

Potential Conditions

The Canadian Environmental Assessment Agency (the Agency) is contemplating the following potential conditions in relation to the Deep Geologic Repository for Low and Intermediate Level Radioactive Waste Project (the Designated Project) for recommendation to the Minister of the Environment for inclusion in a Decision Statement under the *Canadian Environmental Assessment Act, 2012*. Such conditions would become legally binding on the Proponent only if the Minister of the Environment decides that the carrying out of the Designated Project is unlikely to cause significant adverse environmental effects under subsections 5(1) and 5(2) or that the Governor in Council decides such effects are justifiable in the circumstances therefore allowing the Designated Project to proceed.

The Agency is considering having the Canadian Nuclear Safety Commission (CNSC) verify that the Proponent is compliant with the *Canadian Environmental Assessment Act, 2012*, which includes a requirement to comply with the conditions in the Decision Statement. In accordance with existing Memoranda of Understanding, the CNSC would consult Environment Canada and Fisheries and Oceans Canada as appropriate when verifying compliance.

1. Definitions

- 1.1. *Aboriginal groups* – means the Saugeen Ojibway Nation (including the Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation), the Métis Nation of Ontario and the Historic Saugeen Métis Community.
- 1.2. *Baseline* – environmental conditions immediately prior to initiating site preparation and construction of the Designated Project.
- 1.3. *CNSC* – the Canadian Nuclear Safety Commission.
- 1.4. *Days* – calendar days.
- 1.5. *Designated Project* – the Deep Geologic Repository Project for Low and Intermediate Level Radioactive Waste as described in documents to support the environmental assessment under the *Canadian Environmental Assessment Act, 2012*. Canadian Environmental Assessment Registry Reference Number 17520.
- 1.6. *DGR* – Deep Geologic Repository.
- 1.7. *EIS* – the Environmental Impact Statement as submitted to support the environmental assessment of the Designated Project under the *Canadian Environmental Assessment Act, 2012*.
- 1.8. *Fish* – as defined in the *Fisheries Act*, includes (a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.
- 1.9. *Fish habitat* – as defined in the *Fisheries Act*, spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes.

- 1.10. *Follow-up program* – as defined in the *Canadian Environmental Assessment Act, 2012*, a program for (a) verifying the accuracy of the environmental assessment of a designated project; and (b) determining the effectiveness of any mitigation measures.
- 1.11. *Local Study Area* – corresponds to the 10 km emergency planning zone centred on the Bruce nuclear site, as identified by Emergency Management Ontario or as otherwise defined by the CNSC.
- 1.12. *Mitigation measures* – as defined in the *Canadian Environmental Assessment Act, 2012*, measures for the elimination, reduction or control of the adverse environmental effects of a designated project, and includes restitution for any damage to the environment caused by those effects through replacement, restoration, compensation or any other means.
- 1.13. *Migratory bird* – a migratory bird referred to in the *Migratory Birds Convention Act, 1994* and includes the sperm, eggs, embryos, tissue cultures and parts of the bird.
- 1.14. *Postclosure phase* – includes abandonment and long-term performance.
- 1.15. *Preclosure phase* – includes site preparation and construction, operations and decommissioning.
- 1.16. *Designated Project phases* – includes site preparation and construction, operations, decommissioning, abandonment and long-term performance.
 - 1.16.1. *Site preparation and construction* – follows the issuance of the Site Preparation and Construction Licence and includes site preparation and all activities associated with the construction of the Designated Project until an Operating Licence is issued by the CNSC for operations to commence with the emplacement of waste.
 - 1.16.2. *Operations* – follows the issuance of the Operating Licence by the CNSC. Operations cover the waste emplacement period in the DGR and the period of monitoring that follows waste emplacement and prior to the start of decommissioning with the issuance of the Decommissioning Licence by the CNSC.
 - 1.16.3. *Decommissioning* – those actions taken, in the interest of health, safety, security and the protection of the environment, to retire a licensed facility permanently from service and render it to a predetermined end-state condition. Decommissioning begins once all of the waste has been emplaced and a period of monitoring has ended and a decommissioning licence has been obtained. Actions expected to occur during the decommissioning includes the closure of the repository shafts and the removal of surface structures to the required end-state condition.
 - 1.16.4. *Abandonment and long-term performance* – begins following completion of activities under the Decommissioning Licence issued by the CNSC and the issuance by the CNSC of a Licence to Abandon that includes conditions that would apply throughout a period of institutional control that is expected to be up to 300 years.
- 1.17. *Project Site or Project Area* – the geographic area occupied by the Designated Project and the area that will be affected by site preparation and construction of the surface facilities.

