

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (1) (a)	An application for a licence shall contain the following information: the applicant's name and business address;	The name of the applicant is Ontario Power Generation Incorporated (OPG). OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity in Ontario. OPG was created under the Business Corporations Act (Ontario), and is wholly owned by the Province of Ontario. OPG operates a variety of nuclear and non-nuclear generating stations, as well as nuclear waste management facilities. OPG's nuclear generating stations and nuclear waste management facilities are all operated in accordance with licences issued by the Canadian Nuclear Safety Commission. The business address for Ontario Power Generation Inc. is: 700 University Avenue, Toronto, Ontario, M5G 1X6	<ul style="list-style-type: none"> OPG Letter, K.E. Nash to B. Howden, "Deep Geologic Repository for Low and Intermediate Level Waste (DGR) - Application for the Site Preparation and Construction Licence", CD# 00216-CORR-00531-00033, August 13, 2007 	
3 (1) (b)	the activity to be licensed and its purpose;	The activities to be licensed are <u>preparation of the site for</u> and <u>construction of</u> a Deep Geologic Repository (DGR) for long-term management of the low and intermediate level waste (L&ILW) produced by OPG-owned or operated nuclear reactors. The activities are expected to last approximately five to seven years after obtaining the site preparation and construction licence. The location of the DGR is adjacent to OPG's Western Waste Management Facility (WWMF) on the Bruce nuclear site, in the Municipality of Kincardine. The ultimate purpose of the activities to be licensed is the long-term management of the operational and refurbishment L&ILW currently stored at WWMF, as	<ul style="list-style-type: none"> OPG Letter, K.E. Nash to B. Howden, "Deep Geologic Repository for Low and Intermediate Level Waste (DGR) - Application for the Site Preparation and Construction Licence", CD# 00216-CORR-00531-00033, August 13, 2007 Deep Geologic Repository for Low and Intermediate Level Waste – Preliminary Safety Report, OPG 00216-SR-01320-00001 R000, March 2011: <ul style="list-style-type: none"> Section 9.2, Site Preparation Section 9.3 Other Activities Required 	UMMR 3 (b) (i)

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		well as the future operational and refurbishment L&ILW produced as a result of continued operation of OPG-owned or operated nuclear reactors. The kind of activities covered under site preparation and construction are described in the Preliminary Safety Report (hereafter referred to as the PSR).	for Construction – Section 9.4 Construction	
3 (1) (c)	the name, maximum quantity and form of any nuclear substance to be encompassed by the licence;	No nuclear substances, as defined under the Nuclear Safety and Control Act (NSCA), will be encompassed by the site preparation and construction licence. Any site preparation and construction activities that might require construction-related tools containing radioactive nuclear substances as defined in the Nuclear Substances and Radiation Devices Regulations will be performed under the authority of the CNSC nuclear substance and device licences.	• Evidence not required	GNSCR 3 (1) (j) UMMR 3 (c) (ix)
3 (1) (d)	a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence;	The DGR Facility is a Class 1B nuclear facility as defined under the NSCA, to be constructed under the site preparation and construction licence. The DGR Facility includes the deep geologic repository for low and intermediate level waste located at a depth of approximately 680 m, and various surface and underground support facilities. The support facilities include infrastructure for receiving, inspecting and handling waste packages, for transferring waste packages from the surface to the repository horizon, for handling the waste packages in the repository, for emplacing waste packages, for constructing room shield walls, and for material storage.	Description of the DGR Facility is provided in: • PSR, Chapter 6, Facility Description • PSR, Chapter 17, Engineering Drawings Description of waste inventories and packages to be handled at the DGR Facility is provided in: • PSR, Chapter 5, Waste Inventory • Reference Low and Intermediate Level Waste Inventory for the Deep Geologic Repository, OPG 00216-REP-03902-00003-R003, December 2010	C1NFR 5 (a) UMMR 3 (a) (iv) UMMR 5 (1) (a)
		No prescribed equipment will be used during the preparation of the site for and construction of the DGR.	• Evidence not required	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		There will be no prescribed information associated with the preparation of the site for and construction of the DGR as the Nuclear Security Regulations do not apply to this facility. However, a confidential document has been submitted separately describing the security provisions for the DGR during site preparation and construction.	<ul style="list-style-type: none"> OPG Letter, A. Sweetnam to JRP Chair, “Deep Geologic Repository (DGR) for Low and Intermediate Level Waste – Security Provisions” (OPG-Confidential), CD# 00216-CORR-00531-00089, April 2011 	
3 (1) (e)	the proposed measures to ensure compliance with the <i>Radiation Protection Regulations</i> and the <i>Nuclear Security Regulations</i> ;	<p><u>Compliance with Radiation Protection Regulations:</u></p> <p>During site preparation and construction of the DGR, workers will not be at risk of receiving radiation doses over the public dose limits, as OPG will not possess, transfer, use or store any nuclear substances on the DGR site under the site preparation and construction licence. Specific measures for compliance with the Radiation Protection Regulations are therefore not required with respect to OPG’s licence application.</p>	<ul style="list-style-type: none"> PSR, Section 9.4.9.2, Radiological Safety 	RP 4 (a) RP 4 (b) RP 5 (1) RP 5 (2) RP 6 (2)
		<p>The DGR is designed to ensure that workers and general public will be protected from exposure to radiation through specific features in DGR design supportive of radiation protection, use of protective equipment, and implementation of OPG’s Radiation Protection Program, in compliance with the Radiation Protection Regulations.</p>	<p>Since the purpose of the DGR is long-term management of L&ILW, radiological safety during operations is described in the licensing submissions as follows:</p> <ul style="list-style-type: none"> PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> Section 6.2.1.2, Waste Package Receiving Building Section 6.3.4 Underground Shaft and Services Area Section 6.3.5 Emplacement Rooms Section 6.3.8, Underground Ventilation Section 6.5.1 (Methods of Surface Waste Package Handling) General Section 6.5.3, Underground Transfer and Emplacement in Rooms 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
			<ul style="list-style-type: none"> - Section 6.10, Zoning - Section 6.11, Radiation Monitoring • PSR, Section 10.1, Radiation Protection Program: <ul style="list-style-type: none"> - Section 10.1.1, Keeping Doses ALARA - Section 10.1.2, Control of Radiation Exposure and Contamination 	
		<p><u>Compliance with Nuclear Security Regulations</u></p> <p>OPG will not possess, transfer, use or store on the DGR site any Category I, II or III nuclear material (as defined either under the Nuclear Security Regulations) under the site preparation and construction licence and afterwards. Specific design measures for compliance with the Nuclear Security Regulations are therefore not required for the DGR.</p>	<ul style="list-style-type: none"> • Evidence not required 	
3 (1) (f)	any proposed action level for the purpose of section 6 of the <i>Radiation Protection Regulations</i> ;	<p>During site preparation and construction of the DGR there will be no doses of radiation that would require OPG to develop action levels pursuant to section 6 of the Radiation Protection Regulations.</p> <p>Site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p> <p>Action levels are, therefore, not required during the site preparation and construction phase. For the operational phase of the DGR, however, OPG will propose action levels for CNSC acceptance closer to</p>	<ul style="list-style-type: none"> • PSR, Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	RP (6) UMMR 4 (2) (a)

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		obtaining the operating licence.		
3 (1) (g)	the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment or prescribed information;	The DGR Facility is located within the Bruce nuclear site and will be encompassed by the larger Bruce nuclear site security system. The Bruce nuclear site is entirely surrounded by a perimeter fence that restricts access to the site via land or water. Access to the Bruce nuclear site itself is strictly controlled by Bruce Power Security personnel. Only authorized personnel and vehicles are allowed on the site. All construction personnel will require site security clearance. During DGR construction, the only access to the site will be via controlled checkpoints and all construction traffic will enter the Bruce nuclear site via the main entrance. Bruce Power provides security for OPG facilities on the Bruce nuclear site.	<ul style="list-style-type: none"> PSR, Section 2.3, Site Security PSR, Section 9.2.1, Fencing and Security 	
		No nuclear substances will be used during the preparation of the site for and construction of the DGR. There will be no prescribed equipment or prescribed information associated with the preparation of the site for and construction of the DGR, as the Nuclear Security Regulations do not apply to this facility.	<ul style="list-style-type: none"> Evidence not required 	
		The proposed measures to control access to the site to be encompassed by the site preparation and construction licence, are presented in a separate confidential submission.	<ul style="list-style-type: none"> OPG Letter, A. Sweetnam to JRP Chair, “Deep Geologic Repository (DGR) for Low and Intermediate Level Waste – Security Provisions” (OPG-Confidential), CD# 00216-CORR-00531-00089, April 2011 	
3 (1)	the proposed measures to prevent loss or illegal use,	No nuclear substances or prescribed equipment will be used during the preparation of the site for and	<ul style="list-style-type: none"> OPG Letter, A. Sweetnam to JRP Chair, “Deep Geologic Repository (DGR) for Low 	UMMR

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
(h)	possession or removal of the nuclear substance, prescribed equipment or prescribed information;	<p>construction of the DGR. There will be no prescribed information encompassed by the site preparation and construction licence. Theft, loss, illegal use, possession or removal of nuclear substances, prescribed equipment or prescribed information is, therefore, not an issue.</p> <p>General security provisions for the DGR are provided in a confidential submission.</p>	and Intermediate Level Waste – Security Provisions" (OPG-Confidential), CD# 00216-CORR-00531-00089, April 2011	3 (e)
3 (1) (i)	a description and the results of any test, analysis or calculation performed to substantiate the information included in the application;	<p>An overall evaluation of the DGR site was performed to determine the suitability of the site for the repository. The major focus of site characterization was confirmation of the geologic setting. The site characterization results are used as input to repository design and safety assessment, and in building the safety case for the DGR.</p> <p>The site characterization results along with a description of the activities are documented in a geosynthesis document, which is a geoscientific explanation of the overall understanding of site characteristics, attributes and evolution of the site as they relate to demonstrating long term DGR performance and safety.</p> <p>The site characterization work also provides the information necessary to develop a comprehensive descriptive geosphere model that provides an understanding of the current condition of the site (baseline), its past evolution and likely future natural evolution over the period of interest for safety.</p>	<ul style="list-style-type: none"> • PSR, Chapter 3, Site Evaluation and Characterization • PSR Chapter 4, Geoscience • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> – Chapter 2, Geological Framework – Chapter 3, Geomechanical Framework – Chapter 4, Hydrogeochemistry – Chapter 5, Hydrogeology – Chapter 6, Future Evolution of the Bruce Nuclear Site • Descriptive Geosphere Site Model, NWMO DGR-TR-2011-24 R000, March 2011: <ul style="list-style-type: none"> – Section 1.3, Geoscientific Site Characterization Plan – Section 2.3, DGR Borehole Investigation Program 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>During construction of the shaft and the underground portion of the DGR, radon could potentially pose a radiological hazard. A radon assessment in the underground environment was conducted based on the rock properties at the DGR site. The assessment has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p>	<ul style="list-style-type: none"> • PSR, Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	
		<p>The DGR is designed for long-term management of solid low and intermediate level wastes. Assessments were performed to estimate the potential radiological and non-radiological impacts on humans and non-human biota, and to demonstrate the safety of the repository during operation and after its closure.</p> <ul style="list-style-type: none"> • Assessments were performed to estimate the potential radiological (including radon) and non-radiological impacts on public and the workers due to DGR operation under normal and abnormal operating conditions and credible accident conditions. The assessments have concluded that doses due to normal operation, and malfunctions and accidents remain below the regulatory limits and dose targets identified in Section 7.1.2, Criteria, of the PSR. 	<p>Since the purpose of the DGR is long-term management of L&ILW, the description of the assessments performed for the DGR during operations phase and after its closure (including the results) are presented in the licensing submissions as follows:</p> <ul style="list-style-type: none"> • PSR: <ul style="list-style-type: none"> – Chapter 7, Preclosure Safety Assessment <ul style="list-style-type: none"> ▪ Section 7.4, Radiological Safety during Normal Operations: <ul style="list-style-type: none"> – Section 7.4.2, Radiological Assessment of Air and Water Emissions from DGR on Public – Section 7.4.3, Radiological Assessment of Air Emissions on Workers – Section 7.4.4, Assessment of External Radiation on Workers and Public – Section 7.4.5, Assumptions and Uncertainty in Normal 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<ul style="list-style-type: none"> A conservative assessment was performed to estimate the potential radiological and non-radiological impacts on humans and non-human biota during the postclosure period, for normal evolution and disruptive scenarios. The assessment has concluded that acceptance criteria for DGR safety in the postclosure period can be met. 	<p>Operations Assessment</p> <ul style="list-style-type: none"> Section 7.5, Accident Assessment <ul style="list-style-type: none"> Appendix A, Preclosure Safety Assessment Calculation Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> Section 4.3, Estimated Radon Concentration and Doses in the DGR during Operations Phase Maximum Flood Hazard Assessment, NWMO DGR-TR-2011-35, March 2011 PSR, Chapter 8, Postclosure Safety Assessment: <ul style="list-style-type: none"> Section 8.6, Normal Evolution Scenario Section 8.7, Disruptive Scenarios Section 8.8, Assessment of Uncertainties Postclosure Safety Assessment, NWMO DGR-TR-2011-25 R000, March 2011: <ul style="list-style-type: none"> Chapter 6, Assessment Models Chapter 7, Results and Discussion Appendix B, Calculation Cases 	
3 (1) (j)	the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed,	Activities under the site preparation and construction licence will not generate any radioactive wastes. Hazardous waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices and will be managed and disposed of accordingly. Explosives	<ul style="list-style-type: none"> PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> Section 9.2.2, Clearing and Grubbing Section 9.2.3, Site Grading Section 9.3.2, Stormwater Management Section 9.3.3, Waste Rock Handling 	GNSCR 3 (1) (c) C1NFR 3 (e)

