

rental diesel generators in Mayo

providing reliable power in case of an emergency

At Yukon Energy, it's our job to supply the electricity Yukoners need when they need it. Our ability to keep the lights on is especially important during the Yukon's cold and dark winters when demand for electricity is the highest.

Yukoners are using more electricity than ever before – on December 20, 2022, we set a record peak of 118.5 megawatts.

This is why we need dependable sources of electricity and why we rent diesel generators each winter, until we can build more dependable renewable resources.

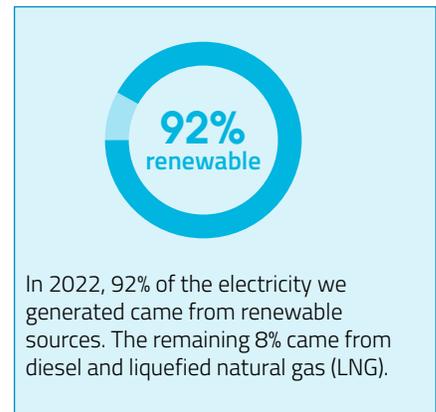
In the winter of 2022–23, we rented 17 diesel generators. Ten of them were installed in our Whitehorse parking lot and the other seven were installed at our diesel power plant in Faro. For the winter of 2023–24, we will need to rent an additional five diesel generators to ensure we have enough electricity to meet demand. These additional five generators will be installed beside our hydro plant outside of Mayo.

Why now?

In addition to growing demand for electricity, we also are experiencing supply chain issues. These issues are causing delays in some of our projects, like the Thermal Replacement Project in Faro and the Grid-scale Battery Storage Project in Whitehorse. When completed, these projects will reduce the number of diesel generators we need to rent each year. However, because they will not be completed for this upcoming winter, we need to rent more diesel generators to fill the gap. Renting diesel generators is the only feasible way to meet electricity demand for this coming winter.

Where in Mayo will the rental diesel units go?

The five rental diesel units will go near our Mayo A hydro plant outside of Mayo (see maps, right and on reverse).





Why Mayo?

There is no space for the additional five units in Whitehorse or Faro. The site in Mayo was selected as the best alternative location for several reasons.

- There is an existing substation with transformer capacity nearby. This is important as the substation distributes the electricity to the rest of the Yukon.
- Yukon Energy staff live and work in Mayo. Having nearby staff will make maintenance activities easier.
- The site is far away from homes and businesses. The nearest residence is over one kilometre away.

How long will the additional diesel rental units be in Mayo?

This will depend on when other projects, like the thermal replacement and battery projects, are completed. We will be applying for a five-year air emissions permit that is required to operate the units.

How loud will the rental diesel units be?

While we recognize diesel generators can be loud, the nearest residence is over a kilometre away. At this distance, sound levels will be well below permissible sound levels. The units will also only run during the winter.

We will be completing spot sound level measurements next winter and will share these results when they are available.

Do we need rental diesel units in Mayo because industrial (mining) load is growing?

No. The number of rental diesel units we need each year is based on the amount of electricity Yukon homes and businesses (i.e., not mines) need during a winter emergency situation.

This emergency situation assumes power from our largest generation source, the Aishihik hydro facility, is unavailable. We call this emergency situation N-1.

Do the rental diesel units provide electricity to the mines?

Yes, but only when there is enough electricity to first meet the demand from Yukon homes and businesses. During emergencies, the mines are the first to be disconnected from the grid so that we can supply the necessary electricity to Yukoners.

Next steps

We are required to go through a Yukon Environmental and Socio-economic Assessment Board (YESAB) review process. We submitted our proposal to the YESAB Mayo Designated Office in May. YESAB will now review our proposal, then conduct its own public engagement. You can get involved in this process by visiting yesab.ca.

After the YESAB assessment, we will apply for an air emissions permit through the Government of Yukon. Site preparation is scheduled for this summer, so that the rental units are ready for this upcoming winter.

Questions or concerns?

Contact communications@yec.yk.ca.



#2 Miles Canyon Road
Box 5920, Whitehorse
Yukon Y1A 6S7
yukonenergy.ca

June 29, 2023

Brad Farrow – Manager, Mayo Designated Office
Yukon Environmental and Socio-economic Assessment Board
Mayo Designated Office
PO Box 297, Mayo, Y0B 1M0

(Submitted via the YESAB Online Registry)

Dear Mr. Farrow:

Re: Response to IR1, June 28, 2023 - YESAA Project Assessment 2023.0090

Please accept the following responses to the information request referenced above. Each of Yukon Energy's responses is prefaced by the specific Designated Office information request.

IR1.1

The Online Form 1 (YOR 2023-0090-0001) states that up to five EPA Approved Tier 2 Caterpillar 3516C Diesel Generators "at 1.8 MW each" will be installed and commissioned. It further states that two of the five are intended to be available only as back up in case of emergencies, leaving a total of three to operating at any one time.

- a) Please confirm that "at 1.8 MW each" is referring to the nameplate capacity of each generator to be 1.8 MW, as referenced in the Engine Generator Specifications document (YOR 2023-0090-0004).

YEC Response:

Confirmed.

- b) Please confirm that no more than three of the proposed generators will be in operation at any one time.

YEC Response:

Yukon Energy is seeking approval from the Yukon Government to operate up to 4.9 MW of fossil fuel-fired electrical generating equipment at any one time at the Project site. Depending on the generators in use this may range from one to several units in order to reach the *operating capacity* threshold under the air emissions permit (see definition in response to IR1.2). The current proposal is to utilize the generators referred to in the Project Proposal and mentioned in the IR preamble, above.





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IR1.2

The document further states that the maximum operating capacity of the Project will be 4.9 MW, during peak demand (winter) and during emergencies. However, the Yukon Energy website (yukonenergy.ca) has no definition of 'operating capacity', only 'capacity' which is defined as: "the amount of electricity that is available at any given time. It is measured in watts, kilowatts (one thousand watts), megawatts (one million watts), or gigawatts (one billion watts)". Similarly, the Canada Energy Regulator defines 'capacity' (in terms of electricity) as, "the maximum amount of power that a device can generate, use, or transfer; usually expressed in megawatts."

- a) Please define the term "operating capacity" as it is used in reference to the Project and how it differs from the "nameplate capacity" of a generator.

YEC Response:

For Yukon Energy, *Operating Capacity* refers to the maximum generating threshold, in megawatts (MW), as defined under a thermal generating station's Air Emissions Permit.

For Yukon Energy, *Capacity* may refer to either the nameplate capacity of a specific generator or the current rated capacity of the unit (whichever is less). The term may also be used to describe the overall installed or available generating capacity of the station, which would be the sum of nameplate or rated capacity of the individual units installed at the facility.

IR1.3

According to Schedule 3, Section 25 (b) of the Assessable Activities, Exceptions and Executive Committee Projects Regulations the construction of a fossil fuel-fired electrical generating station with a production capacity of 5 MW or more is required to be submitted for screening to the YESAB Executive Committee. As the Project is proposing to operate at 0.1 MW below this threshold, please confirm that the operation of the Project will not exceed 4.9 MW at any time, even during emergencies.

YEC Response:

As outlined in the response to IR1.1a, Yukon Energy is seeking authorization from the Yukon Government to operate up to 4.9 MW of fossil fuel-fired electrical generating equipment at any one time at the Project site. As with all Yukon Energy thermal generating stations, any use of the installed *Capacity* higher than the Air Emissions Permit *Operating Capacity* threshold would require approval by the authority having jurisdiction, in this case the Yukon Government Environment Department. If ever required, such approval might be granted in an emergency and would be subject to the provisions of YESAA in this regard (i.e., Section 49(1) and 49(2)).

Thank you for your time and consideration of these responses and our project proposal.

Yours Truly,


Travis Ritchie
Director – Risk and Compliance



Nathaniel Yee

15-July, 2023

To: YESAB - Mayo

Subject: 2023-0090 Mayo Secondary Thermal Generation Project.

Project says 5 Generators, but only 2.72 to be permitted?

The proposal that YEC has submitted to YESAB is for the installation of five rental generators of 1.8MW each, with a total permitted capacity of 4.9MW.

That is, YEC is installing 9MW, but permitting only 4.9MW. Why permit 4.9MW, or 2.72 generators out of 5? An executive committee screening is required at 5MW, so YEC is asking for a permit to run only 2.72 generators to avoid an EC screening.

How is it possible to run 2.72 generators without actually running 3?

YESAA specifies that an EC screening is required for projects of 5MW or more. Clearly this is meant to apply to this project. Running 3 generators only up to 4.9MW will have the same socio-economic impact as running 3 generators for a total of 5.4MW. Was the intention of YESAA to have 9MW projects or 5.4MW projects claim to be 4.9MW projects, or was it to provide assessment relevant to the scale of the project? Pretending to run 2.72 generators to avoid an EC screening is not providing a proper assessment.

YEC has confirmed that the 4.9MW total is simply an attempt to get around the Executive Committee requirement. In YEC's words:

"The proposed site capacity expansion was limited to 4.9 MW so as not to trigger an Executive Committee (EC) Screening, i.e., a 5 MW increase would trigger an EC Screening." ⁽¹⁾

My hope is that YESAB does not accept this attempt to subvert YESAA. Does YEC have some magic way of running 2.72 generators without running 3?

40% Spare / Backup Generators – Really?

YEC is claiming that 2 of the 5 generators are "spares" or "backups" in case 2 of the permitted 2.72 generators fail. Looked at in terms of capacity, of the 9MW to be installed, 4.9MW is to be permitted, and 4.1MW is backup, not to be permitted.

However, in sworn testimony during the 2021 GRA hearings, YEC argued that in the existing rental diesel installations in Faro and Whitehorse, one spare (and only one) was needed in each location. ⁽²⁾

The Yukon Utilities Board did not find this argument compelling and concluded that NO spares were needed in either Whitehorse or Faro: *“The Board finds that the two spare units are therefore redundant, given that they essentially provide backup to the 15 diesel rental units which themselves are backup to YEC’s system.”*⁽³⁾

It is therefore unclear why Mayo needs two spares in a total of five generators, given that YEC claimed to need only one spare each for Faro and Whitehorse – and that the Utilities Board considered even one to be unnecessary.

10% of the rental diesels in Whitehorse are considered “spare”. (1 of 10)

14% of the rentals in Faro are considered “spare”. (1 of 7)

40% of the rentals in Mayo are considered “spare”. (2 of 5??)

So... Are the rentals planned for Mayo amazingly unreliable - or is YEC just trying to get around YESAA requirements again? Why so many more “spares” or “backups” in Mayo than anywhere else?

Section 49. In response to an emergency vs in preparation for an emergency?

And now looking at YEC’s response to IR1.3, YEC does plan to use all 9MW in emergency situations, misusing section 49 of YESAA. Section 49 states

“49 (1) Notwithstanding sections 47 and 48, no assessment is required of an activity that is undertaken **in response to a national emergency** for which special temporary measures are being taken under the Emergencies Act, or **in response to an emergency** when it is in the interest of public welfare, health or safety or of protecting property or the environment that the activity be undertaken immediately.”

It is notable that YEC is now trying to use Section 49(1) as part of their **planning for an emergency**, rather than **“in response to an emergency”** as specified in Section 49. The installation and connection of these generators now is clearly not “in response” to an emergency. YESAA does not support using section 49 as part of the planning process. YEC is required to have N-1 backup capacity, and there is no provision in YESAA that I can find saying that required backup capacity is not subject to assessment. That’s what they’re trying to do here.

So YEC’s emergency plan is to ignore YESAA using section 49. In an emergency, no rules! But alas, no emergency has been declared, so what YEC does now is still subject to YESAA. I realize that you at YESAB know this. Any generator beyond the 2.72 (4.9MW) should not be listed as part of this assessment – as anything in addition to this triggers an EC screening. A YESAB assessment that includes 9MW but only assesses 4.9MW makes no sense.

Noise! Significant adverse socio-economic effects on community wellness.

The proposal mentions the noise study in Faro that supposedly claims the sound difference would be “barely perceptible”. This is deceptive on a number of levels, and not what YESAB concluded in YESAB 2021-0115. Is it reasonable to compare noise differences for an addition to an existing diesel

facility (Faro) to what is effectively a new greenfield diesel station in Mayo? The difference in Mayo will of course be far more than 1dB.

YESAB's conclusions in the case of Faro:

The Watson Lake Designated Office has determined that the Project is likely to have significant adverse socio-economic effects on community wellness that require additional mitigation.

- *Reduced quality of life for Faro residents: sound generated by project activities may interact with other users of the land in such a way to impact their quality of life.*

- *Reduced health: public health may be affected by project operations and long-term activity at the site.*

...the use of generators at the FGS is expected to increase as the Proponent has noted a growing demand for electricity in the Yukon.

“Significant adverse effects” is of course not the same as “barely perceptible”. Noise exceeds BC acceptable standards where rental diesels are installed in Faro and in Whitehorse and there have been multiple noise complaints in both locations. Mayo, as the third location of rental diesel, could be expected to have a similar result.

So....

YEC is installing more than 5MW, and according to YESAA, Mayo should get an Executive Committee screening. Mayo deserves this level of consultation and respect, and YESAA requires it.

YESAB 2023-0090 should be sent to an EC screening or reduced to 3.6MW and only two generators installed. Anything else would not be supported under YESAA.

⁽¹⁾ p. 21, line 32

https://yukonutilitiesboard.yk.ca/pdf/YEC_2021_GRA/YEC_2021_GRA_Round_2_Revised_IRs__Sept_22__2021.pdf

⁽²⁾ P. 303 of the transcript

https://yukonutilitiesboard.yk.ca/pdf/YEC_2021_GRA/YEC2021GRA_28Sept2021.pdf

⁽³⁾ P. 27, Item 114, Appendix A to Board Order 2022-03

https://yukonutilitiesboard.yk.ca/pdf/Board_Orders_2020/Appendix_A_to_Board_Order_2022-03.pdf

August 28, 2023

Brad Farrow, Manager – Mayo Designated Office
Yukon Environmental and Socio-economic Assessment Board
Mayo Designated Office
PO Box 297
Mayo, Y.T. Y0B 1M0

(Submitted via the YESAB Online Registry)

Dear Mr. Farrow:

Re: Response to Public Comments – YESAA Project Assessment 2023.0090

In the case that it may be helpful in preparing the evaluation report for the assessment referenced above Yukon Energy offers the following information in response to some of the public comments received by the Designated Office during the *Seeking Views and Information* phase of this assessment.

FIRST NATION OF NA-CHO NYAK DUN COMMENTS

Topic – Timeline

There is no clear indication from the proposal documents what the intended lifespan of the project is (i.e. continued need for diesel power generation going forward). FNNND views the installation of diesel generators as a short-term necessity while implementation of adequate energy security planning and integration of long-term, non-fossil-fuel-dependent solutions is underway. While FNNND and YEC continue to engage formally in discussions including ongoing and future energy needs, it will still be important to set target timeframes to work towards eventually phasing out the need for diesel generation.

Yukon Energy Response:

Yukon Energy's objective is to maximize renewable energy. We continue to explore and build projects that will help us to supply, on average, 93% renewable electricity by 2030. Over 90% of the electricity we generate today is renewable. Firm electrical back up will, however, continue to be a requirement in the Yukon as we have an islanded grid with no access to electrical energy from outside. In this circumstance, firm back up sources such as, but not necessarily, diesel will continue to be needed. The use of thermal sources is always coupled with an objective of minimizing their use. While new renewable energy sources are planned and constructed there is a near term need for increased thermal generation. The Project is intended to support this need and current planning schedules see it in place for at least the next few years. If there is a continued requirement for this energy following the expiry of the project authorizations (up to 10 years) a new assessment and permitting cycle will commence within the energy context at that time.