- 1.18. *Proponent* – Ontario Power Generation.
- 1.19. *Site Study Area* – corresponds to the property boundary of the Bruce nuclear site, including the existing licensed exclusion zone on land and in Lake Huron or as otherwise defined by the CNSC.
- 1.20. *Species at risk* – as defined in the *Species at Risk Act, 2002*, an extirpated, endangered or threatened species or a species of special concern.
- 1.21. *Qualified individual* – is defined as someone who, through suitable education, experience and knowledge relevant to a particular matter, may be reasonably relied on to provide advice within his or her area of expertise.
- 1.22. *Wetland* – land saturated with water long enough to promote formation of water altered soils, growth of water-tolerant vegetation and various kinds of biological activity that is adapted to the wet environment and separated into five classes: fen, bog, marsh, swamp and shallow open water wetlands (includes open water areas less than two metres deep with wetland characteristics).

Conditions

These conditions are established for the sole purpose of the Decision Statement that may be issued under the *Canadian Environmental Assessment Act, 2012*. They do not relieve the Proponent from any obligation to comply with other legislative or other legal requirements by the federal, provincial or local governments. Nothing in this document should be construed as reducing, increasing, or otherwise affecting what may be required to comply with all applicable legislative or other legal requirements.

2. General conditions

- 2.1. The Proponent shall, throughout all Designated Project phases, ensure its actions to mitigate adverse environmental effects in meeting the conditions set out in this document are informed by the best available information and knowledge, are based on validated methods and models, are undertaken by qualified individuals and apply the best available economically and technologically feasible strategies.
- 2.2. The Proponent shall, where consultation is a requirement of a condition set out in this document:
 - 2.2.1. provide written notice of the opportunity for the party or parties to present their views on the subject of the consultation;
 - 2.2.2. provide sufficient information and a reasonable period of time to permit the party or parties to prepare their views; and
 - 2.2.3. provide a full and impartial consideration of any views presented.
- 2.3. The Proponent shall, where consultation with Aboriginal groups is a requirement of the conditions set out in this document, first consult each Aboriginal group on the most appropriate manner to conduct the consultation.
- 2.4. The Proponent shall, where follow-up is a requirement of a condition set out in this document:
 - 2.4.1. verify the accuracy of the environmental assessment as it pertains to the condition and/or determine the effectiveness of any mitigation measure(s);
 - 2.4.2. where the results of condition 2.4.1 identify issues with respect to the accuracy of the environmental assessment and/or the effectiveness of mitigation measures, identify, in consultation with the CNSC, the means by which the Proponent will determine whether additional mitigation measures are required; and
 - 2.4.3. implement additional mitigation measures, as appropriate.
- 2.5. The Proponent shall submit to the CNSC an annual report, including an executive summary of the report in both official languages. The annual report is submitted no later than March 31. The Proponent shall document in the report:
 - 2.5.1. implementation activities undertaken in the preceding reporting year (defined as from January 1 to December 30) for each of the conditions;

- 2.5.2. how it has considered and incorporated the factors set out in condition 2.1 in the implementation of the conditions set out in this document;
 - 2.5.3. for conditions set out in this document for which consultation is a requirement, how it has considered any views and information received;
 - 2.5.4. the results of the follow-up program requirements identified in conditions 3.3, 4.3, 4.4, 4.6, 4.7, 4.8, 5.2, 8.1, 8.6, 8.7, 9.5, 10.1, 10.2, 10.3, 10.6, 11.5 and 12.3; and
 - 2.5.5. any corrective actions taken by the Proponent, or proposed to be taken, should the predictions of environmental effects prove to be inaccurate or the mitigation measures prove not to be effective.
- 2.6. The Proponent shall make the annual report and the executive summary referred to in condition 2.5, as well as the implementation schedule referred to in condition 15, available on its website upon submission to the CNSC. The Proponent shall, unless otherwise specified by the CNSC, keep these documents available on its website for twenty-five years following the end of operations or until the end of decommissioning of the Designated Project, whichever comes first.
 - 2.7. The Proponent shall, to the satisfaction of the CNSC, update and consolidate its mitigation commitments as set out in its August 25, 2014 Updated DGR Project Consolidated Commitment Lists Report and in its October 17, 2014 List of Commitments from the Additional Hearing Days in September 2014 and incorporate the conditions set out in this document into that consolidated list of mitigation commitments. The Proponent shall implement the consolidated list of mitigation commitments.

