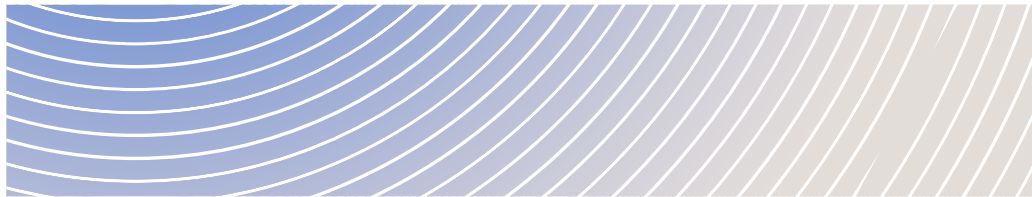


Draft Integrated Tailored Impact Statement Guidelines

DEEP GEOLOGICAL REPOSITORY (DGR) FOR CANADA'S USED
NUCLEAR FUEL PROJECT



APRIL 10, 2026

DRAFT VERSION



Impact Assessment
Agency of Canada

Agence d'évaluation
d'impact du Canada

Canada 

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Abbreviations and short forms

Term	Definition
Adverse federal effects	“Adverse effects within federal jurisdiction” and “direct or incidental adverse effects” as defined under the <i>Impact Assessment Act</i>
IAA	<i>Impact Assessment Act</i>
IAAC	Impact Assessment Agency of Canada
COPC	Contaminant of Potential Concern
ECCC	Environment and Climate Change Canada
GBA Plus	Gender-based Analysis Plus
the Integrated Guidelines	Tailored Impact Statement Guidelines
GHG	Greenhouse gas
HHRA	Human Health Risk Assessment
IEPP	Indigenous Engagement and Partnership Plan
LSA	Local Study Area
Minister	Minister of Environment and Climate Change
PA	Project Area
RSA	Regional Study Area
SARA	<i>Species at Risk Act</i>
SACC	Strategic Assessment of Climate Change
the Template	Tailored Impact Statement Guidelines Template
VC	Valued component

65 The Impact Assessment Agency of Canada's (IAAC) guidance on the practice of the application of the
66 [Impact Assessment Act \(the IAA\)](#) and its regulations is being updated, and the current versions of the
67 guidance, referred to in this document, may not reflect IAAC's current practices. The Nuclear Waste
68 Management Organization (the proponent) remains responsible for following applicable legislation and
69 regulations. The proponent is encouraged to engage with IAAC regarding the applicability of these policies.
70 For more information, please contact nuclearwaste-dechetsnucleaires@iaac-aeic.gc.ca.

71 1. Introduction

72 The federal impact assessment process is intended to prevent or mitigate significant adverse effects within
73 federal jurisdiction — and significant direct or incidental adverse effects — by anticipating, identifying and
74 assessing the effects of designated projects in order to inform decision making under the *Impact*
75 *Assessment Act* (IAA). These draft Integrated Tailored Impact Statement Guidelines (the Integrated
76 Guidelines) for the Deep Geological Repository for Canada's Used Nuclear Fuel Project (the project)
77 proposed by the proponent were tailored by IAAC during the Planning phase of the impact assessment
78 process.

79 The draft Integrated Guidelines include information and studies necessary for the conduct of the impact
80 assessment based on adverse effects within federal jurisdiction, or direct or incidental adverse effects
81 (collectively referred to as adverse federal effects hereafter) that could potentially be significant as
82 informed by the nature, complexity and context of the project, as well as by consultation and engagement
83 with the proponent, Indigenous Nations and communities, the public, lifecycle regulators, jurisdictions,
84 federal authorities and other interested parties.

85 Under the IAA, designated projects that include physical activities regulated by the Canadian Nuclear
86 Safety Commission (CNSC) must be assessed by an integrated review panel (the review panel). The
87 review panel will conduct an integrated assessment that addresses the requirements of an impact
88 assessment under the IAA and the applicable requirements for a license to prepare site under the [Nuclear](#)
89 [Safety and Control Act](#) (NSCA). The review panel will use the proponent's Impact Statement along with
90 other available information to prepare an Impact Assessment Report.

91 In support of the Government of Canada's objective of "one project, one review", the Integrated Guidelines
92 identify where the federal impact assessment and the licensing process of the CNSC have shared
93 information needs. The Integrated Guidelines, in addition to the resources in [Appendix A](#), include all of the
94 information necessary to make a decision in accordance with the IAA and to make a decision whether to
95 issue a license to prepare site in accordance with the NSCA. The proponent remains responsible for
96 ensuring the Impact Statement addresses the requirements necessary to conduct a technical assessment
97 under the NSCA for a license to prepare site application and the Impact Statement must demonstrate, via a
98 concordance table, where in their submission the information necessary to make the licensing decision
99 under the NSCA is found. The specific information required for an application for a Licence to prepare site
100 can be found in [Appendix A](#).

101 The Integrated Guidelines use the word *must* to describe information requirements under the IAA or which
102 form part of the licensing basis. In certain instances, the word *should*, instead of *must*, is used to advise the
103 proponent to follow specific guidance or methods to meet the associated requirement.

104 The IAA requires the assessment of non-negligible adverse effects of a “federal work or undertaking.”
105 Nuclear matters have been declared to be to the general advantage of Canada in the [Nuclear Energy Act](#).
106 This project is considered to be a federal work or undertaking as defined under the [Canadian](#)
107 [Environmental Protection Act 1999](#). Therefore, adverse federal effects within federal jurisdiction, as defined
108 under the IAA, also include changes to the environment or to health, social and economic conditions and
109 the positive and negative consequences of those changes that are likely to be caused by the carrying out
110 of the project.

111 It is the intention that the requirements in the final Integrated Guidelines will be focused on key issues
112 anticipated to be material to decision-making. This draft version of the Integrated Guidelines reflects
113 information requirements for all potential adverse federal effects, with tailored and focused requirements
114 for key issues identified to date during the planning phase. These requirements may be further refined and
115 focused during the remainder of the planning phase based on feedback received.

116 The Integrated Guidelines will be finalized following a comment period, which will run from April 10th, 2026,
117 to May 10th, 2026.

118 1.1 Scope of the impact assessment

119 In determining what information and studies are required in the proponent’s Impact Statement, as set out in
120 these Integrated Guidelines, IAAC took into account the factors listed in subsection 22(1) of the IAA, and
121 focused on elements anticipated to be material to decision making under the IAA as described in [Section](#)
122 [1.2 Selection of Valued Components](#).

123 The scope of the impact assessment must consider each project phase over the lifecycle of the project,
124 whereas this stage of the CNSC licensing process only covers the site preparation phase.

125 1.2 Selection of Valued Components

126 Valued Components (VCs) serve as the focal points for the impact assessment. The elements of the
127 natural and human environments selected as VCs are those anticipated to be material for decision making
128 under the IAA. The assessment of effects on VCs includes the assessment of the likely effect pathways
129 that are cause-effect linkages between a project component or activity and the VC. The VCs must be
130 assessed following the requirements presented in these Integrated Guidelines, as well as the generic
131 assessment methodology in the [Generic Requirements for Impact Statements](#), which outlines the steps
132 that must be applied to the assessment of each VC.

133 The Impact Statement must include, at minimum, the following VCs:

Category	Valued Component (VC) selected	Rationale for inclusion
	VCs for the assessment of adverse effects within federal jurisdiction, as defined under section 2 of the IAA	
Physical environment	Meteorological environment	Project-related activities may alter current climatic and physical properties at the site. Important for understanding impacts to other components of the environment.
	Geology and geochemistry	
	Topography, soil and sediment	
	Radiological conditions	Project-related activities may result in changes to air quality from fugitive dust, GHGs and the release of chemical and radiological contaminants. Ambient conditions may be impacted due to light, noise and vibrations from the project.
	Atmospheric, acoustic and visual environment	
	Groundwater and surface water	Project-related activities such as site clearing, blasting, in-water and underground works, altered site drainage, runoff, water withdrawal and discharge of treated effluent could result in changes to water quality and quantity, and other impacts to the aquatic environment.
Biological environment	Terrestrial, riparian and wetland environments	Project-related activities such as site preparation and construction, blasting, in-water works, water intake, dewatering, effluent discharge, deposition of deleterious substances, sensory disturbances could result in adverse effects to the biological environment.
	Fish and fish habitat	
	Birds and their habitat	
	Terrestrial wildlife and their habitat	

	Species at risk and their habitats	
Human environment	Health, social and economic conditions	Project-related activities may result in changes to the local and regional economy, demand on healthcare and other local services, and an influx of temporary workers may alter the health, social and economic conditions of the region. Project-related activities may result in changes to a variety of environmental receptors, which could indirectly result in impacts to human health.
Indigenous Peoples	Indigenous Peoples' physical and cultural heritage, and structures, sites or things of significance	Project-related activities could result in changes to land access and use for cultural purposes, increased perceptions of risk associated with radioactive waste, health and wellbeing through impacts to air and water quality, and the social and economic conditions of Indigenous Peoples.
	Current use of lands and resources for traditional purposes	
	Health, social and economic conditions of Indigenous Peoples	
	Rights of Indigenous Peoples	
	Additional VCs for decision-making factors under section 63 of the IAA	
	Job creation and procurement opportunities. Education and training	Potential effects and benefits of changed demographics through increased employment, business, and procurement opportunities. Potential benefits including education and training opportunities.

134 The proponent may select additional VCs, based on engagement with Indigenous Nations and
135 communities and public participants and in consideration of Indigenous Knowledge and community
136 knowledge. The Impact Statement must provide a justification if a VC suggested by an Indigenous Nation
137 or community is excluded from the Impact Statement.

1.3 Preparing the Impact Statement

138

139 In preparing the Impact Statement, the proponent must adhere to ethical guidelines and cultural protocols
140 governing research, data collection and confidentiality. The proponent must respect the obligation to
141 protect personal information, including for disaggregated data from small or unique populations, and adopt
142 the established standards for the management of Indigenous data (e.g., [First Nations principles of](#)
143 [Ownership, Control, Access and Possession](#) or standards adopted by an Indigenous Nation or community)
144 including obtaining permission from Indigenous Nations and communities before including information from
145 or about them. The proponent may present the information in the Impact Statement in the manner it deems
146 most appropriate. IAAC recommends the Impact Statement follow the structure of the Integrated
147 Guidelines or provide a table of concordance that indicates where in the Impact Statement the information
148 set out in these Integrated Guidelines has been provided.

149 The Impact Statement must address requirements outlined in these Integrated Guidelines, including the
150 Licensing Requirements and Guidance to Prepare Site in [Appendix A](#), as well as in IAAC's [Generic](#)
151 [Requirements for Impact Statements](#) (which have also been posted on the Canadian Impact Assessment
152 Registry at this link: <https://iaac-aeic.gc.ca/050/evaluations/document/166001?culture=en-CA>), including
153 the requirements on assessment methodology, general information, description of changes to the project
154 that may be caused by the environment, description of potential malfunctions and accidents that may occur
155 in connection with the project, description of engagement with Indigenous Nations and communities,
156 description of public participation, and Impact Statement Summary. Where the proponent is of the opinion
157 that certain information is not required or cannot be provided, it should contact IAAC prior to submitting the
158 Impact Statement to confirm whether the proponent's rationale for excluding the information is appropriate.
159 The rationale must also be provided in the Impact Statement. Additionally, if there are Indigenous-specific
160 requirements that an Indigenous Nation or community does not wish to pursue for the Impact Assessment
161 process, please provide confirmation from the Indigenous Nation or community in the applicable section of
162 the Impact Statement. As applicable, the proponent is also encouraged to refer to the requirements of
163 other jurisdictions to assess effects, as well as to means of other jurisdictions to address effects of the
164 project and to report in the Impact Statement how these were leveraged to assess effects. The proponent
165 should also notify IAAC of any changes made to the project relative to the [Initial Project Description](#).

166 The [Technical Considerations and References for the preparation of an Impact Statement](#) is an IAAC
167 resource that provides supporting information to proponents for preparing their Impact Statement. A
168 project-specific [Technical Considerations and References for the preparation of an Impact Statement](#)
169 (*Technical Considerations and References*) has been developed for the project and provided as a separate
170 document on the Canadian Impact Assessment Registry ([https://iaac-](https://iaac-aeic.gc.ca/050/evaluations/document/166002?culture=en-CA)
171 [aeic.gc.ca/050/evaluations/document/166002?culture=en-CA](https://iaac-aeic.gc.ca/050/evaluations/document/166002?culture=en-CA)). The [Technical Considerations and](#)
172 [References](#) identify which guidance, tools, resources and standards apply to specific sections of the
173 Integrated Guidelines. Where they apply to multiple sections, or the entire Integrated Guidelines, that has
174 been clearly indicated. In preparing the Impact Statement, the proponent should consult the most recent
175 versions of the guidance and references provided. As relevant, the proponent is also encouraged to refer

176 to the policy frameworks and guidance available in IAAC's [Practitioner's Guide to Federal Impact](#)
177 [Assessments](#).

178 The Impact Statement must take into account, where relevant:

- 179 • any relevant regional or strategic assessment;
- 180 • any study or plan that is conducted or prepared by a jurisdiction—or an Indigenous governing body—in
181 respect to the region related to the Project and that is provided to the proponent with respect to the
182 project;
- 183 • any relevant assessment of the effects of the Project that is conducted by or on behalf of an
184 Indigenous governing body and that is provided to the proponent with respect to the project;
- 185 • Indigenous Knowledge, community knowledge, comments received from the public, comments
186 received from a jurisdiction;
- 187 • Gender-based Analysis Plus (GBA Plus), in the context of an impact assessment, as an analytical tool
188 and process that examines how intersecting identity factors influence how different population groups
189 may experience project effects. GBA Plus helps identify potential disproportionate or differential effects
190 and informs strategies to mitigate barriers and enhance equitable access to project benefits. A GBA
191 Plus lens should be applied, where relevant and as identified by Indigenous Nations and communities,
192 throughout the assessment to identify and assess potential disproportionate or differential effects on
193 diverse population groups and how these groups may experience project effects differently; and,
- 194 • other studies or assessments realized by the proponent or other proponents.

195 The proponent is encouraged to engage IAAC and the CNSC as early as possible to clarify requirements in
196 the Integrated Guidelines and to support early resolution of issues. To support this, IAAC may establish
197 technical advisory groups, consisting of, as appropriate, Indigenous Nations and communities, federal
198 authorities, provincial authorities or others. The proponent is also encouraged to submit draft documents
199 for review by IAAC and the CNSC (e.g., proposed study plans, draft sections of the Impact Statement) prior
200 to submitting the formal Impact Statement. The proponent is expected to provide IAAC and the CNSC a
201 work plan for the Impact Statement phase of the Project, within three months of the Notice of
202 Commencement.

203 The proponent is expected to meet the objectives of the requirements set out in these Integrated
204 Guidelines; however, flexibility can be exercised in the methods and approaches used to achieve those
205 objectives. Where the proponent considers that an alternative approach or methodology would achieve the
206 same intent, they are encouraged to engage early with IAAC and the CNSC to discuss the proposed
207 approach. IAAC, in consultation with the CNSC, may accept alternative methods where it is demonstrated
208 that the objectives of the requirement are met. The proponent should clearly describe and justify any
209 proposed alternative approaches. Where the proponent considers that certain information or studies may
210 be generated progressively over time, they should clearly demonstrate how the information available at the
211 integrated assessment stage is sufficient to support sound conclusions and decision-making. This includes
212 explaining how any remaining uncertainties will be understood and managed, and how subsequent

213 information would be incorporated in a manner that maintains the integrity and objectives of the
214 assessment.

215 **1.4 Federal permitting coordination**

216 IAAC will provide coordination of federal permits, licences or authorizations (collectively called permits)
217 early and throughout the impact assessment process to provide:

- 218 • clarity on permitting requirements, timelines and processes through the development of detailed
219 federal permitting plans; and
- 220 • transparency on the status and progress of permits through public reporting on the Canadian Impact
221 Assessment Registry Internet site.

222 Under the IAA, federal authorities are prohibited from issuing permits, before an impact assessment is
223 completed. The proponent, however, is encouraged to develop federal permit applications concurrent with
224 the impact assessment. In some cases, the same information and studies may be used to inform both the
225 impact assessment and federal permits. Collecting and providing permitting information during the impact
226 assessment process may expedite subsequent federal decisions, where applicable. Early engagement with
227 the federal government, Indigenous Nations and communities and the public is essential to support a
228 speedy review of federal permits.

229 **2. Project Description**

230 **2.1 Project overview**

231 The project subject to the impact assessment is the designated physical activity (i.e., the construction and
232 operation of a new facility for the long-term management or disposal of irradiated nuclear fuel or nuclear
233 waste) and any incidental physical activities.

234 The Impact Statement must:

- 235 • describe the project, including key components and activities and their scheduling, timing of each
236 phase, and total lifespan;
- 237 • provide the geographic coordinates (i.e., longitude/latitude using international standard representation
238 in degrees, minutes and seconds) from the centre of the main project site; and,
- 239 • describe and quantify the waste to be managed at the site and identify the current location of waste at
240 interim storage facilities.

241 2.2 Project components and activities

242 The Impact Statement must:

- 243 • describe project components and activities to be carried out during each project phase, with a focus on
244 components and activities with the greatest potential for adverse federal effects, and impacts on
245 Indigenous Peoples and their rights:
 - 246 ○ at a minimum, include project components and activities (direct and incidental) listed in the Initial
247 Project Description;
 - 248 ○ in addition to those listed in the Initial Project Description, transportation of both nuclear and non-
249 nuclear materials outside of the project site, including the construction activities associated with
250 infrastructure upgrades, must be included within the list of project components and activities (as
251 specified in [Section 4 Assessment Methodology](#)) considered within the Impact Statement;
 - 252 ○ for each project activity, describe its location, methods used to carry it out, schedule (expected
253 start date, time of year, duration and frequency), magnitude and scale;
 - 254 ○ identify activities that involve periods of increased disturbance to adverse federal effects and
255 impacts on Indigenous Nations and communities and their rights;
 - 256 ○ identify likely effect pathways between project components and activities and VCs in sufficient
257 detail to support the assessment of effects on VCs and their interactions;
- 258 • include maps of the project footprint and project components, major existing infrastructure, proponent
259 lands, leased properties or lands and adjacent resource leases, land uses and federal lands.
- 260 • describe the project's location, using tables and/or maps, in relation to:
 - 261 ○ ecozones, ecoregions, and ecodistricts as per the province's or Canada's Ecological Landscape
262 Classification (see [Introduction to the Ecological Land Classification \(ELC\) 2017](#));
 - 263 ○ environmentally sensitive areas, such as national, provincial, and regional parks, Indigenous
264 Protected and Conserved Areas, UNESCO World Heritage Sites, ecological reserves,
265 ecologically and biologically sensitive or significant areas, and habitats of listed species at risk;
 - 266 ○ lands subject to conservation agreements;
 - 267 ○ international or provincial borders;

268 2.3 Project Purpose, Need and Alternatives Considered

269 The proponent must identify the purpose of and need for the project, as well as alternatives to the project
270 and alternative means of carrying it out.

271

2.3.1 Purpose of the project

272 The Impact Statement must outline what is to be achieved by carrying out the project from the proponent's
273 perspective, broadly classify the project type (e.g., deep geological repository for nuclear waste) and
274 consider the perspectives of Indigenous Peoples, the public and other participants.

275

2.3.2 Need for the Project

276 The Impact Statement must describe the underlying opportunity or issue that the project intends to seize or
277 solve from the perspective of the proponent, such as demand for a resource or support for a federal or
278 provincial government objective, provide a rationale that the project is a warranted response, and consider
279 the perspectives of Indigenous Peoples, the public and other participants.

280

2.3.3 Alternatives to the Project

281 In the Initial Project Description, the proponent described the "alternatives to" the project that are
282 technically and economically feasible to meet the need for the project and achieve its purpose. This
283 analysis was carried out through their [Choosing a Way Forward](#) study process pursuant to the [Nuclear
284 Fuel Waste Act](#). IAAC and the CNSC determined that this information is sufficient and no additional
285 information is required in the Impact Statement related to "alternatives to".

286

2.3.4 Alternative means of carrying out the Project

287 The Impact Statement must:

- 288 • determine the preferred means of carrying out the project, and justify the exclusion of alternative
289 means, considering:
 - 290 ○ technical and economic feasibility of alternative means, including use of best available
291 technologies;
 - 292 ○ potential for adverse federal effects and impacts on Indigenous Peoples and their rights, as
293 identified by Indigenous Nations and communities,
 - 294 ○ potential for malfunctions or accidents,
 - 295 ○ consideration of effects to species at risk listed under [Schedule 1 of SARA](#), including any critical
296 habitat, and how these effects may be avoided through alternative means of carrying out the
297 project,
 - 298 ○ application of GBA Plus to the analysis of alternative means of carrying out the project to inform
299 how effects may vary for diverse population groups, and
 - 300 ○ information provided by Indigenous Peoples, the public and other participants;

- 301 • address key project elements in its alternative means analysis, including, but not limited to, the
302 following:
- 303 ○ route or corridor and means options for transportation,
 - 304 ○ route or corridor and means options for linear components (e.g., transmission lines),
 - 305 ○ width of the right-of-way,
 - 306 ○ project component locations,
 - 307 ○ timing options for components and phases of the project,
 - 308 ○ access to the project site,
 - 309 ○ facility design (e.g., vertical shafts, used fuel processing plant),
 - 310 ○ potential for the used nuclear fuel to be retrieved in the future;
 - 311 ○ energy sources to power the project site and other stationary sources to provide heat or steam to
312 the project,
 - 313 ○ workforce accommodations
 - 314 ○ water and wastewater management elements:
 - 315 ■ location of effluent discharge points, and
 - 316 ■ treatment technologies and techniques to control effluent quality,
 - 317 ○ waste management strategies, including:
 - 318 ■ non-radioactive waste
 - 319 ■ low and intermediate level radioactive waste
 - 320 ○ construction alternatives;
 - 321 ○ location, construction and crossing methods for waterbodies, watercourses, wetlands and other
322 obstacles;
 - 323 ○ management of excavated materials, including those that are potentially acid generating or
324 leachable; and
 - 325 ○ suspension, abandonment or decommissioning options.
- 326 • provide a detailed summary of the site selection process, including timelines, milestones, engagement
327 activities, key criteria in decision making, and the results leading up to the November 2024 site
328 selection; and,
- 329 • provide a plan for periodically reviewing preferred alternative means and considering the adoption of
330 newer technologies, as applicable.