Topic – Increased Fuel Transport

The use of the diesel generators will require fuel delivery of up to 1 B-train per week. The increased fuel transport can contribute to multiple effects including increased industrial traffic on the Wareham Lake Road which is increasingly becoming a residential access location with occupancy of the new subdivision. More fuel truck traffic also increases the potential risk of spills or accidents along the transport route which could affect waterways and habitats nearby.

Yukon Energy Response:

Yukon Energy recognizes the risks presented by the transport and handling of hazardous materials such as diesel fuel. The impact of a spill can be very costly to the environment and to people. We expect the risks associated with the use of fuel to be mitigated by adherence to applicable codes and standards, other non-discretionary regulatory requirements, and the related planning and practices of Yukon Energy and its suppliers. In the unlikely case of an incident both Yukon Energy and its fuel suppliers have contingency plans and human and material resources to respond.

Topic – Noise Levels

There are no actual mitigations listed for potential increase in noise levels. From the discussion provided in the proposal documents, noise levels in relation to residences was not expected to be particularly high. However, the area is increasingly becoming a residential location with the development of the nearby subdivision. It may be prudent to allow potential for monitoring, including gauging local residents' perceptions of noise levels, with potential for follow-up action if necessary.

Yukon Energy Response:

Given the distance between the generators and receptors at the Campground (>750 m) and nearest residence (>1,100 m) and the likelihood that unit operation will occur in very cold conditions when people are less likely to be outside for long periods of time, noise is not expected to cause significant environmental or socio-economic effects. If, however, public concerns regarding noise are brought to Yukon Energy's attention the Corporation will endeavour to address them on a case-by-case basis. This may include conducting an acoustic audit of the facility, which would collect ambient and operational sound levels in the Project area for comparison to the British Columbia Noise Control Best Practices Guideline and follow up engagement with complainants/interested parties.

Topic – Socio-economic Benefits

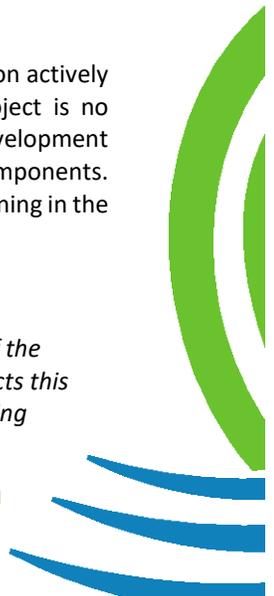
The acquisition, operation and decommissioning of these generators may provide opportunity for economic benefit through partnership and planning. Furthermore, any potential for future site use post-decommissioning, including potential installation of solar panels and/or battery storage, may give rise to further economic benefits locally. It is expected that this project is not seen in isolation as a distinct response to an immediate need but rather an evolving opportunity with steps ultimately towards non-fossil-fuel power generation to meet future needs and benefit communities. FNNND requests that development of a project agreement with the Nation be initiated to facilitate some of these benefits and forward-looking planning.

Yukon Energy Response:

Yukon Energy agrees with these ideas and as part of project developments of this nature the Corporation actively seeks out economic opportunities with local First Nation Governments and communities. This project is no different, with the Corporation working directly with the First Nation of Na-Cho Nyak Dun Development Corporation (NNDDC) to identify and engage goods and services providers for a variety of the Project components. Yukon Energy also has an ongoing dialogue with the FNNND Government regarding broader energy planning in the Yukon and within their traditional territory.

Topic – Generation Capacity Clarity

Through response to an information request, it is understood that while the total generation capacity of the generators to be installed will be well over 5MW, they will never be run to exceed 4.9MW. FNNND expects this output limitation to be binding through regulatory requirements. The context of thorough energy planning



within a timeframe is necessary here to ensure we do not approach a situation where more than 4.9MW is required from this backup system without effects having been assessed and regulated at that scale beforehand.

Yukon Energy Response:

Yukon Energy fully expects that the requested maximum operating capacity of 4.9 MW will be prescribed and enforceable under the Air Emissions Permit that is issued for the project.

YUKON GOVERNMENT COMMENTS

Topic - Air Quality

1. *The Proponent should provide basic air quality analysis specific to the Mayo project, showing the potential impacts of reduced air quality to nearby receptors. The air quality analysis should include the 2025 Yukon ambient air quality standards.*
2. *The Proponent should comment on whether or not the project is expected to impact use of the Five Mile Lake territorial campground.*

Yukon Energy Response:

1. Despite being a low-risk emissions source given its size and distance to receptors, Yukon Energy understands that YG Environment, Standards and Approvals Branch may require a Level 1 (Screening) Assessment of the Project at the permitting stage. As it may be requested, Yukon Energy will include such information in the application for the project air emissions permit at that time.
2. The Project is not predicted to impact the Five Mile Lake Territorial Campground as operation of the generators is expected to occur predominately in winter and little use of the campground at this time of year is anticipated. Furthermore, given its distance from the project area (>750 m) and the fact that significantly more generating capacity exists at other YEC facilities with much closer proximities to nearby receptors¹, significant effects to campground users or nearby residences are not predicted to occur.

YUKON CONSERVATION SOCIETY COMMENTS

Topic - Hierarchy of Generator Use

YCS notes that the project proposal is to install 5 x 1.8MW rented diesel generators totaling a nameplate capacity of 9MW, but only intends on using 4.9MW of this installed capacity. YCS asks that YESAB requests of the proponent to elaborate on the operational logistics of this setup. YCS requests that YESAB ask the proponent if the additional generating capacity is to be used solely under emergency conditions?

Yukon Energy Response:

Yukon Energy provided applicable responses to a similar, but separate request made by the DO during the adequacy review stage (see YOR File 2023.0090.0010).

¹ Examples: Whitehorse Rapids Generating Station permitted capacity 29.4 MW – nearest receptor ~250 m; Faro Generating Station permitted capacity 15.5 MW – nearest receptor ~350 m.

Topic – Spill Plan

YCS asks that YESAB request of the proponent to have an updated spill response plan for the site-specific project. Local phone numbers should be provided in the spill response plan to have a minimal response time to an environmentally impactful event. A robust spill response plan is essential in limiting the destruction caused by a potential spill.

Yukon Energy Response:

Maintenance of a site-specific spill plan is a requirement of Fuel Storage Tank permits, one of which will be issued under the Environment Act, Fuel Storage Tank Regulations, for this project.

Topic – Emission Reporting

YCS respectfully requests that YESAB recommend the proponent keep track of the quantity of fossil fuels consumed related to this project. This would include fuels consumed on site and fuels consumed associated with transporting the fuel to site.

Yukon Energy Response:

Annual reporting of facility emissions, including criteria air contaminants and green house gases (Scope 1), is a requirement of the air emission permit that will be issued under the Environment Act, Air Emissions Regulations, for this project. The calculated emissions are partly a function of fuel consumed.

Topic – Climate Emergency

YCS respectfully requests that YESAB recommends given the urgency of the situation, as highlighted from numerous reports, that the proponent provide information on the utilization of renewable energy over the use of rented diesel generators.

Yukon Energy Response:

Information about overall generation is provided by Yukon Energy on its website and in its annual reports, including total energy generated and the proportion that is generated via renewable sources. Annual reporting to the Yukon Government pursuant to the air emissions permit provides a detailed summary of thermal generation by facility.

Topic – Noise

YCS requests that YESAB asks of the proponent how noise issues will be addressed and or mitigated to ensure minimal sound disruptions from these generators to nearby residents and the Five Mile Lake Campground.

Yukon Energy Response:

Please see the previous response, above, to the FNNND and YG comments regarding potential noise effects.

Topic – Air Pollution

Air pollution from the combustion of fossil fuels has been noted by the proponent as an adverse effect of this project. YCS asks that YESAB request of the proponent if any monitoring and mitigation will take place throughout the operation of these diesel generators.

Yukon Energy Response:

Emissions reporting, as described above, is expected to be part of the ongoing monitoring and follow up program required under the air emissions permit for the Project. No additional pollutant emissions monitoring or mitigation is deemed necessary or proposed by Yukon Energy for a facility of this size in this location.

MR. NATHANIEL YEE COMMENTS

Topic – Generators On Site Versus Permitted Operational Capacity

Yukon Energy Response:

Yukon Energy provided applicable responses to a similar, but separate request made by the DO during the adequacy review stage (see YOR File 2023.0090.0010, response IR1.1).

Topic – Emergencies

Yukon Energy Response:

Yukon Energy provided applicable responses to a similar, but separate request made by the DO during the adequacy review stage (see YOR File 2023.0090.0010, response IR1.3).

Topic – Noise

Yukon Energy Response:

Please see the previous responses to comments on the topic of potential noise effects, above.

CLOSING

Thank you for your time and consideration of this information. If you have any questions, please contact me anytime via email: travis.ritchie@yec.yk.ca and/or by phone (867) 393-5350.

Thank you for your time and consideration.

Yours Truly,



Travis Ritchie,
Director – Risk & Compliance

From: [CalebW.Light](#)
To: [Travis Ritchie](#)
Cc: [Lisa Wiklund](#); [Michael Muller](#)
Subject: RE: Notification of Pending Project Description Submission - Whitehorse Rapids Thermal Generating Station Relicensing Project
Date: September 15, 2023 2:56:56 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

Hi Travis,

Confirming receipt of the notification. The notice has been shared with Executive Committee and a confirmatory response will be forthcoming. I look forward to receiving the Project Description and the Executive Committee will certainly reach out if they would like to discuss the project.

Regards,

Caleb Light

Executive Committee Manager, Head Office
Yukon Environmental and Socio-economic Assessment Board
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From: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Sent: Friday, September 15, 2023 1:40 PM
To: CalebW.Light <caleb.light@yesab.ca>
Cc: Lisa Wiklund <Lisa.Wiklund@yec.yk.ca>; Michael Muller <Michael.Muller@yec.yk.ca>
Subject: Notification of Pending Project Description Submission - Whitehorse Rapids Thermal Generating Station Relicensing Project

Hello Caleb,

Please let this email serve as a notification to the Executive Committee that Yukon Energy intends to submit a project description for a Screening soon.

- ☐ **Project Name:** Whitehorse Rapids Thermal Generating Station Relicensing Project
- ☐ **Proponent:** Yukon Energy Corporation
- ☐ **Targeted Submission Date:** October 16, 2023
- ☐ **Project Location:** Yukon Energy's existing Whitehorse Rapids Generating Station (No. 2 Miles Canyon Road, Whitehorse, Y.T.)

⌘ **Brief Project Overview/Summary:** The proposed project is the continued operation of a fossil fuel fired electrical generating station with a capacity of up to 42 MW and diesel fuel storage up to 300,000 litres. The existing project requires authorization renewals under the Environment Act, Air Emissions Regulations and Fuel Storage Tank Regulations, which expire at the end of 2024 and 2026, respectively. The natural gas generating and fuel storage component of the Station have an existing authorization (Licence No. 1140) under the Oil and Gas Act, Gas Plant Processing Regulation and Oil and Gas Licence Administration Regulations (through mid-2054). As such, it is only the air emissions from the natural gas component of the station that would form part of the scope of the assessment, along with all aspects of the diesel-fired electricity generators and associated fuel storage. The project is intended to renew the aforementioned authorizations under the Environment Act for a term of ten (10) additional years (i.e., 2025-2034). The project will address Yukon Energy's continuing need to meet grid electricity demands including the need for sufficient winter peaking and back up electricity supply in the Yukon. The project will include the continued use of a mix of diesel and natural gas generators along with the associated storage of diesel fuel.

Prior to our submission of the Project Description next month please let me know if you have any questions or would like to discuss the project at all.

Thanks again.

Regards,

Travis



Travis Ritchie

Director, Risk & Compliance

Telephone: 867-393-5350 | Mobile: 867-333-0300



SustainableElectricityCompany™



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SM-YEC-20141008

YESAB

Yukon Environmental and
Socio-economic Assessment Board

Designated Office Evaluation Report

Mayo Secondary Thermal Generation Project

Project Number: 2023-0090

Proponent: Yukon Energy Corporation

Assessment Completion Date: October 6, 2023

Mayo Designated Office

mayo.do@yesab.ca

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Mayo Designated Office Evaluation Report

Mayo Secondary Thermal Generation Project – 2023-0090

Summary

The purpose of the Project is the installation and operation of a secondary thermal generating station near the Village of Mayo. The Project would consist of the installation and operation of five (5) diesel generators, located at the existing Mayo Hydro Generating Station, with a maximum production capacity of 4.9 MW. The Project would be located approximately 7 km north of the Village of Mayo, in the Traditional Territory of the First Nation of Na-Cho Nyak Dun. Construction is estimated to begin in late 2023 with project activities operating seasonally as needed, for 10 years.

The Mayo Designated Office solicited views and information on the Project from July 10 to August 29, 2023 which included an extension request by the First Nation of Na-Cho Nyak Dun and the pausing of the Project during the evacuation order for the Village of Mayo in response to the Talbot Creek wildfire. Comment submissions were received from a member of the public, the First Nation of Na-Cho Nyak Dun, Government of Yukon, Yukon Conservation Society and Yukon Energy Corporation.

Based on comments received and other considerations, the Mayo Designated Office identified the following valued environmental and socio-economic components that may be adversely affected by the Project: air quality, community wellness, aquatic resources and heritage resources. The Designated Office determined that the Project will result in, or is likely to result in, significant adverse effects to air quality, community wellness and heritage resources that can be mitigated and recommended terms and conditions.

The Decision Body, Government of Yukon, will review the Recommendation and the accompanying reasons described in this Evaluation Report. The Decision Body will issue a Decision Document that will either a) accept the recommendation, b) vary the recommendation, or c) reject the recommendation.

Assessment Outcome

Under s. 56(1)(b) of the *Yukon Environmental and Socio-economic Assessment Act*, the Mayo Designated Office recommends to the Decision Body that the Project be allowed to proceed, subject to specified terms and conditions. The Designated Office determined that the Project is likely to have significant adverse environmental and socio-economic effects in or outside Yukon that can be mitigated by those terms and conditions.

The terms and conditions of the recommendations are as follows:

1. The Proponent shall develop, in consultation with YG Environment, a suitable air quality monitoring plan and schedule, to ensure that air emissions comply with the applicable standards.
 - a. The Proponent shall conduct an air quality impact assessment for the Project using the 2025 Yukon Ambient Air Quality Standards. If air contaminant levels are found to exceed ambient air quality standards, the Proponent shall implement corrective measures that ensure that standards are met.
 - b. The monitoring and analysis results shall be made available to Government of Yukon, Environment.

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2. If the Proponent receives noise complaints, an acoustic audit or NIA shall be performed consisting of onsite measurements. Once complete, the Proponent shall share the results with the Regulator, and if required, work with the Regulator to determine additional measures to be installed to reduce noise.
3. The Proponent shall ensure appropriate noise control measures for each rental generator (i.e. silencers/mufflers, acoustic linings or acoustic enclosures) are installed and in good working condition at all times.
4. Upon discovery of a heritage resource the Proponent shall notify the Heritage Department of First Nation of Na-Cho Nyak Dun in addition to Government of Yukon, Heritage Department.