3. Storm water management

- 3.1. The Proponent shall, during all preclosure phases and to the satisfaction of the CNSC, establish and maintain a stormwater management system, including a stormwater management pond, to collect all discharge from the waste rock management area and runoff from the Project site, and to manage water quality downstream of the Project site.
- 3.2. The Proponent shall, prior to construction, submit to the CNSC a plan for treatment of all water destined for discharge from the stormwater management pond. The Proponent shall, throughout construction, operations and decommissioning and to the satisfaction of the CNSC, treat stormwater management pond releases such that they comply with section 36 of the *Fisheries Act*.
- 3.3. The Proponent shall, during all preclosure phases and to the satisfaction of the CNSC, monitor concentrations of contaminants and conducting acute and chronic toxicity tests on the contents of the stormwater management pond prior to release.
- 3.4. The Proponent shall, during all preclosure phases and to the satisfaction of the CNSC, implement a follow-up program to monitor a broad spectrum of parameters (e.g., metals, phosphate, total petroleum hydrocarbons) quarterly at the point of discharge of the storm water management pond.

- 3.5. The Proponent shall, over the life of the project and to the satisfaction of the CNSC and in order to support the design of the stormwater management system, calibrate and verify hydrological and water quality models with new information as it becomes available, including but not limited to, leachate geochemistry and flow rates. The models should be calibrated and verified prior to site preparation, at the end of construction, and periodically during operations and decommissioning and be used to support the design and operation of the stormwater management system.
- 3.6. The Proponent shall, to the satisfaction of the CNSC, review and, if necessary, revise the design of the stormwater management system, based on an assessment of the likelihood of significant changes in the return period and magnitude of major storm events.
- 3.7. The Proponent shall, before the stormwater management system is fully functional and to the satisfaction of the CNSC, prepare a contingency plan to mitigate effects of severe storm-related uncontrolled overland flow to Stream C, Baie de Doré, and MacPherson Bay during site preparation.

4. Fish and fish habitat

- 4.1. The Proponent shall, during site preparation and construction, implement measures to avoid adverse effects to fish and fish habitat associated with culvert installation at the North and South Railway Ditches, including:
 - 4.1.1. embedding culverts below the bed of the South Railway Ditch;
 - 4.1.2. isolating and dewatering the culvert site;
 - 4.1.3. deploying erosion and sediment control measures; and
 - 4.1.4. re-vegetating banks upon completion of construction at the North and South Railway Ditches.
- 4.2. The Proponent shall ensure that in-water works do not occur between July 1 and September 30.
- 4.3. The Proponent shall, during site preparation and to the satisfaction of the CNSC, develop and implement a follow-up program for flow reduction rates in the North Railway Ditch and Stream C that includes the identification of mitigation measures that shall be implemented, if necessary, to address adverse effects on surface water quantity.
- 4.4. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop and implement a follow-up program for aquatic life in the stormwater management system and the ditch at Interconnecting Road. The program shall include the collection of water quality and sediment quality data and the conduct of a risk assessment for fish, fish habitat and aquatic birds based on those data.
- 4.5. The Proponent shall, prior to construction and to the satisfaction of the CNSC, submit a management plan that provides a detailed description of the options available to increase the capacity of the drainage ditch at Interconnecting Road in the event the flow exceeds the capacity of the ditch, in order to avoid adverse effects on nearshore habitat in MacPherson Bay. The plan shall identify the relative potential effects of each of the options on the ecology of MacPherson Bay, and consider the relative effects when selecting and implementing the preferred option.

