

Ontario Power Generation

# **Proposed Stinson Generating Station Life Extension Project**

**Environment Planning Report to Support Future  
Permits and Construction (Final Draft)**

January 2025

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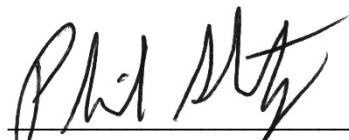
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## Executive Summary

An environmental assessment is not required for the Stinson Generating Station (GS) Life Extension Project. An environmental assessment is not required in Ontario for waterpower facilities when the re-developed facility has its capacity restricted to an increase of 25% or less than the existing one. The existing Stinson GS has a capacity of 5.4 MW while the planned facility will have a capacity of 6 MW. This increase can be accomplished through a negligible change in the flow through the turbines of 43.4 cubic meters per second (cms) to 43.5.

This Environmental Planning Report to Support Future Permits and Construction has been prepared to: support discussions with government agencies; support Indigenous consultation; and, provide direction to OPG, its Owner's Engineer and its constructor contractor on environment requirements including construction stage mitigation and monitoring measures.

The Report begins with a detailed description of the project. That chapter is followed by a description of the existing environmental conditions that is based on separate Aquatic and Terrestrial Environment Technical Support Documents (TSDs) and also a separate archaeological and built heritage assessments. Following the description of the environment, potential environmental impacts and proposed mitigation and monitoring measures are described. These mitigation and monitoring measures are very similar to measures proposed for the life extension of the Coniston GS. The next chapter describes the permits and other approvals required for the project and identifies and describes issues associated with obtaining them. The final chapter includes summaries and conclusions. Overall, the refurbishment of the Stinson Generating Station (GS) will result in environmental impacts that can be mitigated and/or compensated for by a wide variety of measures. No net environmental effects are anticipated associated with the project.

The proposed project has been re-designed based on the proposed use of DIVE turbines. The DIVE-Turbine is an innovative turbine system for hydropower plants up to 4MW per turbine. DIVE Turbine Technology is optimally suited for low-head environments (limited vertical drop) and has spread out over Europe quickly in the last years due to its cost-efficient design enabling partial loads due to double regulation. The units are designed maintenance-free and require only minimal service efforts enabling extremely high availability factor of 99.85% over 20 years. The DIVE units are considered to be more fish friendly (resulting in less fish entrainment and impingement) than either Francis (which are the type of turbines currently in the powerhouse) or Kaplan turbines. Using DIVE turbines has also allowed OPG to eliminate the need for a downstream cofferdam.

This Report is a Final Draft.

# 1 Introduction

An environmental assessment is not required for the Stinson Project. An environmental assessment is not required in Ontario for waterpower facilities when the re-developed facility has its capacity restricted to an increase of 25% or less than the existing one. The existing Stinson GS has a capacity of 5.4 MW while the planned facility will have a capacity of 6 MW. This increase can be accomplished through a negligible change in the flow through the turbines of 43.4 cubic meters per second (cms) to 43.5.

In absence of an environmental assessment process this report is being prepared for Ontario Power Generation (OPG) to facilitate obtaining environmentally related permits and to provide environmental management direction for the construction period for the Stinson GS Life Extension Project. This Report is comprised of the following chapters.

- Chapter 1 – Introduction. This chapter describes the purposes, rationale and organization of this Report.
- Chapter 2 – Project Description. This chapter describes the project.
- Chapter 3 – Description of the Environment. This chapter describes and/or references where a description of the environment or components of the environment can be found.
- Chapter 4 – Environmental Effects, Mitigation and Monitoring. This chapter describes likely environmental effects and the proposed mitigation and monitoring measures.
- Chapter 5 – Permits and Other Approvals. The various permits associated with the project and issues associated with them are described.
- Chapter 6 – Summary and Conclusions.

## **2 Project Description**

### **2.1 Introduction**

OPG has spent the past few years planning the life extension of the Stinson Generating Station (GS). The original station was constructed in 1925 and therefore is close to 100 years old and is at the end of its service life (normally considered to be 90 years). OPG is planning on refurbishing the existing GS and installing two new turbine units.

OPG would note that OPG is also currently working on the life extension of the Coniston GS which is located downriver of Stinson GS.

### **2.2 Location of the Project**

Stinson GS is located within the boundary of the City of Greater Sudbury. The GS is located on the Wanapitei River approximately 25 kilometres east of the city centre of Sudbury and approximately 20 km downstream of the Wanapitei Lake control dam. The Wanapitei River is a tributary of the French River and has its headwaters north of Stinson with the first large waterbody being Wanapitei Lake. The Stinson GS is upstream of OPG's Coniston GS and downstream of Moose Rapids GS (which is privately owned) (see Figure 2-1).



Figure 2-1 Location of the Stinson GS

## 2.3 Historical Development

The Stinson GS was built in 1925 by the Wanapitei Power Company, the same company that developed the McVittie and Coniston GSs. Stinson was the last of the three GSs to be built and was acquired by HEPCO (predecessor to Ontario Hydro) in 1929. A small colony of eighteen buildings was developed on the site to operate the facility. The colony buildings were removed in 1967 (Unterman McPhail, 2021).

## 2.4 Existing Station

The existing site consists of a main concrete gravity dam section, containing nine sluiceways and a retired (sealed) log chute, a concrete gravity section with four intake bays and trashracks leading to the intake canal. Water is conveyed through the canal to the headworks, and continues down through two rivetted steel plate penstocks, each 3.4 m in diameter and 21 m long to the steel water chest of a turbine. Two steel headgates are controlled locally with electric hoists to isolate the penstocks but do not function as emergency gates. The station has two horizontal double Francis (camel back) generating units that operate at a gross head of 16.7 m, each capable of producing 2.7 MW resulting in the total plant capacity of 5.4 MW; however, the plant typically operates at no more than 5.2 MW. Over the years rehabilitations of elements have occurred, some of the major rehabilitations are described below.

- Refaced the concrete of the majority of the piers and sluices and installed a concrete plug at the log chute on the main dam.
- Installed steel plating in various locations on downstream faces of the intake piers.
- Concrete lined and elevated the top of the north intake canal wall.
- Rehabilitated the top and downstream face of the headwork concrete.
- Recoated the penstock and rehabilitated the penstock saddles.
- Replaced the transmission lines and the substation.
- Replaced the power cables from the powerhouse to the substation (KGS, 2021).

Based on the existing condition of the facility it will technically reach its end of life in the next 5 years.

Figure 2-2 below is an aerial photograph of the site with key features labelled.



Figure 2-2 Site Overview

Figure 2-3 is a photograph looking upstream to the reservoir from the Stinson Dam.



*Figure 2-3 Stinson Reservoir (looking upstream from the main dam)*

Figure 2-4 shows the Intake Canal to the Stinson powerhouse.



*Figure 2-4 Stinson Intake Canal*

Figure 2-5 shows the Stinson Main Dam.



*Figure 2-5 Stinson Main Dam*

Figure 2-6 and Figure 2-7 show the Spillway at no flow and partial flow.

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Figure 2-6 Stinson Spillway: Leakage Flow Only



Figure 2-7 Stinson Spillway (likely 43.8 cms showing for the day)

Figure 2-8 shows the powerhouse and vehicular access.



Figure 2-8 Stinson Powerhouse

## 2.5 Operation

The Wanapitei River Water Management Plan (WRWMP) describes the operational requirements for the Stinson GS. The current operating regime at Stinson GS does not have any minimum flow requirements.

The Stinson GS forebay has two different operating range requirements. For the period May 1 to October 15 the range is 255.18 m to 255.42 m. For the balance of the year the range is: 254.66 m to 255.42 m. The narrower summer operating range is maintained for the benefit of residents and cottagers upstream of Stinson (OMNR *et al.*, 2011).

During the winter, efforts are made to keep the water level above 255.00 m from January 1st until an ice cap is formed (usually by January 15th). This practice is carried out to reduce the probability of frozen residential water lines above Stinson GS (OMNR, *et al.*, 2011).

OPG tries to operate its generators producing the greatest amount of hydroelectricity with the flows available. However, throughout the year, flows in the river may not be enough to operate the generators efficiently and the facility may “cycle” its operations within the WRWMP limits, resulting in the fluctuation of downstream flows over a relatively short period of time. OPG attempts to maintain a continuous flow throughout the day. However, at times, it may be necessary to shut down all turbines during low flows.

## 2.6 Alternatives Assessment

An alternatives assessment was undertaken by OPG including considerations for overhaul, refurbishment and redevelopment options resulting in the selection of a refurbishment option by OPG.

## 2.7 Proposed Refurbishment

The preferred option is to refurbish the facility.

The refurbished GS will have the following characteristics:

- Effective Capacity of 6 MW (capacity of the current facility is 5.4);
  - Estimated Annual Energy Generation of approximately 26 GWh;
  - Number of Units – 2;
- Station Flow – 43.5 cms (existing is 43.4 cms);
  - Minimum Operating Flow – 2.18 m<sup>3</sup>/s;
  - Minimum Operating Flow per unit – 2.18 m<sup>3</sup>/s (existing is 6.6 cms to 9 cms);
  - Average Annual Flow – 30 m<sup>3</sup>/s; and
  - Average Head of 16.54 m (range of head from 15.0 m to 18.0 m).

### 2.7.1 General Layout – Site Plan

The proposed new site plan for the Stinson GS along with topographic and bathymetric elevations shown in Figure 2-9. The overall layout of the GS will remain largely unchanged from the existing situation. All of the major civil features of the GS will be retained in their current location including the dam, spillway, intake forebay, penstocks, powerhouse and tailrace. The powerhouse superstructure will be demolished and replaced. The powerhouse foundation will be re-used with some concrete repair work proposed.

Two new turbine/generator units will be installed, and most of the powerhouse mechanical and electrical equipment replaced. With respect to the remaining civil works on site, the existing Main Dam and Sluiceway will be largely unaltered except for some minor work. The existing isolation gates will be refurbished (paint and new wheels), and a new hoist structure and motor will be installed. The existing Switchyard will have one new structure added to accommodate some update electrical equipment, but the overall size is not expected to change.

The existing access road, **Stinson Hydro Road** will still be used for access.

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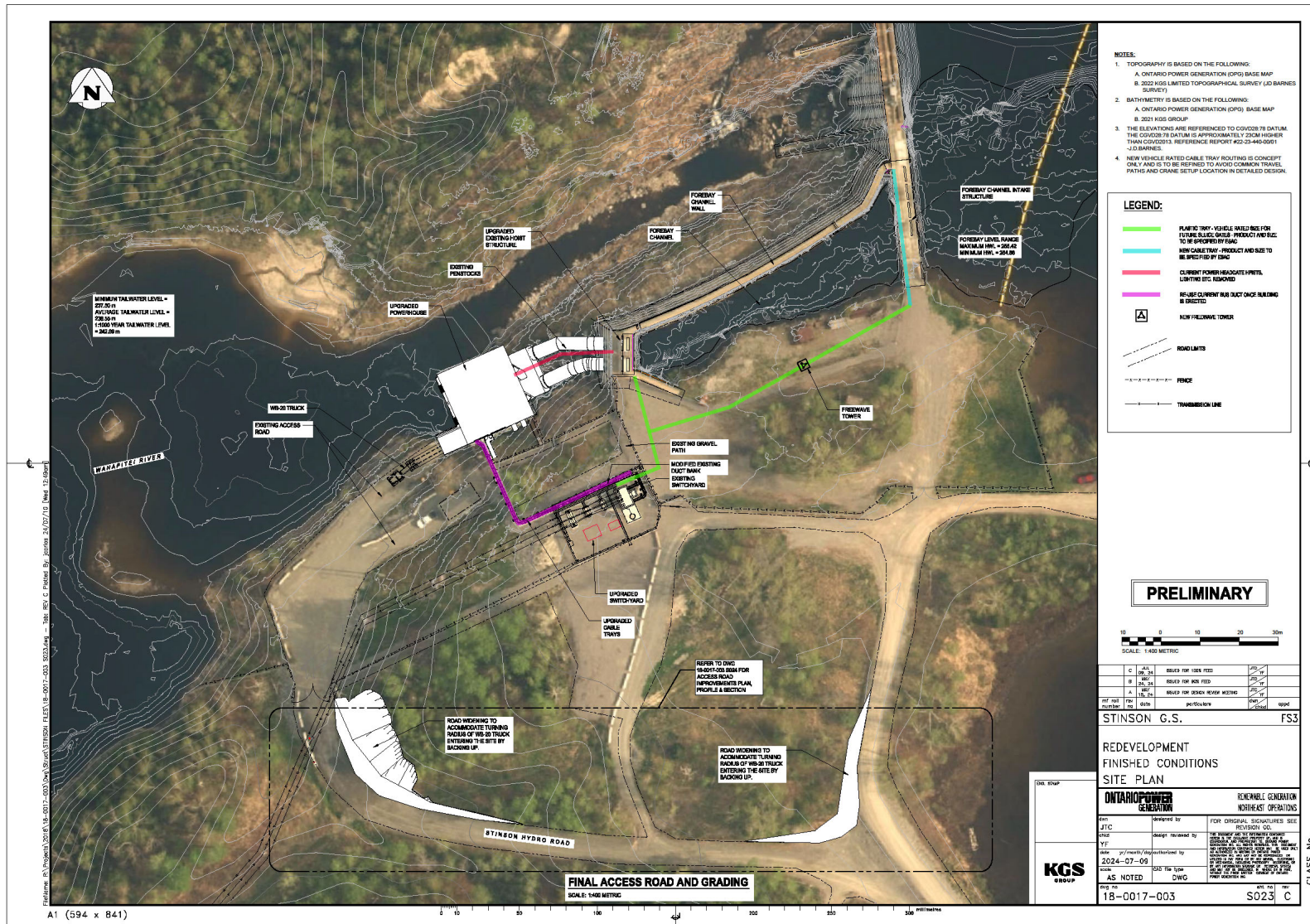


Figure 2-9 Proposed General Arrangement Site Plan for the Stinson GS

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Figure 2-10 shows the site plan during the construction period. In order to providing working space for the construction two laydown areas are proposed south of the intake canal and shown on the Figure. The repair work for man-made intake canal walls and intake deck are shown. Figure 2-10 and Figure 2-11 shows the proposed road modifications. These proposed road modifications will allow for improved accessibility for trucks. All the proposed road modifications occur on OPG property.