For more information, please contact:

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PART A. BACKGROUND

Part A provides the context and background information required for the assessment of the Mayo Secondary Thermal Generation Project (the Project). Section 1.0 identifies the requirement for an assessment under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA), while Sections 2.0 and 3.0 provide information and baseline data relating to the Project and project area. Section 4.0 identifies the scope of the assessment, including matters that were considered in evaluating the significance of potential effects of the Project.

1.0 REQUIREMENT FOR AN ASSESSMENT

The purpose of the proposed project is the installation and operation of a secondary thermal generating station near the Village of Mayo. While several activities are likely to be undertaken in conjunction with the Project, under s. 47 of YESAA, the Project is subject to an assessment by the Mayo Designated Office due to the following circumstances:

- The proposed activity is listed in column 1 of Schedule 1 of the *Assessable Activities, Exceptions and Executive Committee Projects Regulations* (Activity Regulations) and not listed in column 2 as excepted. The proponent proposes to undertake activities listed in Part 4, item 2 of the Activity Regulations. The specific activity is listed as:

Construction, operation, modification, decommissioning, or abandonment of, or other activity in relation to, b) a fossil fuel-fired electrical generation station.
- Is proposed to be undertaken in Yukon; and
- An authorization or the grant of an interest in land by a government agency, independent regulatory agency, municipal government, or First Nation is required for the activity to be undertaken.

1.1 Decision Body

Based upon the definition of Decision Body in YESAA, the Designated Office has identified Government of Yukon Environment as Decision Body for the Project. The Decision Body will review the Recommendation and the accompanying reasons described in this Evaluation Report. The Decision Body will issue a decision document that will either a) accept the recommendation, b) vary the recommendation, or c) reject the recommendation. While several authorizations may be required from the Decision Body, the authorizations associated with the specific activity listed above in Section 1.0 are identified in Table 1. This information is based on the project proposal and other information submitted to the Designated Office during the assessment.

Table 1: The Decision Body

Decision Body	Authorization Required	Act or Regulation
Government of Yukon	Air Emissions Permit	<i>Environment Act, Air Emissions Regulation</i>

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2.0 PROJECT DESCRIPTION

2.1 Proponent Information

Yukon Energy Corporation (the Proponent) is proposing the Project. Contact information for the Proponent is available on the YESAB Online Registry (YOR) in the project proposal.¹

2.2 Geographical Context

The location of the Project is shown in Figure 1. Table 2 includes further details on the project's location and other geographical information.

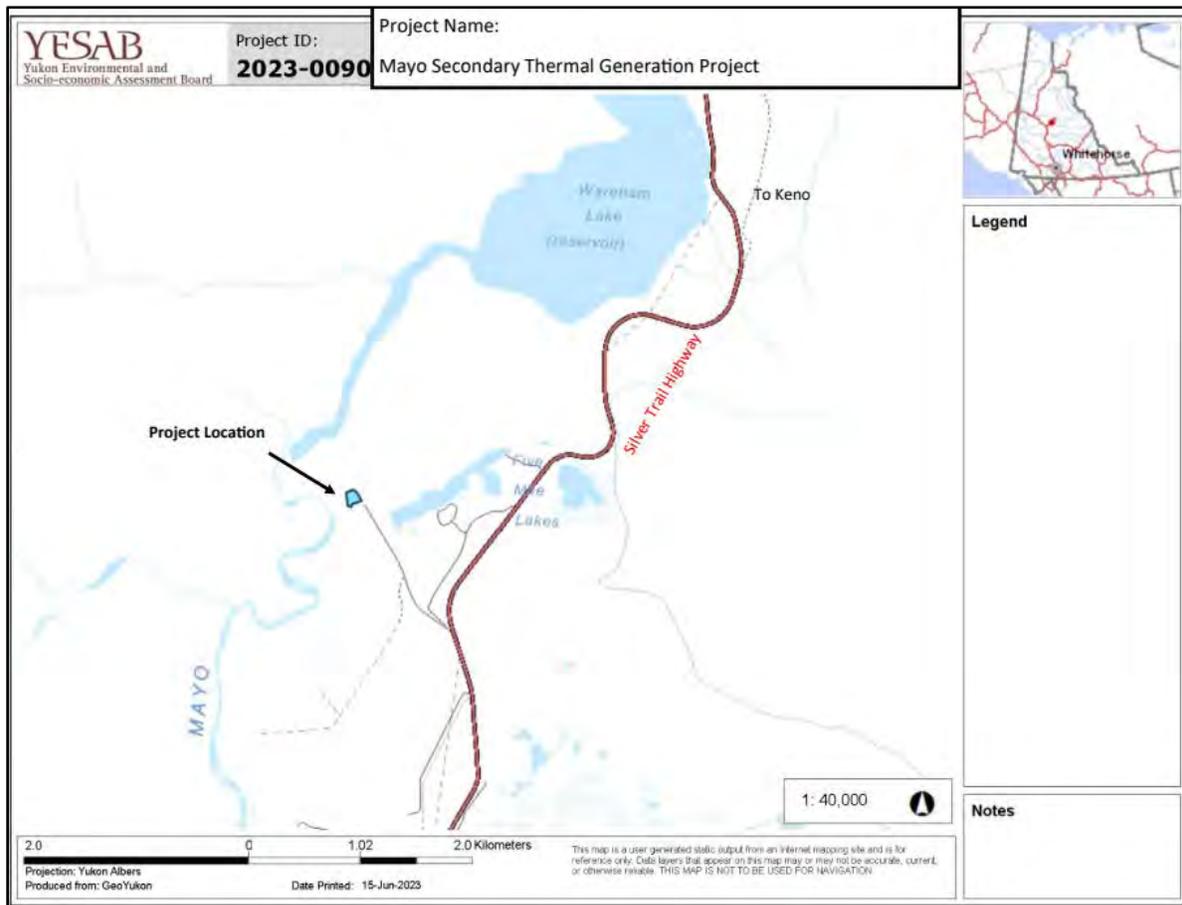


Figure 1: Project Location

¹ YOR 2023-0090-0001
October 6, 2023

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Table 2: Project Location, Coordinates and Geographical Parameters

Project Coordinates: Map Sheet: 105M12	Decimal Degrees	
	63.65279 °N	135.90721 °W
	63.65392 °N	135.90727 °W
	63.65381 °N	135.90558 ° °W
	63.65315 °N	135.90532 °W
First Nation Traditional Territories Involved:	First Nation of Na-Cho Nyak Dun	
Drainage Region:	Major Drainage Area: Yukon Drainage Area Sub Drainage Area: Stewart Sub-sub Drainage Area: Upper Stewart	
Nearby Watercourses or Waterbodies:	Mayo River	
Land Use Planning Region:	Not Applicable	

3.0 PROJECT SCOPE

The project scope defines the project to be assessed and includes all activities described in the project proposal and any subsequent information provided by the Proponent. The project scope includes the project summary, activities, and details, as well as measures that will support the mitigation of adverse project effects.

Project Summary:

The purpose of the Project is the installation and operation of a secondary thermal generating station near the Village of Mayo. The Project would consist of the installation and operation of five (5) diesel generators, located at the existing Mayo Hydro Generating Station, with a maximum production capacity of 4.9 MW. The Project would be located approximately 7 km north of the Village of Mayo, in the Traditional Territory of the First Nation of Na-Cho Nyak Dun. Construction is estimated to begin in late 2023 with project activities operating seasonally as needed, for 10 years.

Project Activities:

Laydown and Siting

- On previously disturbed land currently owned by the Proponent
- Site grading, compacting, and installation of standard grounding grid

Installation and Operation of Five (5) Rental Diesel Generators

- EPA Approved Tier 2 Caterpillar 3516C Diesel Generators, each with a 1.8 MW nameplate capacity (for a total of 9 MW nameplate capacity)
- Stored in containerized mobile trailer units and placed on a gravel pad at the site.
- Maximum operating (production) capacity of 4.9 MW
- For use during peak demand (winter) and during N-1 emergencies
- All five generators may be used at once; however the intention is to only operate up to three at a time and have two generators reserved for backup use only

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- Connected to Yukon Energy's SCADA system and will be configured to operate remotely, as required

Fuel Storage and Use

- Diesel: Up to 150 000 L in two 75 000 L portable double-walled storage tanks
 - Estimated maximum fuel usage of up to 62 000 L per week between December and April, annually
 - Delivered by B-Train fuel truck
 - Installed with spill prevention measures including secondary containment, continuous monitoring, and recovery system

Communication

- Winter 2023-2024 generation capacity report communicated to the First Nation of Na-Cho Nyak Dun and the Village of Mayo in spring of 2024

Decommissioning

- Seasonally decommissioned
- May be relocated offsite, depending on generator supplier's other customer needs, or kept on-site

3.1 Project Details

3.1.1 Site Preparation

As mentioned above, the Project occurs on land that is already disturbed and owned by the Proponent. The installation of a grounding grid as well as minimal site grading and compacting will be needed. However, no clearing is required for this Project. Construction is proposed to occur as soon as possible once permitted.

3.1.2 Installation and Operation

The Proponent proposed to install up to 5 rental/mobile EPA Approved Tier 2 Caterpillar 3516C Diesel Generators, each with a 1.8 MW nameplate capacity (for a total of 9 MW nameplate capacity). The purpose of this additional capacity is to serve as a backup to the hydro generation during peak hours of energy demands during the winter months and in case of emergency.

No more than three diesel generators are intended to be operated at any one time, with the two other units intended to be used only as backup in case of an emergency. However, the potential for all 5 generators to run at the same times exists. The generators will be in mobile trailer units, placed on an existing gravel pad. The maximum operating (production) capacity will not exceed 4.9 MW at anytime, outside of emergencies. If in response to an emergency as defined in S. 49(1) of YESAA, an operating capacity above 4.9 MW is deemed necessary, approval from relevant authorities will be sought and a report will be sent post-emergency to the Designated Office as per YESAA section 49(2).

The diesel generators will be operated remotely in Mayo by Yukon Energy Staff as needed. Additional staff may be hired to operate the facility or to supervise fuel delivery. The generators will be connected to the Yukon Energy's SCADA system.

3.1.3 Fuel Use and Storage

Up to 2 portable double-walled storage tanks with a capacity of 75 000 L each will be installed as well to supply the new generators. They will be installed following spill prevention measures, including secondary

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containment, continuous monitoring, and recovery systems. Diesel consumption is expected to be approximately 62 000 L per week between December and April, annually.

The nearest waterbody is the Mayo River located approximately 150 m away from the Project.

3.1.4 Communication

The Proponent is planning on communicating again in the spring of 2024 regarding the usage of power produced during the winter of 2023-2024.

3.1.5 Decommissioning

The units will be seasonally decommissioned as they will not be needed outside of the winter season. They may be relocated offsite and used in other locations during the spring to fall, depending on the generator supplier's needs.²

4.0 SCOPE OF THE ASSESSMENT

The scope of the assessment identifies the matters considered in an assessment. The scope of assessment is determined by considering the activities described in the scope of the Project (identified in Section 3.0), matters set out in s. 42(1) of YESAA, and by identifying the valued environmental and socio-economic components (VESECs) that may be adversely affected by project activities. Views and information submitted during the assessment help to identify VESECs and the potential adverse effects of the Project to these VESECs.

4.1 Views and Information Submitted

The Mayo Designated Office solicited views and information on the Project from July 10 to August 29, 2023 which includes extension requests by the First Nation of Na-Cho Nyak Dun³ and the pausing of the Project to respect the evacuation order in response to the Talbot Creek wildfire.⁴ Comment submissions were received from Government of Yukon (YG),⁵ the Yukon Conservation Society (YCS),⁶ the First Nation of Na Cho Nyak Dun (FNNND)⁷ and a member of the public.⁸ YG Highways and Public Work have no concerns with the Project. The Proponent has also provided a comment on the Project that was intended to address some of the concerns expressed within the comments submitted.⁹ The member of the public who commented submitted a second comment to respond to the Proponent comment.¹⁰ And a third comment during the prepare recommendation.¹¹

² YOR 2023-0090-0001

³ YOR 2023-0090-0019

⁴ YOR 2023-0090-0024;0025

⁵ YOR 2023-0090-0021

⁶ YOR 2023-0090-0023

⁷ YOR 2023-0090-0027

⁸ YOR 2023-0090-0016

⁹ YOR 2023-0090-0029

¹⁰ YOR 2023-0090-0030

¹¹ YOR 2023-0090-0038

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4.1.1 Acoustic Quality

- The member of the public expressed concerns regarding the noise the Project will generate. They mentioned that noise exceeds BC standards in Faro and Whitehorse where other rental diesel generators have been installed. Similar noise issues are to be expected at the Mayo location.
- Within their comment YCS mentioned that noise from the rented diesel generator is an issue for residents. They requested that the Proponent explain how noise issues will be addressed to reduce noise disturbance to residents and the Five Mile Lake Campground users.
- FNNND indicated that the Proponent has not provided any mitigation regarding noise disturbance. They express concerns regarding the increase of noise from the Project and the growth of residential development in the area.
- The Proponent noted the distance between the closest receptor (>750 m for the campground and >1 100 m for residences) and the likelihood that units will operate at times when people are less likely to be outside. Therefore, noise disturbance is not expected to cause significant effects. They also mentioned that if public concerns arose regarding noise, they would be addressed on a case-by-case basis.

4.1.2 Air Quality

- Within their comment, YG Environment highlighted that the air quality report submitted by the Proponent is not relevant to the project location and that a report specific to Mayo should be provided. This report should include the 2025 Yukon ambient air quality standards. This should show potential impacts from reduced air quality.
- Additionally, YG Environment indicated that the Proponent should clarify if users of the Five Mile Lake territorial campground will be affected by the Project.
- YCS noted that air pollution from the combustion of fossil fuels is an adverse effect of this Project. They requested that the Proponent specify if monitoring and mitigation measures will take place to reduce this effect.
- The Proponent noted that YG Environment, Standards and Approvals Branch may require a Level 1 (Screening) Assessment of the Project at the permitting stage. The Proponent will include this information in the application for the Project air emissions permit at that time.
- The Proponent also indicated that impacts to the Five Mile Lake Territorial Campground are not expected as the generators will be used predominately in winter and considering that the campground is located >750 m away from the facility.
- Additionally, the Proponent mentioned that annual reporting of facility emissions is a requirement of the air emission permit that will be issued for this Project. This reporting is expected to be part of the ongoing monitoring and follow-up program required under the air emissions permit for this Project.

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4.1.3 Public Safety

- Within their comment, FNNND expressed concern regarding the increase in traffic from the Project. It will involve an increase of industrial traffic on Wareham Lake Road which is becoming a residential area.

4.1.4 Heritage Resources

- Within their comment, YG Cultural Services Branch noted that there is one historic site that overlaps with the project location (105M/12/154, Fairbanks Morse Diesel Generator). Additionally, there is a historic site adjacent to the project location (105M/12/114, Wareham Residence/Garage). Several buildings located within or near the project area are included in the Yukon Historic Sites Inventory. Other heritage resources may be present in the area as it has not been inventoried yet. Compliance with standard terms and conditions should reduce impact to heritage resources.

4.1.5 Aquatic Resources

- Within their comment, YCS expressed concern regarding the transport of fish around the dam. They asked that the Proponent explain if alternative means to transport fish past the dam have been considered.
- FNNND expressed concern regarding the increase in fuel transport that could lead to spills and contamination of the nearby waterways.