- 4.6. The Proponent shall, to the satisfaction of the CNSC, implement a follow-up monitoring program during site preparation and construction and operations to determine the effectiveness of the stormwater management system in mitigating water quality impacts in MacPherson Bay. The follow-up program shall include:
 - 4.6.1. conducting an effluent dispersion study in MacPherson Bay after commissioning of the stormwater management pond as support for the design for the follow-up monitoring program;
 - 4.6.2. collecting baseline data for all follow-up monitoring indicators prior to site preparation, including the collection of additional baseline sediment quality data in MacPherson Bay; and
 - 4.6.3. examining water quality, sediment quality, benthic invertebrate community indicators, and caged bivalve studies at determined sampling locations and frequencies.
- 4.7. The Proponent shall, during construction and operations and to the satisfaction of the CNSC, conduct a sediment quality follow-up program in MacPherson Bay. Prior to construction, the Proponent shall collect additional baseline sediment quality data at the ditch at Interconnecting Road and MacPherson Bay.
- 4.8. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop a lake whitefish follow-up program which includes provisions to incorporate input from interested stakeholders and the Saugeen Ojibway Nation. The follow-up program shall take into consideration the increasing understanding of the role of MacPherson Bay in the ecology of the area, and identify mitigation measures that shall be implemented, if necessary, to protect lake whitefish and lake whitefish nursery areas.

5. Migratory birds

- 5.1. The Proponent shall carry out all preclosure phases of the Designated Project in a manner that protects and avoids harming, killing or disturbing migratory birds or destroying or taking their nests or eggs. In this regard, the Proponent shall take into account Environment Canada's Avoidance Guidelines. The Proponent's actions in applying the Avoidance Guidelines shall be in compliance with the *Migratory Birds Convention Act, 1994* and with the *Species at Risk Act*.
- 5.2. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop and implement a follow-up program to monitor and assess the effectiveness of the mitigation measures used to avoid harm to migratory birds, their eggs and nests. The Proponent shall conduct this monitoring throughout all preclosure phases.

6. Current use of lands and resources for traditional purposes

- 6.1. The Proponent shall ensure that the Saugeen Ojibway Nation have continued access to the Jiibegmegoong burial grounds.
- 6.2. The Proponent shall, in order to mitigate the visual effect of the project, establish a 200 metre buffer area from the Interconnecting Road to the long-term waste rock management area. The Proponent shall provide screening via the construction of berms and/or planting of trees.

7. Air quality

- 7.1. The Proponent shall, prior to site preparation and to the satisfaction of CNSC, develop a detailed plan to manage air emissions that includes details on the implementation of the identified mitigation measures, frequency of air quality monitoring and site inspections, thresholds for corrective management actions and record keeping. Mitigation measures shall, at minimum, include:
- 7.1.1. the use of construction equipment that will meet, at minimum, Tier 2 emission standards;
 - 7.1.2. maintenance of equipment in good working order;
 - 7.1.3. watering of roadways for dust suppression;
 - 7.1.4. minimization of drop heights of rock and other material; and
 - 7.1.5. the use of vehicles meeting the newest emission standards.
- 7.2. The Proponent shall, during site preparation and construction and to the satisfaction of the CNSC, conduct a monitoring program for nitrogen oxides and particulate matter (PM₁₀ and PM_{2.5}) with specific consideration given to monitoring any air quality changes that would affect individuals living at or near the critical receptor locations used in the EIS models and the identification of a protocol for advising those individuals should concentrations exceed ambient air quality objectives for nitrogen oxides and particulate matter.

8. Health and socio-economic

- 8.1. The Proponent shall, during site preparation and construction and operations and to the satisfaction of the CNSC, conduct a follow-up program to monitor acrolein concentrations at air receptor sites for local residents and for Aboriginal groups, defined as AR 1, AR 2, AR 3 and AR 5 in the EIS.
- 8.2. The Proponent shall, throughout the preclosure phases of the project and to the satisfaction of the CNSC, implement noise and vibration monitoring at noise receptor sites defined as R1, R2 and R3 in the EIS and at additional monitoring locations identified in consultation with regulatory authorities, Aboriginal groups and permanent and seasonal residents in the Local Study Area. The Proponent shall develop explicit action levels for additional noise mitigation, acceptable to the CNSC, taking into consideration input from Aboriginal groups and permanent and seasonal residents in the Local Study Area.
- 8.3. The Proponent shall, in order to confirm the environmental assessment prediction of no adverse effects for members of the public and Aboriginal groups from exposure to radiation, add the collection of soil samples within the Site Study Area and Local Study Area during construction to its Radiological Environmental Monitoring Program.
- 8.4. The Proponent shall, before an operating licence is issued and to the satisfaction of CNSC, establish thresholds and screening methods for actinides for all waste packages to be emplaced in the DGR. The Proponent shall also, within the same time frame and to the satisfaction of CNSC, develop a contingency plan for managing waste packages that exceed the established thresholds.