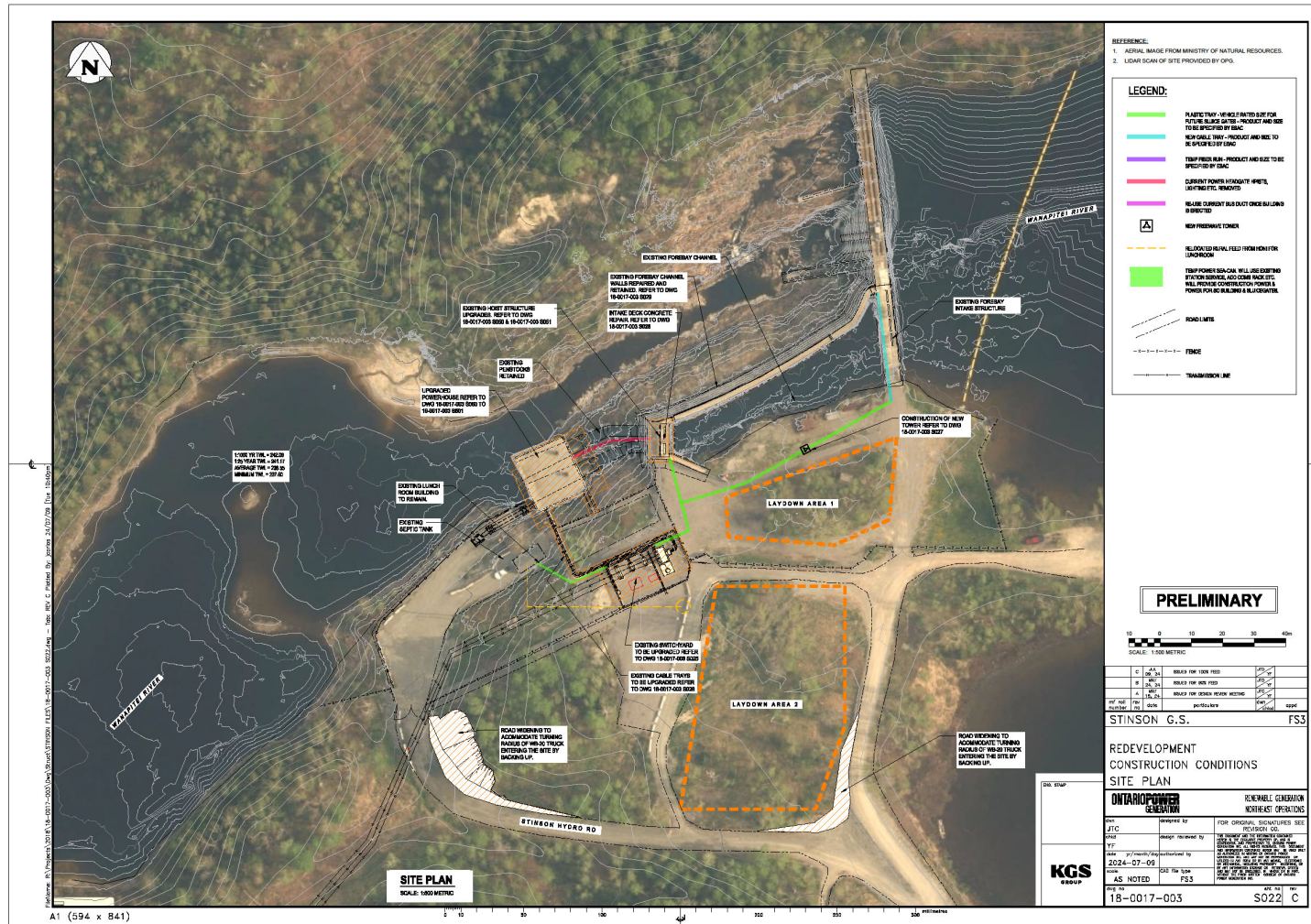


Figure 2-10 Proposed General Arrangement Site Plan for Construction for the Stinson GS

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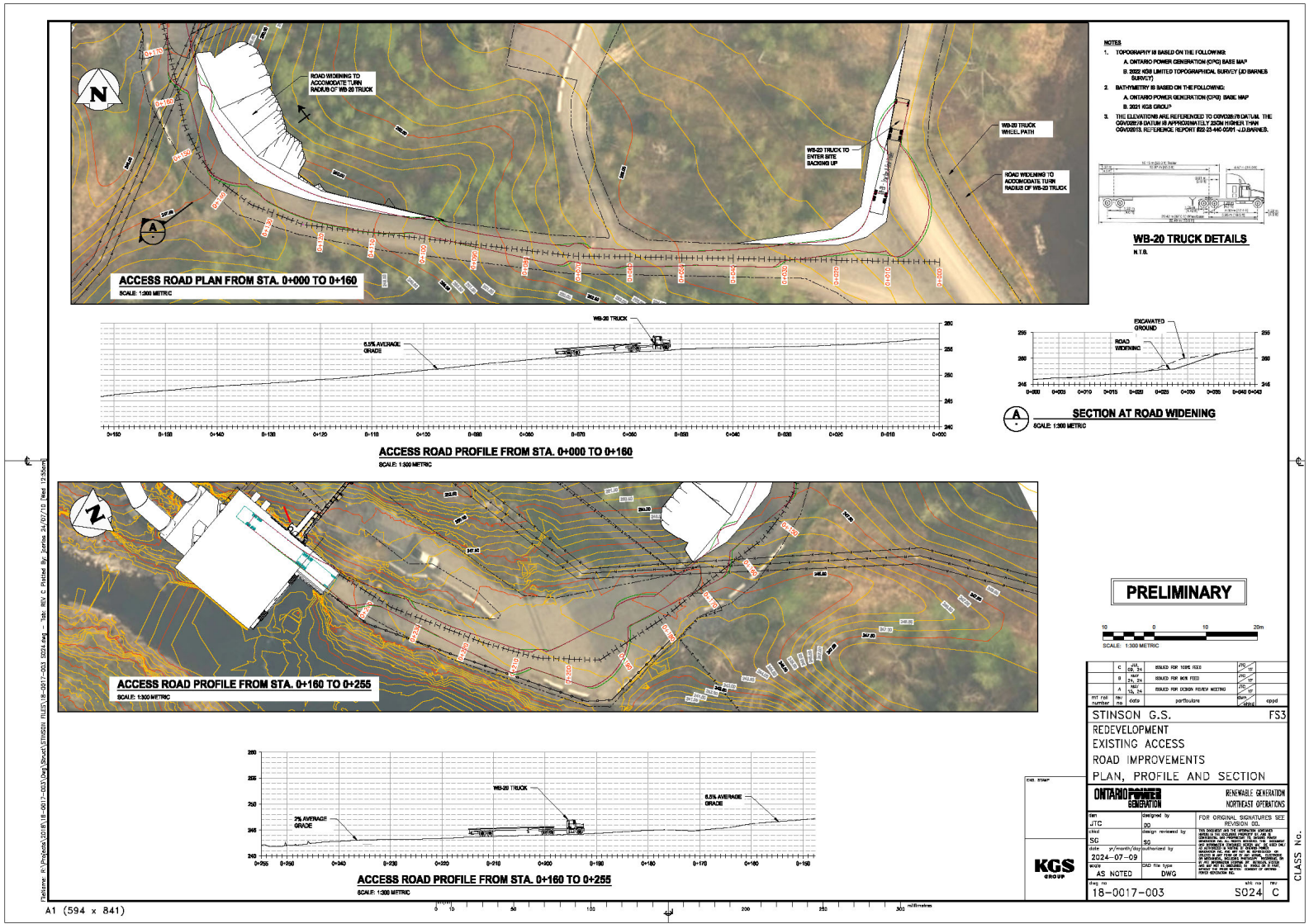


Figure 2-11 Road Improvements for the Stinson GS

## 2.7.2 Powerhouse

Figure 2-12 and Figure 2-13 show the proposed re-built Powerhouse General Arrangement Exterior and Interior Conditions in a 3D View. Both Figures show the penstocks connecting to the north face of the powerhouse and water passages and vehicular access occurring to the south. They represent no changes from the existing conditions.

The total area of the powerhouse will remain the same, as a prefabricated steel building will be added directly on the existing foundation. The height of the new powerhouse will be 3.92 M taller to accommodate the new taller units and a powerhouse crane.

As previously described, the powerhouse superstructure will be demolished and replaced, two new DIVE turbine/generator units will be installed, and most of the powerhouse mechanical and electrical equipment replaced. The powerhouse foundation will be re-used with some concrete repair work proposed.

DIVE Turbines are Fit for Purpose and greatly reduce civil work in comparison to Kaplan or SAXO type turbines. The general features of the DIVE turbines and their benefits for the project are as follows:

- Fit in current powerhouse footprint and can utilize the existing draft tubes.
- Civil work below the floor of the current powerhouse will be limited.
- No downstream cofferdam will be required.
- No permanent tailrace gates are required.
- Turbines are more fish friendly versus SAXO type turbines.

The DIVE-Turbine is an innovative turbine system for hydropower plants up to 4MW per turbine. DIVE Turbine Technology is optimally suited for low-head environments and has spread out over Europe quickly in recent years due to its cost-efficient design enabling partial loads due to double regulation. The units are designed maintenance-free and require only minimal service efforts enabling extremely high availability factor of 99.85% over 20 years. DIVE Turbines are a double regulated turbine and permanent magnet synchronous generator designed in one fully submersible unit.

DIVE Turbines are vertical-axis propeller turbines with electronic regulation. Based on the low RPM and simple propeller type runner, the mortality rate of fish migrating downstream via the DIVE-Turbine is minimized in comparison to classical Kaplan turbines.





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Figure 2-14 shows the General Arrangement of the Powerhouse from the downstream side of the river. Clearly visible are the two water passages for the two units and an exterior walkway.

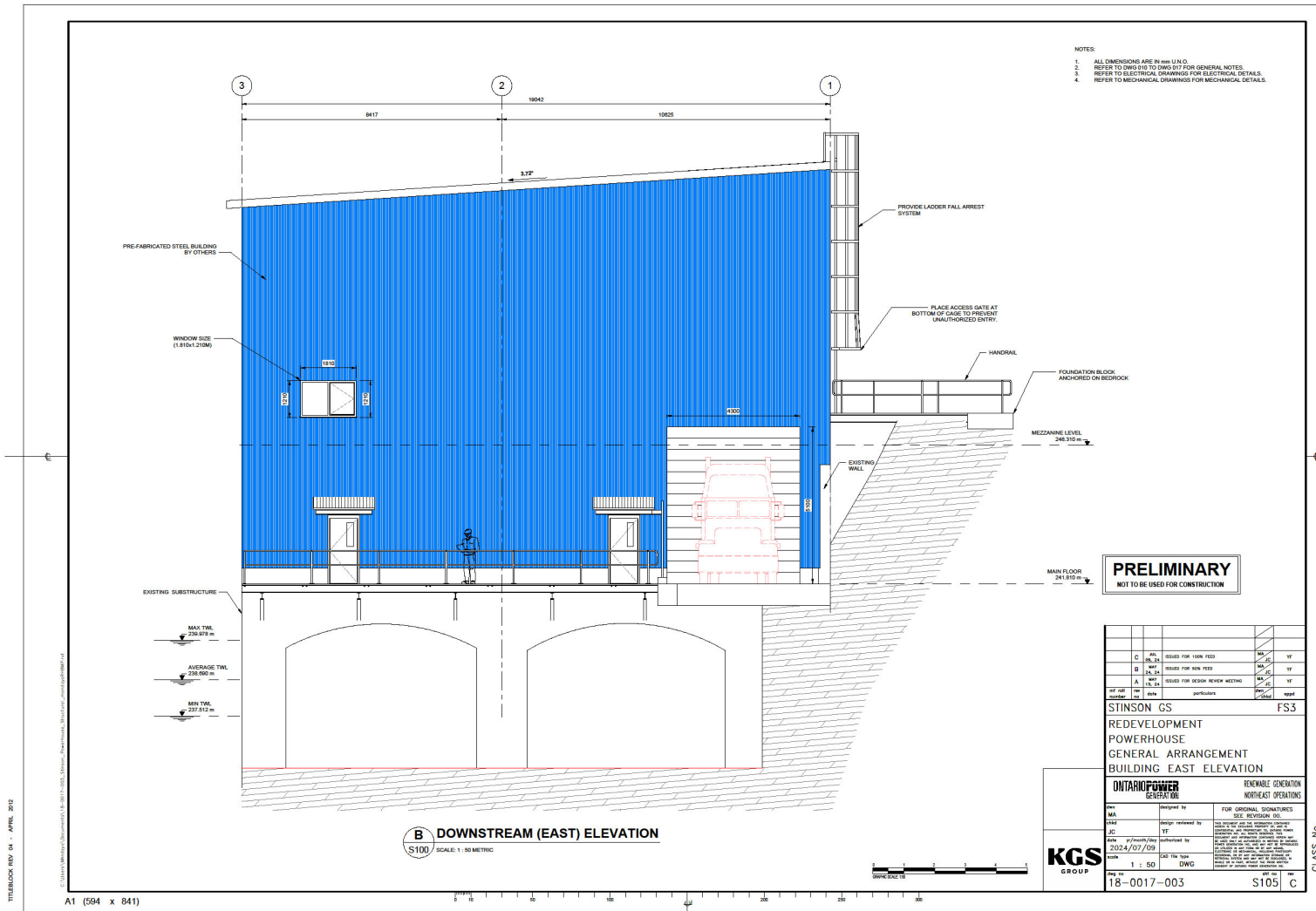


Figure 2-14 General Arrangement of the Powerhouse at the Main Level

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Figure 2-15 shows the General Arrangement of the Powerhouse along Units #1 and #2 and depicting the mechanical and electrical equipment. Figure 2-16 shows the General Arrangement of the Powerhouse Operating Floor as a top view. The Figure shows the layout on the main floor of the powerhouse including the two generator/turbine units. Figure 2-17 shows the General Arrangement of the Powerhouse including depiction of the Control Room.