331 **3. Description of Engagement with** 332 **Indigenous Nations and** 333 **communities**

334 The proponent must meet the standard requirements related to Indigenous engagement as outlined in the
335 [Generic Requirements for the Preparation of an Impact Statement](#). The proponent is encouraged to consult
336 the applicable guidance and resources found in the [standard](#) and [project-specific Technical Considerations](#)
337 [and References for the Preparation of an Impact Statement](#). The proponent must also comply with
338 [REGDOC-3.2.2](#).

339 The terms "Indigenous Nations and communities" and "Indigenous Peoples" are used throughout this
340 document. "Indigenous Nations and communities" refers specifically to those Nations or communities listed
341 in the [Indigenous Engagement and Partnership Plan](#) (IEPP). The term "Indigenous Peoples" is used to
342 reflect the broader legal and policy obligations and can include individuals and collectives whose rights
343 may be affected.

344 Project-specific requirements have been identified during consultation and engagement activities carried
345 out to date. In addition to the standard requirements, the Impact Statement must:

- 346 • describe the proponent's approach to seek and support Indigenous Nations and communities'
347 respective decisions about their free, prior, and informed consent (FPIC)¹ for the project and how the
348 proponent intends to continue discussions as the project progresses through the impact assessment
349 process;

350 Where applicable, the Impact Statement should:

¹ It is ultimately the responsibility of the Crown, not proponents, to aim to secure FPIC where appropriate for Crown decisions. These Integrated Guidelines are instructions for the proponent on what is required in the Impact Statement. Other documents including the [Indigenous Engagement and Partnership Plan](#), community-specific consultation plans and/or Nation-specific agreements can be co-developed between the Crown and Indigenous Nations and communities on how they will work together throughout the impact assessment, including working together to seek to secure FPIC. For the purpose of the impact assessment, this includes the impact assessment and the license to prepare site decision. In addition, there will be future decision-points that require a consultation process and where the Crown may need to aim to secure the FPIC of impacted Nations throughout the project's lifecycle. See the Government of Canada's website on Implementation of the United Nations Declaration: Implementing the United Nations Declaration on the Rights of Indigenous Peoples.

- 351 • include a description of how Indigenous-led studies or assessments were taken into account, with the
352 Indigenous Nation or community's permission to have this information included in the Impact
353 Statement.
- 354 • include a description of any proponent plans and commitments to continue to work with, and seek the
355 knowledge and expertise of, Indigenous Nations and communities throughout the lifecycle of the
356 project, should the project proceed, including how the proponent will report to the CNSC on
357 engagement efforts.

358 4. Assessment Methodology

359 The proponent must meet the standard requirements related to assessment methodology as outlined in the
360 [Generic Requirements for the Preparation of an Impact Statement](#) (the Generic Requirements), including
361 providing an overview of how these areas were incorporated throughout the Impact Statement. The
362 proponent is encouraged to consult the applicable guidance and resources found in the [standard](#) and
363 [project-specific Technical Considerations and References for the Preparation of an Impact Statement](#).
364 Generic Requirements address methodological areas of the impact assessment related to: spatial and
365 temporal boundaries, baseline conditions, effects assessment, mitigation measures, residual effects
366 assessment, cumulative effects assessment, extent of significance, follow-up program, and uncertainty and
367 bias.

368 In addition to the standard requirements, the Impact Statement must:

- 369 • assess potential impacts of project-related transportation activities, including the associated
370 construction of infrastructure, that occur within a geographic extent that includes, at a minimum, the
371 geographic bounding encompassing the railway spur for rail transport to the project site, and the
372 Highway 17 turn-offs associated with road transport to the project site (i.e., the main access corridors
373 to the project site coinciding with new infrastructure). Additional detail and rationale for this component
374 of the assessment is provided in [Section 10 Transportation planning](#).
- 375 ○ the geographic extent of impacts assessed to applicable VCs will be established based on their
376 specific context as outlined in the [Generic Requirements](#), which states that, “appropriate spatial
377 and temporal boundaries must be established to describe the baseline conditions and to guide
378 the assessment of effects on each VC.”
 - 379 ○ potential impacts to applicable VCs could include, but are not limited to wildlife collisions
380 ([Section 6.4.2](#)), strain on local and regional services and infrastructure such as emergency
381 services and road infrastructure, traffic and safety, with particular consideration for school
382 transportation routes and intersections along Highway 17 between Ignace and Dryden ([Section](#)
383 [7.3](#)), impacts on Indigenous Nations and communities and their rights ([Section 8](#)), accidents and
384 malfunctions ([Section 9](#)), and GHG emissions ([Section 12.1.2](#)).
- 385 • temporal boundaries for the assessment should consider, where applicable, the total time frame of the
386 project, which is nominally one million years (with a pre-closure phase that includes site preparation,

- 387 construction, operation and decommissioning, lasting a few hundred years, and a post-closure phase
388 that lasts one million years);
- 389 • assess the project’s likely cumulative effects in relation to the ability of Indigenous Nations and
390 communities to exercise their rights. The proponent should work with Indigenous Nations and
391 communities to determine which sections within the Impact Statement this assessment is best suited to
392 be included in.
- 393 The proponent should also:
- 394 • define and apply criteria and relevant benchmarks with Indigenous Nations and communities, including
395 but not limited to the description of effects on and mitigation for effects on Indigenous Peoples. Criteria
396 may include those identified in [Guidance: Assessment of Potential Impacts on the Rights of Indigenous
397 Peoples](#) and other relevant criteria proposed by an Indigenous Nation and community. These criteria
398 should be applied to determine the extent to which adverse effects on Indigenous Peoples are
399 significant.

400 4.1 Leveraging Existing Information

401 During the site selection process, as outlined in [Moving Forward Together: Process for Selecting a Site for
402 Canada’s Deep Geological Repository for Used Nuclear Fuel](#), the proponent carried out various studies to
403 determine that the preferred site was potentially suitable for a Deep Geological Repository (DGR), both
404 from the perspective of identifying a willing host community, and from the perspective of identifying a site
405 with the requisite technical characteristics to safely contain used nuclear fuel at depth over long periods of
406 time (e.g., [Confidence in Safety – Revell Site – 2023 Update](#)).

407 IAAC recognizes the work carried out to date, including the collection of baseline information and the early
408 identification of mitigation measures and project design features intended to avoid or reduce potential
409 adverse effects. The proponent is encouraged to leverage this information and these early mitigation
410 measures in preparing the Impact Statement, where appropriate, to support a focused assessment on key
411 issues. Where the proponent considers that existing studies and early mitigation measures are sufficient to
412 address well-understood effects, this should be clearly demonstrated and substantiated in the Impact
413 Statement.

414 In order to rely on the existing baseline information and early mitigation measures, the Impact Statement
415 must:

- 416 • demonstrate that the existing baseline information meets the requirements outlined in the applicable
417 sections of the Integrated Guidelines and/or reference documents;
- 418 • provide a summary of the existing baseline information, including how it relates to the potential effects
419 of the project, how it is representative of current conditions in the assessment study areas for each VC,
420 and how Indigenous Nations and communities, government experts, and other participants in the
421 impact assessment were engaged in the development or validation of the information;

- 422 • demonstrate how feedback received on the development of the studies was incorporated into the study
423 methodology;
- 424 • describe the mitigation measures and project design features identified to date, including those
425 presented in the Initial Project Description, and explain how these will be carried forward, refined, and,
426 where necessary, updated based on feedback received during the impact assessment;
- 427 • identify which potential effects are expected to be addressed through commonly applied or well-
428 established mitigation measures, and provide sufficient rationale and evidence to support reliance on
429 these measures;
- 430 • describe how Indigenous Knowledge was incorporated into the existing baseline information; and,
- 431 • provide these resources on the Canadian Impact Assessment Registry so that they are accessible to
432 the public, Indigenous Nations and communities, government experts, and the review panel.

433 5. Physical Environment

434 5.1 Meteorological environment

435 The Impact Statement must:

- 436 • describe the local and regional climate, in sufficient detail to highlight weather variations and
437 characteristics of the regions affected by project activities and components, including historical records
438 of relevant meteorological information;
- 439 • provide summary data and the reference to underlying data source, including unique weather stations
440 identifiers for:
 - 441 ○ monthly mean, maximum and minimum temperatures,
 - 442 ○ monthly mean, maximum and minimum precipitation,
 - 443 ○ typical wind speed and direction, and
 - 444 ○ standard meteorological measurement to provide estimates of evaporation (e.g., using the
445 Penman, Morton or Meyer Methods) or estimates of monthly (or daily) evapotranspiration.
- 446 • provide reference to sources (and unique weather station identifiers) for hourly meteorological data
447 (wind speed and direction, air temperature, dew point temperature or humidity, air pressure and
448 precipitation data) from a minimum of one year to support dispersion modelling that captures the
449 normal variability of meteorological conditions;
- 450 • describe the influence of climate change on the local and regional climate and in the risks of extreme
451 weather events, using appropriately conservative long-term projections.

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5.2 Geology and geochemistry

Note: Section 5.2 is focused on the site-specific geological conditions, including any potential effects that the project has on geology or geochemistry. The potential effects that geological hazards have on the project (and other effects the environment may have on the project) is captured in [Section 11](#).

5.2.1 Baseline conditions

The Impact Statement must:

- describe the regional, local and site-specific geology relevant for the project, including the petrology, mineralogy (including an evaluation of any mineral resource potential) and geochemistry (including hydrogeochemistry), stratigraphy, structural geology, and tectonic setting;
- describe the geomorphology, topography, and geotechnical and geomechanical characteristics of areas proposed for project components;
- describe the geology of the bedrock and overburden at regional and local/site scale for the project, including a table of geological descriptions (including relative and/or absolute ages of geological units), geological maps and cross-sections at the appropriate scale;
- identify on geological maps the location of areas where future drilling or other site characterization activities are planned;
- identify any geological hazards that exist in the areas planned for the project facilities and infrastructure, including:
 - history of seismic activity in the area, including induced earthquakes, and secondary effects such as the risk of, landslides, liquefaction, and seiches,
 - evidence of active and capable faults with potential for either seismic or aseismic fault behaviour,
 - regional and localized uplift or subsidence (tectonic and glacial isostatic adjustment-related),
 - history of, and potential for, glaciations,
 - history of landslides, slope erosion and the potential for ground and rock instability/landslides, and subsidence during and following project activities.
- present a 3-dimensional geological model developed for the site based on the conceptual model of the geological environment;
- provide a systematic geochemical characterization of excavated materials and its weathering process in the stockpile or disposal facility, as well as the wall of the underground openings;
- provide a detailed summary of analytical methods used to characterize mineralogy, petrology, elemental composition, acid general potential and Contaminants of Potential Concern (COPCs) leaching. The [Mine Environment Neutral Drainage \(MEND\) report 1.20.1](#) is recommended as guidance to support study design;

- 485 • describe the representativeness of samples collected for acid rock drainage and COPCs leaching
486 assessment. Present cross-sections or block model images at an appropriate scale that include rock
487 samples, geology, mineralized zones, borehole traces and identification numbers, and a scale and
488 legend;
- 489 • describe the approach and methods for the prediction of acid rock drainage and COPCs leaching,
490 including identification of potential parameters of concern. Provide initial leaching potential results
491 based on short-term leach tests and an analysis of the representativeness of laboratory and field
492 kinetic tests based on static test results;
- 493 • describe the quality assurance/quality control procedures. Provide laboratory certificates of analysis
494 that include information related to analytical methodology and quality assurance/quality control;
- 495 • provide estimates of the potential for all excavated materials to be sources of acid rock drainage,,
496 and/or COPCs leaching, timing to its onset, and short- and long-term loading rates;
- 497 • present a complete list of source terms of major COPCs for all excavated materials, wastes, and the
498 underground openings, to be used as source terms in an appropriate environmental risk assessment
499 model, for all phases, considering:
 - 500 ○ the results of the geochemical characterization study that evaluated the potential for acid rock
501 drainage, neutral mine drainage, and/or metal(loid) leaching for all materials,
 - 502 ○ baseline groundwater and surface water quality,
 - 503 ○ potentially acid-generating rock volumes and tonnage, and
 - 504 ○ waste disposal, management and mitigation methods and their effects on acid rock drainage
505 and/or metal(loid) leaching potential.
- 506 • provide a clear description and rationale for all input parameters and assumptions; and
- 507 • provide base case (i.e., most likely, mean, median) and worst case (e.g., 75th to 90th percentile)
508 scenarios, plus applicable sensitivity scenarios.

509 **5.2.2 Effects to geology and geochemistry**

510 The Impact Statement must:

- 511 • describe the potential effects of the project on geological formations, including effects on physical
512 stability and integrity, geochemical conditions, and the geothermal regime;
- 513 • describe the potential effects of the project on the environment when bedrock, unconsolidated
514 deposits, soils or sediments are excavated, disturbed, stockpiled and/or used for construction
515 purposes;
- 516 • describe, in the appropriate VC sections, potential effects to receptors such as groundwater, surface
517 water and sediment quality resulting from acid rock drainage, neutral mine drainage, and/or metal(loid)
518 leaching; and,

- 519 • provide base case (i.e., most likely, mean, median) and worst case (e.g., 75th to 90th percentile)
520 scenarios of identified potential geological hazards and geochemical perturbations induced from the
521 project, plus applicable sensitivity scenarios.

522 **5.3 Topography, soil and sediment**

523 **5.3.1 Baseline conditions**

524 The Impact Statement must:

- 525 • describe the terrain, soils and sediments within the local and regional study areas, including sediment
526 stratigraphy. Provide surficial geology maps and cross-sections of appropriate scale;
- 527 • describe and map landforms including elevated landforms, eskers, ridges, cliffs, rock outcrops,
528 exposed bedrock, talus and other karst topography caves;
- 529 • provide a description and location of any erosion-sensitive soils and areas of ground instability;
- 530 • provide maps depicting soil depth by horizon and soil order within the project area to support soil
531 salvage and reclamation efforts, and to outline potential for soil erosion;
- 532 • describe the suitability of topsoil and overburden for use in the reclamation of disturbed areas including
533 an assessment of the acid generating potential of overburden to be used;
- 534 • describe any known or suspected soil or sediment contamination with the study area that could be re-
535 suspended, released or otherwise disturbed as a result of the project; and
- 536 • identify areas or ecosystems that are sensitive or vulnerable to acidification resulting from the
537 deposition of atmospheric contaminants, including radionuclides.

538 **5.3.2 Effects to topography, soil and sediment**

539 The Impact Statement must describe all effects of the project on topography, soil and sediment including:

- 540 • predicted changes in concentrations of relevant contaminants in relation to applicable guidelines for
541 soil quality;
- 542 • potential and likelihood of problematic erosion from movement or redistribution of soil and overburden,
543 vegetation clearing, and watercourse diversions; and,
- 544 • potential and likelihood of re-suspended, releasing or otherwise disturbing known or suspected soil or
545 sediment contamination.

546 **5.4 Radiological conditions**

547 The proponent should refer to Health Canada's [Guidance for Evaluating Human Health Impacts in Impact](#)
548 [Assessments: Radiological Impacts](#) to ensure that it provides the information and analysis considered
549 necessary to assess the project's impacts on human health. The proponent should complete the checklists
550 provided in these guides to assist participants in verifying that the main elements have been completed
551 and in identifying the location of this information in the Impact Statement.

552 **5.4.1 Ambient radioactivity**

553 The Impact Statement must:

- 554 • describe the ambient radiological conditions at the project site and within the local and regional study
555 areas by:
 - 556 ○ providing information on existing conditions including an inventory of sources, activity levels and
557 origin for all environmental components including air, soil, food, water, aquatic sediments, plant
558 and animal tissue;
- 559 • describe human and non-human biota that could be exposed to ambient radioactivity, including
560 information on radiation levels to which workers and members of the public may be exposed; and,
- 561 • describe current radiological monitoring, management programs and any special studies, including
562 detailed results from these programs.

563 **5.4.2 Changes to radiological conditions**

564 For all phases of the project and all applicable VCs, the Impact Statement must:

- 565 • provide a plan for assessing the effects of the project related to the release of radionuclides to the
566 environment, including sampling media and/or indicator species, measured parameters, sampling
567 methodologies, locations and frequencies; and,
- 568 • describe changes to radiation and radioactivity present in the terrestrial and aquatic environment, the
569 atmosphere, and to workers or nearby communities.

570 **5.5 Atmospheric, acoustic and visual environment**

571 **5.5.1 Baseline conditions**

572 The Impact Statement must:

- 573 • characterize the ambient air quality in the project, local and regional study areas and identify existing
574 emissions and contaminant sources;
- 575 • provide baseline ambient air concentrations for contaminants, in particular near key receptors (e.g.,
576 communities, traditional land users, wildlife) and quantify emission sources for the following:
- 577 ○ total particulate matter;
- 578 ○ particulate matter less than 2.5 microns (PM2.5),
- 579 ○ particulate matter less than 10 microns (PM10),
- 580 ○ carbon monoxide (CO),
- 581 ○ sulphur dioxide (SO2),
- 582 ○ nitrogen dioxide (NO2) and nitrogen oxides (NOx),
- 583 ○ ozone (O3),
- 584 ○ hydrogen sulphide (H2S) and other reduced sulphur compounds,
- 585 ○ volatile organic compounds (VOCs), individual or an appropriate subset,
- 586 ○ polycyclic aromatic compounds, including polycyclic aromatic hydrocarbons (PAHs), alkylated
587 PAHs, PAH transformation products, including nitro and oxy-PAHs, and dibenzothiophenes
588 (DBTs), and
- 589 ○ any other relevant air pollutants from mobile, stationary or fugitive sources, including
590 contaminants produced by the combustion of diesel fuel;
- 591 • compare ambient air quality results with applicable regional, provincial and federal standards. For air
592 pollutants with standards, the comparison must use the same averaging period and the statistical
593 format associated with each numerical value;
- 594 ○ standards include: [Canadian Ambient Air Quality Standards](#) (CAAQS), National Ambient Air
595 Quality Objectives (NAAQO) or relevant provincial standards. The proponent must refer to the
596 new CAAQS established by the Canadian Council of Ministers of the Environment (CCME) for
597 PM2.5, O3, SO2 and NO2 for 2020 and 2025;
- 598 • describe dust and acid deposition through either existing long-term, or new monitoring data for a
599 duration of a minimum of one year;
- 600 • describe the data collection methods and data source(s), including data validation and quality control
601 methods;
- 602 • identify and address issues related to the quality of the monitoring data and seasonal variability in the
603 baseline survey and determine ambient contaminant concentrations using complete, exhaustive and
604 representative monitoring data, collected over an appropriate duration and geographic scope;
- 605 • if modelling is undertaken to understand baseline ambient air quality, then describe direct and indirect
606 sources of baseline air emissions, including mobile, stationary and fugitive;
- 607 • provide current ambient noise levels at key receptor points (e.g., communities, traditional land users,
608 sensitive human receptors and wildlife), including the results of a baseline ambient noise survey and

609 permissible noise levels for each receptor. The information on usual noise sources (natural or
610 anthropogenic), their geographic extent and temporal variations must be included. At the time of
611 collecting baseline data for the study on ambient noise where there are human receptors, it is
612 recommended that the following aspects be considered:

- 613 ○ natural sounds,
- 614 ○ soundscapes ([see ISO 12913-1:2014. Acoustics — Soundscape — Part 1: Definition and](#)
615 [conceptual framework](#)),
- 616 ○ expectations regarding quiet conditions in specific places or at specific times,
- 617 ○ usual sleeping hours (the default assumption is 10 p.m. to 7 a.m.), and
- 618 ○ degree of baseline annoyance attributable to existing noise sources (e.g., vehicle traffic, aircraft,
619 other industrial noise);
- 620 ● describe night-time illumination levels during different weather conditions and seasons; and
- 621 ● describe landscapes of interest, visual screens and other components of the visual environment, and
622 locate them on maps.

623 **5.5.2 Effects to the atmospheric, acoustic, and visual** 624 **environment**

625 The Impact Statement must describe the effects of the project on the atmospheric, acoustic and visual
626 environment, and:

- 627 ● provide a detailed description of emission sources of air pollutants from the project listed under [Section](#)
628 [5.5.1 Baseline conditions](#) for all phases of the project;
- 629 ● provide detailed methodology and assumptions used to estimate emissions of air pollutants released
 - 630 ○ provide and reference all relevant emission factors
 - 631 ○ for all applicable emission sources, include the assumed tier of emission standard for each
632 emission factor applied, and
 - 633 ○ provide details of the achievement of emission standards for all mobile and stationary engines
634 used in the project;
- 635 ● use atmospheric dispersion modelling to predict the fate of emissions resulting from project-related
636 sources and provide appropriately scaled contour map(s) plotting the predicted emissions;
 - 637 ○ determine whether the formation of secondary pollutants (pollutants which are not directly
638 emitted but form when other primary pollutants react in the atmosphere) resulting from the
639 project under assessment has the potential to raise concentrations above baseline levels – if so,
640 identify and characterize these pollutants;

- 641 • provide the rationale for the choice of air quality model, including the type and magnitude of emissions,
642 the complexity of sources, terrain and meteorology, or for why modelling is not being used to predict
643 fate of air emissions;
- 644 • provide justification for all control efficiencies used to reduce emission rates of sources within the
645 model, including details of all assumptions associated with the related mitigation measures, and their
646 achievability;
- 647 • assess the uncertainty in the modeled air pollutant concentrations using relevant range of model
648 inputs. All sources of uncertainty should be taken into account, including:
 - 649 ○ model uncertainty, including a consideration for how uncertainty in modeled predictions may vary
650 spatially and temporally, and
 - 651 ○ uncertainty in baseline concentration estimates, in the estimates of meteorological inputs, and in
652 estimates of source emissions (from sources attributable to the project, and externally);
- 653 • conduct a source contribution analysis to assess the relative contributions of project and non-project
654 emission sources on pollutant concentrations at key receptors. The source contribution analysis should
655 be conducted for all pollutants that exceed 10% of the relevant guidance or standard value. Emission
656 sources should be grouped into appropriate categories;
- 657 • assess effects to the receiving environment through:
 - 658 ○ comparison with ambient standards, including the Canadian Ambient Air Quality Standards
659 (CAAQS). The assessment against CAAQS should be based on the principles of “keeping clean
660 areas clean” and continuous improvement, and in the context of air sheds and air zones with the
661 Air Quality Management System,
 - 662 ○ comparison with critical thresholds (consider current, historical loadings, buffering capacity,
663 including Acid Deposition Critical Loads),
 - 664 ○ comparison with sensitive ecological receptors or VCs in the aquatic and terrestrial environment
665 (consider effects thresholds of species in question), and
 - 666 ○ comparison to other appropriate existing guidelines, objectives or standards, where relevant.
667 This includes regional and community-based air quality guidelines;
- 668 • describe changes in ambient vibration and sound levels resulting from the project;
- 669 • for project activities that result or may result in an increase in sound emissions during any phase of the
670 project:
 - 671 ○ quantify sound levels at appropriate distances from any project facility and/or activities and
672 describe the frequency, duration and character of sound, and
 - 673 ○ describe the locations and characteristics of sensitive receptors, including species at risk
- 674 • provide a description of any changes in nighttime light levels resulting from the project:
 - 675 ○ quantify light levels at appropriate distances from any project facilities, including the timing (e.g.,
676 night hours), frequency, duration, distribution and character of light emissions.