- 8.5. The proponent shall, before an operating licence is issued and to the satisfaction of the CNSC, develop and implement a detailed plan on how it would mitigate a scenario where intermediate-level waste containers fail in filled chambers while the DGR is still in operation. The plan should evaluate the anticipated exposures to the workforce if the rooms were completely filled, as well as during the period when the retrieval of containers would still be possible via planned access routes.
- 8.6. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop a follow-up program for radon that includes the establishment of baseline radon levels and ongoing monitoring at locations including within the exhaust air shaft at the surface and near the waste rock management area. Monitoring shall continue until the end of operations.
- 8.7. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop a dust and noise follow-up program to examine social and economic effects of offsite dust and noise levels due to the Designated Project.

9. Species-at-risk

- 9.1. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, install barriers to prevent turtles and snakes from entering the Project site. The barriers shall include, at minimum, the installation of exclusion fencing along the southern and eastern edges of the Project site and shall be maintained throughout site preparation and construction.
- 9.2. The Proponent shall, to the satisfaction of the CNSC, implement measures to avoid adverse effects to snapping turtles and other turtle species at risk, including:
 - 9.2.1. delaying the infilling of “Wetland 3” until the latter years of site preparation and construction;
 - 9.2.2. conducting turtle surveys of “Wetland 3” throughout the years prior to its infilling. A qualified individual experienced in turtle surveys should conduct a minimum of three surveys per year on sunny days, beginning as soon as the ice cover has melted. The third survey should occur no later than mid-June; and
 - 9.2.3. relocating snapping turtles from “Wetland 3” to the northeast marsh prior to the infilling of “Wetland 3”.
- 9.3. The Proponent shall develop and implement a management plan to the satisfaction of the CNSC, to ensure its activities do not disrupt eastern ribbonsnake or eastern milksnake individuals, their eggs, gestation sites, hibernacula or habitat during site preparation and construction.
- 9.4. The Proponent shall, during and after the re-routing of the drainage ditch and to the satisfaction of the CNSC, maintain water levels in the northeast marsh at appropriate levels to protect snapping turtle habitat.
- 9.5. The Proponent shall, to the satisfaction of the CNSC, implement a follow-up program to monitor water levels in the northeast marsh:

- 9.5.1. monthly for a period of one year prior to site preparation and construction to establish baseline levels; and
- 9.5.2. weekly during the site preparation and construction phase.
- 9.6. The Proponent shall, prior to beginning construction of the stormwater management system and to the satisfaction of the CNSC, verify that the overburden stratigraphy at the site is the same as predicted in the EIS. If unexpected, higher permeability, stratigraphy is encountered, the Proponent shall assess the potential effect on water levels in the northeast marsh and evaluate and implement mitigation options to the satisfaction of the CNSC.

10. Plant and wildlife

- 10.1. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop a follow-up program to monitor any changes to cattail and other aquatic plant habitat within the stormwater system, including the stormwater management pond. Baseline conditions shall be established prior to habitat disturbance, and follow-up monitoring shall take place following the disturbance of habitat during all preclosure phases. The Proponent shall address any adverse change in these plant communities that, in turn, may adversely affect significant species, such as amphibians and reptiles, in accordance with the *Species at Risk Act*.
- 10.2. The Proponent shall, prior to construction and to the satisfaction of the CNSC, submit a follow-up program to monitor the establishment of a self-sustaining plant community that will provide habitat for amphibians, birds, invertebrates and small-bodied fish. The program shall contain mitigation measures to be taken, should concentrations of total dissolved solids in the storm water management system be observed at levels with the potential to affect sensitive plant or animal species.
- 10.3. The Proponent shall, prior to construction and to the satisfaction of the CNSC, develop a follow-up program to monitor the naturalization of disturbed areas during construction and operations. If monitoring indicates the presence of invasive plant species and noxious weeds, the Proponent shall implement appropriate mitigation measures.
- 10.4. The Proponent shall, during site preparation and construction and to the satisfaction of the CNSC, monitor for indications of potential effects on plants as a result of changes in air quality caused by the Designated Project in the Project Area and the Site Study Area.
- 10.5. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, confirm the absence of significant plant species in the Project Area. If significant species are located, the Proponent shall, following consultation with appropriate regulatory agencies and the CNSC, take action to avoid or mitigate the potential loss.
- 10.6. The Proponent shall, to the satisfaction of the CNSC, conduct a follow-up program on radiation levels in air, water, soil, sediment, terrestrial and aquatic biota in the Project Area and Local Study Area.