4.1.6 Use of Fuel

- YCS noted in their comment that the Proponent should provide an updated fuel spill plan.
- YCS also indicated that the Project would require diesel fuel from outside the Yukon and they requested that YESAB consider the upstream processing for the diesel fuel that will be imported into the Yukon.
- The Proponent indicated that risk with the use of fuel is mitigated by their adherence to applicable codes and standards and that in the event of spills, a contingency plan is in place with the appropriate resources to respond.
- The Proponent also noted that maintenance of a site-specific spill plan is a requirement of Fuel Storage Tank permits which will be issued for this Project.

4.1.7 Climate Change Considerations

- YCS mentioned that Our Clean Future aims at reducing emissions from diesel generators by 30%. The Proponent should keep track of the quantity of fossil fuel used by this Project.
- YCS also noted that considering the context of the climate emergency, the Proponent should explain why rented diesel generators were chosen over renewable energy for this Project.
- FNNND noted that the lifespan of the Project is unclear. The installation of diesel generators should be a short-term necessity until a non-fossil-fuel-dependent solution is underway.

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- A member of the public noted that diesel as a source of energy was growing in the Yukon and that the Proposal should reflect that growth.¹²
- The member of the public also indicated that Whitehorse and Faro's rental diesel were both at the bottom of the stacking order when these projects were initially proposed. While Mayo might be near the bottom of the stacking order for now, this will not be the case in the future when Yukon Energy selects the next site for rental diesel. Additionally, Atlin and Moon Lake energy projects lack funding and are not likely to be operational by 2028.¹³
- Within a comment, the Proponent stated that Yukon Energy's objective is to maximize renewable energy and to have on average 93% renewable electricity by 2030. However, firm electrical backups such as diesel will always be needed as the Yukon has an island grid with no connection to electrical energy from outside.
- Additionally, the Proponent indicated that information about overall generation is provided by Yukon Energy on their website and annual reports, including total energy generated and the proportion that is generated via renewable sources.

4.1.8 Assessable Activities and Level of Assessment

- A member of the public indicated that the Proponent intends to increase the usage of rental diesel generator units in the future. They noted that the Proponent mentioned that they propose an operation capacity of 4.9 MW, below 5 MW to avoid going through the Executive Committee process.¹⁴
- The member of the public expressed concern as it seems as if the Proponent is planning on using the generators at a higher capacity, using Section 49(1) of YESAA and avoiding having to go through a higher level of assessment.¹⁵
- Furthermore, the member indicated that the Proponent requested in 2017, emergency usage of rental diesel (without YESAB assessment) until 2021, claiming they will have a "permanent solution" to address the capacity gap by then and will no longer need the rentals. With the proliferation of rental diesel in Mayo and Faro, the capacity gap has not been addressed, and won't be until Atlin and Moon Lake are built.¹⁶
- The member of the public also expressed concerns on project splitting. They questioned "in permitting the proposed installation of 9MW with a 4.9MW assessment, is YEC going to continue adding <5MW segments in the future to avoid an EC screening?"¹⁷
- Within their comment, the member of the public indicated that the Proponent stated in the General rate Application (GRA) that additional permanent diesel generators could be installed at the Mayo plant. Additionally, the GRA mentioned that 5 additional rented diesel generator are

¹² YOR 2023-0090-0031

¹³ YOR 2023-0090-0031

¹⁴ YOR 2023-0090-0016;0031

¹⁵ Ibid

¹⁶ YOR 2023-0090-0031

¹⁷ YOR 2023-0090-0038

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needed to address power demands for the upcoming winter. However, the GRA does not mentioned that production capacity will be limited to 4.9 MW.¹⁸

- YCS noted that this Project requires diesel fuel from outside the Yukon and requested that YESAB consider the upstream processing for the diesel fuel that will be imported into the Yukon.
- The Proponent indicated that they expect that the requested maximum operating capacity of 4.9 MW will be prescribed and enforceable under the Air Emissions Permit that is issued for the Project.

4.1.9 Land Use Planning

- Within their comment, FNNND raised the issue of not having completed a regional land use plan for the area. However, they mentioned that they do not oppose the Project as they recognize that some infrastructures are essential to be constructed.

4.1.10 Socio-Economic Benefits

- Within their comment, FNNND mentioned that the Project may provide an opportunity for economic benefit through partnership and planning. FNNND requested that the development of a project agreement with the Nation be initiated to facilitate some of these benefits and forward-looking planning.
- The Proponent mentioned that they agree with FNNND's ideas and as part of project developments of this nature, YEC actively seeks out economic opportunities with local First Nation Governments and communities.

4.1.11 Regulatory Reminder

- YG Environment noted that under the Environment Act and Air Emissions Regulations, they cannot provide authorization to operate above the assessed capacity in the event of an emergency.

4.2 Concerns and Interests Considered but not Assessed Further

The Designated Office considered the following information but determined there are no known pathways of effects. This section explains how the Designated Office considered relevant information, project design features, and relevant legislation that eliminate pathways of adverse effects.

4.2.1 Effect on Fish

As presented above, YCS expressed concern regarding the transport of fish around the dam. Since this Project does not involve the transport or salvage of fish or work in water, the Designated Office has determined that there is no pathway for effects to fish. As such, this concern is not addressed further in this report.

¹⁸ Ibid

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4.2.2 Socio-Economic Benefits

As mentioned above, within their comment, FNNND requested that the development of a project agreement with the Nation be initiated to facilitate some of the benefits created by the Project and forward-looking planning.¹⁹ The Proponent mentioned that they are in agreement with FNNND and actively seek out economic opportunities with local First Nation Governments and communities.²⁰

YESAB does not assess potential benefits resulting from a project, but rather adverse effects on identified valued components a project may have. Therefore, potential socio-economic benefits from the Project will not be discussed further in this report, but YESAB actively supports this endeavour.

4.3 Determination of Significance

In order to mitigate a potential adverse effect, the Designated Office must first find that the effect is significant. In addressing what may constitute a “significant” adverse effect, the Designated Office considered the following effects characterization criteria:

Magnitude: The extent of a change from baseline conditions as a result of a proposed project.

Likelihood: The probability that an adverse effect will occur.

Geographic Extent: The spatial area(s) in which an effect is predicted to be detectable.

Duration: The length of time an effect is predicted to last.

Frequency: How often an effect is predicted to occur.

Timing: When an effect is predicted to occur.

Reversibility: The degree to which a valued environmental or socio-economic component can be returned to baseline conditions or other established reference points after proposed activities have ceased.

Context: The particular environmental and/or socio-economic context within which the project occurs. Context is related to the importance of valued environmental and socio-economic components, their resiliency to potential effects and the extent to which those valued components may successfully adapt to change.

Not all the factors are relevant to all effects; a specific effect's characterization and corresponding significance determination may rely on a subset of these criteria.

4.3.1 Consideration of Cumulative Effects

With regards to cumulative effects, subsection 42(1)(d) of YESAA instructs Designated Offices to consider:

42(1)(d) the significance of any adverse cumulative environmental or socio-economic effects that have occurred or might occur in connection with the project or existing project in combination with

¹⁹ YOR 2023-0090-0027

²⁰ YOR 2023-0090-0029

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the effects of other projects for which proposals have been submitted under subsection 50(1) or any activities that have been carried out, are being carried out or are likely to be carried out in or outside Yukon;

(d)(1) any studies or research undertaken under subsection 112(1) that are relevant to the project or existing project;

(d)(2) the need for effects monitoring.

The consideration of cumulative effects is a key contextual factor in determining the significance of potential project effects.

4.4 Other Matters Considered

4.4.1 YESAA, Assessable Activities and Level of Assessment

During the Seeking Views and Information stage, some participants asserted that the Project should be assessed by the Executive Committee, rather than the Designated Office, as the total installed (nameplate) capacity of the Project will be higher than the threshold that triggers an Executive Committee screening.²¹ A member of the public and YCS both expressed the concern that Yukon Energy Corporation (YEC) is proposing to install 5 generators with inameplate capacities of 1.8 MW each, for a total capacity of 9 MW, but only asking for a permitted capacity of 4.9 MW. They asserted that YEC is seeking to avoid having to go through the Executive Committee assessment process. Their view was that the Project should be assessed at the Executive Committee level since the facility will have a total nameplate capacity of 9 MW.

The level of assessment required under YESAA is determined through the application of the *Assessable Activities, Exceptions and Executive Committee Projects Regulations* (Regulations). Specifically, if an activity included within the scope of the proposed project is specified in Schedule 3 of the Regulations, then the proposal for that project must be submitted to the Executive Committee. If project activities don't come within Schedule 3, but are listed in Schedule 1 of the Regulations, and not excepted, then the proposal for that project must be submitted to the Designated Office.

In this instance, Schedule 3 of the Regulations includes the following trigger:

25 Construction, decommissioning or abandonment of
...(b) a fossil fuel-fired electrical generating station with a production capacity of 5 MW or more.

In turn, Part 4, item 2 of Schedule 1 of the Regulations identifies the following trigger:

Construction, operation, modification, decommissioning or abandonment of, or other activity in relation to, ...
(b) a fossil fuel-fired electrical generating station

“Production capacity” is not defined in the Regulations, and the remainder of the text of s.25 of Schedule 3 does not assist with the interpretation of the phrase.

The Designated Office defines the phrase “production capacity” in the context of s.25 of Schedule 3 as meaning the proponent’s intended operational production capacity, rather than the theoretical maximum production capacity a project’s proposed infrastructure, equipment and operation could allow. This

²¹ YOR 2023-0090-0016

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interpretation is supported by caselaw interpreting the phrase in the context of different legislation.²² It is further supported by apparent purpose underlying the approach implemented through YESAA and the Regulations to determining assessability and level of assessment. Specifically, the Regulations employ unambiguous, quantifiable measures to determine assessability and level of assessment. In the context of different legislation, the B.C. Court of Appeal has found that such thresholds:

...provide bright-line rules that are designed to be easily applied by proponents to determine if their proposed project is reviewable.²³

Furthermore, much like the legislation which was considered by the B.C. Court of Appeal in the above case, YESAA²⁴ and the Regulations require proponents to submit proposals to the appropriate assessment entity. The purposes of YESAA are multi-faceted. The purpose of the above-described legislated approach with respect to assessability and level of assessment, however, appears to reflect the purposes in YESAA regarding timeliness, efficiency, and certainty.²⁵ These purposes are advanced by clear, bright-line rules which do not require extrapolations or considerations beyond the proponent's stated, intended operational production capacity. Consequently, for the above reasons, the Designated Office defines "production capacity" in the context of s.25 of Schedule 3 of the Regulations as meaning the proponent's intended operational production capacity, rather than a theoretical maximum which could be derived through a consideration of what the proponent's proposed infrastructure, equipment and operation could allow.

As applied to the Project, this means that the Project does not trigger s.25 of Schedule 3 of the Regulations, and is required to be assessed by the Designated Office. Specifically, the Proponent has clearly stated that their intended operational production capacity is 4.9 MW, and that they are seeking approval to operate at a capacity of "up to 4.9 MW of fossil fuel-fired electrical generating equipment at any one time at the project site".²⁶ Accordingly, the production capacity of the Project falls below the threshold set out in s.25 of Schedule 3, and does not trigger an EC screening.

Note that, in view of references to "emergencies" in the Proposal, and the suggestion from a member of the public that the Proponent intended to rely on s.49 of YESAA in the future,²⁷ the Designated Office sought clarification from the Proponent that the operation of the Project will not exceed 4.9 MW at any time, even during emergencies.²⁸ In response, the Proponent:

- outlined their understanding of the process which would be applied in the event that a person were to seek to undertake emergency works pursuant to s.49 of YESAA; and
- re-iterated that they are seeking authorization from the Yukon Government to operate up to 4.9 MW of fossil fuel-fired electrical generating equipment at any one time at the Project site.²⁹

Ultimately, the potential application of s.49, in the future, to a particular project or activity is a matter to be resolved between the Proponent and regulator, and is outside of the Designated Office's jurisdiction.

²² Fort Nelson First Nation v. British Columbia (EAO) 2015 BCCA 500; *Friends of Davie Bay v. British Columbia* 2012 BCCA 293

²³ Fort Nelson First Nation v. British Columbia (EAO) 2015 BCCA 500.

²⁴ YESAA s.50 (1).

²⁵ YESAA, s.5(2)(i) and (j)

²⁶ YOR 2023-0090-0010

²⁷ YOR 2023-0090-0016;0031

²⁸ YOR 2023-0090-0007

²⁹ YOR 2023-0090-0010

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Furthermore, in this case the Proponent has clearly re-iterated that the intended operational production capacity of this Project was a maximum operation of 4.9 MW. Accordingly, the existence of a provision under YESAA exempting from assessment certain emergency activities does not alter or impact the Designated Office's conclusion that the intended operational production capacity of the Project falls below 5 MW and is thus not subject to a screening by the Executive Committee.

Out of Territory Transport of Fuel

Regarding comments highlighting diesel fuel being transported from outside of the Yukon, the Designated Office does not have the authority to include within the scope of the project assessed activities happening outside of the Yukon.³⁰

4.4.2 Our Clean Future

Government of Yukon has established *Our Clean Future* in partnership with Yukon First Nations, transboundary Indigenous groups and Yukon Municipalities over the course of 3 years to identify areas of focus for the next 10 years to respond to the climate emergency. The report was issued in 2020 and includes 4 goals to reach by 2030 to achieve the Government's vision of a clean future with healthy people, communities and ecosystems. These include:³¹

- Reduce Yukon's greenhouse gas emissions by 45% by 2030
- Ensure Yukoners have access to reliable, affordable and renewable energy with 97% of electricity on Yukon's main electricity grid coming from renewable sources by 2030 and use 30% less diesel for electricity generation in the communities that are not connected to the main electricity grid
- Adapt to the impacts of climate change
- Build a green economy that will help Yukoners take care of the natural environment so it can support long-term jobs and economic activity, continued traditional and cultural activities and strong mental and physical wellbeing

The plan will seek to create opportunities for individuals, businesses and organizations to take part in reducing emissions, enhancing energy security, making Yukon more resilient and building a green economy through financial support, information and advice.

Included in the top priorities for the next 10 years to address climate change, meet energy needs and build a green economy are tangible actions that help set the path to reach greenhouse gas emission reduction targets, renewable energy production and climate change resiliency. Specific to the Project, the plan outlines action in the Energy production section of the report, identifying a shift to seeking more

³⁰ The long title of the Act, as well as sections 47 and 66.2 of the Act support the conclusion that - except in the narrow circumstances set out in s.93 - the scope of the project assessed by DOs, EC and panels of the Board is limited to activities in Yukon. This conclusion is further supported by the absurd consequences which would ensue from interpreting YESAA as allowing assessors to scope activities outside of Yukon into the project. More specifically, it would result in assessors making recommendations to decision bodies in respect of activities which the latter had no authority over.

³¹ Government of Yukon, 2020

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renewable energy for heating and electricity combined with upgrades to the electricity grid and energy storage.

