An artistic rendering (subject to change)

Micro Modular Reactor® (MMR®) Project at Chalk River

Welcome to our open house!

Acknowledgement and Commitment to Indigenous Communities

- The Chalk River site is built on unceded Algonquin Anishinabe Territory, Global First Power (GFP) recognizes the peoples and land of the Algonquin Anishinabe Nation, as well as all First Nations and Métis peoples' valuable past and present contributions to this land
- GFP is committed to:
  - Building mutually beneficial working relationships with Indigenous communities
  - Engaging with all Indigenous communities with treaty and Aboriginal rights as well as those with interests in the vicinity of the Project site

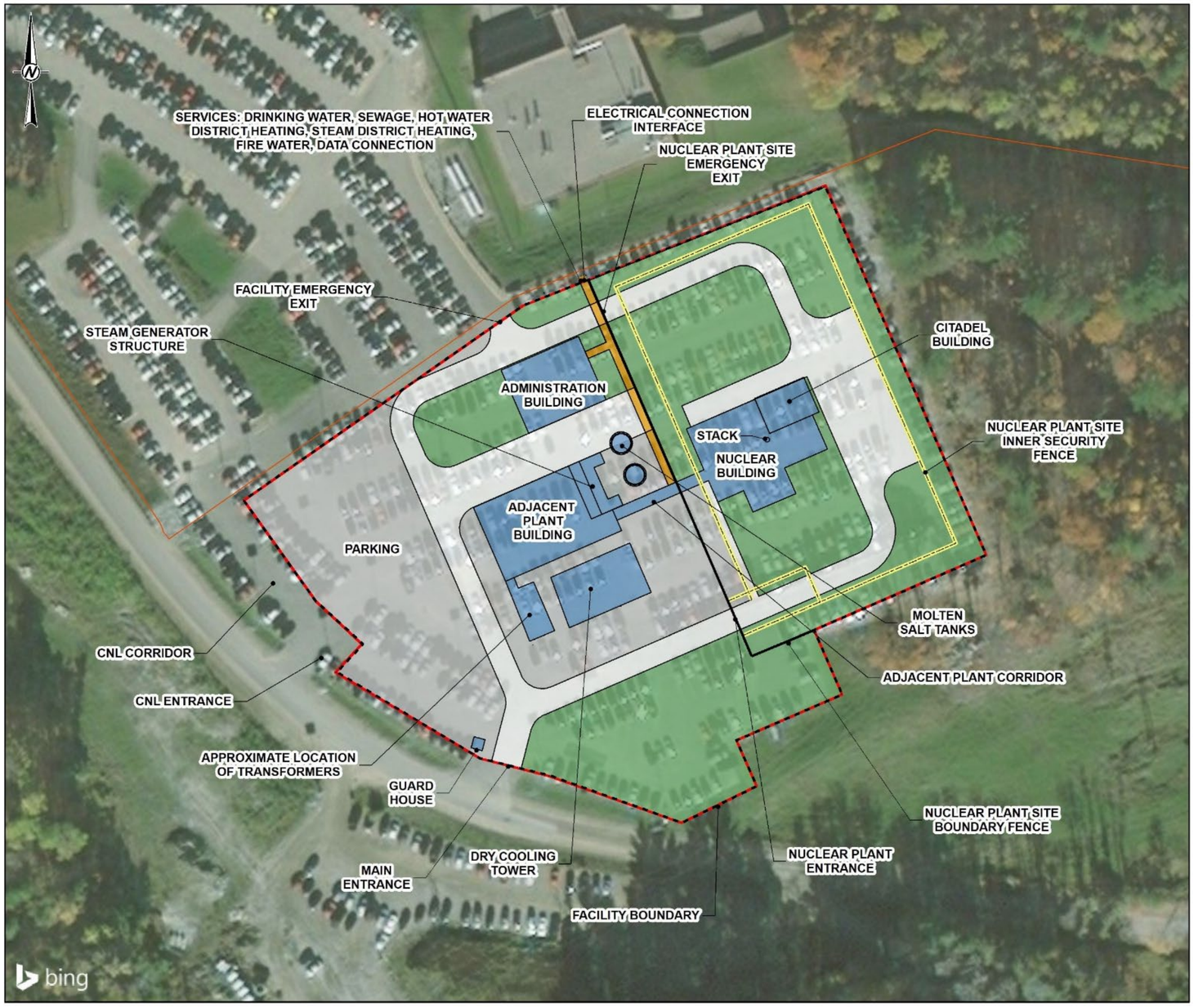
Global First Power: Who We Are

GFP is a Canadian energy company, with the goal of developing and deploying Micro Modular Reactor (MMR) technology as an alternative to fossil-fuel generation