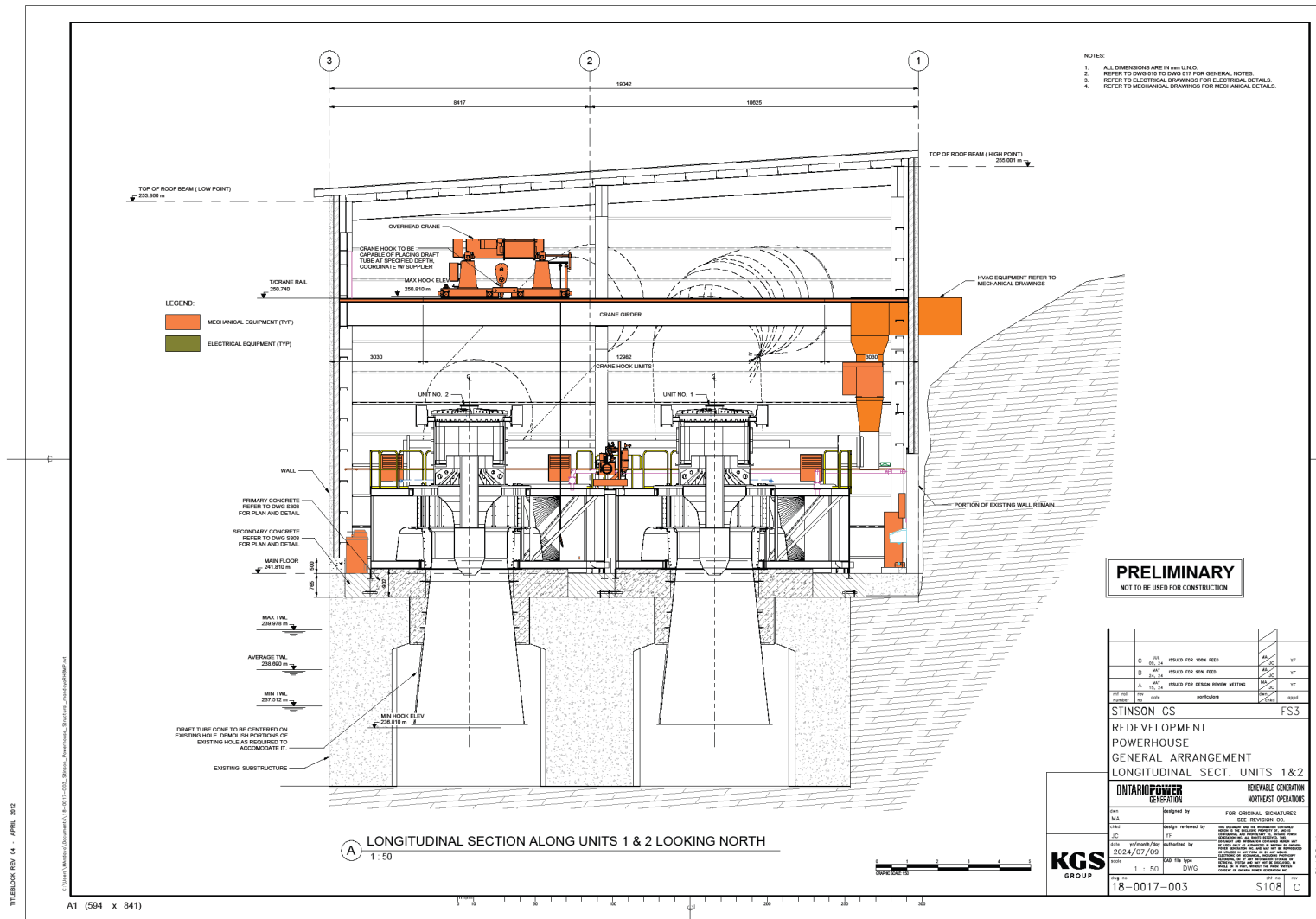


Figure 2-15 General Arrangement of the Powerhouse Along Units #1 and #2

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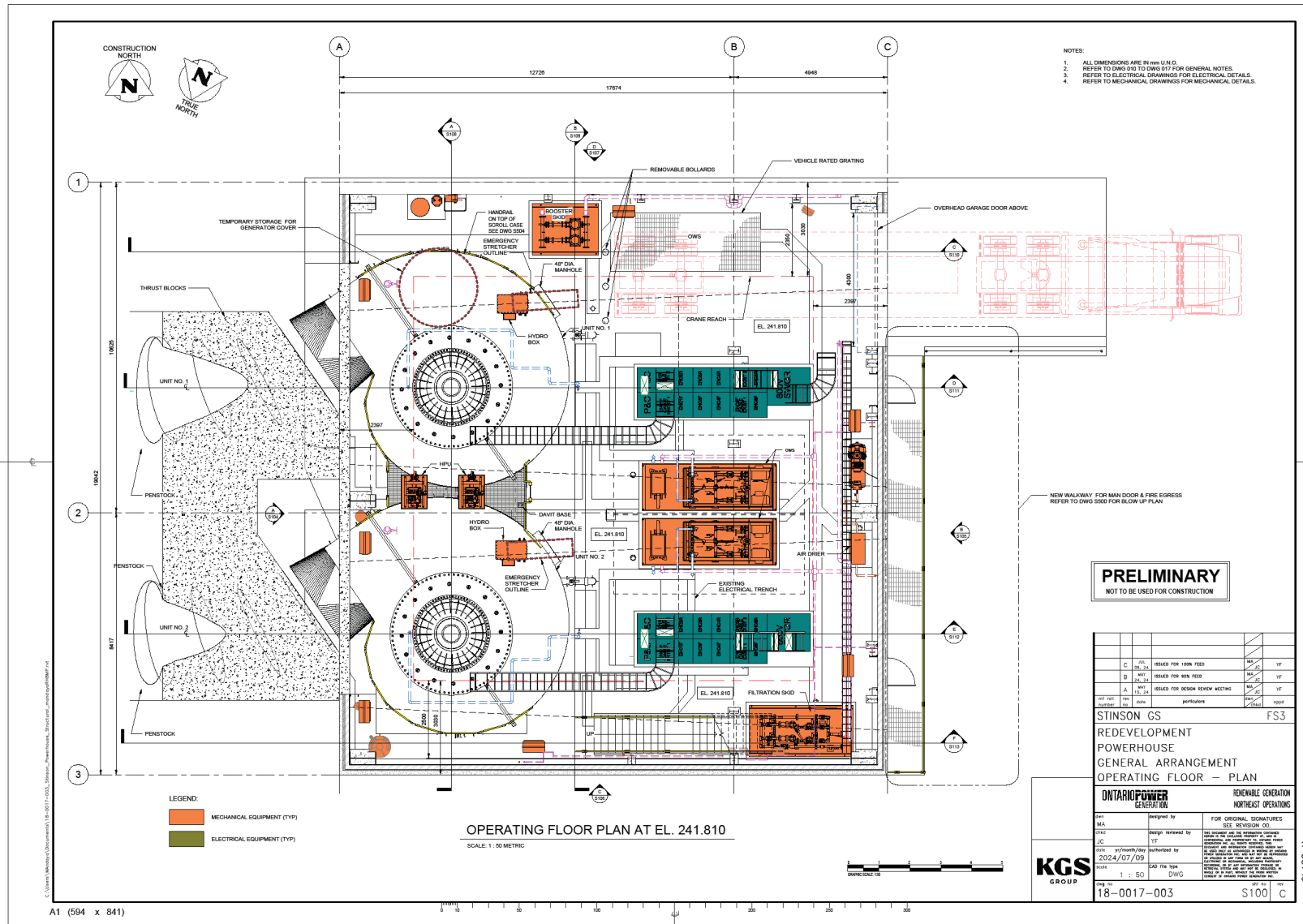


Figure 2-16 General Arrangement of the Powerhouse Operating Floor Plan

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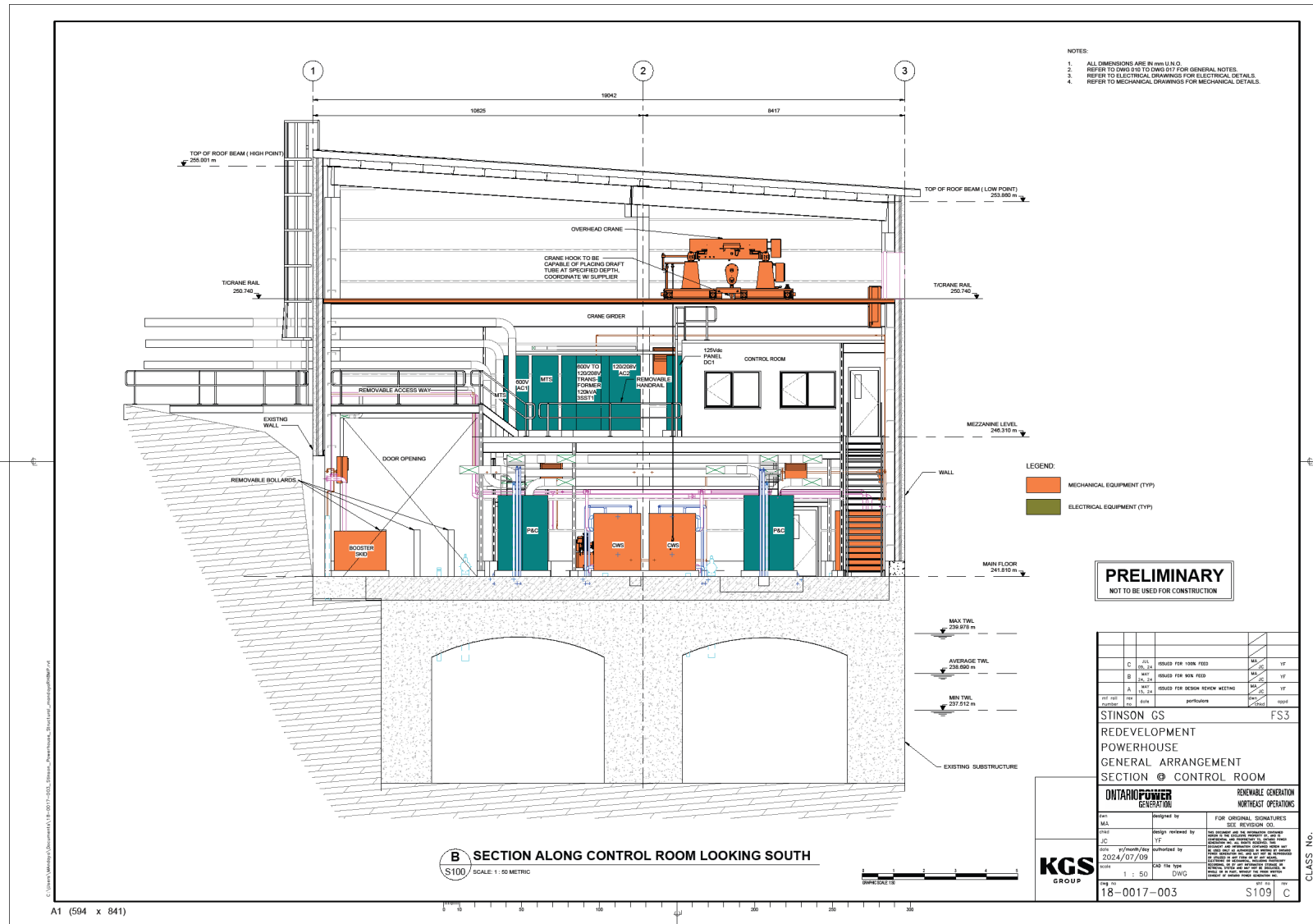


Figure 2-17 General Arrangement of the Powerhouse and Control Room

### 2.7.3 Construction Sequencing

The construction would proceed according to the following general stages as described below.

#### **Stage #1 – Site Preparation**

The first stage of the work will involve preparing the site for construction.

Vegetation will be removed on all areas to be constructed on including laydown areas. This clearing will be outside of the breeding bird and bat seasons (April 1 to October 1). Merchantable timber belongs to the Crown, although the amount of such material to be cleared on site is minimal. Should the MNRF be amendable wood and plant resources will be offered to WFN or other local First Nations for their use.

Any access improvements (road and parking upgrades) required at the site will be undertaken.

Erosion and sediment controls (including turtle exclusion fencing) will be established on the site.

Construction facilities such as trailers will be brought and established on site. Laydown areas will be set up, and trailers, equipment and materials organized into appropriate areas. Establishing laydown areas may mean placing temporary fill material on certain areas.

#### **Stage #2 – Demolition**

The Intake Canal will be dewatered using the existing intake structure and stop logs. This will allow the removal of the two isolation gates for off-site restoration and removal of the hoist frame for replacement. The Intake Canal will be drained through the powerhouse and existing units. Pumps will be utilized to assist in dewatering if necessary.



### **Stage #3 – Unit Removal and Draft Tube Install**

Once the powerhouse superstructure has been removed, the two existing camel back units will be removed as well as all electrical and mechanical systems. The concrete floor will be excavated to the extent required to install new support beams and reinforcement for the new DIVE units. Figure 2-19 shows the extent of the planned concrete floor removal.

Once the excavations are completed, new prefabricated steel draft tube cones will be lowered into position and embedded in concrete along with embedments for the scroll cases.

