competition with invasive species, and dust deposition”.	Please explain how traditional use plant species and their associated ecosystems are not expected to be affected by these changes.	
114.	CNSC	Baseline assessment of rare plant species	Sections 13.2.3.1 and 13.2.3.2	**Context:** The spatial boundaries for the vegetation baseline assessment do not cover the extent of the environmental assessment (EA) spatial boundaries, i.e., the baseline study areas are smaller than the EA regional study area (RSA) of 107,491 ha, as depicted in Figure 13.2-1. As a result, it is unclear whether all plant species in the RSA were adequately captured in baseline surveys, in particular with respect to	1.Provide further rationale for the selection of an ecosystem-based approach for rare plant species. 2.Discuss uncertainties related to an ecosystem-based approach for rare plant species.	

[4] EIS, Section 13, p. 13-14.

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				rare species (e.g., federal and provincial species at risk) that may be located in potentially affected downstream waterbodies, wetlands, and riparian areas. Moreover, there appears to be inconsistency between the rare plant species maps in the EIS and the Annex VII.2 (Vegetation Baseline Report 2: Inventory, Rare Plants, and Wetlands). For example, see Figure 13.5-5 in the EIS *versus* Figure 3.3-1 in Annex VII.2. Lastly, the baseline survey was conducted only in 2018 which may underestimate the presence of certain rare plant species (e.g., annuals). **Rationale:** The VC selection is in part based on observations of plant species in the baseline studies. The limited amount of rare vascular plant observations during the baseline field surveys is used as a rationale to use an ecosystem-based approach to the assessment of rare plants. However, since the surveyed areas for observations do not extend to the RSA boundaries, there is a possibility that not all rare species occurring in the RSA were captured in baseline surveys. Further rationale should be provided to conclude that an ecosystem-based approach is appropriate and conservative for rare plant species. Moreover, in the baseline study presented in Annex VII.2, it is stated that the survey likely underestimates the number of rare species present since only a portion of available habitat was surveyed, and due to plants' variable emergence between years. For example, certain rare annual species have a seed bank and emerge only during specific moisture regimes which may not be available every year.	3.Discuss uncertainties related to limitations of the baseline inventory survey for rare plants. 4.Explain discrepancies between rare plant species mapping in the EIS and Annex VII.2. **Suggestions for mitigation and follow-up measures** Identify any monitoring of rare plants that would be required by other authorities.	
115.	CNSC	Regional environmental assessment boundaries	Section 13.2.3.2	**Context:** The regional study area (RSA) for the EA was selected to provide a watershed-based context for interpreting the local effects of the Project. The RSA includes the local study area (LSA), Forrest Lake, Beet Lake, Naomi Lake, and the watershed east and north of the confluence of the Clearwater and Mirror rivers. The Project is located on the western "edge" of the RSA, as depicted in Figure 13.2-1. Since the complete RSA is used to evaluate the availability (e.g., change in area) and distribution of vegetation VCs (i.e., upland, wetland, and riparian ecosystems), the selection of the size and spatial boundaries of the RSA affects the calculated proportions of lost VC areas, which in turn is used for the predicted effects assessment. The conclusion of the magnitude of the effects is in part based on the physical loss (%) compared to the RSA, and the conclusion of e.g. "low magnitude" (e.g., Table 13.5-6) is therefore influenced by the size of the RSA. **Rationale:** Given that the predicted direct loss of upland, wetland, and riparian ecosystems is concentrated nearby the Project area (LSA), the determination of magnitude based on the comparably large RSA may not adequately reflect the potential effects on availability and distribution of vegetation habitat near the Project. For example, for wetland ecosystems, the Project is predicted to contribute to a loss of 26.0 ha (i.e., 21.2% in the LSA) of undisturbed wetland ecosystems (page 13-118), however, the significance rating is "low magnitude" based on the RSA scale.	1.Provide further rationale for the appropriateness of selecting the size and spatial boundaries of the RSA, and for using a watershed-based approach, for the vegetation VCs. 2.Discuss the conservativeness of using the comparison to the RSA for the determination of effect magnitude. 3.Present effect magnitude based on the LSA for vegetation VCs.	

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				As another example, the uncommon upland ELC Black spruce/Labrador tea/feathermoss (BP14) availability would decrease from 19.1 ha to 7.6 ha in the LSA, which equals a decrease of approx. 60%.		
116.	MN-S	Traditional Plant Use Plant Species	Section 13.2.6.2	It is not clear how total availability calculations for traditional use plant species considered ELC units with low field sampling effort. Were vegetation field plots comparable between studies (i.e., CanNorth vs. Omnia)? How has accessibility and practicality for harvest (i.e., available at high density) been considered?	Please include additional information how total availability calculations for traditional use plant species considered ELC units with low field sampling effort. Please provide additional information clarifying if vegetation field plots were comparable between studies (i.e., CanNorth vs. Omnia as well as how accessibility and practicality for harvest (i.e., available at high density) has been considered.	
117.	CNSC	Change to an environmental component due to hazardous contaminants	Section 13.4.2	**Context:** The categorizing of "V-04: Fugitive dust and constituent emissions" as a secondary effects pathway is based on the assumption that the spatial extent for the deposition of fugitive dust emissions is concentrated within 500 m of the Project footprint. However, the study of Chen et al. 2017 is cited which concluded that dust generated from a haul road was found to decrease lichen cover up to 1 km. This indicates that lichen is a sensitive species to dust deposition. The Environmental Risk Assessment (ERA) supporting document does not evaluate the air/dust deposition pathway for lichen. The exposure pathway is not included in the ecological conceptual site model (page 6.24 of Technical Support Document (TSD) XXI: Environmental Risk Assessment). **Rationale:** In the ERA (TSD XXI), it was concluded that constituents relevant to fugitive dust and particulates (i.e., total suspended particulates (TSP), particulate matter PM_{10} and $PM_{2.5}$) exceeded screening values, but these were not carried forward in the ERA. Please provide an analysis of predicted effects from dust and particulate matter on lichen.	Evaluate predicted effects on lichen species from atmospheric contact with TSP, PM_{10} and $PM_{2.5}$. **Suggestions for mitigation and follow-up measures** CNSC staff suggest to measure dust deposition at different spatial intervals from the Project site in order to evaluate whether fugitive dust emissions are concentrated within 500 m of the Project footprint, as assumed in the EIS.	
118.	CNSC	Aquatic species	Section 13.4.2	**Context:** The section on the effects pathway "V-08: Surface water flow changes" includes a discussion on how changes in surface water levels, flows, and drainage areas can affect wetland ecosystems, however, it is not acknowledged that seemingly "isolated" wetlands can also be connected hydrologically through groundwater. There is no assessment of potential "downstream" effects to hydrological connectivity of wetlands across the RSA. **Rationale:** Changes in hydrological regimes due to the Project could potentially affect wetland hydrological connectivity, and thereby wetland water levels and indirectly the availability, distribution, and condition of vegetation VCs. In particular, information on wetland connectivity would be relevant regarding the wetlands in close proximity to the Project infrastructure, i.e., the extensive organic wetland (i.e., BP19, BP19[BU], and BP20) to the east of the existing bridge crossing	Evaluate predicted effects on wetland hydrological connectivity, including with respect to groundwater, in the context of vegetation VCs.	

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				on the existing access road, as well as the wetland west of the proposed airstrip (as described in section 13.5.2.1.2).		
119.	CNSC	Upland ecosystem loss	Sections 13.5.1.1.1 and 13.5.1.3.1	**Context:** In the significance determination for upland ecosystem availability, it is stated that effects are permanent and irreversible for upland ELC units that are covered by permanent facilities (e.g., waste rock storage areas, WRSAs). **Rationale:** Certain upland ELC units are uncommon in the LSA and may be affected. For example, within the LSA, the uncommon Black spruce/Labrador tea/feathermoss (BP14) availability is predicted to decrease from 19.1 ha to 7.6 ha. It is unclear if this ELC is present in areas that are proposed to be used for permanent facilities, and therefore cannot be reclaimed (i.e., permanent and irreversible effect).	1.Provide information on which ELCs are located in areas that are planned to be covered by permanent facilities. 2.Assess the magnitude of effect on the ELCs that cannot be reclaimed. **Suggestions for mitigation and follow-up measures** Consider placement of permanent facilities in areas with upland ELC units that remain common within the LSA.	
120.	CNSC	Traditional use plant species	Section 13.5.4.3.2	**Context:** In the context of the significance determination, it is stated that the effects of previous and existing developments and activities in the Base Case have negatively altered habitat availability and habitat distribution of traditional use plant species. Based on this, it is concluded that in the Application Case, the Project contributes to adverse changes of low magnitude. However, the magnitude compared to a "baseline natural state" of the habitat (i.e., before any disturbance) is unclear. Furthermore, it is predicted that traditional use plant species continue to be self-sustaining and ecologically effective, however, it is unclear what the "tipping point" is at which these species are not self-sustaining and ecologically effective anymore, given that they are assessed on an ELC basis. **Rationale:** Indigenous Groups have expressed concerns related to Project activities and potential effects on traditional use plants, their health and availability for gathering (e.g., section 13.5.4.1.1). Concerns were also expressed about the ability to access habitats in the vicinity of the Project site for collecting medicinal plants or berries and how the ability to harvest traditional use plant species is reduced by the cumulative effects of existing disturbances and the Project. Given these concerns, it would be relevant to assess the magnitude of effects with consideration of the already cumulative effects of existing disturbances.	1.Evaluate magnitude of predicted effects on traditional use plant species availability and distribution with respect to a "baseline undisturbed" state, as well as taking into account the cumulative magnitude of existing and proposed disturbances. 2.Define the specific indicators at which traditional use plant species are considered not self-sustaining and ecologically effective.	
121.	ECCC	Wildlife and Wildlife Habitat	Section 14	As per the CNSC Generic Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012: "The EIS will then describe mitigation measures that are specific to each environmental effect identified. Measures will be written as specific commitments that clearly describe how the proponent intends to implement them and the environmental outcome the mitigation is designed to address. The EIS will describe mitigation measures in relation to species and/or critical habitat listed under the Species at Risk Act (SARA). These mitigation measures will be consistent with any SARA permit, applicable recovery strategy and/or action plan." The draft EIS does not list all SAR, or the adverse effects to all SARA-listed species,	1. Identify all SAR and their critical habitat and describe how they may be adversely affected by the Project. 2. Describe what measures will be taken to avoid or lessen the effects of each Project activity and phase, and how these effects will be monitored to ensure they are minimized or avoided.	

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				and does not outline the measures that will be taken to avoid or mitigate these effects.		
122.	ECCC	Wildlife and Wildlife Habitat	Section 14	ECCC has identified that four SAR arthropods (yellow banded bumble bee, gypsy cuckoo bumble bee, transverse lady beetle, and nine-spotted lady beetle) have ranges overlapping the Project area and these were not mentioned in the draft EIS.	1. Include the four arthropod SAR in the assessment. 2. Explain what mitigation measures will be used to minimize effects to SAR arthropods that could occur in the study area.	
123.	ECCC	Wildlife and Wildlife Habitat	Section 14 Table 14.4-1 Table 23A-3	Light pollution and effects to migratory birds and SAR such as bats and caribou are identified in the draft EIS. Mitigation is described as 'limit light pollution to the extent practical…' but more detail will help ECCC to determine how light pollution will be limited and what mitigation measures will be utilized.	Explain how light pollution will be managed and what specific mitigation measures will be used to minimize effects to migratory birds and SAR birds and mammals.	
124.	ECCC	Wildlife and Wildlife Habitat	Section 14.2 Table 14.2-1	The Proponent has selected VCs to represent multiple Species at Risk (SAR), without providing sufficient detail on overlap of habitat requirements. Olive-sided flycatcher is considered representative of bank swallow, barn swallow and common nighthawk despite these species having very different nesting habitat requirements. Rusty blackbird is considered representative of horned grebe and yellow rail, although these species have different nesting and feeding habitat requirements. The information for rusty blackbird in table 14.2-1 lists that this species is a "representative species for effects on bank swallow, barn swallow, and common nighthawk, which are all aerial insectivores". This is the same rationale used for olive-sided flycatcher being representative for the same species.	1. Provide an explanation to support the use of olive-sided flycatcher as a representative species for bank swallow, barn swallow and common nighthawk or individually assess each species. 2. Provide an explanation to support use of rusty blackbird as a representative species for horned grebe and yellow rail or individually assess each species.	
125.	CNSC	Physical stressors (noise and vibration) on wildlife	Table 14.4-1; Appendix 14A	**Context:** During all project phases, sensory disturbances such as but not limited to noise have been identified as stressors for wildlife in the project area. However, this appears to have been assessed for most part from an anthropocentric perspective, such as dispersal of game animals resulting in loss of hunting opportunities for local hunters. While this is valid, there is virtually no consideration of the biology of wildlife species which can be disrupted by sensory disturbances. **Rationale:** Noise has been demonstrated to adversely affect reproductive behaviour (e.g., calling behaviour, mating success, calving, to name a few) in many wildlife species. This is particularly important for protected species (SARA-listed species, migratory species) where successful breeding is inextricably linked to species survival, in addition to other factors such as the availability of critical habitat. Also, there is no consideration of project-related vibrations as a sensory disturbance. Sensitive terrestrial species (specifically, herpetofauna, amphibians, and invertebrates) can be impacted by vibrations emanating from the operation of heavy machinery and blasting activities at the project site.	1.Provide a discussion of impacts of physical stressors (specifically noise and vibrations) on wildlife in the project area. Discussion should focus on protected species (i.e., migratory birds, SARA-listed species) and, if appropriate, mitigation measures and/or monitoring should be considered. 2.Provide project-related vibrations as a sensory disturbance in this assessment.	
126.	ECCC	Wildlife and Wildlife Habitat	Section 14.4.2 Table 14.4-1 Table 23A-1 Table 23A-5	The Proponent states that vegetation will be cleared during the construction phase to widen the access road and prepare the mine site, however the timing of vegetation clearing windows was mentioned only within the text of the EIS and should be included in the mitigation table and summaries. The Proponent also states that if sensitive periods for nesting migratory birds cannot be avoided, pre-	Provide an Environmental Protection Program that includes: • details on how vegetation clearing related to site preparation and road widening/development will	

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				clearance surveys will be conducted and buffers applied. ECCC does not recommend the use of nest searches or pre-clearing surveys for active bird nests during the breeding season as a mitigation, given the difficulty associated with finding nests reliably and the high likelihood of disturbing nesting birds when searching. Instead, ECCC recommends that clearing and grubbing activities not be conducted during the breeding bird season. The draft EIS states that activity restrictions for sensitive species, including nesting migratory birds, will be applied but provides no details on what these restrictions are or when they will be applied. The Proponent commits to including this information in an Environmental Protection Program.	be conducted to minimize risk to migratory birds and SAR. • the timing window that will be used for vegetation removal to reduce risk to migratory birds and SAR and • details on what activity restrictions will be implemented for the protection of migratory birds and SAR and when they will be applied.	
	MN-S	Summary of Significance Determination - Caribou	Section 14.5.1.3.2 Section 14.7	The EIS states "… *even the incremental effects due to the small amount of habitat loss from the Project in SK2 West are predicted to result in a significant adverse effect on caribou in the Application Case.* … Cumulative effects from the Project, Fission Patterson Lake Property, and forest harvest activities are similarly predicted to result in a significant adverse effect on caribou in the RFD Case, …". MN-S has not had the opportunity to evaluate the Caribou Mitigation and Offsetting Plan to date.	Please explain how significant effects, including cumulative effects, on a listed species can be mitigated with the development of a Caribou Mitigation and Offsetting Plan (i.e., no details provided or evidence that such a plan will be effective) for the Project. Please ensure MN-S has the opportunity to evaluate the Caribou Mitigation and Offsetting Plan.	
127.	ECCC	Wildlife and Wildlife Habitat	Appendix 14A Table 20.3-1 Annex VIII.2, Sections 8, 10 Annex VIII.3, Section 3	Myotis species were detected throughout the Site Survey Area (SSA) but there were no descriptions of locations of important habitat such as maternal roosts or hibernacula provided despite identifying that minor hibernacula could exist in the Regional Study Area (RSA).	1. Describe and map locations of suitable myotis hibernacula and/or maternal roost habitat within the LSA and RSA and explain how these habitats may be affected by Project activities. 2. Describe what mitigation measures will be taken to avoid the breeding period for bats.	
128.	CNSC	Human Health with respect to radiation exposure	Human Health Accidents and Malfunction	**Context:** Camp workers at the proposed Project were assessed for both radiological and non-radiological exposures in the Environmental Impact Statement (EIS) for the Rook I Project. However, the potential radiological and non-radiological impacts of the project on the health and safety of all other persons that would be on-site (for example, nuclear energy workers (NEWs) and persons not considered as NEWs (i.e., non-NEWs)), during normal operations and during accidents and malfunctions, were excluded from the EIS. The rationale provided by the proponent is in reference to CSA N288.6-12, as NEWs are not considered in the Standard. The exclusion of NEWs and non-NEWs who may be occupationally exposed to ionizing radiation and non-radiological hazards is contrary to the Project Description for the Rook I Project, which does identify in Section 4.2.5, Human and Ecological Health, the following:	The proponent is requested to assess the potential radiological and non-radiological impacts of the project on the health and safety of all persons on-site, during normal operations and during accidents and malfunctions (persons on-site in this context are NEWs and persons who are not NEWs who may incur occupational exposures). The proponent should identify all associated hazards and screen them as to potential risks for bounding scenarios. All bounding scenarios should be further assessed in detail with adequate consequence criteria for their specific impacts/risks on the environment, human health, and workers' safety.	