GFP is jointly owned by USNC and OPG

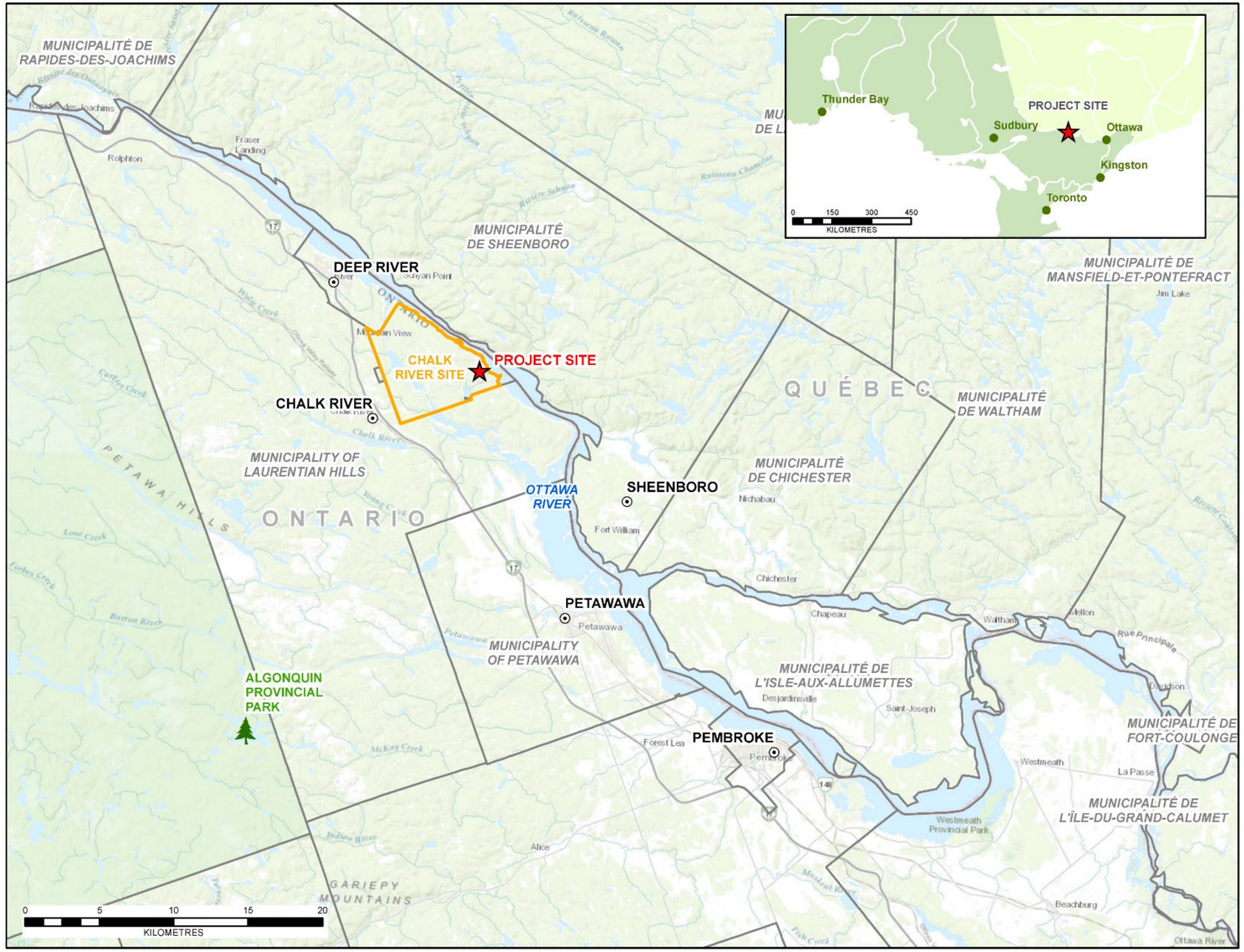
www.globalfirstpower.com

What is the Project?



- GFP proposes to construct, own, and operate one MMR and supporting infrastructure at the Chalk River site
- The Chalk River site is owned by Atomic Energy of Canada Limited (AECL) and operated by Canadian Nuclear Laboratories (CNL)
- MMR is a 15-megawatt (MW) thermal (approximately 5 MW electrical) reactor with 20-year operational life designed by USNC
- The Project will serve as a commercial demonstration for MMR's advanced clean energy technology, supporting Canada's climate change goals

MMR Project at Chalk River



The Project site is currently an employee parking lot located in the Chalk River site