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	processed or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste;	will be required for excavation of the shafts and underground facilities. Handling of explosives on the project site (surface and underground) will be in accordance with Part VI of the Mines and Mining Plants Regulations (Reg. 854).	Section 9.3.4, Conventional and Hazardous Materials Management	UMMR 3 (c) (ix)
3 (1) (k)	the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the Act and the regulations made under the Act, including the internal allocation of functions, responsibilities and authority;	<p>OPG is the owner and licensee of the DGR throughout the entire lifecycle of the project. The operating model adopted for the project prior to starting DGR operations is based upon owner's oversight of all activities to design, prepare the site, construct, commission, and to ensure operational readiness of the repository.</p> <p>The Nuclear Waste Management Organization (NWMO) has been contracted by OPG to conduct all activities associated with the design and construction of the DGR.</p> <p>Organizational management structures have been established for the DGR project to ensure that responsibilities for performing activities are kept separate from the responsibilities for review and oversight. The internal allocation of functions, responsibilities and authorities are such that during the project, the health and safety of workers and general public, and the environment are protected at all times, and all regulatory requirements are met in accordance with the applicable acts and regulations.</p> <p>OPG, as owner, establishes the performance requirements. During the design and construction of the DGR, OPG maintains overall responsibility for the development of the repository through oversight and monitoring the performance of the NWMO in all aspects of the DGR design, site preparation,</p>	<p>The overall management approach is described in:</p> <ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.3, Project Management • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Chapter 2, Project Management Approach <p>OPG's organizational management structure is described in:</p> <ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> ▪ Section 1.5.1, Organizational Arrangements ▪ Appendix C, Ontario Power Generation Roles and Responsibilities for Deep 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>construction, commissioning, and turnover to operations. OPG performs project oversight to ensure that the project goals are achieved; all activities meet requirements through financial, engineering and project reviews, audits, surveillance, inspections and tests; and that its direct contracts are successfully completed. During construction, OPG assumes the role and responsibilities of the "Project Owner", as defined under the Ontario Occupational Health and Safety Act and its Regulations (OH&SA s.30).</p> <p>During the design stage, NWMO plans, organizes, directs and controls the design and engineering work for the DGR Project under OPG oversight. During construction, NWMO assumes the role and responsibilities of "Constructor" (OH&SA s.23) and "Employer" (OH&SA s.25 and s.26). The project organization will include qualified personnel providing on-site functions including construction management, project planning and control, procurement, health, safety, environment, engineering, commissioning and operations planning.</p>	<p>Geological Repository Project – Design & Construction Phase</p> <p>NWMO's organizational management structure (as Design and Construction Management company) is described in:</p> <ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> ▪ Chapter 3, Project Organization during the Design and Construction Phase ▪ Appendix A, Figure 1, L&ILW DGR Design and Construction Project Organization – Construction ▪ Appendix A, Figure 2, NWMO Corporate Functions Supporting DGR Project ▪ Appendix B, Roles and Responsibilities during the Design and Construction Phase 	
3 (1) (j)	a description of any proposed financial guarantee relating to the activity to be licensed; and	The financial guarantee related to the DGR and its decommissioning at the end of construction (to meet this regulatory requirement) is proposed in accordance with the CNSC Guide G-206, Financial Guarantees for the Decommissioning of Licensed Activities.	<ul style="list-style-type: none"> • Deep Geologic Repository for Low and Intermediate Level Waste Financial Guarantee for Post-Construction Decommissioning, attached to OPG Letter, A. Sweetnam to Don Howard, "Submission of Information on Financial Guarantee in Support of OPG's Licence Application for Low and Intermediate Level Waste Deep Geologic Repository", CD# 00216-CORR-00531-00092, April 2011 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (1) (m)	any other information required by the Act or the regulations made under the Act for the activity to be licensed and the nuclear substance, nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.	-	<ul style="list-style-type: none"> As required 	
3 (1.1) (a)	The Commission or a designated officer authorized under paragraph 37(2)(c) of the Act, may require any other information that is necessary to enable the Commission or the designated officer to determine whether the applicant is qualified to carry on the activity to be licensed; or	-	<ul style="list-style-type: none"> As required 	
3 (1.1) (b)	will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.	-	<ul style="list-style-type: none"> As required 	
15 (a)	Every applicant for licence and every licensee shall notify the	For the purposes of OPG's Site Preparation and Construction Licence Application for the DGR, the following people have authority to act for Ontario	<ul style="list-style-type: none"> OPG Letter from Imtiaz Malek to T. E. Schaubel, D. Howard and P. A. Webster, "Persons Authorized to Act on Behalf of 	

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	Commission of the persons who have authority to act for them in their dealings with the Commission.	Power Generation in dealing with the Canadian Nuclear Safety Commission: <ul style="list-style-type: none"> Mr. Tom Mitchell, President and Chief Executive Officer Mr. Wayne Robbins, Chief Nuclear Officer Mr. Albert Sweetnam Executive Vice President 	OPG in Dealings with the CNSC", CD# N-CORR-00531-05063, December 3, 2010.	
15 (b)	the names and position titles of the persons who are responsible for the management and control of the licensed activity and the nuclear substance, nuclear facility, prescribed equipment or prescribed information encompassed by the licence.	For the purposes of OPG's Site Preparation and Construction Licence Application for the DGR, the following person will be responsible for the management and control of the activities associated with the licence, when issued: <ul style="list-style-type: none"> Mr. Albert Sweetnam Executive Vice President 	<ul style="list-style-type: none"> OPG Letter, W. Robbins to M. Leblanc, "Changes in Control and Management of Activities to be Licensed", CD# 00216-CORR-00531-00073, August 12, 2009 	
27	Every licensee shall keep a record of all information relating to the licence that is submitted by the licensee to the Commission.	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System 	GNSCR 28
28	(1) Every person who is required to keep a record by the Act, the regulations made under the Act or a licence shall retain the record for the period specified in the applicable regulations made under the Act or, if no period is	Same as above	Same as above	GNSCR 27

Compliance Matrix

GENERAL NUCLEAR SAFETY AND CONTROL REGULATIONS (GNSCR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	<p>specified in the regulations, for the period ending one year after the expiry of the licence that authorizes the activity in respect of which the records are kept.</p> <p>(2) No person shall dispose of a record referred to in the Act, the regulations made under the Act or a licence unless the person</p> <p>(a) is no longer required to keep the record by the Act, the regulations made under the Act or the licence; and</p> <p>(b) has notified the Commission of the date of disposal and of the nature of the record at least 90 days before the date of disposal.</p> <p>(3) A person who notifies the Commission in accordance with subsection (2) shall file the record, or a copy of the record, with the Commission at its request.</p>			