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5.6 Groundwater and surface water

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5.6.1 Baseline conditions

679 The Impact Statement must:

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- describe the hydrographic and hydro-climatic context of the project site (e.g., climate patterns);

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- identify the hydrologic network, including but not limited to the watershed delineation, stream courses identification and mapping;

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- provide a characterization of groundwater resources potentially affected by the project;

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- describe the local monitoring program and hydrologic data collection;

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- quantify the existing surface water conditions, including the full range of seasonal and inter-annual variations (including variations in inflows, outflows, water surface elevations, net loss including evaporation and seepage, storage volumes and retention time), ice cover and snow regime. This may be based on data from on-site gauging stations or from reference regional gauging stations;

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- identify and describe the waterbodies and water resources potentially affected by the project;

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- describe the expected water requirements for each phase of the project life-cycle;

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- describe and illustrate on one or more topographic maps, at appropriate scales, the drainage basins in relation to key project components. On the map(s), identify all waterbodies and watercourses, including intermittent streams, flood risk areas, wetlands, watershed and sub-watershed boundaries, and direction of flow:

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- if applicable, indicate the intended locations of water crossing and watercourse diversions;

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- provide a list of all waterbodies and watercourses (permanent, intermittent and ephemeral) that may be directly or indirectly affected by the project. Provide a table that groups waterbodies and watercourses by sub-watershed and provides the following information about each:

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- type of watercourse impacted (e.g., lotic or lentic system, lake, river, pond, temporary or permanent stream), and

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- size of the waterbodies and watercourses, as applicable (e.g., width at the ordinary high water mark, length or area).

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- provide flow hydrographs and corresponding water levels for nearby streams and rivers showing the full range of seasonal and inter-annual variations; as well as seasonal baseflow

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- hydrographs may be based on data from nearby gauging stations or from gauging stations on site, and

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- approach used should take into account the need to provide information for use in fish habitat characterization and effects assessment.

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- 709 • provide stage hydrographs for lakes expected to be affected by the project showing the full range of
710 seasonal and inter-annual water level variations;
- 711 • for each waterbody and watercourse potentially affected by the project, provide a description of ice
712 cover, thickness and conditions and the timing of freeze-thaw cycles;
- 713 • provide for each waterbody potentially affected by the project, bathymetry, maximum and mean
714 depths, vertical profile information, information on stratification and turnover, and sediment composition
715 (e.g., particle size analysis and sediment quality);
- 716 • using traditional field and mapping techniques, provide a delineation and characterization of
717 groundwater–surface water interactions, including an identification of groundwater-dependent
718 ecosystems, wetlands, discharge and recharge areas that are potentially affected by the project
- 719 ○ use this information to calibrate and verify numerical flow modelling;
- 720 • develop a quantitative surface water balance for watersheds potentially affected by the project,
721 detailing water intake and outflow to the environment;
- 722 • describe the surface water, ground water and sediment quality baseline characterization program,
723 including sampling site selection and locations, monitoring duration and frequency, sampling
724 methodology, and analytical protocol, including quality assurance and quality control measures
- 725 ○ describe the incorporation of any applicable historical data or existing information, and
- 726 ○ characterization program should include sampling locations within the project area, the local and
727 regional study areas, and should include reference locations that are unlikely to be impacted by
728 the project;
- 729 • provide baseline data for relevant physicochemical parameters and chemical constituents for surface
730 water, groundwater and sediment quality that are expected to change throughout the project lifecycle;
731 including temporal trends and groundwater–surface water interactions, representative of seasonal and
732 inter-annual variability and spatial representation relevant to the project components, the LSA and the
733 RSA. The data should be presented in a compiled, tabulated, and graphed form using appropriately
734 sensitive detection limits, and include estimates relevant to the project activities and components:
- 735 ○ physicochemical parameters may include temperature, pH, electrical conductivity, dissolved
736 oxygen, turbidity, total suspended solids, total hardness, total dissolved solids, biological oxygen
737 demand, carbonate equilibrium) and chemical constituents may include major and minor ions,
738 total and dissolved trace metals / metalloids, radionuclides, total mercury, methylmercury,
739 polycyclic aromatic compounds, persistent organic pollutants, nutrients) in comparison to the
740 relevant environmental quality guidelines,
- 741 ○ water sample collection and analysis should use appropriately sensitive detection limits and the
742 data should illustrate the seasonal and inter-annual variability in baseline surface water quality
743 with sufficient years of baseline data to fully characterize natural variability, including possible
744 variabilities due to groundwater–surface water interactions;
- 745 ○ physical and chemical parameters may include particle size, moisture content metals/metalloids,
746 total sulphur, total organic carbon, polycyclic aromatic compounds, persistent organic pollutants.

- 747 Sediment samples should target silt-clay range (<63um) and include appropriate replication to
748 describe site heterogeneity.
- 749 • identify springs and any other potable surface water resources within the local and regional project
750 areas and describe their current use, potential for future use, and whether their consumption has
751 Indigenous cultural importance;
 - 752 • identify domestic, communal or municipal water wells within the local and regional areas, and provide
753 information on their depth, distance from the project, stratigraphy, screened hydrostratigraphic unit and
754 piezometric level and capacity, and describe their current use, potential for future use, and whether
755 their consumption has any Indigenous cultural importance;
 - 756 • identify groundwater-producing strata (coarse-grained sediments and permeable bedrock) within the
757 host rock and describe how interactions between groundwater and the deep geological repository will
758 be limited. Where current domestic, communal or municipal water wells access these strata, their
759 distance from the project must also be marked and added to the map;
 - 760 • provide a summary of key groundwater monitoring wells within the regional study area used to inform
761 the conceptual model, and identify their location, groundwater quality information and monitoring
762 frequency. Provide representative hydrographs showing the range of seasonal and inter-annual water
763 level variations and indicate any spatial variation in the regional study area;
 - 764 • describe the hydrostratigraphic units (aquifers, aquitards, aquicludes) of the hydrogeological
765 environment in both bedrock and overburden and provide a piezometric map showing heads and the
766 direction of groundwater flow;
 - 767 • describe the structural geology of the hydrogeological environment, including major faults, fracture
768 density and orientation with respect to groundwater flow directions;
 - 769 • describe the groundwater flow boundaries of the hydrogeological environment, including groundwater
770 divides and boundaries with surface water;
 - 771 • provide the hydraulic properties of the hydrostratigraphic units, including data on hydraulic conductivity,
772 specific storage, transmissivity, storativity, saturated thickness, porosity and specific yield, as
773 applicable;
 - 774 • provide hydrogeological maps and cross-sections of the study area showing water table elevations,
775 potentiometric contours, interpreted groundwater flow directions, groundwater divides and areas of
776 recharge and discharge;
 - 777 • present a conceptual model of the hydrogeological environment, including a discussion of geomorphic,
778 hydrostratigraphic, hydrologic, climatic and anthropogenic controls on groundwater flow;
 - 779 • present 3-dimensional numerical geological and groundwater flow models developed for the project
780 area based on the conceptual model of the hydrogeological environment
 - 781 ○ state limitations and assumptions in the modelling approach, including calibration methods,
782 model validation and accuracy,

- 783 ○ calibrate the numerical model to baseline hydrogeological conditions using groundwater level
- 784 and stream flow monitoring data and provide metrics and graphs describing the quality of the
- 785 calibration that was achieved and discuss how spatial variability is considered in model
- 786 calibration,
- 787 ○ analyze the sensitivity of key model outputs to hydraulic properties and climatic parameters such
- 788 as recharge, and
- 789 ○ using the calibrated numerical model, provide a baseline groundwater budget including baseflow
- 790 discharge to wetlands, streams and rivers, recharge from lakes or streams, and any
- 791 anthropogenic withdrawals;
- 792 ● present a conceptual model for the hydrological environment, as appropriate to describe baseline
- 793 conditions for surface waters. The model should be developed to support the assessment of potential
- 794 changes to water and sediment quantity and quality in rivers, streams, lakes, springs and wetlands,
- 795 with input from regulators; and
- 796 ● explain how baseline data were gathered, and modelling developed, at a scale and resolution that
- 797 allows for the application of results about groundwater and surface water to the assessment of
- 798 interrelated VCs, notably for fish, birds and other wildlife, their habitat and their health, human health
- 799 as well as the current use of land and resources for traditional purposes.

800 **5.6.2 Effects to groundwater and surface water**

801 The Impact Statement must:

- 802 ● describe the effects of the project on surface and ground water, including effects related to:
 - 803 ○ project use of surface water or groundwater resources,
 - 804 ○ changes to water flow or watercourse diversions, and
 - 805 ○ discharge of water, effluent, wastewaters or other substances to the environment;
- 806 ● describe how the effects of climate change are taken into account in the evaluation of the project
- 807 effects;
- 808 ● discuss changes to watersheds, including alignment and condition of waterbodies and watercourses
- 809 (permanent, intermittent and ephemeral), including those created, removed or altered by the project;
- 810 ● quantify the extent of hydrological changes that will result from disturbances to aquifers and surface
- 811 water features, taking into account climate change. This includes changes to water temperature, the
- 812 quantity or timing of surface flow, water levels, ice thickness or extent, sediment input, and channel
- 813 regime in watercourses, and water levels in affected waterbodies;
- 814 ● present an integrated site water balance model incorporating surface and groundwater fluxes to or
- 815 from all major project components, for all project phases. Include estimates of surface water runoff
- 816 rates for major project components;
- 817 ● indicate the groundwater and surface water withdrawal requirements during all phases and specify:

- 818 ○ the timing, quantity and quality of water withdrawn from the environment (flow rates and annual
- 819 volumes),
- 820 ○ the conditions under which this water is released into the receiving environment;
- 821 • present key flow rates for all project components (including the underground repository) and water
- 822 management structures, including inflow, outflow or surface run off from storage piles, contaminated
- 823 material storage, and waste management facilities;
- 824 • present a comprehensive site water management plan for all project phases, including for:
 - 825 ○ water inflows and outflows,
 - 826 ○ water diversion, and
 - 827 ○ water management;
- 828 • using the 3-dimensional numerical groundwater flow model:
 - 829 ○ estimate key project fluxes, dewatering rates, and seepage rates during construction, operation
 - 830 and the post-closure period, and
 - 831 ○ estimate seasonal changes to surface water and groundwater regimes, effects on baseflow in
 - 832 rivers and streams, effects on wetlands, effects on potable supplies, and effects on natural flow
 - 833 divides;
- 834 • describe the contaminants associated with the project, their spatial and temporal locations and their
- 835 potential flow paths (e.g. groundwater seepage pathways and how they relate to potential receptors).
- 836 Characterize how they could affect surface and groundwater quality, including information on the
- 837 source(s) of any contaminants, and their transport and fate in the hydraulic environment;
- 838 • describe the downgradient flow of groundwater affected by the project, with the use of figures showing
- 839 groundwater piezometric contours and particle tracking results;
- 840 • describe the contaminant attenuation capacity within the hydrogeological units in the project area and
- 841 use this input to assess off-site groundwater and surface water contamination. Alternatively, the
- 842 proponent may conservatively assume no attenuation capacity, and describe degradation products (i.e.
- 843 daughter materials) during groundwater flow.
- 844 • describe the potential changes to surface water, groundwater or sediment quality related to the project
- 845 including:
 - 846 ○ potential changes to surface water quality due to surface erosion and sedimentation, from the
 - 847 removal of vegetation and changes to riparian, wetland and terrestrial environments, due to
 - 848 direct and indirect discharges, surface erosion and sedimentation, generation and deposition of
 - 849 dust and particulate matter, including to physicochemical parameters (e.g. temperature, pH,
 - 850 salinity, dissolved oxygen, total suspended solids), chemical constituents (e.g. major and minor
 - 851 ions, trace metals, radionuclides, nutrients, organic compounds) and changes to water quantity
 - 852 in the receiving environment. Present expected changes as well as risk-based worst- and best-
 - 853 case scenarios. Use appropriate modelling and describe model assumptions, inputs and
 - 854 associated rationale,

- 855 ○ changes to surface water and groundwater quality due to all discharges and effluents from the
856 project, including changes to physicochemical parameters (temperature, pH, salinity, dissolved
857 oxygen), and relevant chemical constituents (major and minor ions, trace metals, radionuclides,
858 nutrients, organic compounds), and
- 859 ○ potential changes to surface water as a result of acidifying emissions from the project and acid
860 deposition;
- 861 • comparison of any changes to surface or groundwater quality to applicable guidelines, objectives or
862 standards;
- 863 • describe the quantity and quality of all effluent streams released from the site to the receiving
864 environment, including effluent from treatment facilities, dewatering activities, seepage and surface run
865 off from project components and site;
- 866 ○ compare the quality of all effluent streams to applicable guidelines, objectives or standards to
867 better identify possible adverse effects on the receiving environment;
- 868 • using the integrated chemical mass balance model, describe predicted worst, base and sensitivity case
869 changes caused by project activities to surface water, groundwater and sediment quality in the
870 receiving environment, for both physicochemical parameters and chemical constituents, including but
871 not limited to:
- 872 ○ chemical loadings associated with acid rock drainage, neutral waste rock drainage, and/or
873 metal(loid) leaching;
- 874 ○ seepage from piles of overburden and waste rock, and
- 875 ○ watercourse and waterbody crossings, blasting, diversions, dewatering, water withdrawal,
876 wastewater return, overflows from excavation, and surface runoff;
- 877 • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and
878 sediment quality to baseline and applicable guidelines, objectives or standards;
- 879 • provide an assessment for off-site migration pathways for impacted groundwater;
- 880 • describe locations at which potential changes to water or sediment quality will be assessed, including
881 at all discharge points and boundaries for the applicable study areas; and,
- 882 • analyze and describe changes to surface and groundwater at a scale and resolution that allows for the
883 application of results to the assessment of interrelated VCs, notably for fish and fish habitat and human
884 health. Carry forward the assessment of potential changes in water quantity and quality, as required in
885 the following sections of the Guidelines.

886 6. Biological Environment

887 6.1 Terrestrial, riparian and wetland environments

888 6.1.1 Baseline conditions

889 The Impact Statement must:

- 890 • provide a description of the biodiversity, relative abundance and distribution of vegetation species and
891 communities of ecological, economic or human importance within the local and regional study areas of
892 the project, including:
 - 893 ○ rare plant communities and communities of limited distribution;
 - 894 ○ species at risk, including those listed in Schedule 1 of the SARA, provincially listed or assessed
895 by the [Committee on the Status of Endangered Wildlife in Canada](#) (COSEWIC) to be 'at risk,'
896 including species of concern;
 - 897 ○ critical habitat as described in final or draft recovery strategies or action plans for species at risk;
898 and,
 - 899 ○ species for which harvest level records are maintained by provincial, local conservation agencies
900 or organizations.
- 901 • describe the biodiversity metrics, biotic and abiotic indicators that are used to characterize the baseline
902 vegetation biodiversity and discuss the rationale for their selection;
- 903 • provide baseline concentrations of potential concern in vegetation at representative exposure and
904 reference sites;
- 905 • provide maps, at an appropriate scale, of the vegetation species and communities of importance within
906 the local study area, and where available, the regional study area;
- 907 • describe the current level of both anthropogenic and natural (e.g., fire, flood, drought) disturbance
908 associated with vegetation, including a description of level of habitat fragmentation and loss, historical
909 and current disturbance, any proximate activities that have resulted in changes to fire regimes (e.g. fire
910 suppression, flooding, insect infestations);
 - 911 ○ describe any weed species, other invasive species and introduced species of concern;
- 912 • describe the shoreline, banks, current and future flood risk areas, and wetland catchment boundaries;
- 913 • quantify, describe and map riparian areas within the local and regional study area potentially affected
914 by the project;
- 915 • quantify, describe and map wetlands (e.g., fens, marshes, peat lands, bogs) within the local and
916 regional study area potentially affected by the project, in the context of:

- 917 ○ wetland class, ecological community type and conservation status,
- 918 ○ biodiversity,
- 919 ○ wetland habitat that provides important functions for species at risk,
- 920 ○ abundance at local, regional and provincial scales,
- 921 ○ distribution, and
- 922 ○ current level of disturbance;
- 923 ● identify and describe wetland capacities to perform hydrological and water quality functions, provide for
- 924 wildlife and wildlife habitat or other ecological functions; and,
- 925 ● provide a wetland functions assessment in accordance with the guiding principles of [Wetland](#)
- 926 [Ecological Functions Assessment: An Overview of Approaches](#) or any subsequent approved
- 927 guidelines by which to determine the most appropriate functions assessment methodology to use
- 928 ○ provide a rationale for the wetland functions assessment method chosen and submit complete
- 929 data sets from any survey sites, including geospatial data files;
- 930 ○ determine if other wetland conservation policies, regulations or wetland compensation guidelines
- 931 apply;
- 932 ○ identify study areas of sufficient size to capture effects to wetlands within the larger drainage
- 933 area.

6.1.2 Effects to terrestrial, riparian and wetland environments

936 The Impact Statement must describe the effects of the project on terrestrial, riparian and wetland
 937 environments, including:

- 938 ● describe all potential effects due to the project, for all phases, to terrestrial, riparian and wetland
- 939 environments;
- 940 ● describe the key indicators used to assess project effects and the sensitivity of vegetation
- 941 communities, wetlands, and riparian and terrestrial environments to disturbance;
- 942 ● describe changes related to landscape disturbance, including loss and fragmentation of habitats,
- 943 alteration of riparian areas, including buffers or setbacks and potential project effects on areas of soil
- 944 or ground instability;
- 945 ● quantify the area of vegetation communities, riparian, wetland, and terrestrial environments, that may
- 946 be cleared or otherwise disturbed within the study area during all phases of the project, including a
- 947 description of the disturbance;
- 948 ● describe potential effects on the biodiversity of riparian, wetland and terrestrial environments, including
- 949 effects from fragmentation and changes to regional biodiversity;

- 950 • describe the potential effects of any hydrological or water flow changes, either permanent or
951 temporary, on vegetation and wetlands;
- 952 • describe any changes to or loss of wetland function, including consideration of ecological (e.g.,
953 hydrological, biogeochemical cycling, habitat and climate functions) and socioeconomic functions of
954 wetlands. Describe and justify the methodology used to assess the effects;
- 955 • describe potential effects from project emissions that may result in contamination and acidification of
956 nearby land and waterbodies, including consideration of the sensitivity of vegetation communities,
957 wetlands, and riparian and terrestrial environments to disturbance;
- 958 • describe potential changes to terrestrial, riparian, and wetland environments due to activities that may
959 affect topography, soil erosion, compaction and productivity, contamination, bank slopes and
960 suspension of sediment, or due to any contaminants of concern potentially associated with the project
961 that may affect vegetation, soil, sediment or water; and,
- 962 • describe potential changes to terrestrial, riparian, and wetland environments as a result of any known
963 or suspected soil contamination within the study areas that could be re-suspended, released or
964 otherwise disturbed as a result of the project.

965 **6.2 Fish and fish habitat**

966 The impact assessment must assess the effects of the project on fish and fish habitat, as defined in
967 subsection 2(1) of the [Fisheries Act](#) based on likely effect pathways from project components or activities.
968 The spatial scale and pathway of effects will dictate the appropriate fish and fish habitat assessment
969 methods, such as quantifying habitat loss and/or considering long-term population viability.

970 Where *Fisheries Act* authorization(s) under section 34.4(2)(b) or 35(2)(b) of the *Fisheries Act* are likely
971 required for the project, the proponent is encouraged to provide the information required for permitting
972 during the impact assessment in support of an efficient and shortened permitting approval process, and
973 refer to [Project Planning: Applying for a Fisheries Act Authorization](#) and the [Applicant's Guide Supporting
974 the Authorizations Concerning Fish and Fish Habitat Protection Regulations](#).

975 Where it is not possible to eliminate, reduce or control adverse effects to fish and fish habitat, offsetting
976 measures should be considered, which may include restoration of degraded fish habitat, habitat
977 enhancement or construction, or stocking, referring to the [Policy for Applying Measures to Offset Harmful
978 Impacts to Fish and Fish Habitat](#).