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				Human and ecological health considerations will be evaluated through all phases of the Project and will consider the various potential impacts that the Project could have to various receptors. For example, specific to the direct operation of the Project, select occupations and personnel on-site could be exposed to radiation sources as part of their daily activities. These would include underground miners, ore and waste rock truck drivers and mill operators. The proponent is reminded that the scope of the environmental assessment, as outlined in the Project Description for the Rook I Project, which was subsequently accepted by the Commission in its Record of Decision, provides the overarching framework for the EIS. Further, in the Record of Decision, it is stated that … "*CNSC staff submitted a detailed description of the primary project components and that it was satisfied that the project components and activities that NexGen listed in its project description were appropriate.*" This would include the receptors identified in Section 4.2.5 as outlined above (i.e., *specific to the direct operation of the Project, select occupations and personnel on-site could be exposed to radiation sources as part of their daily activities. These would include underground miners, ore and waste rock truck drivers and mill operators*). **Rationale:** NexGen identified the scope of the Rook I Project in its submitted project description. Section 4.2.5, Human and Ecological Health, includes consideration of various potential impacts that the Project could have to various receptors, with examples given including select occupations and personnel on-site that could be exposed to radiation sources and non-radiological hazards as part of their daily activities (*paraphrased by CNSC staff*). CNSC staff note that the CSA standard N288.6-12 addresses environmental risk assessments for Class I nuclear facilities and uranium mines and mills. It is agreed that the standard does state the following in 1.6 (Receptors): *NEWs are covered under the radiation protection program and health and safety program in place at the facility and therefore not considered in the Standard.* However, there is currently no radiation protection program or health and safety program in place; noting that the Rook I Project is currently undergoing the EIS review process. Therefore, there is no information contained in the EIS on the extent of potential radiological and non-radiological impacts the project may have on all persons on-site (NEWs and persons who are not NEWs), including during accidents and malfunctions (also noting that the camp workers included in the HHRA were not advanced to the accidents and malfunctions analyses).		

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129.	MN-S	Exposure Pathways	Section 15.1, Figure 15.1-3	The linkage diagram is useful; however, it does not include all relevant information. Potentially operative exposure pathways removed through controls, mitigation, or treatment should also be discussed. Any exposure pathways which are assumed to be incomplete will require confirmation with monitoring and should not restrict Traditional Land Uses of MN-S, and the reasoning for excluding exposure pathways should be obvious and transparent.	Please include a conceptual site model or linkage diagram that shows all operational as well as incomplete exposure pathways, as well as justification for exposure pathways being rendered incomplete and not considered further in the assessment.	
130.	MN-S	Existing Conditions	Section 15.2.6	Some traditional peoples eat burbot—including the liver. There may be the potential for bioaccumulation of COPCs in burbot livers, especially if burbot are ingesting other predator species of fish, as well as benthic organisms. Burbot would be a good species to gather baseline COPC information from because they are distributed throughout the study area; being captured in all but two (2) waterbodies and watercourses (Clearwater River above Beet Lake, and Clearwater River below Beet Lake). One of the reasons that burbot would be a good species to gather baseline COPC information from is because burbot are distributed throughout the study area, being captured in all but 2 waterbodies and watercourses (all except Clearwater River above Beet Lake, and Clearwater River below Beet Lake).	MN-S requests that the site (LSA) information for existing data regarding toxins (metals, and other toxins) include testing burbot (tissue, bile, livers) as a baseline from which to look at cumulative effects.	
131.	MN-S	Removal of Exposure Pathways	Section 15.2.7	Removal of exposure pathways through mitigation is only acceptable if mitigative measures are applied at the design stage or if their continued operation are conditions of project approval. If active management, exposure control, or other risk mitigations measures need to be maintained or actively applied/enforced, than the pathway should be considered operative. Any exposure pathway mitigated through this approach will require additional monitoring and validation to ensure that the mitigation is effective. Any mitigation which requires restrictions on Traditional Land Use by MN-S will require additional consultation.	**Suggestions for mitigation and follow-up measures** Please provide confirmation that NexGen will consult with MN-S on any mitigation which requires restrictions on Traditional Land Use by MN-S.	
	MN-S	Subsistence Harvester	Section 15.2.8.1	The EIS states that: "… about 50% of the Traditional Foods for subsistence harvesters were assumed to be sourced from either Patterson Lake South Arm, Beet Lake in the LAS, or Lloyd Lake, and the other 50% from a reference location." The identity of this reference location and potential for additional exposure through country foods (whether naturally occurring or not) is not clear.	Please clarify whether/how COPC exposure from the reference location was incorporated. Please include additional detail on the nature of the "reference location" of the Traditional Food Study and the level of COPC exposure expected through Traditional Resources from there.	
132.	CNSC	Receptor Selection and Characterization	Section 15,2.8.1	**Context:** In the selection of receptors for the Human Health Risk Assessment, "infants" and "toddlers" were grouped together with one-year-olds and assumed to have similar exposures (and effects) to the COPCs in the project area. There are, however, significant differences between these groups with respect to their food intakes, body weights, feeding behaviour, and sensitivities to COPCs, to name a few. An infant's intake of liquids (infant formula reconstituted with water taken from the Patterson Lake, for example) is much greater than a toddler and a one-year-old receptor. A toddler would have much higher hand-to-mouth activity (therefore, higher intake of soil) than an older child. Similarly, the sensitivity of these groups to COPCs will differ significantly given that the immune system and detoxification	Include, as receptors, an infant and a toddler in the HHRA for the project.	

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				mechanisms are still developing in the younger age groups. **Rational:** Clause 6.2.3.1 of the CSA Standard N288.6-12 (Environmental risk assessments at Class 1 nuclear facilities and uranium mines and mills) outlines receptor groups divided into age classes to include infants, toddlers, children, teens, and adults. Given the foregoing, it is inappropriate to group infants and toddlers with one-year-olds in this HHRA.		
133.	MN-S	Carcinogens - harvester	Section 15.5.1.2	This Section compares the subsistence harvester exposed to Project-related arsenic to a reference subsistence harvester for context. However, the reference harvester is only exposed through foodstuffs and not through other exposure pathways, such as baseline concentrations in soil, air, or water.	To ensure a valid comparison between a subsistence harvester exposed to Project-related arsenic and a reference subsistence harvester, please include total exposure for the reference harvester case.	
134.	CNSC	Human Health with respect to radiation exposure	Section 15.5.1.3	**Context:** The factor of 60 Bq/m^3 should not be used as a screening level for radon in ambient air. It was not designed for this purpose. **Rationale:** The value of 60 Bq/m^3 is a reference level for environmental radon concentrations based on a calculated effective dose to members of the public. This value was derived from table 5 of section 4.2.1 in ICRP-65. This section of ICRP-65 provides the basis for an action level for intervention in indoor dwellings. The recommendation of the ICRP is that the annual effective dose be in the range of 3 to 10 mSv/year for a member of the public. The corresponding radon concentration would range from 200 to 600 Bq/m^3, assuming an annual occupancy of 7,000 hours and an equilibrium factor of 0.4. The occupancy time of 7,000 hours represents 80% of the outdoor occupancy. UNSCEAR suggests that a value of 60% may be appropriate for the outdoor environment; therefore, the occupancy used in this derivation is conservative for outdoor exposures. The value of 60 Bq/m^3 is based on dividing the ICRP recommended action level of 600 Bq/m3, which corresponds approximately to an annual dose of 10 mSv/year, by a factor of 10 to arrive at a radon concentration of 60 Bq/m^3 corresponding to an annual effective dose of 1 mSv/year.	Identify the local or regional radon background concentrations. **Suggestions for mitigation and follow-up measures:** NexGen should compare the monitored environmental radon concentrations to local or regional background concentrations.	
135.	MN-S	Carcinogens – harvesters	Section 15.5.2.2, Table 15.5-6	The discussion and table do not acknowledge predicted ILCRs exceed acceptable levels for three receptor groups, and are over 10x the acceptable level of risk for subsistence harvesters at Patterson Lake South Arm.	Please provide additional context in the EIS regarding predicted ILCRs.	
136.	CNSC	Current use of lands and resources for traditional purposes	Sections 15.6, 16.6, 17.6, 19.6,	**Context**: It is not clear if NexGen sought input from Indigenous Nations and communities on the potential adverse effects pathway, reasonably foreseeable development (RFD) case, conclusions and significance determination related to potential adverse impacts of the project on the potential or established Indigenous and/or treaty rights and effects of changes to the environment on Indigenous peoples, pursuant to paragraph 5(1)(c) of the CEAA 2012	Please provide additional information to demonstrate whether Indigenous Nations and communities were engaged directly with regarding the effects pathways, RFD case, conclusions and significance determination related to potential adverse impacts of the project on the potential or established Indigenous and/or treaty	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: More information is required to understand whether Indigenous Nations and communities have provided input or have been engaged on the effects pathways, RFD case, conclusions, and significance determination.	rights and effects of changes to the environment on Indigenous peoples, pursuant to paragraph 5(1)(c) of the CEAA 2012. Provide a rationale if this engagement has not been completed.	
137.	CNSC	Indigenous Peoples' health / Socio-economic conditions	Sections 15.8 TSD XXI: ERA Section 8.3 Monitoring and follow-up	**Context:** The EIS states "NexGen would be working with local Indigenous Groups in an effort to complete a targeted traditional foods study to help validate or modify the dietary assumptions made in the HHRA." It is not clear when or how this activity will occur. The level of detail in TSD XXI: ERA section 8.3- Monitoring and Follow-up appears to be insufficient. **Rationale:** Additional information is required to understand the timelines and approach to conducting this engagement activity and study. As outlined in TSD XXI: ERA Section 8.3 , with respect to Far Future Project Effects, ''NexGen would implement an adaptive management throughout the operations.'' There is no explanation how this would be implemented.	Provide further detail in both Section 15.8 of the EIS as well as in Section 8.3 of the TSD XXI: ERA on the status of the targeted traditional food study. Include information about when the Traditional Foods Study would be completed, how Indigenous Nations and communities have and/or will be engaged on this study, how it will be used to help validate the consumption of traditional foods used in the HHRA, and how adaptive management would be implemented for the far future project effects.	
138.	MN-S	Executive Summary Section Purpose Section Introductions Incorporation of Indigenous Knowledge	Throughout EIS	The EIS states that : "*The cultural and heritage resources and Indigenous land and resource use assessment used widely accepted scientific practices and incorporated Indigenous and Local Knowledge from a variety of sources, including Joint Working Group meetings and Indigenous Knowledge and Traditional Land Use (IKTLU) Studies completed by First Nations and Métis Groups (collectively referred to Indigenous Groups) for the Project.*" Terminology such as Métis Group (rather than Indigenous Nation) does not align with, or reflect an understanding of, MN-S as a rights holder. The use of "incorporated" does not reflect current best practices that acknowledge Indigenous Knowledge as an equal but different way of knowing (than western science). This terminology implies that Indigenous Knowledge can be absorbed into a scientific approach. Terminology such as "First Nations" and "Indigenous groups" does not reflect current best practices or acknowledge the Rights, Title and Jurisdiction of MN-S. Each Indigenous Nation should be discussed and acknowledged independently.	Please revise EIS terminology accordingly.	
139.	CRDN	Heritage Resources	Section 16?	No heritage resources identified.	NexGen should provide details on the protocol for change finds. CRDN community monitor should be present monitoring during all phases of project development.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
140.	CNSC	Current use of lands and resources for traditional purposes	Section 16, 17, 23 and 24	**Context:** It is not clear from this section(s) of the EIS and the Indigenous Engagement Report, whether NexGen provided Indigenous Nations and communities with the opportunity to participate in the development, implementation and review of monitoring and mitigation measures, as per the guidance of REGDOC-3.2.2 and CNSC's Generic EIS Guidelines. This engagement should include: presenting information regarding effects to Indigenous land and resource use and mitigation measures, seeking specific feedback, responding to any feedback and validating this with identified. If needed, NexGen should provide a rationale where information could not be obtained. **Rationale:** More information is required to determine what measures were identified to mitigate or accommodate potential adverse impacts of the project on the potential or established Indigenous and/or treaty rights and effects of changes to the environment on Indigenous peoples, including suggestions raised by Indigenous groups pursuant to paragraph 5(1)(c) of the CEAA 2012.	Provide details about how NexGen engaged with Indigenous Nations and communities on the development, implementation and review and validation of the mitigation measures proposed. **Suggestions for mitigation and follow-up measures** It is recommended that NexGen creates a commitments table, or adds a column to their issues table, that clearly articulates the specific mitigations that they have committed to for each Indigenous Nations and community to address the issues and concerns they have raised.	
141.	CNSC	Any structure, site or thing of historical, archaeological, paleontological or architectural significance	Section 16 and 16.4.2	**Context:** It is not clear whether Indigenous Nations and communities were engaged on the results and findings of the Heritage Resources Impact Assessments (HHRIA). **Rationale:** More information is required to understand whether Indigenous Nations and communities have been engaged on; physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.	Provide detail to demonstrate whether NexGen engaged with any Indigenous Nations on these surveys and findings on preserving, and managing the archaeological resources identified in the future HHIAs for the site. **Suggestions for mitigation and follow-up measures** The Final EIS submission should include an update on any engagement activities that have taken place with regards to any of the HHRIAs for the Project, or any site or thing that is of historical, archaeological, paleontological or architectural significance.	
142.	CNSC	Indigenous physical and cultural heritage	Section 16 and 16.5.1.3.6	**Context:** The EIS states "The spatial extent of indirect or perceived effects from the Project and potential avoidance or reduced traditional land and resource use surrounding the Project was assumed to be 5 km from the maximum disturbance area, which represents an area where individuals may perceive contamination to exist." It is not clear if NexGen engaged directly with the Indigenous Nations and communities regarding the spatial extent of perceived effects on water, fish, plant, and wildlife resource quality. **Rationale:** More information is required to understand whether Indigenous Nations and communities have provided input or been engaged on the conclusion's regarding the extent of the perceived effects on the lands and resources use and therefore significance determination.	Please provide additional information on how Indigenous Nations and communities were engaged on the 5 km perceived spatial extent selected for the perceived effects on the lands and resources use. It is not clear if NexGen plans to carry out a perception baseline study for the project and area in collaboration with impacted Indigenous Nations and communities? If so, it is recommended that the spatial boundaries of perceived risk of the project by Indigenous Nations and communities be taken into consideration in the measurement indicators and assessment endpoints in the potential impact on cultural and heritage resources and Indigenous land and resource use. **Suggestions for mitigation and follow-up measures**	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
					It is recommended that NexGen engage directly with the Indigenous Nations and communities on the spatial extent of perceived effects for their traditional activities including hunting, trapping, and potential impacts on cultural and heritage resources and Indigenous land and resource use.	
143.	MN-S	Introduction	Section 16.1	The EIS states: “Changes in access to land and traffic patterns could alter Indigenous land user safety.” Changes to access have wider ranging impacts to Indigenous land users than just safety concerns. Changes in access may also impact the ability to access Culturally significant locales and/or resources for cultural practices and/or sustenance. This text does not acknowledge MN-S connection to the homeland and the importance and impact of land access to the MN-S culture and practices.	Please revise text to include acknowledgement of MN-S’ connection to the homeland and the importance and impact of land access to the MN-S culture and practices.	
144.	MN-S	Assessment Endpoints	Section 16.2.2.3, Table 16.2-1	The EIS states: “Continued ability to participate in Indigenous land and resource use activities.” The ability to participate in an activity is not equivalent to the ability to continue to practice an activity with the same frequency or success as was present prior to Project disturbance. As rights holders, at a minimum, the ability for MN-S to continue Indigenous land and resource use practices, as they currently occur, should be the assessment endpoint.	Please revise assessment endpoints to include the ability for MN-S to continue Indigenous land and resource use practices, as they currently occur.	
145.	MN-S	Assessment Cases	Section 16.2.5, Figure 16.2-2	Figure 16.2-2 states: "The Fission Patterson Lake South Property, which is planned by Fission Uranium Corp. … was included in the RFD Case (Figure 16.2-2). …The CRDN and MN-S specifically mentioned the potential for cumulative effects from the Project and the nearby proposed Fission Patterson Lake South Property …” The figure does not appear to show the location of the Fission Patterson Lake South Property, which is identified as included within the RFD case and has also been specifically identified for consideration of cumulative effects by MN-S.	Please revise Figure 16.2-2 to include the location of the Fission Patterson Lake South Property.	
146.	MN-S	Existing Conditions	Section 16.2.6	The EIS states: “Data were validated and supplemented through several means, including discussion during Joint Working Group meetings and review of Joint Working Group records.” It is unclear who completed the validation process for existing conditions for Indigenous Land and Resource Use VC. Third party review of meeting records and notes is not equivalent to data validation by potentially affected parties. Data verification should involve collaboration with MN-S, as rights holders, and Indigenous land and resource users. This includes the opportunity to review, revise and contribute to the characterization of existing land and resource conditions with the MN-S Homeland.	Please update the language regarding data verification to reflect that MN-S requested and was not provided the opportunity to review (and verify) the EIS prior to regulatory submissions.	