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (a)	<p>An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the <i>General Nuclear Safety and Control Regulations</i>:</p> <p>a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone;</p>	<p>The DGR Facility is located at the Bruce nuclear site. The Bruce nuclear site is located in the Municipality of Kincardine, at a longitude of 81°30' west and latitude 44°20' north, on the eastern shore of Lake Huron. The DGR Facility is located within OPG retained lands and is adjacent to the WWMF.</p>	<ul style="list-style-type: none"> • PSR, Chapter 1, Introduction: <ul style="list-style-type: none"> – Section 1.2, DGR Project Overview – Figure 1-1, Location of the DGR within the Bruce Nuclear Site – Figure 1-2, DGR Site – Figure 1-3, Schematic of the DGR • PSR, Section 2.1, Site Location and General Description: <ul style="list-style-type: none"> – Section 2.1.1, DGR Site Location – Section 2.1.2, DGR Site Geology – Section 2.1.3, Bruce Nuclear Site Topography – Figure 2-1, Location of DGR Site Relative to the Bruce NGSS A and B Exclusion Zones • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> – Section 6.2, Surface Buildings and Infrastructure – Section 6.3, Underground Facilities 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (b)	plans showing the location, perimeter, areas, structures and systems of the nuclear facility;	-	<ul style="list-style-type: none"> • PSR, Chapter 1, Introduction: <ul style="list-style-type: none"> - Figure 1-1, Location of the DGR within the Bruce Nuclear Site - Figure 1-2, DGR Site - Figure 1-3, Schematic of the DGR • PSR, Section 2.1, Site Location and General Description: <ul style="list-style-type: none"> - Figure 2-1, Location of DGR Site Relative to the Bruce NGSs A and B Exclusion Zones • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Figure 6-1, DGR Surface Facilities - Figure 6-2, Layout of DGR Underground Facilities - Figure 6-6, Isometric View of the Repository Level • PSR, Chapter 17, Engineering Drawings <ul style="list-style-type: none"> - Operations Layout General Arrangement, DWG. No. 11T1076-C-SK1 - Waste Rock Management Area – Site Grading and Drainage, DWG. No. H333000-WP404-10-042-0001, Rev.00 - Waste Rock Management Area – Base Case, DWG. No. H333000-WP404-10-042-0003, Rev.01 	<p>UMMR 3 (a) (ii)</p> <p>UMMR 3 (a) (iii)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (c)	evidence that the applicant is the owner of the site or has authority from the owner of the site to carry on the activity to be licensed;	-	<ul style="list-style-type: none"> • Proof of land ownership showing evidence that OPG owns the land on which the proposed DGR is to be built is attached to OPG Letter, A. Sweetnam to JRP Chair, "Submission of Information in Support of OPG's Licence Application for a Deep Geologic Repository for Low and Intermediate Level Waste", CD# 00216-CORR-00531-00090, April 2011, Attachment 2, "Proof of Land Ownership". 	
3 (d)	the proposed quality assurance program for the activity to be licensed;	<p>All activities to be encompassed by the site preparation and construction licence will be performed under a quality program reviewed and accepted by OPG, and compliant with CAN/CSA N286-05 and ISO 9001:2008 quality management standards. The program is implemented in accordance with OPG's Management System and through the following processes:</p> <ul style="list-style-type: none"> • A managed system consisting of governing documents that prescribe controls and responsibilities to ensure activities are carried out in a safe, effective manner by qualified personnel; • Individual accountability for implementing and adhering to the managed system elements; and • Evaluation and enhancement of the program elements through continuous improvement processes. <p>The quality program includes provisions for systematic planned audits and assessments</p>	<ul style="list-style-type: none"> • PSR, Chapter 11, Quality Assurance: <ul style="list-style-type: none"> – Section 11.3, Design and Construction Phase • OPG Charter - Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011 • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011 	UMMR 3 (b) (v)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		designed to provide a comprehensive, critical and independent evaluation of project activities.		
3 (e)	the name, form, characteristics and quantity of any hazardous substances that may be on the site while the activity to be licensed is carried on;	Hazardous waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices and will be managed and disposed of accordingly. Explosives will be required for excavation of the shafts and underground facilities.	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management 	GNSCR 3 (1) (j) UMMR 3 (c) (ix)
3 (f)	the proposed worker health and safety policies and procedures;	The construction contractor's Health and Safety Plan, after review by OPG and NWMO, will be implemented during the activities to prepare the site for and construct the DGR. NWMO's Design and Construction Management System accepted by OPG, includes implementation of NWMO's Health and Safety policy that describes the minimum requirements for the management of employee and public health and safety. The policy requires that managers assess and manage risks, design the work environment, plan work and execute work to protect workers and the public. The policy also commits the organization to continually improve health and safety performance.	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> ▪ Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 <ul style="list-style-type: none"> – Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 	UMMR 3 (d) (iii)
		The DGR is designed to ensure that workers will be protected from exposure to radiation and from conventional hazards. A radiation protection program will be implemented during operations to manage	<ul style="list-style-type: none"> • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.1, Radiation Protection Program – Section 10.2, Conventional Occupational 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		radiological risks that could contribute to occupational radiation doses. A conventional health and safety program will be implemented for the DGR, consistent with OPG's Health and Safety Policy, and Nuclear Safety Policy, and will include provisions for hazardous materials management and use of personal protective equipment.	Health and Safety Program	
3 (g)	the proposed environmental protection policies and procedures;	Environmental protection will be in accordance with NWMO's Design and Construction Management System that includes implementation of its Environment Policy, NWMO-POL-ES-0001, that describes the minimum requirements for environmental management for the NWMO. The policy applies to all NWMO work and requires the implementation of an environmental management system that is compliant with the ISO 14001:2000 Environmental Management System Standard.	<ul style="list-style-type: none"> Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> Section 4.1.5.1, Environment Policy NWMO-POL-ES-0001 	UMMR 3 (c) (v)
		The DGR is designed to ensure that environment is protected during operations. Environmental protection policies, programs and procedures will be implemented in accordance with OPG's Environment Policy; Biodiversity Policy, Land Assessment and Remediation Policy, Spills Management Policy and Policy for Use of Ozone Depleting Substances. Execution of the DGR program will be	<ul style="list-style-type: none"> PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.3, Environmental Protection Program 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		accomplished under OPG oversight through an integrated set of documented activities, typical of an Environmental Management System which will be aligned with the CNSC Standard S-296 and the International Standards Organization standard 14001 and will meet the requirements of OPG's Environmental Management Program.		
3 (h)	the proposed effluent and environmental monitoring programs;	<p>The DGR site will be monitored during site preparation, construction, and operation. As part of the Environmental Management System, an environmental monitoring program, consistent with the CSA Standard N288.4 will be implemented.</p> <p>An environmental follow-up program will be implemented to verify that the environmental and cumulative effects of the DGR project are consistent with predictions in the environmental assessment. It will be used to verify that mitigation measures are effective once implemented and determine whether there is a need for additional mitigation measures.</p>	<ul style="list-style-type: none"> Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> Section 4.1.5.1, Environment Policy NWMO-POL-ES-0001 DGR EA Follow-up Monitoring Program, NWMO DGR-TR-2011-10, March 2011 PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.4, Monitoring Program 	UMMR 3 (c) (vi)
3 (i)	if the application is in respect of a nuclear facility referred to in paragraph 2(b) of the <i>Nuclear Security Regulations</i> , the information required by section 3 of those Regulations;	OPG will not possess, transfer, use or store on the DGR site any Category I, II or III nuclear material (as defined under the Nuclear Security Regulations) under the site preparation and construction licence and afterwards. Specific design measures for compliance with the Nuclear Security Regulations are therefore not required for the DGR.	<ul style="list-style-type: none"> Evidence not required 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
3 (j)	the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the activity to be licensed; and	<p>A Public Involvement Program for OPG's DGR for L&ILW has been designed in accordance with the CNSC Regulatory Guide G-217, Licensee Public Information Programs.</p> <p>The delivery of the DGR Public Involvement Program encompasses a broad approach, which is related to key milestones in the development of the DGR. A broad range of communication tools will be employed to provide the general public, key stakeholders and Aboriginal Peoples with information and opportunities for engagement.</p>	<ul style="list-style-type: none"> PSR, Chapter 12, Public Information and Involvement Program 	UMMR 3 (c) (i)
3 (k)	the proposed plan for the decommissioning of the nuclear facility or of the site.	<p>The preliminary decommissioning plan addresses end-of-construction decommissioning for the DGR facility. The end-of-life decommissioning for the DGR Facility is also described in accordance with CNSC Regulatory Guide G-219, Decommissioning Planning for Licensed Activities and CSA Standard N294-09, Decommissioning of Facilities Containing Nuclear Substances.</p> <p>Prior to abandonment, decommissioning activities will begin after waste emplacement operations have ended and regulatory approval has been received to decommission the facility. The scope of decommissioning work for the repository will include decommissioning of underground facilities, sealing of shafts, and demolition of surface buildings and infrastructure.</p>	<ul style="list-style-type: none"> PSR, Chapter 13, Preliminary Decommissioning Planning Preliminary Decommissioning Plan, NWMO DGR-TR-2011-39 R000, March 2011 	UMMR 3 (a) (viii)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
4 (a)	<p>An application for a licence to prepare a site for a Class I nuclear facility shall contain the following information in addition to the information required by section 3:</p> <p>a description of the site evaluation process and of the investigations and preparatory work that have been and will be done on the site and in the surrounding area;</p>	<p>An overall evaluation of the DGR site was performed to determine the suitability of the site for the repository. As part of early feasibility studies (2002-2003), the regional geologic framework in which the Bruce nuclear site resides was investigated to assess the potential of the site to host a DGR for the long-term management of L&ILW. The results of these studies led to the confirmation of a number of hypotheses regarding geoscientific attributes of the Bruce nuclear site favourable for the safe implementation of the DGR concept. Site-specific and regional geoscientific characterization activities were carried out during 2006-2010. The major focus of site characterization was confirmation of the geologic setting. The site characterization results are used as input to repository design and safety assessment, and in building the safety case for the DGR.</p> <p>The site characterization results along</p>	<ul style="list-style-type: none"> • PSR, Chapter 3, Site Evaluation and Characterization: • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> – Section 1.1, Background • Descriptive Geosphere Site Model, NWMO DGR-TR-2011-24 R000, March 2011: <ul style="list-style-type: none"> – Section 1.3, Geoscientific Site Characterization Plan – Section 2.3, DGR Borehole Investigation Program 	<p>UMMR 3 (a) (i)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>with a description of the activities are documented in a geosynthesis document, which describes the overall understanding of site characteristics, attributes and evolution of the site as they relate to demonstrating long term DGR performance and safety.</p> <p>The site characterization work also provides the information necessary to develop a comprehensive descriptive geosphere model that provides an understanding of the current condition of the site (baseline), its past evolution and likely future natural evolution over the period of interest for safety. The descriptive geosphere model, developed during the site evaluation process, will continue to be updated as further information becomes available, including during the construction and operations phases.</p> <p>Additional geoscientific investigations are planned for 2011, as part of activities associated with the geoscientific characterization of the Bruce nuclear site.</p> <p>The geoscientific information acquired during the site characterization process will also be verified during DGR construction.</p> <p>The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have</p>	<ul style="list-style-type: none"> • PSR, Section 3.4, Additional Geoscientific Investigations • Geoscientific Verification Plan, NWMO DGR-TR-2011-38 R000, March 2011 	
		<p>The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have</p>	<ul style="list-style-type: none"> • PSR, Chapter 2, Site Description: <ul style="list-style-type: none"> – Section 2.4, Environment Studies – Section 2.5, Atmospheric Environment – Section 2.6, Aquatic Environment 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		been a number of environmental assessments conducted for various activities related to the waste management operations and to power generation. In 2007 and 2009 additional baseline environmental monitoring studies were completed specific to the DGR site to update and improve the comprehensiveness of the information.	<ul style="list-style-type: none"> - Section 2.7, Terrestrial Environment 	
4 (b)	a description of the site's susceptibility to human activity and natural phenomena, including seismic events, tornadoes and floods;	An overview of site specific hazards such as seismicity, rainfall/floods, tornadoes, including recurrence probability and size of events was documented. Current and future land, water and development uses were also described.	<ul style="list-style-type: none"> • PSR, Chapter 2, Site Description: <ul style="list-style-type: none"> - Section 2.4, Environment Studies - Section 2.5, Atmospheric Environment - Section 2.5.4.8, Severe Weather - Section 2.6, Aquatic Environment - Section 2.7, Terrestrial Environment - Section 2.8, Social and Economic Environment • PSR, Chapter 4, Geoscience: <ul style="list-style-type: none"> - Section 4.1.1.12, Natural Resources - Section 4.1.1.7, Seismicity - Section 4.5.2, Geologic Disturbances - Section 4.5.4.3, Long-Term Cavern and Pillar Stability • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> - Chapter 3, Geomechanical Framework - Chapter 4, Hydrogeochemistry - Chapter 5, Hydrogeology - Chapter 6, Future Evolution of the Bruce 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
			<p>Nuclear Site</p> <ul style="list-style-type: none"> • PSR, Chapter 7, Preclosure Safety Assessment <ul style="list-style-type: none"> – Section 7.5.1, Hazard Identification – Bounding Scenarios • PSR, Chapter 8, Postclosure Safety Assessment: <ul style="list-style-type: none"> – Section 8.7, Disruptive Scenarios • Postclosure Safety Assessment, NWMO DGR-TR-2011-25 R000, March 2011 <ul style="list-style-type: none"> – Section 4.3, Geological Setting – Section 4.4, Surface Environment 	
4 (c)	the proposed program to determine the environmental baseline characteristics of the site and the surrounding area;	The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have been a number of environmental assessments conducted for various activities related to the waste management operations, and to activities related to power generation. In 2007 and 2009 additional baseline environmental monitoring studies were completed specific to the DGR project to update and improve the comprehensiveness of the information.	<ul style="list-style-type: none"> • PSR, Section 2.4, Environment Studies <ul style="list-style-type: none"> – Section 2.4.1, Introduction 	UMMR 3 (c) (ii)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
4 (d)	the proposed quality assurance program for the design of the nuclear facility; and	<p>The design of the DGR Facility is performed under a quality program reviewed and accepted by OPG and compliant with CAN/CSA N286-05 and ISO 9001:2008 quality management standards. The program is implemented in accordance with OPG Management System and through the following processes:</p> <ul style="list-style-type: none"> • A managed system consisting of governing documents that prescribe controls and responsibilities to ensure activities are carried out in a safe, effective manner by qualified personnel; • Individual accountability for implementing and adhering to the managed system elements; and • Evaluation and enhancement of the program elements through continuous improvement processes. <p>The quality program includes provisions for systematic planned audits and assessments designed to provide a comprehensive, critical and independent evaluation of project activities.</p>	<ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.8.1, Design – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1, NWMO Corporate Governance Applicable to the DGR Project: <ul style="list-style-type: none"> ▪ Section 4.1.3, Quality Assurance Governance ▪ Section 4.1.4, Engineering and Technical Governance – Section 4.2, NWMO DGR Project- Specific Governance: <ul style="list-style-type: none"> ▪ Section 4.2.1, Engineering Project Management Governance ▪ Section 4.2.2, DGR Project Change Control, DGR-PROC-00740-0001 • PSR, Chapter 11, Quality Assurance <ul style="list-style-type: none"> – Section 11.3, Design and Construction Phase 	<p>C1NFR 5 (g)</p> <p>UMMR 5 (1) (d)</p>
4 (e)	the effects on the environment and the health and safety of persons that may result from	<p><u>Assessment of the Effects</u></p> <p>No radiological hazards are anticipated</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.4.9.1, Conventional Safety 	<p>C1NFR 5 (i)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	<p>the activity to be licensed, and the measures that will be taken to prevent or mitigate those effects.</p>	<p>during DGR site preparation and aboveground portion of the DGR. During construction of the shaft and the underground portion of the DGR, radon could potentially pose a radiological hazard. A radon assessment in the underground environment was conducted based on the rock properties at the DGR site. The assessment has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p> <p>A preliminary conventional (non-radiological) safety assessment was performed to estimate the potential conventional hazards and their impact on workers during preparation of the site for and construction of the DGR. Specific measures were identified to control the potential hazards and mitigate possible impacts from these hazards for site preparation and construction. The preliminary assessment has concluded that the facility can be constructed in a safe manner.</p> <p><u>Measures that Will Be Taken to Prevent or Mitigate the Effects</u></p> <p>Protection of the environment, and the health and safety of persons is achieved through a combination of design features</p>	<ul style="list-style-type: none"> - Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase • Preliminary Conventional Safety Assessment, NWMO DGR-TR-2011-37 R000, March 2011: <ul style="list-style-type: none"> - Section 5.1, Site Preparation - Section 5.2, Construction - Section 5.4, General Safety Management • PSR Chapter 6, Facility Description <ul style="list-style-type: none"> - Section 6.8, Fire and Life Safety 	<p>UMMR 3 (c) (iii)</p> <p>UMMR 3 (d) (i)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>and implementation of specific policies, programs and procedures in place during the site preparation for and construction of the DGR.</p> <p>Activities under the site preparation and construction licence will be performed in accordance with OPG and NWMO governance to ensure that the required quality, the health, safety and security of the public and workers, and protection of the environment are achieved when preparing for, and constructing the DGR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management – Section 9.3.3, Waste Rock Handling – Section 9.3.2, Stormwater Management – Section 9.4.5.2, Ventilation During Shaft Sinking – Section 9.4.10, Contingency Plans during Construction – Section 9.4.7.3, Ventilation during Lateral Development. – Section 9.4.7.4, Underground Services During Construction • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.5.2, Safety Culture – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 – Section 4.1.5, Environment Governance – Section 4.1.5.1, Environment Policy, 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
			<p>NWMO-POL-ES-0001</p> <ul style="list-style-type: none"> - Section 4.1.5.2, Environmental Incident, Spill or Accident - Section 4.1.2.4, Emergency Response Standard, NWMO-STD-WM-0002 - Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 - Section 4.2.7.3 Environment Management Plan 	
5 (a)	<p>An application for a licence to construct a Class I nuclear facility shall contain the following information in addition to the information required by section 3:</p> <p>a description of the proposed design of the nuclear facility, including the manner in which the physical and environmental characteristics of the site are taken into account in the design;</p>	<p>The DGR Facility is a Class 1B nuclear facility as defined under the NSCA, to be constructed under the site preparation and construction licence. The DGR Facility includes the deep geologic repository for low and intermediate level waste located at a depth of approximately 680 m, and various surface and underground support facilities. The support facilities include infrastructure for receiving, inspecting and handling waste packages, for transferring waste packages from the surface to the repository horizon, for handling the waste packages in the repository, for emplacing waste packages, for constructing room shield walls, and for material storage.</p>	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description • PSR, Chapter 17, Engineering Drawings 	<p>GNSCR 3 (1) (d)</p> <p>UMMR 3 (a) (iv)</p> <p>UMMR 5 (1) (a)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		Chapter 6 of the PSR describes the manner in which the design takes into account the physical and environmental characteristics of the site described earlier in Chapter 2.		
5 (b)	a description of the environmental baseline characteristics of the site and the surrounding area;	The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have been a number of environmental assessments conducted for various activities related to the waste management operations, and to activities related to power generation. In 2007 and 2009 additional baseline environmental monitoring studies were completed specific to the DGR project to update and improve the comprehensiveness of the information.	<ul style="list-style-type: none"> • PSR, Section 2.4, Environment Studies <ul style="list-style-type: none"> – Section 2.4.1, Introduction 	
5 (c)	the proposed construction program, including its schedule;	<p>Information on construction program and schedule is provided in the Design and Construction Phase Management System documents and in the PSR.</p> <p>The construction governance will include a description of the construction project as well as the processes that will be used to execute and complete the work and accomplish the construction objectives and</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.1.2, Construction Program and Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR- 	<p>UMMR 3 (b) (iv)</p> <p>UMMR 5 (1) (b)</p> <p>UMMR 5 (1) (i)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>requirements including schedule.</p> <p>The site preparation and construction activities are expected to last approximately five to seven years after obtaining the licence. A schedule has been provided in Chapter 9 of the PSR.</p>	<p>0001 R000, March 2011:</p> <ul style="list-style-type: none"> - Section 1.10, Construction <ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2.7, Construction Governance • General schedule for the lifecycle of the DGR, attached to OPG Letter, A. Sweetnam to JRP Chair, "Submission of Information in Support of OPG's Licence Application for a Deep Geologic Repository for Low and Intermediate Level Waste", CD# 00216-CORR-00531-00090, April 2011 	
5 (d)	a description of the structures proposed to be built as part of the nuclear facility, including their design and their design characteristics;	The DGR Facility includes the deep geologic repository for low and intermediate level waste located at a depth of approximately 680 m, and various surface and underground support facilities. The support facilities include infrastructure for receiving, inspecting and handling waste packages, for transferring waste packages from the surface to the repository horizon, for handling the waste packages in the repository, for constructing room shield walls, and for material storage.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description <ul style="list-style-type: none"> - Section 6.1.1, DGR Requirements - Section 6.1.2, Applicable Regulations, Standards and Codes - Section 6.2, Surface Buildings and Infrastructure - Section 6.3, Underground Facilities • PSR, Chapter 17, Engineering Drawings 	
5 (e)	a description of the systems and equipment proposed to be installed at the nuclear facility, including their design and their design operating conditions;	The design of the DGR has been developed in accordance with specific criteria based on the regulations under the NSCA and/or on guidance from federal and provincial authorities, and international guidance.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.1.1, DGR Requirements - Section 6.1.2, Applicable Regulations, Standards and Codes - Section 6.2, Surface Buildings and Infrastructure 	UMMR 5 (1) (c)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		The description of the systems and equipment used at DGR and their design operating conditions are provided in Chapter 6 of the PSR.	<ul style="list-style-type: none"> - Section 6.3, Underground Facilities - Section 6.5, Transfer Equipment and Emplacement Operations - Section 6.7, Hazardous Materials and Waste - Section 6.8, Fire and Life Safety - Section 6.13, Access Tunnel Closure Walls - Section 6.14, Shaft Seal <ul style="list-style-type: none"> • PSR, Chapter 17, Engineering Drawings: <ul style="list-style-type: none"> - Shaft Hoisting Systems: Dia.6500 – Main Shaft Sinking Stage and Bucket Proposed Layout, DWG. No. H333000-WP405-20-035-0001 - Main Shaft: Headframe - Sinking Condition General Arrangement, DWG. No. H333000-WP406-20-042-0003 - Ventilation Shaft: Headframe – Sinking Condition General Arrangement, DWG. No. H333000-WP406-20-042-0008 - Ventilation System: Typical Shaft Sinking Ventilation Process Flow Diagram, DWG. No. H333000-WP410-20-030-0002, Rev.00 • Ontario Power Generation's Deep Geologic Repository for Low and Intermediate-Level Waste Project Requirements, NWMO DGR-PDR-00120-0001 R002, September 2010 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
5 (f)	a preliminary safety analysis report demonstrating the adequacy of the design of the nuclear facility;	The purpose of the PSR is to demonstrate the adequacy of the design of the DGR and that the facility can be constructed and operated without undue risk to the health and safety of workers, the public, and the environment. The PSR also demonstrates the manner in which the DGR will comply with the applicable regulatory requirements. The PSR provides an overview of the natural and geophysical environment of the DGR site, preliminary DGR design, site preparation, construction and operations, presenting the safety case, and a summary of the results of its associated safety assessments.	<ul style="list-style-type: none"> PSR (all) 	
5 (g)	the proposed quality assurance program for the design of the nuclear facility;	<p>The design of the DGR Facility is performed under a quality program compliant with CAN/CSA N286-05 and ISO 9001:2008 quality management standards. The program is implemented through the following processes:</p> <ul style="list-style-type: none"> A managed system consisting of governing documents that prescribe controls and responsibilities to ensure activities are carried out in a safe, effective manner by qualified personnel; Individual accountability for implementing and adhering to the managed system elements; and Evaluation and enhancement of the program elements through continuous improvement processes. <p>The quality program includes provisions for</p>	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Section 1.8.1, Design Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> Section 4.1, NWMO Corporate Governance Applicable to the DGR Project: <ul style="list-style-type: none"> Section 4.1.3, Quality Assurance Governance Section 4.1.4, Engineering and 	<p>C1NFR 4 (d)</p> <p>UMMR 5 (1) (d)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		systematic planned audits and assessments designed to provide a comprehensive, critical and independent evaluation of project activities.	<ul style="list-style-type: none"> – Technical Governance <ul style="list-style-type: none"> – Section 4.2, NWMO DGR Project- Specific Governance: <ul style="list-style-type: none"> ▪ Section 4.2.1, Engineering Project Management Governance ▪ Section 4.2.2, DGR Project Change Control, DGR-PROC-00740-0001 • PSR, Chapter 11, Quality Assurance <ul style="list-style-type: none"> – Section 11.3, Design and Construction Phase 	
5 (h)	the proposed measures to facilitate Canada's compliance with any applicable safeguards agreement;	OPG will not possess, transfer, use or store on the DGR site any Category I, II or III nuclear material (as defined under the Nuclear Security Regulations) under the site preparation and construction licence and afterwards. Specific design measures for compliance with any applicable safeguards agreement are therefore not required for the DGR.	<ul style="list-style-type: none"> • Evidence not required 	
5 (i)	the effects on the environment and the health and safety of persons that may result from the construction, operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects;	<p><u>Potential Impact during Construction:</u></p> <p>No radiological hazards are anticipated during DGR site preparation and aboveground portion of the DGR. During construction of the shaft and the underground portion of the DGR, radon could potentially pose a radiological hazard. A radon assessment in the underground environment was conducted based on the rock properties at the DGR site. The assessment has concluded that</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.4.9.1, Conventional Safety – Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2, Estimated Radon Concentration and Doses in the DGR 	<p>C1NFR 4 (e)</p> <p>UMMR 3 (c) (iii)</p> <p>UMMR 3 (d) (i)</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p> <p>A preliminary conventional (non-radiological) safety assessment was performed to estimate the potential conventional hazards and their impact on workers during preparation of the site for and construction of the DGR. Specific measures were identified to control the potential hazards and mitigate possible impacts from these hazards for site preparation and construction. The preliminary assessment has concluded that the facility can be constructed in a safe manner.</p> <p><u>Potential Impact during Operation</u></p> <p>Assessments were performed to estimate the potential radiological (including radon) and non-radiological impacts on public and the workers due to DGR under normal and abnormal operating conditions and credible accident conditions. The assessments have concluded that doses due to normal operation, and malfunctions and accidents remain below the regulatory limits and dose targets identified in Section 7.1.2, Criteria, of the PSR.</p>	<p>during Construction Phase</p> <ul style="list-style-type: none"> • Preliminary Conventional Safety Assessment, NWMO DGR-TR-2011-37 R000, March 2011: <ul style="list-style-type: none"> – Section 5.1, Site Preparation – Section 5.2, Construction – Section 5.4, General Safety Management • PSR: <ul style="list-style-type: none"> – Chapter 7, Preclosure Safety Assessment: <ul style="list-style-type: none"> ▪ Section 7.4.2, Radiological Assessment of Air and Water Emissions from DGR on Public: <ul style="list-style-type: none"> * Section 7.4.2.3, Public Dose Results – Air and Water Emissions ▪ Section 7.4.3, Radiological Assessment of Air and Water Emissions on Workers: <ul style="list-style-type: none"> * Section 7.4.3.3, Estimated Worker Inhalation Dose ▪ Section 7.4.4, Assessment of External Radiation on Workers and Public: 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>A preliminary ALARA (As Low As Reasonable Achievable) assessment for the DGR operations was performed to provide an initial estimate of individual and collective occupational doses, and initial recommendations regarding potential dose reduction.</p> <p>A preliminary conventional (non-radiological) safety assessment was performed to estimate the potential conventional hazards and their impact on</p>	<ul style="list-style-type: none"> * Section 7.4.4.2, External Dose Results ▪ Section 7.4.5, Assumptions and Uncertainty in Normal Operations Assessment ▪ Section 7.5, Accident Assessment: <ul style="list-style-type: none"> * Section 7.5.4, Accident Consequence Assessment Results – Appendix A, Preclosure Safety Assessment Calculation • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.3, Estimated Radon Concentration and Doses in the DGR during Operations Phase • Maximum Flood Hazard Assessment, NWMO DGR-TR-2011-35, March 2011 • Preliminary ALARA Assessment, NWMO DGR-TR-2011-36 R000, March 2011 • Preliminary Conventional Safety Assessment, NWMO DGR-TR-2011-37 R000, March 2011 <ul style="list-style-type: none"> – Section 5.3, Operations – Section 5.4, General Safety Management 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		workers during DGR operation. Specific measures were identified to control the potential hazards and mitigate possible impacts from these hazards. The preliminary assessment has concluded that there is no reason why the facility could not be operated in a safe manner.		
		<p><u>Measures that Will Be Taken to Prevent or Mitigate the Effects during Construction</u></p> <p>Protection of the environment, and the health and safety of persons is achieved through a combination of design features and implementation of specific NWMO policies, programs and procedures, under OPG oversight, during the site preparation for and construction of the DGR.</p> <p>Activities under the site preparation and construction licence will be performed in accordance with OPG and NWMO governance, to ensure that the required quality, the health, safety and security of the public and workers, and protection of the environment are achieved when preparing for, and constructing the DGR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management – Section 9.3.3, Waste Rock Handling – Section 9.3.2, Stormwater Management – Section 9.4.5.2, Ventilation During Shaft Sinking – Section 6.8, Fire and Life Safety – Section 9.4.10, Contingency Plans during Construction • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.5.2, Safety Culture – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p><u>Measures that Will Be Taken to Prevent or Mitigate the Effects during Operation and Decommissioning</u></p> <p>To ensure adequate protection of the environment, and health and safety of the persons during DGR operations, the facility is designed such that, for situations in which consequences of potential accidents are not negligible, prevention or mitigation is achieved through one or more of the following:</p> <ul style="list-style-type: none"> • Design mitigation; • Preventive measures to reduce the likelihood of such accidents further; • Administrative controls (mainly through procedures); • Controls installed on equipment to restrain their movement (e.g., limit switches); and • Worker training. 	<ul style="list-style-type: none"> - Section 4.1.2.4, Emergency Response Standard, NWMO-STD-WM-0002 - Section 4.1.5, Environment Governance - Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 - Section 4.1.5.2, Environmental Incident, Spill or Accident - Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 <ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.2, Surface Buildings and Infrastructure: <ul style="list-style-type: none"> ▪ Section 6.2.2, Ventilation Shaft Area ▪ Section 6.2.3, Waste Rock Management Area ▪ Section 6.2.4.8, Stormwater Management System - Section 6.3, Underground Facilities: <ul style="list-style-type: none"> ▪ Section 6.3.2, Ventilation Shaft ▪ Section 6.3.8, Underground Ventilation - Section 6.7, Hazardous Materials and Waste - Section 6.8, Fire and Life Safety - Section 6.9, Emergency Response - Section 6.10, Zoning - Section 6.14, Shaft Seal <ul style="list-style-type: none"> • Design and Construction Phase Management 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		<p>For accidents assessed to have larger consequences, contingency plans will be in place and emergency response, including mine rescue, will be available to protect the workers.</p> <p>In support of the DGR, policies, programs and procedures will be in place during DGR operation to protect the environment, and health and safety of the public and the workers. These will assure compliance with applicable provincial and federal legislation, and applicable regulations.</p>	<p>System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011:</p> <ul style="list-style-type: none"> - Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 - Section 4.1.5, Environment Governance <ul style="list-style-type: none"> ▪ Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 - Section 4.1.2.4, Emergency Response Standard, NWMO-STD-WM-0002 - Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 <ul style="list-style-type: none"> • PSR, Chapter 7, Preclosure Safety Assessment <ul style="list-style-type: none"> - Section 7.5.6, Preventative and Mitigation Measures - Section 7.6, Contingency Planning • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> - Section 10.1, Radiation Protection Program - Section 10.2, Conventional Occupational Health and Safety Program - Section 10.3, Environmental Protection Program - Section 10.6, Fire Protection Program - Section 10.7, Emergency Preparedness and Emergency Response Program 	
5 (j)	the proposed location of points of release, the proposed maximum quantities and	Activities under the site preparation and construction licence will not generate any releases of nuclear substances. Hazardous	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.3.4, Conventional and 	UMMR 3 (c) (vii)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	concentrations, and the anticipated volume and flow rate of releases of nuclear substances and hazardous substances into the environment, including their physical, chemical and radiological characteristics;	waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices. Explosives will be required for excavation of the shafts and underground facilities.	<ul style="list-style-type: none"> - Hazardous Materials Management <ul style="list-style-type: none"> - Section 9.3.3, Waste Rock Handling 	
		The radioactive and chemical inventory of the effluents anticipated to be released during normal operation of the DGR has been estimated based on the waste to be emplaced in the repository.	<ul style="list-style-type: none"> • PSR, Chapter 7, Preclosure Safety Assessment: <ul style="list-style-type: none"> - Section 7.4, Radiological Safety during Normal Operations: <ul style="list-style-type: none"> ▪ Section 7.4.2.1, Source Terms - Air and Water Release Rates 	
5 (k)	the proposed measures to control releases of nuclear substances and hazardous substances into the environment;	Activities under the site preparation and construction licence will not generate any releases of nuclear substances. Hazardous waste anticipated to result from the licensed activities will be managed and disposed of as described in the PSR. Handling of explosives on the project site (surface and underground) will be in accordance with Part VI of the Mines and Mining Plants Regulations (Reg. 854).	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.3.4, Conventional and Hazardous Materials Management - Section 9.3.3, Waste Rock Handling • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 	UMMR 3 (c) (viii)
		The DGR is designed such that any releases of the radioactive and hazardous substances from the DGR into the environment will be controlled through a combination of design provisions and	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.2, Surface Buildings and Infrastructure: <ul style="list-style-type: none"> ▪ Section 6.2.2, Ventilation Shaft Area ▪ Section 6.2.3, Waste Rock 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		implementation of environmental protection policies, programs and procedures under OPG oversight.	<ul style="list-style-type: none"> Management Area <ul style="list-style-type: none"> ▪ Section 6.2.4.8, Stormwater Management System – Section 6.3, Underground Facilities: <ul style="list-style-type: none"> ▪ Section 6.3.2, Ventilation Shaft ▪ Section 6.3.8, Underground Ventilation – Section 6.7, Hazardous Materials and Waste <ul style="list-style-type: none"> • PSR, Chapter 17, Engineering Drawings: <ul style="list-style-type: none"> – Ventilation System: Typical Shaft Sinking Ventilation Process Flow Diagram, DWG. No. H333000-WP410-20-030-0002, Rev.00 • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.3, Environmental Protection Program 	
5 (l)	the proposed program and schedule for recruiting, training and qualifying workers in respect of the operation and maintenance of the nuclear facility;	<p>Training programs will be designed and developed based on an assessment of job requirements and appropriate training objectives and will be assessed and approved prior to implementation. Persons receiving training will be evaluated to ensure they have developed the necessary skills and knowledge required for job performance and provided feedback and remedial training if necessary.</p> <p>OPG will acquire and train operations phase staff prior to commissioning to participate in</p>	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.1, Competency, Performance and Training Governance – Section 4.2.6.1, Training Management Plan, DGR-PLAN-08920-0001 – Section 4.2.8.2, Commissioning Management Plan 	