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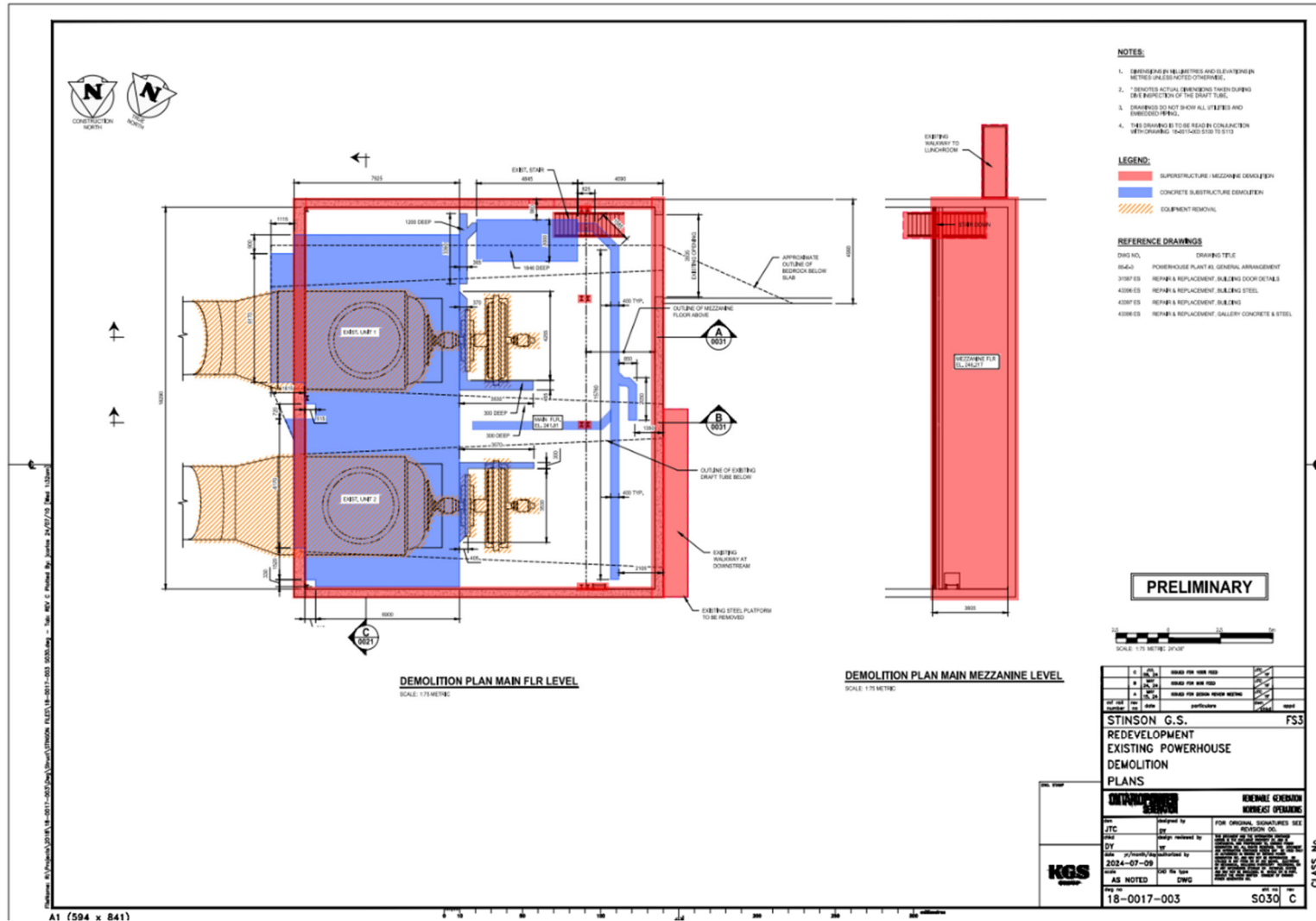


Figure 2-19 Powerhouse Re-Development Floor Removal

#### **Stage #4 – Powerhouse and Equipment Installation**

A pre-fabricated steel building will be erected on the existing foundation. After the superstructure is erected, a new 40-ton powerhouse crane will be installed to aid in the installation of the DIVE turbine units. The DIVE units will be installed in three segments. The scroll case, the turbine and the generator. Other plant electrical and mechanical equipment will also be installed in parallel.

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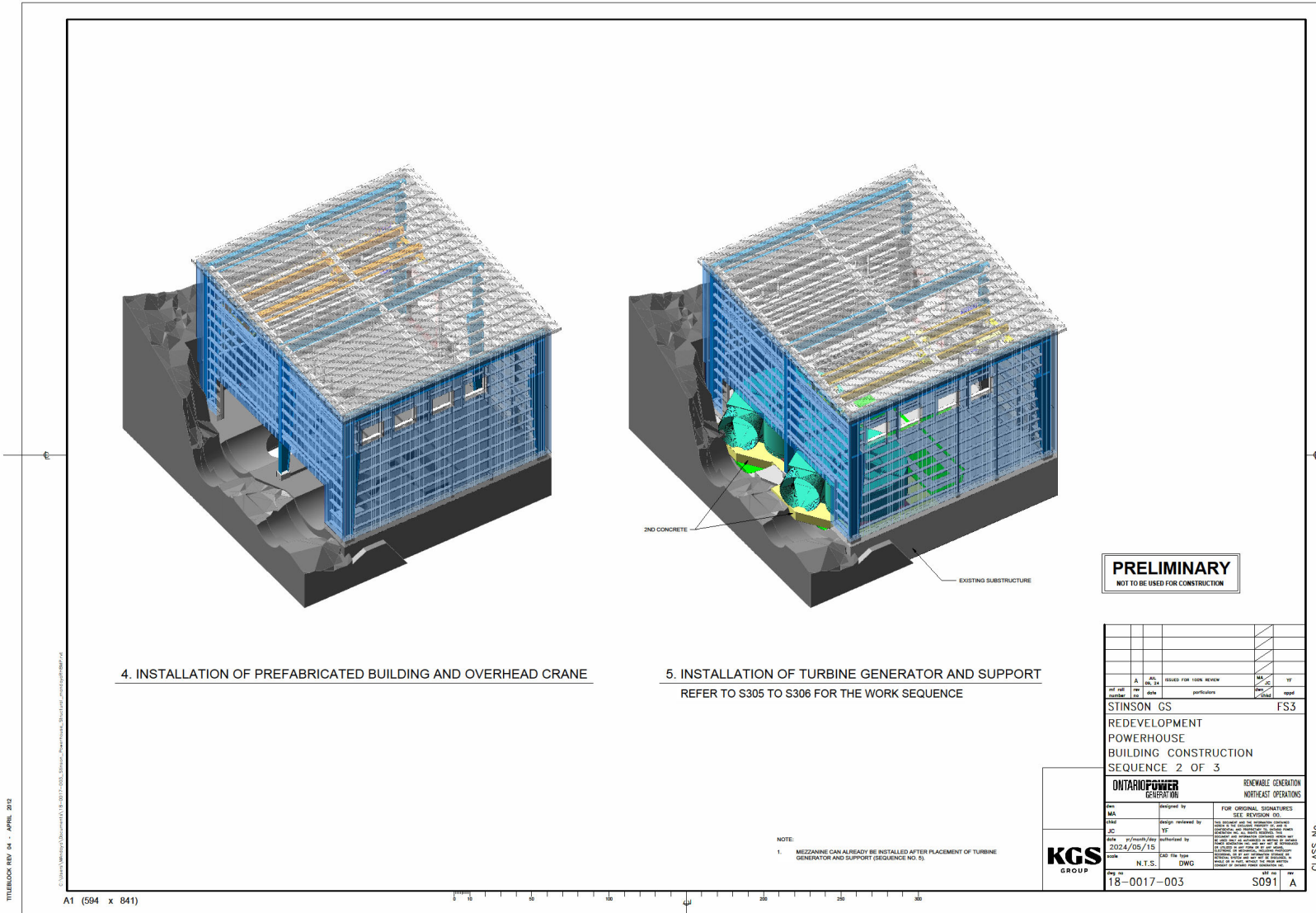


Figure 2-20 Powerhouse Construction – Installation of Prefabricated Building, Overhead Crane and Turbine Generator and Support

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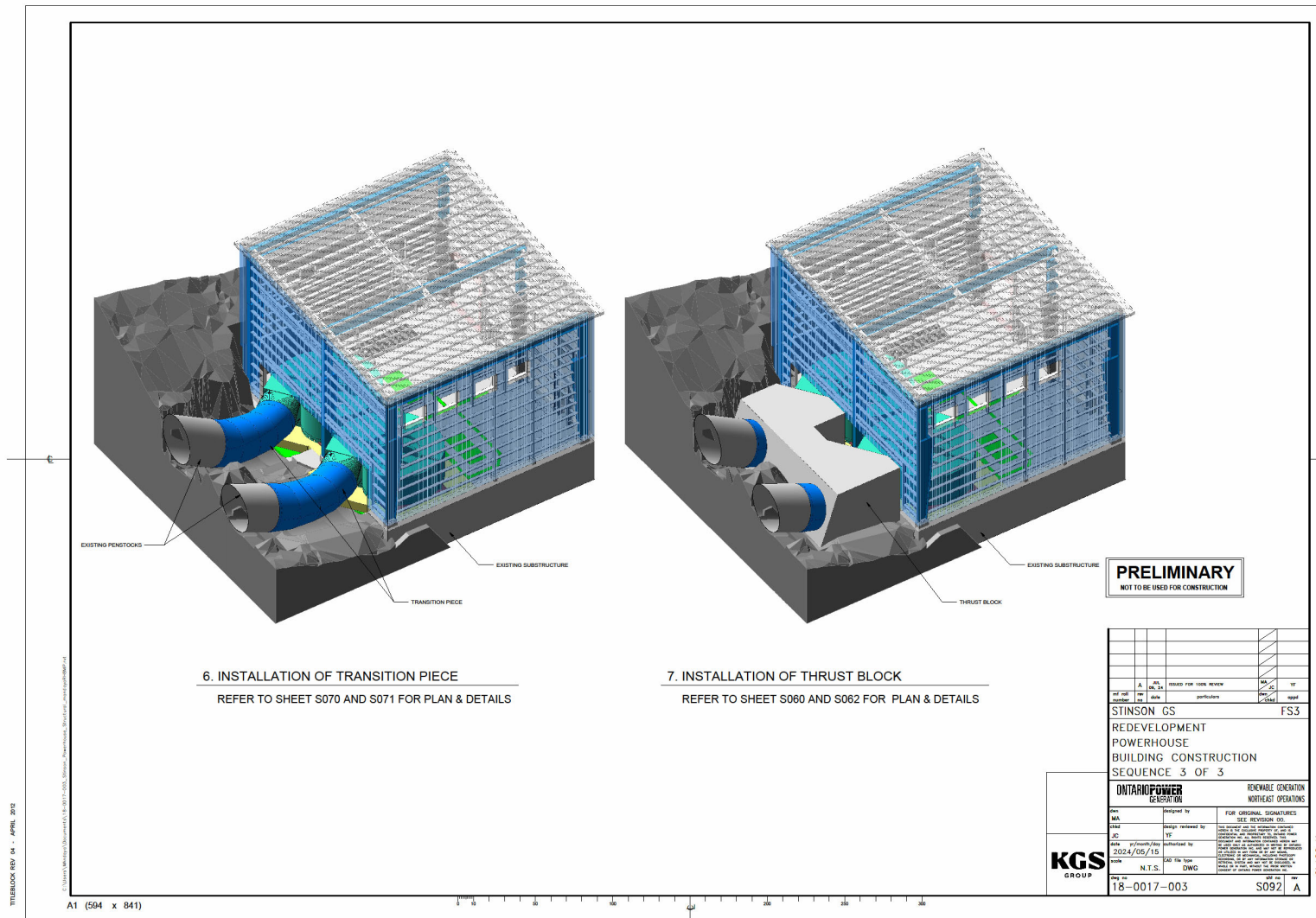


Figure 2-21 Powerhouse Construction – Installation of Transition Piece and Thrust Block

### **Stage #5 – Commissioning**

When all the equipment is installed and verified it will be released to commissioning gradually. A series of verifications will be completed prior to permitting the Intake Canal to be watered once again. Once the water is restored to the flow passages the units will be placed back into service following a sequence of testing. The testing will occur in compliance with the WRWMP.

### **Stage #6 – Site Remediation**

Stage #6 will involve final clean-up of the site including removal of all temporary construction features and equipment.

Areas planned for re-vegetation will be either re-planted or seeded once the areas have been stabilized, temporary materials such as fill are removed, and overburden/topsoil is replaced.

## **2.8 Construction**

The Project will be executed using a Design-Build Strategy with early contractor engagement. Both the Coniston and Stinson GSs will be completed together as one project. Per this strategy, OPG has secured the services of a professional engineering firm to complete the detailed design. In parallel, the Construction Contractor is engaged providing early constructability input and preparing the final construction cost and schedule estimates for the preferred option for Stinson GS.

There will be office and construction crew trailers onsite, but there will not be any construction accommodations onsite with all construction staff accommodated offsite in nearby communities.

The existing onsite roads may require some limited upgrading and widening to facilitate construction and improve access to the site for semi-trailers.

As previously indicated in this Report the project has been revised to eliminate the need for: a downstream cofferdam; other in-water work; and the use of explosives. To facilitate both demolition and construction the following construction activities and infrastructure will be used:

- A floating dock will be installed in the tailrace of the current powerhouse to facilitate demolition and construction.
- A platform or platforms will be constructed connected to and around the existing powerhouse to facilitate demolition and construction. All the platforms will include a plastic liner that is intended to be impermeable barrier so debris cannot enter the water. Furthermore, a filter cloth will be placed over the liner to protect the integrity of the liner and act as a sponge to retain any liquid material (e.g., prevent rain from mixing with dirt on the platform).
- Sediment fencing and/or other erosion and sediment controls are to be utilized on land to prevent materials from entering the river. An in-water turbidity curtain may be employed in the river if further mitigation is warranted.

A Hazardous Materials Management Plan, Waste Management Plan and a Spills Emergency Preparedness and Response Plan will be developed for the Stinson Life Extension Project as part of a broader site-specific Environmental Management Plan for the construction period.

Commissioning of the new units will not differ much from normal operation. However, there will be more start-up and shut-down sequences for the units and emergency stops for testing of the equipment. All commissioning will be done in compliance with the WMP. Wet testing will be planned to avoid the Walleye spawning period. And be in compliance with the WMP rules.

During the commissioning, the units would be cleaned of deleterious material prior to starting the unit. They may potentially be washed/mopped out. Any water from this would be minor, amounting to a few 5-gallon pails. This water would be disposed of through the septic system as normal wash water would at the station as it is currently configured. This water will go into a wastewater tank and be hauled off site by a certified septic company.

Incidental spills of oil, gas, diesel and other liquids to the environment could occur during construction. In addition, sanitary and other wastes will be generated during construction. Fuelling and lubrication of construction equipment should be carried out in a manner that minimizes the possibility of releases to the environment. Measures for containment and cleanup of contaminant releases will be followed to minimize contamination of the natural environment, followed by approved landfill or other disposal. Interim sanitary waste collection and availability of treatment facilities will be arranged for the duration of the construction period. All construction waste, washwater and wastewater will be disposed of or managed in accordance with regulatory requirements.

## **2.9 Decommissioning**

Decommissioning involves the permanent removal of the hydroelectric facilities, with the resultant loss of the site as a renewable source of electricity generation. Once the Stinson GS Life Extension Project has reached the end of its service life in 90 years (approximately 90 years from now) or more, additional redevelopment, rather than decommissioning, would be an option that should be considered again to further extend the life of this plant.

## 3 Description of the Environment

### 3.1 Atmospheric Environment

Hydroelectric generating stations produce no air emissions except for emissions associated with the occasional use of back-up generators.

No field investigations related to air emissions are proposed with respect to the Project.

Environmental noise levels will vary according to a number of factors: intensity, kind and number of noise sources; proximity to the noise sources; topography; presence of barriers and absorbers such as vegetation; and meteorological conditions.