147.	MN-S	Project Interactions and Mitigations	Section 16.2.7	The EIS states: “A screening-level assessment was applied using Indigenous and Local Knowledge, scientific knowledge, logic, experience with similar developments, and an understanding of the effectiveness of mitigation (i.e., level of certainty that mitigation would work) to assign each pathway to one of the following categories …”	Please revise this section of the EIS to include consideration of changes to the human environment, including impacts to the ability to continue Indigenous land and resource use.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				While the description of screening includes consideration of Indigenous Knowledge, the definitions for both a secondary and primary pathway only references environmental changes (which is assumed to reference the physical and biophysical environment) as the thresholds for the assessment. The determination of pathways should also consider changes to the human environment, including impacts to the ability to continue Indigenous land and resource use.		
148.	MN-S	Residual Effects Classification and Determination of Significance	Section 16.2.9	The EIS states: "This assessment endpoint is qualitatively defined by the continued ability of Indigenous Groups to participate in land-based activities based on similar availability of resources for harvesting, maintenance of access to traditional land use areas, and maintenance of quality of Indigenous land use experience, while acknowledging that traditional activities are dependent on individual preferences and experience. The classification of residual effects criteria provides the foundation for determining if the threshold for significance is exceeded." Indigenous Land and Resource use is intrinsically tied to the land and the specific locale; similar availability of resources does not necessarily reflect the ability to maintain MN-S cultural practices. The ability to participate in an activity is not equivalent to the ability to continue to practice an activity with the same frequency or success as was present prior to Project disturbance. As rights holders, at a minimum, the ability for MN-S to continue Indigenous land and resource use practices, as they currently occur, should be the assessment endpoint.	Please revise to include as an assessment endpoint the ability for MN-S to continue Indigenous land and resource use practices, as they currently occur.	
149.	MN-S	Monitoring, Follow-Up and Adaptive Management	Section 16.2.11	The EIS states: "The implementation of robust, long-term environmental testing and monitoring has also been requested by Indigenous Groups to verify protection of the environment, including community-led monitoring during Construction and Operations of the proposed Project." In addition to supporting implementation of community-led monitoring, as a rights holder MN-S should be involved in the scoping and development of environmental testing and monitoring programs.	Please revise text to clarify that MN-S will be involved in the scoping and development of environmental testing and monitoring programs.	
150.	CNSC	Current use of lands and resources for traditional purposes	Sections 16.3.2	**Context:** Section 16.3.2 of the EIS provides an overview of CRDN, MN-S, BNDN and BRDN. Publicly available information should be included regarding ACFN and YNLR as well as any relevant information provided during engagement with ACFN/ YNLR to date. **Rationale:** More information is required to understand ACFN and YNLR's history and traditional land use in the vicinity of the project.	Provide an overview for ACFN and YNLR in Section 16.3.2 of the EIS.	
151.	MN-S	Gathering	Section 16.3.3.2.3	The EIS states: "A general use area was mapped around the east shore of Forrest Lake and Beet Lake, and Forrest Lake, which overlap the maximum disturbance area ..." MN-S Indigenous land and resource use (gathering) overlaps with the maximum disturbance area; this must be considered and discussed within the assessment.	Please revise the EIS to include details regarding MN-S Indigenous land and resource use (gathering) as it overlaps with the maximum disturbance area.	
152.	MN-S	Hunting	Section 16.3.3.2.4	The EIS states: "Métis Nation – Saskatchewan citizens hunt throughout the LSA and RSA…. Some MN-S citizens reported that moose have moved farther away	Please revise the wildlife assessment to include consideration on MN-S qualitative observations on	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				because of too much activity in the area of the proposed Project." MN-S Indigenous land and resource use (hunting) overlaps with both the LSA and RSA; this must be considered and discussed within the assessment. The wildlife assessment should include consideration on MN-S qualitative observations on Moose movements. The EIS also states: "Specific hunting areas located in the LSA identified by the MN-S include in the areas of Gedak Lake; Dennis Lake; Derkson, Koops and Gall lakes; and Patterson Lake including within the maximum disturbance area …." MN-S Indigenous land and resource use (hunting) overlaps with the maximum disturbance area; this must be considered and discussed within the assessment.	Moose movements. Please revise the EIS to include details regarding MN-S Indigenous land and resource use (hunting) as it overlaps with the maximum disturbance area.	
153.	MN-S	Trapping	Section 16.3.3.2.5	The EIS states: "Métis Nation – Saskatchewan citizens trap in the LSA and RSA. In the RSA, MN-S has identified one trapline … In the LSA, the MN-S has identified one trapline that extends from north of Patterson Lake, including within the maximum disturbance area …" MN-S Indigenous land and resource use (trapping) overlaps with the maximum disturbance area; this must be considered and discussed within the assessment.	Please revise the EIS to include details regarding MN-S Indigenous land and resource use (trapping) as it overlaps with the maximum disturbance area.	
154.	MN-S	Culturally Important Sites and Areas	Section 16.3.3.2.6	The EIS states: "Métis Nation – Saskatchewan citizens value the LSA and consider it culturally important to their continued use of the land. They consider the area important not only for harvesting but also for its role in the larger landscape." MN-S Indigenous land and resource use (harvesting and holistically) must be considered and discussed within the assessment.	Please revise the EIS to include consideration of MN-S Indigenous land and resource use (harvesting and holistically) within the assessment.	
155.	MN-S	Culturally Important Sites and Areas	Section 16.3.3.2.6	The EIS states: "There were no cultural sites and areas identified by the MN-S in the LSA, but several were reported in the RSA, including at lakes directly north of the LSA ..." MN-S identification of cultural sites does not align with the outcomes of the HRIA which identified no heritage resources. Given the pathways analysis determined that "all potential adverse pathways from the Project could be removed from the assessment (page iv)", it is assumed that potential impacts to the heritage resources identified by MN-S have not been assessed or mitigated.	Please revise the EIS to include the Indigenous Knowledge (including the identification of heritage resources) that has been shared with the proponent by MN-S, for the purposes of this study. This information should be considered and applied to the assessment. Given the identification of an MN-S cultural site directly north of the LSA, the rationale for the cultural and heritage resources VC should be evaluated to consider its appropriateness to capture resources potentially impacted by the Project.	
156.	CNSC	Current use of lands and resources for traditional purposes	Section 16.3.3.6	**Context:** The EIS states "The EIS states Athabasca Denesųłiné did not identify any specific traditional activities overlapping with the LSA. **Rationale:** More information is required to better understand YNLR's current and traditional land use near the proposed project site.	Please provide additional information about any additional engagement activities that NexGen completed directly with YNLR related to better understanding their current and traditional land use and potential interests near the proposed project site.	
157.	MN-S	Existing Conditions	Section 16.3	Section 16.3 of the EIS states: "Indigenous land and resource use in the LSA is actively pursued by the CRDN, MN-S, and BNDN, and, to a lesser extent, the BRDN."	Please provide more context that will provide assurance to MN-S to ensure MN-S is given the opportunity to participate in field programs to support identification of cultural and heritage	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				While active Indigenous land and resource use in the LSA by MN-S is acknowledged, best practices that align with an understanding of MN-S as a rights holder would include the opportunity to participate in field programs to support identification of cultural and heritage resources as well as the opportunity to provide review and contribution to the assessment prior to finalization and submission to regulators.	resources as well as given the opportunity to provide review and contribution to the assessment prior to finalization and submission to regulators	
158.	MN-S	Potential Effects and Proposed Mitigation	Section 16.4	Section 16.4 of the EIS states: "Project activities that would have the potential to affect Indigenous land and resource use during the Project lifespan include:" [bullet list] The Project would also impact and change the ability of MN-S to access the homeland due to active mining activities and access restrictions the land.	Please revise bullet list to include "The Project would also impact and change the ability of MN-S to access the homeland due to active mining activities and access restrictions the land."	
159.	MN-S	Potential Effects and Proposed Mitigation	Section 16.4	Section 16.4 of the EIS states: "Project environmental design features such as the underground tailings management facility and a limited Project footprint were designed to minimize the Project's effects on cultural and heritage resources and Indigenous land and resource use." While underground tailings management would minimize the Project footprint, this benefit must be considered in the context of other environmental concerns such as groundwater quality. This text does not accurately reflect holistic consideration of design changes.	Please provide additional context that includes and reflects holistic consideration of design changes.	
160.	MN-S	Potential Effects and Proposed Mitigation	Section 16.4	Section 16.4 of the EIS states: "With respect to cultural and heritage resources, as spatial overlap between the Project and the Fission Patterson Lake South Property would not exist, pathways between the projects would also not overlap; therefore, only the potential effects of the Project were considered in the subsequent steps of the assessment process."	Please revise the EIS to include the consideration of cumulative impact of the loss of access to these lands and resources and the resulting impact to MN-S cultural practices and Indigenous Land and Resource Use. Text should reference how this is considered within the assessment.	
161.	MN-S	Project Interactions and mitigations	Section 16.4, Table 16.4-1	Table 16.4-1 : ILU-04 Environmental Design Features and Mitigation: "Install a gate at the site entrance (i.e., gatehouse) to control public access." It is unclear how installation of a gatehouse would mitigate changes to the availability of fish, plants, and wildlife for harvesting from increased access and competition for resources. It is expected that the installation of a gatehouse, would be in place to ensure that the Indigenous land and resource users do not accidently enter active mining areas as a safety measure. In practice, restricted access is likely to exacerbate changes to the availability of fish, plants, and wildlife for harvesting as it would further decrease access to support MN-S Indigenous land and resource use.	Please provide further information in the EIS on how the installation of a gatehouse would mitigate changes to the availability of fish, plants, and wildlife for harvesting from increased access and competition for resources.	
162.	MN-S	Project Interactions and mitigations	Section 16.4, Table 16.4-1	Table 16.4-1 "ILU-05: Changes to air or water quality The following Project interactions were predicted to result in no pathway to Indigenous land and resource use and were not carried forward in this assessment." The discussion about the assessment of intermediate components and the environmental risk assessment lacks acknowledgement of any real or perceived impacts on fish, plants or wildlife due to air or water quality contamination that have been shared by Indigenous nations.	Please revise the EIS to include the acknowledgement, discussion and consideration of MN-S qualitative communication of impacts regarding the quality of resources or contamination levels.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Indigenous Knowledge is a unique, but equal way of knowing. As a rights holder, MN-S qualitative communication of impacts regarding the quality of resources or contamination levels should be acknowledged, discussed, and considered.		
163.	MN-S	Secondary Pathways: Disturbance of heritage Resources	Section 16.4.2	HR-01: Disturbance of heritage resources The EIS states: "Therefore, a chance find procedure would be implemented during clearing activities. Management options for any unanticipated archaeological materials or features discovered by chance during any land clearly activities for all Project phases would be developed in consultation with the Heritage Conservation Branch." As a rights holder, MN-S should be involved in the scoping, development, and implementation of a Chance Find Procedure and management options for any unanticipated archaeological materials or features, or cultural or heritage resources discovered throughout the Project life cycle.	Please revise the EIS to include MN-S involvement in the scoping, development, and implementation of a Chance Find Procedure and management options for any unanticipated archaeological materials or features, or cultural or heritage resources discovered throughout the Project life cycle.	
164.	MN-S	Residual Effects Analysis	Section 16.5	Section 16.5 of the EIS states: "Nonetheless, the majority of the LSA and RSA would remain intact with similar resources (i.e., water, fish, plants, and wildlife) as the Patterson Lake area …" Indigenous Land and Resource Use is intrinsically tied to the land and the specific locale; similar resources do not necessarily reflect the ability to maintain MN-S cultural practices.	Please provide additional context in the EIS to show how this statement takes into consideration Indigenous land and resource use and the ability for MN-S to maintain cultural practices.	
165.	MN-S	Access to and Area available for Indigenous Land and Resource use	Section 16.5.1.1	The EIS states: "Access to parts of Patterson Lake may be temporarily restricted during construction of in-lake infrastructure, but unrestricted access to the lake is expected during Operations and Closure." This text does not acknowledge that in-lake infrastructure may affect the ability of MN-S to continue cultural practices and Indigenous land and resource use.	Please revise text to acknowledge that in-lake infrastructure may affect the ability of MN-S to continue cultural practices and Indigenous land and resource use.	
166.	MN-S	Access to and Area available for Indigenous Land and Resource use	Section 16.5.1.2.2	The EIS states: "There were no culturally important sites and areas identified by Indigenous Groups that overlap with the maximum disturbance area." This text does not acknowledge that culturally important sites were identified by Indigenous Groups (including MN-S) within the Regional Study Area and therefore does not accurately represent the presence of culturally important sites within the assessment areas.	Please revise text to acknowledge that culturally important sites were identified by Indigenous Groups (including MN-S) within the Regional Study Area and therefore does not accurately represent the presence of culturally important sites within the assessment areas.	
167.	MN-S	Gathering	Section 16.5.1.2.2	The EIS states: "The loss of most traditional use plants would be continuous until reclamation has re-established vegetation; however, the loss of traditional use plants in wetland habitat (e.g., pitcher plant) is considered permanent and irreversible. While the availability of traditional use plants would be reduced in the maximum disturbance area of the Project, traditional use plant habitat is predicted to remain abundant across the vegetation RSA, and incremental effects of the Project are expected to remain within the resilience and adaptability limits of traditional use plant species. This would result in a low magnitude change in availability of traditional plants int he Indigenous land and resource use LSA." "However, while the loss of traditional use plants in the Project footprint would range from long-term to permanent depending on the habitat, traditional use plants would remain widespread in the Indigenous land and resource use LSA, and opportunities for traditional gathering could continue."	Please provide additional information to confirm that the permanent and irreversible loss of wetland habitat and traditional use plants will be mitigated and compensated.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				The permanent and irreversible loss of wetland habitat and traditional use plants must be mitigated and compensated. Indigenous Land and Resource use is intrinsically tied to the land and the specific locale; similar availability of resources in adjacent areas does not necessarily reflect the ability to maintain MN-S cultural practices. As such it is not appropriate to assume that abundance in the RSA and LSA is equivalent to the losses incurred due to the Project.		
168.	MN-S	Noise	Section 16.5.1.3.1	The EIS states: "However, it is recognized that noise can have an effect on the aesthetics of individual resources users using the LSA, and that individuals may perceive and experience noise differently. Sensitivity to noise may be higher for some individuals, especially when they expect a quiet experience on the land. Tolerance levels may be very different among individual Indigenous land users and are difficult to measure quantitatively. However, it is reasonable to expect that some of the Indigenous land users may be affected negatively and choose not to conduct harvesting activities in the LSA at some locations potentially affect by noise increases."	MN-S requests the opportunity to be engaged in and collaborate on the scoping, development, implementation and analysis of mitigation and monitoring programs associated with Project noise impacts; particularly as it relates to Indigenous land and resource use.	
169.	MN-S	Light	Section 16.5.1.3.2	The EIS states: "The only times when light trespass would be visible is when an Indigenous land user has a direct line of sight on a light source … During Construction and Operations, Project-related illumination would result in skies brighter than the E1 threshold in localized areas for either of the 16 receptors considered in the light analysis ... Sky glow is expected to obscure faint stars for Indigenous land users on clear nights. The change in sky glow may affect the nighttime aesthetics and experience for Indigenous land users spending the night on the land or at a cabin ... Overall, the change of nighttime aesthetics resulting from skyglow would be relatively minor, and changes to the star visibility are expected to be localized." While aesthetics is discussed (16.5.1.3.4) it does not appear that an assessment of visual effects, or predictive modelling of visual effects, has been undertaken to understand the likelihood or frequency that visual effects, including light trespass and sky glow, would impact Indigenous land and resource use. An assessment of visual effects including predictive modelling should be undertaken, and informed by Indigenous land and resource users, including MN-S, to identify appropriate viewing points and determine potential visual impacts (including light trespass and sky glow) associated with the Project.	An assessment of visual effects including predictive modelling should be undertaken, and informed by Indigenous land and resource users, including MN-S, to identify appropriate viewing points and determine potential visual impacts (including light trespass and sky glow) associated with the Project.	
170.	MN-S	Perceptions of Water, Fish, Plant and Wildlife Resource Quality	Section 16.5.1.3.6	The EIS states: "A spatial analysis was completed to provide an indication of the extent of perceived effects on land resources. The spatial extent of indirect or perceived effects from the Project and potential avoidance or reduced traditional land and resource use surrounding the Project was assumed to be 5km from the maximum disturbance area, which represents an area where individuals may perceive contamination to exist. ... Five kilometres was also selected because it represents a distance that can easily by travelled by foot, out and back, through the bush to carry out traditional activities (e.g., hunting) in a day ... A 5km distance from the Project encompasses Patterson Lake where Indigenous Groups indicated the most concern during Joint Working Group."	Please provide additional details regarding the verification with Indigenous Nations that 5 km from the maximum disturbance area represents the area where individuals may perceive contamination to exist. As rights holders and Indigenous land and resource users, data verification should involve collaboration with MN-S, including the opportunity to review, revise and contribute to the characterization of existing land and resource conditions with the MN-S Homeland.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				MN-S was not provided the opportunity to review, discuss or collaborate on an appropriate spatial boundary to represent the area where individuals may perceive contamination to exist. MN-S notes that neither a review of primary sources of Indigenous Knowledge nor Joint Working Group references to an area of importance constitute verification of Indigenous land users' area of perceived impact. Without verification, it is also not appropriate to assume that perceived impacts of quality are directly comparable to the distance an individual can travel on foot.	MN-S request that the language regarding data verification is updated to reflect that MN-S requested and was not provided the opportunity to review (and verify) the EIS prior to regulatory submissions.	