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
		the commissioning and turnover process. Upon completion of commissioning and before the DGR Facility will be declared in-service, OPG will develop operational policies, procedures and standards through managed turnover, with knowledgeable and qualified staff. NWMO will provide support to the initial training of the operations phase staff.		
		Once in-service, a staffing and training program will be developed to ensure the presence of a sufficient number of qualified workers to carry out activities safely and in accordance with the NSCA and its Regulations. A training program meeting the requirements of N-PROG-TR-0005 will be established and maintained.	<ul style="list-style-type: none"> PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.5, Staffing and Training Program 	
5 (m)	a description of any proposed full-scope training simulator for the nuclear facility.	Not applicable	<ul style="list-style-type: none"> Evidence not required 	
14 (1)	Every licensee shall keep a record of the results of the effluent and environmental monitoring programs referred to in the licence.	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System 	C1NFR 14 (2), 14 (4), UMMR 16 (1)

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
14 (2)	<p>Every licensee who operates a Class I nuclear facility shall keep a record of</p> <p>(a) operating and maintenance procedures;</p> <p>(b) the results of the commissioning program referred to in the licence;</p> <p>(c) the results of the inspection and maintenance programs referred to in the licence;</p> <p>(d) the nature and amount of radiation, nuclear substances and hazardous substances within the nuclear facility; and</p> <p>(e) the status of each worker's qualifications, requalification and training, including the results of all tests and examinations completed in accordance with the licence.</p>	<p>All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.</p>	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System PSR, Section 10.9, Records and Document Control 	<p>C1NFR 14 (4), 14 (5)</p> <p>UMMR 16 (1)</p> <p>UMMR 16 (3)</p>
14 (3)	<p>Every licensee who decommissions a Class I nuclear facility shall keep a record of [...]</p>	<p>Decommissioning is not part of the activities to be licensed at this stage.</p>	<ul style="list-style-type: none"> Evidence not required 	
14 (4)	<p>Every person who is required by this section to keep a record referred to in paragraph (2)(a) to (d) or (3)(a) to (d) shall retain the record for 10 years after the</p>	<p>All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities.</p>	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management 	<p>GNSCR 28</p> <p>C1NFR</p>

Compliance Matrix

CLASS I NUCLEAR FACILITIES REGULATIONS (C1NFR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	expiry date of the licence to abandon issued in respect of the Class I nuclear facility.	Records are classified, indexed and stored in an approved document management system.	<p>System</p> <ul style="list-style-type: none"> Preliminary Decommissioning Plan, , NWMO DGR-TR-2011-39 R000, March 2011: <ul style="list-style-type: none"> Chapter 13, Documentation (Records) 	<p>14 (2)</p> <p>UMMR 16 (1)</p> <p>UMMR 16 (3)</p>
14 (5)	Every person who is required by this section to keep a record referred to in paragraph (2)(e) or (3)(e) shall retain the record for the period that the worker is employed by the licensee and for five years after the worker ceases to be so employed.	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System 	<p>GNSCR 28</p> <p>C1NFR 14 (1), 14 (2), 14 (4)</p> <p>UMMR 16 (1)</p> <p>UMMR 16 (3)</p>