Noise levels would increase during the construction period and would be typical of any construction project. Adherence to any local noise by-law, if applicable, would occur.

No specific noise studies are proposed.

### 3.2 Physical Environment

The topography in the project area is rugged with numerous ridges and valleys. The ridges in the area are commonly formed by rock outcrops with or without shallow overburden. Some of the valleys are occupied by lakes and ponds. Site-specific design and construction-stage geological information for the dams and powerhouse are not available, and information on the surface and the bedrock geology has been obtained from Ontario Geological Survey (OGS) maps, assessment documents related to the local area and the site reconnaissance. The surface geology map from Ontario Geological Survey (<http://www.mndm.gov.on.ca>) showed that the surrounding area of the generating station is mostly composed of exposed bedrock with localized glaciofluvial and glaciolacustrine deposits composed of sand and gravel mixtures. The bedrock geological map of the site obtained from Ontario Geological Survey (<http://www.mndm.gov.on.ca>) identified that the site is underlain by quartz sandstone and quartzite. Local areas near the site are shown to be underlain by combinations of felsic and mafic igneous to metamorphic rock, mostly in the form of gneiss (KGS, 2020).

KGS noted the following with respect to geotechnical integrity of the site.

“In general, the geotechnical performance of the Stinson GS structures have been satisfactory, with no major concerns or problems identified, consistent with the previous condition assessment. The main structures are founded on bedrock, and from past reports, there are no immediate areas to avoid when analyzing development options. Geotechnical investigations are required for all options but the extent will change.” (KGS, 2021)

### 3.3 Cultural Heritage

#### 3.3.1 Archaeology

A Stage 1 and 2 Archaeological Resource Assessment was completed on the Stinson GS by Woodland Heritage Northeast and submitted to OPG in 2021. In the Executive Summary, the following summary conclusion was made:

“As no archaeological resources were located during the test pit survey of the area of archaeological potential in the study area (Map 14), no further archaeological resource assessment work is recommended in advance of the rehabilitation of the Stinson Generating Station in Lot 2, Concession 5 and Lot 2, Concession 6 in Dryden Township, District of Sudbury, Ontario.” (Woodland Heritage Northeast, 2021).

The area assessed by the consulting archaeologist is deemed sufficiently large enough to accommodate all of the construction activities; however, should more area be required further assessment will be undertaken.

#### 3.3.2 Built Heritage

While an environmental assessment is not required for the proposed project all Ontario government ministries and prescribed public bodies such as the OPG must comply with the Ministry of Citizenship and Multiculturalism (MCM) Standards & Guidelines for Conservation of Provincial Heritage Properties (S&Gs) approved in April 2010. The Preliminary Assessment provided a useful description of the potential cultural heritage value or interest of Stinson.

“It is the conclusion of this preliminary assessment for potential cultural heritage value or interest that the Stinson GS has potential to be of “Cultural Heritage Value or Interest” and to be identified as a PHP under the O. Reg. 9/06 of the OHA. Prior to undertaking any proposed OPG maintenance, refurbishment and/or re-development work to the site and buildings/structures, as an OPG requirement under the MHSTCI S&G’s, a CHER should be completed to determine the PHP status of the Stinson GS. The CHER provides a Statement of Cultural Heritage Value (SCHV) and list of significant heritage attributes that will provide guidance to the OPG on cultural heritage resource conservation matters when planning change/alterations to the cultural heritage landscape and its buildings and structures of the GS property. If the Stinson GS is considered to be a PHP, a Strategic Conservation Plan (SCP) is required under the S&Gs. A Heritage Impact Assessment (HIA) may be required to address impacts to the facility as a result of any proposed OPG work.

Direct impacts to the cultural heritage resource include the demolition, removal, relocation or disposal (S&Gs, Section F: Disposal) of a built heritage resource including, but not limited to buildings, structures and equipment deemed to be a heritage attribute of cultural heritage interest or value (See Table 1) and are considered to be of high impact.

Indirect impacts may include but are not limited the introduction of changes/alterations to the character and setting of the cultural heritage resource, replacement of secondary structures and operating may considered to be of either low, medium or high impact depending on the level of intervention and change. Maintenance would generally be considered to be of low impact.” (Unterman McPhail, p. 23)

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The Unterman McPhail Report identified the need for four potential reports described below.

- A Cultural Heritage Evaluation Report (CHER) will be completed under the evaluation criteria of O. Reg. 9/06 of the *Ontario Heritage Act (OHA)* and the evaluation criteria of O. Reg. 10/06 of the OHA in accordance with the S&Gs. This action is required prior to any work being undertaken to determine the heritage attributes of the Stinson GS. A CHER will provide a Statement of Cultural Heritage Value (SCHV) and a list of heritage attributes to be considered for conservation and/or mitigation action as part of any re-development plan.
- A Strategic Conservation Plan (SCP) must be prepared for a PHP to detail how OPG will conserve the property in accordance with the S&Gs.
- A Heritage Impact Assessment (HIA) must be prepared in accordance with the S&Gs to determine the exact type and level of impacts to the cultural heritage resources as a result of proposed OPG work and will provide appropriate conservation mitigation actions.
- An outcome of an HIA may be a Cultural Heritage Documentation Report (CHDR) and the preparation of a salvage list. A Salvage List is required as a mitigation action of the HIA (which may be another deliverable). This Report would only be needed after a decision is made on the project moving forward (August 2023).

A meeting was held in June 2022 between the Ministry staff, OPG and its consultants to discuss plans for Stinson and planned reports. It was agreed that a CHER is to be completed and send in draft to the Ministry and then a decision will be made on whether a CHIA and/or SCP is required.

ARCADIS Canada Inc. (Arcadis) has retained Northwest Archaeological Assessments (Andrew Hinshelwood, PhD, CAHP) and Unterman McPhail Associates (UMcA) to undertake a cultural heritage evaluation of the Stinson Generating Station (GS), exclusive of the dam and intake canal. Dr. Hinshelwood has prepared both the: OPG Heritage Review Process Cultural Heritage Research Report Stinson Generating Station Redevelopment Project Former Township of Dryden, City of Greater Sudbury, District of Sudbury, Ontario; and, OPG Heritage Review Process Cultural Heritage Evaluation Report Stinson Generating Station Redevelopment Project Former Township of Dryden, City of Greater Sudbury, District of Sudbury, Ontario. The former report is the Cultural Heritage Research Report which is referred to as a CHRR and the latter Cultural Heritage Evaluation Report is referred to as the CHER. The CHRR report comprises the research component of the cultural heritage assessment whereas the CHER constitutes the evaluation component.

Stinson GS is one of three facilities built by the Wahnapiatae Power Company on the Wanapitei River. The company was formed in 1902 by Sudbury businessmen Frank Cochrane and William McVittie to develop hydroelectric generation sites. In 1904, the company acquired the contract to supply electricity to the town of Sudbury and to several local mining companies and began work on three hydroelectric generating sites on the Wanapitei River: Coniston came into service in 1905; McVittie in 1912; and Stinson in 1925. The Hydro-Electric Power Commission (HEPC), later Ontario Hydro and now OPG, acquired the Wahnapiatae Power Company in 1929-1930. Stinson GS receives regular maintenance and remains in active use. Given its date of construction and potential cultural heritage value, OPG requested the preparation of a cultural heritage assessment.

This cultural heritage evaluation for the Stinson GS has been prepared in compliance with the Ministry of Tourism, Culture and Sport (MTCS) Standards & Guidelines for Conservation of Provincial Heritage Properties (April 28, 2010), now Ministry of Citizenship and Culture (MCM). The purpose of the evaluation is to determine the cultural

heritage value or interest of the property in relation to the criteria set out under the Ontario Heritage Act (OHA). This report comprises the research component of the cultural heritage assessment.

Based on the application of the Criteria for Determining Cultural Heritage Value or Interest under Ontario Regulation 9/06, the conclusion of this Cultural Heritage Evaluation is that Stinson GS holds cultural heritage value or interest based on design values but does not hold significant associative and contextual values. For this reason, Stinson GS is evaluated as a Provincial Heritage Property (PHP) as defined by the Standards and Guidelines. Further, Stinson GS does not meet the criteria for provincial significance set out in Ontario Regulation 10/06. For this reason, Stinson GS is not a Provincial Heritage Property of Provincial Significance (PHPPS) as defined by the Standards and Guidelines.

Given that Stinson GS is evaluated to be a PHP, decisions regarding future operation, maintenance, refurbishment or redevelopment work at the property should be based on appropriate studies and research, with an awareness of the potential impact of the proposed activities on the cultural heritage value and heritage attributes of the property and take measures to mitigate direct and indirect impacts to the heritage attributes. To conform to the requirements of the S&G process, any work proposed for the “site, buildings, structures and original equipment that includes demolition, removal, and relocation of disposal of any heritage attributes” at Stinson will require OPG to maintain a record of the heritage attributes to be considered for mitigation of direct and indirect impacts as part of any redevelopment plan, and prepare a Strategic Conservation Plan (SCP) and/or Cultural Heritage Impact Assessment (CHIA) in accordance with the S&Gs. Depending on decisions made for the redevelopment/refurbishment of the site, a Cultural Heritage Documentation Report (CHDR) may also be required.

A draft CHIA has been prepared by Dr. Hinshelwood and its conclusions presented in Chapter 4.

### **3.4 Land Use Planning and Socio-Economics**

OPG would anticipate that no workers camp would be proposed for the Project and that most of the labour associated with the Project could be hired locally.

As a provincially owned entity, OPG’s facilities do not need to be subject to municipal regulation but normally OPG complies with all municipal requirements.

The existing Stinson GS is approximately 100 years old, and the facility pre-dated any form of municipal land use plan for the area.

According to the current City of Greater Sudbury Official Plan the area of the GS lies in a Rural Open Space with a *Rural Area Designation*.

According to the Zoning By-Law of the City of Greater Sudbury Interactive Zoning Map ([Zone Map \(arcgis.com\)](https://www.sudbury.ca/arcgis)) is located in an RU zone that allows for facilities that generate electrical power.

Stinson is also in an Intake Protection Zone, specifically IPZ3 Vulnerability Scoring 8. This designation is associated with Greater Sudbury’s *Greater Sudbury Source Protection Area Source Protection Plan (Source Protection Plan)*. The Zoning By-Law does restrict certain uses from the IPZ3 zone but none of these are applicable to Stinson.

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Stinson GS is rated a score of 8 because it lies upriver of the Wanapitei Water Treatment Plant which is located off Highway 17 directly across from Coniston Hydro Road.

While a number of policies are applicable to the IPZ3 Zone, none of them seem applicable to OPG and the Stinson GS. This could be confirmed with a discussion with Conservation Sudbury.

OPG will consult with the City of Greater Sudbury on any municipal issues of concern (preliminary consultation has already occurred).

OPG's has two land tenures at Stinson. The first is Water Power Lease #96 that gives OPG exclusive rights to use the lands (outlined as a purple line) for all uses as they relate to the production of power. The other tenure is a Licence of Occupation which is for OPG's flooding allowance to a set contour (shown in teal). The land tenures are shown below.

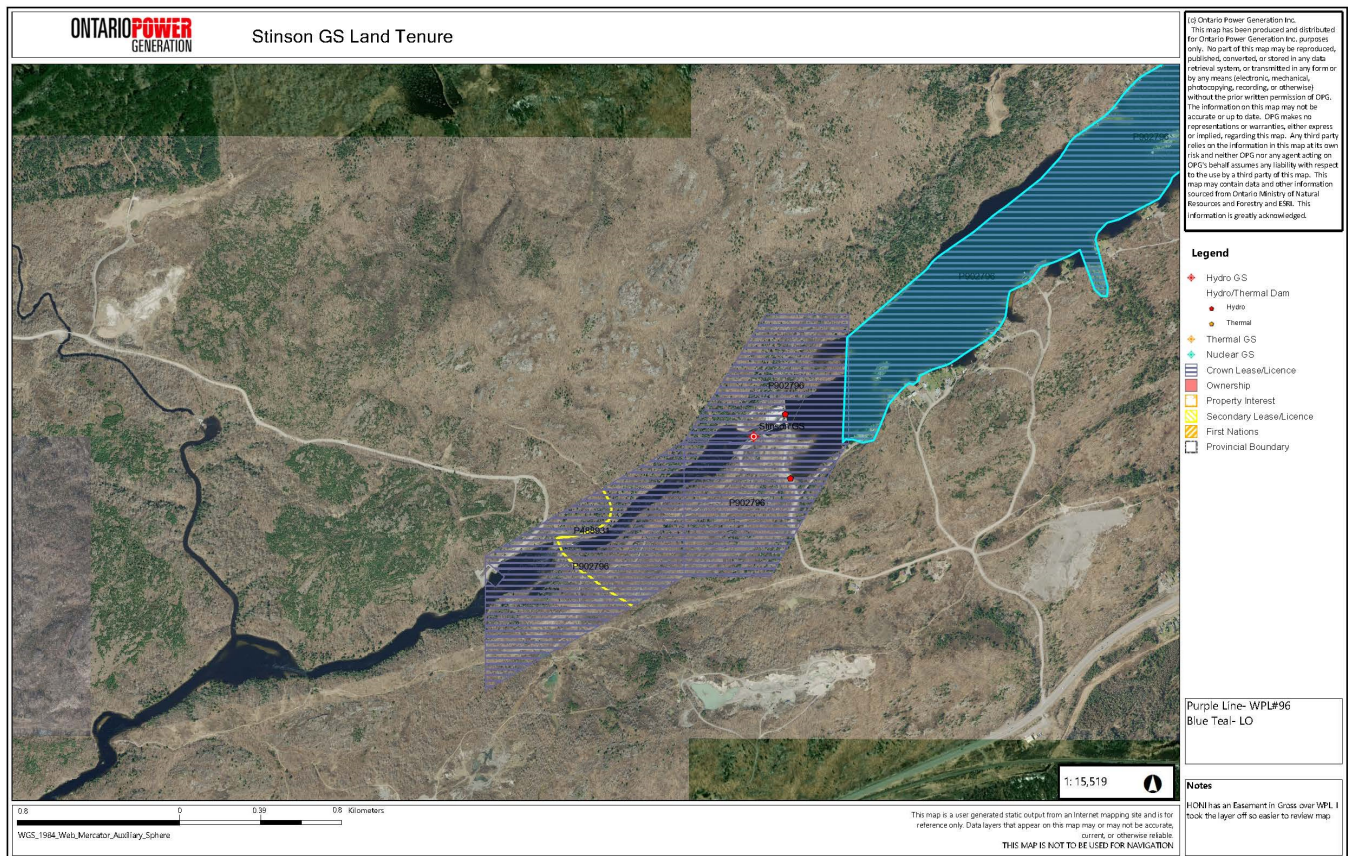


Figure 3-1 OPG Land Tenure at Stinson

### **3.5 Terrestrial Environment**

A stand alone TSD for the Terrestrial Environment has been prepared. A description of the terrestrial environment has been prepared and appears in Chapter 3 of that Report.