Comments received during the Seeking Views and Information stage express concerns regarding the Project not being in line with Our Clean Future plan. YCS requested that “the Proponent keep track of the quantity of fossil fuels consumed related to this Project. This would include fuels consumed on-site and fuels consumed associated with transporting the fuel to site.”³²

As mentioned in Section 4.1.7, the Proponent has indicated in a comment that Yukon Energy’s objectives are to maximize renewable energy and to have on average 93% renewable electricity by 2030. However, firm electrical backups such as diesel will always be needed as the Yukon has an island grid with no connection to electrical energy from outside. Furthermore, information about overall generation is provided by Yukon Energy on their website and annual reports, including total energy generated and the proportion that is generated via renewable sources.³³

The Designated Office does not have the authority to assess whether the proposed Project is compliant with *Our Clean Future* plan. Therefore, this element will not be discussed further in this report. The Proponent also indicated within a comment submission that fuel consumed could be found within the annual reporting of facility emissions as “the calculated emissions are partly a function of fuel consumed.”³⁴

4.5 Valued Environmental and Socio-economic Components Evaluated

The Designated Office has identified the following VESECs as having the potential to be adversely affected by the Project. Project effects to the following VESECs are discussed further in Part B of this report:

- Air Quality (Section 5.0)
- Community Wellness (Section 6.0)
- Aquatic Resources (Section 7.0)
- Heritage Resources (Section 8.0)

³² YOR 2023-0090-0023

³³ YOR 2023-0090-0029

³⁴ YOR 2023-0090-0029

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PART B. ASSESSMENT AND REASONS FOR RECOMMENDATION

Part B of this evaluation report presents the effects assessment of the Project on VESECs identified in Section 4.5. For each VESEC identified, an overview is provided followed by a discussion on relevant contextual factors, an effects characterization analysis and a determination of significance. Where adverse project effects are determined to be significant, terms and conditions are recommended.

5.0 AIR QUALITY

5.1 Overview

The burning of diesel fuel during the operation of the Mayo Secondary Thermal Generating Station (MSGs) has the potential to result in reduced air quality beyond the project area due to the emission of diesel exhaust, which contains approximately 40 toxic substances. Reduced air quality can affect the surrounding natural environment in many ways, including altering the chemical composition of soils, contributing to the acidification of lakes and other waterways, causing acid rain, and contributing to global warming and climate change, which includes increasing occurrences of heat waves, droughts, wildfires and more.

The Designated Office has determined that the Project is likely to result in significant adverse effects to air quality.

5.2 Spatial and Temporal Scope

The spatial scope of potential cumulative effects on air quality is a 5 km radius around the project area to capture existing development and activities.

In the Proposal, the Proponent noted it is unclear how long the generator capacity at this location will be required. There is the potential that the generation capacity may not be needed for the entire 10 years of the Air Emissions Permit as well as the potential for the Proponent to apply for a permit renewal at the end of the 10-year life of the permit. Therefore, effects to air quality could persist for the duration of the operation and beyond if renewed.³⁵ However, if renewed, the operation would be required to undergo an additional YESAB assessment at which time, the continuation of air emissions would be assessed at that time. Therefore, the temporal scope for effect to air quality from the Project is 10 years, which is the length of the Air Emissions Permit being sought.

Contextual considerations provide the environmental and/or socio-economic setting within which the Project will occur. It includes the reference conditions and past, present and likely future activities that may occur in the spatial scope of the assessment and any other relevant considerations.

5.2.1 Reference Conditions

The Project will be located on property already owned by the Proponent, adjacent to an easement for utility purposes. The property includes the Mayo Generating Station. It is located along the Wareham Dam Road, a little more than 1 km away from the Silver Trail Highway that connects Mayo and Keno City. Multiple country residential properties and one agricultural area are located approximately 1 km south of the Project. Closer to the Project, approximately 650 m, there is the Five Mile Lakes Campground and

³⁵ YOR 2023-0090-0001

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Recreation Site.³⁶ The campground is used seasonally from early May to early October, whereas the recreation site is used year-round by residents.³⁷

5.2.2 Consideration of Past, Present, and Likely Activities

As mentioned in a previous assessment regarding a similar project,³⁸ although Yukon Energy's 10-Year Renewable Electricity Plan aims to reduce the dependency on fossil fuels as a source of power, they have not identified reliable ways to do so. Projects that would help move toward that goal include the construction of the new facility on Moon Lake, the expansion of the Atlin hydro plant and the expansion of the transmission network in the Southern Lakes region. However, YEC also notes that regulatory uncertainties could lead to proposed projects being delayed or cancelled, resulting in an increased reliance on thermal generation for energy and ongoing rentals of temporary diesel engines.

Additionally, as mentioned by FNNND in their comment, the residential development near the project area is expected to increase in the future,³⁹ given the lack of a regional land use plan. Nearby activities that may result in residual effects to air quality within this spatial scope include existing highway traffic on the Silver Trail Highway and heating of nearby residences.

5.2.3 Relevant Legislation

The Designated Office considered the following legislative requirements. This list is not exhaustive; rather, the Designated Office reviewed this specific legislation because of its direct relevance to air quality.

- *Canadian Environmental Protection Act (1999)*
 - *Sulphur in Diesel Fuel Regulations*
- *Environment Act (Yukon)*
 - *Air Emissions Regulations*
 - Section 3 regulates a 40% maximum opacity of visible emissions from a source not regulated by the terms and conditions of a permit under the regulations.
 - Section 4 prohibits the use of fuel that has a sulphur content over 1.1% except as authorized by a permit under the regulations.
 - Section 6 prohibits the release of any air contaminant to such extent or degree as (a) may cause or be likely to cause irreparable damage to the natural environment; or (b) in the opinion of a health officer, cause actual or imminent harm to public health or safety.
- *Occupational Health Regulations*

³⁶ GeoYukon

³⁷ Government of Yukon, 2023

³⁸ YOR 2021-0115-0021

³⁹ YOR 2023-0090-0027

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5.3 Effect Characterization

5.3.1 Project Effect: Decreased Ambient Air Quality

The operation of diesel generators to produce energy requires the combustion of diesel and the creation of diesel exhaust. Diesel exhaust is a complex mixture of combustion products.⁴⁰ The composition of the mixture is dependent on fuel composition, the design of the engine, operating conditions, lubricating oil, additives, and the emission control system.⁴¹

Diesel exhaust is known to include approximately 40 toxic substances. Among these toxic substances are total particulate matter (TPM), inhalable particulate matter less than or equal to 10 microns (PM₁₀), respirable particulate matter less than or equal to 2.5 microns (PM_{2.5}), sulphur oxides (SO_x), nitrogen oxides (NO_x), carbon oxides (CO_x), ground-level ozone (O₃), and volatile organic compounds (VOC's). The release of toxic substances into the atmosphere can affect the surrounding environment in many ways, such as altering the chemical composition of soils, contributing to acidification of lakes and other waterways, causing acid rain, and contributing to global warming and climate change, which includes increasing occurrences of heat waves, droughts, wildfires and more.

The Yukon Ambient Air Quality Standards (YAAQS) are the maximum concentrations of pollutants acceptable in ambient air throughout the Yukon (see Table 3 below). They are to be used to determine the acceptability of emissions from proposed and existing developments. In 2010, YG Environment adopted the YAAQS for SO₂, O₃, Total Suspended Particulate (TSP), CO, PM_{2.5} and NO₂. In 2019, these standards were updated, including reducing the standards for NO₂ from 401 µg/m³ to 113 µg/m³. These standards were used in the Air Dispersion Modelling Assessment for the Faro facility that was provided by the Proponent.⁴² These standards are also in line with Canada-wide minimum standards, although some jurisdictions including British Columbia, have enacted more stringent requirements. These standards will again be updated in 2025. The standards presented in Table 3 will be in effect starting January 1, 2025, which is within the temporal scope of the Project.

⁴⁰ Ullman, 1989

⁴¹ Olbert, 1973

⁴² YOR 2023-0090-0036

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Table 3: Yukon Ambient Air Quality Standards 2019-2025⁴³

Pollutant	Averaging Time	Current Standard	2025 Standard (effective Jan 1, 2025)
Ground Level Ozone (O ₃)	8 Hour	123 ug/m ³	119 ug/m ³
Nitrogen Dioxide (NO ₂)	1 Hour	113 ug/m ³	79 ug/m ³
	Annual	32 ug/m ³	23 ug/m ³
Particulate Matter Coarse (PM ₁₀)	24 Hour	50 ug/m ³	50 ug/m ³
Particulate Matter Fine (PM _{2.5})	24 Hour	27 ug/m ³	27 ug/m ³
	Annual	8.8 ug/m ³	8.8 ug/m ³
Sulphur Dioxide (SO ₂)	1 Hour	183 ug/m ³	170 ug/m ³
	Annual	13 ug/m ³	11 ug/m ³
Total Suspended Particulate (TSP)	24 Hour	120 ug/m ³	120 ug/m ³
	Annual	60 ug/m ³	60 ug/m ³

Notes:

All ambient air quality measurements are referenced to a standard temperature of 25°C and pressure of 101.3 kiloPascals. For comparison purposes, results should be expressed in these standard conditions. ug/m³ - micrograms per cubic meter.

The Proponent has provided an Air Dispersion Modelling Assessment for the Faro facility, but not for the facility in Mayo.⁴⁴ In this assessment, five criteria air contaminants were evaluated and modelled between 2016 and 2018 for two modelling scenarios: Existing Permitted Emission Capacity Scenario (10.6 MW) and Future Expanded Emission Capacity Scenario (16 MW) of the Faro facility. The assessment showed that although the air contaminant concentrations were higher in the Future Scenario, the maximum concentrations of air contaminants were below their respective ambient air quality criteria under the YAAQS, except for short-term (1-hour) NO₂ exceedances in both scenarios. According to the assessment, the exposure levels of NO₂ exceedances to humans are predicted to be low as they are expected to occur during nighttime (6:00 pm to 7:00 am) in the cooler months of the year (January through April and September through December) when outdoor human activity is limited. The assessment also noted that the emissions from the Faro facility are expected to be much lower than modelled and overall air quality impacts on the Town of Faro are not expected to be significant, as the modelling scenarios assumed maximum operating conditions and continuous which is not expected.⁴⁵

The Proponent indicated in an Information Request Response that the Faro facility had an operating capacity 3 times higher than the one proposed for this Project.⁴⁶ They added that both locations had “reasonably comparable topographic and meteorological conditions.” They also highlighted that the assessment concluded that there was an extremely low risk for effects to air quality from the project.

⁴³ Government of Yukon, 2019

⁴⁴ YOR 2023-0090-0036

⁴⁵ YOR 2023-0090-0036; Attachment 1

⁴⁶ YOR 2023-0090-0036

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Therefore, effects on air quality at the MSGS were not expected to be significant and no monitoring measures were proposed during operations.⁴⁷ The Proponent also provided the following mitigation regarding effects to air quality:

- Despite being a low-risk emissions source given its size and distance to receptors, Yukon Energy understands that YG Environment, Standards and Approvals Branch may require a Level 1 (Screening) Assessment of the Project at the permitting stage. As it may be requested, Yukon Energy will include such information in the application for the project air emissions permit at that time.⁴⁸
- Compliance with the conditions of the air emissions permit is expected to mitigate the potential for environmental and/or human health effects to result from Yukon Energy's occasional use of the thermal generators installed for this Project.⁴⁹

However, as illustrated above in Table 3, the standards for NO₂ will be further reduced in 2025, resulting in the potential for much higher NO₂ exceedances when compared to the 2019 standards for NO₂. Given the Project's temporal scope of 10 years (until approximately 2033), most of the Project will rely on the 2025 YAAQS.

As stated by the Canadian Council of Ministers of the Environment (CCME),

*Short-term exposure to NO₂ can elicit a range of adverse respiratory effects including decreased lung function, increased respiratory symptoms, and airway inflammation, and cause aggravation of respiratory diseases, particularly asthma and chronic obstructive pulmonary disease. Long-term exposure to NO₂ may contribute to allergic responses, and asthma development and may increase susceptibility to respiratory infections. Inhalation of NO₂ has also been linked to effects on the cardiovascular system and some reproductive effects.*⁵⁰

Due to the potential effects resulting from both short and long-term exposure to NO₂, the Designated Office views any exceedance of NO₂ to represent a high-magnitude effect to air quality and the health of exposed Mayo residents. Additionally, although the Proponent stated that topographic and meteorological conditions are comparable at both locations, some parameters may differ such as wind patterns. These differences could impact the modelling results, making them difficult to apply the results to the Mayo facility.

Moreover, in their comment, YG Environment indicated that the air quality report submitted by the Proponent is not relevant to the Mayo facility. They recommended that the Proponent conduct a similar study to the one that was done for the Faro facility and that it should include the 2025 Yukon Ambient Air Standards.⁵¹

As uncovered in the Air Dispersion Modelling Assessment done by WSP for the Faro facility, the maximum predicted NO₂ concentrations significantly exceed the YAAQS for both existing and future scenarios in the short-term averaging period (1 hour). The summary of modelling results for both emission scenarios can be found in Table 4 below. Model-predicted NO₂ concentrations indicate that over an

⁴⁷ YOR 2023-0090-0036

⁴⁸ Ibid

⁴⁹ YOR 2023-0090-0001

⁵⁰ <https://ccme.ca/en/air-quality-report>

⁵¹ YOR 2023-0090-0021

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averaging period of 1 hour, the concentration of NO₂ found at the receptor with the highest predicted ambient concentration across all modelled receptors for the future scenario (capacity of up to 16 MW) was 215% of the current YAAQS. When taking into consideration the expected reduction of the YAAQS in 2025 to 79 µg/m³ for NO₂, the exceedances from the Faro facility will be even higher at 308% (243.2 µg/m³ / 79 µg/m³ x 100%).

Table 4: Summary of Maximum Cumulative Modelling Results at the MPOI³ from both Emission Scenarios⁵²

AIR CONTAMINANT	AVERAGING PERIOD	AMBIENT AIR QUALITY STANDARD (µg/m ³)	JURISDICTION	BASELINE CONCENTRATION		MAXIMUM CUMULATIVE MODEL PREDICTED CONCENTRATION AT THE MPOI			
				Value (µg/m ³)	% of Criteria	Existing Scenario		Future Scenario	
						Value (µg/m ³)	% of Criteria	Value (µg/m ³)	% of Criteria
Nitrogen Dioxide (NO ₂)	1-hour	113	Yukon	0.67	0.6%	160.3	142%	243.2	215%
	Annual	32	Yukon	0.11	0.3%	11.0	34%	18.3	57%
Particulate Matter Coarse (PM ₁₀)	24-hour	50	Yukon	0.46	0.9%	19.7	39%	24.1	48%
Particulate Matter Fine (PM _{2.5})	24-hour	27	Yukon	0.25	0.9%	9.3	34%	12.7	47%
	Annual	8.8	Yukon	0.05	0.5%	1.6	18%	2.2	25%
Sulphur Dioxide (SO ₂)	1-hour	183	Yukon	N/A	N/A	3.3	2%	4.3	2%
	Annual	13	Yukon	N/A	N/A	0.2	2%	0.3	3%
Carbon Monoxide (CO)	1-hour	14300	BC	N/A	N/A	480.3	3%	489.0	3%
	8-hour	5500	BC	N/A	N/A	248.8	5%	310.4	6%

The Designated Office considered the modelled exceedances and the conclusions of the Air Dispersion Modelling Assessment done for the Faro facility when determining significance of effects from the Project to air quality. The assessment provided discussion regarding the predicted concentrations of NO₂ indicating that the modeled concentrations met the previous standards (before 2019) but not the current YAAQS. Again, it is important to note that these standards will be further decreased in 2025 and therefore, it is important for the Proponent to ensure the facility works towards ensuring these standards are met in future operations.