171.	MN-S	Significance Determination	Section 16.6	Section 16.6 of the EIS states: "Indigenous land and resource use is expected to change around Patterson Lake, but overall Indigenous land and resource use in other areas of the LSA and RSA is anticipated to continue. The residual effects on the Indigenous Land and Resource Use VC in the Application Case and the RFD Case are predicted to be not significant."	Please revise this section to take into consideration the following: Indigenous Land and Resource use is intrinsically tied to the land and the specific locale; despite access to other areas, a change in access and cultural practices around Patterson Lake has the potential to affect the ability of MN-S to continue cultural practices associated with the Patterson Lake area.	
172.	MN-S	Prediction Confidence and Uncertainty	Section 16.7	The EIS states: "The primary factors affecting confidence in the predictions made in the assessment for Indigenous land and resource use include: - level of understanding of Indigenous perceptions is based on IKTLU Studies, comments during Joint Working Group meetings, and other perception studies, all of which may not capture the full breadth of individuals' perceptions ..." Determining the significance of impacts to Indigenous land and resource use should be verified by Indigenous land and resource users, and not just be informed by Indigenous Knowledge. MN-S was not provided the opportunity to contribute to the significance determination. MN-S further notes that a neither a review of primary sources of Indigenous Knowledge nor incidental sharing during a Joint Working Group meeting constitute verification of Indigenous land users' perceptions.	MN-S is requesting to be given the opportunity to verify the significance of impacts and to contribute to the significance determination.	
173.	MN-S	Indigenous Land and Resource Use	Section 17 Section 17.1 Section 17.2	It is unclear why Indigenous land uses associated with commercial or recreational activities has not been considered within the assessment of the Indigenous Land and Resource Use VC. In general, all uses of the land by Indigenous Peoples should be considered Indigenous land and resource use. Section 35(2) of the Constitution Act (1982) outlines Aboriginal rights and Treaty rights and does not distinguish between commercial, recreational, and other uses of the land. As such, assessment of Indigenous land and resource use should be considered holistically. It is not appropriate to separate Indigenous land and resource uses for assessment under two different VCs.	MN-S is requesting that an assessment of Indigenous land and resource use be considered holistically in the EIS.	
174.	MN-S	Spatial Boundaries	Section 17.2.3	"The Other Land and Resource Use LSA (Figure 17.2-1) incorporates: …" Given the inclusion of Indigenous land and resource users within this VC the list of areas considered within the LSA should also consider the LSA for the cultural and heritage and Indigenous land and resource use LSA.	Please revise the EIS to include the list of areas considered within the LSA for the cultural and heritage and Indigenous land and resource use LSA.	
175.	MN-S	Existing Conditions	Section 17.2.6	It is unclear from this statement if Indigenous commercial and recreational use was considered through the KP interview process. It is also unclear who determined that key persons were in possession of adequate knowledge and experience.	Please provide additional information to clarify the validation process.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				It is unclear who completed the validation process for existing conditions for Other Land and Resource Use VC. Third party review of meeting records and notes is not equivalent to data validation by potentially affected parties. As rights holders and Indigenous land and resource users, data verification should involve collaboration with MN-S, including the opportunity to review, revise and contribute to the characterization of existing land and resource conditions with the MN-S Homeland.		
176.	MN-S	Residual Effects Classification and Determination of Significance	Section 17.2.9	The activities described include recreational (non-Indigenous) hunting, fishing, commercial trapping, commercial fishing, lodge and outfitting services and ecotourism, cabins, parks and protected area, forestry and wildlife, and mining and exploration. It is unclear from this text how Indigenous land and resource users are considered within this VC and/or the existing conditions content. Section 17.2.1 (See comment 17-009) states "this section focuses more narrowly on uses for commercial or recreational purposes and extends to both Indigenous and non-Indigenous users." This contradicts the text included in Section 17.3.	Please revise the EIS to provide clarity on how Indigenous land and resource users are considered within this VC and/or the existing conditions content. Please revise sections 17.2.1 in relation to section 17.3.	
177.	MN-S	No Pathway	Section 17.4.1	Participants of the 2021 trapper's workshop and LPA community members comments on the potential Project effects on water quality, fish and wildlife in the area of the Project…. No significant adverse effect on any human receptors as a result of releases from the Project is likely during Operations for the Application Case and RFD Case. Therefore, this pathway was determined to have no measurable effects on the health of resource users and was not carried forward in the assessment. While quotes that demonstrate Indigenous Knowledge are included throughout this chapter, with the exception of noting concerns were raised through the 2021 trappers' workshop, based on the text provided, Indigenous Knowledge does not appear to have been applied and considered in the determination of Project interactions.	Please provide clarity on how Indigenous Knowledge has been applied and considered in the determination of Project interactions.	
178.	MN-S	Access to, and Area Available for, Land and Resource use	Section 17.6.2	The EIS states: "Regional initiatives to mitigate access could include promotion of continued use close to the Project to, such initiatives would help maintain the areas as an active landscape for resource users, particularly for trappers from local Indigenous communities." It is unclear what mitigations are being proposed to help maintain the area as an active landscape. Proponent promotion for continued use cannot be assumed to be an effective mitigation measure as it is highly dependent on the level of trust that has been established with local users.	Please provide clarity regarding what mitigations are being proposed to help maintain the area as an active landscape.	
179.	MN-S	Access Restrictions and Avoidance	Section 19.5.1.1	The EIS states: "Related to cultural continuity, after mitigation, it is anticipated that access restrictions and avoidance of areas near the Project would have an adverse effect on the well-being of some land users. Access would be restricted only within the maximum disturbance footprint past the gatehouse, thought perceptions of the Project effects could extend across a broader area. ... The effect on cultural continuity would be limited to site-specific knowledge that may not be shared among generations and the loss of which may not be replaced." It is unclear how the effect of access restrictions and avoidance of areas near the Project on cultural continuity can be limited to the maximum disturbance of the	MN-S request that NexGen updates this content, and provide additional detail in the EIS to better reflect how avoidance of areas near the Project has been considered. When considering avoidance of areas for Traditional practices, additional information (and verification by Indigenous Groups) is required to support the statement that the maximum disturbance footprint	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				footprint. While this reflects the access restriction, it is not necessarily reflective of avoidance areas due to the perception of Project effects.	(i.e., physical Project exclusion) is the only area where the ability to practice cultural continuity would be impacted and further the described outcome that the impact to cultural continuity is reversible.	
180.	CNSC	Human health with with respect to hazardous contaminants	Section 21	**Context:** One of the potential risks of a uranium mill is an uncontrolled release from a scrubber. **Rationale:** In the EIS, it doesn't appear that the scenario of an uncontrolled release from a scrubber has been considered. This could be a likely event in a uranium mill given the frequency of handling uranium concentrate. Uranium mills have stacks that are equipped with scrubbers to reduce dust and emissions resulting from the operation. A failure of a scrubber can result in an uncontrolled release of total particulate matter and other contaminants to the environment. This bounding scenario does not appear to be considered in the EIS.	NexGen should consider a bounding scenario of a failure of a scrubber stack in the mill.	
181.	CNSC	Human health with with respect to hazardous contaminants	Section 21	**Context:** One of the potential risks of a uranium mill is a spill of uranium concentrate. **Rationale:** In the EIS, it doesn't appear that the scenario of a spill of uranium concentrate has been considered. This could be a likely event in a uranium mill given the frequency of handling uranium concentrate. This could have impacts since there could be radiation exposure during this malfunction.	NexGen should consider a bounding scenario of a spill of uranium concentrate in the mill.	
182.	CNSC	Accidents and Malfunctions	Section 21.2.2 TSD IX, Section 1.3	**Context:** The spatial extent of the assessment includes two sections of highway, one along Highway 955 and the second along Highway 155. The spatial extent along Highway 955 spans from the intersection of the Project access road and Highway 955 to the intersection of Highway 955 and Highway 155 at La Loche. The spatial extent along Highway 155 spans from the intersection of Highway 955 and Highway 155 to the intersection of Highway 155 and Highway 55 at Green Lake. The proponent states that the spatial extent was informed by evaluation of the existing traffic volumes, identification of incremental increases in traffic associated with the proposed Project, and understanding of transportation emergency response times. The proponent further states that traffic volumes on Highway 155 and Highway 955 are as much as 2 to 20 times less than those on Highway 55, and much lower compared to other provincial highways of comparable size. As such, the incremental increase in traffic volume on these highways due to project-related traffic would be larger than those for other such highways. In addition, the distance of these two highways from major population centres such as Regina or Saskatoon results in slower emergency response to transportation accidents. The emergency response capabilities that can be deployed to the traffic accidents on other major highways is more timely, due to closer proximity to larger population centres.	Provide further rationale or justification on the spatial extent of not extending the transportation risk assessment beyond the Highway 155 and Highway 55 junction at Green Lake. **Technical Discussion Required**: Yes	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: TSD IX Sections 8.1.1 and 8.1.2 show that the truck accident rate in Saskatchewan between 2007 and 2014 is from 0.81 to 0.98 per million-vehicle-kilometer [MVkm]distance travelled, while the truck accident rate on Highway 955 and Highway 155 (SGI 2018) is from 0.8 to 1.16 accidents per MVkm, which is similar to or slightly higher than the provincial truck accident rate. When a traffic accident involves radioactive materials or Uranium, the emergency response that can be deployed may come only from the project emergency response team. If such an accident occurs south of Green Lake, the response time for deploying response team from the project site would take longer time to arrive at the accidental site and the highway with such an accident would need to be blocked for a longer time. Therefore, a traffic accident occurs south of Green Lake may pose higher risks to human health and the environment. It appears the determination of the spatial extent not extending beyond Green Lake is not well justified.		
183.	MN-S	Accidents and Malfunctions	Section 21.5.1	"Based on a review of Project-related information, the following key Project components and activities were identified that form the basis of consideration for the identification of potential hazard scenarios: [bullet list] …" While the list of Project components includes "process plant buildings" there does not appear to be any consideration of in-lake infrastructure and associated discharges, such as the treated effluent and pipe diffuser and the treated sewage pipe and outfall. Given the importance of Patterson Lake and the importance of water and influence of water on Indigenous culture (as discussed in Section 21.4, p. 21-12) these factors should be a consideration in the hazard identification process.	MN-S requests that NexGen consider potential accidents or malfunctions related to in-lake infrastructure through the Hazard Identification process. MN-S also requests that these options are specifically discussed in the EIS; if they are not identified as bounding scenarios, rationale should be provided given the level of importance that Patterson Lake and the associated wildlife and habitat provide to MN-S Culture and practices.	
184.	CNSC	Accidents and Malfunctions	Section 21.5.1	**Context:** The proponent states that the assessment of accidents and malfunctions began with the initial identification of hazard scenarios. Hazard scenarios were identified using a systematic approach that considered the existence of sources of hazards and initiating events for the Project. The hazard identification was conducted to identify a comprehensive list of potential project-related accident and malfunction scenarios associated with the key project components and activities with further details provided in the technical supporting document (TSD) VIII. **Rationale:** In addition to traffic accidents on the Project access road, experience from similar mine operation suggests the incidence of traffic accidents damaging chemical storage tanks on the mill site, which could result in the release of chemicals from the ruptured storage tank and cause risks to human health and safety, and the environment. However, this hazard scenario appears to have not been assessed.	Assess the hazard of potential traffic accidents that could damage the chemical storage tanks on the mill site.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
185.	CNSC	Accidents and Malfunctions	Section 21.5.1	**Context:** The proponent states that the assessment of accidents and malfunctions began with the initial identification of hazard scenarios. Hazard scenarios were identified using a systematic approach that considered the existence of sources of hazards and initiating events for the Project. After identifying potential hazard scenarios, a subset (i.e., bounding scenarios) was selected as the focus of the detailed risk analysis. The hazard identification was conducted to identify a comprehensive list of potential project-related accident and malfunction scenarios associated with the key project components and activities with further details provided in the technical supporting document (TSD) VIII. **Rationale:** CNSC staff noted that explosives and detonator storage stations, and strong acid storage facility were not included in the list of key project facilities and the hazards associated with the storage and transportation of explosives, detonators, and strong acid were not identified and their risks to the environment, human health, and workers safety were not evaluated.	1.Include the facilities for storing explosives, detonators, and strong acid in the list of key project facilities; 2.Identify the hazards related to the storage and transportation of explosives, detonators, and strong acid; 3.Assess their potential effects on the environment, human heath, and workers safety from a potential accident/malfunction associated with explosives, detonators, and strong acid.	
186.	MN-S	Accidents and Malfunctions	Section 21.6	The EIS states: “Six hazard scenarios were selected as bounding scenarios for more detailed risk analysis.” Given the high importance of Patterson Lake to Indigenous and local Communities, the use of the lake for fishing and sustenance, and the presence of in-lake infrastructure, an accidental release into Patterson Lake has the potential to impacts several VCs and linked VCs.	MN-S requests that NexGen considers an aquatic release to Patterson Lake as a bounding scenario for the assessment of effects of accidents and malfunctions.	
187.	CNSC	Accident and Malfunction	Section 21.6 TSD VIII	**Context:** In Table 21.6-1, the accident or malfunction for project component NPAG WRSA, it states that “…uncontrolled leachate/seepage release through lining failure.” It is understood that the NPAG WRSA has no liner, so the lining failure is an incorrect statement. In Table 21.6-3, the release characterization of Bounding Scenario 2 states that hydrogen peroxide = 11,350 L to 18,900 t. 18,900 t is incorrect and should be 18,000 L. Table 3-1 to Table 3-20 in Appendix A of TSD VIII, -consequences for the hazards ID# 1.1, 1.3, 1.8 2.1, 5.2, 17.2, and 20.1 include occupational major injuries. However, the severity (S) is denoted as number 2 that appears to be inconsistent with consequence rating number in Table 3-2 of TSD VIII. -hazard ID# 4.3 has a likelihood (L)=1 and S=5 and its risk ranking (RR) is Low, but not moderate as defined in hazard risk matrix. -Consequences for hazard ID# 5.5 and 5.7 include fatality, but their S=4, not 5. -Hazard ID# 9.3 has L=1 and S=5, RR is high, not moderate as defined in hazard risk matrix.	Clarify or correct all inconsistent and/or inaccurate/incorrect information in section 21.6 and in Tables 3-1 to 3-20 in Appendix A of TSD VIII.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				-Hazard ID#11.4 states uncontrolled leachate/seepage release through lining failure for NPAG waste rock pile. It is understood that NPAG waste rock pile has no liner. -Hazard ID# 12.1 states that dual lined pad with leak detection system, which is not the case for PAG waste rock stockpile. -Hazard ID# 14.3, L=2 for pond lining failure and leakage is not justifiable based on the operation experience at other similar projects in the area. -Hazard ID# 16.1, L=2 for a very common accident/malfunction is not justifiable. **Rationale:** Inconsistent or inaccurate/incorrect information was included in Chapter 21 Accidents and Malfunctions and its supporting TSD.		
188.	CNSC	Accidents and Malfunctions	Section 21.6.3.1 TSD VIII, Section 6.2 TSD IX, Section 9	**Context:** The proponent states that based on drum deformations performed in a previous analysis (McSweeney et al. 2004), if a drum experienced a crush force of 100,000 lbs, then the deformation of the drum would cause the lid to detach from the drum. Using this drum failure mechanism, and assuming the drums weigh 450 kg and are arranged four across in the truck, at a speed of 48 km/h (<60 km/h in TSD IX), the front 25% of the drums would fail, at 60 km/h to 97 km/h 55% would fail, at 145 km/h 75% would fail, and at ≥193 km/h all would fail. Given that the speed of the truck would be less than 40 km/h, it was concluded that less than 25% of the drums would fail upon a traffic accident scenario. There are assumed to be 50 drums per shipment, so some stacking or rows of drums should be expected in this scenario. The drums stacked above could be at greater risk of deformation in a traffic accident. It is not clear whether drums stacking was considered in the previous study cited by the proponent and whether 25% fail is still an adequate percentage of drum failures in such traffic accident scenarios. **Rationale:** Drum failure percentage will impact on the release quantity of uranium in such an accident scenario and then impact on the consequence assessment. Therefore, the drum failure should be adequately assessed and supported with sufficient information and justification.	Clarify the speed limit for 25% drum fail; Provide information and/or rationale as to whether drum stacking would impact drum failure at different speeds and confirm whether 25% drum fail for such an accident is still valid. **Requires Technical Discussion**: Yes	
189.	CNSC	Accidents and Malfunctions	Section 21.6.4 TSD VIII, Section 7	**Context:** EIS states that Bounding Scenario 2 consists of the release of fuel and hazardous chemicals into the Clearwater River under the bridge along the project access road due to traffic accidents. Among the chemicals considered for this scenario, the effects of the release of gasoline and solvents are bounded by the effects associated with the release of diesel fuel. **Rationale:** It is understood strong acid will be used as the stripping agent in the process plant solvent extraction circuit to extract Uranium and will be transported to the site. The strong acid is not considered in this scenario. Explosives will be used for the	Provide information whether Bounding Scenario 2 would bound the potential effects of an aquatic release of strong acid and explosives from a traffic accident and conduct assessment, if not bounded, of the aquatic release of strong acid and explosives from a traffic accident.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				project construction and operation and will be transported to the site as well. It is not clear whether bounding scenario 2 could bound the potential effects of a traffic accident for aquatic release of strong acid and explosives.		