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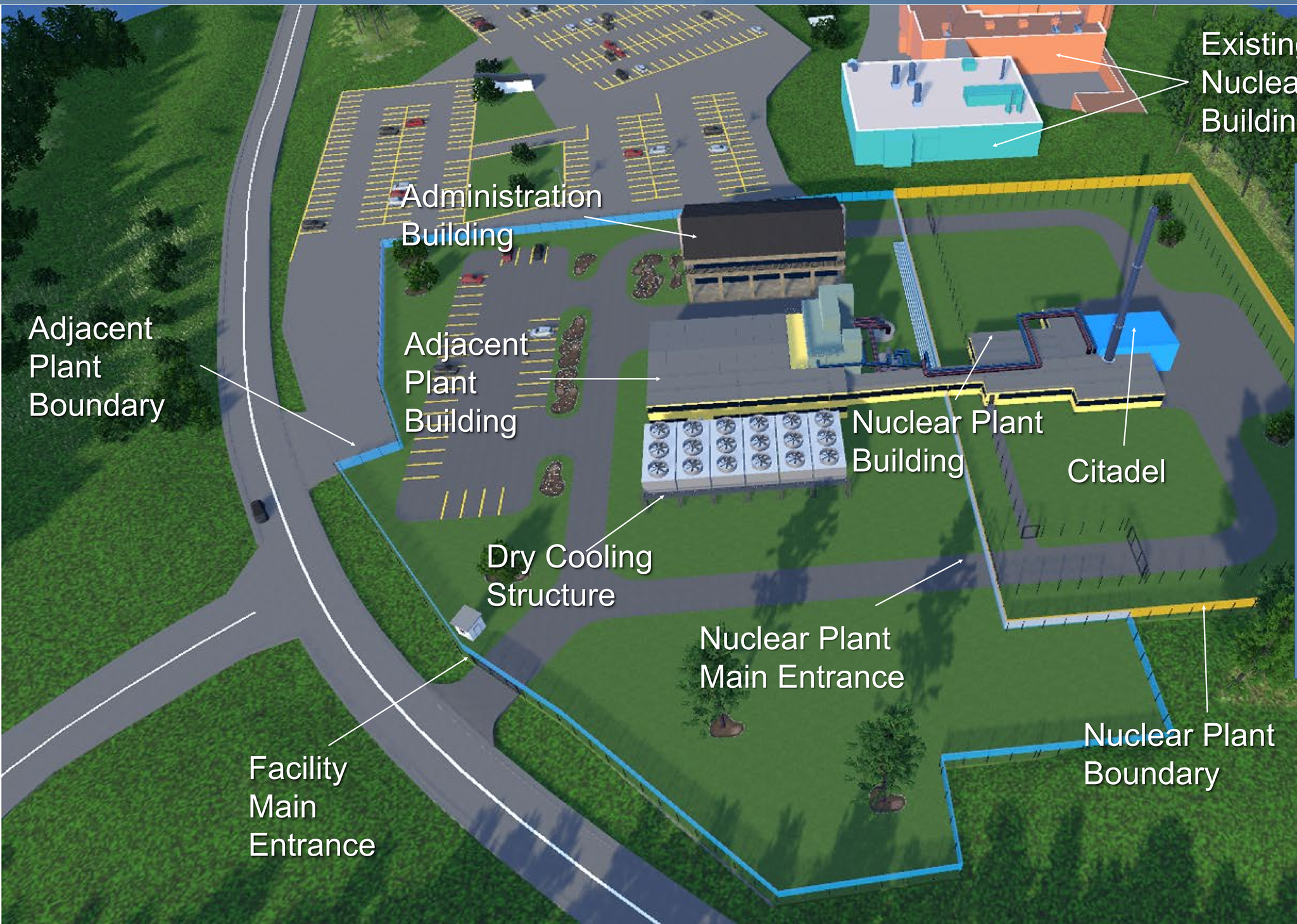
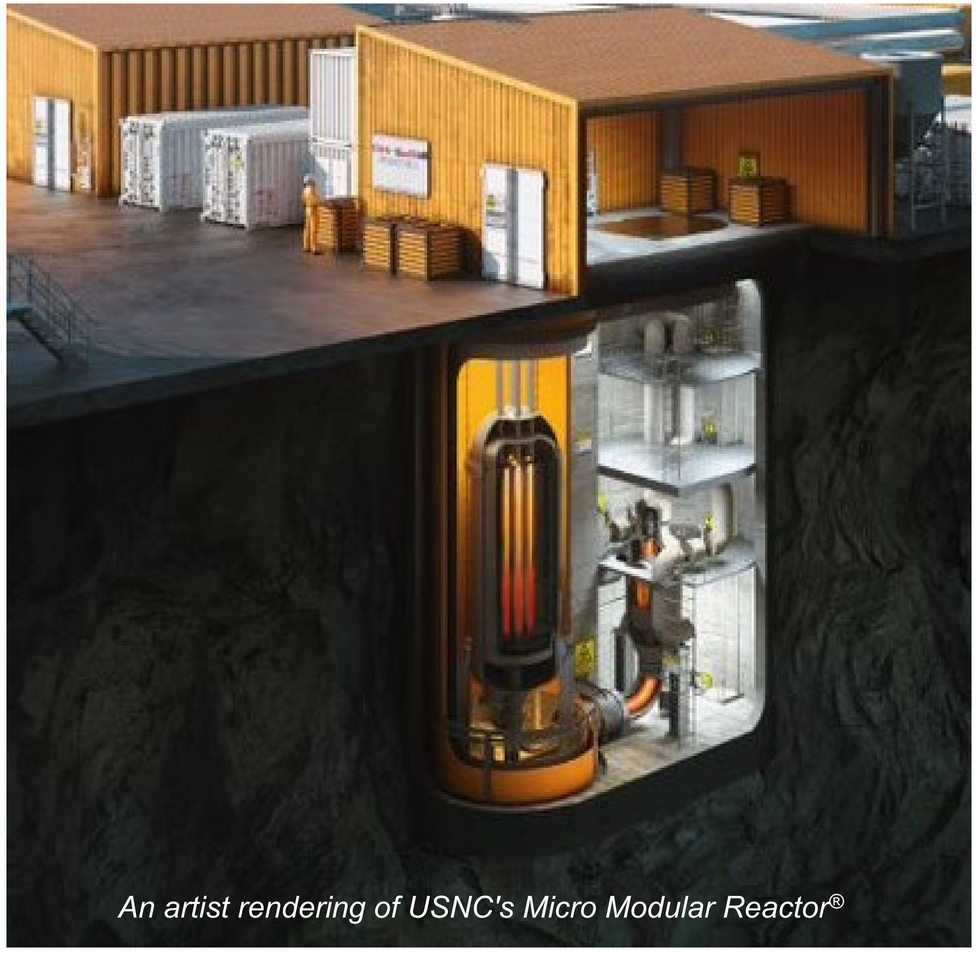