979 **6.2.1 Baseline conditions**

980 The Impact Statement must:

- 981 • list in a table all waterbodies and watercourses frequented by fish, or on which fish depend directly or
982 indirectly, likely to be affected by the project. Include in the table:

- 983 ○ whether freshwater, estuarine or marine,
- 984 ○ type and permanence (e.g., temporary, intermittent or ephemeral stream),
- 985 ○ size (i.e., width at the ordinary high-water mark) and depths,
- 986 ○ ice regime, and
- 987 ○ whether flows are regulated;
- 988 • for each of the waterbodies and watercourses listed above, present maps at appropriate scales using
- 989 aerial imagery overlaid with relevant descriptions, as well as relevant summary tables, that depict:
- 990 ○ the location and area of fish habitat
- 991 ○ the location of any known or potential barriers to fish passage, both natural and constructed
- 992 including water management infrastructure or waterbody crossings (e.g., bridges, culverts,
- 993 dams, weirs, beaver dams, waterfalls, etc.),
- 994 ○ footprint areas of proposed works
- 995 ○ physical and biological characteristics at a level of detail commensurate with the potential for
- 996 effects on fish and fish habitat including:
- 997 ■ baseline habitat loss or disturbance (e.g., fragmentation)
- 998 ■ habitat use or suitability, including critical habitat and residences for species at risk, habitat
- 999 function (e.g., spawning, calving, nursery, etc.) and sensitive times for habitat use (e.g.,
- 1000 overwintering, migration), or how the habitat directly or indirectly support fish to carry out
- 1001 their life process,
- 1002 ■ important habitat features (e.g., substrate types, beaver dams, riffles, pools),
- 1003 ■ habitat areas with high fish abundance or diversity,
- 1004 ■ species present, including sub-species and sub-populations, considering inter- and intra-
- 1005 annual variations,
- 1006 ■ flow direction, if applicable,
- 1007 ■ existing local and regional sources of contaminants,
- 1008 ■ proximity to protected or sensitive habitat areas,
- 1009 ■ description and location of erosion-sensitive soils and areas of ground instability, and
- 1010 ■ presence of invasive or introduced species of concern;
- 1011 • identify the fish and aquatic plant species that will serve as the focus of the effects assessment,
- 1012 considering that different species may be affected differently by the project and may require different
- 1013 mitigation. The proponent should ensure the information provided with respect to changes to surface
- 1014 water and groundwater and any associated impacts on fish and aquatic plant species includes:
- 1015 ○ surface water hydrology in the local study area (LSA) and regional study area (RSA) from on-site
- 1016 gauging stations, considering ice cover, freeze-thaw cycle and snow regime, flow hydrographs,
- 1017 water levels and seasonal baseflow for streams and rivers, as well as stage hydrographs for

1018 lakes, including quantitative characterization of baseline hydrology in a model detailing baseline
 1019 surface water flows. The model results must account for inter-annual patterns including trends in
 1020 flow, permanence, or ice cover, as well as seasonal, or contain an explanation of why these
 1021 patterns are not material to the effects. This information should be used to characterize the
 1022 quantity of water in areas frequented by fish and the timing of flows and water levels,
 1023 ○ local water velocities and levels, including measurements of water velocity profiles and
 1024 characterization of water levels and flow variability in the potential perturbation zones (e.g. flow
 1025 velocity, turbulence, shear stress),
 1026 ○ delineation and characterization of groundwater–surface water interactions at groundwater-
 1027 dependent areas frequented by fish. Where multiple factors or temporal and spatial scales
 1028 require consideration, a consistent multi-model or integrated modelling approach should be
 1029 employed. This information should also be used to characterize aquifers related to groundwater-
 1030 dependent areas frequented by fish and to calibrate and verify numerical flow modelling.

1031 **6.2.2 Effects to fish and fish habitat**

1032 The Impact Statement must:

- 1033 • describe the likely [effects pathways](#) to fish and fish habitat from project components or activities for
 1034 each waterbody, watercourse and location likely affected by the project (e.g. point and diffuse sources
 1035 of discharges and their receiving environment), including:
 - 1036 ○ habitat alteration, disruption or destruction (temporary or permanent) relative to baseline,
 1037 described in a table in terms of area, habitat type, sensitivity of habitat and impact (e.g.
 1038 magnitude, intensity, persistence), as well as on maps at appropriate scales,
 - 1039 ○ risk from noise and vibrations (e.g., blasting),
 - 1040 ○ risk of entrapment, impingement or entrainment,
 - 1041 ○ risk of introduction of aquatic invasive species, including pathogens,
 - 1042 ○ changes resulting from watercourse-crossing(s). For each crossing, describe and justify the
 1043 techniques used, and risk of fish habitat loss from obstructions to fish passage,
 - 1044 ○ changes to the alignment of waterbodies and watercourses, locations of any intakes and
 1045 proposed maximum pumping rates, and any resulting changes in surface water flows based on
 1046 the quantitative characterization of the hydrology or in groundwater and surface water conditions
 1047 at a scale, resolution and level of detail relevant to assess the effects to fish and fish habitat,
 - 1048 ○ changes to surface water flows and levels and to groundwater quantity and flow pattern
 1049 considering surface water and groundwater withdrawal (e.g. spatial scales, timing, quantity and
 1050 quality of water withdrawn, flow rates and annual volumes), fluxes and the conditions under
 1051 which this water is released into the receiving environment. Use a three-dimensional numerical
 1052 groundwater flow model to simulate the hydrogeological system and estimate key water fluxes
 1053 based on the calibrated baseline conditions model and include:

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- major project components, including open pits, underground workings, waste rock piles, tailings management facilities, dewatering wells, water diversion ditches, and sediment ponds,
 - changes to surface water flows and hydraulic conditions in the receiving environment caused by project components supported by quantitative data and quantitative characterization through modelling outputs, including:
 - flow regimes (e.g. timing and volumes) based on the hydrological model calibrated to baseline conditions,
 - velocity regimes and flow hydraulics (e.g. localized velocity perturbations, turbulence, shear stresses, flow reversals),
 - sediment transport and deposition patterns affecting habitat structure and water quality, and groundwater-surface water interactions,
 - and an assessment of the sensitivity of key model outputs to hydraulic properties and climatic parameters such as recharge,
 - changes to surface water and groundwater quality resulting from acid rock drainage and/or COPC leaching from mined, excavated or blasted material, including:
 - a consideration of all relevant material, including pit wall materials, underground development ramps, overburden and potential construction material (i.e., excavated rock, quarries, unconsolidated material), and
 - a conceptual geochemical model that assesses how project activities and components may affect the quality of surface water, groundwater, and sediment in areas that support fish habitat. This model must include risk-based source terms, integrate geochemical data from relevant materials to predict drainage chemistry and quantify the potential for COPCs leaching and acid rock drainage under expected site conditions, especially from sulphidic geological materials,
 - temporal changes to water quality and sediment quality at applicable locations, compared to applicable guidelines, site-specific objectives or benchmarks, and/or relevant toxicity test results (either site-specific or published):
 - as applicable, indicate where and when the water quality in the immediate receiving environment begins to meet water quality guidelines,
 - changes in nutrients and productivity resulting in indirect effects on fish (e.g., eutrophication, food availability),
 - discharges of waters to the aquatic environment,
 - re-suspension, release or disturbance of known or suspected soil or sediment contamination
 - describe residual, and, if applicable, cumulative effects to fish and fish habitat and aquatic plant species based on the likely effect pathways and a comparison with baseline conditions.

1090 6.3 Birds and their habitat

1091 For the purpose of the Integrated Guidelines, “birds” refers to all birds, with emphasis on migratory birds,
1092 as defined under the [Migratory Birds Convention Act, 1994](#).

1093 6.3.1 Baseline conditions

1094 The Impact Statement must:

- 1095 • identify species likely present in the LSA and RSA based on data from existing sources and recent
1096 field habitat surveys for the breeding and non-breeding season, as well as Indigenous Knowledge and
1097 community knowledge that is provided;
- 1098 • identify the bird species (e.g., a species at risk) or groups of species (e.g., shorebirds) that are
1099 indicators for effects and will serve as the focus of the effects assessment, considering that different
1100 species and groups of species may be affected differently by the project and may require different
1101 mitigation. Where there is uncertainty as to bird species likely present in the project areas, the
1102 selection of birds should be inclusive and representative.
- 1103 • as needed to assess effects, for each bird identified:
 - 1104 ○ describe population, including subpopulations or subspecies that may have distinct ecological
1105 requirements or migratory routes, distribution, seasonal ranges, migration, movements,
1106 frequency and timing of occurrence, habitat association(s) and requirements for relevant life
1107 cycle stages, and sensitive periods (e.g., seasonal, time of day), including estimates of
1108 abundance or density where available,
 - 1109 ○ describe and quantify habitat based on the best available existing information and recent field
1110 habitat surveys, including:
 - 1111 ■ maps with habitat survey locations (including details of spatial and temporal coverage),
 - 1112 ■ maps with expected areas of concentration of key birds, including sites likely used over the
1113 course of the year for breeding, feeding, wintering, movement, resting or roosting, staging
1114 and migrating, as applicable,
 - 1115 ■ description and maps of the location of areas important to birds (e.g., bird sanctuaries), and
1116 of residences and critical habitat for species at risk as defined in recovery strategies,
 - 1117 ■ maps of rare, unique or threatened habitat or habitat features (e.g., old forest, species-
1118 specific breeding habitat, eskers and other similar geological formations), and a description
1119 of how birds are expected to use that habitat year-round (e.g., winter, spring migration,
1120 breeding season, fall migration, movement corridors) based on available information,
 - 1121 ■ maps of the project’s footprint relative to information about birds, identifying temporary and
1122 permanent infrastructure, and description of whether project components avoid sensitive
1123 habitat such as breeding territories or areas of seasonal concentration, and

- 1124 ▪ maps of nests that will be or have been added to the [Abandoned Nest Registry](#) and are
1125 being monitored to comply with the [Migratory Birds Regulations, 2022](#); and
- 1126 • justify whether existing information and recent field habitat surveys are sufficient to support the
1127 assessment of likely residual and cumulative effects on the birds identified and to determine the extent
1128 to which these effects are significant considering uncertainties and bias, as well as spatial and
1129 temporal representation, in the baseline. If not sufficient, conduct and include additional field bird or
1130 habitat surveys, as needed to assess effects, which may include:
- 1131 ○ targeted field bird surveys of presence or locations of species at risk where unique mitigation
1132 measures and/or follow-up could be required,
- 1133 ○ field habitat surveys to identify rare habitats or geological features, nests, and critical habitat for
1134 species at risk, and
- 1135 ○ field bird surveys where risk or uncertainty related to effects on birds are moderate to high,
1136 where bird presence, population or distribution are poorly understood (e.g., flyway or stopover
1137 that could be affected to a high extent), or where appropriate mitigation measures are unknown
1138 or uncertain.

1139 **6.3.2 Effects to birds and their habitat**

1140 The Impact Statement must:

- 1141 • describe the likely effect pathways to birds from specific project components (temporary and
1142 permanent) and activities during all phases of the project, considering risks of mortality (e.g., from
1143 collisions, predators) and disturbances (e.g., from light, presence of workers; and
- 1144 • describe residual and, if applicable, cumulative effects to birds resulting from the likely effect pathways
1145 to birds, including an estimate of effects resulting from habitat changes (e.g., degradation, removal)
1146 and of effects to species at risk critical habitat.

1147 **6.4 Terrestrial wildlife and their habitat**

1148 **6.4.1 Baseline conditions**

1149 The Impact Statement must:

- 1150 • describe and map the biodiversity of terrestrial wildlife species (e.g., amphibians, reptiles, mammals)
1151 and wildlife habitats that are found or are likely to be found in the study area;
- 1152 • identify wildlife species of ecological importance and of importance for human uses (e.g., recreational
1153 and economic uses), other than birds, that are likely to be directly or indirectly affected in the study
1154 areas. For each species:

- 1155 ○ describe their distribution and location, abundance and population status, lifecycle, known
- 1156 residences, seasonal ranges, migration and movements, wildlife corridors and physical barriers
- 1157 to movement, habitat requirements, and sensitive periods (e.g., seasonal, diurnal and nocturnal),
- 1158 and
- 1159 ○ provide a map showing the highest concentrations or areas of use by species, differentiating
- 1160 between federal and non-federal lands;
- 1161 ● identify the metrics and biotic and abiotic indicators that are used to characterize the baseline
- 1162 conditions (e.g., population size, recruitment rates) and discuss the rationale for their selection;
- 1163 ● describe the use and harvesting of fur-bearing species
- 1164 ● describe any locations within the study area that might constitute sensitive areas for terrestrial wildlife,
- 1165 and show on maps, such as:
 - 1166 ○ protected areas or sensitive habitats as described in [Sections 2.2 Project components and](#)
 - 1167 [activities](#) and [6.5 Species at risk and their habitat](#); species at risk critical habitat that has been
 - 1168 designated or is under consideration,
 - 1169 ○ travel corridors and alternate routes for travel corridors that could potentially be affected by the
 - 1170 project;
- 1171 ● identify and describe any invasive species, introduced species of concern; and other species that may
- 1172 be considered as “weed species” in the project’s context;
- 1173 ● describe the levels of disturbance currently affecting wildlife and wildlife habitat, such as habitat
- 1174 fragmentation and the extent of human access and use; and,
- 1175 ● describe the natural disturbance regimes and their sources (e.g., fire, floods, droughts, diseases,
- 1176 insects and other pests).

1177 **6.4.2 Effects to terrestrial wildlife and their habitat**

1178 The Impact Statement must:

- 1179 ● describe the potential effects of the project on wildlife and wildlife habitat (including population level,
- 1180 regional or local sub-population effects), due to the following, as applicable:
 - 1181 ○ site preparation, vegetation removal, particularly of habitats important for breeding, overwintering
 - 1182 or that act as movement corridors,
 - 1183 ○ noise, light and sensory disturbances,
 - 1184 ○ water and air emissions or dust,
 - 1185 ○ bioaccumulation of contaminants in wildlife,
 - 1186 ○ habitat loss and fragmentation,
 - 1187 ○ introduction of invasive species,
 - 1188 ○ altered predator-prey relations, such as increased wildlife predation,

- 1189 ○ increase in the spread and prevalence of diseases and other health concerns;
- 1190 • provide an evaluation of the effects of the project, including any new road access, pipeline,
- 1191 transmission line or other rights of way on wildlife mortality risk and movement patterns;
- 1192 • describe effects to wildlife biodiversity, considering biodiversity metrics and the biotic and abiotic
- 1193 indicators selected, including changes to regional biodiversity and local and regional ecosystems;
- 1194 • describe and quantify, where possible, the potential effects to wildlife, including acute and chronic
- 1195 effects to wildlife health, of changes to air and water quality (e.g., from radiation exposure,
- 1196 contaminants, effluents, atmospheric emissions, dust deposition, and bioaccumulation);
- 1197 • describe and assess the resilience and recovery capabilities of wildlife populations and habitats to
- 1198 disturbance, including the anticipated potential for the project area to be returned to its existing state
- 1199 with respect to wildlife populations and their habitat following operations.

1200 6.5 Species at risk and their habitat

1201 6.5.1 Baseline conditions

1202 The Impact Statement must:

- 1203 • provide a list of all species at risk that are likely to be in the project area, including:
 - 1204 ○ species listed in Schedule 1 of the federal [Species at Risk Act](#),
 - 1205 ○ species assessed by COSEWIC as extirpated, endangered, threatened or of special concern. It
 - 1206 is recommended to refer to the most recent COSEWIC annual report for the list of assessed
 - 1207 wildlife species posted on its website;
- 1208 • for each species at risk identified in the list above:
 - 1209 ○ describe abundance (including relative abundance in each habitat type), population status, and
 - 1210 distribution,
 - 1211 ○ provide a map showing survey sites, species sighting records, the areas of highest concentration
 - 1212 or areas of use,
 - 1213 ○ provide information and/or mapping at an appropriate scale for residences, seasonal
 - 1214 movements, movement corridors, habitat requirements, key habitat areas, identified or proposed
 - 1215 Critical Habitat and/or recovery habitat (where applicable), differentiated by federal and non-
 - 1216 federal lands,
 - 1217 ○ describe the general life history (e.g., breeding, foraging) that may occur in the project area, or
 - 1218 be affected by the project, and
 - 1219 ○ identify critical periods (e.g., denning, rutting, spawning, calving, breeding, roosting), setback
 - 1220 distances, or other restrictions related to these species;

- 1221 • provide any published studies that describe the regional importance (including economic), abundance
1222 and distribution of species at risk, including recovery strategies or plans;
- 1223 • describe the source of the Species at Risk data, including survey design, sampling protocols and data
1224 handling
 - 1225 ○ when using recognized standards, provide details of any modifications to the recommended
1226 methods and rationale for these modifications,
 - 1227 ○ indicate who was involved in the development of the baseline surveys (e.g., federal/provincial
1228 wildlife experts, specialists, local communities, and Indigenous Nations or communities),
 - 1229 ○ where applicable, the proponent should contact provincial or local government authorities to
1230 determine additional data sources and survey methods.

1231 6.5.2 Effects to species at risk and their habitat

1232 The Impact Statement must:

- 1233 • describe the potential effects of the project on species at risk listed under Schedule 1 of the *Species at*
1234 *Risk Act* as listed under [Section 1.2 Selection of Valued Components](#), and their critical habitats
1235 (including its extent, availability and presence of biophysical attributes). The analysis of potential
1236 effects should be provided separately for each species at risk, including separate analyses for each
1237 activity, component and phase of the project, including possible radiological effects;
- 1238 • describe the potential effects of the project on species assessed by the COSEWIC as extirpated,
1239 endangered, threatened or of special concern (flora and fauna), as well as on the potential habitat of
1240 these species that are not currently listed under the *Species at Risk Act*;
- 1241 • clearly identify the locations of federal and non-federal lands within the study area and differentiate
1242 between them in the presentation of information regarding species at risk;
- 1243 • describe the area, biophysical attributes and location of habitat including critical habitat affected (e.g.,
1244 destroyed, permanently altered, disrupted), including direct and indirect effects due to vibration and
1245 artificial light in the project area on usage patterns and migratory behaviour of species at risk; and,
- 1246 • describe the residual effects that are likely to result from the project after avoidance and minimization
1247 measures have been applied, including the extent, duration and magnitude of the effects on:
 - 1248 ○ the number of individuals killed, harmed, harassed
 - 1249 ○ and the number of residences damaged or destroyed.

1250 7. Human Environment

1251 The IAA requires the consideration of changes to health, social or economic conditions and the positive
1252 and negative consequences of these changes that are likely to be caused by the carrying out of the
1253 designated project. The IAA also requires the assessment of adverse effects within federal jurisdiction,

1254 including non-negligible adverse changes occurring in Canada to the health, social or economic conditions
1255 of Indigenous Peoples.

1256 Section 7 of the Integrated Guidelines presents a holistic approach to the requirements for health, social,
1257 and economic conditions of those living in the project study area, including the following distinct groups to
1258 work with in completing the requirements in Section 7 of the Integrated Guidelines:

- 1259 • individuals living in the project study area, including Indigenous Peoples and members of the public
1260 (referred to collectively as local peoples);
- 1261 • broad populations living in the project study area (referred to as local communities); and
- 1262 • Indigenous Nations and communities.

1263 Unless noted otherwise, and where Indigenous Nations and communities have agreed to including the
1264 information in the Impact Statement, all requirements in Section 7 apply to the three groups listed above.
1265 For the Impact Statement, the goal of Section 7 is to collect relevant baseline information, conduct effects
1266 analysis and provide potential mitigation measures as a result of local community and Indigenous
1267 engagement efforts in the project study area. Collection of baseline data and effects analysis in Section 7
1268 should consider health, social, and economic inequalities between Indigenous Nations and communities
1269 and local peoples.

1270 [Section 8 Indigenous Nations and communities](#) of the Integrated Guidelines presents a targeted approach
1271 by building on the information in Section 7 and providing Indigenous Nation or community-specific detailed
1272 requirements based on input from each Indigenous Nation or community. The proponent must allow those
1273 Indigenous Nations and communities to identify how their information in Sections 7 and 8 is presented. The
1274 proponent may provide information in response to Sections 7 and 8 together, if and when appropriate, and
1275 as determined by participating Indigenous Nations and communities.

1276 The proponent should work with, at minimum, the Township of Ignace, City of Dryden, Municipality of Sioux
1277 Lookout, Municipality of Machin, Village of Wabigoon Local Services Board, Melgund Local Services
1278 Board, City of Kenora, Municipality of Red Lake, Township of Ear Falls, Township of Pickle Lake, Township
1279 of Sioux Narrows-Nestor Falls, and other self-identifying local communities, as well as local peoples, when
1280 fulfilling the requirements of Section 7. The proponent must consider the Indigenous Nations and
1281 communities when fulfilling the requirements in Section 7 and [Section 8.3.2](#).

1282 The Ontario Ministry of Citizenship and Multiculturalism has determined that the property meets the criteria
1283 for archaeological assessment, marine archaeological assessment, and a Cultural Heritage Evaluation
1284 Report (cultural heritage studies) due to the project's proximity to provincially registered archaeological
1285 sites and the age of potential heritage buildings or structures on non-federal lands. The information

1286 requirements in Sections [7.3.1](#), [7.3.2.1](#) and [7.5](#) related to non-Indigenous cultural heritage² are optional,
1287 should the proponent choose to leverage the Impact Statement to meet the requirements of the [Ontario](#)
1288 [Heritage Act](#).

1289 **7.1 Health, Social and Economic Conditions**

1290 **7.1.1 General baseline conditions**

1291 For all baseline conditions in Section 7 of the Integrated Guidelines, the Impact Statement must:

- 1292 • describe relevant community history or context, including historical impacts on health, social, and
1293 economic conditions;
- 1294 • provide a comparison of data at the provincial, regional or national level, if possible, to better interpret
1295 baseline conditions;
- 1296 • describe baseline conditions using disaggregated data for diverse population groups and their different
1297 access to resources, opportunities and services within the community to support GBA Plus; and
- 1298 • be sufficiently detailed to provide a comprehensive understanding of the health, social and economic
1299 conditions, including relevant trends.

1300 **7.1.2 General effects assessment**

1301 The Impact Statement must:

- 1302 • assess positive and adverse effects of the project on health, social and economic conditions;
- 1303 • describe how the differential effects identified in the GBA Plus results - relating to human health, social
1304 and economic conditions- affect diverse population groups (e.g., Indigenous women, girls, gender-
1305 diverse and Two-Spirit peoples);
- 1306 • describe potential effects from the influx of transient workers on health, social, and economic
1307 conditions, including local housing, services and infrastructure, traditional activities, recreational
1308 activities (e.g., hunting, fishing, camping), and community safety (e.g., gender-based violence); and
- 1309 • describe the interconnections between social, health and economic conditions and other VCs, as well
1310 as interactions between effects.