### **3.6 Aquatic Environment**

A stand alone TSD for the Aquatic Environment has been prepared. A description of the aquatic environment has been prepared and appears in Chapter 3 of that Report.

## 4 Environmental Effects, Mitigation and Monitoring

A large number of mitigation measures are proposed to protect the aquatic, terrestrial, cultural and socio-economic environments from negative effects associated with construction activities for the project.

### 4.1 Effects Assessment and Mitigation Measures

The available environmental baseline and site-specific information provided the basis for an assessment of potential effects of the proposed Stinson Generating Station Life Extension Project on the aquatic environment.

The potential effects include temporary construction effects (e.g., due to vegetation clearing, exposed soil, dewatering, excavation, and noise) and operational effects.

The selection and application of avoidance and mitigation measures to avoid or mitigate potential effects of proposed construction and operation are based on the following nine principles:

1. Avoid permanent destruction or harmful alteration of fish habitat, where practicable, through siting of facilities and project design.
2. Where unavoidable, minimize the permanent destruction or harmful alteration of fish habitat to the extent practicable through siting of facilities and project design.
3. Avoid temporary harmful alteration of fish habitat to the extent practicable during construction.
4. Where unavoidable, minimize temporary destruction or harmful alteration of fish habitat to the extent practicable by implementing appropriate mitigation measures.
5. Minimize the area and duration of habitat disturbance.
6. Appropriate timing of construction activities, whenever practicable, to avoid sensitive time periods and limit the length of time of potential effects.
7. Avoid causing death of fish, where practicable, during construction.
8. Where unavoidable, minimize the death of fish during construction by implementing appropriate mitigation measures.
9. Minimize the death of fish during operations, to the extent practicable, through project design and by implementing appropriate avoidance and mitigation measures.

Recommended avoidance and mitigation measures to avoid or minimize the potential harmful effects on the aquatic environment considered best industry practices described in various sources such as: OWA Standing Guidance for Temporary Dewatering and Repair of Hydroelectric Facilities and Water Control Structures in Ontario; OWA (2012b) "Best Management Practices Guide for the Mitigation of Impacts of Waterpower Facility Construction", relevant Fisheries and Oceans Canada (DFO) Standards and Codes of Practices (e.g., Routine Maintenance Dredging and End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater), and Ontario Provincial Standard Specifications as well as government agency and other organization consultation. Assessment of the DFO pressures, avoidance and mitigation measures was also considered in the development of mitigation, monitoring and project design measures. (<https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>).

## 4.2 Site Plan and Preparation of an Environmental Management Plan

A site development plan should be prepared by the DBC, including planning considerations; site and design considerations; site development scheduling; selection of construction equipment; and site development details.

A site-specific Environmental Management Plan should be developed by the DBC that ensures that environmental protection will be achieved during construction by describing government agency requirements, proposed Project commitments and recommended mitigation measures to be undertaken. The site-specific Environmental Management Plan will include an Erosion and Sediment Control Plan, Spills Emergency Preparedness and Response Plan, Hazardous Materials Management Plan, Waste Management Plan and Site Rehabilitation Plan.

For more specific direction on mitigation measures the DBC is encouraged to utilize best industry practices described in various sources such as: OWA Standing Guidance for Temporary Dewatering and Repair of Hydroelectric Facilities and Water Control Structures in Ontario OWA (2012b) “Best Management Practices Guide for the Mitigation of Impacts of Waterpower Facility Construction”, relevant Fisheries and Oceans Canada (DFO) Standards and Codes of Practices (e.g., Routine Maintenance Dredging and End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater), and Ontario Provincial Standard Specifications as well as government agency and other organization consultation. Assessment of the DFO pressures, avoidance and mitigation measures should also be considered in the development of mitigation, monitoring and project design measures. (<https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>).

A Fire Protection Plan should be developed by the DBC. This Plan will provide an inventory of available fire suppressant equipment, response plans and contingency plans. This could be part of an overall Emergency Response Plan.

## 4.3 General Environmental Effects and Mitigation Measures

### 4.3.1 Management and Control of Hazardous Waste, Construction Wastes and Incidental Spills

All materials and equipment used for the purpose of site preparation and proposed Project completion should be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, debris, etc.) from entering the water or spilling onto land. Incidental spills of oil, gas, diesel fuel and other liquids to the environment could occur during construction. Fuelling and lubrication of construction equipment should be carried out in a manner that minimizes the possibility of releases to the environment. All hazardous materials should be clearly marked and stored safely on site to avoid accidental release.

Measures for containment and cleanup of contaminant releases should be followed to minimize contamination of the natural environment, e.g., placement of fuel tanks and generators on an appropriate form of containment where possible, monitoring and other measures documented in the site-specific Environmental Management Plan. At all times where spills are a risk, appropriate materials for cleanup and approved disposal locations should be available. Spills or other discharges should be reported to the MECP (Spills Action Centre) as required by provincial legislation. Interim sanitary waste collection and availability of treatment facilities should be arranged for the

duration of the construction period. All construction waste, washwater and wastewater should be disposed of in accordance with regulatory requirements.

During powerhouse construction, there is a potential for accidental loss of cement during surface application. Any dripped cement should be recovered from the river bottom for suitable disposal. All trash and other solid debris should also be collected for appropriate disposal.

A Hazardous Materials Management Plan, Waste Management Plan and a Spills Emergency Preparedness and Response Plan will be developed as part of the site-specific Environmental Management Plan. The implementation of these pollution prevention plans will obviate or minimize the environmental effects of accidental releases to the natural environment that have the potential to affect surface water and groundwater quality in the proposed Project area.

### **4.3.2 Erosion and Sediment Controls**

The same erosion and sediment control measures used to protect the aquatic environment would also be employed for the terrestrial environment.

There is a risk to the Wanapitei River by sediment loadings due to accelerated soil erosion during construction. Till and gully erosion caused by channelized overland flow can be a major source of soil erosion. Sheet erosion can also be a source of sediment.

Erosion and sediment control will be an integral component of the construction planning process. All personnel involved with the proposed works will be briefed on erosion and sediment control including engineers, contractors, inspectors and environmental staff. A site-specific Sediment and Erosion Control Plan and Stormwater Management Plan is to be prepared by the DBC. The site-specific Erosion and Sediment Control Plan will be part of a broader Environmental Management Plan required for the construction period of the project. Sediment and erosion control measures should be implemented prior to work and maintained during the work phase, to prevent entry of sediment into the water. This should include sediment removal from areas within the cofferdams and within work areas such as the powerhouse foundation area, draft pit and tailrace excavation. Judicious selection of the discharge location and water pressure during dewatering will minimize potential effects of in-water construction activities on water quality in the Wanapitei River. The plan should also include the use of silt curtains or cofferdams, if appropriate, during any in-water work to prevent deleterious substances from entering fish habitat.

Management of dredged material and control of runoff will be addressed by the site-specific Sediment and Erosion Control Plan and Stormwater Management Plan to be prepared by the DBC.

The perimeter of the natural shoreline is limited in the area of proposed construction, however, during construction the removal of any natural shoreline vegetation should be avoided or minimized, and consideration made to armor potentially erodible shoreline proximate to the proposed GS.

In general, the following guidelines will be applied in the development of the Erosion and Sediment Control Plan:

- fitting of proposed works to the terrain (i.e., using the natural topography of the land in the placement and organization of the construction site);
- timing of grading and construction activities to minimize soil exposure;
- retention of existing vegetation where feasible;
- restriction of the use of heavy construction equipment to within the approved work areas to minimize soil disturbance and vegetation destruction;
- storage of stripped soil at upland locations with a minimum of 5 m from the edge of the River and above the high water mark;
- implementation of erosion control measures, e.g., rip-rap berms underlain by filter geotextile, straw bales used as filters, silt fencing along the shoreline and/or mulching for interim stabilization;
- diversion of runoff away from exposed areas;
- minimization of the length and steepness of slopes subject to erosion;
- maintenance of low runoff velocities;
- design of drainage works, such as ditches and outfalls, to handle concentrated runoff;
- retention of sediment on site;
- routine inspection and maintenance of erosion and sediment control measures; and
- re-vegetation of disturbed areas by seeding and/or planting following construction as soon as seasonal conditions permit.

More detailed direction with respect to erosion and sediment control can be obtained by looking at Ontario Provincial Standard Specification 805, Construction Specification for Temporary Erosion and Sediment Control Measures.

The use of settling ponds (which are not anticipated) will require Environmental Compliance Approvals under the OWRA. If required, the DBC will be responsible for the final design of the settling ponds, including locations of such works, treatment options, volumes, discharges to the environment, proposed monitoring plans and effluent criteria for parameters of concern (e.g., pH, TSS, turbidity, hydrocarbons, total ammonia).

With the implementation of the site-specific Erosion and Sediment Control Plans, the potential effects of soil erosion and turbidity generation will be minimized or obviated.

## 4.4 Air and Noise

Construction activities have the potential for short-term effects on air quality in the vicinity of the site. Emissions are primarily exhaust emissions (and associated odour) from construction equipment and fugitive dust due to disturbance of dry fine-grained soils. As with any construction site, these emissions will be of relatively short duration and unlikely to have any effect on the surrounding airshed.

During construction, the practices and procedures outlined in the Cheminfo (2005) document “Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities”, prepared in conjunction with the Construction and Demolition Multi-Stakeholder Working Group for Environment Canada, will be followed, including:

- plans to minimize dust generation through planning, site layout and the proper use of materials, tools and equipment;
- use of wind fencing;
- compacting disturbed soil;
- activity scheduling;
- storage piles management;
- minimization of drop heights;
- barriers to prevent dispersion of materials;
- avoidance of blasting where feasible;
- work practices for loading debris;
- avoidance of prolonged storage of debris; and
- proper techniques for the use of materials that include VOCs.

The DBC and subcontractors will be required to maintain equipment in good working condition to minimize combustion emissions to the extent practicable. To reduce fugitive dust emissions, effective dust suppression techniques, such as on-site and road watering, will be used.

The application of the recommended mitigation measures should minimize combustion emissions and limit fugitive dust emissions to the work area. As a result of the low concentrations of the atmospheric pollutants generated during construction, no adverse effects on terrestrial vegetation due to these emissions are anticipated.

The primary form of mitigation of noise is adherence to the City of Sudbury’s Noise ByLaw. The area is generally rural and industrial in character. The nearest human receptors to the construction site are shoreline residences 150 m upstream.

## **4.5 Terrestrial Environmental Effect and Mitigation Measures**

This section describes specific terrestrial environment effects and proposed mitigation measures.

### **4.5.1 Wetlands and Areas of Natural and Scientific Interest**

The wetlands within the study area have not been evaluated by the province and as such are not designated as provincially significant wetlands. Nevertheless, no development will be occurring within or adjacent to the wetlands associated with the Wanapitei River and mitigation measures will be implemented to protect vegetation and wetland function. There are no Areas of Natural and Scientific Interest or Provincially Significant Wetlands within a distance where they would be affected by activities within the study area.

## 4.5.2 Wildlife

The redevelopment of the Stinson GS is not expected to have any long-term negative effects on the wildlife documented to be present or likely to be present within the study area or on the adjacent lands (including both endangered bat species, Blanding's Turtle and Eastern Whip-poor-will).

As per the regulations under the federal *Migratory Birds Convention Act* it is necessary to ensure that breeding birds and/or their nests, eggs or young are not disturbed, damaged or destroyed. Therefore:

- vegetation clearing should be avoided during the migratory bird nesting season (April to the end of August) (it is OPG's intention to clear trees between October 1 and April 1 to meet the bat cavity tree window); and
- if minor vegetation clearing needs to occur during the migratory bird nesting season or if clearing needs to occur in highly disturbed areas with simple vegetative structure, then a qualified avian ecologist will examine the area to be affected to ensure that no nests, eggs or nestlings or indications of nesting are present. However, it should be recognized that in almost all circumstances a high risk of nesting birds will occur from May to July inclusive.

### 4.5.2.1 Proposed GS Construction and Road Traffic

All traffic associated with the project will travel along Stinson Hydro Road. On the sections of Stinson Hydro Road within the study area, traffic speeds are limited for safety purposes given the slopes and road widths and these low speeds reduce the likelihood of vehicular-animal incidents. Given the presence of turtles in the study area, including the threatened Blanding's Turtle, specific mitigation measures are recommended in Section 4.5.3.2 to minimize the adverse effects of vehicular traffic on wildlife.

The DB contractor will also monitor any wildlife mortality caused by construction traffic and alter practices if any incidents are documented.

### 4.5.2.2 Proposed Project Operation

Once construction of the proposed Project is completed, any displaced animals could reoccupy the habitat created on the rehabilitated areas, and the habitat not directly affected by construction activities. The steady noise from the proposed Project powerhouse during operation is not expected to elicit an adverse reaction from wildlife due to habituation.

## 4.5.3 Endangered and Threatened Species

As indicated in Sections 3.3.4 of the Terrestrial Environment TSD, four species subject to prohibitions under the provincial ESA are known to occur within or adjacent to the study area and hence warrant further discussion.

### 4.5.3.1 Bats (Little Brown Myotis, Northern Myotis)

Two endangered bat species were confirmed by acoustic surveys to be present within the study area and habitat for these species was documented. As shown in the Terrestrial Environment TSD, bat habitat trees were present

in several locations. As such, the following is recommended to avoid adverse effects on individuals of the species as per Section 9 of the ESA:

- Any removal of potential bat habitat trees should be completed outside of the active season for bats (no habitat tree removal between April 1 and October 1).

It is expected that no authorizations specific to bats under the ESA would be required if trees were cleared outside of the bat active season (April 1 to October 1). Additionally, if tree removal cannot be completed during this timing window, then MECP must be contacted to obtain further direction prior to removal of any trees.