190.	CNSC	Accidents and Malfunctions	21.6.4 TAD VIII, Section 7	**Context:** Bounding Scenario 2 is for traffic accident release of fuel and hazardous chemicals into the Clearwater River under the bridge along the Project access road. Based on the release characterization, the release of diesel fuel would bound other releases. The scenario of release of diesel fuel considered that 45% of the fuel released will be lost due to evaporation and dissolution. While the aquatic release of the fuel was further assessed in the effect assessment, emissions to air from the spills was not discussed/assessed in the EIS. **Rationale:** Emissions to air through evaporation of the fuel releases/spills would impact on the air quality and should be discussed in the EIS.	Strengthen discussion on emissions to air from the accidental release of this scenario.	
191.	CNSC	Accidents and Malfunctions	Section 21.6.5 TSD VIII, Section 8	**Context:** Bounding Scenario 3 involves damage to equipment and vessels containing uranium-bearing solutions in the solvent extraction building, resulting in fire and release of uranium to the environment. The effects of this scenario were evaluated with the Areal Locations of Hazardous Atmospheres (ALOHA) model. The details of the assessment are provided in TSD VIII. In TSD VIII, the airborne source term for this scenario is estimated with equation developed by the United States Department of Energy (USDOE) where the respirable faction is assumed to only include particles of 10 μm and smaller. **Rationale:** No rational was provided to support the consideration of only 10 μm and smaller particles. For material at risk, the total volume of the uranium-rich solvent of 100 m3 was used without explanation. It is also not clear where is the maximum uranium concentration of 8 g/L in the loaded solvent from. The calculation of leak path factor involves several factors either calculated or assumed (i.e. the volume of air of 210 m^3, 14 air changes, maximum air flow of 27 m^3, burning rate of 2.6 L/s), which are not clearly stated. As the airborne source term is an important factor for the effect assessment and should be calculated with transparent and justified information/data.	Provide rationale for why only 10 μm and smaller particles were considered for respirable fraction and explanation for the values of factors used for leak path factor calculation. **Requires Technical Discussion**: Yes	
192.	MN-S	Accidents and Malfunctions	Section 21.7	The EIS states: “After the detailed risk analysis was complete, the resultant risk level rating was assessed to be Low for all scenarios except for the transportation accident scenario involving a vehicle-pedestrian collision, which was deemed to be a Moderate risk. The Moderate risk scenario was deemed to represent a tolerable level of risk in consideration of proposed safeguards that reduce the risk level to ALARP.”	MN-S requests additional detail about verification undertaken regarding the MN-S outcomes. If no verification was undertaken, MN-S requests additional text to acknowledge verification was not undertaken and to further acknowledge the limitations of the assessment in this regard.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				It is unclear if NexGen has verified the outcomes of this assessment with potentially affected Peoples (i.e., land users who may be pedestrians along the transportation routes), who may not support this outcome.		
193.	CNSC	Accidents and Malfunctions	Section 21.7 TSD IX	**Context:** The analysis of the potential transportation accident involving hazardous materials requires information regarding the type, quantity, transportation method, and characteristics of the hazardous materials transported from/to the site. The following hazardous materials were selected for the assessment: uranium concentrate, hydrogen peroxide, diesel fuel, liquidized natural gas (LNG), and molten sulphur. **Rationale:** The project will need significant amount of strong acid and explosives that will be transported to the site. The strong acid and explosives are considered as either hazardous or dangerous materials. However, they were not considered in the transportation risk assessment.	Include strong acid and explosives in the transportation risk assessment.	
194.	CNSC	Accidents and Malfunctions	Section 21.7 TSD IX	**Context:** While the EIS states that six transportation hazard scenarios were selected as the focus of the transportation risk assessment, only five scenarios were included in Tables 21.7.1 and 21.7.3. In TSD IX, while five scenarios were stated in Section 6: Transportation Accident Scenarios, six accident scenarios were presented in summary Table 11-1. **Rationale:** Inconsistent information on the transportation hazard scenarios was provided in the EIS.	Clarify the hazard scenarios for transportation risk assessment and provide consistent information in the EIS.	
195.	CNSC	Accidents and Malfunctions	Section 21.7.2.1	**Context:** For the aquatic release scenario, of the 33 water features that are crossed by or occur in the direct vicinity of the project's transportation route, 4 were selected as the focus of the scenario for transportation risk assessment. **Rationale:** Stakeholders need to understand why only four features were selected for this scenario assessment as this might impact on the overall transportation-related risk assessment.	Provide rationale or criteria for selecting only 4 water features for transportation risk assessment of the aquatic release scenario. **Requires Technical Discussion**: Yes	
196.	CNSC	Accidents and Malfunctions	Section 21.7.2.2 TSD IX, Section 9.1	**Context:** It states in Section 21.7.2.2 that "Based on these analyses, the hypothetical maximum concentrations of uranium in water and sediment ranged between 121 μg/L (i.e. downstream of Churchill Lake) and 516 μg/L (i.e. Clear River), and 2,760 μg/g (i.e. Clearwater River) and 3,760 μg/g (i.e., Canoe River), respectively." However, in Section 9.1 of TSD IX, maximum concentrations of uranium in sediment for the Clearwater River release is 2.76x104 μg/g (dry wet) or 27,600 μg/g (dry wet) in Table 9-1; maximum concentrations of uranium in sediment for	Clarify maximum concentrations of uranium in sediment for aquatic release scenario.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				the Canoe River release is $3.76x10^4$ µg/g (dry wet) or 37,600 µg/g (dry wet) in Table 9-3. It appears that 37,600 µg/g is not the maximum concentrations of uranium in sediment for the aquatic release of uranium as maximum concentrations of uranium in sediment for the Beaver River Crossing release appears to be $4.11x10^4$ µg/g (dry wet) (also refer to CNSC AM-17). **Rationale:** Inconsistent/incorrect information on maximum concentrations of uranium in sediment under aquatic release scenario is provided in the EIS.		
197.	MN-S	Incorporation of Indigenous Knowledge	Section 22.3	The EIS states: "The leadership of each Indigenous Group selected their Joint Working Group participants with consideration of group diversity; where possible, members included Elders, youth, different genders, a range of ages, and land users around Patterson Lake." It is unclear how MN-S's input was considered in section 22.	Please revise the EIS to provide additional context as to how MN-S' input was considered in this section.	
198.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	Section 22.6	**Context:** In Section 22.6, the Proponent provides risk level determinations for various natural hazards based on their likelihood of occurrence and potential consequences. This relies on the climate information and projections detailed in Appendix 22A wherein the potential for future increases in the frequency/magnitude of short-duration precipitation events and Probable Maximum precipitation (PMP) are noted. This potential is also noted in section 22.6.3. – Major Precipitation Events. **Rationale:** In Section 22.6 under "Water Management Infrastructure" (p.22), the Proponent notes "*Self-containment for runoff from mineralized materials has been sized to contain PMP events*". It is not clear if that PMP considers potential climate change.	Describe how future climate change has been factored into the consideration of the risk levels related to extreme precipitation, including possible increases in frequency and magnitude, for all of the Hazard Scenarios identified in Table 22.6.3. **Suggestions for mitigation and follow-up measures** Monitor all pumps and availability of contingency pumps. Redundant pumps may be necessary when the failure threatens the environment.	
199.	ECCC	Fish and fish habitat Migratory birds Current use of lands and resources for traditional purposes	Section 22.6 Appendix 22A	**Context:** In Section 22.6, the Proponent indicates that they have considered the median in an ensemble of climate change projections for a number of climate parameters in their hazard scenario assessment. **Rationale:** Best practice for addressing the inherent uncertainty in future climate projections is to consider the range of projected changes in an ensemble of projections from a range of future emission scenarios and models. Evaluating the risk level based only on the median does not address the inherent uncertainty. A probability of occurrence has not been ascribed to the different future emission scenarios and they diverge increasingly beyond ~2040. The median projected change from the ensemble may not be the most likely to occur, which would result in unreliable predictions and the subsequent assessment of effects of the Project.	Describe how the overall risk levels (based on likelihood and consequence) for the various hazard scenarios that relate to climate outlined in the various tables in Section 22.6 would differ if more extreme projected future changes were considered (i.e., not just the median).	
200.	CNSC	Assessment of Effects of the Environment on the Project	Section 22.6.2 Drought	**Context:** Drought conditions affecting revegetation was assessed in this section. The proponent claims that drought conditions may still affect the successful establishment of some vegetation used in reclamation of the site, particularly if the	Provide further information to demonstrate the negligible consequence for unsuccessful revegetation with clear reclamation objectives and criteria for certifying the reclamation objectives are met.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				drought corresponds to an immature standing crop although native, drought-resistant vegetation species would be used for reclamation. The proponent indicates that the probability of drought conditions affecting reclamation efforts is assessed as unlikely, as adaptive management would be applied to certify reclamation objectives are met, and closure would be managed for several years after mining ceases. However, it is not clear what are the reclamation objectives and what are the criteria to be used to certify such reclamation objectives are met. The proponent further states that the consequence for unsuccessful revegetation is assessed as negligible as there would be no stoppage in Project activity and revegetation of disturbed areas would be repeated. However, there is no further information to support the negligible consequence. **Rationale:** It is understood that waste rock stockpiles will be managed and reclaimed on surface. Lack of a vegetation cover on the waste rock stockpiles will increase the erosion potential of the waste rock stockpiles and the net infiltration into the waste rock stockpiles, and then enhance the contaminant migration, which may pose more significant impacts on the surrounding environment. It is not clear whether vegetation cover is relied on for waste rock stockpile reclamations.		
201.	CNSC	Assessment of Effects of the Environment on the Project	Section 22.6.6 Extreme Temperatures	**Context:** The EIS states that "The NPAG and PAG WRSA cover systems would be designed to withstand cold climates and increasing temperatures. They would follow design and construction recommendations in guidance manuals such as MEND Report 2.21.4A Design, Construction, and Performance Monitoring of Cover Systems for Waste Rock and Tailings (O'Kane 2004)." **Rationale:** MEND report 2.21.4A discusses such issues as freeze/thaw cycling and snowpack measurements, but the majority of the design and monitoring methodologies are based on experiences in more temperate climate, while the guidance manual - MEND report 1.16.5c (2012) [2] is based on more experiences in cold climates and should be followed for cover system design. Reference: MEND Report 1.16.5c, 2012. Cold Regions Cover System Design Technical Guidance Document.	Follow more adequate guidance, such as MEND Report 1.16.5c (2012), for the NPAG and PAG WRSA landform and cover system designs.	
202.	CNSC	Assessment of Effects of the Environment on the Project	Section 22.6.7 Seismic events	**Context:** The EIS states that "The estimated peak ground acceleration (PGA) with a return period of 4,975 years is less than 0.036g at a probability of 2% over 50 years (Golder 2020)." **Rationale:** An event with a probability of 2% over 50 years would have a return period of 2,500 years, but not 4,975 years.	Correct the inconsistent information on probability and return period for the seismic event considered for the Project.	
203.	NRCan	Seismic hazards	Section 22.6.7.1	**Context:** The National Building Code (NBC) (including seismic provisions) has been updated as of 2020.	Please clarify as to which National Building Code may be used?	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: Natural Resources Canada (NRCan) points out that the 2015 NBC has been updated (including seismic provisions) and the 2020 National Building Code is most current.	**Suggestions for mitigation and follow-up measures** NRCan suggests using the 2020 NBC for mitigation purposes.	
204.	NRCan	Seismic Hazards	22.6.7.1	**Context:** Seismic events due to mining have been evaluated and are considered highly unlikely. **Rationale:** Section 22.6.7.1 of the draft EIS states that seismic events are unlikely due to mining activities.	Please provide additional information or references on how the proponent came to this conclusion.	
205.	ECCC	Fish and fish habitat Migratory birds Current use of lands and resources for traditional purposes	Section 22.7 TSD XXII	**Context:** In Section 22.7 - the conclusions to the Assessment of the Environment on the Project chapter – the Proponent indicates that: *"The potential risks associated with natural hazards and future climate change would continue to be considered in engineering design on an ongoing basis as a part of the continual improvement process and through implementation of the Climate Adaptation Framework (TSD XXII)."* The quote above indicates that the Climate Adaptation Framework will be implemented. The Climate Adaptation Framework document does not include sufficient detail. It reads more as a Proposed framework in development than a concrete plan. There are a series of suggested measures and approaches and the verb "could" rather than "will" is used throughout **Rationale:** .Providing additional detail in the Climate Adaptation Framework will allow ECCC to assess the Proponent's conclusions on the potential risks associated with natural hazards and future climate change.	Provide an updated version of the Climate Adaptation Framework for review, if available.	
206.	ECCC	Fish and fish habitat	Appendix 22A Appendix 22A2.2 Appendix 22A4.1.1	**Context:** The Climate Change Assessment describes the current climate and provides projections of how climate is likely to change under future climate conditions. Climate variables including temperature and precipitation are input to a multi-model ensemble (multiple models and scenarios) and the output is used to describe how current climate conditions may change in the future. Appendix 22A describes the methods used to conduct the climate assessment, however, clarification on some of the datasets and methods used in the assessment would assist ECCC in understanding future climate projections. It is unclear which climate datasets were used throughout the EIS to determine the Annual Maximum Series described in Appendix 22A and if a Model Output Statistics model was used to generate the data. To establish existing climate conditions for the Project area, reanalysis data from Modern-Era Retrospective analysis for Research and Application Version 2 (MERRA-	1. Describe how all the Annual Maximum Series used in Appendix 22A were generated. 2. Provide the percentage of climate data that comes from satellite observations, the percentage of data from ground-based observations and if there are data gaps in the datasets. 3. Describe how the 2050 and 2080 scenarios used to project climate change were included in the assessment (i.e., as climate points or time series analysis).	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				2) were used. However, it is not clear how missing satellite observations due to cloud cover were addressed. It is also unclear if projected changes under future climate conditions provided for the 2 scenarios, 2050 and 2080 were treated as climate points or a time series analysis. **Rationale:** The climate change assessment is used to assess the effects of the environment on the Project that may occur due to future climate change. A clear understanding of the climate variable datasets and methods used in the climate assessment will enable a better understanding how projected future changes in climate may affect the Project over its lifespan.		
207.	ECCC	Wildlife and Wildlife Habitat	Section 23	The Proponent states they are committed to developing the following plans: Environmental Monitoring Plan Environmental Protection Program Biodiversity Action Plan Effluent Monitoring Plan Decommissioning and Reclamation Plan	Provide the Environmental Monitoring Plan, Environmental Protection Program, Biodiversity Action Plan, Effluent Monitoring Plan, and Decommissioning and Reclamation Plan for review and provide detail on how these plans and programs will ensure the protection of SAR and migratory birds and their nests and wetland function, including how any residual effects will be mitigated.	
208.	CNSC	Follow-Up Monitoring Program	Section 23.5.1	Section 23.5.1 of the EIS includes a very high level summary of what will be included in the Environmental Assessment Follow-Up Monitoring Program (EAFMP) and refers the reader to Sections 7-19 for details that would be implemented as part of the EAFMP. This makes it difficult to see the overall picture of the proposed EAFMP as a whole and it would be best to summarize all of this information in this section so that the reader can get a better idea of what the EAFMP will entail as a whole. It would also be helpful to include a summary of how Indigenous and Local knowledge helped form the basis of the preliminary EAFMP to date. The updated information should also clarify the roles and responsibilities of the different participants in the EAFMP.	1. Please revise Section 23.5.1 to include a table that summarizes the details (as outlined in Sections 7-19 of the EIS) of the proposed preliminary EAFMP for all phases of the Project. Also please include a summary explaining how indigenous nations and communities were involved and how Indigenous and local Knowledge helped influence the development of the preliminary EAFMP. 2. As outlined in Section 11 of the *Generic Guidelines for the preparation of an Environmental Impact Statement pursuant to the CEAA 2012*, please include roles and responsibilities to be played by the proponent, regulatory agencies, Indigenous people, local and regional organizations and others in the design, implementation and evaluation of the EAFMP program results.	
209.	ECCC	Wildlife and Wildlife Habitat	Appendix 23A Table 23A-4 Table 23A-5 Table 23B-1	The use of a liner for the PAG (potentially acid generating) waste rock storage area to "limit seepage from the special waste storage area with double liner and leak detection system" is new technology used to reduce risk of contamination of water run-off and seepage. However, it is unclear how the liner efficacy will be monitored, what will occur if a leak is detected and how migratory birds and SAR will be protected during this process. The Proponent has committed to describing surface water/contact water monitoring in the Environmental Protection Program.	1. Provide details on how the liner's effectiveness will be monitored. 2. Describe what measures will be taken if a leak is detected and how the actions will protect migratory birds, SAR and their habitat from effects of a spill or leak.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
210.	ECCC	Wildlife and Wildlife Habitat	Table 23A-4	The draft EIS states that discharge waters "meets discharge quality criteria prior to release into the environment" but this is not discussed in the context of potential effects to migratory birds, SAR and wetland function.	Describe what the discharge quality criteria are and provide context on how these criteria will reduce effects to migratory birds and SAR.	