² Information requirements in Section 7 related to non-Indigenous cultural heritage are denoted with an asterisk

1311 As applicable to the assessment, the analysis should describe the goals of local or regional land use plans
1312 or local or regional development plans and the extent to which the project is aligned with such plans to
1313 avoid or enhance effects. The effects assessment should explore and discuss opportunities by which
1314 benefits to local communities can be enhanced.

1315 7.2 Health Conditions

1316 7.2.1 Baseline for health conditions

1317 The Impact Statement must:

- 1318 • describe current health conditions in the context of physical, mental and social well-being and
1319 incorporate a determinants of health approach that extends beyond biophysical health considerations.
 - 1320 ○ provide a demographic profile for local communities and Indigenous Nations and communities,
1321 and describe other community-relevant health information;
 - 1322 ○ develop community health profiles that describe the overall biophysical, social and economic
1323 health of each Indigenous Nation and community and local community, including baseline
1324 information. Health profiles should include the [Community Well-Being Index](#), consider
1325 psychosocial factors, and be co-developed, where possible.
 - 1326 ○ include a description of any context-specific definitions of health and well-being, from the
1327 perspective of Indigenous Nations and communities and local communities;
 - 1328 ○ include regionally available data and health studies, including those related to mercury; and
 - 1329 ○ use, where available, secondary information sources (e.g., Public Health Agency of Canada,
1330 Statistics Canada, Indigenous Services Canada, Indigenous health authorities, provincial health
1331 authorities, municipalities);
- 1332 • be sufficiently detailed to describe the pathways by which the project's influence on the determinants of
1333 health may affect health outcomes;
- 1334 • provide the approximate location on a map and distance of likely human receptors, including
1335 foreseeable future receptors, which could be affected by changes in air, water, country food quality,
1336 and noise and light levels, including:
 - 1337 ○ a description of land uses and activities by local human receptors including, but not limited to,
1338 gathering, hunting, trapping and fishing, and traditional, cultural and recreational activities;
 - 1339 ○ registered or recognized hunting, guiding, or trapping areas, preferred harvesting areas, and
1340 recreational and commercial fishing areas;
 - 1341 ○ a description for Indigenous Peoples' permanent and temporary residences (e.g., camps
1342 identified in collaboration with Indigenous Peoples);

- 1343 ○ sensitive receptors (e.g., daycares, schools, hospitals, community centres, retirement
- 1344 complexes, health care centres) near the project;
- 1345 • describe surface waterbodies used for recreational purposes, specifying whether their use is seasonal
- 1346 or year-round, as well as their distance from project activities. For Indigenous Nations and
- 1347 communities, identify surface waterbodies used for traditional and cultural practices, where Indigenous
- 1348 Nations and communities have agreed to including this information in the Impact Statement.
- 1349 • describe drinking water sources and intakes, both surface and groundwater (permanent, seasonal,
- 1350 periodic or temporary) industries, local peoples, and municipalities. Include flow rates, approximate
- 1351 wellhead capture zones, and the distance from project activities;
- 1352 • describe the consumption of country foods (traditional foods) as a health-related behaviour, including,
- 1353 if possible, identifying the subpopulations consuming foods, along with what species are used,
- 1354 quantities, frequency, harvesting locations and how the data were collected;
- 1355 • provide baseline contaminant concentrations, including mercury, in ambient air, sediment, drinking
- 1356 water and tissues of country foods consumed by Indigenous Nations and communities and local
- 1357 communities. The proponent should work with Indigenous Nations and communities and local
- 1358 communities to collect tissue samples where appropriate and to ensure samples collected are
- 1359 representative of the population;
- 1360 • describe the level of food security and food sovereignty within Indigenous Nations and communities
- 1361 and local communities;

1362 Guidance for developing the appropriate baseline information relevant to human health is identified in the

1363 [Section 7](#) preamble (above), and the proponent must justify any deviation from this guidance. The

1364 proponent should refer to the Health Canada guidelines to ensure that best practices are followed in

1365 collecting baseline information for the assessment. Receptor exposure characteristics (for example,

1366 inhalation or ingestion rates), when used, should be referenced from accepted Canadian or international

1367 sources.

1368 **7.2.2 Effects on health conditions**

1369 The Impact Statement must:

- 1370 • describe any potential project effects on community health profiles (see [Section 7.2.1](#));
- 1371 • describe potential effects of the project on human health:
 - 1372 ○ provide a Health Impact Assessment and a Human Health Risk Assessment (HHRA) ;
 - 1373 ■ conduct a problem formulation exercise and/or preliminary model predictions to determine
 - 1374 whether a complete HHRA is required. The proponent must provide a rationale if the
 - 1375 problem formulation and/or preliminary model predictions indicate that a complete HHRA is
 - 1376 not warranted. The problem formulation exercise and HHRA, if a HHRA is conducted, must
 - 1377 use best practices in health risk assessments methods (see Health Canada, 2023).

- 1378 [Guidance for Evaluating Human Health Impacts Effects in Impact Assessment: Human](#)
 1379 [Health Risk Assessment](#));
- 1380 ■ describe and quantify specific thresholds used for HHRA and document if different
 1381 thresholds were considered for vulnerable populations, including by sex and age. Provide a
 1382 justification if any applicable threshold was not used;
 - 1383 ○ apply a determinants of health lens and describe any potential health effects resulting from
 1384 changes on biophysical, social and economic determinants of health, including relevant
 1385 interconnections and interactions;
 - 1386 ○ describe any potential effects on health inequalities between Indigenous Nations and
 1387 communities and local communities;

1388 **7.2.2.1. Effects on biophysical determinants of health**

1389 The Impact Statement must:

- 1390 ● document and take into account tolerance thresholds for potential adverse effects on health identified
 1391 by Indigenous Nations and communities and local peoples and communities;
- 1392 ● provide an assessment of the potential effects on human health in consideration of, but not limited to,
 1393 potential changes in:
 - 1394 ○ air quality;
 - 1395 ○ noise exposure and vibration;
 - 1396 ○ light levels;
 - 1397 ○ drinking water quality and quantity including flow rates, as applicable;
 - 1398 ■ assessment should be based on the strictest guideline values for the following criteria:
 1399 [Guidelines for Canadian Drinking Water Quality \(GCDWQ\)](#), or any relevant provincial water
 1400 quality standards or guidelines, and compliance with existing provincial regulatory
 1401 mechanisms;
 - 1402 ■ describe the fate and estimated travel times of contaminants of potential concern (COPC)
 1403 from contaminant source areas to drinking water sources;
 - 1404 ○ current and future availability and quality of country foods;
 - 1405 ■ describe how the project-related contaminants (as identified in Sections [5.3 Topography,](#)
 1406 [soil and sediment,](#) [5.5 Atmospheric, acoustic and visual environment,](#) and [5.6 Groundwater](#)
 1407 [and surface water](#)) can potentially end up in the water, air or soil, can be absorbed in
 1408 country foods (i.e., foods that are trapped, fished, hunted, harvested or grown for
 1409 subsistence, cultural or medicinal purposes);
 - 1410 ■ provide the rationale if a determination is made that an assessment of the potential for
 1411 contamination of country foods is not required or if some contaminants are excluded from
 1412 the assessment;

- 1413 ○ current and future availability and quality of water for drinking, recreational and cultural uses;
- 1414 • estimate radiological doses to:
 - 1415 ○ workers from routine and non-routine work practices, including the maximum annual effective
 - 1416 and equivalent doses to categories of workers;
 - 1417 ○ to the general public through any direct or indirect pathways (e.g., environmental)
 - 1418 ○ Indigenous Peoples engaging in traditional practices in proximity to the project through any direct
 - 1419 or indirect pathways (i.e., hunting, trapping, fishing, harvesting, etc.)
 - 1420 ▪ describe and document the method used to estimate effective and equivalent doses
- 1421 • provide a detailed justification for every COPC or exposure route that would be excluded or eliminated
- 1422 from the assessment of the human health risks;
- 1423 • identify other potential pathways of exposure to contaminants;
- 1424 • provide an assessment of the carcinogenicity of diesel exhaust when diesel engines are a source of air
- 1425 pollutant emissions for the project;
- 1426 • in situations where project-related air, water or noise emissions meet local, provincial or federal
- 1427 guidelines, and yet concerns from local peoples were raised regarding human health effects, provide a
- 1428 description of the local peoples concerns and how they were or are to be addressed;
- 1429 • evaluate the potential risk to human and non-human biota from biocides and other means used to
- 1430 manage biohazards and invasive species; and
- 1431 • describe any project-related changes that could result in a positive health effect (e.g., remediation
- 1432 projects).

7.2.2.2. Effects on social determinants of health

1433

1434 The Impact Statement must:

- 1435 • document and take into account tolerance thresholds for potential adverse effects identified by
- 1436 Indigenous Nations and communities and local communities;
- 1437 • describe the potential positive and adverse health effects from project-related interactions to relevant
- 1438 social, cultural, psychosocial and economic factors along effect pathways and their respective
- 1439 indicators, reflecting the input of Indigenous Nations and communities and local communities;
- 1440 • identify and describe anticipated changes to determinants of health, including psychosocial factors,
- 1441 that may be related to the project, including:
 - 1442 ○ housing availability, housing affordability, home ownership and home value;
 - 1443 ○ demographic information on the region, including available descriptive statistics (e.g., age,
 - 1444 ethnicity, sex and gender, language);
 - 1445 ○ access to health and social services;
 - 1446 ○ access to green spaces, parks and recreational facilities;

- 1447 ○ community cohesion;
- 1448 ○ average income and wage inequality;
- 1449 ○ education level;
- 1450 ○ factors supporting mental health and community well-being (including perceived risks to personal
- 1451 community, and environmental, health and safety, and concern for future generations); and
- 1452 ○ safety of Indigenous women, girls and 2SLGBTQIA+ People (including concerns regarding
- 1453 gender-based violence);
- 1454 ● identify any emotional or social stress factor that may result from the project, particularly concerns
- 1455 regarding perceived public safety risks due to the project or due to potential accidents or malfunctions
- 1456 to those living in proximity to the project;
- 1457 ● describe potential effects on access to health, public safety, and social services, including the
- 1458 increased use of these services in local communities and the region;
- 1459 ● describe potential effects of project conditions (e.g., transient employment, high wages, high stress
- 1460 work, coupled with gender-based norms) on community safety, including increased risks of harm from
- 1461 family conflict, sexual exploitation, trafficking, and gender-and family-based violence, particularly
- 1462 during the construction phase;
- 1463 ● indicate the potential health effects, short-term or long-term, resulting from changes on community
- 1464 cohesion and perception of well-being and safety during each project phase;
- 1465 ● with permission from Indigenous Nations and communities, describe any potential avoidance of areas
- 1466 of project-related disturbances, or any potential changes to their relationship with the land, air, and
- 1467 water due to real or perceived changes to safety, environmental quality and tranquillity. Explain how
- 1468 these potential avoidances or relationship changes were considered in assessing potential effects on
- 1469 the diet and mental well-being;
- 1470 ● with regard to potential effects on food security and safety:
 - 1471 ○ describe changes in terms of quality, usage and stability of locally grown and country foods
 - 1472 (traditional foods) for local communities and Indigenous Nations and communities, including
 - 1473 possibilities of avoidance of certain country food sources or drinking or recreational water
 - 1474 sources due to the perception of contamination; and
 - 1475 ○ describe the potential effects related to these changes on the physical and mental health of local
 - 1476 communities and Indigenous Nations and communities due to the perception of contamination;
- 1477 ● describe any positive health effects (e.g., resulting from improved economic opportunities, increased
- 1478 access to services).

1479 7.3 Social Conditions

1480 7.3.1 Baseline for social conditions

1481 The Impact Statement must:

- 1482 • identify the social area of influence of the project;
- 1483 • describe the natural and cultural heritage of local communities, including maps for buildings, sites and
1484 things of historical, archaeological, paleontological or architectural significance in the study area,
1485 including land, natural features and resources considered to be heritage*;
- 1486 • describe baseline conditions for land and resource use of local communities, including:
 - 1487 ○ a brief history of human occupancy and of land resource use in the study area based on
1488 selected spatial and temporal boundaries (include maps, if possible), including information on
1489 major industries in the vicinity of the project site;
 - 1490 ○ a consideration of relevant current and future land use from local, regional, or provincial land use
1491 or resource development plans;
 - 1492 ○ sites or areas that are used by local peoples either as a permanent residence or as a
1493 seasonal/temporary location, and the number of people using each identified site or area
1494 (include a map, if possible);
 - 1495 ○ identify remote, rural and urban residential areas (including seasonally and year-round occupied
1496 establishments);
 - 1497 ○ identify parks and primary recreation areas (including local and provincial/territorial parks,
1498 recognized scenic areas, and recreational water bodies;
 - 1499 ○ identify monitored or administered forest areas (including forests under agreement, areas
1500 designated for timber sales) and bear management areas; and
 - 1501 ○ any other relevant land and resource use baseline information identified in [Section 7.2.1](#).
- 1502 • describe baseline conditions for community well-being and way of life, including:
 - 1503 ○ community cohesion, including level of support and engagement in community or neighborhood,
1504 social networks and social activities;
 - 1505 ○ the psychosocial environment and its influence on community well-being;
 - 1506 ○ relevant protection factors that contribute to community well-being and resilience, including any
1507 interactions between these factors (e.g., sense of belonging, cultural continuity, language, family
1508 supports);
 - 1509 ○ demographic characteristics and major socio-cultural values and concerns;
 - 1510 ○ relevant historical local community background; and
 - 1511 ○ applicable history of the local community with previous developers and industry.

- 1512 • describe baseline conditions for services and infrastructure, including:
 - 1513 ○ describe and evaluate the existing local, regional, Indigenous Nations and communities, and
 - 1514 local community infrastructure and services in the study areas. Evaluations should consider the
 - 1515 existing capacity, functionality, and ability of infrastructure and services to meaningfully meet the
 - 1516 needs of local peoples:
 - 1517 ■ road and rail infrastructure, traffic and safety, with particular consideration for school
 - 1518 transportation routes and intersections along Highway 17 between Ignace and Dryden;
 - 1519 ■ railways;
 - 1520 ■ airports;
 - 1521 ■ information related to existing traffic;
 - 1522 ■ pipelines, water mains and sewer lines;
 - 1523 ■ power lines and utilities;
 - 1524 ■ housing, accommodation and lodging (e.g., affordability including rental prices, availability,
 - 1525 suitability), including camping facilities and recreational dwellings;
 - 1526 ■ public transportation;
 - 1527 ■ recreation and parks;
 - 1528 ■ waste management;
 - 1529 ■ educational services, facilities, and childcare, including enrolment capacity and utilization
 - 1530 rates;
 - 1531 ■ elder and long-term care and services;
 - 1532 ■ Indigenous-specific health services and programs (e.g., land-based healing, traditional
 - 1533 medicine, mental wellness teams);
 - 1534 ■ existing health services and programs, including mental health services, healthcare
 - 1535 infrastructure and provider capacity and emergency and ambulance services;
 - 1536 ■ police and fire departments;
 - 1537 ■ social, recreational and community services; and
 - 1538 ■ all other potentially affected infrastructure and services.
 - 1539 ○ capacity of municipal government and Indigenous Nations and communities to collaborate with
 - 1540 provincial and federal authorities and to secure funding and support required to upgrade the
 - 1541 current regional infrastructure and services; and
 - 1542 ○ where applicable, describe the distinct end users of infrastructure and include any agreements
 - 1543 (e.g., Municipal-Type Service Agreements) with municipal or regional governments and
 - 1544 Indigenous Nations and communities for the access and use of infrastructure and services for
 - 1545 community needs.
 - 1546 ○ describe baseline conditions for navigation, including:

- 1547 ▪ existing navigable waterways and all their uses; and
- 1548 ▪ potentially affected waterway users and existing concerns regarding navigable water use
- 1549 and access.

1550 **7.3.2 Effects on social conditions**

1551 **7.3.2.1 Effects on community well-being and way of life**

1552 The Impact Statement must:

- 1553 • document and take into account tolerance thresholds for potential adverse effects identified by
- 1554 Indigenous Nations and communities and local communities;
- 1555 • describe the likely effects on the project’s contribution to components of the Community Well-Being
- 1556 Index for local peoples located in the LSA identified as of importance through engagement with
- 1557 Indigenous Nations and communities and local communities;
- 1558 • describe the potential effects to physical and cultural heritage, sites and things of historical,
- 1559 archaeological, paleontological or architectural significance in the study areas, including land, natural
- 1560 features and resources considered to be or have the potential to be heritage*.
- 1561 • describe potential adverse and positive effects, at the community level, of changes to community well-
- 1562 being including, but not limited to:
 - 1563 ○ safety and security;
 - 1564 ○ food security;
 - 1565 ○ income inequity;
 - 1566 ○ housing prices and availability (including social housing);
 - 1567 ○ property value (e.g., land, homes and businesses)
 - 1568 ○ cost of living;
 - 1569 ○ non-commercial/trade economy; and
 - 1570 ○ those conditions considered for analysis of determinants of health in [Section 7.2](#);
- 1571 • consider potential effects related to greater propagation of infectious diseases and gender-based
- 1572 violence;
- 1573 • describe, at the community level, the expected interactions and their effects, between the project's
- 1574 construction, operation and maintenance workforce and local communities, businesses and residents;
- 1575 • describe in-and out-migration effects, related to activities in all phases of the project lifecycle, including
- 1576 changes in population;
- 1577 • evaluate effects on access, ownership and use of resources (e.g., land tenure, food, water, social
- 1578 infrastructure); and

- 1579 • describe any positive effects on well-being (e.g., resulting from improved economic opportunities,
1580 increased access to services).

1581 **7.3.2.2. Effects on services and infrastructure**

1582 The Impact Statement must:

- 1583 • describe the adverse and positive effects to the local and regional services and infrastructure, including
1584 their capacity and functionality, and anticipating and considering increased demand including those
1585 identified under [Section 7.3.1](#):
- 1586 ○ take into account potential effects arising from potential emergencies and from a higher risk of
1587 accidents for each phase of the project, (e.g., a higher risk of impact on the road system and
1588 emergency services during the construction phase due to increased vehicle traffic);
 - 1589 • describe any need for government or proponent expenditures for new or expanded services, facilities
1590 or infrastructure, arising out of project-related effects;
 - 1591 • identify any navigable waterways potentially impacted by the project, including the associated type of
1592 work that may impact it, the physical characteristics of the waterbody or watercourse, the known or
1593 suspected past, current or future use, potentially affected waterway users, and physical impacts from
1594 proposed work upstream and downstream.

1595 **7.3 Economic Conditions**

1596 **7.4.1 Baseline for economic conditions**

1597 The Impact Statement must:

- 1598 • describe the local and regional economic conditions for Indigenous Nations and communities and local
1599 communities, including:
- 1600 ○ main economic activities in the study areas, including the extent to which each activity
1601 contributes to the local and regional economies;
 - 1602 ○ demographic features of the local and regional population, including educational attainment and
1603 income;
 - 1604 ○ prevalent economic concerns and economic aspirations of residents, families and workers in the
1605 study area;
 - 1606 ○ any local, Indigenous, provincial, or federal economic development and land use plans for the
1607 study areas;
 - 1608 ○ existing employment rates and economic well-being in the study area and impacted
1609 communities;

- 1610 ○ labour force indicators, including participation rates, unemployment rates, employment by
- 1611 industry and by occupation, the availability of skilled and unskilled workers, existing working
- 1612 conditions, wages and average salary range, full-time and part-time employment, and an
- 1613 assessment of any existing gaps in employment equity;
- 1614 ○ existing training opportunities to examine gender, Indigenous, and diverse subgroup inequities
- 1615 such as for skilled trades and in wages and qualifications;
- 1616 ○ local and regional workforce development and training plans, including those specific for
- 1617 Indigenous Peoples and Indigenous Nations and communities;
- 1618 ○ an overview of the local, regional, national, and international businesses that may provide
- 1619 supplies and services required for the project;
- 1620 ○ current use of land and waterbodies for economic activities in the study areas including a
- 1621 description of tourism, hunting, guiding, recreational and commercial fishing (including catch
- 1622 rates, visitation rates, and angling days), trapping, outdoor recreation, outfitters, and forestry;
- 1623 ○ local peoples and communities, and Indigenous Nations and communities interested in local land
- 1624 uses and resources for previous projects in the regional study area; and
- 1625 ● describe agricultural activities for Indigenous Nations and communities and local communities.

1626 7.4.2 Effects on economic conditions

1627 7.4.2.1 Effects on employment

1628 The Impact Statement must:

- 1629 ● describe the potential changes in employment including:
 - 1630 ○ an estimate of the direct, indirect and induced employment, including income or wages, at each
 - 1631 phase of the project (including an estimate of the full-time equivalent (FTE) employment, and an
 - 1632 estimate of full- and part-time employment);
 - 1633 ○ a description of the types and duration of employment anticipated to be created at each phase of
 - 1634 the project;
 - 1635 ○ a description of skill and education levels required for the positions;
 - 1636 ○ anticipated workplace policies and programs, including hiring policies and programs, employee
 - 1637 assistance programs and benefits programs;
 - 1638 ○ an estimate of anticipated workforce region of origin (i.e., local, regional, out-of-province or
 - 1639 international employees);
 - 1640 ○ an estimate of the ability of the local and regional labour market to meet the employment
 - 1641 demand;
 - 1642 ○ an analysis of the potential for labour shortages in relevant sectors as a result of the project;

- 1643 ○ a description of the plans and the justification for hiring of temporary workers to make up for any
- 1644 local shortage of labour and skills;
- 1645 ○ situations where the project may cause the displacement of local workers; and
- 1646 ○ any potential short, medium and long-term changes to the local and regional labour markets as a
- 1647 result of the project;
- 1648 ● describe expected investments in training and skills development opportunities, including training and
- 1649 funding programs required to improve employment opportunities for local peoples and Indigenous
- 1650 Nations and communities, and
- 1651 ● describe the project's diversity and inclusion workforce plans, policies and practices, including related
- 1652 to workplace safety, cultural training, and to increase the employment of Indigenous Peoples,
- 1653 Indigenous Nations and communities, women and diverse population groups.