A more likely scenario, as well as the actual likelihood of the worst-case scenario, are unknown, particularly given the further reduction of NO₂ standards expected in 2025. In addition, when considering the modelled exceedances along with the range of adverse respiratory effects that may be produced by unacceptable levels of NO₂ as well as the measured exceedance for the receptor with the highest predicted ambient concentration (215% of the YAAQS for NO₂ at current standards), the Designated Office considers the effects to air quality and the health of Mayo residents to be of high likelihood and magnitude. This is of further relevance for those who are outdoors after work in the winter or who enjoy recreational time in the outdoors (after 6:00 pm) during the cooler months of the year (September through April) when the majority of predicted exceedances are likely to be observed, dependent on weather conditions.⁵³

Section 6 of *Air Emissions Regulations* prohibits the release of any air contaminant to such extent or degree as (a) may cause or be likely to cause irreparable damage to the natural environment; or (b) in the opinion of a health officer, cause actual or imminent harm to public health or safety.

In the case of this Project, it is unclear if the NO₂ level will exceed the current YAAQS as no modelling assessment was conducted for this facility. However, NO₂ standards for YAAQS will be further reduced in 2025, and it will increase the possibility of the Project NO₂ production exceeding the new standard. If the

⁵² YOR 2023-0090-0036; Attachment 1

⁵³ Ibid

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Designated Office were to use the previous thermal generating station modelling results to hypothesize potential effects from the Project, as recommended by the Proponent, the Project would theoretically produce $74.4 \mu\text{g}/\text{m}^3$, only 6% shy of the 2025 YAAQS ($16 \text{ MW} / 243.2 \mu\text{g}/\text{m}^3 * 4.9 \text{ MW}$). With such a small margin of error, the Designated Office considers the reliance on Air Dispersion Modelling Assessments for other sites insufficient to determine the Project will result in non-significant effects to air quality.

As discussed above, exceedances of NO_2 have the potential to lead to various adverse respiratory effects (CCME).⁵⁴ Given the uncertainties and potential exceedances when changes to the YAAQS are put in place, the Proponent needs to ensure measures are in place to comply with the standards and to reduce NO_2 exceedances to ensure residents, especially those who utilize the outdoors in the evening in the winter, spring, and fall are not affected by air quality as a result of the Project.

Therefore, it is likely that the Project will result in significant adverse effects to air quality and further mitigations are recommended. The Proponent should conduct an air quality impact assessment at the Mayo facility based on the 2025 Yukon Ambient Air Quality Standards to collect relevant information regarding effect to air quality from the Project. Additionally, the Proponent should develop with the regulators an air quality monitoring plan to ensure that air emissions comply with the applicable standards. If the results of the monitoring show exceedance, the Proponent should implement corrective measures to ensure that standards are met. Additionally, the monitoring and analysis results should be made available to Government of Yukon, Department of Environment. These mitigation measures are considered sufficient to reduce effects to air quality from the project activities.

5.4 Significance Determination

As discussed above, the Mayo Designated Office has determined that the Project is likely to have significant adverse environmental effects on air quality. These effects can be eliminated, reduced or controlled by the application of the following terms and conditions:

1. The Proponent shall develop, in consultation with YG Environment, a suitable air quality monitoring plan and schedule, to ensure that air emissions comply with the applicable standards.
 - a. The Proponent shall conduct an air quality impact assessment for the Project using the 2025 Yukon Ambient Air Quality Standards. If air contaminant levels are found to exceed ambient air quality standards, the Proponent shall implement corrective measures that ensure that standards are met.
 - b. The monitoring and analysis results shall be made available to Government of Yukon, Environment.

6.0 COMMUNITY WELLNESS

6.1 Overview

The Project involves activities that can lead to adverse effects to community wellness from noise disturbance. The Project is in proximity to country residential lots and a recreational area. The increase in

⁵⁴ <https://ccme.ca/en/air-quality-report>

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noise produced by the Project may reduce the quality of life for nearby residents and recreationists. Concerns regarding noise disturbance were received during the Seeking Views and Information stage from FNNND, YCS and a member of the public.

The Designated Office has determined that the Project is likely to result in significant adverse effects to community wellness.

6.2 Spatial and Temporal Scope

The spatial scope is a 5 km radius around the project area to capture existing development and activities over the 10-year temporal scope of the Project. However, as mentioned in the Proposal, it is unclear how long the generator capacity at this location will be required and the Proponent may apply for a permit renewal at the end of the 10-year temporal scope.⁵⁵ Effects to community wellness could persist past the 10-year life of the operation if it is renewed or amended.

6.3 Contextual Considerations

Contextual considerations provide the environmental and/or socio-economic setting within which the Project will occur. It includes the reference conditions and past, present and likely future activities that may occur in the spatial scope of the assessment and any other relevant considerations.

6.3.1 Reference Conditions

As previously mentioned, the Project is located on land privately owned by YEC, the Proponent. It is located approximately 750 m from the Five Mile Lake Campground and Recreation Site and approximately 1.1 km from a residential subdivision. Residential and country residential development is growing in that area and further lot developments are expected. There is also one agricultural property located approximately 1.4 km from the Project.

6.3.2 Consideration of Past, Present, and Likely Activities

As mentioned in Section 5.3.2, the area is likely to see an increase in country residential and/or residential lot development in the future. At the moment, the closest property is located approximately, 1.12 km from the Project. There is also the Five Mile Lakes Campground and Recreation Site approximately 750 m from the Project, which is in operation from May to October but used by residents year-round. The Project is also located near the Silver Trail Highway and typical highway activities such as maintenance and traffic are expected.

Yukon Energy's 10-Year Renewable Electricity Plan involves the construction of a new pump storage facility on Moon Lake, the expansion of the Atlin hydro plant and the expansion of the transmission network in the Southern Lakes region. These projects are expected to decrease the dependency on fossil fuels during the winter and meet expected peak demands. In turn, this would decrease the future noise disturbance coming from the Mayo facility. Yukon Energy's high case portfolio charts for energy and capacity indicate that with all expected expansions and planned resources, Yukon Energy will just meet demand.⁵⁶ YEC noted in their 10-Year Plan that replacing retired diesel generators can reduce the need for rental diesel generators. Rental diesel generators are also not included in YEC's plan from 2028/29 onwards. However, YEC also notes that regulatory uncertainties could lead to proposed projects being

⁵⁵ YOR 2023-0090-0001

⁵⁶ Yukon Energy, 2020; Figures 21-22

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delayed or cancelled, resulting in an increased reliance on thermal generation for energy and ongoing rentals of temporary diesel engines. In the 2022 YEC Annual Report, YEC mentioned that additional funding was required before the Atlin project could begin.⁵⁷

6.3.3 Relevant Legislation

The Designated Office considered the following legislative requirements. This list is not exhaustive; rather, the Designated Office reviewed this specific legislation because of its direct relevance to community wellness.

There is no relevant regulatory noise guidance or criteria in the Yukon encompassing noise from industrial sources outside of municipalities. In the absence of this legislation, the Designated Office is identifying the regulations that guided the Noise Impact Assessment provided by the Proponent:⁵⁸

- *British Columbia Noise Control Best Practices Guideline*
- *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Noise*

6.4 Effect Characterization

6.4.1 Project Effect: Noise Disturbance

The Project will likely result in increased noise in proximity to a recreational site and country residential lots. The Project involves the installation of 5 rental diesel generators and the combined use of these generators to produce a maximum of 4.9 MW production capacity at any given time. Operation will be primarily during the winter months, for up to 10 years. This noise represents a potential disturbance to peace and quiet on nearby residential properties and recreationists, which can change the tone and atmosphere of the surrounding area. In addition, this noise may have ramifications on public health. Continued noise disturbance can result in chronic health conditions, which could adversely affect the health of nearby residents; the probability of which is high considering the frequency and duration of project activities.⁵⁹ While effects such as annoyance and sleep disturbance can be reversed when project activities cease, other effects such as anxiety, stress, physiological changes, and physiological effects may not be easily reversible depending on the extent of their impact. Comments received by the Designated Office highlighted concerns regarding potential impacts of noise emissions to quality of life.

In Information Request Response #2, the Proponent provided a Noise Survey Report (NSR) prepared by WSP Inc. (WSP).⁶⁰ The report was prepared in October, 2022 and was commissioned by YEC to quantify both ambient sound levels and current operational sound levels at locations in the surrounding community of Faro. This NSR was originally provided for a previous assessment, project # 2021-0115 Faro Generating Station Capacity Expansion Project.⁶¹

Table 5 shows the noise survey results with measured sound levels at different receptors. Receptor R1 was located at the facility, receptors R2 and R3 were located near residences and buildings, 355 m from the facility and receptor R6 was located 1.34 km from the facility. The locations of the receptors are

⁵⁷ Yukon Energy, 2022

⁵⁸ YOR 2023-0090-0036; Attachment 2

⁵⁹ European Environment Agency, 2021; Jariwala et al., 2017

⁶⁰ YOR 2023-0090-0036

⁶¹ YOR 2021-0115-0021

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shown in Figure 2. The noise of 6 YM Caterpillar rental units was surveyed during the NSR and the rental units are the same type as those proposed to be used for this project (Caterpillar 3516).⁶²

Table 5: Noise Survey Results⁶³

Noise Survey Results							
Operational Condition	Measured Sound Level, Leq (dBA)						
	R1 Facility Fence line	R2 130 Dawson Dr.	R3 RCMP Office	R4 146 Kitzka Ave.	R5 356 Campbell St.	R6 504 Douglas Dr.	R7 502 Ladue Dr.
Nighttime Ambient	42.0	23.6	25.4	-	-	-	-
Daytime Ambient	42.7	35.4	33.9	-	-	-	-
YM Operation ¹	-	42.1	53.6	49.4	39.0	41.4	39.1
FD Operation ²	-	44.1	50.4	50.5	44.5	38.8	45.4

1. 10.6 MW power output operations with six of the YM Caterpillar rental units in operation.
 2. 10.6 MW power output operations with both permanent FD units and three YM caterpillar units in operation.

⁶² YOR 2023-0090-0036; Attachment 2

⁶³ YOR 2023-0090-0036; Attachment 2

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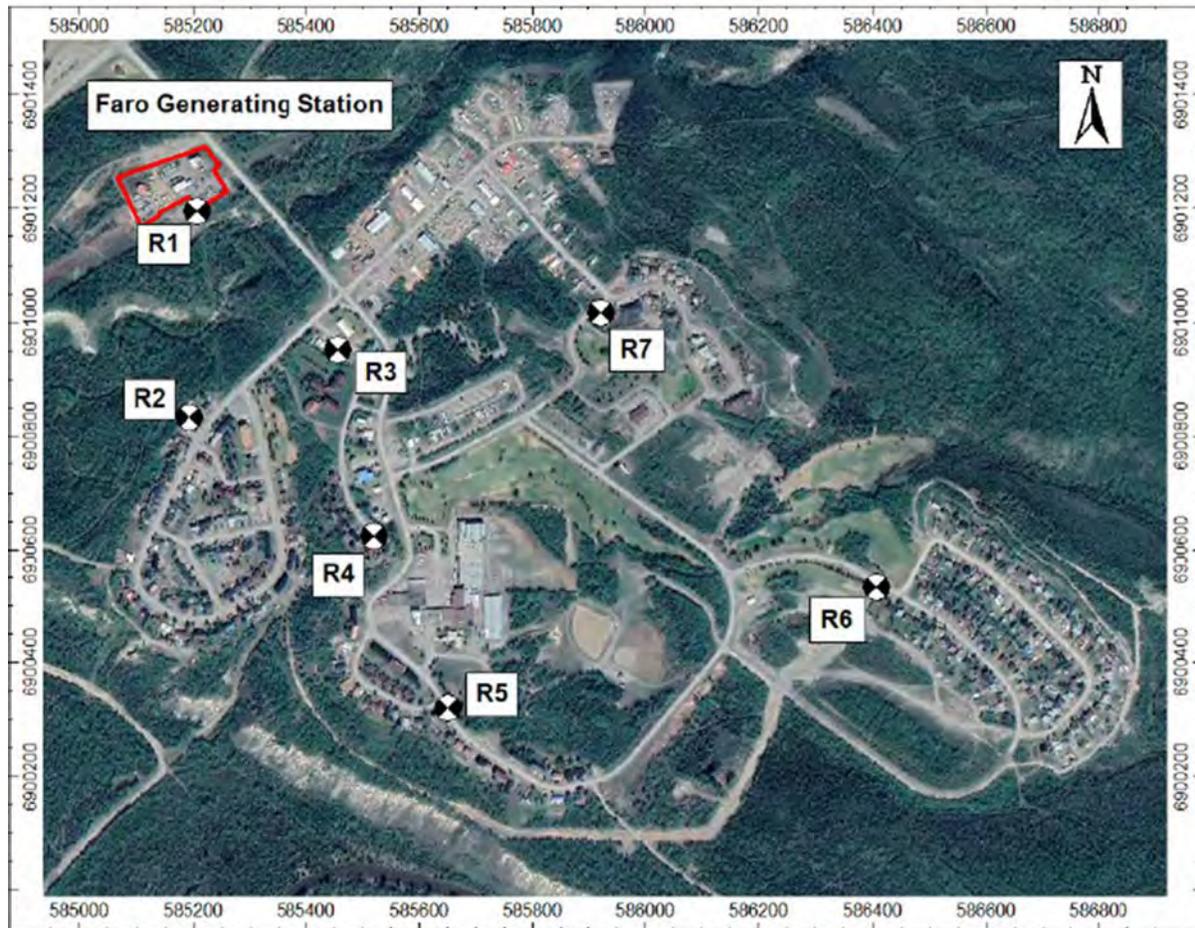


Figure 2: Study Area Showing Receptor Locations⁶⁴

However, the past YESAB assessment for the Faro facility⁶⁵ indicated that not all the installed rented generators were considered in the NIA when defining the Permissible Sound Level (PSL) at the receptor locations, but only the ones permitted under the Air Emission permit. However, the permit was amended in 2020 to allow a reinstatement capacity of 5.65 MW to a cumulative capacity of 10.6 MW, thus allowing the operation of the installed rental generators. Noise complaints from the use of the installed rental generators were not considered when determining the PSL.⁶⁶ The NIA also noted that the facility was operating at a capacity much lower than the permitted capacity. Additionally, as explained in the previous assessment, there were outstanding noise complaints that were not considered in the NIA when defining the PSL.

⁶⁴ YOR 2023-0090-0036; Attachment 1, Figure 1

⁶⁵ YOR 2021-0115-0021

⁶⁶ Ibid

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In the same information request, the Proponent noted that they predicted no significant adverse effects related to noise were likely to occur from the Project, and subsequently are not planning any noise monitoring. The reasons they provided for this prediction were:

- The production capacity (4.9 MW) for the Project is less than one third of that of the recently assessed Faro Generating Station Capacity Expansion Project (15.5 MW), YESAB 2021-0115.
- Measured operating sound levels [from the Faro facility] at distances greater than 650 metres from the generators were close to the most stringent permissible sound level of 40 dBA defined under the British Columbia Noise Control Best Practices Guideline (2021).
- Approximately 1 100 m of relatively dense and nearly continuous mixed forest land cover exists between proposed noise sources in the Project and the nearest residential receptor from the Project.

However, in the Noise Impact Assessment provided by the Proponent for YESAB 2021-0115, it was noted that the change in dBA from operating at a capacity of 15.5 MW was less than 1 dBA in difference from noise levels emitted while operating at 10.6 MW⁶⁷. Therefore, past a certain capacity generation, differences in capacity being produced seem to have marginal changes to the dBAs being produced. At this time, no information has been presented as to what that threshold is. The operation of 4.9 MW could potentially have marginal differences in noise compared to operating at 10.6 MW or 15.5 MW.