*Facility includes two separate operating plants: the **Nuclear Plant** generating heat to be sent to the **Adjacent Plant.***

The Adjacent Plant uses heat provided by the Nuclear Plant to generate electricity or use for district heating or other industrial purposes.

About MMR Technology

- Designed with **advanced safety systems** meaning that it does not require an operator to safely shut down the reactor in the unlikely event of a malfunction
- **Minimal** operations and maintenance requirements compared to traditional nuclear technology
- **No external power or water** required to safely operate or cool the reactor
- Constructed and tested prior to arriving on-site; **assembled and fueled on-site**
- Designed **lifespan of 20 years;** no need to refuel
- **Scalable and modular** – modules can be combined for different sites/energy needs
- Based on **trusted technology** in use since 2000; successful demonstrations in US and Germany



An artist rendering of USNC's Micro Modular Reactor®

One MMR unit could replace 200 M litres of diesel

Environmental Assessment (EA)

- The Project is subject to an environmental assessment (EA) in accordance with the *Canadian Environmental Assessment Act (CEAA 2012)*
- The EA must demonstrate that the Project is not likely to cause significant adverse environmental effects considering available mitigation measures
- Effects of the Project will be documented in the Environmental Impact Statement

Factors to be considered in the EA under *CEAA 2012* include:

- A description of the Project
- The purpose of the Project
- Alternative means of carrying out the Project
- The effects of the Project, including malfunction and accident scenarios on various aspects of the environment
- Proposed mitigation measures to reduce or eliminate adverse effects
- Determination of cumulative effects with other projects
- Changes to the Project that may be caused by the environment
- The significance of residual adverse effects
- Indigenous and public comments on the EA
- Any environmental follow-up and monitoring programs

GFP is also addressing the sustainability of the Project and consideration of effects through gender-based analysis plus (GBA+) in response to feedback from Indigenous communities

EA Process

The preliminary assessment findings consider the effects of the Project (radiological and non-radiological) on the following environmental components:

<u>Physical</u>

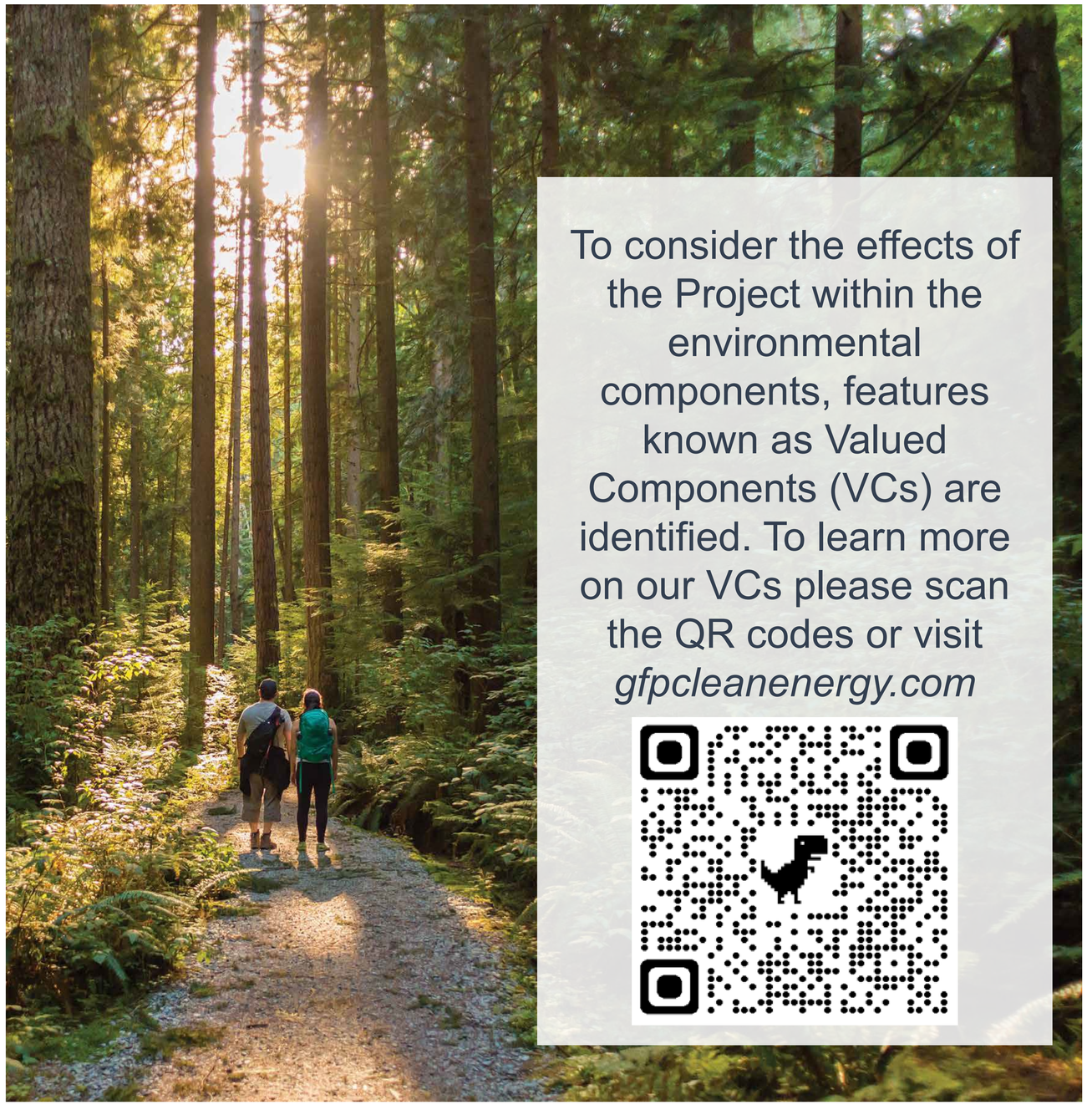
- Atmospheric Environment
- Surface Water Environment
- Geology and Groundwater Environment

<u>Biophysical (plants and wildlife)</u>

- Terrestrial Environment
- Aquatic Environment
- Ecological Health

<u>Human</u>

- Interests of Indigenous People
- Cultural Resources
- Land Use and Socio- economic Conditions
- Human Health



To consider the effects of the Project within the environmental components, features known as Valued Components (VCs) are identified. To learn more on our VCs please scan the QR codes or visit *gfpcleanenergy.com*

Atmospheric Environment

Preliminary Findings

Air, noise, vibration

Effects of Project air emissions, noise and vibration on the health of wildlife, plants and people in the area surrounding the Project site are found to be negligible

Project Design and Baseline Environment

- The Project site is adjacent to CNL's operating facilities at the Chalk River site
- Site preparation and construction activities are planned over approximately 2 years including limited drilling and/or blasting activities
- During operations, there will be very small emission releases to air from the stack at the Nuclear Plant

Assessment Findings

Computer modelling of predicted emissions from Project activities is used to understand potential for effects:

- During Project operations there will be very small radiological releases to air from the stack, representing a very small fraction of the dose limits to human receptors and the dose benchmarks for ecological health; GFP will be required under their license conditions to comply with regulatory release limits
- During all Project phases, use of vehicles may release non-radiological parameters such as dust or combustion emissions and may generate noise; best management practices such as vehicle maintenance and speed limits reduce potential effects