211.	ECCC	Wildlife and Wildlife Habitat	Table 23A-5	The Proponent states they will implement best management practices (BMPs) and mitigation such as spill prevention.	1. Explain in more detail what BMPs and mitigation will be utilized for spill prevention. 2. Explain what risks exist for migratory birds, SAR, and wetland function if a release occurs and what actions will be taken if a spill occurs.	
212.	CNSC	Terrestrial environment	Section 23-Appendix 23B	**Context:** Appendix 23B summaries the environmental assessment monitoring and follow-up programs proposed for the project. There is no mention of doing follow up monitoring to confirm soil quality is not impacted by project activities such as air deposition of COPCs to soil, or contact water contamination of soil pathways. **Rationale:** Although there is a plan to monitor air quality, there is no follow up monitoring planned to confirm there are no impacts on soil quality around the site from project activities. This monitoring is required to confirm the EA predictions that soil quality impacts from project activities will not exceed any soil quality guidelines.	Please include a soil quality monitoring plan in the EA follow up monitoring for any contaminants that may impact soil quality through project activities (air deposition, water contact, etc). **Suggestions for mitigation and follow-up measures** Soil quality environmental monitoring	
213.	ECCC	Wildlife and Wildlife Habitat	Table 23B-1	The draft EIS states that noise monitoring will be conducted to verify models but it is unclear what measures will be taken if noise levels are higher than anticipated or exceed thresholds.	Explain what measures will be taken if noise levels exceed thresholds.	
214.	MN-S	Joint Working Group	Section 4.2.1.1	“Traditional Foods study” A traditional food study had not been completed at the time the EIS was submitted, as this EIS states. MN-S submitted a food study budget to NexGen on May 26, 2022. NexGen approved the traditional food study budget by email on August 8, 2022, almost two months after the EIS was submitted. Therefore, reference to the traditional food study as being completed is not accurate.	Please correct this inaccuracy and revise the EIS.	
215.	MN-S	Primary Indigenous Groups	Section 6.1.1	Combining all topics of interest in a global fashion and ascribing them to all Indigenous Nations does not facilitate review for understanding of how an individual Nation's interests may or may not have been addressed in the assessment.	Please rewrite Section 6.1.1 on a Nation-by-Nation basis. Verbiage such as "communities said" is unhelpful to understand how NexGen may have understood and addressed issues that affect individual Nations’ rights and interests.	
216.	CNSC	Alternative Assessment	TSD VII, Section 3.5 Multiple Accounts Analysis and Table B-7	**Context:** Multiple accounts analysis (MAA) was performed to quantitatively evaluate alternatives carried out forward from screening by following the ECCC guidelines for the assessment of alternatives for mine waste disposal (ECCC 2016). The preferred alternative was selected with the highest score ranking of the alternatives assessed with the MAA. One of the steps for the MAA is scoring and weighting in which scoring scales were developed for each indicator with values ranging from 1 to 6 following ECCC (2016) guidelines. When scoring alternatives, a value of 1 always assigned to indicate the	1.Provide an explanation for why reverse number of indicator values were used for the indicator “Potential for impact to plant, fish, and other wildlife population and habitat during construction and, operation, and closure” and correct them as necessary and evaluate whether the correction will impact on the alternative ranking for tailings management;	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				least favorable alternative while a value of 6 was always assigned to indicate the most favorable alternative. **Rationale:** In Table B-7, for the indicator "Potential for impact to plant, fish, and other wildlife population and habitat during construction, operation, and closure" in which indicator measurement is "Distance" that states "Measurement as distance from tailings facility centroid to Patterson Lake, with the longest distance preferred for lowest potential impact." Based on the ECCC guidelines, Underground Location U-4 Paste has a shortest distance of 0.2 km to Paterson Lake, which should be least preferred for this indicator and a lowest value of 1 should be assigned, while a highest value of 6 should be assigned to Surface Location S-1 Paste. However, in Table B-7, reverse number of indicator values were assigned to different alternatives. In addition, a non-integral value was used for some alternatives with no explanation, e.g. in Table B-7, Surface Location S-3 Paste and In Pit Location P-3 Slurry have same distance to Patterson Lake, but 1.9 indicator value was assigned to Surface Location S-3 Paste while 1.6 was assigned to In Pit Location P-3 Slurry.	2.Provide an explanation of how non-integral number of indicator values were used for different alternatives.	
217.	CNSC	Accidents and Malfunctions	TSD VIII	**Context:** In the assessment of some accident scenarios, the terms "very unlikely" and "extremely unlikely" were used for probability, which are different from the terms used in Table 3-1. Similarly, the terms "very severe" and "low" were used for consequences, which are different from the terms used in Table 3-2. The terms and linkage between these terms and the associated tables needs to be clarified. **Rationale:** Inconsistent terms were used for the probability and consequences of the bounding scenario assessment.	Clarify the linkage between the terms mentioned in Context and the terms in Tables 3-1 and 3-2.	
218.	CNSC	Accidents and Malfunctions	TSD VIII, Section 6.2	**Context:** When assessing the release characterization of Bounding Scenario 1, the proponent assumed that 95% of the released uranium concentrate can be recovered from the release location without sufficient justification, and that different water column depths, i.e. 10 cm, 30 cm, 5 cm at the release location were assumed without explanation. **Rationale:** As the release characterization of the uranium concentrate would impact on the assessment of its potential effects, CNSC staff, the public, and Indigenous Groups need to understand the adequacy of the release characterization of this bounding scenario.	Provide further rationale for assuming 95% recovery rate and for using different water column depths for uranium concentrate release characterization.	
219.	ECCC	Fish and fish habitat	TSD VIII, Section 7.2	**Context:**	1. Provide the tanker truck capacity that will be used to transport corrosive liquids.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		Change to an environmental component due to hazardous contaminants		A hydrogen peroxide spill at the site-access bridge over the Clearwater River was not analyzed further based on the Proponent's release characterization. The Proponent indicated that most species of fish tolerated hydrogen peroxide at greater than a 1000 ppm concentration with no adverse effects. The Proponent then further explained that the concentration of 1000 ppm requires a dilution of 1 to 1000 which means that 18 m^3 should be diluted to 18 000 m^3. Ultimately, it was concluded that this would occur in a stretch of less than 200 m of the Clearwater River and therefore will not affect a large fish population. **Rationale:** Corrosive liquids are typically transported in TC412 tanker trucks, which have a capacity of 40 m^3. If TC412 tanker trucks will be utilized, the distance any spilled contaminants will travel downstream in the Clearwater River will increase resulting in an underestimation of the risk to the receiving environment. It is not clear why the Proponent is considering 18 m^3 as a possible spill volume of hydrogen peroxide. Clarification would assist ECCC in understanding the potential effects on the receiving environment.	2. If trucks of greater than 18 m^3 will be utilized, update the risk evaluation. 3. Provide details on the measures that will be used to reduce the risk from this hazard.	
220.	CNSC	Human Health with respect to radiation exposure	TSD VIII – Accidents and Malfunctions Report, Section 8.0	**Context:** Bounding scenario 3 (Solvent extraction fire or explosion): Results of air concentration predictions for uranium and U_3O_8 are compared to the Emergency Response Planning Guides (ERPG), which are based on chemical toxicity only. Radiological exposure was not considered in this accident scenario. **Rationale:** An estimate of the annual effective dose is required to determine whether the expected doses meet the dose limits set out in the *Radiation Protection Regulations*.	Provide an estimate of the radiological dose to workers and to members of the public resulting from bounding scenario 3.	
221.	CNSC	Human Health with respect to radiation exposure	TSD VIII – Accidents and Malfunctions Report, Section 9.0	**Context:** Bounding scenario 4 (Tailings transfer pipe of pump failure): Occupational exposure from this accident scenario could occur, however, these have not been considered in this TSD. The potential for radiological doses off site has not been addressed. **Rationale:** An estimate of the annual effective dose is required to determine whether the expected doses meet the dose limits set out in the *Radiation Protection Regulations*.	Provide an estimate of the potential radiological dose on-site and off-site resulting from bounding scenario 4.	
222.	CNSC	Human Health with respect to radiation exposure	TSD IX – Transportation Risk Assessment Report	**Context:** Radiological dose to human receptors from transport accidents and the annual dose to the truck driver from the uranium concentrate being transported have not been assessed. **Rationale:** An estimate of the annual effective dose is required to determine whether the expected doses meet the dose limits set out in the *Radiation Protection Regulations*.	Provide an estimate of the annual radiological dose to a truck driver while transporting uranium concentrate from the Rook I site (upon accessing route 955 from the site access road) to the final destination of the uranium concentrate, due to external gamma exposure from the load for the duration of the trip. The number of such trips a driver would typically be expected to complete in one year should be factored into the calculation of the annual dose. In addition, the radiological dose due to accident scenarios should be addressed in the TSD.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
223.	CNSC	Accidents and Malfunctions	TSD IX, Section 1.3	**Context:** Section 1.3 states that "The transportation risk assessment, which is a part of the assessment of accidents and malfunctions, is intended to provide a clear identification of potential transportation-associated hazards that fall outside the range of "typical" day-to-day events." **Rationale:** Highway 955, known locally as the Semchuk Trail, is an all-season highway that is almost entirely unpaved, except for an approximately 4.5 km section of paved highway from La Loche to the turn off to the CRDN reserve. Highway 955 is designated as a secondary highway with the narrowest portion of 7m in width, shoulder to shoulder. When engaging with Joint Working Groups, Joint Working Groups expressed concerns of the poor conditions of the highway north of Green Lake. The poor conditions of Highway 955 could result in a higher accidental rate when traffic rate is increased. While the reviewers understood that TSD IX deals only with the transportation risk related to Accidents and Malfunctions, the transportation risks/hazards due to the increased traffic rate (e.g., vehicle-vehicle accidents and vehicle-individual accidents), during day-to-day operations should also be assessed.	Provide information whether/where the transportation risk/hazard during day-to-day operation is assessed.	
224.	CNSC	Accidents and Malfunctions	TSD IX, Section 5.2	**Context:** It states that "The traffic Impact Study Report prepared by Stantec (2019) calculated the trip generation divided into expendables, labor, and construction equipment or materials categories. Stantec 2019, Appendix B, contains a detailed list of category inclusions and breaks down trips per item. These trip generation data are summarized in Table 5-5, Table 5-6, Table 5-7, below, for all Project phases." **Rationale:** Traffic generation for different project phases is one of the bases for transportation risk assessment. However, the Stantec 2019 report was not submitted and no explanation of the values in Tables 5-5 to 5-7 was provided. Reviewers can not understand the numbers in the tables without the supporting report and additional explanation (e.g. why Trips/Day is more than Trips/Week?)	Provide the Stantec report (2019) or additional explanation on traffic generation for different project phases.	
225.	CNSC	Accidents and Malfunctions	TSD IX, Section 9.1.1	**Context:** On page 9.2 of TSD IX, it states that "If the remediation criteria is set at no-effect uranium concentration of 2,296 μg/g, the residual uranium content in the 5 cm of sediments in an area of 15 m by 15 m is about 26 kg." The proponent claimed that this is a very small fraction of the total amount released, which was used to demonstrate that 95% recovery is a reasonable assumption. However, it is unknown how the 26 kg release amount is calculated. **Rationale:**	Provide calculations or information to support the 26 kg of residual uranium concentrate in the sediment for aquatic uranium release scenario.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Since 95% recovery rate was used to support the assessment of aquatic uranium release scenario, it is important that this assumption is supported with correct residual release amount of 26 kg uranium concentrate.		
226.	CNSC	Accidents and Malfunctions	TSD IX, Section 9.1.6.2	**Context:** It states on page 9.15 that "Sediment quality results are shown in Table 9-5 for post-remediation conditions. The results presented in the table are a summary of the three flow conditions for the predicted concentrations in Beaver River sediments. In general, using the results of the assessment, the minimum predicted uranium concentrate concentrations in the river sediments occurred under high flow conditions, where the smaller particles (less than 5 μm) are deposited over a larger area." **Rationale:** In Table 9-5, the minimum predicted uranium concentrate concentration in the river sediments did not occur under high flow conditions, rather under average flow condition. It appears that in Table 9-5, the values for average concentration in sediment and average concentration in pore water are switched between the average flow condition and the maximum flow condition.	Clarify the values in Table 9-5 under average and maximum flow conditions.	
227.	CNSC	Accidents and Malfunctions	TSD IX, Section 9.1.7	**Context:** The transportation route of highway 155 crosses the Kisis Channel at the Village of Buffalo Narrows. However, the location where a hypothetical truck accident may occur is assumed at a small bay in the southern part of the lake next to Buffalo Narrows. The bridge crosses the Kisis Channel was not considered for a hypothetical truck accident. **Rationale:** The bridge crossing the Kisis Channel is the bottleneck for highway 155 transportation through the Village of Buffalo Narrows and could have a higher potential for truck accidents.	Provide rationale or information for not selecting the bridge crossing the Kisis Channel for a hypothetical truck accident for the assessment of release to Church Lake.	
228.	CNSC	Accidents and Malfunctions	TSD IX, Section 9.2.2	**Context:** On page 9.24, it states that based on the above discussion on water penetration rate, a conservative penetration time for 15 min was made. No further information was provided why 15 min penetration time is conservative. **Rationale:** It is understood that the response time to a transportation accident could be much longer depending on the accident location and the occurrence time. The accidentally spilled liquid could have much longer time to penetrate soil for a terrestrial release.	Clarify why 15 min was considered as a conservative penetration time for terrestrial release scenario.	
229.	CNSC	Accidents and Malfunctions	TSD IX, Section 10.3	**Context:** Section 10.3 states that "The assessment results shown in Section 9.3, Atmospheric Release Scenarios, indicated that the AEGL-2 or ERPG-2 concentrations would be exceeded within a 238 m distance from the release location for uranium	Clarify the distance values stated in section 9.3 and section 10.3.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				concentrate particle and within 124 m for carbon monoxide in the downgradient wind direction." And "…Under these conditions, the AEGL-2 or ERPG-2 concentrations would be exceeded within a 367 m distance from the release location for uranium concentrate particle, and within 510 m for carbon monoxide in the downgradient wind direction." **Rationale:** The distance value used in 10.3 appears to be inconsistent with the distance values in section 9.3 (i.e. in Tables 9-10 and 9-11), where, for example, 238 m distance is for carbon monoxide, but not for uranium concentrate, and there are no values of 124 m and 367 m.		
230.	ECCC	Climate Change	TSD XII	**Context:** The Proponent provided a net-zero framework document, which was "developed based on the guidance provided in the *Draft Technical Guide Related to the Strategic Assessment of Climate Change*" (SACC). This net-zero framework indicates technologies and practices that could be implemented to reduce GHG emissions from the Project, including information on technical feasibility and GHG reduction potential, which constitutes steps 1-3 of the SACC's 6-step BAT/BEP Determination process. The net-zero framework is incomplete, in that it does not provide information on the complete BAT/BEP Determination, and does not demonstrate how the Project's net GHG emissions will equal 0 t CO2 eq by 2050 and thereafter for the remainder of the Project lifetime. Furthermore, the Proponent states "emissions associated with land use change, stationary combustion, waste incineration, industrial processes, and explosives have a relatively small combined contribution of 12.6% of annual emissions, and therefore have not been evaluated in the net-zero framework at this early stage". The final row in Table 5 (electrification) of the net-zero framework, the Proponent lists several projects where electrification of on-site mobile equipment is being planned or implemented. The upcoming Jansen underground potash mine, which has placed an order for electric vehicles[5] was not included in the table. **Rationale:** While ECCC recognizes that this Project falls under CEAA 2012, the principles of the SACC and Draft Technical Guide should be followed by the Proponent in order to support Canada's ability to meet its environmental obligations and commitments in respect of climate change. The requested information will assist the Proponent in selecting appropriate mitigation measures to reduce GHG emissions from the Project.	1. Update the net-zero framework to align with the principles of sections 3.1 and 3.5.1 of the Draft Technical Guide, by including the following: • The information requirements outlined in section 3.5.2 of the Draft Technical Guide, including completion of the full 6-step BAT/BEP Determination process; • Consideration of all main emission sources defined in the Draft Technical Guide as those that are anticipated to contribute to 1% or more of total Project GHG emissions. 2. Include the upcoming Jansen underground potash mine in the preliminary alternative technologies and practices assessment, which is summarized in Table 5.	
231.	CNSC	Groundwater flow modeling	TSD XIV, Section 2.3	**Context and Rationale:** Section 2.3.1 states that "the model was constructed based on a rectangular mesh ……, with the northwest portion of the model domain situated along a topographic	1.Provide clarification as to why the northwest and southeast portions are topographic high and low,	

[5] https://im-mining.com/2022/06/20/sandvik-secures-major-bev-loader-order-for-bhps-jansen-potash-mine/

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				high and the southeast portion of the model situated along a topographic low (i.e., with drainage to the Clearwater River)". It is not clear how the topographic high/low was determined, considering that the rectangular mesh is not coincident with the surface water watershed (as shown in Figure A-2). Section 2.3.2 indicates that fixed head boundary nodes were specified along the southeast lateral boundary on slices 6 to 39. It is not clear why the southeast boundary was specified as fixed head boundary while all the other three boundary conditions were assumed as no-flow boundary. Additionally, it is not clear why the fixed head was assigned to slice 6 to 39, and what the stratigraphic units of slice 6 to 39 are. Section 2.3.1 described the discretization of the model domain. A figure showing the model mesh would help understand the model domain discretization along the horizontal and vertical direction, and the discretization of each hydro-stratigraphic unit.	since they are not coincident with the surface water watershed. 2.Provide a justification of the boundary conditions (i.e., why the southeast portion was specified as fixed head while all the rest were assigned as no-flow boundary conditions?). 3.Show the model domain discretization along the horizontal and vertical directions along with the hydro-stratigraphic units on the same figure to illustrate the discretization of each hydro-stratigraphic unit.	