Secondly, no evidence was provided as to how effective 1 100 m of nearly continuous mixed forest landscape would be at dampening noise, or if it would contribute any difference at all.

Thirdly, the Proponent noted that the Faro facility generators were **close to** the permissible sound level (PSL) of 40 dBA, the most stringent possible PSL defined in the *BC Noise Control Best Practices Guidelines* (2021). Close to is not the same as below.

Compared to the Project, residences are closer to the Faro facility. The Faro facility has a higher production capacity with 6 Caterpillar rental units used for the survey, potentially resulting in higher noise disturbance. However, the difference in dBA between receptor R2 (355 m away) and receptor R6 (1.34 km away), was only 0.7 dBA. According to a study conducted by the National Research Council on hearing loss, generally, human ears are not sensitive to a decibel change smaller than one decibel. Additionally, “[o]ver a range of frequencies (approximately 500 to 4000 Hz) and levels (approximately 35 to 80 dB SPL) in which humans are most sensitive, listeners can discriminate a change of about one decibel in sound level and about a half of a percent change in tonal frequency.”⁶⁸

Although this study considered decibels (dB) and not weighted decibel (dBA) which considers different frequencies, a change of 0.7 dBA seems negligible as it is unlikely to be detected by human ears. Regarding these results, it is fair to assume that noise disturbance would be similar for residents located at those two receptors. Furthermore, although the results indicated low production of dBA from the facility, noise complaints from residents show that there was a noise disturbance effect from the facility. Additionally, receptors R3 and R4 (spatially located between R2 and R6) both had higher dBAs recorded

⁶⁷ YOR 2021-0115-0002

⁶⁸ National Research Council, 2005

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than either receptor R2 or R6, demonstrating that distance between noise source and receptor alone is not the only contributor to noise disturbance.

Comments received during the Seeking Views and Information stage expressed concern regarding potential noise disturbance from the Project to the nearby campground and the expanding residential development.⁶⁹ Since the purpose of the Project is to operate mainly during winter, there should be no overlap with campground users, which are mainly present from May to October.⁷⁰

Regarding country residential properties and local recreation site users, as explained above, the difference in sound level is negligible for a receptor at 355 m and 1.34 km. It is fair to assume that if residents living at 355 m were disturbed by the sound produced by the MSGS, residents living at 1.1 km would likely also be disturbed.

Additionally, within their comment, FNNND explained that residential development is increasing in the area near the Project.⁷¹ This could result in residential properties being built closer to the Project, which could in turn be affected by noise production.

Moreover, as indicated by a member of the public within their comment submission, in 2017 YEC requested emergency usage of rental diesel generators **at the Whitehorse facility until 2021**, until a permanent solution could be implemented to respond to the capacity gap.⁷² On their website, YEC also mentioned that the electricity demand is growing, with an increase of 23% in the last 5 years.⁷³ Additionally, data from Statistic Canada, shows that the use of petroleum products⁷⁴ to produce energy had increased by 18.145 MW between 2019 and 2020. There was also an increase of 0.106 MW between 2020 and 2021.⁷⁵

To the knowledge of the Designated Office no permanent solution has yet been implemented to respond to the capacity gap and rental diesel generators will likely continue to be used to respond to the growing energy demands; which could increase noise disturbance from the increased usage of diesel generators as a source of power. This will likely be further compounded by YEC's potential plans for the project site:

The current Mayo diesel facility is located within the townsite and has been under review for potential relocation to YEC's Mayo hydro site property in order to consolidate YEC Mayo generation facilities and to move diesel generation operation further from the townsite. The current diesel infrastructure development at Mayo for the 2023 diesel rentals will also provide for such potential future permanent diesel relocation at Mayo (although no specific plan has been finalized in this regard).

The substation located above the Mayo MH0 Plant (S249) has been selected as the new thermal site due to its available generation capacity, proximity to MH0 infrastructure, and accessibility for staff. This infrastructure has the potential to be used to connect additional permanent diesel

⁶⁹ Comments expressing concern about noise disturbance were submitted from FNNND, YCS and a member of the public.

⁷⁰ Government Yukon, 2023

⁷¹ YOR 2023-0090-0027

⁷² YOR 2023-0090-0031

⁷³ YEC, 2023

⁷⁴ Include light fuel oil, total heavy fuel oil and diesel

⁷⁵ Statistics Canada, 2022; Yukon Bureau of Statistics, 2021

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generators in the future, either replacement of the units within the Mayo townsite or new thermal capacity.⁷⁶

Considering that noise disturbance can affect the health of nearby residents by leading to physiological changes, and physiological effects that may not be reversible depending on the extent of their impact,⁷⁷ effects on community wellness from noise disturbance are considered of high magnitude.

The Proponent indicated that no monitoring or mitigations are proposed to mitigate effect of noise disturbance since:

1. The increase in noise levels in the NIA for the Faro facility was determined to be negligible;
2. This project has a smaller operating capacity; and
3. Receptors for this project are further away.⁷⁸

However, during peak operation, the generators would be operating at the same time as the current Mayo Generating Station, which is co-located with the Project. The *BC Noise Control Best Practice Guidelines* state “[w]hen planning a well or facility in an area where there is an existing facility or approved energy-related facility, the permit holder should ensure that its planned operations will not cause the cumulative noise levels to exceed the permissible sound level.” Currently, no noise emission levels have been given for the current location, nor a PSL been calculated for the project location.

The Proponent mentioned within their comment submission, that noise complaints will be addressed on a case-by-case basis.⁷⁹ However, the manner, timeline, or to what degree these complaints would be addressed was not elaborated on. Additionally, the guidelines stipulate “If a valid complaint is registered after a facility is in operation, permit holders should meet the PSL as determined by this guideline.”

Considering the likelihood of noise disturbance occurring from the MSGS, the high magnitude of potential effect to community wellness, and the lack of monitoring or mitigations proposed by the Proponent, further mitigations are recommended. To help reduce noise disturbance from the Project, the Designated Office recommends that the Proponent perform a comprehensive acoustic audit or NIA consisting of onsite measurements if a complaint is received and if results demonstrate noise exceedances, work with YG Environment to determine additional measures to be implemented to rectify them. Additionally, the Proponent should ensure that noise control measures such as silencers/mufflers, and acoustic linings for each rental generator are in place. These mitigations are considered to be sufficient in reducing noise disturbances effect from the project activities.

6.5 Significance Determination

As discussed above, the Mayo Designated Office has determined that the Project is likely to have significant adverse socio-economic effects on community wellness. These effects can be eliminated, reduced or controlled by the application of the following terms and conditions:

⁷⁶ Yukon Energy Corporation 2023-24 General Rate Application, 2023

⁷⁷ European Environment Agency, 2021; Jariwala et al., 2017

⁷⁸ YOR 2023-0090-0036

⁷⁹ YOR 2023-0090-0029

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2. If the Proponent receives noise complaints, an acoustic audit or NIA shall be performed consisting of onsite measurements. Once complete, the Proponent shall share the results with the Regulator, and if required, work with the Regulator to determine and implement additional measures to be undertaken or installed to reduce noise.
3. The Proponent shall ensure appropriate noise control measures for each rental generator (i.e., silencers/mufflers, acoustic linings or acoustic enclosures) are installed and in good working condition at all times.

7.0 AQUATIC RESOURCES

7.1 Overview

The Project is located along Wareham Dam Road, 7 km north of the Village of Mayo, and approximately 150 m from the Mayo River. Project activities including diesel fuel handling and storage have the potential to result in contamination of nearby surface water.

The Mayo Designated Office has determined that the Project is not likely to have significant adverse effects to aquatic resources. The rationale for this determination is provided in the following sections.

7.2 Spatial and Temporal Scope

For the consideration of cumulative effects to aquatic resources, the Designated Office considered the project location and a 2 km radius. This area was considered to include upstream and downstream portions of the Yukon River that may experience cumulative effects from the Project and other activities within this spatial extent. Additionally, as noted by YCS in their comment, diesel will be transported from outside of the Territory to supply the Project.⁸⁰ As spills could occur during transportation, the routes used to transport fuel are included in the spatial scope of this project. As it is unclear which route the delivery truck will take; this includes, the Silver Trail Highway, the Klondike Highway and the Robert Campbell Highway.

The temporal scope of effects was determined to be 10 years; construction is proposed to occur over the three summers following licensing, during this time ground-disturbing activities and the use and handling of fuels have the potential to cause contamination. Following construction, heating fuel will be stored on-site for the duration of the permit.

7.3 Contextual Considerations

Contextual considerations provide the environmental and/or socio-economic setting within which the Project will occur. It includes the reference conditions and past, present and likely future activities that may occur in the spatial scope of the assessment and any other relevant considerations.

7.3.1 Reference Conditions

The Project is located approximately 150 m from the Mayo River which flows into the Stewart River which in turn drains into the Yukon River and supports many species of fish including Chinook Salmon. The

⁸⁰ YOR 2023-0090-0023

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Project is located on the existing Mayo Generating Station property and much of the site has been previously cleared and disturbed.

7.3.2 Consideration of Past, Present, and Likely Activities

The Mayo River supports a variety of activities such as fishing, boating, and hiking along the river shore. Additionally, the nearby Five Mile Lake Campground hosts multiple recreational activities including fishing, camping, and hiking. As mentioned previously, there are some country residential properties nearby and the Silver Trail Highway. Activities related to highways such as maintenance are expected in the area. First Nation traditional activities such as gathering, and food harvesting (hunting, fishing and berries picking) may also occur in the area.

7.3.3 Relevant Legislation

The Designated Office considered the following legislative requirements. This list is not exhaustive; rather, the Designated Office reviewed this specific legislation because of its direct relevance to aquatic resources.

- *Waters Act* (Yukon)
- *Environment Act* (Yukon)
- *Spills Regulations*

7.4 Effect Characterization

7.4.1 Project Effect: Contamination

The Project involves the storage and handling of large quantities of diesel fuels, which have the potential to result in contamination of the nearby Mayo River if a spill were to occur. During the Seeking Views and Information stage of the assessment, the Designated Office received comments expressing concerns regarding the potential of contamination from fuel spills.

The Project involves fuel handling and storage of up to 150 000 L of diesel in two 75 000 L portable double-walled storage tanks on site. In addition, the Proponent indicated that the Project could require the delivery of diesel fuel of up to 62 000 L per week between December and April. Fuel will be delivered from outside the Territory by B-Train fuel truck.⁸¹

The proposal outlines mitigations to reduce the likelihood and magnitude of potential effects to aquatic resources from contamination. The Proponent indicated that the storage tank will be installed with spill-prevention measures, including secondary containment, continuous monitoring, and a recovery system.

- The fuel storage tanks will be installed pursuant to non-discretionary codes and standards including a variety of spill prevention and response measures, such as secondary containment, continuous leak detection, and a recovery system. In addition to non-discretionary legislation respecting fuel storage and handling, Yukon Energy has several Environmental Work Practices that will be strictly adhered to, including:

⁸¹ YOR 2023-0090-0001

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- Fuels, lubricants and coolants
- Spill Response
- Spill Prevention
- Hazardous and special waste management⁸²

The Proponent also indicated in a comment that a “site-specific spill plan is a requirement of Fuel Storage Tank permits, one of which will be issued under the *Environment Act*, *Fuel Storage Tank Regulations*, for this Project.⁸³ It is therefore expected that a spill plan will be in place at the site.

These measures will reduce the likelihood and magnitude of effects to the Mayo River in the event of a spill, and the fuel spill plan and protocols in place will further reduce the duration and geographic extent of potential effects. Regarding the transportation of diesel fuel, robust existing legislation will significantly reduce the potential for a spill and potential adverse effects in the event of a spill.

The Designated Office considered the effect of fuel contamination to aquatic resources but determined that the project design and application of relevant legislation will reduce the likelihood of a fuel spill entering a waterway and the magnitude and geographic extent if it does. Relevant legislation precludes Proponents from intentionally releasing deleterious substances, including fuels, into the surrounding environment. Due to the robust legislation regarding fuel use and storage, impacts from this activity will likely be effectively managed.

7.5 Significance Determination

As discussed above, the Mayo Designated Office has determined that the Project will not have significant adverse environmental effects to aquatic resources.

8.0 HERITAGE RESOURCES

8.1 Overview

The Project occurs within the Traditional Territory of the First Nation of Na-Cho Nyak Dun (FNNND) and involves the use of heavy equipment, grading and compacting which have the potential to adversely affect heritage resources within the project area. These activities may result in the loss, alteration, or destruction of a heritage resource. As mentioned in Section 4.1.4, the Project overlaps and is adjacent to known historic sites and other heritage resources may be present in the area, as it has not yet been inventoried.⁸⁴

In addition to the tangible heritage resources, other less physical elements are considered heritage resources. These include place names, heritage routes and stories. The Umbrella Final Agreement and YESAA have a much broader definition of heritage resources than Government of Yukon that shall be considered.

A heritage resource is defined under YESAA as:

⁸² YOR 2023-0090-0001

⁸³ YOR 2023-0090-0036

⁸⁴ YOR 2023-0090-0021

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- a) a moveable work or assembly of works of people or of nature, other than a record only, that is of scientific or cultural value for its archaeological, paleontological, ethnological, prehistoric, historic or aesthetic features;
- b) record, regardless of its physical form or characteristics, that is of scientific or cultural value for its archaeological, paleontological, ethnological, prehistoric, historic or aesthetic features; or
- c) an area of land that contains a work or assembly of works referred to in paragraph (a) or an area that is of aesthetic or cultural value, including a human burial site outside a recognized cemetery (See YESAA s.2.)

The Designated Office has determined that the Project is likely to have significant adverse effects to heritage resources, such that additional terms and conditions are recommended.

8.2 Spatial and Temporal Scope

The spatial scope of this assessment is the project area as well as known heritage resources (105M/12/154 Fairbanks Morse Diesel Generator and 105M/12/114 Wareham Residence/Garage), in the vicinity of the project area.

The temporal scope of the assessment is 10 years, which is the duration of the Project during which physical impacts to heritage resources can occur. However, the Designated Office acknowledges that the effects from the alteration, fragmentation, or loss of a heritage resource may have effects lasting beyond the Project's temporal scope.

8.3 Contextual Considerations

8.3.1 Reference Conditions

The area falls within the Traditional Territory of the First Nation of Na-Cho Nyak Dun and the Project is located on land privately owned by YEC, the Proponent. According to comments provided by YG Cultural Services Branch, the project area does have 2 known previously documented historic sites (YHSI Designations: 105M/12/154 – Fairbanks Morse Diesel Generator and 105M/12/114 – Wareham Residence/Garage). There are also a number of buildings and infrastructure related to the construction of the Wareham Dam built in the 50s. YG Cultural Services Branch also noted that the project location has not been inventoried for sites to date and undocumented heritage resources may be present within the project area.⁸⁵

Additionally, the result of a desktop review of the project area “suggests that there is low potential for archaeological sites to overlap with the Project.” Finally, YG Cultural and Services Branch also added that paleontological fossils are not common in the area and are unlikely to be encountered.⁸⁶

8.3.2 Consideration of Past, Present, and Likely Activities

As mentioned in Section 5.3.2, the Project is also located near the Five Mile Lakes Campground and Recreation Site, the Silver Trail Highway and is within the Traditional Territory of the First Nation of Na-

⁸⁵ YOR 2023-0090-0021

⁸⁶ Ibid

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Cho Nyak Dun. Past, present and future activities near the project area include recreational use, highway-related activities and activities related to the development and use of residential lots.