Surface Water Environment

Preliminary Findings

Surface water quality and quantity

Effects of Project activities on quality and quantity of existing surface water features including the Ottawa River are found to be negligible

Project Design and Baseline Environment

- The Project does not require a water intake or discharge outlet to provide cooling water for the reactor
- CNL will provide access to existing site services including drinking water, sanitary sewer, and the stormwater system which ultimately discharge to the Ottawa River
- During site preparation and construction, the asphalt surface of the current parking lot will be removed, and the site graded and prepared
- During operations, the site surface will include a mix of structures, paved surfaces, and grassed areas
- At the end of the Project, the site will be restored for another use
- There are no natural surface water features within the Project site; the closest water features (03 Stream and 02 Stream) are approximately 400 m away

Assessment Findings

- Best practices for erosion control (e.g., construction silt fencing) and stormwater management, including compliance with CNL's stormwater quality acceptability criteria, will reduce potential for effects to surface water quality
- Changes in infiltration of water with the changed site surface are expected to be negligible to surface water quantity beyond the boundary of the Project site

Geology and Groundwater Environment

Preliminary Findings

Bedrock, soil, groundwater

Effects of excavation and reactor placement on geology, soil quality, groundwater quality and quantity are found to be negligible

Project Design and Baseline Environment

- The Project footprint is small; the reactor vessel within the Citadel building is smaller than a school bus
- During site preparation and construction, drilling and/or blasting for the Citadel building will be limited, dewatering of excavations will be required

Assessment Findings

- Computer modelling used to understand flow of groundwater during dewatering for excavation found that changes to groundwater quantity through dewatering are negligible beyond the Project site boundary
- Waterproofing of deeper foundations reduce potential for effects to groundwater quality and quantity through inflow during all Project phases
- Best management practices to be followed for soil handling, drilling, blasting and dewatering activities reduce potential for effects to geology, soil quality, groundwater quality and quantity

Terrestrial, Aquatic and Ecological Health Environments

Preliminary Findings

Plants and Wildlife

Effects of Project activities on the health of wildlife and plants in the area surrounding the Project site are found to be negligible

Project Design and Baseline Environment

- Areas of natural vegetation or aquatic habitat are not present within the Project site. Through the site selection process this site was preferred in part as it limits further disturbance to the natural environment
- The Chalk River site supports a mix of habitats including deciduous and coniferous forest types, including habitat suitable for Species at Risk turtle, bird, and bat species
- The Chalk River site provides limited habitat for aquatic species; the region is dominated by the Ottawa River which supports a variety of aquatic species

Assessment Findings

- Project activities do not include removal or creation of habitat for fish or wildlife
- Negligible effects are predicted to surface water quality and quantity, including to the Ottawa River; no changes to aquatic species and habitat downstream are anticipated as a result
- There may be short-term disturbance to wildlife considering predicted site preparation and construction noise; no sensitive habitat is present adjacent to the Project site and species within proximity of the existing operations at CNL are habituated to current activities
- Construction and workforce traffic travelling through the Chalk River site to the Project site will follow CNL's existing programs and procedures to protect wildlife using habitat along Plant Road, including turtle species that are Species at Risk
- The primary pathway for emissions from the Project is through air. Through conduct of an Ecological Risk Assessment, no effects to wildlife VCs in or outside of the Chalk River site are anticipated through exposure to predicted radiological and non-radiological emissions

Cultural Resources, Interests of Indigenous People

Preliminary Findings

Human Environment

Assessment of potential effects of the Project to the Interests of Indigenous People is in progress.

Effects of Project activities on potential cultural resources at the Project site are found to be negligible based on current information.