7.4.2.2 Effects on economies and economic participation

1654 The Impact Statement must:

- 1657 ● provide an estimate of contributions to gross domestic product at the local, provincial and federal
- 1658 levels;
- 1659 ● assess potential positive and adverse effects to the local, Indigenous, regional, provincial and national
- 1660 economies (e.g., job creation, staff recruitment and retention for local employers, youth retention in the
- 1661 area, and indirect effects on local businesses total dollar value of contracts):
 - 1662 ○ provide an estimate of the anticipated levels of local and regional economic participation in the
 - 1663 project in comparison to the total project requirements (e.g., total dollar value of contracts);
 - 1664 ○ include a description of effects on Indigenous Nations and communities' ability to manage or
 - 1665 improve social and economic conditions including in relation to engaging in traditional and other
 - 1666 economic activities;
- 1667 ● describe Indigenous economic participation in the project (e.g., number of workers), including;
 - 1668 ○ studies involving socio-economic projections including workforce and population must be
 - 1669 completed collaboratively with Indigenous Nations and communities;
 - 1670 ○ collaboration with Indigenous Nations and communities to develop training, employment and
 - 1671 procurement strategies with priority for members of, and businesses owned by members of
 - 1672 Indigenous Nations and communities;
 - 1673 ○ outline the elements, where appropriate, of any Indigenous Nation and community-specific
 - 1674 benefit plans, including economic development, whether through an agreement or otherwise.
- 1675 ● describe in general terms, any economic benefit agreements under consideration or concluded with
- 1676 local communities;

- 1677 • describe, if applicable, any actions to increase procurement from local or regional businesses, and
1678 from businesses owned by Indigenous Peoples, Indigenous Nations and communities, women, or
1679 diverse population groups;
 - 1680 • describe the potential effects of changes to economic conditions for specific sectors, for example:
1681 ○ fishing, hunting, guiding and trapping;
1682 ○ commercial outfitters;
1683 ○ commercial recreation and tourism;
1684 ○ retail and hospitality;
1685 ○ agriculture;
1686 ○ forestry; and
1687 ○ harvesting (e.g., bait harvesting)
 - 1688 • describe situations when the project may directly or indirectly create economic hardships for, or the
1689 displacement of, other industries, businesses and companies in the region (e.g., construction industry
1690 and low wage jobs);
 - 1691 • describe the potential effects of changes to land and resources used in local economic activity,
1692 including potential effects of the project on the availability, value and quality of commercial land and
1693 real estate.
- 1694 The economic information provided will be made publicly available and should not contain confidential
1695 business information.

1696 **7.5 Mitigation and enhancement measures for health,** 1697 **social, and economic conditions**

1698 The Impact Statement must:

- 1699 • describe the proposed mitigation and enhancement measures for effects on human health, including:
1700 ○ effects identified related to Indigenous Peoples, Indigenous Nations and communities' or local
1701 communities' health profiles;
1702 ■ take into account perceived effects as identified by local peoples, Indigenous Nations and
1703 communities, and local communities
- 1704 ○ any additional mitigation considered if the level of emissions from a particular project emission or
1705 effluent discharge is below or at the applicable limits. If a project-related change is substantial
1706 (even within established limits) as a result of local or regional circumstances, the proponent must
1707 provide additional mitigation to minimize pollution and risks to human health;

- 1708 ○ when potential effects on human health exist due to exposure to a non-threshold contaminant
1709 (e.g., certain air pollutants such as fine particulate matter and nitrogen dioxide, describe
1710 mitigation aimed at reducing residual effects to as low a level as reasonably possible;
- 1711 ○ how radiation protection measures maintain doses to the public and the environment to a level
1712 that is As Low As Reasonably Achievable (ALARA) through the application of Best Available
1713 Technology and Techniques Economically Achievable (BATEA);
- 1714 ■ calculated doses to persons, both on and offsite, should be traceable to the input data (for
1715 example, receptor exposure characteristics, relevant radiological data). Sample dose
1716 calculations should be included that demonstrate the link from input data (such as
1717 concentrations of radionuclides in air) to doses to persons, with all relevant assumptions
1718 provided;
- 1719 ● identify and describe the proposed mitigation and enhancement measures that will be implemented for
1720 all social effects, taking into account local, Indigenous and regional land use and development plans,
1721 including:
- 1722 ○ effects on infrastructure and services;
- 1723 ○ effects on community well-being and resilience;
- 1724 ○ mitigation considered for heritage and structures, sites, and things of significance, as well as
1725 contingency plans and communications plans in the event of such discoveries during field
1726 studies or project activities;
- 1727 ○ mitigation measures for effects on physical and cultural heritage or any structure, site, or thing
1728 that is of historical, archaeological, paleontological, or architectural significance should be
1729 provided and supported by technical heritage studies*; and
- 1730 ○ opportunities to enhance positive impacts
- 1731 ● describe the proposed mitigation and enhancement measures that will be implemented for all
1732 economic effects, including:
- 1733 ○ mitigation measures to address potential shortage of skillsets (such as training programs), in
1734 order to adequately assess potential economic impacts and support the population;
- 1735 ○ describe plans, programs and policies to encourage contracting and procurement opportunities
1736 for local and regional businesses and Indigenous Nations and communities:
- 1737 ■ describe any procurement policies that facilitate the opportunities for local companies;
- 1738 ■ describe supplier network development initiatives, including the identification of potential
1739 local suppliers, and plans to provide them with information on technical, commercial and
1740 other requirements, and to debrief unsuccessful bidders;
- 1741 ■ describe technology transfer and research and development programs that will facilitate the
1742 use of local suppliers of goods and services and local employees, and that will develop new
1743 capabilities related to project requirements.
- 1744 ○ opportunities for enhancing positive effects, such as:

- 1745 ▪ education, training and hiring practices that encourage employment of local and Indigenous Peoples and Indigenous Nations and communities;
- 1746
- 1747 ▪ actions taken to increase job security for employees;
- 1748 ▪ actions taken to increase access to education and training opportunities for different groups (e.g., provision of transportation, childcare, flexible hours);
- 1749
- 1750 ▪ a summary of commitments made with respect to employment, training and trade; and
- 1751 ▪ training, education, and scholarship programs that the proponent plans to support in order to improve employment opportunities, including participation in and contribution to local training networks. Specify the types of employment targeted by these programs, the targeted demographics, such as local residents, Indigenous Peoples, Indigenous Nations and communities, and diverse population groups (e.g., Indigenous women), and describe any plans for ensuring that these programs are culturally responsive to targeted demographics;
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1758 **8. Indigenous Nations and** 1759 **communities**

1760 The Impact Statement must demonstrate how impacts on Indigenous Peoples and their rights were
1761 considered and assessed, including:

- 1762 • impacts resulting from any change to the environment on physical and cultural heritage or any
1763 structure, site or thing that is of historical, archaeological, paleontological or architectural significance;
- 1764 • impacts resulting from any change to the environment on the current use of lands and resources for
1765 traditional purposes;
- 1766 • changes to the health, social or economic conditions of Indigenous Peoples; and
- 1767 • any adverse impacts on Indigenous rights.

1768 Indigenous Nations or communities are best placed to understand how a project may impact them. The
1769 assessment of impacts on Indigenous Peoples and their rights must be done in collaboration with
1770 Indigenous Nations and communities as outlined in [Description of engagement with Indigenous groups](#).

1771 Where relevant, the proponent must collaborate with Indigenous Nations and communities to incorporate
1772 information from or about them into the assessment of all VCs (e.g., biophysical VCs). The proponent must
1773 respect each Indigenous Nation or community's preferences for assessing impacts, and discuss with each
1774 Indigenous Nation or community whether it is appropriate for the proponent to provide its conclusions
1775 regarding (residual and cumulative) impacts on Indigenous Peoples and their rights. If an Indigenous
1776 Nation or community has provided their own conclusion, the proponent is not required to provide one.

1777 Wabigoon Lake Ojibway Nation have shared that they will be implementing their own independent
1778 Regulatory Assessment and Approval Process (RAAP) for the project, grounded in Anishinaabe law,
1779 values, and responsibilities. In consideration of the RAAP, the proponent is expected to collaborate with
1780 Wabigoon Lake Ojibway Nation, where appropriate, in fulfilling the requirements of
1781 the Integrated Guidelines as they relate to Wabigoon Lake Ojibway Nation.

1782 The proponent is expected to engage with all Indigenous Nations and communities impacted by the
1783 project, as set out in the IEPP, and to describe the outcomes of that engagement in the Impact Statement.
1784 In addition, the results of engagement should be analyzed and presented separately for each Indigenous
1785 Nation or community. This Indigenous Nation or community-specific assessment does not need to repeat
1786 the entire analysis of each VC, but should summarize and present the information relevant to that
1787 Indigenous Nation or community. To the extent possible, each specific assessment should be done in a
1788 way that works best for that Indigenous Nation or community.

1789 Where requested by Indigenous Nations and communities, parts or all of the assessments of effects on the
1790 Indigenous Peoples and their rights can be combined in the Indigenous Nation or community-specific
1791 assessment. For example, effects on the current use of lands and resources for traditional purposes and
1792 impacts on Indigenous rights to hunt, fish, and trap can be reported together. Indigenous Nations and
1793 communities may also identify holistic VCs that encompass multiple environmental, health, social, or
1794 economic elements. Undertaking these assessments together, when requested, will support consistent
1795 conclusions. In all cases, the Impact Statement must demonstrate that all requirements were met.
1796 **Reference source not found.**

1797 **8.1 Indigenous physical and cultural heritage, and** 1798 **structures, sites, or things of significance**

1799 The Impact Statement must assess and clearly distinguish the impacts of the project to physical or cultural
1800 heritage from the impacts to specific structures, sites or things, as well as align with the considerations set
1801 out in the [Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing](#).

1802 **8.1.1 Baseline conditions for physical and cultural heritage,** 1803 **and structures, sites, or things of significance**

1804 Protocols and participation in any assessment of physical and cultural heritage, that are being carried out
1805 or led by the proponent, including but not limited to archaeological investigations, must be developed in
1806 collaboration with Indigenous Nations and communities and must consider provincial standards and
1807 standards set by Indigenous Nations and communities, and seek alignment between them.

1808 The Impact Statement must describe baseline conditions including:

- 1809 • how existing cumulative effects have already impacted physical and cultural heritage;
- 1810 • the location of physical and cultural heritage features on maps, if they have been shared by Indigenous
- 1811 Nations and communities with the proponent and if the proponent has permission from the Indigenous
- 1812 Nations and communities for the information to be shared publicly. If required, a coarser geographic
- 1813 resolution can be presented; and
- 1814 • how Indigenous Nations and communities participated, including by leading or contributing to studies.

1815 **8.1.2 Effects to physical and cultural heritage, and**

1816 **structures, sites, or things of significance**

1817 The Impact Statement must:

- 1818 • assess effects to physical and cultural heritage, and structures, sites or things of historical,
- 1819 archaeological, paleontological or architectural significance based on a comparison with and without
- 1820 the project, including:
 - 1821 ○ effects on structures, sites or things of significance including:
 - 1822 ■ burial sites,
 - 1823 ■ spiritual sites, including rivers and watercourses,
 - 1824 ■ cultural landscapes,
 - 1825 ■ teaching areas used to transfer knowledge between generations,
 - 1826 ■ sacred, ceremonial or culturally important places, plants, animals, objects, beings or things,
 - 1827 ■ places with archaeological potential or artefacts,
 - 1828 ■ historically occupied sites, and
 - 1829 ■ elements of the environment identified by Indigenous Nations and communities as having
 - 1830 heritage value,
 - 1831 ○ loss or destruction of physical and cultural heritage, including:
 - 1832 ■ oral histories,
 - 1833 ■ cultural values and experiences on the land,
 - 1834 ■ Indigenous governance systems and Indigenous laws tied to the landscape, and
 - 1835 ■ place names, language and other elements that make up a culture,
 - 1836 ○ changes to access to and/or experience with physical and cultural heritage,
 - 1837 ○ changes to the cultural value, spirituality, or importance associated with physical and cultural
 - 1838 heritage,
 - 1839 ○ changes to sacred, ceremonial or culturally important places, objects or things,

- 1840 ○ changes to visual aesthetics over the life of the project and post-project abandonment or
- 1841 decommissioning,
- 1842 ○ changes to elements of the environment identified by Indigenous Nations and communities as
- 1843 having heritage value, and
- 1844 ○ any other effects identified by Indigenous Nations and communities;
- 1845 ● describe how impacts on Indigenous Peoples and their rights will also impact the ability to transmit
- 1846 their culture, language or Indigenous Knowledge intergenerationally, for example, through ceremonies,
- 1847 harvesting, teaching of stewardship / caretaker laws, or a community tradition of sharing;
- 1848 ● provide copies of correspondence with provincial, territorial or Indigenous authorities responsible for
- 1849 heritage resources with comments on any physical and cultural heritage resource assessment; and
- 1850 ● describe contingency plans and field interventions that will be applied should heritage resources be
- 1851 discovered during field studies or project activities

1852 **8.2 Current use of lands and resources for traditional**

1853 **purposes**

1854 The Impact Statement must assess the impacts of the project to the current use of lands and resources for
 1855 traditional purposes. The analysis must align with the steps set out in the [Technical Guidance for Assessing](#)
 1856 [the Current Use of Lands and Resources for Traditional Purposes under CEAA, 2012](#).

1857 **8.2.1 Baseline conditions for current use of lands and**

1858 **resources for traditional purposes**

1859 The Impact Statement must describe baseline conditions, including:

- 1860 ● how existing cumulative effects have already impacted the current use of lands and resources for
- 1861 traditional purposes;
- 1862 ● Indigenous governance systems and Indigenous laws associated with the current use of lands and
- 1863 resources for traditional purposes;
- 1864 ● traditional activities presently or historically practised (e.g., hunting, fishing, trapping, gathering of
- 1865 plants or medicines, access or travel routes); and
- 1866 ● baseline conditions for likely effect pathways to impacts on the current use of lands and resources by
- 1867 Indigenous Peoples for traditional purposes, in sufficient detail to support the assessment of impacts,
- 1868 including:
 - 1869 ○ species use (e.g., magnitude, timing) and availability as country foods (traditional foods) or for
 - 1870 other traditional purposes; and

- 1871 ○ existing navigable waters and their uses, navigable water users, and existing concerns
1872 regarding navigable water use and access.

1873 **8.2.2 Effects to current use of lands and resources for** 1874 **traditional purposes**

1875 The Impact Statement must:

- 1876 • assess the effects on current use of lands and resources for traditional purposes, based on likely effect
1877 pathways and a comparison with and without the project, including changes to:
 - 1878 ○ the quantity, distribution, and quality (including perceived quality) of resources available for
1879 harvesting and consumption of country foods (traditional foods), specifying the species and
1880 resources used or important for traditional and cultural purposes,
 - 1881 ○ navigation and navigation safety, including to navigable waters for each affected waterway and
1882 likely effect pathway (dewatering of watercourse or water body, water-level changes, diversion,
1883 crossing, etc.),
 - 1884 ■ specify the crossing method for all project components that will be constructed in, on,
1885 under, over, through or across navigable waters (e.g., temporary or permanent bridges),
 - 1886 ○ navigable water users and navigational use,
 - 1887 ○ the locations, frequency, duration or timing of fishing, hunting, trapping, gathering, cultural or
1888 ceremonial activities and other traditional practices, including any avoidance of resources due to
1889 perceived quality,
 - 1890 ○ access to:
 - 1891 ■ culturally important harvesting areas or resources and travel routes for conducting
1892 traditional practices (e.g., physical access to harvest-specific species, culturally important
1893 locations),
 - 1894 ■ traditional territories, communities and reserves, and
 - 1895 ■ locations of importance for traditional use, including camps, cabins and gathering, staging,
1896 or teaching grounds,
 - 1897 ○ economic burdens of, and increased time for, travelling further to hunting, fishing, trapping, and
1898 gathering opportunities,
 - 1899 ○ efforts by Indigenous Nations and communities to restore traditional practices,
 - 1900 ○ the experience of being on the land (e.g., changes in air quality, noise and sensory disturbance,
1901 artificial light, fragmentation of traditional territory, visual aesthetics/landscape and any corollary
1902 wellness impacts as a result of sensory changes, including perceived contamination),
 - 1903 ○ the use of riverbanks, travel ways, navigable waterways and waterbodies, including for social
1904 and ceremonial purposes, travel or recreation, and

- 1905 ○ sites of interest to communities including for commercial and non-commercial fishing, hunting,
1906 trapping and gathering and cultural or ceremonial activities and practices, and other current uses
1907 identified by Indigenous Nations and communities;
- 1908 • describe how the information provided by Indigenous Nations and communities, including Indigenous
1909 Knowledge, has been considered.

1910 **8.3 Health, social and economic conditions of Indigenous Peoples**

1911

1912 **8.2.3 Baseline conditions**

1913 The baseline conditions established for Indigenous Nations and communities must meet the requirements
1914 set out in [Section 7 Human Environment](#), and take into account GBA Plus specific to Indigenous Peoples
1915 as well as Indigenous governance regimes and Indigenous laws.

1916 The Impact Statement must identify and describe the following components identified by Indigenous
1917 Nations and communities: valued components or health, social or economic concerns relevant to the
1918 project identified by each Indigenous Nation or community.

1919 The health baseline study, where applicable based on potential project effects, should be tailored to each
1920 of the Indigenous Nations and communities. Indigenous Nations and communities should be offered the
1921 opportunity to carry out their own study.

1922 **8.2.4 Effects to health, social and economic conditions of Indigenous Peoples**

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1924 In addition to the requirements set out in Section 7 health, social and economic conditions, the Impact
1925 Statement must include a health impact assessment tailored to each of the Indigenous Nations and
1926 communities as listed in 3.1 of the [IEPP](#).

1927 The Impact Statement must identify and describe the following components identified by Indigenous
1928 Nations and communities: valued components or health, social or economic concerns relevant to the
1929 project identified by each Indigenous Nations and community.

1930 **8.4 Rights of Indigenous Peoples**

1931 The IAA affirms the Government of Canada's commitment to ensure respect for the rights of Indigenous
1932 Peoples recognized and affirmed by section 35 of the *Constitution Act, 1982*. The proponent is encouraged

1933 to refer to IAAC's [Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples](#), [Policy](#)
1934 [Context: Assessment of Potential Impacts on the Rights of Indigenous Peoples](#) or subsequent revisions
1935 made prior to submission of the Impact Statement to ensure that the relevant provisions of the IAA are met
1936 and IAAC's Indigenous Advisory Committee [Principles to Guide the Assessment of Impacts to Indigenous](#)
1937 [Inherent and Treaty Rights](#).

1938 **8.4.1 Baseline conditions**

1939 The Impact Statement must:

- 1940 • describe the rights of Indigenous Peoples impacted by the project, including historical context and the
1941 importance of the rights to the rights-bearing communities (e.g., the connection of rights to practices,
1942 customs, beliefs, worldviews, and livelihoods);
- 1943 • include information on how rights have already been impacted by cumulative effects, and how existing
1944 and reasonably foreseeable future activities could affect the conditions that support or limit the ability of
1945 Indigenous Peoples to meaningful exercise of their rights;
- 1946 • document the nature and extent of the exercise of rights of Indigenous Peoples, impacted by the
1947 project, as identified by the Indigenous Nation or community; and
- 1948 • consider how the information requirements related to physical and cultural heritage, use of lands,
1949 Indigenous health, social, and economic conditions, are applicable to the nature and extent of the
1950 exercise of rights.

1951 Indigenous Nations and communities must be involved in the baseline characterization of their rights, to the
1952 extent they choose to be involved.

1953 **8.4.2 Impacts on rights of Indigenous Peoples**

1954 The proponent must share studies and information about the project and its potential impacts with Indigenous
1955 Nations and communities prior to assessing the impact of the project on their rights, and collaborate with
1956 Indigenous Nations and communities in assessing impacts on those rights. Where findings differ between
1957 the proponent and Indigenous Nations and communities, the proponent should clearly present how both
1958 were considered in the Impact Statement.

1959 The Impact Statement must:

- 1960 • document the project's impacts on the rights of Indigenous Peoples and their severity, considering
1961 links between resources, access, and experience, including:
 - 1962 ○ residual impacts on the exercise of rights,
 - 1963 ○ interference with the quality and quantity of resources available for the exercise of rights
1964 (including preferred species),

- 1965 ○ changes to the ability to travel freely in the territory and to access areas important to the exercise
- 1966 of rights,
- 1967 ○ changes to the experience associated with the exercise of rights, including in connection to land,
- 1968 well-being, knowledge of the landscape, air quality, noise exposure, effects of vibrations, artificial
- 1969 light, fragmentation, visual aesthetics and safety,
- 1970 ○ impacts on Indigenous traditions, laws and governance,
- 1971 ○ impacts on stewardship of traditional lands and resources by Indigenous Nations and
- 1972 communities,
- 1973 ○ changes to the ability of Indigenous Nations and communities to derive future economic benefits
- 1974 from the land or water,
- 1975 ○ changes to the ability to maintain an ongoing relationship with the land or water,
- 1976 ○ alignment with the values, political direction and/or objectives of Indigenous Nations and
- 1977 communities' actions to mitigate or to adapt to a changing climate,
- 1978 ○ changes to the authority of Indigenous Nations and communities on their territory, and
- 1979 ○ all other elements of significance identified by Indigenous Nations and communities;
- 1980 ● document the level of engagement with Indigenous Nations and communities and the approach taken
- 1981 to support Indigenous Nations and communities in identifying the potential impacts of the project on
- 1982 their rights;
- 1983 ● describe solutions to concerns raised about impacts on the exercise of rights, as agreed to by
- 1984 Indigenous Nations and communities;
- 1985 ● describe how the assessments of impacts on Indigenous Peoples (including impacts on physical and
- 1986 cultural heritage, current use of lands and resources for traditional purposes, and the health, social,
- 1987 and economic conditions of Indigenous Peoples) were integrated into the assessment of impacts on
- 1988 Indigenous rights and considered in determining residual and cumulative impacts and their severity;
- 1989 ● describe the methodology used and agreed to by Indigenous Nations and communities for assessing
- 1990 impacts on their rights, and include any Indigenous-led studies that were provided if permission has
- 1991 been obtained from the Indigenous Nation or community to include them; and
- 1992 ● where an Indigenous Nation or community has not provided its views on the impact of the project on
- 1993 their rights to the proponent, or where the proponent and an Indigenous Nation or community, in
- 1994 consultation with IAAC, agree that the Indigenous Nation or community will provide information on
- 1995 impacts on their rights directly or the review panel, provide an explanation.