Compliance Matrix

RADIATION PROTECTION REGULATIONS (RPR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
4 (a)	<p>Every licensee shall implement a radiation protection program and shall, as part of that program, keep the amount of exposure to radon progeny and the effective dose and equivalent dose received by and committed to persons as low as is reasonable achievable, social and economic factors being taken into account, through implementation of</p> <p>(i) management control over work practices,</p> <p>(ii) personnel qualification and training,</p> <p>(iii) control of occupational and public exposure to radiation, and</p> <p>(iv) planning for unusual situations; and</p>	<p>Site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has confirmed that no radiological hazards exist during DGR construction. The assessment of the radon levels during construction has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant. Radon levels will, however, be checked periodically during construction to confirm this conclusion.</p> <p>OPG, as Operator of the DGR, will use its existing Radiation Protection Program (N-PROG-RA-0013) to manage radiological risks that could contribute to public and occupational radiation doses when the DGR Facility becomes operational.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.1, Radiation Protection Program 	<p>GNSCR 3 (1) (f)</p>

Compliance Matrix

RADIATION PROTECTION REGULATIONS (RPR)

Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
4 (b)	<p>ascertain the quantity and concentration of any nuclear substance released as result of the licensed activity</p> <p>(i) by direct measurement as a result of monitoring, or</p> <p>(ii) if the time and resources required for direct measurement as a result of monitoring outweigh the usefulness of ascertaining the quantity and concentration using that method, by estimating them.</p>	<p>As noted above, site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that no radiological hazards exist during DGR construction.</p> <p>A pre-operational monitoring program will be carried out however to determine background levels for later comparison and to aid in identifying important exposure pathways.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase • PSR, Section 6.11, Radiation Monitoring • DGR EA Follow Up Monitoring Program <ul style="list-style-type: none"> – Section 14, Baseline Studies and Pre-Construction Follow Up 	GNSCR 3 (1) (f)
5 (1)	<p>For the purpose of keeping a record of doses of radiation in accordance with section 27 of the Act, every licensee shall ascertain and record the magnitude of exposure to radon progeny of each person referred to in that section, as well as the effective dose and equivalent dose received by and committed to that person.</p>	<p>As noted above, site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p>	<ul style="list-style-type: none"> • All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures N-PROG-AS-0006 and N-PROC-AS-0042. • PSR, Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	GNSCR 3 (1) (f)

Compliance Matrix

RADIATION PROTECTION REGULATIONS (RPR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
5 (2)	<p>A licensee shall ascertain the magnitude of exposure to radon progeny and the effective dose and equivalent dose</p> <p>(a) by direct measurement as a result of monitoring; or</p> <p>(b) if the time and resources required for direct measurement as a result of monitoring outweigh the usefulness of ascertaining the amount of exposure and doses using that method, by estimating them.</p>	<p>As noted above, site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant. However, periodic monitoring will be performed during the construction to confirm that radon does not pose an occupational hazard.</p>	<ul style="list-style-type: none"> PSR, Section 9.4.9.2, Radiological Safety Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	<p>GNSCR 3 (1) (f)</p>
6 (1)	<p>In this section, "action level" means a specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program and triggers a requirement for specific action to be taken.</p>	-	<ul style="list-style-type: none"> Evidence not required 	
6 (2)	<p>When a licensee becomes aware that an action level referred to in the licence for the purpose of this subsection has been reached, the licensee shall</p> <p>(a) conduct an investigation to establish the cause for reaching</p>	<p>During site preparation and construction of the DGR there will be no doses of radiation that would require OPG to develop action levels pursuant to section 6 of the Radiation Protection Regulations.</p> <p>Site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that underground radon</p>	<ul style="list-style-type: none"> PSR, Section 9.4.9.2, Radiological Safety Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	<p>GNSCR 3 (1) (f)</p> <p>UMMR 4 (2) (a)</p>

Compliance Matrix

RADIATION PROTECTION REGULATIONS (RPR)				
Sec.	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req.
	the action level; (b) identify and take action to restore the effectiveness of the radiation protection program implemented in accordance with section 4; and (c) notify the Commission within the period specified in the licence.	concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant. Action levels are, therefore, not required during the site preparation and construction phase. For the operational phase of the DGR, however, OPG will propose action levels for CNSC acceptance closer to obtaining the operating licence.		