Interests of Indigenous Peoples

- GFP is working with Indigenous communities to learn more about potential effects to Aboriginal Treaty Rights and Interests

Cultural Resources

- A number of cultural resources including archaeological sites have been identified at the Chalk River site based on past assessments; no cultural resources, including archaeological sites, were identified within the Project site
- The Project site is an asphalt parking lot, representing an area with a previously disturbed ground surface
- Best practices during an inadvertent discovery of a cultural resource during site preparation/construction, such as suspending work for further investigation, will be followed; reducing potential for effects to cultural resources, including archeological sites

Land-Use and Socio-Economic Conditions

Preliminary Findings

Human Environment

Effects of Project activities on use of land and resources, recreation and tourism, local population and economy, municipal services and finances, community character, quality of life and public safety are found to be negligible

Project Design and Baseline Environment

- Land uses in the vicinity of the Project include the existing Chalk River site and Garrison Petawawa south of the Chalk River site, both with restrictions on public access
- Predominant land uses in the area and along the Ottawa River include recreation and tourism, as well as forestry, limited agriculture, and trapping activities
- The Project predicts a construction workforce of approximately 60 employees, has a 20-year operational life and is anticipated to be operated by approximately 30 employees
- The Project will include traffic movement to and from the Project site within and outside of the Chalk River site

Assessment Findings

- Given the Project's location within the Chalk River site, its design and small size, negligible effects are predicted to the land use or socio-economic VCs representing land and resource use or registered interests, outdoor recreation and tourism, local population and demographics, municipal services and infrastructure, community character and image, quality of life, and public safety
- Benefits linked to employment and government revenues are identified to the VCs representing the regional labour market, economic development, government finance, and housing/accommodation
- A benefit to Community Character and Image may occur where the Project may serve to strengthen the image of the Chalk River site as a hub for nuclear research, innovation, and SMR technology development

Human Health

Preliminary Findings

Human Environment

Project emissions are expected to have negligible effects on the health of people in the area surrounding the Project site

Project Design and Baseline Environment

- During operations, there will be limited releases to air from the stack at the Nuclear Plant
- During operations, there will be connection to existing site services including drinking water, sanitary sewer, and stormwater system which ultimately discharge to the Ottawa River
- Conventional solid waste, construction waste and hazardous materials will be managed at approved facilities
- Low and intermediate level radioactive wastes will be managed on-site before storage at a long-term licensed facility; used fuel will be managed on-site before going to an off-site facility managed by the Nuclear Waste Management Organization which is responsible for the management of used fuel in Canada

Assessment Findings

- A Human Health Risk Assessment (HHRA) was conducted to understand pathways of effect to human health during all project phases
- Receptor types considered in the HHRA included workers within the Chalk River site, the public outside of the Chalk River site, and harvesters in the region
- Based on the HHRA findings, no effects to human receptors within and outside of the Chalk River site are anticipated through exposure to predicted radiological and non-radiological releases

Timeline – for Planning Purposes

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2019	2020	2021	2022	2023	2024	2025	2026	2027	2028

Indigenous, Public and Stakeholder Engagement

- Ongoing outreach and communications on environmental assessment, licensing activities and project status
- Opportunities for Indigenous, stakeholder and public input regarding project development, regulatory and licensing activities

Project Commencement

- Submit project description
- Submit application for licence to prepare site

Licensing

- Application and approval of regulatory licences required for site preparation, construction and operation

Environmental Assessment

- Conduct studies
- Prepare Environmental Impact Statement
- Receive Environmental Assessment decision

Engineering and System Development

- Site facility and module design
- Nuclear Plant and Adjacent Plant design
- Operation system development

Equipment and Materials

- Nuclear Plant and Adjacent Plant procurement

Site Work

- Site preparation and construction
- Commissioning

Commence Operations

- Operation for 20 years
- Maintain licence to operate

Next Steps

We are currently seeking your input and questions on the preliminary assessment findings and how you wish to be engaged in our Project going forward.

We look forward to engaging with you further following submission of our draft Environmental Impact Statement to CNSC later this year.

Your feedback is important in shaping the direction of this exciting Project!

To share your feedback virtually please scan the QR code below or visit gfpcleanenergy.com and click share comments:

Comment form