232.	CNSC	Solute transport modeling	TSD XIV, Section 3.3.1	Equation (2) is Fick's Second Law, but it is not equal to the diffusive flux. Diffusive flux is represented by Fick's First Law.	Please correct Equation (2).	
233.	CNSC	Infiltration rate on the waste rock storage areas	TSD XIV, Section 3.3.1	Section 3.3.1 (page 13) indicates that, for the post-closure, infiltration was reduced relative to operation conditions due to the cover-in-place. However, no further information is provided about the reduced infiltration (e.g., the extent that infiltration was reduced due to the cover-in-place).	Please provide additional information on the reduced infiltration, including the infiltration rate assumed due to the cover-in-place, or provide reference (such as other TSD) for the reduced infiltration.	
234.	CNSC	Groundwater inflow	TSD XIV, Section 4.1	This section presents the predicted groundwater inflow for the base case, as well as other two scenarios. In one scenario, the hydraulic conductivity of the fault zone was increased by a factor of 5, while in another scenario, the hydraulic conductivity of the basement rock was increased by a factor of 2. It is not clear if the predicted flow rate for the scenario with increased hydraulic conductivity for the fault zone represents the potential maximum inflow rate under non-routine conditions (e.g., flow rate induced by ground collapse along high-conductive features). It is a good practice to estimate the potential maximum inflow rate under non-routine conditions, and provide mitigation measures.	Please estimate the potential maximum inflow rate under non-routine conditions. **Suggestions for mitigation and follow-up measures** Mitigation measures should be developed to minimize the likelihood for non-routine conditions to occur.	
235.	CNSC	Tailings source term derivation	TSD XV, Section 3.3.1.2 Base case and upper case source term calculations	**Context:** The representative materials for CPB and CPT were proportioned to develop a base case and an upper case. Table 3-2 illustrates the methods used for development of both cases. However, no future justification was given with respect to why such methods were adopted. **Rationale:** The upper case seems to demonstrate the worst scenario as maximum leachate concentrations were chosen for each constituent. However, for the upper case scenarios the EIS used the highest pH for source term calculations. Higher pH can enhance dissolution of certain minerals, but will reversely precipitate other	Provide further justification of the methodology for determination of the geochemical assumptions for the base and upper cases.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				elements that are major COPCs. Therefore, it is controversial to simply choose the highest pH as a conservative assumption.		
236.	CNSC	Tailings source term derivation	TSD XV, Section 3.4.1 Evaluation of secondary mineral controls	**Context:** Temperature sensitivity was not evaluated, and solutions were assumed to be at 25°C in order to be consistent with thermodynamic data for geochemical simulations. **Rationale:** Most geochemical reactions and sorption/desorption processes are dependent on temperature. The test data obtained under laboratory conditions may not represent the in-situ condition if temperature varies. For ground surface storage or disposal of waste rock, a scaling factor is usually applied for derivation of source term by considering various factors including temperature. The current EIS lacks information about geothermal condition of the underground tailings repository.	Provide geothermal profile of the site, or at least the geothermal condition of the underground tailings management facility, and adjust the source term derivation as necessary.	
237.	CNSC	Tailings source term derivation	TSD XV, Section 3.4.1 Evaluation of secondary mineral controls	**Context:** A range of oxidation-reduction potential values (-250 mV ~ 500 mV) were reported to be investigated as representative of the oxidized nature of the CPB and CPT and anticipated groundwater conditions at depth. However, no further data or information is available in the EIS or its corresponding TSD. **Rationale:** As clearly stated in Section 3.1.1.1 (Key Chemical Reactions), changes in redox can lead minerals to precipitate or dissolve, and elements to sorb or desorb. A wide range of redox potential will affect the leaching behaviour of major COPCs (e.g. U and As), and will thus introduce uncertainty to the derived source terms. Given its importance in understanding the uncertainty in source term, and how this uncertainty has been managed in the EIS, the geochemical simulation results used to determine the oxidation-reduction potential values should be provided to support the EIS review.	Provide geochemical simulation results about the effect of varying redox potentials, and discuss the potential influences on source terms.	
238.	CNSC	Conceptual geochemical models for waste rock	TSD XVII WR and UG Source Term Report Section 2.2 Geochemical weathering concepts	**Context:** Geochemical weathering is conceptualized as oxidation of pyrite and dissolution of calcite. Release mechanisms of COPCs from waste rock were also discussed briefly. **Rationale:** Uranium and radionuclide release is assumed to result primarily from dissolution. Therefore, source terms for uranium and radionuclides are derived differently from other species. However, it is unclear how such a special treatment was implemented. Uraninite dissolves under oxidative conditions in the presence of carbonate by formation of carbonate complexes. From the current form of the TSD, it is unclear how these dissolution mechanisms are taken into consideration. Therefore, the exact release mechanism for uranium should be given.	Provide detailed information on the considered release mechanisms of uranium from waste rock.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
239.	CNSC	Waste rock and underground wall rock source term prediction	TSD XVII, Section 3.2.2	**Context:** It is stated that "Samples with an NPR greater than 3 were classified as NPAG, and samples with an NPR less than 1 classified as PAG. Samples with NPR between 1 and 3 were classified as uncertain (UC). Further details on the ARD classification will be provided in a baseline geochemistry report currently in draft." Based on this statement, it is still unknown how the waste rock with samples that have NPR between 1 and 3 is classified. **Rationale:** As the waste rock classification will impact on the quantity of both PAG and NPAG waste rocks and their management in both short-term and long-term. This might also impact on their potential effects on the environment.	Provide further details on ARD classification to support the EIS.	
240.	CNSC	Waste rock and underground wall rock source term prediction	TSD XVII, Section 3.2.2, Table 3-4	**Context:** Table 3-4 provides a summary of the infiltration rates, surface area and annual flows rates for each source term. However, no further details how they are obtained, in particular, the net infiltration rate. **Rationale:** Net infiltration will impact on the contaminant leaching and migration and then the loading to the surrounding environment and should be well justified.	Provide further details how net infiltration rates for different source terms are determined. **Suggestions for mitigation and follow-up measures** Monitor the net infiltration rate during operation and reclamation of waste rock stockpiles	
241.	CNSC	Waste rock and underground wall rock source term prediction	TSD XVII, Section 3.2.2, Table 3-9 and Table 3-10	**Context:** Tables 3-9 and 3-10 contain model input loading rates for various parameters for operations and closure by Lithological Grouping. It is noted that during operations, for Segregated PAG Source Term 3&5, parameter SO4 in INT-Mine and SPGN-Mine is greater than that in INT-UGTMF and SPGN-UGTMF. However, during closure, it is reverse, i.e., parameter SO4 in INT-Mine and SPGN-Mine is smaller than that in INT-UGTMF and SPGN-UGTMF. No further information is provided why this is the case. **Rationale:** The input loading rate will impact on the output loading rate and would then impact on the source loadings to the surrounding environment and should be determined adequately.	Provide further information why model input loading rates for parameter SO4 and others as appropriate by Lithological Grouping are reverse in values for operations and closure for Segregated PAG Source Term 3&5.	
242.	CNSC	Source term model inputs and assumptions	TSD XVII WR and UG Source Term Report Section 3.2.2 Table 4.1, 4.3	**Context:** The source terms for waste rock and underground wall rock were predicted from the kinetic leaching test results (HCT) of corresponding samples. Model input has been provided in table format. However, neither reference document nor evidence of kinetic leaching test results was provided in the report. In addition, several elements were observed to be identical in values for different study scenarios in the predicted WRSA concentrations (Tables 4-1, 4-3). For instance, Uranium concentration in the predicted leachate is found to be identical in different scenarios. However, no explanation was provided.	Provide a separate geochemical characterization report for representative waste rock, which should include total elemental analyses of waste rock typical of the geological formations for future development. Provide complete dataset of HCT leaching test results to support the source term predictions. This will provide a comprehensive dataset about the baseline characteristics of the waste rocks as result of the operation, and will facilitate developing corresponding geochemical models for derivation of	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				Rationale: NexGen's current methodology to predict source term relies on leachate concentration of major elements from HCT tests. Since no test results were available for review, it is hard to justify whether the adopted model input is representative of the rocks to be encountered in the operation. Variability of geochemical properties is not fully addressed in the current form. As the HCT test condition could be designed to represent the field condition, uncertainty in variables could affect the leaching behaviour. Information is missing with regards to proportion of chemicals leaching from solid phase. This is partly because of lack of information on total concentration/quantity of chemicals in waste rock samples. In order to achieve this, a detailed quantification of wholerock elemental analyses for waste rock is required. With an in-depth understanding of the total elemental composition, it will enable a better reactive geochemical speciation and transportation modelling for source term predictions.	source terms for both short-term operation and long-term disposals. **Suggestions for mitigation and follow-up measures** Assess the comparative proportion of the leachable elements in the solid phase.	
243.	CNSC	Conceptual geochemical models for waste rock	TSD XVII WR and UG Source Term Report Section 3.2.2 Model inputs & assumptions, Oxygen transport modelling	**Context:** Oxygen transport modelling was completed by Okane to assess oxygen availability for sulfide oxidation in the waste rock stockpile. The Okane (2020) report was heavily relied upon for the development of source terms under different scenarios, in particular, the designs with engineered layers. **Rationale:** The current EIS and TSD XVII have limited to no information on how the engineered layers in the PAG waste rock stockpile are designed. The methodology and simulation results of oxygen transport in waste rock stockpiles are unavailable in the current report.	Provide the referenced Okane (2020) reports: Okane (2020a). Rook I WRSA Options Analysis. Memorandum provided to NexGen Energy Ltd. Okane (2020b). Rook I WRSA – 1-Dimensional Numerical Modelling of WRSA End-Members, Internal Memorandum provided to NexGen Energy Ltd., March 24, 2020.	
244.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	TSD XVIII, Section 4.1.2	**Context**: Seepage from site water ponds is described as a model input based on whether ponds are lined or unlined. **Rationale**: In accordance with comment ECCC-SW-04, ECCC reminds the Proponent that the *Metal and Diamond Mining Effluent Regulations* (MDMER) requires all mine effluent and seepage from the mine site that contains deleterious substances be discharged through a final discharge point.	Provide additional information on how water will be released into the receiving environment from the west bermed runoff collection area with consideration of MDMER requirements and update modelling as necessary.	
245.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	TSD XVIII, Section 5.1.1	**Context**: Flow rate values for the west and east surface runoff appear abnormally high in Figure 9 pg. 46. **Rationale**: Values approach 1000 m^3/day during the transitional monitoring period for runoff, which seems very high considering it is runoff and not an active discharge.	Verify the values/units for east and west surface runoff and provide a rationale if the values currently stated are correct.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
246.	ECCC	Fish and fish habitat	TSD XVIII, Section 5.1.2.3 Section 7	**Context:** The Site-Wide Water Balance Report (SWWBR) describes in Section 5.1.2.3 the vulnerability of the water management system to the extended failure of any one of the various pumps on-site in an average year (1993 in the historical data). The Proponent states in Section 5.1.2.3 that in a 7-day failure, overflow may occur in the settling pond and effluent treatment. **Rationale:** Freshwater supply to the processing plant and groundwater sumps in the mine may also be affected in an extended pump failure, but these do not lead to effects on the environment. The evaluation of pump failure in an 'average year' may mask the potential for pump failures at inopportune times, such as above average precipitation or storm conditions. Additional information would assist ECCC in assessing the potential effects of the Project to the receiving environment.	1. Explain whether or not an analysis of pump failure in storm conditions (e.g. 24-hour 100-year rainfall) would identify the same vulnerable areas. If new vulnerable areas are identified, discuss the mitigation measures that would be used to address this. 2. Discuss whether pump failures at certain nodes may be more important in terms of valued components.	
247.	CNSC	Human health with with respect to hazardous contaminants	TSD XVIII, Appendix H	**Context:** The CNSC has a draft REGDOC-2.9.2 about controlling releases to the environment from nuclear facilities. REGDOC-2.9.2 clarifies the CNSC's requirements and provides guidance for controlling releases to the environment, through: • applying the concept of best available technology and techniques, economically achievable (BATEA) • establishing and implementing licensed release limits and action levels for releases to the environment • commissioning of new treatment systems and confirming their performance • implementing adaptive management where required NexGen has been hosting workshops with CNSC staff. NexGen also acknowledged in their EIS that they will have to be in compliance with REGDOC-2.9.2. **Rationale:** As stated in the draft REGDOC-2.9.2, environmental release targets are used as criteria to inform the design of wastewater treatment systems to constrain the quantity and concentration of contaminants and physical stressors released into the environment. Environmental release targets are established using an exposure-based approach and a technology-based approach. In the EIS, it is unclear how the environmental release targets were used to identify the water treatment plant technology and design.	CNSC's expectation is that NexGen demonstrate to the CNSC that the requirements in draft REGDOC-2.9.2 are met, including: • BATEA assessment • Establishing and implementing licensed release limits and action levels for releases to the environment • Commissioning plan NexGen must clearly demonstrate how the Rook I Project meets the requirements in draft REGDOC-2.9.2.* NexGen must use the environmental release targets to inform the selection of the treatment technology. *Note that although REGDOC-2.9.2 is still in draft form, CNSC staff expects proponents to follow this document in conjunction with REGDOC-2.9.1	
248.	CNSC	Human health with with respect to hazardous contaminants	TSD XVIII, Appendix H	**Context:** The CNSC has a draft REGDOC-2.9.2 about releases to the environment from nuclear facilities. REGDOC-2.9.2 clarifies the CNSC's requirements and provides guidance for controlling releases to the environment, through:	NexGen should harmonize the proposed Effluent Release Targets with the technology-based performance standards that exist in the *Metal and Diamond Mining Effluent Regulations* where applicable.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				• applying the concept of best available technology and techniques, economically achievable (BATEA) • establishing and implementing licensed release limits and action levels for releases to the environment • commissioning of new treatment systems and confirming their performance • implementing adaptive management where required It is acknowledged that NexGen has been having frequent workshops with CNSC staff about draft REGDOC-2.9.2. It is also acknowledged that NexGen stated in the EIS that the final release targets will be proposed to the CNSC as part of the licence application submission to the CNSC. **Rationale:** It is not clear in the submission whether NexGen has considered whether any applicable technology-based performance standards exist in Canada or internationally, and would be relevant as effluent discharge targets, in order to ensure principles of pollution prevention are applied. Consideration of this would help ensure that the proposed effluent discharge targets harmonize with existing federal, provincial/territorial, and/or municipal requirements. For example, there are release limits for radium-226, TSS, and pH outlined in the federal *Metal and Diamond Mining Effluent Regulations*, which have been demonstrated to be achievable in the uranium mine and mill industry.		
249.	CNSC	Human Health with respect to radiation exposure	TSD XVIII, Appendix H	**Context:** As per REGDOC-2.9.1, effluent release targets are an important part of the design of the water treatment plant. Therefore, the development of the effluent release targets must be conservative, consider all possible exposure pathways, and protective of human health and aquatic biota. **Rationale:** It is noted that the proposed effluent release targets for radionuclides are derived based on the thresholds provided by Ecometrix (2021). The basis behind these thresholds don't appear to be provided in Appendix H of TSD XVIII. In addition, it is not clear how the proposed effluent release targets for radionuclides correspond to a dose to a member of the public or to biota. It is also not clear how exposure pathways (such as immersion and ingestion of water) were considered in the development of the proposed effluent release targets for radionuclides.	NexGen should provide more information on how the thresholds for radionuclides are derived. NexGen should clarify how the proposed effluent release targets for radionuclides correspond to a dose to a member of the public or to biota. NexGen should clarify how the proposed effluent release targets for radionuclides considered potential exposure pathways.	
250.	CNSC	Human health with with respect to	TSD XVIII, Appendix H	**Context:** In the EIS, NexGen states that the development of water quality used in the proposed effluent release targets does not include the September 2020 data from Patterson Lake.	Provide justification that the addition of the September 2020 water quality data will not significantly impact the proposed effluent release targets	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		hazardous contaminants		**Rationale:** It is not clear in the EIS whether including the September 2020 water quality data from Patterson Lake would significantly impact the development of the proposed effluent release targets.		
251.	CNSC	Wildlife, wildlife habitat	TSD XXI- ERA- section 2.3.3.2	**Context:** The ERA defines the occupancy factors for both fish and wildlife species spent in various media. These factors are used in the IMPACT model to calculate risk. Table 2-5 of TSD XXI contains the occupancy factors used in the IMPACT model for the ERA. **Rationale:** How these factors were decided is unclear from reading the ERA. For instance, muskrat, beaver, American mink, mallard and common loon are assigned a factor of 1 for occupancy in air, and 0.5 for occupancy in soil/sediment surface. Riparian mammals and birds also spend time in water, but this is not captured in the occupancy factor table or calculations.	Please explain the choice of occupancy factors for riparian mammals and birds in the ERA, and how it is conservative for the exposure and risk assessments.	