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
<p><i>NOTE: Although the DGR Facility is not a uranium mine and Uranium Mines and Mills Regulations (UMMR) are not directly applicable, the OPG submission in support of the site preparation and construction licence has taken into account the requirements from the UMMR due to many similarities of the DGR Facility with a mine in terms of construction and operation. A compliance matrix has, therefore, been prepared for the UMMR, recognizing the limited applicability of these regulations to the DGR Facility.</i></p>				
3 (a) (i)	<p>An application for a licence in respect of a uranium mine or mill, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the General Nuclear Safety and Control Regulations:</p> <p>in relation to the plan and description of the mine or mill,</p> <p>a description of the site evaluation process and of the investigations and preparatory work to be done at the site and in the surrounding area,</p>	<p>An overall evaluation of the DGR site was performed to determine the suitability of the site for the repository. As part of early feasibility studies (2002-2003), the regional geologic framework in which the Bruce nuclear site resides was investigated to assess the potential of the site to host a DGR for the long-term management of L&ILW. The results of these studies led to the confirmation of a number of hypotheses regarding geoscientific attributes of the Bruce nuclear site favourable for the safe implementation of the DGR concept. Site-specific and regional geoscientific characterization activities were carried out during 2006-2010. The major focus of site characterization was confirmation of the geologic setting. The site characterization results are used as input to repository design and safety assessment, and in building the safety case for the DGR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 3, Site Evaluation and Characterization • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> – Section 1.1, Background • Descriptive Geosphere Site Model, NWMO DGR-TR-2011-24 R000, March 2011: <ul style="list-style-type: none"> – Section 1.3, Geoscientific Site Characterization Plan – Section 2.3, DGR Borehole Investigation Program 	C1NFR 4 (a)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<p>The site characterization results along with a description of the activities are documented in a geosynthesis document, which is a geoscientific explanation of the overall understanding of site characteristics, attributes and evolution of the site as they relate to demonstrating long term DGR performance and safety.</p> <p>The site characterization work also provides the information necessary to develop a comprehensive descriptive geosphere model that provides an understanding of the current condition of the site (baseline), its past evolution and likely future natural evolution over the period of interest for safety. The descriptive geosphere model, developed during the site evaluation process, will continue to be updated as further information becomes available, including during the construction and operations phases.</p>		
		<p>Additional geoscientific investigations are planned for 2011, as part of activities associated with the geoscientific characterization of the Bruce nuclear site.</p> <p>The geoscientific information acquired during the siting process will also be verified during the DGR construction.</p>	<ul style="list-style-type: none"> • PSR, Section 3.4, Additional Geoscientific Investigations • Geoscientific Verification Plan, NWMO DGR-TR-2011-38 R000, March 2011 	
		<p>The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have been a number of environmental assessments conducted for various</p>	<ul style="list-style-type: none"> • PSR, Chapter 2, Site Description: <ul style="list-style-type: none"> – Section 2.4, Environment Studies – Section 2.5, Atmospheric Environment – Section 2.6, Aquatic Environment 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		activities related to the waste management operations and to power generation. In 2007 and 2009 additional baseline environmental monitoring studies were completed specific to the DGR site to update and improve the comprehensiveness of the information.	<ul style="list-style-type: none"> - Section 2.7, Terrestrial Environment 	
3 (a) (ii)	a surface plan indicating the boundaries of the mine or mill and the area where the activity to be licensed is proposed to be carried on,	Boundaries of the DGR Facility, both aboveground and underground, are shown in many figures in the PSR.	<ul style="list-style-type: none"> • PSR, Chapter 1, Introduction: <ul style="list-style-type: none"> - Figure 1-1, Location of the DGR within the Bruce Nuclear Site - Figure 1-2, DGR Site - Figure 1-3, Schematic of the DGR • PSR, Section 2.1, Site Location and General Description: <ul style="list-style-type: none"> - Figure 2-1, Location of DGR Site Relative to the Bruce NGSS A and B Exclusion Zones 	C1NFR 3 (b)
3 (a) (iii)	a plan showing the existing and planned structures, excavations and underground development,	Various figures show the existing and planned structures, excavations and underground development.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Figure 6-1, DGR Surface Facilities - Figure 6-2, Layout of DGR Underground Facilities - Figure 6-6, Isometric View of the Repository Level - Figure 9-4, Initiation of Shaft Sinking - Figure 9-5, Complete Shaft Sinking and Establish Shaft Stations - Figure 9-6, Initial Repository Level Development - Figure 9-7, Complete Shaft Services Area and Establish Multiple Headings - Figure 9-8, Complete Underground 	C1NFR 3 (b)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			<ul style="list-style-type: none"> Development <ul style="list-style-type: none"> – Figure 9-9, Typical Sinking Galloway – Figure 9-10, Typical Shaft Sinking Layout – Figure 9-11, Typical Drill and Blast Excavation Cycle • PSR, Chapter 17, Engineering Drawings <ul style="list-style-type: none"> – Operations Layout General Arrangement, DWG. No. 11T1076-C-SK1 – Waste Rock Management Area – Site Grading and Drainage, DWG. No. H333000-WP404-10-042-0001, Rev.00 – Waste Rock Management Area – Base Case, DWG. No. H333000-WP404-10-042-0003, Rev.01 	
3 (a) (iv)	a description of the mine or mill, including the installations, their purpose and capacity, and any excavations and underground development,	<p>The DGR Facility is not a uranium mine.</p> <p>The facility includes the deep geologic repository for low and intermediate level waste located at a depth of approximately 680 m, and various surface and underground support facilities. The support facilities include infrastructure for receiving, inspecting and handling waste packages, for transferring waste packages from the surface to the repository horizon, for handling the waste packages in the repository, for emplacing waste packages, for constructing room shield walls, and for material storage.</p>	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> – Section 6.2, Surface Buildings and Infrastructure – Section 6.3, Underground Facilities • PSR, Chapter 17, Engineering Drawings 	<p>GNSCR 3 (1) (d)</p> <p>C1NFR 5 (a)</p> <p>UMMR 5 (1) (a)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (a) (v)	a description of the site geology and mineralogy,	A description of regional and site geology is provided, including the overall geological setting, the location of major geological features, the Paleozoic stratigraphy, the structural geology and geological history, the Quaternary geology and glaciation, the process of diagenesis and its effects, as well as the presence and future potential of natural resources (oil and gas, aggregates and salt).	<ul style="list-style-type: none"> • PSR: <ul style="list-style-type: none"> – Section 2.1.2, DGR Geology – Section 4.1, Geology • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> – Chapter 2, Geological Framework • Descriptive Geosphere Site Model, NWMO DGR-TR-2011-24 R000, March 2011 <ul style="list-style-type: none"> – Chapter 3, Descriptive Geological Site Model 	
3 (a) (vi)	a description of any activity that may have an impact on the development of the mine or mill, including any mining-related activity that was carried on at the site before the date of submission of the application to the Commission,	As part of early feasibility studies (2002-2003), the regional geologic framework in which the Bruce nuclear site resides was investigated to assess the potential of the site to host a DGR for the long-term management of L&ILW. The results of these studies led to the development of a number of hypotheses regarding geoscientific attributes of the Bruce nuclear site favourable for the safe implementation of the DGR concept. Site-specific and regional geoscientific characterization activities were carried out during 2006-2010 to gather data and information to test the hypotheses and provide evidence supporting the DGR safety case.	<ul style="list-style-type: none"> • PSR, Chapter 2, Site Description: <ul style="list-style-type: none"> – Section 2.1.4, Historical Context • PSR, Chapter 3, Site Evaluation and Characterization • Geosynthesis, NWMO DGR-TR-2011-11 R000, March 2011: <ul style="list-style-type: none"> – Section 1.1, Background • Descriptive Geosphere Site Model, NWMO DGR-TR-2011-24 R000, March 2011 <ul style="list-style-type: none"> – Section 1.3, Geoscientific Site Characterization Plan – Section 2.3, DGR Borehole Investigation 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			Program	
3 (a) (vii)	a description of the design of and the maintenance program for every eating area,	<p>A combined office, lunch room and refuge station is included in the underground services area. Maintenance of the lunch room area will be performed in accordance with the inspection and maintenance program to be in place once the facility is in operation.</p> <p>During construction, lunch rooms will be provided by the contractor in trailers above ground.</p>	<ul style="list-style-type: none"> PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> Section 6.3.4, Underground Shaft and Services Area Figure 6-14, Underground Services Area PSR, Section 9.3.1, Installation of Construction Services PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.8, Inspection and Maintenance Program 	
3 (a) (viii)	the proposed plan for the decommissioning of the mine or mill, and	<p>Decommissioning activities will begin after waste emplacement operations have ended and regulatory approval has been received to decommission the facility. The scope of decommissioning work for the repository will include decommissioning of underground facilities, sealing of shafts, and demolition of surface buildings and infrastructure.</p> <p>The preliminary decommissioning planning addresses end-of-construction as well as end-of-life decommissioning for the DGR Facility, and has been developed in accordance with CNSC Regulatory Guide G-219, Decommissioning Planning for Licensed Activities and CSA Standard N294-09, Decommissioning of Facilities Containing Nuclear Substances.</p>	<ul style="list-style-type: none"> PSR, Chapter 13, Preliminary Decommissioning Planning Preliminary Decommissioning Plan, NWMO DGR-TR-2011-39 R000, March 2011 	C1NFR 3 (k)
3 (a) (ix)	a description of the proposed emergency power systems and their capacities;	An emergency power system using diesel generators, complete with load bank, is installed to assure safety in the event of a grid power	<ul style="list-style-type: none"> PSR, Section 6.2.4.1, Electrical Supply and Emergency Power 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		failure. An emergency generation capacity of approximately 1,750 kW (which consists of multiple generators providing the required load with additional capacity) is required to serve the site loads that are essential for personnel safety. In the event that one of the generators is not operable, the remaining generators can supply the emergency load requirements. It is not intended to maintain operational power requirements following a grid power failure.		
3 (b) (i)	in relation to the activity to be licensed, a description of and the schedule for the planned activity,	<p>The activities to be licensed are <u>preparation of the site for</u> and <u>construction of</u> a DGR for long-term management of the L&ILW produced by OPG-owned or operated nuclear reactors. The activities are expected to last approximately five to seven years after obtaining the site preparation and construction licence. The location of the DGR is adjacent to OPG's WWMF on the Bruce nuclear site, in the Municipality of Kincardine.</p> <p>The ultimate purpose of the activities to be licensed is the long-term management of the operational and refurbishment L&ILW currently stored at WWMF, as well as the future L&ILW produced as a result of continued operation of OPG-owned or operated nuclear reactors.</p>	<ul style="list-style-type: none"> • OPG Letter, K.E. Nash to B. Howden, "Deep Geologic Repository for Low and Intermediate Level Waste (DGR) - Application for the Site Preparation and Construction Licence", CD# 00216-CORR-00531-00033, August 13, 2007 • PSR: <ul style="list-style-type: none"> – Section 1.2, DGR Project Overview – Section 9.1.2, Construction Program and Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule • General schedule for the lifecycle of the DGR, attached to OPG Letter, A. Sweetnam to JRP Chair, "Submission of Information in Support of OPG's Licence Application for a Deep Geologic Repository for Low and Intermediate Level Waste", CD# 00216-CORR-00531-00090, April 2011 	GNSCR 3 (1) (b)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (b) (ii)	a description of the proposed methods for carrying on the activity,	<p>Following receipt of the licence, the site will be prepared for construction by clearing and grubbing, site grading, installing fencing, installing temporary construction services, and establishing the stormwater management system.</p> <p>The first major construction activities will be establishing the shaft collars followed by the erection of the main and ventilation shaft headframes, sinking of two shafts and construction of underground infrastructure, access tunnels and emplacement rooms at the repository level. At the same time various facilities and infrastructure will be constructed at surface. At the end of construction, the DGR Facility will be fully commissioned and all temporary construction facilities removed from the site in preparation for handover to DGR operations staff.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.1.1, Construction Regulations – Section 9.2, Site Preparation – Section 9.3 Other Activities Required for Construction – Section 9.4, Construction 	-
3 (b) (iii)	a list of the categories of material proposed to be mined and a description of the criteria used to determine those categories,	The DGR is not a mine.	<ul style="list-style-type: none"> • Evidence not required 	
3 (b) (iv)	the anticipated duration of the activity, and	The site preparation and construction activities are expected to last approximately five to seven years after obtaining the licence.	<ul style="list-style-type: none"> • PSR: <ul style="list-style-type: none"> – Section 1.2, DGR Project Overview – Section 9.1.2, Construction Program and Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule • General schedule for the lifecycle of the DGR, attached to OPG Letter, A. Sweetnam to JRP 	<p>C1NFR 5 (c)</p> <p>UMMR 5 (1) (b)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			Chair, "Submission of Information in Support of OPG's Licence Application for a Deep Geologic Repository for Low and Intermediate Level Waste", CD# 00216-CORR-00531-00090, April 2011	
3 (b) (v)	the proposed quality assurance program for the activity;	<p>All activities to be encompassed by the site preparation and construction licence are and will be performed under a quality program compliant with CAN/CSA N286-05 and ISO 9001:2008 quality management standards. The program is implemented through the following processes:</p> <ul style="list-style-type: none"> • A managed system consisting of governing documents that prescribe controls and responsibilities to ensure activities are carried out in a safe, effective manner by qualified personnel; • Individual accountability for implementing and adhering to the managed system elements; and • Evaluation and enhancement of the program elements through continuous improvement processes. <p>The quality program includes provisions for systematic planned audits and assessments designed to provide a comprehensive, critical and independent evaluation of project activities.</p>	<ul style="list-style-type: none"> • PSR, Chapter 11, Quality Assurance: <ul style="list-style-type: none"> – Section 11.3, Design and Construction Phase • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011 • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011 	C1NFR 3 (d)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (c) (i)	in relation to the environment and waste management, the program to inform persons living in the vicinity of the mine or mill of the general nature and characteristics of the anticipated effects of the activity to be licensed on the environment and the health and safety of persons,	A Public Involvement Program for OPG's DGR for L&ILW has been designed in accordance with the CNSC Regulatory Guide G-217, Licensee Public Information Programs. The delivery of the DGR Public Involvement Program encompasses a broad approach, which is related to key milestones in the development of the DGR. A broad range of communication tools will be employed to provide the general public, key stakeholders and Aboriginal Peoples with information and opportunities for engagement.	<ul style="list-style-type: none"> PSR, Chapter 12, Public Information and Involvement Program 	C1NFR 3 (j)
3 (c) (ii)	the program to determine the environmental baseline characteristics of the site and the surrounding area,	The natural environment of the Bruce nuclear site and the effects of operations on the natural environment have been extensively studied. Since 1997, there have been a number of environmental assessments conducted for various activities related to the waste management operations, and to activities related to power generation. In 2007 and 2009 additional baseline environmental monitoring studies were completed specific to the DGR project to update and improve the comprehensiveness of the information.	<ul style="list-style-type: none"> PSR, Section 2.4, Environment Studies <ul style="list-style-type: none"> Section 2.4.1, Introduction 	C1NFR 4 (c)
3 (c) (iii)	the effects on the environment that may result from the activity to be licensed, and the measures that will be taken to prevent or mitigate those effects,	<u>Assessment of the Effects</u> Assessment of environmental effects of the activities to be licensed is addressed in the PSR in Section 9.5.	<ul style="list-style-type: none"> PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> Section 9.5 Potential Environmental Effects and Monitoring Programs 	C1NFR 4 (e) C1NFR 5 (i) UMMR 3 (d) (i)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<p><u>Measures that Will Be Taken to Prevent or Mitigate the Effects</u></p> <p>Protection of the environment is achieved through a combination of design features and implementation of specific policies, programs and procedures in place during the site preparation for and construction of the DGR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management – Section 9.3.3, Waste Rock Handling • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.5, Environment Governance <ul style="list-style-type: none"> ▪ Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 ▪ Section 4.1.5.2, Environmental Incident, Spill or Accident 	
3 (c) (iv)	the proposed positions for and qualifications and responsibilities of environmental protection workers,	<p>A staffing and training program will be developed to ensure the presence of a sufficient number of qualified workers to carry out activities safely and in accordance with the NSCA and its Regulations. A training program meeting the requirements of N-PROG-TR-0005 will be established and maintained.</p> <p>OPG will acquire and train operations phase staff, including environmental protection staff upon completion of commissioning and before the DGR Facility will be declared in-service. NWMO will provide support to the initial training of the operations phase staff.</p>	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.1, Competency, Performance and Training Governance – Section 4.2.6.1, Training Management Plan, DGR-PLAN-08920-0001 • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.5, Staffing and Training Program 	
3 (c) (v)	the proposed environmental protection policies and programs,	The NWMO Environment Policy, NWMO-POL-ES-0001, describes the minimum requirements for environmental management for the NWMO. The	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: 	C1NFR 3 (g)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<p>policy applies to all NWMO work and requires the implementation of an environmental management system that is compliant with the ISO 14001:2000 Environmental Management System Standard.</p>	<ul style="list-style-type: none"> ▪ Section 4.1.5.1, Environment Policy NWMO-POL-ES-0001 	
		<p>The DGR is designed to ensure that environment is protected during operations. Environmental protection policies, programs and procedures will be implemented in accordance with OPG's Environment Policy; Biodiversity Policy, Land Assessment and Remediation Policy, Spills Management Policy and Policy for Use of Ozone Depleting Substances.</p> <p>Execution of the DGR program will be accomplished through an integrated set of documented activities, typical of an Environmental Management System which will be aligned with the CNSC Standard S-296 and the International Standards Organization standard 14001 and will meet the requirements of OPG's Environmental Management Program.</p>	<ul style="list-style-type: none"> • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.3, Environmental Protection Program 	
3 (c) (vi)	the proposed effluent and environmental monitoring programs,	<p>The DGR site will be monitored during site preparation, construction, and operation. As part of the Environmental Management System, an environmental monitoring program, consistent with the CSA Standard N288.4 will be implemented under OPG oversight.</p> <p>An environmental follow-up program will be implemented to verify that the environmental and cumulative effects of the DGR project are consistent with predictions in the environmental assessment. It will be used to verify that mitigation measures are effective once implemented and</p>	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.5.1, Environment Policy NWMO-POL-ES-0001 • DGR EA Follow-up Monitoring Program, NWMO DGR-TR-2011-10, March 2011 • PSR, Chapter 10, Operational Programs: 	C1NFR 3 (h)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		determine whether there is a need for additional mitigation measures.	<ul style="list-style-type: none"> - Section 10.4, Monitoring Program 	
3 (c) (vii)	the proposed location, the proposed maximum quantities and concentrations, and the anticipated volume and flow rate of releases of nuclear substances and hazardous substances into the environment, including their physical, chemical and radiological characteristics,	Activities under the site preparation and construction licence will not generate any releases of nuclear substances. Hazardous waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices. Explosives will be required for excavation of the shafts and underground facilities.	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.3.4, Conventional and Hazardous Materials Management - Section 9.3.3, Waste Rock Handling - Section 9.3.2, Stormwater Management 	C1NFR 5 (j)
		The radioactive and chemical inventory of the effluents anticipated to be released during normal operation of the DGR has been estimated based on the waste to be emplaced in the repository.	<ul style="list-style-type: none"> • PSR, Chapter 7, Preclosure Safety Assessment: <ul style="list-style-type: none"> - Section 7.4, Radiological Safety during Normal Operations: <ul style="list-style-type: none"> ▪ Section 7.4.2.1, Source Terms - Air and Water Release Rates 	
3 (c) (viii)	the proposed measures to control releases of nuclear substances and hazardous substances into the environment,	Activities under the site preparation and construction licence will not generate any releases of nuclear substances. Hazardous materials and waste anticipated to result from the licensed activities will be managed and disposed of accordingly. Handling of explosives on the project site (surface and underground) will be in accordance with Part VI of the Mines and Mining Plants Regulations (Reg. 854).	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.3.4, Conventional and Hazardous Materials Management - Section 9.3.3, Waste Rock Handling - Section 9.3.2, Stormwater Management • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 	C1NFR 5 (k)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		The DGR is designed such that any releases of the radioactive and hazardous substances from the DGR into the environment will be controlled through a combination of design provisions and implementation of environmental protection policies, programs and procedures OPG's Environment Policy; Biodiversity Policy, Land Assessment and Remediation Policy, Spills Management Policy and Policy for Use of Ozone Depleting Substances.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> – Section 6.2, Surface Buildings and Infrastructure: <ul style="list-style-type: none"> ▪ Section 6.2.2, Ventilation Shaft Area ▪ Section 6.2.3, Waste Rock Management Area ▪ Section 6.2.4.8, Stormwater Management System – Section 6.3, Underground Facilities: <ul style="list-style-type: none"> ▪ Section 6.3.2, Ventilation Shaft ▪ Section 6.3.8, Underground Ventilation – Section 6.7, Hazardous Materials and Waste • PSR, Chapter 17, Engineering Drawings: <ul style="list-style-type: none"> – Ventilation System: Typical Shaft Sinking Ventilation Process Flow Diagram, DWG. No. H333000-WP410-20-030-0002, Rev.00 – Permanent Ventilation System PFD Summer Surface Conditions Construction Period, DWG. No. H333000-WP410-20-030-0003-001 • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.3, Environmental Protection Program 	
3 (c) (ix)	a description of the anticipated liquid and solid waste streams within the mine or mill, including	<u>Waste that may be generated at the site</u> Activities under the site preparation and	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.2.2, Clearing and Grubbing 	GNSCR 3 (1) (c)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
	the ingress of fresh water and any diversion or control of the flow of uncontaminated surface and ground water,	construction licence will not generate any radioactive wastes. Hazardous waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices and will be managed and disposed of accordingly.	<ul style="list-style-type: none"> - Section 9.2.3, Site Grading - Section 9.3.4, Conventional and Hazardous Materials Management - Section 9.3.3, Waste Rock Handling - Section 9.3.2, Stormwater Management 	GNSCR 3 (1) (j)
		<p>The anticipated waste streams, as described in the design of the facility, will include conventional, hazardous and small quantities of low level radioactive waste produced during the operation and decommissioning phases of the DGR.</p> <p>In the event that construction would be suspended prior to start of DGR operations, no radioactive waste would be present at the DGR site. In this case, the only waste generated would be of a chemical and/or industrial nature.</p>	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.7, Hazardous Materials and Waste - Section 6.2.3, Waste Rock Management Area - Section 6.2.4.8, Stormwater Management System • PSR, Chapter 13, Preliminary Decommissioning Planning: <ul style="list-style-type: none"> - Section 13.10.1, Radioactive Waste - Section 13.10.2, Demolition Waste - Section 13.10.2, Hazardous Waste - Section 13.11, Decommissioning at the End of Construction • Preliminary Decommissioning Plan, NWMO DGR-TR-2011-39 R000, March 2011: <ul style="list-style-type: none"> - Section 8.1, Radioactive Waste - Section 8.2, Hazardous Waste - Section 8.3, Demolition Waste - Appendix B: Decommissioning Following Construction: <ul style="list-style-type: none"> ▪ Section B.5, Waste Management 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<p><u>Waste disposed at the site</u></p> <p>The DGR is designed for long-term management of solid low and intermediate level wastes. The DGR will not accept liquid wastes, except for small amounts of incidental liquids that are inevitably associated with the solid wastes. The DGR will also not accept wastes containing used fuel waste or recognizable fuel fragments.</p>	<p>Since the purpose of the DGR is long-term management of L&ILW, the waste inventory (name, quantity and form) is described in the following licensing submissions:</p> <ul style="list-style-type: none"> • PSR, Chapter 5, Waste Inventory: <ul style="list-style-type: none"> – Section 5.3, Waste Types and Categories – Section 5.8, Waste Volumes – Section 5.9, Radionuclide Inventory – Section 5.10, Physical and Chemical Characteristics of Key Radionuclides – Section 5.11, Chemical Inventory – Section 5.12, Physical and Chemical Characteristics of the Bulk Material Inventory • Reference Low and Intermediate Level Waste Inventory for the Deep Geologic Repository, OPG 00216-REP-03902-00003-R003, December 2010 	
		<p>Most L&ILW is inherently heterogeneous, with considerable variability both across waste categories, and also from package to package within a waste category. OPG’s waste characterization program, which has been used for many years, will be also used at DGR to identify the characteristics of various waste types.</p>	<ul style="list-style-type: none"> • PSR: <ul style="list-style-type: none"> – Section 5.4, Waste Containers and Packages – Section 6.4, DGR Waste Package Inventory – Section 5.6, Waste Characterization Program 	
		<p>All LLW and ILW is shipped or transferred to the DGR in waste packages that meet the DGR Waste Acceptance Criteria (WAC). Some waste packages currently stored at WWMF meet the DGR WAC and are considered DGR-ready.</p>	<ul style="list-style-type: none"> • PSR: <ul style="list-style-type: none"> – Section 5.5, Waste Acceptance Criteria – Section 6.3.4, Emplacement Rooms – Section 6.5, Transfer Equipment and 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		Others will require some waste conditioning, additional decay time, and/or container overpacking or shielding. The L&ILW is then placed underground, in the emplacement rooms.	Emplacement Operations	
		OPG, as Operator of the DGR, will use the existing Radiation Protection Program N-PROG-RA-0013 to manage any radiological risks that could contribute to public and occupational radiation doses. OPG's Conventional Safety Program will be used to ensure workers work safely in a healthy and injury-free workplace by managing and mitigating risks associated with activities, products and services of OPG operations.	<ul style="list-style-type: none"> • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.1, Radiation Protection Program – Section 10.2, Conventional Occupational Health and Safety Program 	
3 (c) (x)	the proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment, the health and safety of persons and the maintenance of security, including measures to	<p>Procedures to mitigate effects of accidental releases of hazardous substances will be in place in accordance with NWMO's Design and Construction Phase Management System to ensure adequate protection of the environment, and health and safety of the persons during DGR site preparation and construction. Procedures will also be in place during operations to mitigate effects of accidental releases of nuclear and hazardous substances, as outlined in the PSR.</p> <p>The facility is designed such that, for situations in which consequences of potential accidents are not negligible, mitigation is achieved through one or more of the following:</p> <ul style="list-style-type: none"> • Design mitigation; 	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.4.10, Contingency Plans during Construction • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.2.4, Emergency Response Standard, NWMO-STD-WM-0002 – Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 • PSR, Chapter 10, Operational Programs: 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<ul style="list-style-type: none"> • Preventive measures to reduce the likelihood of such accidents further; • Administrative controls (mainly through procedures); • Controls installed on equipment to restrain their movement (e.g., limit switches); and • Worker training. <p>For accidents assessed to have larger consequences, contingency plans will be in place and emergency response, including mine rescue, will be available to protect the workers.</p>	<ul style="list-style-type: none"> – Section 6.8, Fire and Life Safety – Section 6.9, Emergency Response – Section 7.6, Contingency Planning – Section 10.7, Emergency Preparedness and Emergency Response Program 	
3 (c) (x) (A)	assist off-site authorities in planning and preparing to limit the adverse effects of an accidental release,	See above	See above	
3 (c) (x) (B)	notify off-site authorities of an accidental release or the imminence of an accidental release,	See above	See above	
3 (c) (x) (C)	report information to off-site authorities during and after an accidental release,	See above	See above	
3 (c) (x) (D)	assist off-site authorities in dealing with the adverse effects of an accidental release, and	See above	See above	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (c) (x) (E)	test the implementation of the measures to control the adverse effects of an accidental release,	See above	See above	
3 (c) (xi)	the anticipated quantities, composition and characteristics of backfill, and	Not applicable	<ul style="list-style-type: none"> Evidence not required 	
3 (c) (xii)	a description of the proposed waste management system;	<p>Activities under the site preparation and construction licence will not generate any radioactive wastes. Hazardous waste anticipated to result from the licensed activities will be limited to that originating from standard construction practices and will be managed and disposed of accordingly.</p> <p>In the event that construction would be suspended prior to start of DGR operations, no radioactive waste would be present at the DGR site. In this case, the only waste generated would be of a chemical and/or industrial nature.</p>	<ul style="list-style-type: none"> PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> Section 9.3.4, Conventional and Hazardous Materials Management Section 9.3.3, Waste Rock Handling Section 9.3.2, Stormwater Management 	UMMR 5 (1) (f)
		<p>The anticipated waste streams, as described in the design of the facility, will include conventional, hazardous and small quantities of low level radioactive waste produced during the operation and decommissioning phases of the DGR.</p>	<ul style="list-style-type: none"> PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> Section 6.7, Hazardous Materials and Waste Section 6.2.3, Waste Rock Management Area Section 6.2.4.8, Stormwater Management System PSR, Chapter 13, Preliminary Decommissioning Planning: <ul style="list-style-type: none"> Section 13.10.1, Radioactive Waste 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			<ul style="list-style-type: none"> - Section 13.10.2, Demolition Waste - Section 13.10.2, Hazardous Waste - Section 13.11, Decommissioning at the End of Construction <ul style="list-style-type: none"> • Preliminary Decommissioning Plan, NWMO DGR-TR-2011-39 R000, March 2011: <ul style="list-style-type: none"> - Section 8.1, Radioactive Waste - Section 8.2, Hazardous Waste - Section 8.3, Demolition Waste - Appendix B: Decommissioning Following Construction: <ul style="list-style-type: none"> ▪ Section B.5, Waste Management 	
3 (d) (i)	<p>in relation to health and safety,</p> <p>the effects on the health and safety of persons that may result from the activity to be licensed, and the measures that will be taken to prevent or mitigate those effects,</p>	<p><u>Assessment of the Effects</u></p> <p>No radiological hazards are anticipated during DGR site preparation and aboveground portion of the DGR. During construction of the shaft and the underground portion of the DGR, radon could potentially pose a radiological hazard. A radon assessment in the underground environment was conducted based on the rock properties at the DGR site. The assessment has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based on the guidelines, the radioactive hazard is considered to be insignificant.</p> <p>A preliminary conventional (non-radiological) safety assessment was performed to estimate the potential conventional hazards and their impact on</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.4.9.1, Conventional Safety - Section 9.4.9.2, Radiological Safety • Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase • Preliminary Conventional Safety Assessment, NWMO DGR-TR-2011-37 R000, March 2011: <ul style="list-style-type: none"> - Section 5.1, Site Preparation - Section 5.2, Construction - Section 5.4, General Safety Management 	<p>C1NFR 4 (e)</p> <p>C1NFR 5 (i)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		workers during DGR operation. Specific measures were identified to control the potential hazards and mitigate possible impacts from these hazards. The preliminary assessment has concluded that there is no reason why the facility could not be operated in a safe manner.		
		<p><u>Measures that Will Be Taken to Prevent or Mitigate the Effects</u></p> <p>Protection of the health and safety of persons is achieved through a combination of design features and implementation of specific policies, programs and procedures in place during the site preparation for and construction of the DGR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management – Section 9.3.3, Waste Rock Handling – Section 9.3.2, Stormwater Management – Section 9.4.5.2, Ventilation During Shaft Sinking – Section 6.8, Fire and Life Safety – Section 9.4.10, Contingency Plans during Construction 	
		Activities under the site preparation and construction licence will be performed in accordance with OPG and NWMO governance, to ensure that the required quality, the health, safety and security of the public and workers are achieved when preparing for, and constructing the DGR.	<ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.5.2, Safety Culture – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 – Section 4.1.5, Environment Governance 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			<ul style="list-style-type: none"> ▪ Section 4.1.5.1, Environment Policy, NWMO-POL-ES-0001 ▪ Section 4.1.5.2, Environmental Incident, Spill or Accident – Section 4.1.2.4, Emergency Response Standard, NWMO-STD-WM-0002 – Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 	
3 (d) (ii)	the proposed program for selecting, using and maintaining personal protective equipment,	<p>The existing OPG health and safety program will be used to govern the selection, use and maintenance of personal protective equipment for the above-ground portion of the DGR.</p> <p>For underground activities, the requirements for personal protective equipment under the Mines and Mining Plants Regulations (Reg. 854) will be complied with.</p>	<ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011 • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.2, Conventional Occupational Health and Safety Program – Section 10.2.2, Personal Protective Equipment 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (d) (iii)	the proposed worker health and safety policies and programs,	The NWMO Health and Safety Policy, NWMO-POL-WM-0002, will be implemented during the activities to prepare the site for and construct the DGR. The policy describes the minimum requirements for the management of employee and public health and safety. The policy requires that managers assess and manage risks, design the work environment, plan work and execute work to protect workers and the public. The policy also commits the organization to continually improve health and safety performance.	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.2.1, Health and Safety Policy, NWMO-POL-WM-0002 – Section 4.2.7.2, Health and Safety Management Plan, DGR-PLAN-08962-0001 	C1NFR 3 (f)
		The DGR is designed to ensure that during operations, workers will be protected from exposure to radiation and from conventional hazards. A radiation protection program will be implemented during operations to manage radiological risks that could contribute to occupational radiation doses. A conventional health and safety program will be implemented for the DGR, consistent with OPG's Health and Safety Policy, and Nuclear Safety Policy, and will include provisions for hazardous materials management and use of personal protective equipment.	<ul style="list-style-type: none"> • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.1, Radiation Protection Program – Section 10.2, Conventional Occupational Health and Safety Program 	
3 (d) (iv)	the proposed positions for and qualifications and responsibilities of radiation protection workers,	Upon completion of commissioning and before the DGR Facility will be declared in-service, OPG will acquire and train operations phase staff, and develop operational policies, procedures and standards through managed turnover, with knowledgeable and qualified staff. NWMO will provide support to the initial training of the operations phase staff.	<ul style="list-style-type: none"> • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1.1, Competency, Performance and Training Governance – Section 4.2.6.1, Training Management Plan, DGR-PLAN-08920-0001 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (d) (v)	the proposed training program for workers,	Once in-service, a staffing and training program will be developed to ensure the presence of a sufficient number of qualified workers to carry out activities safely and in accordance with the NSCA and its Regulations. A training program meeting the requirements of N-PROG-TR-0005 will be established and maintained.	<ul style="list-style-type: none"> • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.5, Staffing and Training Program 	
3 (d) (vi)	the proposed measures to control the spread of any radioactive contamination,	<p>No radioactive contamination will be present at the DGR site during the site preparation and construction as none of the activities to be performed under the site preparation and construction licence will generate any releases of nuclear substances.</p> <p>The DGR is designed such that health and safety of the general public and workers will be protected during the activities of waste emplacement. Air and water monitoring will take place at strategic locations underground and at surface to ensure radiation levels in air and water are consistent with regulatory limits. Zoning will be used as key practice in maintaining control of radiation exposure and contamination. Inter-zonal monitoring will be employed as the final barrier to the spread of radioactive contamination to the public domain.</p>	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> – Section 6.11, Radiation Monitoring • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.1.2, Control of Radiation Exposure and Contamination – Section 10.4.1, Radiological Monitoring Program 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (d) (vii)	the proposed ventilation and dust control methods and equipment for controlling air quality, and	<p>During construction of the DGR, ventilation during shaft sinking will be in place to ensure that health and safety of the personnel is adequately protected. The ventilation system for shaft sinking will be temporary and specific to each shaft.</p> <p>The design of the DGR includes air quality underground monitoring to ensure that the health and safety of personnel within the repository is not compromised during the waste emplacement activities.</p>	<ul style="list-style-type: none"> • PSR, Section 9.4.5.2, Ventilation During Shaft Sinking • PSR, Section 6.3, Underground Facilities: <ul style="list-style-type: none"> – Section 6.3.2, Ventilation Shaft – Section 6.3.8, Underground Ventilation – Section 6.12, Underground Air Quality Monitoring • PSR, Chapter 17, Engineering Drawings: <ul style="list-style-type: none"> – Ventilation System: Typical Shaft Sinking Ventilation Process Flow Diagram, DWG. No. H333000-WP410-20-030-0002, Rev.00 – Permanent Ventilation System PFD Summer Surface Conditions Construction Period, DWG. No. H333000-WP410-20-030-0003-001 	
3 (d) (viii)	the proposed level of effectiveness of and inspection schedule for the ventilation and dust control systems; and	<p>Inspection for the ventilation and dust control systems during construction will be the responsibility of the contractor.</p> <p>Inspection of the ventilation and dust control systems will be performed in accordance with the inspection and maintenance program to be in place once the facility is in operation.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction <ul style="list-style-type: none"> – Section 9.4.7.3, Ventilation during Lateral Development • PSR Chapter 10, Operational Programs <ul style="list-style-type: none"> – Section 10.8, Inspection and Maintenance Program 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
3 (e)	in relation to security, the proposed measures to alert the licensee to acts of sabotage or attempted sabotage at the mine or mill.	General security provisions for the DGR are provided in a confidential submission.	<ul style="list-style-type: none"> OPG Letter, A. Sweetnam to JRP Chair, "Deep Geologic Repository (DGR) for Low and Intermediate Level Waste – Security Provisions" (OPG-Confidential), CD# 00216-CORR-00531-00089, April 2011 	
4 (1)	In this section, "action level" means a specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program or environmental protection program, and triggers a requirement for specific action to be taken.	-	<ul style="list-style-type: none"> Evidence not required 	
4 (2) (a)	<p>An application for a licence in respect of a uranium mine or mill, other than a licence to abandon, shall contain a proposed code of practice that includes</p> <p>any action level that the applicant considers appropriate for the purpose of this subsection.</p>	<p>During site preparation and construction of the DGR there will be no doses of radiation that would require OPG to develop action levels pursuant to section 6 of the Radiation Protection Regulations.</p> <p>Site preparation activities do not involve any radiological hazard. An assessment of radon in the underground environment during construction has concluded that underground radon concentrations will be below the allowable limit in the Canadian Guidelines for Management of Naturally Occurring Radioactive Materials. Based</p>	<ul style="list-style-type: none"> PSR, Section 9.4.9.2, Radiological Safety Radon Assessment, NWMO DGR-TR-2011-34 R000, March 2011: <ul style="list-style-type: none"> Section 4.2, Estimated Radon Concentration and Doses in the DGR during Construction Phase 	<p>GNSCR 3 (1) (f)</p> <p>RP (6)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		<p>on the guidelines, the radioactive hazard is considered to be insignificant.</p> <p>Action levels are, therefore, not required during the site preparation and construction phase. For the operational phase of the DGR, however, OPG will propose action levels for CNSC acceptance as part of the operating licence process.</p>		
4 (2) (b)	a description of any action that the applicant will take if an action level is reached; and	Action levels will be proposed for CNSC acceptance closer to obtaining the operating licence.		RP 6 (2)
4 (2) (c)	the reporting procedures that will be followed if an action level is reached.	Reporting procedures will be developed once action levels have been proposed closer to the facility becoming operational.		RP 6 (2)
5 (1) (a)	<p>An application for a licence to prepare a site for and construct a uranium mine shall contain the following information in addition to the information required by section 3 and subsection 4(2):</p> <p>a description of the proposed design of the mine;</p>	The DGR Facility is a Class 1B nuclear facility as defined under the NSCA, to be constructed under the site preparation and construction licence. The DGR Facility includes the deep geologic repository for low and intermediate level waste located at a depth of approximately 680 m, and various surface and underground support facilities. The support facilities include infrastructure for receiving, inspecting and handling waste packages, for transferring waste packages from the surface to the repository	<p>Description of the DGR Facility is provided in:</p> <ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description • PSR, Chapter 17, Engineering Drawings <p>Description of waste inventories and packages to be handled at the DGR Facility is provided in:</p> <ul style="list-style-type: none"> • PSR, Chapter 5, Waste Inventory • Reference Low and Intermediate Level Waste Inventory for the Deep Geologic Repository, 	<p>GNSCR 3 (1) (d)</p> <p>C1NFR 5 (d)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		horizon, for handling the waste packages in the repository, for emplacing waste packages, for constructing room shield walls, and for material storage.	OPG 00216-REP-03902-00003-R003, December 2010	
5 (1) (b)	the proposed construction program, including its schedule;	<p>The construction governance will include a description of the construction project and the facilities to be constructed as well as the processes that will be used to execute and complete the work and accomplish the construction objectives and requirements including schedule.</p> <p>The site preparation and construction activities are expected to last approximately five to seven years after obtaining the licence.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.1.2, Construction Program and Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule – Figure 9-1, DGR Project Site Preparation and Construction Schedule • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.10, Construction – Section 1.11, Commissioning • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.2.7, Construction Governance • General schedule for the lifecycle of the DGR, attached to OPG Letter, A. Sweetnam to JRP Chair, "Submission of Information in Support of OPG's Licence Application for a Deep Geologic Repository for Low and Intermediate Level Waste", CD# 00216-CORR-00531- 	<p>C1NFR 5 (c)</p> <p>UMMR 3 (b) (iv)</p> <p>UMMR 5 (1) (i)</p>