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9. Effects of Potential Accidents or Malfunctions

Consideration of potential accidents and malfunction scenarios for all project phases and project activities (both designated project activities and those incidental to them) during early project planning is critical for building public confidence in the safety of the facility, understanding and managing risks, and providing a foundation to validate the design and continually improve the project as it proceeds into subsequent phases. The proponent must consider, at a minimum, malfunction scenarios including (but not limited to):

- various degrees of barrier loss (e.g., container breach or failure, groundwater intrusion, corrosion, incomplete sealing of boreholes, etc.); and,
- drilling equipment, shaft, ventilation or hoist failure.

Accidents would include those associated with human error such as:

- improper operation of equipment (both at the project site and during transportation); or
- failure to follow health and safety requirements and other standards.

In preparing the Impact Statement, the proponent is encouraged to consult the applicable guidance and resources found in [Appendix A](#), in the [Generic Requirements for Impact Statements](#), and in the [standard](#) and [project-specific Technical Considerations and References for the Preparation of an Impact Statement](#). The following project-specific requirements have been included due to the nature and timescale of the project.

9.1 Risk assessment

The Impact Statement must:

- identify hazards for each project phase that could lead to events of accidents and malfunctions related to the project and provide an explanation of how these events were identified (e.g., information sources, recognized risk assessment methodology, professional expertise, similar project, participants' input);
 - take into account the lifespan and design of different project components, complicating factors such as weather or external events, and the potential for vandalism, sabotage, or other malicious acts;
 - organize risk assessments by project phase, according to individual project activities/components, and the applicable accident and malfunction scenarios for each.
- conduct an analysis of the risk of each hazard and adverse event (including likelihood and consequences) and describe the potential consequences (including the environmental, health, social and economic effects as well as impacts on Indigenous Peoples and their rights);

- 2028 • describe the worst-case scenarios and the lower-consequence scenarios, including:
- 2029 ○ the magnitude, duration and extent of effects,
- 2030 ○ the quantity, mechanism, rate, form and characteristic of contaminants, emissions and other
- 2031 materials released or discharged into the environment,
- 2032 ○ influence of local and regional terrain, topography and weather conditions (e.g., difficult access
- 2033 for interventions),
- 2034 ○ modelling for any contaminants spilled or released indirectly into water or air,
- 2035 ○ potential environmental, health, social and economic effects, including impacts on Indigenous
- 2036 Peoples and their rights. With respect to human health specifically, consideration should be
- 2037 given to potential pathways of effects associated with surface water, air, country foods, and other
- 2038 relevant media, including short-term and long-term risks to human health,
- 2039 ○ relative locations of sensitive receptors (e.g., humans, fish and/or wildlife and their habitat,
- 2040 waterways, private drinking water wells),
- 2041 ○ timing related to sensitive receptors (e.g., migration and nesting periods of migratory birds,
- 2042 spawning periods for fish, hunting season, tourist season), and
- 2043 ○ impacts on critical infrastructure, such as local drinking water treatment plants or facilities that
- 2044 can treat water sources affected by the project, as well as the ability and capacity of the drinking
- 2045 water treatment plants or facilities to treat water sources affected by accidental releases from the
- 2046 project during all project phases;
- 2047 • identify and justify the spatial and temporal boundaries for the effects assessment associated with
- 2048 accidents and malfunctions. The spatial boundaries identified for effects from potential accidents and
- 2049 malfunctions will generally be larger than the boundaries for the project effects alone, and may extend
- 2050 beyond Canada's jurisdiction; and
- 2051 • provide environmental sensitivity mapping that identifies site-specific conditions and sensitive
- 2052 receptors adjacent to project activities.

2053 9.2 Mitigation measures

2054 The Impact Statement must:

- 2055 • describe the mitigation measures and safeguards that would be in place to avoid and prevent
- 2056 accidents and malfunctions, including project design choices and operational considerations, including
- 2057 engineering, safety and risk reduction standards, criteria and approaches to be used;
- 2058 • describe the proposed security measures to reduce the potential for vandalism or other malicious acts
- 2059 that could lead to accidents or malfunctions;

- 2060 • describe the mitigation measures for the potential adverse environmental, health, social and economic
- 2061 effects, including impacts on Indigenous Peoples and their rights, in the event of an accident or
- 2062 malfunction, such as emergency response and repair procedures that would be put in place;
- 2063 • describe long-term monitoring and recovery measures that could be implemented to manage effects to
- 2064 the environment and health, social and economic conditions, including impacts on Indigenous Peoples
- 2065 and their rights, from accidents and malfunctions, including measures to remediate affected lands and
- 2066 waters;
- 2067 • provide details of financial liability and compensation measures in place pursuant to regulations or the
- 2068 proponent's commitment in case of potential accidents or malfunctions associated with the project;
- 2069 • describe mutual aid arrangements in the event that the accident or malfunction exceeds proponent
- 2070 resources and how to access these resources; and
- 2071 • describe the expected effectiveness of the mitigation measures, safeguards and response measures
- 2072 and systems.

2073 9.3 Emergency management

2074 The Impact Statement must:

- 2075 • describe an emergency response plan for a wide range of emergency scenarios that are applicable to
- 2076 the designated project (i.e., the designated physical activity and those that are incidental to it);
- 2077 • identify emergency response zones;
- 2078 • present preliminary emergency measures to respond to the various accident and malfunction
- 2079 scenarios, including identifying associated response systems and capabilities;
- 2080 • take into account evacuation areas in the planning of emergency measures as well as the
- 2081 particularities linked to these areas (e.g., number of residents varying with the seasons, possible high
- 2082 number of individuals unfamiliar with the region, limited communication means in remote areas and
- 2083 with temporary residents);
- 2084 • describe the potential effects of accidents and malfunctions on the emergency plan execution,
- 2085 including on evacuation routes;
- 2086 • describe existing emergency preparedness and response systems and existing arrangements and/or
- 2087 coordination with the responsible response organizations in the spatial boundaries associated with the
- 2088 project and describe potential impacts to these existing systems, arrangements, and/or coordination;
- 2089 • document response strategies for each type of scenario where harmful substances could be released,
- 2090 including strategic locations of spill response equipment relative to likely accident and malfunction sites
- 2091 and/or likely pathways to sensitive environmental receptors;
- 2092 • describe liaison and continued education plans linked to emergency preparedness for surrounding
- 2093 communities, including Indigenous communities, that may be affected by an accident or malfunction;

- 2094 • explain outreach efforts that the proponent has made and will continue to make to ensure the public
2095 and Indigenous Nations and communities understand the risks associated with this type of project
2096 (e.g., providing non-technical information, providing information in local languages if applicable, etc.)
- 2097 • describe any waste management plan as it pertains to waste generated during an emergency
2098 response; and
- 2099 • describe emergency communication and public notification plans, community awareness plans and
2100 public reporting plans including plans that would provide emergency instructions to surrounding
2101 communities, including Indigenous communities, and how these will be informed by the public and
2102 Indigenous Nations and communities. The proponent should consider including:
 - 2103 ○ immediate urgent actions, such as notifying the public of security and safety concerns,
2104 instructions for on-site shelter or shelter-in-place, procedures and evacuation routes
 - 2105 ○ longer-term actions, such as a general website and telephone helplines, updates on the status of
2106 incidents, injured animal reports;
 - 2107 ○ the contact information for entities (municipal/provincial/federal/other) involved in ongoing long-
2108 term monitoring of air quality, water quality, and/or country (traditional) foods and details about
2109 such monitoring;
 - 2110 ○ any plan for translation to local Indigenous languages, if requested by Indigenous Nations or
2111 communities; and
 - 2112 ○ the Interim Service Standards for Culturally-Relevant Emergency Management Services of
2113 Indigenous Services Canada's Emergency Management Assistance Program.

2114 10. Planning for transportation

2115 IAAC reviewed and analyzed documentation provided by the proponent, including, but not limited to the
2116 Initial Project Description, as well as comments received from Indigenous Nations and communities, the
2117 public, government authorities, and other participants during the Planning Phase, and has determined that
2118 project-related transportation has the potential to result in adverse effects within areas of federal
2119 jurisdiction, and is incidental to the project.

2120 Transportation activities related to this project include increased traffic to the project during site preparation
2121 and construction as well as the transport of used nuclear fuel to the repository during the operation phase
2122 of the project.

2123 10.1 Transportation of used nuclear fuel

2124 Both CNSC and Transport Canada jointly regulate the transport and packaging of nuclear substances in
2125 Canada. The CNSC's [Packaging and Transport of Nuclear Substances Regulations, 2015](#) and Transport
2126 Canada's [Transport of Dangerous Goods Regulations](#) ensure that the packaging and transport of nuclear

2127 substances are done safely and securely. NWMO will be required to meet these regulations to ensure that
2128 the package design meets the stringent regulatory requirements, and all other requirements, for the safe
2129 transport of used nuclear fuel. These requirements include emergency response measures to protect the
2130 public, workers, and the environment, will need to be met before shipment starts. The CNSC, as the life-
2131 cycle regulator, will be responsible for any consultation and engagement processes and obligations for all
2132 future phases of the project should there be a positive IA decision, as appropriate.

2133 Although the transportation of used nuclear fuel would not occur until the operational phase of the project,
2134 currently anticipated to begin in the 2040s, and recognizing that the proponent is in the early stages of
2135 planning these activities and that certain aspects of transportation will be prescribed through regulatory
2136 requirements, the proponent must submit an update to their [2021 Preliminary Transportation Plan](#). The
2137 Preliminary Transportation Plan for used nuclear fuel includes information related to a series of processes
2138 and measures that the NWMO would apply anywhere that their transportation activities are carried out. The
2139 update should build on the foundational information presented in the preliminary plan and provide
2140 information reasonably available at this stage of project planning. More detailed transportation
2141 planning will occur as the project advances toward the operational phase (i.e., the phase when
2142 transportation of used nuclear fuel would be required) and as the proponent seeks the necessary
2143 licences from the CNSC.

2144 The impact assessment is a planning tool and as such, plans on how used nuclear fuel will be moved to
2145 the project site as well as an emergency response plan will be required. These plans are general and
2146 therefore would apply everywhere that transportation may occur but do not specifically refer to any
2147 geographic extent. The CNSC's [Packaging and Transport of Nuclear Substances Regulations, 2015](#) and
2148 Transport Canada's [Transport of Dangerous Goods Regulations](#) would ensure that impacts to the
2149 environment and human health are minimized when the used nuclear fuel would be shipped during
2150 operations.

2151 The Impact Statement must:

- 2152 • provide an update to the 2021 Preliminary Transportation Plan for used nuclear fuel, based on
2153 information reasonably available at this stage of project planning, including information related to:
 - 2154 ○ the modes of transport and route planning framework, including concepts, principles and criteria
2155 for selecting routes, and alternating routes in the event of extenuating circumstances (e.g.,
2156 severe weather, road closure, etc.);
 - 2157 ○ the long-term plan for continuing to engage and educate the public and Indigenous Nations and
2158 communities on the transportation of used nuclear fuel, including future updates to this plan
2159 leading up to obtaining the appropriate licensing, and then subsequently during project
2160 operations.
- 2161 • provide an emergency management and response plan that describes the measures should an
2162 accident or malfunction occur, including training and coordination with Indigenous Nations and
2163 communities, first responders and emergency agencies, and high-level immediate response
2164 procedures undertaken by carriers (e.g., containment of the package/nuclear materials, isolation from
2165 sensitive receptors, communication with the relevant entities, etc.).

10.2 Movement of materials and people

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2167 While the transport of nuclear substances is governed by CNSC and TC regulatory frameworks, the roads
2168 and highways on which used nuclear fuel, construction materials, and personnel would travel are under
2169 municipal and provincial jurisdiction, and as a result are not included in the impact assessment as it is
2170 outside of IAAC's mandate. Any operations, maintenance, improvements and upgrades to the provincial
2171 highway system fall under the responsibility of the Ontario government.

2172 Project-related transportation activities, including the construction of associated infrastructure required for
2173 the transportation of used nuclear fuel and for the movement of other materials and workers, that occur
2174 within a geographic extent that includes, at a minimum, the geographic bounding encompassing the
2175 railway spur for rail transport and Highway 17 turn-offs for road transport (i.e., the main access corridors to
2176 the project site coinciding with new infrastructure), may have adverse effects within federal jurisdiction on
2177 applicable VCs identified in [Section 1.2 Selection of Valued Components](#).

2178 The proponent will be expected to assess potential adverse effects within federal jurisdiction using a range
2179 of representative transportation scenarios that could reasonably occur as a result of increased movement
2180 of materials and workers to and from the project site (e.g., transportation near waterbodies, under
2181 adverse weather conditions, effects of climate change, or other credible situations that could influence the
2182 nature or severity of potential effects). These scenarios must be developed in consultation with TC, CNSC
2183 and IAAC. Considering these scenarios will allow the assessment to characterize the potential types and
2184 pathways of adverse effects that could arise from transportation activities in areas where such effects
2185 may reasonably occur within federal jurisdiction.

2186 The Ontario Ministry of Transportation (MTO) has determined that the two proposed access points to
2187 Highway 17 will require entrance permits and that transportation-related improvements will likely be
2188 necessary. IAAC has coordinated with MTO, and the proponent must provide a traffic impact study (TIS)
2189 completed by an MTO prequalified engineering service provider in the traffic impact analysis category and
2190 in accordance with the [General Guidelines for the Preparation of Traffic Impact Studies](#). The proponent will
2191 be responsible for the design, construction and contract administration of all improvements required as a
2192 result of the development in accordance with the [Guidelines for Highway Improvements Associated With
2193 Development](#). This must be conducted to the satisfaction of MTO.

2194 As it relates to transportation activities, the proponent is encouraged to align the geographic extent for the
2195 project provided in the Impact Statement with the General Guidelines for the Preparation of Traffic Impact
2196 Studies, which states, "the limits of the study area shall extend such that the study area includes all
2197 highways, interchanges and intersections that will be affected or potentially affected by the traffic
2198 generated by the proposed development. The limits of the study area must be approved by MTO in
2199 advance of the preparation of the TIS".

2200 This approach provides a reasonable and proportionate basis for assessing transportation-related effects
2201 at this stage of project planning, while ensuring that credible circumstances that could give rise to adverse

2202 effects are appropriately considered. These specific requirements are described in greater detail in the VC-
2203 specific sections (e.g., Sections 5-8).

2204 **11. Effects of the Environment on the** 2205 **Project**

2206 Environmental conditions, including natural hazards and external events could adversely affect the integrity
2207 of the DGR. This in turn could result in effects to the environment, health, social and economic conditions.
2208 Given the nature and timescale of the DGR project, it is important that these events are carefully
2209 considered during project design, as well as incorporated into different probability patterns and potential
2210 future climate scenarios.

2211 The proponent should focus on credible near and far future events that have a reasonable probability of
2212 occurring and could lead to adverse impacts without appropriate management. The analysis should also
2213 consider induced natural hazards, where the probability of occurrence increases as a result of project-
2214 related activities.

2215 This analysis will form the basis of the safety case, which is the main tool used to document and
2216 demonstrate that a facility will adequately protect people and the environment during its entire lifecycle
2217 (i.e., site preparation, construction, operation and decommissioning) and in the post-closure period. For a
2218 post-closure safety assessment, the emphasis is on the performance of the disposal facility and the
2219 assessment of its impact after closure.

2220 With respect to potential effects of the environment on the project, the Impact Statement must also meet
2221 the requirements of [REGDOC-2.11.1, Waste Management, Volume III: Safety Case for the Disposal of](#)
2222 [Radioactive Waste, Version 2](#), particularly with respect to the post-closure safety assessment for this stage
2223 of the licensing process.

2224 In preparing the Impact Statement, the proponent is encouraged to consult the applicable guidance and
2225 resources found in [Appendix A](#), in the [Generic Requirements for Impact Statements](#), and in the [standard](#)
2226 and [project-specific Technical Considerations and References for the Preparation of an Impact Statement](#).

2227 In addition to the [Generic Requirements for Impact Statements](#), the following project-specific requirements
2228 have been included due to the nature and timescale of the project. The proponent may opt to provide
2229 information in a format that allows for analysis over several timeframes, for example (1) during the
2230 construction and operational period up to closure; (2) up until 10,000 years after closure; (3) beyond
2231 10,000 years over repeated glacial cycles.

2232 The Impact Statement must:

- 2233 • describe how environmental conditions, including natural hazards such as severe and/or extreme
2234 weather conditions, seismicity, glaciation, wildfires, and other external events, could adversely affect

- 2235 the project and how this could result in effects to the environment, as well as to health, social and
2236 economic conditions;
- 2237 • provide details of planning, design and construction strategies intended to minimize the potential
2238 adverse effects of the environment on the project;
- 2239 • describe mitigation measures that can be implemented in preparation for effects of the environment on
2240 the project;
- 2241 • describe possible mitigation measures to address adverse environmental, health, social and economic
2242 effects resulting from effects of the environment on the project;
- 2243 • describe the project's climate resilience and how the impacts of climate change and global climate
2244 cycles have been integrated into the project design and planning throughout the life of the project.
- 2245 • describe the climate data, projections, and global climate cycle and ice sheet models, and related
2246 information used to assess risks over the life of the project;
- 2247 • identify the project's sensitivities and vulnerabilities to changes in climate (both in mean conditions and
2248 extremes such as short-duration heavy precipitation events);
- 2249 • describe all known and relevant trends in meteorological events, weather patterns or physical changes
2250 in the environment that are expected to result from changes in climate, and incorporate this information
2251 into a risk assessment as contributing or complicating factors for accidents and malfunctions (e.g.,
2252 increased risk of forest fires). Provide mitigation measures (both passive and active) that the proponent
2253 is prepared to take to minimize the frequency, severity and consequences of these projected effects;
2254 and,
- 2255 • assess the potential effects of seismic events on the project and specify the dynamic soil properties
2256 (e.g., shear wave velocities, damping ratio, shear modulus) that will be used with the probability of
2257 occurrence and the best practice codes and guides that are or will be used in the seismic effects
2258 analysis (e.g. CSA N289 series, [National Building Code of Canada 2025](#), CAN/CSA-Z662
2259 standard). Additional guidance related to conducting climate change resilience assessments is included
2260 in the [Strategic Assessment of Climate Change](#).

2261 12. Contributions to inform decision 2262 making

2263 At the decision-making phase of the IA, should the decision maker determine that the adverse federal
2264 effects that are likely to be caused by the project are likely to be, to some extent, significant, the decision
2265 maker will decide whether they are justified in the public interest in light of the extent to which they are
2266 significant and of the factors set out in section 63 of the IAA. The requirements in this section of the
2267 Integrated Guidelines may inform the analysis of these factors.

2268

12.1 Canada's environmental obligations and climate change commitments

2269

2270 IAAC, with the support of federal authorities, will analyze the project's likely effects in the context of
2271 Canada's environmental obligations relevant to this project, as well as the project's GHG emissions in the
2272 context of Canada's emissions targets and forecasts. Where the proponent is of the view that the likely
2273 effects of the project contribute to the Government of Canada's ability to meet its environmental obligations
2274 and/or its commitments in respect of climate change, the proponent is encouraged to substantiate this view
2275 in the Impact Statement by describing these likely effects and the extent of their contribution (e.g., net
2276 increase in biodiversity through habitat restoration; net GHG reductions domestically through carbon
2277 capture).

2278

12.2 Environmental obligations

2279 Federal environmental obligations relevant to this project include those set out in the following
2280 instruments:

2281 *Biodiversity*

- 2282 • [Convention on Biological Diversity](#) and [Kunming-Montreal Global Biodiversity Framework](#) and its
2283 domestic framework: [Canada's 2030 Nature Strategy](#), as well legislations supporting its
2284 implementation including [SARA](#) and recovery strategies and action plans developed under SARA for
2285 species at risk likely affected by the project available on the [species at risk public registry](#);
- 2286 • [Convention on Wetlands of International Importance Especially as Waterfowl Habitat \(Ramsar\)](#), as
2287 implemented in part under the [Federal Policy on Wetland Conservation](#) and the [North American](#)
2288 [Waterfowl Management Plan](#);
- 2289 • [Convention for the Protection of Migratory Birds in the United States and Canada](#), as implemented in
2290 part under the [Migratory Birds Convention Act \(1994\)](#), and supporting
2291 conservation objectives from ECCC's [bird conservation regions and strategies](#);

2292 *Air pollution*

- 2293 • the [Canada-United States Air Quality Agreement](#), as implemented under the Air Quality Management
2294 System;

2295 *Water quality and quantity*

- 2296 • the [Canada-US Boundary Waters Treaty](#), as implemented by the International Joint Commission.

2297 Where the proponent is of the view that the likely effects of the project contribute to environmental
2298 obligations, the proponent is encouraged to:

- 2299 • describe plans and commitments that contribute to the above-listed environmental obligations; and

- 2300 • with respect to the biodiversity obligations:
- 2301 ○ describe and, where possible, quantify likely changes in biodiversity resulting from the
- 2302 project referring to relevant guidance such as the [Convention on Biological Diversity's Voluntary](#)
- 2303 [Guidelines on Biodiversity-Inclusive Impact Assessment](#),
- 2304 ○ describe whether, applying the mitigation hierarchy, the project would result in no net loss or in
- 2305 net positive impacts on biodiversity, and
- 2306 ○ describe whether and how the project's likely effects will contribute to the targets identified
- 2307 in [Canada's 2030 Nature Strategy](#) such as Target 2 (ecosystem restoration), Target 3 (protected
- 2308 and conserved areas), Target 4 (species recovery), Target 6 (invasive alien species), Target 7
- 2309 (pollution and biodiversity, focusing on chemicals and air pollutants), Target 11 (ecosystem
- 2310 services and functions), Target 14 (mainstreaming of biodiversity values), Target 21 (knowledge
- 2311 sharing), and Target 22 (inclusion of Indigenous Nations and communities, women/girls,
- 2312 youth/children, persons with disabilities, and environmental human rights defenders in
- 2313 decision making).