11. Groundwater

- 11.1. The Proponent shall, during site preparation and construction and to the satisfaction of the CNSC, place a liner under the stormwater management pond.
- 11.2. The Proponent shall, during site preparation and construction and to the satisfaction of the CNSC, place a liner under the waste rock management areas to direct leachate to a treatment facility or the stormwater management pond.
- 11.3. The Proponent shall not, during any phase of the project, dispose of waste rock outside the boundaries of the stormwater management system without the permission of the CNSC.
- 11.4. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, use information from existing and planned groundwater monitoring wells to verify the zone of influence from dewatering during excavation and construction. The Proponent shall use the results to inform the final design of shaft excavation procedures and infrastructure, including mitigation of groundwater inflow from surficial and shallow bedrock groundwater zones.
- 11.5. The Proponent shall, to the satisfaction of the CNSC, implement a follow-up program for groundwater quality and groundwater inflow rates into the shafts and repository. If groundwater inflows exceed predicted values or if the zone of influence is larger than expected, the Proponent shall implement mitigation measures to either reduce groundwater inflow or the zone of influence. If groundwater loadings and/or concentrations of contaminants of concern exceed environmental assessment predictions, the Proponent shall implement mitigation measures to avoid adverse effects to surface water quality, to the satisfaction of the CNSC.
- 11.6. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, update the hydrogeologic properties of the till cover in the water balance and surface water/groundwater interaction numerical models and undertake further updates to the models as more data become available.
- 11.7. The Proponent shall, prior to shaft sinking and to the satisfaction of the CNSC, enhance its capability to detect and monitor the movement of the tritium plume originating from the Western Waste Management Facility by adding an adequate number of monitoring wells up-gradient of the DGR shafts.
- 11.8. The Proponent shall, to the satisfaction of the CNSC, conduct a comprehensive assessment of the migration of the tritium plume originating from the Western Waste Management Facility site. The assessment shall include updated modelling of the tritium plume migration. If groundwater modelling or monitoring indicates that the tritium plume may reach the shaft before the shaft collars are installed, the Proponent shall prepare a contingency plan, to the satisfaction of the CNSC, and implement that plan as required.

12. Waste rock management

- 12.1. The Proponent shall, prior to construction and to the satisfaction of the CNSC, improve the characterization of the leachate that will be generated by the waste rock piles, by performing kinetic leach tests on existing dolostone, shale and limestone core samples. During shaft excavation the Proponent shall conduct field cell studies on the material being deposited in the

dolostone, shale and limestone waste rock piles to verify leachate compositions and the acid generation potential under prevailing conditions.

- 12.2. The Proponent shall, prior to construction and to the satisfaction of the CNSC, submit a waste rock characterization program for the duration of construction that will include sampling of full-strength leachates to examine contaminants of concern other than those linked to acid generating potential (including, but not limited to metals and metalloids released under alkaline conditions, total dissolved solids and hydrocarbons).
- 12.3. The Proponent shall, prior to construction to the satisfaction of the CNSC, develop a waste rock follow-up program which shall be implemented throughout all preclosure phases of the Designated Project and shall, based on sampling of full strength leachates, include monitoring the quantity and quality of leachate and surface runoff directed to the stormwater management system.