252.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	TSD XXI, Section 4.2.3.1	**Context**: Table 4-1 pg. 43 provides water quality objectives used for the Environmental Risk Assessment (ERA). There are discrepancies between the selected guidelines in this table and the selected Project thresholds used in the main EIS for cadmium and manganese. Additionally, the most stringent molybdenum guideline should be applied. **Rationale**: The Proponent should ensure the most stringent environmental water quality objectives are used and that consistency is maintained across different assessments in the EIS. Use of the most stringent guidelines will allow for the most protective assessment to analyze risks to the receiving environment.	1. Update the ERA using the water quality objectives for cadmium and manganese that were used in the main EIS. 2. Update the ERA applying the most stringent molybdenum water quality guidelines.	
253.	ECCC	Fish and fish habitat Change to an environmental component due to hazardous contaminants	TSD XXI, Section 4.2.3.2	**Context**: Un-ionized ammonia and Total Suspended Solids (TSS) have not been included in Table 4-2 pg. 46, which makes it unclear if risk from un-ionized ammonia and TSS have been assessed. **Rationale**: Un-ionized ammonia and TSS are prescribed deleterious substances under Schedule 4 of the *Metal and Diamond Mining Effluent Regulations* (MDMER) and therefore should be put forward for assessment.	Provide an assessment of TSS and un-ionized ammonia.	
254.	ECCC	Fish and fish habitat Change to an environmental component due	TSD XXI, Section 4.2.3.3	**Context:** It is unclear from this section and Table 4-3 pg. 50 that the selection of sediment Constituents of Potential Concern (COPCs) has taken into consideration elevated baseline concentrations of arsenic, barium, iron, lead, manganese, zinc, lead-210, polonium-210 and radium-226 that were found during baseline monitoring. Inconsistencies between the sediment quality thresholds applied and the thresholds chosen within the EIS are noted.	Provide further information regarding if elevated baseline sampling concentrations for sediment COPCs were considered as part of the screening process. Update the results of the assessments if required.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
		to radiological contaminants		**Rationale**: The Proponent should ensure the most stringent environmental sediment quality objectives available are used and consistently maintained across different assessments for the EIS. Use of the most stringent guidelines will allow for the most protective assessment to analyze risks to the receiving environment.		
255.	CNSC	Human Health with respect to radiation exposure	TSD XXI – Environmental Risk Assessment/ Section 5.1.3.2.1 (page 5.11)	**Context:** No rationale has been given why the seasonal resident and lodge operator's diet reflects an average annual food consumption rate, while the other receptors are assigned higher consumption rates. **Rationale:** Clarification is requested so that CNSC staff may determine whether the dose estimate for the offsite receptors is adequate.	Clarification for the choice of the receptor diets should be provided, specifically why the seasonal resident and lodge operator's diet reflects an average food consumption rate, while the other receptors are assigned higher consumption rates.	
256.	CNSC	Human Health with respect to radiation exposure	TSD XXI – Environmental Risk Assessment/ Section 5.3.2 (page 5.77)	**Context:** Exposures to radon progeny have been assessed separately from exposures due to other radionuclides. On page 5.77 the TSD states that "The limit established by the CNSC for radon above background for sites licensed by the CNSC is 60 Bq/m^3 (*Radiation Protection Regulations* SOR/2000-203). For this project, the incremental radon concentration of 60 Bq/m^3 was adopted". The *Radiation Protection Regulations* do not stipulate a limit for radon above background for sites licensed by the CNSC. The effective dose limits for NEWs and persons that are not NEWs are listed in section 13 of these regulations, and in subsection 1(3) for the general public. The annual effective dose from all sources combined must be compared to the applicable effective dose limit. For members of the public this limit is 1 mSv per year. In addition, since the total dose is about 0.6 mSv (including radon progeny, ingestion, inhalation, and external exposures), i.e., 60% of the public effective dose limit, the conservatism built into the dose assessment should be discussed further in particular in relation to the radon dose assessment. **Rationale:** The reason of the requested changes is to ensure consistency with the *Radiation Protection Regulations*. Additional information on conservatism would help put the total dose in context in the Environmental Assessment Report and provide insight on whether the annual dose could approach the dose limit.	The TSD should be aligned with the *Radiation Protection Regulations* by: 1. Removing the reference to a 60 Bq/m^3 limit. 2. Reporting the assessment results as the total dose, from all radionuclides combined including radon progeny, and by comparing this annual effective dose to the effective dose limit. Also provide a summary of the conservative assumptions that have been included in the dose calculations.	
257.	ECCC	Fish and fish habitat	TSD XXI, Section 6.1.1	**Context:** Table 6 pg. 186 provides information on the selected ecological receptors for the Environmental Risk Assessment (ERA). However, no information has been provided on which species (found within the Project local or regional study areas) that these selected receptors are representing. **Rationale:**	**Specific Question/ Request for Information:** 1. Update Table 6 to include a list of each species that each selected ecological receptor is representing.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
				A list of which species the selected ecological receptors are representing should be provided within this table.		
258.	CNSC	COPC concentrations in macrophytes	TSD XXI: ERA, Table 6-1	**Context:** In Table 6-1 of the ERA supporting document, it is stated that for aquatic vegetation, shoot, root, and sediment samples were collected at Lloyd Lake for metal and radionuclide analysis. The macrophyte data does not appear to be discussed beyond a comparison of modelled and measured concentrations (Figure 3-4 in Appendix A of TSD XXI: ERA). Information appears to be missing on the sampling campaign. In particular, it would be of relevance to include which species were sampled as COPC uptake is species-specific, as well as where and when sampling was performed. **Rationale:** Aquatic vegetation can accumulate COPC in their shoot and root tissues, and therefore it is relevant to discuss this data in the EIS. Moreover, in the ERA supporting document, it is unclear how this data were used in the ecological risk assessment. CSA N288.6-12 states that measured concentrations of COPCs should be used, where possible, in the exposure assessment (clause 7.3.6), and that bioaccumulation factors (BAFs) should only be used if measured tissue concentrations are not available (clause 7.3.4.3.1). Please clarify how measured COPC data from macrophytes were used in the ERA.	1.Present information on the macrophyte sampling campaign. 2.Present a summary of measured COPC data in macrophyte shoots and roots. 3.Clarify how measured COPC data from macrophytes were used in the ERA, and consequently considered in the EIS.	
259.	CNSC	Aquatic Environment	TSD XXI- ERA-section 6.3.1.1	**Context:** The ERA defines water concentration-based TRVs for aquatic biota from chronic effects from long term COPCs exposures. In the ERA, TRVs were selected that were 20% ECs (EC_{20} values). As chronic EC_{20} values are not always available, the ERA uses a protocol described in Table 6-14 to derive EC_{20} values from available data. **Rationale:** Although the protocol described in Table 6-14 may be adequate, there is no reference provided to support its use.	Please provide a reference or justification for the calculations used to derive EC_{20} values showing it is a conservative method.	
260.	CNSC	Wildlife, wildlife habitat and SAR	TSD XXI- ERA-section 6.4.1.1.1	**Context:** In accordance with Clause 7.2.4.3 of CSA N288.6-12, species at risk (SAR) should be assessed at the individual level as effects on a few individuals are not considered acceptable, and not assessed at a population level. It is unclear how SAR were assessed in the ERA. **Rationale:** It appears lowest-observed-adverse-effect levels (LOAEL) were used for benchmarks for SAR. The assessment appears to compare SAR doses to LOAELs and if there were no HQ values above 1, then SAR were considered protected. SAR are often assessed using no observable adverse effect level (NOAEL), and not LOAEL, to ensure there are no effects on individual species at risk.	Please justify the method used to assess SAR within the EIS and ERA, ensuring that SAR were assessed at the individual level.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
261.	CNSC	Level of details (QA/QC,)	TSD XXI: ERA Section 7.1- QA/QC	**Context:** Overall, the information in the HHRA is straightforward and clearly presented. However, the level of details in section 7.1- QA/QC appears to be insufficient/unclear to allow a comprehensive evaluation of compliance with CSA N288.6 and associated/interlinked documents. **Rationale:** As per CSA N288.6 (Clause 10) Appropriate QA/QC requirements shall exist for all aspects of the ERA and should be specified prior to conducting the ERA. If these requirements already exist as part of a facility's overall QA program, that program may be applied to the ERA process. In section 7.1 of the ERA report, it is stated that the planning, preparation, and work was performed under the ECOMETRIX ISO-9001-2015 certified quality management system. CSA N286-12 clause 9.5.7, Verification of Services, states that Purchased services shall be verified in accordance with the planned verification. This clause is applicable with other clauses of CSA N286-12. For example, clause 4.8 on work management. Clause 4.8 addresses planning the work including the verification and using controlled documents. CSA N286-12 clause 9.5.5 specifies that "the selected supplier's technical documents that are required to be submitted shall be reviewed and accepted". Additionally, CSA N288.4-19, Clause 10.1.2 (note 1): "The QA program should be commensurate with the management system principle set out in N286, CSA-ISO-9001, or other recognized quality standards." It is not clear how the current information provided satisfies these requirements Providing this information will improve understanding how the QA/QC program fits within the organizations management system and meeting these requirements will ensure that the proponent has control of the purchased services as a future licence applicant.	Provide clarifications if the proponent has reviewed and accepted the TSD XXI-ERA report, and how the ECOMETRIX QA/QC satisfy the proponent quality standard requirements.	
262.	CNSC	Level of details (Sensitivity analysis)	TSD XXI: ERA Section 7.2- Sensitivity analysis	**Context:** The level of detail in section 7.2- Sensitivity Analysis appears to be insufficient to allow a comprehensive review. **Rationale:** Section 7.2 presents the sensitivity analysis of the key model parameters used for annual weather patterns, deposition of COPCs, food consumptions and climate change. The level of details is insufficient to illustrate how the calculations of sensitivity analysis are performed for the different parameters. Providing a sample calculation would illustrate how the sensitivity analysis was calculated for the different parameters.	Provide sample calculations to illustrate how the sensitivity analysis are performed for the different parameters.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
263.	CNSC	Level of details (conceptual model)	TSD XXI: ERA Figure 5.5-Conceptual model	**Context:** The level of detail in Figure 5.5 Conceptual Model appears to be insufficient. **Rationale:** CSA N288.6, clause 6.2.7.3 Site-specific conceptual models should include representations of: (a) the identified COPCs and physical stressors, and (f) relevant transport pathways/modes (e.g., dispersion and deposition) and transformations (e.g., photo-degradation and biodegradation), as applicable. Figure 5.5 shows most of relevant information, but missing representations of the identified COPCs, and transport pathways. Considering this information, the conceptual model will provide valuable representations of the exposure settings considered in the site-specific model for this assessment.	Provide the identified COPCs and the associated pathways into the conceptual model illustrated in Figure 5.5.	
264.	CNSC	Calculation of bedrock hydraulic conductivity through Packer test analysis	Annex III, Section 5.2.2.2, Appendix G	**Context:** Section 5.2.2.2 indicates that hydraulic conductivities were calculated using the Thiem equation. However, Appendix G shows that some tests were analyzed using the Lugeon unit, some were analyzed using the Theis recovery curve analysis, and some were based on the Thiem equation. For the Thiem equation, radius of influence were assumed instead of measured. It is stated in Section 5.2.2.2 that “These assumptions were: R0=1 m; where Q≤0.1 L/min R0=10 m; where 1.0 L/min≤Q≤0.1 L/min R0=1 m; where Q≤0.1 L/min” **Rationale:** There are apparent typos in these assumptions, and they impact the understanding of the content. Additionally, justification (i.e., references) should be provided for these assumptions.	Provide all the theories used in the packer test analysis (i.e., Lugeon test analysis, Theim recovery curve analysis, etc.), and ensure text in Section 5.2.2.2 is consistent with Appendix G. Please clarify the assumptions related to the radius of influence, and provide justification for the assumptions.	
265.	CNSC	Groundwater flow modeling	Annex III, section 6.1	It is stated in Section 6.1 that “Within the bedrock, measured hydraulic gradients indicate that under existing conditions the primary groundwater flow direction is upwards and to the north-northwest (i.e., towards Patterson Lake). In the glacial drift deposits, the groundwater flow direction is downwards and to the north-northwest (i.e., towards Patterson Lake).” It is not clear if this is applicable to the whole modeling domain, or just to the local area around the mine site. A comparison of Figure 19 with Figure 35 indicates that the measured hydraulic heads show an upward gradient within the bedrock, while the simulated hydraulic heads do not. It is not clear what the impact of this inconsistency on the accuracy of the modelled results	Please clarify if this statement in Section 6.1 is applicable for the whole modeling domain. Please provide a discussion on the implication of the inconsistency between the measured and simulated gradients in the bedrock.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
266.	CNSC	Fault zone distribution	Annex III, Section 6.3.3	Section 6.3.3 describes the fault zone and shear zone derived based on the geological model and geophysical survey data. Figures 28, 20 and 30 illustrate the cross sections of the fault zone. But it is not clear how the fault zone extends in the horizontal direction.	Please illustrate the plan view of the fault zone and shear zone in a figure.	
267.	CNSC	Groundwater flow model calibration	Annex III, Section 6.4, Section 6.5 TSD XIV	1.Figure 31 (Annex III) shows the calibration statistics, but there is no information about the water balance. The model should demonstrate an accurate water balance. The water balance error is the difference between total predicted inflow and total predicted outflow. 2.Section 6.5 (paragraph 4 on page 68) (Annex III) cited (Golder 2022b, Regional Meteorological and Hydrological Characterization Report for the Rook I Project) as the source of the estimates of baseflow. Section 2.4 (in TSD XIV) referenced Annex IV.2, Hydrometric Monitoring Characterization Report. It is not clear which one is the correct source. 3.Section 6.5 (paragraph 4 on page 68) (Annex III) states that "Using the catchment areas for Patterson Lake, this baseflow corresponds to an equivalent recharge rate of approximately 110 mm/yr (3.5 L/s/km^2)". It is not clear where this estimate comes from (i.e., appropriate reference is not clear). If this is a calculation in this modeling exercise (i.e., Annex III), an explanation of how this is calculated should be provided. 4.(Annex III) Paragraph 2 on page 68 references Figure 32 and Figure 35. However, they should be Figure 31.	1.Provide the water balance as a model performance measure. 2.Clarify which reference is the correct reference to obtain the baseflow. 3Explain how to determine the equivalent recharge rate corresponding to the baseflow. 4.Please correct the references to Figure 31.	
268.	ECCC	Wildlife and Wildlife Habitat	Annex VIII.2, Section 3 Section 8 Section 10	Given the potential impact of the Project on caribou, the baseline caribou data is insufficient to understand Project effects to this species. Presence/absence detection was provided by camera traps, incidental observations, winter track and pellet survey. There are no dates associated with the locations of caribou observations from incidental or camera trap surveys, and no explanation of seasonal use of the Project area by caribou. Indigenous knowledge of caribou use in the area is referenced in Section 3 Indigenous and Local Knowledge, but should be summarized in Section 14 and used to determine potential Project effects on caribou.	1. Provide more details on the baseline caribou data including: • dates of all observations; and • a summary of seasonal use of LSA, RSA and caribou home range. 2. Explain how caribou use of the area could be affected by the Project throughout all seasons and life stages (e.g., calving, breeding, travel). 3. Provide a summary of Indigenous knowledge of caribou use of the Project area, including seasonal use.	
269.	ECCC	Wildlife and Wildlife Habitat	Annex VIII.2, Section 8 Section 10	There is potential for some SAR (e.g., myotis species, barn or bank swallows, common nighthawk) to be attracted to and use mine infrastructure (buildings, roads etc.) for nesting, roosting, or foraging. This carries an increased collision risk.	For all Project phases, describe the mitigation measures and responses to prevent and minimize effects on SAR that may utilize mine infrastructure.	
270.	ECCC	Wildlife and Wildlife Habitat	Annex VIII.2, Section 10	Surveys confirm common nighthawk occupies the SSA and the LSA. Aerial foraging and road-roosting behavior make this species susceptible to collision.	Provide a mitigation plan to address potential mortality risk to common nighthawk.	

No.	Department	Project Effects Link	Reference to EIS, appendices, or supporting documentation (if applicable)	Context and Rationale	Information Requirement	NexGen Response
271.	ECCC	Wildlife and Wildlife Habitat	Annex VIII.2, Section 10	Surveys confirm that barn swallows and myotis species were detected in association with bridge crossings (e.g., Patterson Creek Bridge). The Wildlife Baseline Report 2 states (with respect to myotis species) that "This infrastructure could serve to provide habitat for both maternal colonies and/or mixed sex groups that often congregate at night when cool temperatures persist" and that barn swallow "breeding habitat within the area of the Project was likely limited to areas with existing infrastructure...".	1. Develop a mitigation plan to reduce risk to myotis species and barn swallows utilizing any bridges or existing infrastructure as a maternal roost and/or roost site or as breeding habitat (nest site), including avoidance of collisions and disturbance. Demonstrate how the planned mitigation activities will result in no residual effects. 2. Explain what mitigation will be used to ensure no damage occurs to barn swallow nests if any bridge or existing infrastructure maintenance or upgrades are required.	