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			00090, April 2011	
5 (1) (c)	a description of the components, systems and equipment proposed to be installed at the mine, including their design operating conditions;	The design of the DGR has been developed in accordance with specific criteria based on the regulations under the NSCA and/or on guidance from federal and provincial authorities, and international guidance. The description of the systems and equipment used at DGR is provided in Chapter 6 of the PSR.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> – Section 6.1.1, DGR Requirements – Section 6.1.2, Applicable Regulations, Standards and Codes – Section 6.2, Surface Buildings and Infrastructure – Section 6.3, Underground Facilities – Section 6.5, Transfer Equipment and Emplacement Operations – Section 6.7, Hazardous Materials and Waste – Section 6.8, Fire and Life Safety – Section 6.13, Access Tunnel Closure Walls – Section 6.14, Shaft Seal • PSR, Chapter 17, Engineering Drawings: <ul style="list-style-type: none"> – Shaft Hoisting Systems, Dia.6500 – Main Shaft Sinking Stage and Bucket Proposed Layout, DWG. No. H333000-WP405-20-035-0001 – Main Shaft Headframe - Sinking Condition General Arrangement, DWG. No. H333000-WP406-20-042-0003 – Ventilation Shaft Headframe – Sinking Condition General Arrangement, DWG. No. H333000-WP406-20-042-0008 – Ventilation System: Typical Shaft Sinking Ventilation Process Flow Diagram, DWG. No. H333000-WP410-20-030-0002, 	C1NFR 5 (e)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			Rev.00 – Permanent Ventilation System PFD Summer Surface Conditions Construction Period, DWG. No. H333000-WP410-20-030-0003-001 • Ontario Power Generation's Deep Geologic Repository for Low and Intermediate-Level Waste Project Requirements, NWMO DGR-PDR-00120-0001 R002, September 2010	
5 (1) (d)	the proposed quality assurance program for the design of the mine;	The design of the DGR Facility is performed under a quality program compliant with CAN/CSA N286-05 and ISO 9001:2008 quality management standards. The program is implemented through the following processes: <ul style="list-style-type: none"> • A managed system consisting of governing documents that prescribe controls and responsibilities to ensure activities are carried out in a safe, effective manner by qualified personnel; • Individual accountability for implementing and adhering to the managed system elements; and • Evaluation and enhancement of the program elements through continuous improvement processes. The quality program includes provisions for systematic planned audits and assessments designed to provide a comprehensive, critical and independent evaluation of project activities.	<ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 1.8.1, Design – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> – Section 4.1, NWMO Corporate Governance Applicable to the DGR Project: <ul style="list-style-type: none"> ▪ Section 4.1.3, Quality Assurance Governance ▪ Section 4.1.4, Engineering and Technical Governance – Section 4.2, NWMO DGR Project- Specific Governance: <ul style="list-style-type: none"> ▪ Section 4.2.1, Engineering Project 	C1NFR 4 (d) C1NFR 5 (g)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			<ul style="list-style-type: none"> Management Governance <ul style="list-style-type: none"> ▪ Section 4.2.2, DGR Project Change Control, DGR-PROC-00740-0001 • PSR, Chapter 11, Quality Assurance <ul style="list-style-type: none"> – Section 11.3, Design and Construction Phase 	
5 (1) (e)	the results of a process-hazard analysis and a description of how those results have been taken into account;	An assessment was performed to estimate the potential radiological and non-radiological impacts on public and the workers due to DGR operation under normal and abnormal operating conditions and credible accident conditions. A hazard identification process was used in the assessment to identify the bounding accident scenarios, based on a systematic review of relevant site and facility features and processes.	<ul style="list-style-type: none"> • PSR, Chapter 7, Preclosure Safety Assessment <ul style="list-style-type: none"> – Section 7.4.1, Hazard Identification – Exposure Pathways 	
		A conservative assessment was performed to estimate the potential radiological and non-radiological impacts on humans and non-human biota during the postclosure period, for normal evolution and disruptive scenarios. Identification of the scenarios in the assessment was based on considering potential external features, events and processes that could drive the evolution of the repository system.	<ul style="list-style-type: none"> • PSR, Chapter 8, Postclosure Safety Assessment: <ul style="list-style-type: none"> – Section 8.5, Scenario Identification • Postclosure Safety Assessment, NWMO DGR-TR-2011-25 R000, March 2011: <ul style="list-style-type: none"> – Chapter 5, Scenario Identification and Description 	
5 (1) (f)	a description of the proposed design, construction and operation of the waste management system, including	Activities under the site preparation and construction licence will not generate any radioactive wastes. Hazardous waste anticipated to result from the licensed activities will be limited	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> – Section 9.3.4, Conventional and Hazardous Materials Management 	UMMR 3 (c) (xii)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
	the measures to monitor its construction and operation, the construction schedule, the contingency plans for construction and the measures to control the movement of water in existing waterways;	to that originating from standard construction practices and will be managed and disposed of accordingly. No waste management system needs to be constructed for the waste arising from the construction and operation of the DGR. The stormwater management system is described in the PSR. In the event that construction would be suspended prior to start of DGR operations, no radioactive waste would be present at the DGR site. In this case, the only waste generated would be of a chemical and/or industrial nature.	<ul style="list-style-type: none"> - Section 9.3.3, Waste Rock Handling - Section 9.3.2, Stormwater Management 	
		The anticipated waste streams, as described in the design of the facility, will include conventional, hazardous and small quantities of low level radioactive waste produced during the operation and decommissioning phases of the DGR.	<ul style="list-style-type: none"> • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.7, Hazardous Materials and Waste - Section 6.2.3, Waste Rock Management Area - Section 6.2.4.8, Stormwater Management System • PSR, Chapter 13, Preliminary Decommissioning Planning: <ul style="list-style-type: none"> - Section 13.10.1, Radioactive Waste - Section 13.10.2, Demolition Waste - Section 13.10.2, Hazardous Waste - Section 13.11, Decommissioning at the End of Construction • Preliminary Decommissioning Plan, NWMO 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
			DGR-TR-2011-39 R000, March 2011: <ul style="list-style-type: none"> - Section 8.1, Radioactive Waste - Section 8.2, Hazardous Waste - Section 8.3, Demolition Waste - Appendix B: Decommissioning Following Construction: <ul style="list-style-type: none"> ▪ Section B.5, Waste Management 	
5 (1) (g)	a description of the proposed disposition of the ore;	The DGR Facility is not a uranium mine.	<ul style="list-style-type: none"> • Evidence not required 	
5 (1) (h)	the anticipated quantities and grade of ore and waste rock that will be removed, their proposed storage location, and the proposed method, program and schedule, for their removal and disposal;	Waste rock will be produced during from the development of the shafts and the underground repository level. The waste rock will be transferred to surface to the appropriate temporary stockpiles at the Waste Rock Management Area.	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.3.3, Waste Rock Handling • PSR, Chapter 6, Facility Description: <ul style="list-style-type: none"> - Section 6.2.3, Waste Rock Management Area • PSR, Figure 9-1, DGR Project Site Preparation and Construction Schedule 	
5 (1) (i)	the proposed mining methods and programs; and	Construction of the DGR will be executed in four major phases: pre-sink, sinking, lateral development and commissioning. Details of each phase are provided in Chapter 9 of the PSR. All construction activities will be performed in accordance with OPG and NWMO governance, to ensure that the required quality, the health, safety and security of the public and workers are achieved when preparing for, and constructing the DGR.	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction <ul style="list-style-type: none"> - Section 9.1.2, Construction Program and Schedule - Figure 9-1, DGR Project Site Preparation and Construction Schedule - Section 9.4, Construction • OPG Charter Deep Geological Repository 	C1NFR 5 (c) UMMR 5 (1) (b)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
		The construction governance will include a description of the construction project and the facilities to be constructed as well as the processes that will be used to execute and complete the work and accomplish the construction objectives and requirements including schedule.	<ul style="list-style-type: none"> Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 1.10, Construction - Section 1.11, Commissioning • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2.7, Construction Governance 	
5 (1) (j)	the proposed commissioning plan for the components, systems and equipment to be installed at the mine.	<p>Commissioning plans for the DGR will be developed in accordance with the commissioning program referred to in the OPG and NWMO governance.</p> <p>A high-level overview of the commissioning plan is provided in the PSR.</p>	<ul style="list-style-type: none"> • PSR, Chapter 9, Site Preparation and Construction: <ul style="list-style-type: none"> - Section 9.4.11, Commissioning • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 1.11, Commissioning • Design and Construction Phase Management System (OPG's L&ILW DGR), NWMO DGR-EN-0001 R000, March 2011: <ul style="list-style-type: none"> - Section 4.2.8, Commissioning Governance 	
11 (a)	Every licensee shall, with respect to the ventilation systems established in accordance with the licence, ensure that each main fan is	<p>Air quality underground will be monitored to ensure that the health and safety of personnel within the repository is not compromised.</p> <p>Ventilation fans and regulators underground will be controlled remotely from surface at the main control room or manually at the ventilation shaft fans and emplacement rooms. Emergency</p>	<ul style="list-style-type: none"> • PSR, Section 6.3, Underground Facilities: <ul style="list-style-type: none"> - Section 6.12, Underground Air Quality Monitoring - Section 6.8.4, Emergency Ventilation Controls - Section 6.2.4.3 Control and Monitoring Systems 	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
	equipped with a device that provides a warning signal when the main fan is not functioning properly;	ventilation controls are discussed in the PSR.	– 6.8.4 Emergency Ventilation Controls	
11 (b)	ensure that a person is designated to receive and respond to a warning signal provided by a device referred to in paragraph (a); and	Same as above	Same as above	
11 (c)	implement measures to prevent any person or activity from interfering with the proper operation of the ventilation systems	Same as above	Same as above	
12 (1) (a)	Where a ventilation system in a work place is not functioning in accordance with a licence, the licensee shall implement alternative measures to protect the health and safety of its workers; and	Same as above	Same as above	
12 (1) (b)	ensure that only the work necessary to restore that system is performed in the work place.	Same as above	Same as above	