#### 4.5.3.2 Blanding's Turtle

Blanding's Turtles make regular overland movements between wetlands/waterbodies, as well as to and from nesting areas. These movements can be up to 2 km and can occur anytime during the turtle's active season but are more likely during the nesting season. These behavioural characteristics make it difficult to exclude Blanding's Turtles from all work areas that have the potential to injure or kill individuals (i.e., roads and areas where motorized vehicles are operating). That said, mitigation measures that combine species at risk training for on-site workers with temporary exclusion fencing can substantially reduce the likelihood of adverse effects on Blanding's Turtle. The following mitigation measures are recommended:

- Qualified Professional to provide species at risk training for DBC staff and all workers that will be on-site;
- Develop and adhere to site-specific response protocols for turtles and other wildlife encounters;
- Incorporate "tailgate" education material for species at risk;
- Erect one turtle/snake crossing awareness sign near the entrance to the active construction zone;
- Erect temporary exclusion fencing to prevent turtles from moving into areas of active construction and motorized vehicle traffic; and
- Exclusion fencing to be installed can double as sediment fencing but must meet the specifications recommended in the most recent version of MNR's guidance document *Reptile and Amphibian Exclusion Fencing*.

Based on the implementation of these mitigation measures, it is our opinion that the proposed activities will achieve avoidance under the ESA with respect to Blanding's Turtle and thus not require an authorization.

#### 4.5.3.3 Eastern Whip-poor-will

As indicated in Section 3.3.4 of the Terrestrial Environment TSD, vocalizations from a male breeding Whip-poor-will were documented during both on-site surveys and with a remotely deployed acoustic detector. The male's territory is estimated to encompass the Stinson GS on both sides of the river. The Wanapitei River in this area has a combination of open rock barren, interspersed with forest, and as such, makes the area ideal habitat for the species. Preliminary assessment indicates that much of the proposed laydown area for the project would be defined as Category 2 Whip-poor-will habitat following the general habitat description for the species (MECP 2021). There may not be practical alternatives to these laydown areas for the project given slopes and access, and it is therefore

likely these areas will be highly disturbed for laydown equipment and activity during the time when the generating station is being refurbished.

Adhering to the mitigation measures for vegetation clearing for migratory birds will avoid adverse effects on Eastern Whip-poor-will during the breeding season, specifically:

- vegetation clearing should be avoided during the migratory bird nesting season (April to the end of August).
- if minor vegetation removal needs to occur during the nesting season for migratory birds or if clearing needs to occur in highly disturbed areas with simple vegetative structure, then a qualified avian ecologist will examine the area to be affected to ensure that no nests, eggs or nestlings or indications of nesting are present.

To reduce the amount of habitat permanently lost once the laydown areas are cleared and being used for refurbishment activities the following is recommended:

- Remove equipment and temporary infrastructure from portions of the laydown areas no longer needed after the generating station refurbishment has been completed.

#### 4.5.4 Species of Conservation Concern

The mitigation measures provided above for migratory birds and Blanding's Turtle will prevent adverse effects on the species of conservation concern present in the study area.

## 4.6 Aquatic Environmental Effect and Mitigation Measures

This section describes specific aquatic environment effects and proposed mitigation measures.

### 4.6.1 Death of Fish

The potential for death of fish during construction is very low as no blasting, in-water works nor cofferdams are proposed. Death of fish could occur during the de-watering of the Intake Canal.

#### Dewatering and Fish Relocations

As indicated in section 2.7.4 the Intake Canal will be dewatered using the existing intake structure and stop logs. This will allow the removal of the two isolation gates for off-site restoration and removal of the hoist frame for replacement. The Intake Canal will be drained through the powerhouse and existing units. Pumps will be utilized to assist in final dewatering if necessary. It is expected that most fish present in the Intake Canal will move downstream through the penstocks and GS as the intake canal is drained. A fish relocation plan will be developed and implemented by the constructor to capture and relocate fish that remain within the Intake Canal during final dewatering. This work will require a Licence to Collect Fish for Scientific Purposes issued under the *Fish and Wildlife Conservation Act*, which is obtained from MNRF.

Intake screens adhering to the DFO code of practice will be used to prevent the impingement or entrainment of fish during dewatering (<https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>).

No mussels were observed in the project vicinity during field investigations, however, mussels within the dewatered areas will be relocated during the fish relocation program if they are present.

#### **4.6.2 Changes to Wetted Habitat**

No permanent changes to the area or nature of existing wetted habitat will occur as a result of the project. During construction, the man-made Intake Canal will be de-watered and not available to fish.

The existing GS had a maximum capacity of 43.4 m<sup>3</sup>/s. During construction there will be a significant increase in the volume of water and the proportion of the time that water is discharged through the spillway. This in turn will result in more habitat being available in the spillway, especially when flows are lower than the GS capacity. Based on average daily flow data, flow was less than 43.4 m<sup>3</sup>/s 75 percent of the time during the period between 1999 and 2019. It should be noted that the upper spillway is steep and when discharge is high the high-water velocities there will limit fish use.

Overall, the net effect on fish productivity during construction, which is estimated to last slightly over one year, is expected to be a minor positive one.

#### **4.6.3 Changes to Riparian Vegetation**

Little alteration of riparian vegetation is anticipated. Most of the construction area is occupied by existing infrastructure. Figure 2-10 indicates that the two areas most likely to be cleared for use as laydown areas are set back from the shoreline.

#### **4.6.4 Changes to Fish Passage**

An extensive discussion on fish passage occurs in Section 4.1 of the Aquatic TSD. As indicated in that Report, no upstream fish passage is possible at the Stinson GS at present and this will not change with the proposed project.

Under present conditions fish can be conveyed downstream through the GS or via the spillway, depending on where water is being discharged. During construction there will be no flow through the GS and downstream fish passage can only occur via the spillway.

#### **4.6.5 Changes to Surface Hydrology**

During construction water will not be flowing through the intake canal and existing GS and therefore more water will be passing through the spillway. The construction of the project is not expected to have any other effect on surface hydrology. The increased volume of flow through the spillway will result in a temporary increase in the area of available habitat, and increases in depth and velocity, with the magnitude of the changes dependent upon flow.

#### **4.6.6 Changes to Groundwater Hydrology**

Based on the available groundwater data, static groundwater levels are expected to be approximately 1.1 to 1.3 meters below the ground surface at the proposed retaining wall area of the powerhouse. Groundwater levels will fluctuate depending on the season and following precipitation events, hence the actual groundwater level at the

time of construction could vary from that what was reported in the geotechnical report. KGS has advised that the contractor develop a plan for managing the groundwater during construction (KGS, 2023). No changes to groundwater hydrology are expected with the project as the powerhouse is already in existence.

#### 4.6.7 Changes to Water Quality

Stinson is in an Intake Protection Zone, specifically IPZ3 Vulnerability Scoring 8. This designation is associated with Greater Sudbury's *Greater Sudbury Source Protection Area Source Protection Plan (Source Protection Plan)*. The Zoning By-Law does restrict certain uses from the IPZ3 zone but none of these are applicable to Stinson. Stinson GS is rated a score of 8 because it lies upriver of the Wanapitei Water Treatment Plant which is located off Highway 17 directly across from Coniston Hydro Road.

While a number of policies are applicable to the IPZ3 Zone, none of them seem applicable to OPG and the Stinson GS. This could be confirmed with a discussion with Conservation Sudbury.

OPG will consult with the City of Greater Sudbury on any municipal issues of concern (preliminary consultation has already occurred).

During construction, water quality in the Wanapitei River may be affected by suspended sediment generated by land-based construction activities (e.g., soil erosion, dewatering, stormwater runoff) and incidental spills and/or waste material dispersion. Mitigation measures are proposed in many sections throughout this chapter (4.2, 4.3.1, 4.3.2, 4.4 and 4.6.1) to protect water quality.

Overall, with the implementation of the mitigation measures described in this document, the effects of the construction of the proposed Project on water quality are expected to be localized, temporary and negligible.

##### 4.6.7.1 Erosion and Sediment Control

Erosion and sediment controls are already discussed in Section 4.3.2.

##### 4.6.7.2 Management and Control of Hazardous Materials, Construction Wastes, and Incidental Spills

Management and control of hazardous materials, construction wastes, groundwater and incidental spills is described in detail in Section 4.3.1.

## 4.7 Cultural Heritage (Archaeology)

No archaeological resources were identified at the Stinson GS site. However, all archaeology reports in Ontario contain two proactive measures that constructors are to be aware of:

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage

a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

- The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

## 4.8 Marine Heritage

Woodland Heritage Northeast carried out An Evaluation of the Potential to Impact Unknown Underwater Archaeological Resources at the Stinson Generating Station – Proposed In-Water Work that was completed in 2023. On page 4 of that Report, it was indicated that:

“Overall, given the well-documented disturbances on land and in the water as well as the high, variable water velocity through the falls; the shifting historical riverbed; the complete erosion of the spillway and riverbed; the artificial nature of the forebay, intake channel, and tailrace; and the comparatively recent construction of the dam, post-dating the other dams on the Wanapitei River and the settlement of the region, it is highly unlikely that archaeological materials would be located within the areas to be impacted by the proposed work at the Stinson Generating Station.”

The conclusion of this analysis with contributions from a licenced archaeologist qualified to undertake marine archaeological work is that a marine archaeological assessment should not be required.

## 4.9 Built Heritage

As indicated in Chapter 3 a draft Cultural Heritage Impact Assessment (CHIA) for the Stinson GS was prepared by Northwest Archaeological Assessments Inc in December of 2024. A summary of that Report and its recommendations are presented below:

OPG has proposed refurbishment as the preferred re-development option and plans to replace the 5.4 MW facility with a new 6 MW facility at the Stinson GS. Under the proposal, the powerhouse superstructure will be demolished and replaced, two new turbine/generator units will be installed, and the vast majority of the powerhouse mechanical and electrical equipment replaced. The powerhouse foundation will be repaired and re-used, meaning the new powerhouse will have the same footprint as the existing structure. The major civil features of the GS will be retained in their current location including the dam, spillway, intake forebay, penstocks, powerhouse, and tailrace. Under the terms of the Ontario Waterpower Association Class Environmental Assessment (OWA Class EA), an environmental assessment is not required for waterpower facilities when the re-developed facility will have capacity increased by less than 25%. Following a review of the proposed redevelopment and the criteria found in the process, it was determined that an environmental assessment is not required for the Stinson Generating Station (GS) Life Extension Project.

Stinson GS was evaluated against Ontario Regulation 9/06 and Ontario Regulation 10/06 and documented in a CHER in May 2023. Through the application of the “Criteria for Determining Cultural Heritage Value or Interest” under O.Reg. 9/06, Stinson GS is of cultural heritage value or

interest, due to its physical or design and historical values, although not for associative or contextual values. Therefore, it is a provincial heritage property (PHP) as defined by the Standards and Guidelines. The Stinson GS does not fulfill the evaluation criteria for provincial significance as set out in O.Reg. 10/06 and is not considered to be a provincial heritage property of provincial significance (PHPPS) as defined by the Standards and Guidelines.

This CHIA assesses potential impacts to the Stinson GS resulting from the proposed redevelopment. Identified direct impacts for the project include removal of identified heritage attributes of the PHP (powerhouse and powerhouse equipment including the generators and turbines). Identified indirect impacts include modifications to the headworks and access roads. Positive impacts to redevelopment include the retained configuration of the component features of the facility and its continued use for hydroelectric power generation purposes on the Wanapitei River. This maintains and continues an over 100-year identifiable and defining cultural heritage landscape and its retention for hydroelectric power generation reinforces the significant physical, functional, and visual linkages between the GS facility's built heritage resources.

The following conservation recommendations are provided to OPG to address the effects of the identified impacts to the Stinson GS.

#### Powerhouse and Headworks

It is recommended that a Cultural Heritage Documentation Report (CHDR) is prepared for the built heritage resources of the Stinson GS property, focussed on the powerhouse. This reflect the substance of the OWA Mitigation Option 8 (b), Undertake full recording and documentation of existing building, even though the property was not subject to an Environmental Assessment.

The CHDR, which will require additional fieldwork and draw on the information contained in the CHER and CHIA, be prepared for OPG by a professional heritage consultant in good standing with the Canadian Association of Heritage Professionals (CAHP) and with demonstrated experience in the preparation of documentation reports. The CHDR should include an historical summary of the development of the Stinson GS, historical photographs, contemporary photographs of the structures, photographic key plans and available design drawings.

#### Allocation of Cultural Heritage Reports

OPG will retain copies of all cultural heritage reports prepared (CHER, CHIA and CHDR) within the OPG official document repository system. Additionally, OPG will provide digital or hard copies of the reports to the Greater Sudbury Public Library. Consideration should also be given to providing support to the library for the work associated with intake and cataloguing the reports.”

The draft Report will be reviewed by OPG and then sent to MCM for review.

## 4.10 Socio-Economic

A indicated in Chapter 3, OPG will consult with the City of Greater Sudbury on any municipal issues of concern (preliminary consultation has already occurred). This consultation will occur once a contractor has been retained for the project.

OPG is also mindful of the fact that Stinson Hydro Road is used by both local residents and seasonal users of the area. As such, vehicles associated with the construction will be required to adhere to speed limits and other requirements on the road.

OPG also plans to issue a newsletter in the local area and provide contact information for the constructor, in the event an issue comes up.

## **4.11 Potential Post-construction and Operational Effects and Associated Mitigation, Enhancement and Monitoring Measures**

### **4.11.1 Wanapitei River Water Management**

OPG does not propose to alter the existing water management compliance requirements associated with this facility. The redevelopment of the Stinson GS will continue to be operated in full accordance with WRWMP required levels and flows.

As already indicated, the original GS had a capacity of 4.75 megawatts (MW) with a plant discharge flow of 43.4 m<sup>3</sup>/s. The proposed GS will have a capacity of 6.0 MW based on a plant discharge flow of 43.5 m<sup>3</sup>/s.

As stated in the preceding section, the total GS capacity after redevelopment (43.5 m<sup>3</sup>/sec) will be nearly identical to the original capacity (43.4 m<sup>3</sup>/sec). Consequently, no major changes in the relative amounts of water passing through the station and the spillway are expected to occur. As well, the proposed minimum flow of the new station will be a very low 2.18 m<sup>3</sup>/sec, allowing the GS to pass very low flows.

### **4.11.2 Groundwater Hydrology**

No effects on groundwater hydrology or quality are anticipated as a result of the redevelopment of the GS; therefore, no mitigation is required.

### **4.11.3 Surface Water Quality**

The re-development of the Stinson Generating Station is not expected to have any negative effects on water quality. Water will go through the powerhouse and be returned to the river in approximately the same locations and volumes as prior to development. The proposed project does not result in any new inundation which might impair water quality.