2314 **12.2.1 Climate change commitments**

2315 As part of its decision, should the Governor in Council determine that the adverse federal effects are, to

2316 some extent significant, the Governor in Council must consider only whether the extent to which the effects

2317 that are likely to be caused by the carrying out of the project, contribute to the Government of Canada's

2318 ability to meet its commitment in respect of climate change, when considering whether the effects are

2319 justified in the public interest.

2320 Greenhouse gas emissions

2321 The proponent must assess the project's GHG emissions following the [Strategic Assessment of Climate](#)

2322 [Change](#) (SACC) and the technical guides related to the SACC, developed by ECCC, including the [Draft](#)

2323 [Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero](#)

2324 [plan and upstream GHG assessment](#) (Technical Guide). The proponent is encouraged to keep apprised of

2325 updates to the SACC and related technical guides published by ECCC.

2326 The Impact Statement must:

- 2327 • assess the project's GHG emissions and emissions intensity as described in sections 3 and 5 of the
- 2328 SACC and section 2.1 and 2.5 of the Technical Guide;
- 2329 • provide an explanation of how the project may impact Canada's efforts to reduce GHG emissions, in
- 2330 Canada and globally as described in section 5.1.3 of the SACC and in the Technical Guide.

2331

12.3 Sustainability

2332 Sustainability is the ability to protect the environment, contribute to the social and economic well-being of
2333 Indigenous Nations and communities and the people of Canada and preserve their health in a manner that
2334 benefits present and future generations. Information throughout the Integrated Guidelines can be used to
2335 support the analysis of the extent to which the likely effects of the project contribute to sustainability.

2336

12.3.1 Extent to which the likely effects of the project contribute to sustainability

2337

2338 The Impact Statement must:

- 2339 • provide an analysis of the extent to which the project's likely positive effects and adverse federal
2340 effects contribute to sustainability according to the following steps:
 - 2341 ○ identify the key VCs from Section 1.2 Selection of Valued Components relevant to long-term
2342 well-being to be included in the sustainability analysis, informed by Indigenous Knowledge and
2343 the project context;
 - 2344 ○ establish temporal boundaries, considering how long-term effects on the identified VCs could
2345 affect future generations including beyond the project lifecycle;
 - 2346 ○ apply the following sustainability principles to determine whether and the extent to which the
2347 project's potential positive effects result in a net positive contribution to sustainability (based on
2348 the criteria of no contribution, to low, moderate or high contribution):
 - 2349 ■ consider interconnectedness and interdependence of human-ecological systems,
 - 2350 ■ consider well-being of present and future generations,
 - 2351 ■ consider positive effects and reduce adverse effects of the project, and
 - 2352 ■ apply the precautionary principle and consider the uncertainty and risk of irreversible harm.

Appendix A: Licencing Requirements and Guidance to Prepare Site: Mapping for the DGR for Canada's Used Nuclear Fuel

Background

The Nuclear Waste Management Organization (NWMO) identified in its [Initial Project Description](#) for its Deep Geological Repository for Canada's Used Nuclear Fuel Project (the project) that it intends to apply for a licence to prepare site for a deep geological repository (DGR) facility.

In accordance with the [Nuclear Safety and Control Act](#) (NSCA) and regulations made under it, a person must have a licence issued by the CNSC to prepare a site for a DGR. The project will be subject to both the IAA and the NSCA and may require other regulatory approvals. As outlined in the [Memorandum of Understanding](#) between IAAC and the CNSC, the assessment of designated projects under the IAA that are regulated by the CNSC under the NSCA will proceed by way of an integrated impact assessment, which seeks to discharge the requirements of both Acts under one process.

Application to prepare site for a Class I facility

The objective of the site preparation stage is to assess whether the site is suitable for all licensing stages of a nuclear facility. An application for a licence to prepare site (LTPS) does not require detailed design information or specifications of a facility design but must provide enough information to demonstrate that releases of radioactive and hazardous substances are within limits claimed in the impact assessment and meet all applicable regulatory requirements.

Note that the licensing requirements, guides, and regulatory documents listed in this Appendix are not open for public consultation or amendments during this comment period. CNSC documents that are open for public consultation must be commented on using the CNSC's consultation program for regulatory documents, which can be found on the CNSC's [website](#). All licensing requirements, guides, and regulatory documents listed in this Appendix have been approved by the Commission, with input received by the public and Indigenous Nations and communities taken into consideration.

Licensing requirements for Class I nuclear facilities

The NWMO's project is classified as a Class IB nuclear facility under the [Class I Nuclear Facilities Regulations](#), as it involves a facility for the disposal of a nuclear substance generated at another nuclear facility. As a result, the licence application is required to meet the regulatory requirements prescribed for Class I nuclear facilities and information required by sections 3 and 4 of the [General Nuclear Safety and Control Regulations](#).

The CNSC's licensing stages are outlined in the [Class I Nuclear Facilities Regulations](#) and are aligned with the lifecycle of a nuclear facility. Applicants are required to obtain a licence for each desired licensing stage.

Applicable licence application guide

Regulatory document [REGDOC-1.2.3, Licence Application Guide: Licence to Prepare Site for a Deep Geological Repository](#) is a licence application guide, which is a specific type of guidance document that maps relevant regulatory documents and technical standards to topics, to inform the licence application process. This regulatory document provides clarity about the requirements and guidance on the information needed to apply for a licence to prepare site for a DGR facility.

Applicable regulatory documents

Regulatory documents generally present both requirements and guidance in a single document and distinguish between them by the use of mandatory (e.g., shall, must) and non-mandatory (e.g., should, may) language. The following regulatory documents apply for a licence to prepare site for a DGR facility.

1. Regulatory document [REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization](#) sets out guidance on site characterization for a deep geological repository (DGR) facility for radioactive waste. Site characterization information is integral to licence applications for DGR facilities.
2. Regulatory document [REGDOC-2.1.1, Management System](#). The purpose of this document is to provide information on management systems that are applicable to different types of CNSC licensees.
3. Regulatory document [REGDOC 2.1.2, Safety Culture](#). Class IB nuclear facilities are subject to the requirement of section 2, and are recommended to use the information and guidance of sections 1, 2, 3 and Appendices A & B.
4. Regulatory Document [REGDOC-2.2.2, Personnel Training, Version 2](#). This regulatory document applies to workers engaged in licensed activities in nuclear facilities or where nuclear substances or prescribed equipment are produced, used, possessed, packaged or disposed of.
5. Regulatory document [REGDOC 2.4.4, Safety Analysis for Class IB Nuclear Facilities](#). This regulatory document clarifies requirements and provides guidance for applicants and licensees on how to demonstrate the safety of a Class IB nuclear facility in the operational phase up to closure.
6. Regulatory Document [REGDOC-2.11.1, Waste Management, Volume III: Safety Case for the Disposal of Radioactive Waste, Version 2](#). The purpose of this document is to provide requirements and guidance to applicants and licensees for developing a post-closure safety case and supporting safety assessment activities pertaining to the disposal of all classes of radioactive waste.

7. Regulatory Document [REGDOC-2.5.1, General Design Considerations: Human Factors](#). This regulatory document sets out guidance for applicants and licensees in developing human factors engineering program planning documentation that demonstrates how human factors considerations are incorporated into activities licensed by the CNSC.
8. Regulatory document [REGDOC-2.6.3, Aging Management](#). The application must include an aging management plan, listing all structures, systems and components (SSCs) important to safety, to provide for the timely detection and mitigation of the aging effects to ensure integrity and functional capacity of the SSCs throughout the pre-closure period. It will also ensure that they are as described in the pre- and post-closure safety assessments.
9. Regulatory Document [REGDOC-2.7.1, Radiation Protection, Version 1.1](#) and [REGDOC-2.7.2, Dosimetry, Volume I: Ascertaining Occupational Dose](#). The application must describe the approaches for meeting the requirements of the [Radiation Protection Regulations](#) for activities conducted under the licence to prepare site. The application must also describe how radiological hazards will be monitored and controlled during any site preparation activities, as applicable.
10. Regulatory document [REGDOC-2.8.1, Conventional Health and Safety](#). This document applies to all CNSC-licensed activities. This document does not include any requirements but is a source of conventional health and safety-related information for all applicants and licensees.
11. Regulatory Document [REGDOC-2.9.1, Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.2](#). This regulatory document provides information to applicants and licensees on protecting the environment and the health of persons.
12. Regulatory document [REGDOC-2.10.1, Nuclear Emergency Preparedness and Response, Version 2](#). This regulatory document sets out the emergency preparedness requirements and guidance of the CNSC related to the development of emergency measures for licensees and licence applicants of Class I nuclear facilities.
13. Regulatory document [REGDOC-2.11, Framework for Radioactive Waste Management and Decommissioning in Canada, Version 2](#). This regulatory document is relevant to all radioactive waste management, including the generation, handling, processing, storage, transport and disposal of radioactive waste, and all phases of decommissioning, including planning, preparation, execution and completion, in Canada.
14. Regulatory Document [REGDOC-2.11.1, Waste Management, Volume I: Management of Radioactive Waste](#) sets out requirements and guidance for managing radioactive waste. This document provides requirements and guidance, applicable as part of the licensing basis, for licensees managing radioactive wastes. Specifically, it addresses the management of radioactive wastes and radioactive waste storage and disposal facilities

15. Regulatory Document [REGDOC-2.11.2, Decommissioning](#). This regulatory document provides requirements and guidance regarding the planning and preparation for as well as the execution and completion of decommissioning.
16. Regulatory document [REGDOC-2.12.1, High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices](#). This document contains prescribed information and is available on a valid need-to-know basis.
17. Regulatory document [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2.1](#). This document sets out guidance to help applicants for a CNSC licence in respect of Category I or II nuclear material.
18. Regulatory document [REGDOC-2.13.1, Safeguards and Nuclear Material Accountancy](#). This document specifies the information, access and support that licensees shall provide to the CNSC and the IAEA to facilitate Canadian compliance with Canada's safeguards
19. Regulatory Document [REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills, Version 1.1](#). This regulatory document incorporates and clarifies requirements found in the NSCA and the regulations made under the NSCA for reporting. "Reporting" means reports on events, notifications and the submission of specific records, along with annual compliance monitoring reports.
20. Regulatory Document [REGDOC-3.2.1, Public Information and Disclosure](#). This document is to set out the regulatory requirements of the CNSC for public information and disclosure, for applicants and licensees. A program for public information includes a public disclosure protocol regarding events and developments involving their facilities and/or activities.
21. Regulatory document [REGDOC-3.2.2, Indigenous Engagement, Version 1.2](#). This document identifies requirements for CNSC licensees, with respect to Indigenous engagement. It also provides guidance and information on conducting Indigenous engagement activities.
22. Regulatory document [REGDOC-3.3.1, Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities](#). Applicants and licensees are required to make adequate provision for the safe decommissioning of existing or proposed new nuclear facilities by ensuring that sufficient financial resources are available to fund all approved decommissioning activities should the licensee not be able to fulfill its obligations.
23. Regulatory document [REGDOC 3.5.3, Regulatory Fundamentals, Version 3](#). This regulatory document is intended for information only and does not contain any requirements for CNSC licensees.

It describes the CNSC's regulatory approach and philosophy and outlines how the CNSC applies the NSCA and regulations made under the authority of the NSCA in its regulatory oversight.

24. Regulatory document [REGDOC-3.6, Glossary of CNSC Terminology](#). The glossary provides a list of terms and definitions used in the NSCA, the regulations made under the NSCA, and CNSC regulatory documents and other publications, such as annual reports and guidance documents. Acronyms and abbreviations are also included.

Post-closure safety case

Under the safety and control area (SCA) for safety analysis, the NWMO must analyze and demonstrate safety of the proposed project throughout both the pre-closure and post-closure periods. This includes all licensing stages leading to facility closure, as well as the long-term performance of the facility after closure. Requirements and guidance for pre-closure safety are provided in REGDOC-2.4.4, while post-closure safety requirements are outlined in REGDOC-2.11.1, Volume 3. The post-closure period extends over extremely long-time frames, during which safety must be ensured through passive barriers and system performance, with minimal reliance on human intervention. Due to the inherent uncertainties related to this very long time frame, REGDOC-2.11.1, Volumes 1 and 3, require the proponent to develop a post-closure safety case, an integrated collection of arguments and evidence to demonstrate the post-closure safety of the facility and the meeting of all applicable regulatory requirements. The post-closure safety case is a key component of the licence application and must include:

- The structure of the post-closure safety case. The flow of documentation should be clearly shown to correspond to that structure, and the information used to develop the post-closure safety case must be comprehensive, credible and traceable. Credibility of the safety case could be enhanced by an expert third-party peer review.
- A description of the DGR system and its individual components.
- A defined and justified assessment time frame for the evolution of the DGR system during that time frame.
- The acceptance criteria for selected safety indicators (e.g., dose, risk, radionuclide concentrations), in addition to addressing the principles of containment, isolation, defence-in-depth, and robustness.
- A safety assessment of all aspects relevant to post-closure safety of the DGR. It is a systematic process that includes quantitative analyses, the interpretation of the results and a comparison to the acceptance criteria for the selected safety indicators.
- A management system that conforms with the applicable requirements [CSA N286-12, Management system requirements for nuclear facilities, Toronto, 2012](#).

A post-closure safety case for the entire DGR lifecycle is required at the start of each major licensing stage, from site preparation through to decommissioning (which includes closure and decommissioning of ancillary facilities), and for the post-closure period until release from regulatory control. The post-closure safety case must be updated iteratively throughout the DGR lifecycle. Following a graded approach to safety, the rigour in developing the safety case is commensurate with the hazards from the waste to be

disposed (used nuclear Candu fuel) and the licensing stage (site preparation). The NWMO must show how the graded approach has been used in the development of the safety case. The sources of data (from desktop studies, site investigations, research and development, testing, demonstration, etc...), used to develop the safety case must be identified, and data limitations must be acknowledged. The uncertainties associated with safety arguments coming from limited data or process understanding must be acknowledged and evaluated, and future activities to reduce uncertainties must be proposed. The rationale for proceeding to site preparation despite those uncertainties must be provided.

Defence-in-depth in the post-closure period is achieved through a multi-barrier system that provides the core safety functions of containment and isolation. A multi-barrier system includes the engineered barriers consisting of the waste form, the used fuel container, seals in the underground facility (buffer, backfill, shaft seals) and the natural barrier, the host rock. The post-closure safety case must:

- Describe the multi-barrier system and its individual components, and their respective safety functions and specify the reference time frames during which the safety functions would be maintained.
- Determine the evolution and safety performance of the multi-barrier system and its components during the corresponding time frames. Expected and disruptive evolution scenarios should be defined and assessed.
- Assess the robustness of the multi-barrier system and its components by demonstrating that they do not lose their safety functions due to natural and anthropogenic disturbances expected during their reference time frames.
- Describe existing and future verification activities that provide confidence that the safety functions would be fulfilled, such as demonstration, prototype and/or mock-up building and testing, mathematical modelling, and others.
- Include any additional arguments (e.g., from natural analogues and paleohydrogeological information) to provide additional confidence in the fulfillment of the safety functions.

The natural barrier, the host rock, serves as the ultimate barrier of the multibarrier system. It plays a critical role in isolating the used fuel from the near-surface environment, providing favourable conditions for the performance of the engineered barriers, and retarding the migration of radionuclides should the engineered barriers be bypassed. The post-closure safety case must:

- Demonstrate that site characterization is sufficiently detailed, for the current licensing stage, to support current site description and understanding and its expected future evolution, as specified in REGDOC 2.11.1, Volume 1 subsection 11.2. Criteria for DGR site characterization and evaluation are provided in CSA N292.7:22, Deep geological disposal of radioactive waste and irradiated fuel, with further guidance on site characterization provided in REGDOC-1.2.1.
- The role of site characterization through the lifecycle of a DGR facility is provided in CSA N292.7.
- Ensure the quality of site characterization, as part of the disposal system description in support the safety case, as specified in REGDOC 2.11.1, Volume 3 in subsection 7.4.
- Identify remaining uncertainties and propose future verification and characterization activities to reduce the uncertainties, if applicable.

The post-closure safety assessment is an important component of the safety case. Requirements and guidance for the safety assessment are detailed in REGDOC-2.11.1, Volume 3. Due to the high hazards associated with used fuel, and the long duration of these hazards, the NWMO should pay special attention to the following:

- The reference time frame for the assessment must be defined and justified with respect to the duration of the hazards associated with the used fuel, and with other considerations suggested in REGDOC-2.11.1 V.III.
- Normal evolution scenarios must be defined. Disturbing events that are expected to occur in the future (e.g., glaciation, earthquakes, climate change) are to be included in the normal evolution scenarios and their probability of occurrence specified.
- Disruptive event scenarios must be defined. Disruptive event scenarios include disturbing events with lower probability of occurrence than the ones in normal evolution scenarios.
- What-if scenarios should be used to exhibit the robustness and performance of the multi-barrier system under extreme conditions. These scenarios assume the total or partial failure of a barrier or safety function without specifying the probability of such failure.
- The computing tools used in safety assessments and their inter-relation must be described. They should be qualified in accordance with applicable standards and must be verified, calibrated, and validated to provide confidence in their ability to perform long-term safety assessments.
- Uncertainty analysis of the assessment results must be performed to identify the sources and significance of the uncertainty and to show how they were handled in the current safety case and how they will be addressed in future iterations.

Safety and control area framework

The CNSC's regulatory requirements and expectations for the safety performance of programs are organized into a framework made up of 14 SCAs which are sub-divided into specific areas that define the key components of each SCA. The table that follows outlines each applicable SCA, their applicable specific areas, that relate to an application to prepare site for a DGR or subsequent licensing stage to facilitate planning.

Safety and Control Area Framework			
Functional area	Safety and control area	Definition	Specific areas
Management	Management system	Covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.	<ul style="list-style-type: none"> ▪ Management system ▪ Organization ▪ Performance assessment, improvement and management review ▪ Operating experience (OPEX), Problem

Safety and Control Area Framework			
Functional area	Safety and control area	Definition	Specific areas
			Identification and Resolution <ul style="list-style-type: none"> ▪ Change management ▪ Safety culture ▪ Configuration management ▪ Records management ▪ Supply and Contractor Management ▪ Business continuity
	Human performance management	Covers activities that enable effective human performance through the development and implementation of processes that ensure a sufficient number of licensee personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.	<ul style="list-style-type: none"> ▪ Human performance program ▪ Personnel training ▪ Personnel certification ▪ Work organization and job design ▪ Fitness for duty
	Operating performance	Includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.	<ul style="list-style-type: none"> ▪ Conduct of licensed activity ▪ Procedures ▪ Reporting and trending ▪ Outage management performance ▪ Safe operating envelope ▪ Severe accident management and recovery ▪ Accident management and recovery

Safety and Control Area Framework			
Functional area	Safety and control area	Definition	Specific areas
Facility and equipment	Safety analysis	Covers maintenance of the safety analysis that supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.	<ul style="list-style-type: none"> ▪ Deterministic safety analysis ▪ Hazard analysis ▪ Probabilistic safety analysis ▪ Criticality safety ▪ Severe accident analysis ▪ Management of safety issues (including R&D programs)
	Physical design	Relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.	<ul style="list-style-type: none"> ▪ Design governance ▪ Site characterization ▪ Facility design ▪ Structure design ▪ System design ▪ Component design
	Fitness for service	Covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.	<ul style="list-style-type: none"> ▪ Equipment fitness for service/equipment performance ▪ Maintenance ▪ Structural integrity ▪ Aging management ▪ Chemistry control ▪ Periodic inspection and testing
Core control processes	Radiation protection	Covers the implementation of a radiation protection program in accordance with the <i>Radiation Protection Regulations</i> . The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained ALARA.	<ul style="list-style-type: none"> ▪ Application of ALARA ▪ Worker dose control ▪ Radiation protection program performance ▪ Radiological hazard control

Safety and Control Area Framework			
Functional area	Safety and control area	Definition	Specific areas
	Conventional health and safety	Covers the implementation of a program to manage workplace safety hazards and to protect workers.	<ul style="list-style-type: none"> ▪ Performance ▪ Practices ▪ Awareness
	Environmental protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.	<ul style="list-style-type: none"> ▪ Effluent and emissions control (releases) ▪ Environmental management system (EMS) ▪ Protection of people ▪ Assessment and monitoring ▪ Environmental risk assessment
	Emergency management and fire protection	Covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine conditions. This area also includes any results of participation in exercises.	<ul style="list-style-type: none"> ▪ Conventional emergency preparedness and response ▪ Nuclear emergency preparedness and response ▪ Fire emergency preparedness and response
	Waste management	Covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. This area also covers the planning for decommissioning.	<ul style="list-style-type: none"> ▪ Waste characterization ▪ Waste minimization ▪ Waste management practices ▪ Decommissioning plans
	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.	<ul style="list-style-type: none"> ▪ Facilities and equipment ▪ Response arrangements ▪ Security practices ▪ Drills and exercises ▪ Cyber security
	Safeguards and non-proliferation	Covers the programs and activities required for the	<ul style="list-style-type: none"> ▪ Nuclear material accountancy and control

Safety and Control Area Framework			
Functional area	Safety and control area	Definition	Specific areas
		successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the <i>Treaty on the Non-Proliferation of Nuclear Weapons</i> .	<ul style="list-style-type: none"> ▪ Access and assistance to the IAEA ▪ Operational and design information ▪ Safeguards equipment, containment and surveillance ▪ Import and export
	Packaging and transport	Covers programs for the safe packaging and transport of nuclear substances to and from the licensed facility.	<ul style="list-style-type: none"> ▪ Package design and maintenance ▪ Packaging and transport ▪ Registration for use