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
12 (2)	Before a worker performs any work that is necessary to restore a ventilation system, the licensee shall inform the worker of the protective measures that have been taken and are to be taken in connection with the work.	Same as above	Same as above	
13	No licensee shall rely on the use of a respirator to comply with the Radiation Protection Regulations unless the use of the respirator (a) is for a temporary or unforeseen situation; and (b) is permitted by the code of practice referred to in the licence.	No respirators will be used at the DGR.	<ul style="list-style-type: none"> Evidence not required 	
16 (1) (a)	Every licensee shall keep a record of its operating and maintenance procedures;	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.9, Records and Document Control 	GNSCR 28 C1NFR 14 (2), 14 (4)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
16 (1) (b)	Every licensee shall keep a record of its mine plans showing the actual and planned mine workings;	Same as above	Same as above	Same as above
16 (1) (c)	the schedules for all of its planned mining operations;	Same as above	Same as above	Same as above
16 (1) (d)	the plans of every tailings-containment structure and area and every diversion structure and system associated with the waste management system;	The DGR Facility is not a uranium mine.	<ul style="list-style-type: none"> Evidence not required 	
16 (1) (e)	the design of the uranium mine or mill and of the components and systems installed at the mine or mill;	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> Section 10.9, Records and Document Control 	GNSCR 28 C1NFR 14 (1), 14 (2), 14 (4) 14 (5)

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
16 (1) (f)	the method and relevant data used to ascertain the doses of radiation received by the workers at the uranium mine or mill and the intake of radioactive nuclear substances by those workers;	Same as above	Same as above	Same as above
16 (1) (g)	any measurement made in accordance with the licence or the regulations made under the Act;	Same as above	Same as above	Same as above
16 (1) (h)	the inspections and maintenance carried out in accordance with the licence or the regulations made under the Act;	Same as above	Same as above	Same as above
16 (1) (i)	the quantity of air delivered by each main fan;	Same as above	Same as above	Same as above
16 (1) (j)	the performance of each dust control system; and	Same as above	Same as above	Same as above
16 (1) (k)	the training received by each worker.	Same as above	Same as above	Same as above
16 (2)	Every licensee shall make the records referred to in subsection (1) available at the uranium mine or mill to the workers and a workers' representative.	Same as above	Same as above	Same as above

Compliance Matrix

URANIUM MINES AND MILLS REGULATIONS (UMMR)				
	Regulatory Requirement	High Level Description Addressing the Regulatory Requirement	Evidence in Licensing Submission Addressing the Regulatory Requirement	Cross-ref. to Other Reg. Req
16 (3)	Every licensee shall retain a record of the training referred to in paragraph (1) (k) for the period that the worker is employed at the uranium mine or mill.	All records pertaining to DGR will be managed in accordance with OPG's records and document control procedures, to ensure consistent management of records generated across OPG's nuclear facilities. Records are classified, indexed and stored in an approved document management system.	<ul style="list-style-type: none"> • OPG Charter Deep Geological Repository Project Management System , 00216-CHAR-0001 R000, March 2011: <ul style="list-style-type: none"> – Appendix B, Correlation of CSA N286-05 Requirements to OPG Management System • PSR, Chapter 10, Operational Programs: <ul style="list-style-type: none"> – Section 10.9, Records and Document Control 	GNSCR 28 C1NFR 14 (1), 14 (2), 14 (4) 14 (5)
16 (4)	Every licensee shall post, at a location within the uranium mine or mill that is accessible to all workers and where it is most likely to come to their attention, a record of the measurements made in respect of every work place in accordance with the licence and these Regulations.	Record of measurements will be posted at a place where it comes to workers' attention, as is the practice for OPG's other nuclear facilities.		