All of OPG's powerhouses have an oil-water separator in place that separates oily substances and prevents them from entering the river. All of OPG's GSs contain spill equipment and personnel trained in its use should regular operations activities result in spills.

### **4.11.4 Sediment Erosion and Transport**

The final site grading and elevations will be designed to minimize erosion and manage stormwater.

Once the site is fully re-developed and any unstable areas stabilized, the erosion and sediment control measures will be removed from the site except for any permanent ditches, berms or other features that are recommended to prevent any sediment from entering the river and erosion from occurring.

As the proposed project will be operating according to the requirements of the existing WRWMP, OPG does not anticipate any changes to localized erosion patterns on the river.

#### **4.11.5 Changes to Aquatic Habitat**

No existing habitat will be-eliminated, or significantly altered, downstream from the powerhouse.

Post-development, flow from the tailrace will enter the river channel at the same location as prior to redevelopment and the maximum flow through the GS will be essentially unchanged, so no changes to depths or water velocities are expected.

##### **4.11.5.1 Upstream Fish Passage**

As indicated previously, no upstream fish passage is possible at the Stinson GS and this will not change as a result of the refurbishment.

#### **4.11.6 Downstream Fish Passage, Impingement and Entrainment**

Under existing conditions, fish can be conveyed downstream through the GS or via the spillway, depending on where water is being discharged. This will continue to be the case post-development. There will be no change to the conditions experienced by fish passing downstream through the spillway as a result of the redevelopment. The intake velocities to the powerhouse will not change.

#### **4.11.7 Fish Mortality Due to Passage Through the GS**

The rates of mortality and injury to fish that pass through hydroelectric turbines is the subject of considerable scientific research, however, determining these rates is not simple and they are affected by the facility characteristics (e.g., dam height) and turbine characteristics (e.g., turbine design and velocity) as well as fish species, size and life stage (Radinger *et al.*, 2021; Algera *et al.*, 2020). There are no mortality or injury data for the Stinson GS. To the best of our knowledge, dead or injured fish have not been reported downstream from the Stinson GS, nor are concentrations of scavengers or predators (e.g., gulls, terns) that feed on dead or injured fish, which suggests that the number of fish injured or killed is not large.

There will be no changes to intake velocities from the existing situation.

The DIVE turbines are considered an improvement over the existing Francis turbines. However, this improvement would be difficult to quantify and assess.

## 5 Permits and Other Approvals

A preliminary list of known environmental permits, licences, clearances and approvals for Stinson Generating Station Life Extension Project (SGSLEP) is provided in the Table below. This list should be updated over the course of the project. Recent changes to some permitting requirements have occurred which have eliminated the need for a permit or two. Those changes are included here for the purposes of clarity. Depending on the final design and changes to applicable federal and provincial legislation and policies many of these approvals may or may not be required; however, the list is provided for illustrative purposes.

Table 5-1 List of Permits, Licences and Approvals Possibly Required for the Proposed Stinson Generating Life Extension Project

Agency	Statute	Likely Permits, Licences or Approvals	Applicability	General Approach
<b>PROVINCIAL APPROVALS</b>				
MECP	EPA	Ontario Regulation 347, General Waste Regulation.  Transport documentation including Waste Management System	Waste generator registration for hazardous waste generated and ensuring all requirements of Reg. 347 are met during construction.  Approvals for carrier and disposal to an approved waste disposal or transfer site.  All of the above are generally handled by the constructor.	Nothing required. Handled by constructor.
MECP	OWRA	Permit to Take Water - PTTW (Operations)	A Permit to Take Water for operations and <b>will not be required</b> for this Project as the Government passed Bill 132, <i>Better for People, Smarter for Business Act</i> , 2019 (Royal Assent, December 10, 2019). With the passage of this Bill Waterpower facilities are no longer required to obtain this permit.	Not required.
MECP	OWRA	PTTW (Construction)	While s. 34(1) generally requires a PTTW for taking more than 50,000L of water on any day pursuant to s. 34(1), paragraph 4 of s. 34(2) provides that s. 34(1) does not apply to the taking of water for the purpose of constructing or operating a dam within the meaning of the Lakes and <i>Rivers Improvement Act</i> if the dam is associated with the production of electricity. "Dam"	Not required.

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Agency	Statute	Likely Permits, Licences or Approvals	Applicability	General Approach
			<p>means a structure or work forwarding, holding back or diverting water and includes a dam, tailings dam, dike, diversion, channel alteration, artificial channel, culvert or causeway; ("barrage")</p> <p>The exceptions in s. 34(2) are subject to s. 34(5), which allows the Director of the MECP, by order, to prohibit any person from taking water by any means (including relying on an exception in s. 34(2)) except in accordance with a permit issued under s. 34.1.</p>	
MECP	OWRA	Environmental Compliance Approval	<p><u>Construction of GS:</u></p> <p>A temporary settling pond or other type of methods may be required to manage sediment laden waters from the construction.</p> <p><u>Operation of GS:</u></p> <p>For any sewage works such as oil containment systems in the powerhouse an ECA is required.</p>	<p><u>Construction of GS:</u></p> <p>Whether an ECA is required is dependent on the construction methods proposed by the DBC.</p> <p><u>Operation of GS:</u></p> <p>ECA required for oil-water separator for permanent powerhouse.</p>
MNRF	LRIA	Section 16 approval	<p>Plans and Specifications Approval for works involving the construction of the new GS and any refurbishment work associated with the existing dam.</p> <p>As per OPG/MNRF agreement, application is submitted /reviewed/approved internally though OPGs Dam Safety. No MNRF review required.</p>	<p>Coordinate the preparation of the application with KGS, to be submitted to OPG Dam Safety. Following submission of Table of Comments and Responses that was generated as part of the Project Description and Agency Meeting.</p>
MNRF	LRIA	Section 23 approval	<p>Minor Amendment to the WMP to record changes to the facility from the existing situation.</p>	<p>Should have a discussion with MNRF as to when minor amendments to WRWMP could be processed for both Coniston and Stinson.</p>

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Agency	Statute	Likely Permits, Licences or Approvals	Applicability	General Approach
MNRF	<i>Lakes and Rivers Improvement (LRIA)</i>	Section 16 approval	Plans and Specifications Approval for works involving the construction of the new GS and any refurbishment work associated with the existing dam.  As per OPG/MNRF agreement, application is submitted /reviewed/approved internally through OPGs Dam Safety. No MNRF review required.	This is largely an engineering review of the proposed structures associated with the project.
MNRF	<i>Fish and Wildlife Conservation Act</i>	Licence to Collect Fish for Scientific Purposes	<u>Construction of GS:</u>  For the capture and transfer of fish following de-watering of the Intake Canal	Likely required for the Intake Canal de-watering.
MNRF	<i>Crown Forest Sustainability Act</i>	Forest Resource Licence	OPG was informed that a Forest Resource Licence (FRL) will be required prior to vegetation clearing at Coniston as the Crown retains ownership of the merchantable timber rights. This is likely the same situation at the Stinson GS.	FRL likely required for small amount of vegetation clearing.
Ministry of Citizenship and Multiculturalism	<i>Ontario Heritage Act</i>	None	Archaeological assessment already entered into Registry.  Marine assessment completed.  CHIA has been prepared but not yet submitted.	No permits are required. Reports are to be filed.
Ontario Energy Board	<i>Ontario Energy Board Act</i>	Section 92 approval	Leave to Construct, Expand or Reinforce Electricity Line or Interconnection – Distribution Connection Agreement	OPG to work with KGS (OR) on obtaining this approval.
Conservation Sudbury	<i>Conservation Authorities Act</i>	Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Permit	Any ancillary works, not within the MNRF LRIA scope but within the Regulated Area of the CA, would be items where the Conservation Authority might engage further with a possibility of a Permit required for alterations to the shoreline.	Unlikely approval required from Conservation Sudbury.

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Agency	Statute	Likely Permits, Licences or Approvals	Applicability	General Approach
<b>FEDERAL LEGISLATION</b>				
DFO	<i>Fisheries Act</i>	Construction (Section 34 and 35 approval)  Section 34.2(2)(b) & Section 35(2)(b). DFO Authorization for Construction - Authorization for Works or Undertakings that result in HADD (footprint effect and duration of that effect).	An RfR has already been submitted to DFO. Subject to further discussions with DFO on the modified project.	Request for Review has been submitted. Preliminary discussion held with DFO
DFO	<i>Fisheries Act</i>	Operations (Section 34.4 and 35 approval)	The fish and fish habitat protection provisions of the <i>Fisheries Act</i> are the authorities for the regulation of works, undertakings or activities that risk harming fish and fish habitat. Specifically, they include the two core prohibitions against persons carrying on works, undertakings or activities that result in the “death of fish by means other than fishing” (hereafter referred to as the death of fish) (subsection 34.4(1)), and the “harmful alteration, disruption or destruction of fish habitat” (subsection 35(1)).  May be required depending on the final design.  Subject to further discussions with DFO.	Not required until plant is to go into Operations. Further discussions with DFO required.
Environment Canada	<i>Migratory Birds Convention Act</i>		If tree clearing occurs during bird nesting season, this act must be adhered to and permit required. No breeding bird can be harmed, harassed or agitated during bird nesting season.  The objective is to clear outside of the breeding bird season.	No permit required provided clearing occurs in the October 1 – April 30 period.

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Agency	Statute	Likely Permits, Licences or Approvals	Applicability	General Approach
Transport Canada	<i>Navigable Waters Act</i>	Section 5(1) Major Works in any Navigable Water and/or 7(1) Interference with navigation  Approval for Construction Works in Navigable Waters	5(1) Required for Major Works for dam and if intake bridge is replaced. Both considered a major work (Major Works Order SOR/2019-320).  7(1) Relevant if booms are required.  OPG to confirm if existing boom has a permit.  Note: TC will require Notification to external stakeholder.	OPG to work with internal Dam Safety to consult with TC on the timing of this.
<b>LOCAL APPROVALS</b>				
City of Greater Sudbury	<i>Building Code</i>	Building Code approval	Demolition and Building Permit may be required.	Up to OPG, DBC and OE on strategy to pursue demolition and building permits.
Public Health Sudbury and Districts	<i>Building Code</i>	Sewage System Permit	Sewage system approval if washroom is installed with a septic bed.	Up to OPG, DBC and OE on strategy to pursue this permit.

## 6 Summary and Conclusions

An environmental assessment is not required for the Stinson Generating Station (GS) Life Extension Project. An environmental assessment is not required in Ontario for waterpower facilities when the re-developed facility has its capacity restricted to an increase of 25% or less than the existing one. The existing Stinson GS has a capacity of 5.4 MW while the planned facility will have a capacity of 6 MW. This increase can be accomplished through a negligible change in the flow through the turbines of 43.4 cubic meters per second (cms) to 43.5.

This Environmental Planning Report to Support Future Permits and Construction has been prepared to: support discussions with government agencies; support Indigenous consultation; and, provide direction to OPG, its Owner's Engineer and its constructor contractor on environment requirements including construction stage mitigation and monitoring measures.

Overall, the refurbishment of the Stinson Generating Station (GS) will result in environmental impacts that can be mitigated and/or compensated for by a wide variety of measures. No net environmental effects are anticipated associated with the project.

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## 8 Acronyms and Abbreviations

AAFN	Atikameksheng Anishnawbek First Nation
Arcadis	Arcadis Canada Inc.
BMP	Best Management Practices
Beacon	Beacon Environmental
OWA Class EA	Class Environmental Assessment for Waterpower Projects
CFSA	<i>Crown Forest Sustainability Act</i>
CGSLEP	Coniston Generating Station Life Extension Project
CHDR	Cultural Heritage Documentation Report
CHER	Cultural Heritage Evaluation Report
CHRR	Cultural Heritage Research Report
DB	Design Build
DBC	Design-Build Contractor
DFO	Department of Fisheries and Oceans
DFN	Dokis First Nation
e.g.	For example (exempli gratia)
EA	Environmental Assessment
ECA	Environmental Compliance Approvals
EPA	<i>Environmental Protection Act</i>
ESA	<i>Endangered Species Act</i>
et al.	And others (et alia)
etc.	And so on (et cetera)
FRL	Forest Resource Licence
FWCA	<i>Fish and Wildlife Conservation Act</i>
GS	Generating Station
HADD	Habitat alteration, disruption or destruction
HIA	Heritage Impact Assessment
HIFN	Henvey Inlet First Nation
Hydro One	Hydro One Networks Inc.
i.e.	That is (id est)

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INAC	Indigenous and Northern Affairs Canada
KGS Group	Kontzamanis, Graumaun, Smith, MacMillan Inc.
KM	Kilometre
LIO	Land Information Ontario
<i>LRIA</i>	<i>Lakes and Rivers Improvement Act</i>
M5	Extractive Industrial
MCM	Ministry of
MECP	Ontario Ministry of Environment, Conservation and Parks
MHSTCI	Ministry of Citizenship and Culture
MNRF	Ontario Ministry of Natural Resources and Forestry
NFN	Nipissing First Nation
NHIC	Natural Heritage Information Centre
<i>NWA</i>	<i>Navigable Waters Act</i>
<i>NWPA</i>	<i>Navigable Waters Protection Act</i>
O. Reg.	Ontario Regulation
OBBA	Ontario Breeding Bird Atlas
OGS	Ontario Geological Survey
<i>OHA</i>	<i>Ontario Heritage Act</i>
OMNR	Ontario Ministry of Natural Resources
OMNRF	Ontario Ministry of Natural Resources and Forestry
OPG	Ontario Power Generation Inc.
ORAA	Ontario Reptile and Amphibian Atlas
OWA	Ontario Waterpower Association
<i>OWRA</i>	<i>Ontario Water Resources Act</i>
pers. comm.	Personal communication
PTTW	Permit to Take Water
RFR	Request for Review
RU	Rural
S&Gs	Standards & Guidelines for Conservation of Provincial Heritage Properties
S5	Secure – common, widespread and abundant in the Province
SAR	Species at risk

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SARA	<i>Species at Risk Act</i>
SCHV	Statement of Cultural Heritage Value
SCP	Strategic Conservation Plan
SGSLEP	Stinson Generating Station Life Extension Project
SLS	Seasonal Limited Service
WFN	Wahnapitae First Nation
WMP	Water Management Plan
WR	Wanapitei River
WRA	<i>Ontario Water Resources Act</i>
WRFN	Whitefish River First Nation
WRWMP	Wanapitei River Water Management Plan

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