13. Accidents and malfunctions

- 13.1. The Proponent shall, throughout all preclosure phases, undertake all reasonable measures to prevent accidents and malfunctions that may result in adverse human and/or environmental effects and effectively implement appropriate emergency response procedures and contingencies developed in relation to the Designated Project.
- 13.2. In the event of an accident or malfunction with the potential to cause adverse environmental effects, the Proponent shall implement measures to minimize any adverse environmental effects associated with the occurrence, in accordance with procedures and protocols established under the CNSC regulations and licencing conditions.
- 13.3. The Proponent shall, prior to site preparation and to the satisfaction of the CNSC, develop and implement a detailed spill response plan throughout all Designated Project phases. Containment methods, locations and strategies set out in the plan shall be designed and implemented in a manner that will enable spill mitigation to be deployed in time to prevent downstream effects.
- 13.4. The Proponent shall, before a licence to operate the DGR is issued and to the satisfaction of the CNSC, prepare an inspection protocol for waste containers, beyond visual inspection, that must be followed before their placement in the DGR. The protocol shall include procedures that ensure that container venting mechanisms will remain functional following emplacement in the DGR.
- 13.5. The Proponent shall, starting prior to construction and until the end of operations, investigate and report to the CNSC on a regular basis on the effectiveness of existing and emerging imaging technologies which could be used to detect waste-to-container interactions that may lead to container breaches. If effective non-destructive testing methods become available, subject to the approval of the CNSC, they should be promptly instituted by the Proponent to supplement visual inspections of waste packages.
- 13.6. The Proponent shall, as soon as possible prior to site preparation and to the satisfaction of the CNSC, implement a testing program with respect to post-closure containment of radionuclides and other contaminants that will examine:

- 13.6.1. long term seal performance and seal material behaviour under similar conditions and depths to those that each seal material will experience in the DGR; and
- 13.6.2. consideration of the chemical, hydraulic and physical interaction of the seals with specific rock formations, including the host and cap formations and other formations that may influence the long-term safety case, and the associated excavation damage.
- 13.7. The Proponent shall, before a licence to operate is issued, finalize and obtain the approval of the CNSC of its Waste Acceptance Criteria, including measures to avoid releases of container contents prior to their emplacement in, and the closure of, the repository panels.
- 13.8. The Proponent shall, before a licence to operate is issued and to the satisfaction of the CNSC, perform research, and report on, the predicted long-term stability (up to decommissioning) of the solidified active liquid waste sludges and the potential release of liquids when exposed to conditions applicable to the DGR to confirm that no further measures are required to control condensation from, and leakage of, sludges following packaging.
- 13.9. The Proponent shall, before a licence to operate is issued and to the satisfaction of the CNSC, perform probabilistic calculations for radiation exposures to humans and non-human biota for the Normal Evolution and Disruptive Scenarios. These calculations should supplement the deterministic calculations in the current long-term safety case assessment.
- 13.10. The Proponent's future modelling for all variant cases of the Disruptive Scenarios shall, to the satisfaction of the CNSC, provide clear and accessible evaluations of the amounts and activities of discharges into Lake Huron via the shallow and intermediate groundwater systems.

14. Climate change

- 14.1. The Proponent shall, prior to construction, develop and regularly update, to the satisfaction of the CNSC, a climate change strategy that:
 - 14.1.1. incorporates the results of up-to-date climate change models;
 - 14.1.2. analyses how the environment may affect the Designated Project; and
 - 14.1.3. identifies any changes to project implementation or mitigation required in light of those analyses.
- 14.2. The Proponent shall, to the satisfaction of the CNSC, use the results of the climate change strategy to inform the understanding of probable maximum precipitation events and, if required, adjust design elements including the storm water management system and shaft collar height.
- 14.3. The Proponent shall, prior to operations and to the satisfaction of the CNSC, augment the Geoscientific Verification Plan to provide additional gas generation modelling for the decommissioned DGR and to include modelling of gas generation from decommissioning waste in a manner that will ensure there will be timely information available for the design and implementation of the mitigation measures associated with reduction of gas generation.

15. Implementation schedule

- 15.1. The Proponent shall, 90 days prior to initiating site preparation, submit to the CNSC an implementation schedule for the conditions within this document. The implementation schedule shall indicate the commencement and completion dates for each activities relating to conditions set out in this document with sufficient detail to allow the CNSC to plan compliance verification activities.
- 15.2. The Proponent shall submit on an annual basis an update to the site preparation and construction schedule in writing from the date of the initial submission of the schedule until the commencement of operation of the Designated Project.

16. Record keeping

- 16.1. The Proponent shall record, retain and make available to the CNSC, upon request, information related to the implementation of the conditions of this document, in accordance with procedures and protocols established under the CNSC regulations and licencing conditions.