Additionally, as mentioned above, one historic site 105M/12/154 (Fairbanks Morse Diesel Generator) is located within the project area and one historic site 105M/12/114 (Wareham Residence/Garage), is adjacent to the project area.⁸⁷ The Project is also located near the Warham Dam. YG Cultural Services Branch mentioned in their comment that the Warham Dam was built in 1951 and that several buildings and infrastructure related to the dam were in the area.⁸⁸

8.3.3 Relevant Legislation

- *Historic Resources Act* (Yukon)
 - s. (64) No person shall destroy or alter any historic object, whether or not the person owns it, or any human remains, except in accordance with a historic resources permit. S.Y. 1991, c.8, s.63
- *Archaeological Sites Regulations*
 - s. (4) No person shall excavate, alter, or otherwise disturb an archaeological site, or remove an archaeological object from an archaeological site
- First Nation of Na-Cho Nyak Dun Final Agreement, Chapter 13 – Heritage

8.4 Effect Characterization

8.4.1 Project Effect: Damage or Loss of Heritage Resources

The value of a heritage resource is not only based on their physical or material properties but also for the associative or symbolic attributes with which they are imbued, as explained above. The value is created from its exposure to many periods or stages in history and not just for its existence at a single moment in time. Heritage resources potentially within the proposed project area gain value from the interaction of nature and human activities; these resources may include movable or immovable resources above ground or buried, on land or in water and whose features are both natural and fabricated. The removal or destruction of a resource is irreplaceable; the value associated with it may be forever lost. Effects to heritage resources can occur anywhere within the project area but will be focused on areas where the ground is disturbed.

Project activities, including heavy equipment use, grading and compacting may result in the damage or destruction of items of historical or heritage value, should they occur within the project site. Land-altering activities may adversely affect heritage or historic resources by destroying or altering all or part of a resource, isolating a resource from its natural setting and introducing physical, chemical, or visual elements that are out of character with the historic or heritage resources and its setting. Moveable objects or features are exposed and whether inadvertently or with intent, vandalism, removal, or damage may result.

⁸⁷ Ibid

⁸⁸ Ibid

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As mentioned above, two known historic sites are present in or are adjacent to the Project. Additionally, a number of buildings and structures from the construction of the Warham Dam are present within and near the project location. However, within their comment, YG Cultural Services Branch indicated that project activities are not anticipated to impact those sites. They noted that compliance of the Proponent to standard terms and conditions of Territorial *Land Use Regulations* should be sufficient to mitigate potential effects to heritage resources.

The Proponent has not provided any commitment regarding potential impact from project activities on heritage resources.

Although YG Cultural Services Branch noted that impact from project activities on the historic sites are not anticipated, they also indicated that the project location has not yet been inventoried for archeological sites.⁸⁹ Undocumented heritage resources may be present within the project area. Furthermore, as explained above, the definition of a heritage resource under YESAA may be different from the definition used by YG to conduct the desktop review of the project site. Therefore, undocumented heritage resources may be present within the project area.

Despite the existing legislation noted in Section 8.3.3 mitigating impact to heritage resources, First Nations are not mandated to be notified of the discovery of heritage resources on Crown Land that are not defined as archaeological or palaeontological. Without notification, adverse effects to a heritage resource may occur without the affected First Nation knowing; or rather, a heritage resource may be misidentified, and destroyed before consultation with the First Nation. Given the high importance the First Nations place on heritage resources for their identity and culture, as is, legislation may not prevent significant adverse effects to heritage resources. The removal or destruction of a resource is irreplaceable, and the value or values associated with it may be forever. Therefore, project effects to heritage resources are not reversible.

Any activities which involve earthworks and land altering have the potential to cause significant adverse effects to heritage resources. Many heritage resources are inconspicuous and hard to detect. Given the land-altering nature of the Project (grading and compacting), the Project will likely result in the alteration, fragmentation, or loss of undocumented heritage resources, should they exist. Most individual heritage resources that are separated by a meaningful spatial distance are more appropriately considered a singular resource rather than a collective resource. Many resources are fragile and easily damaged, and the nature of heritage resources and the values associated with them is such that their destruction is permanent. As such, there is potential for significant adverse effects to heritage resources if they should be found, and if that does occur then all construction should cease immediately and the First Nation of Na-Cho Nyak Dun as well as the Government of Yukon, Heritage Department should be notified to determine next steps.

8.5 Significance Determination

As discussed above, the Mayo Designated Office has determined that the Project is likely to have significant adverse socio-economic effect on heritage resources. These effects can be eliminated, reduced or controlled by the application of the following terms and conditions:

⁸⁹ YOR 2023-0090-0021

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4. Upon discovery of a heritage resource the Proponent shall notify the Heritage Department of First Nation of Na-Cho Nyak Dun in addition to Government of Yukon, Heritage Department.

9.0 CONCLUSION OF THE ASSESSMENT

Under s. 56(1)(b) of the *Yukon Environmental and Socio-economic Assessment Act*, the Mayo Designated Office recommends to the Decision Body that the Project be allowed to proceed, subject to specified terms and conditions. The Designated Office determined that the Project is likely to have significant adverse environmental and socio-economic effects in or outside Yukon that can be mitigated by those terms and conditions.

The terms and conditions of the recommendations are as follows:

1. The Proponent shall develop, in consultation with YG Environment, a suitable air quality monitoring plan and schedule, to ensure that air emissions comply with the applicable standards.
 - a. The Proponent shall conduct an air quality impact assessment for the Project using the 2025 Yukon Ambient Air Quality Standards. If air contaminant levels during the operation of the Project are found to exceed ambient air quality standards, the Proponent shall implement corrective measures that ensure that standards are met.
 - b. The monitoring and analysis results shall be made available to Government of Yukon, Environment.
2. If the Proponent receives noise complaints, an acoustic audit or NIA shall be performed consisting of onsite measurements. Once complete, the Proponent shall share the results with the Regulator, and if required, work with the Regulator to determine additional measures to be installed to reduce noise.
3. The Proponent shall ensure appropriate noise control measures for each rental generator (i.e. silencers/mufflers, acoustic linings or acoustic enclosures) are installed and in good working condition at all times.
4. Upon discovery of a heritage resource the Proponent shall notify the Heritage Department of First Nation of Na-Cho Nyak Dun in addition to Government of Yukon, Heritage Department.

9.1 Authorization of Recommendation / Referral

The undersigned is authorized pursuant to s. 23(2) of YESAA to make this Recommendation:

Brad Farrow
Manager, Mayo Designated Office
October 6, 2023

October 6, 2023

YESAB

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Appendix A REFERENCES

All references to documents on the YESAB Online Registry (YOR) can be found by searching for the Project and document number on the YOR at <https://www.yesabregistry.ca>.

- BC Oil and Gas Commission. 2021. British Columbia Noise Control Best Practices Guideline. <https://www.bc-er.ca/files/operations-documentation/Oil-and-Gas-Operations-Manual/Supporting-Documents/BC-Noise-Control-Best-Practices-Guideline-July-12-v.2.2-2021.pdf>
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Mayo Designated Office Evaluation Report

Mayo Secondary Thermal Generation Project – 2023-0090

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Yukon Environmental and Socio-economic Assessment Act
Decision Document

This document meets the decision bodies' requirements as set out in the *Yukon Environmental & Socio-economic Assessment Act*.

Decision Bodies for this Project

Yukon government

Project

Project Name	Mayo Secondary Thermal Generation Project	YESAB File	2023-0090
Proponent Name	Travis Ritchie		
Company Name	YEC		

Project Description

Project Scope - Summary

The purpose of the Project is the installation and operation of a secondary thermal generating station near the Village of Mayo. The Project would consist of the installation and operation of five (5) diesel generators, located at the existing Mayo Hydro Generating Station, with a maximum production capacity of 4.9 MW. The Project would be located approximately 7 km north of the Village of Mayo, in the Traditional Territory of the First Nation of Na-Cho Nyak Dun. Construction is estimated to begin late 2023 with project activities operating seasonally as needed, for 10 years.

Project Scope - Activities

Laydown and Siting

- On previously disturbed land currently owned by the Proponent
- Site grading, compacting, and installation of standard grounding grid

Installation and Operation of Five (5) Rental Diesel Generators

- EPA Approved Tier 2 Caterpillar 3516C Diesel Generators, each with a 1.8 MW nameplate capacity (for a total of 9 MW nameplate capacity)
 - Stored in containerized mobile trailer units and placed on a gravel pad at the site.
 - Maximum operating (production) capacity of 4.9 MW during peak demand (winter) and during N-1 emergencies
 - Up to two generators to be reserved for back-up use only
 - Connected to Yukon Energy's SCADA system and will be configured to operate remotely, as required

Fuel Storage and Use

- Diesel: Up to 150 000 L in two 75 000 L portable double-walled storage tanks
 - Estimated maximum fuel usage of up to 62 000 L per week between December and April, annually
 - Delivered by B-Train fuel truck
 - Installed with spill prevention measures including secondary containment, continuous monitoring, and recovery system

Communication

- Winter 2023-2024 generation capacity report communicated to the First Nation of Na-Cho Nyak Dun and Village of Mayo in spring of 2024

Decommissioning

Yukon Environmental and Socio-economic Assessment Act

Decision Document

- Seasonally decommissioned
- May be relocated offsite, depending on engine supplier's other customer needs, or kept onsite

Decision Bodies for this Project

Consolidated Decision

Not Applicable

First Nations Consultation

A. Consultation under YESAA section 74

Not Applicable

B. First Nations Consultation - General

The Government of Yukon sent a letter to the First Nation of Na-Cho Nyäk Dun on October 10, 2023, inviting comments on the Evaluation Report and associated draft Decision Document by October 24, 2023. No comments were received.

YESAB Recommendation

Under s. 56(1)(b) of the *Yukon Environmental and Socio-economic Assessment Act*, the Mayo Designated Office recommends to the Decision Bodies that the Project be allowed to proceed, subject to specified terms and conditions. The Designated Office determined that the Project will have significant adverse environmental and socio-economic effects in or outside Yukon that can be mitigated by those terms and conditions.

Decision

Pursuant to section 75 and 80, the Yukon government has considered the assessment of this project and:

- Accepts the recommendation and the terms and conditions as follows:
- Rejects the recommendation and the terms and conditions as follows for the reason(s) specified:
- Varies the recommendation and the terms and conditions as follows for the reason(s) specified:

Rationale for Decision

After giving full and fair consideration to the Evaluation Report and supporting information, the Decision Body varies the recommendation and the terms and conditions contained in the Evaluation Report.

Yukon Environmental and Socio-economic Assessment Act

Decision Document

Term	Term &	Status	Reason
1	<p>YESAB: The Proponent shall develop, in consultation with YG Environment, a suitable air quality monitoring plan and schedule, to ensure that air emissions comply with the applicable standards. a. The Proponent shall conduct an air quality impact assessment for the Project using the 2025 Yukon Ambient Air Quality Standards. If air contaminant levels are found to exceed ambient air quality standards, the Proponent shall implement corrective measures that ensure that standards are met. b. The monitoring and analysis results shall be made available to Government of Yukon, Environment.</p> <p>NEW Term: The Proponent's air emission permit application shall be subject to a technical review by the regulator. Results of the technical review may require the Proponent to submit an air emissions management plan for review and approval. The management plan should outline appropriate monitoring, mitigation and management actions to reduce, control and mitigate air emissions from the Mayo generating station.</p>	Change	<p>The permit application will be subject to a technical review as part of the regulatory review process. Based on the results of the technical review the Proponent may be subject to air quality monitoring and mitigation measures to decrease emission values to within acceptable limits as identified by the 2025 Yukon Ambient Air Quality Standards.</p>
2	<p>YESAB: If the Proponent receives noise complaints, an acoustic audit or NIA shall be performed consisting of onsite measurements. Once complete, the Proponent shall share the results with the Regulator, and if required, work with the Regulator to determine and implement additional measures to be undertaken or installed to reduce noise.</p> <p>NEW Term: The Proponent shall maintain a Complaint Management System and install signage at the Mayo Generating Station with contact details for concerns/complaints. The Complaint Management System shall include a process for community engagement, noise monitoring and mitigation measures, and dispute resolution. If ongoing noise complaints are received, the Proponent shall use the established process to work with the community to resolve noise related concerns resulting from the Mayo generating station. The Proponent shall share outcomes from the Complaint Management System with the regulator as a component of their annual report.</p>	Change	<p>Term varied to clearly identify the Proponent's responsibility for community engagement related to noise levels from the Mayo generating station.</p>
3	<p>YESAB: The Proponent shall ensure appropriate noise control measures for each rental generator (i.e., silencers/mufflers, acoustic linings or acoustic enclosures) are installed and in good working condition at all times.</p>	Agree	--
4	<p>YESAB: Upon discovery of a heritage resource the Proponent shall notify the Heritage Department of First Nation of Na-Cho Nyak Dun in addition to Government of Yukon, Heritage Department.</p>	Agree	--

Yukon Environmental and Socio-economic Assessment Act

Decision Document

Date

Project Recommendation 2023-10-06

Recommendation Received From

Designated Office - Mayo

Authority

By signing below, the Yukon government has exercised its authority as per YESAA section 75 to issue a decision document on this project.

Name	Bryna Cable	Positio	Director, Environmental Protection and
Phone	867-667-5683	Email	bryna.cable@yukon.ca

Signature

Original signed by Environment

Date

Distribution

Project Proponent	Yes
Other Decision Bodies	No
Major Projects Yukon, Executive	No
YESAB Designated Office	Yes
YESAB Executive Committee	No
Yukon Surface Rights Board	No
Yukon Water Board	No
Land Use Planning Commission	
Independent Regulatory Agency	
Other Body/Person as Required	



#2 Miles Canyon Road
Box 5920, Whitehorse
Yukon Y1A 6S7
yukonenergy.ca

November 6, 2023

Caleb Light – Executive Committee Manager
Yukon Environmental and Socio-economic Assessment Board
Suite 200-309 Strickland Street
Whitehorse, Yukon Y1A 2J9

(via email: caleb.light@yesab.ca)

Dear Mr. Light

Re: Project Description for YESAA Screening of the Whitehorse Rapids Thermal Generating Station Relicensing Project

Further to our notification of September 15, 2023, indicating an intent to initiate the Presubmission Engagement (PSE) process for the Whitehorse Rapids Thermal Generating Station Relicensing Project, please accept the attached Project Description.

Please do not hesitate to contact me at 867-393-5350 or by email: travis.ritchie@yec.yk.ca for any questions or further information regarding this project.

Yours Truly,

A handwritten signature in blue ink, appearing to read "Travis Ritchie", with a long horizontal flourish extending to the right.

Travis Ritchie
Director – Risk & Compliance

/attachment

- c. Dave Irvine, Manager - Land and Resources – Ta'an Kwachan Council
- John Pattimore, Development Assessment Specialist – Kwanlin Dün First Nation
- Karmen Whitbread, Acting Manager - Planning and Sustainability Services - City of Whitehorse
- Rox-Ann Duchesne, Major Projects Manager - Government of Yukon, Executive Council Office



WHITEHORSE RAPIDS THERMAL GENERATING STATION RELICENSING PROJECT

PROJECT DESCRIPTION

for Executive Committee Screening
Pursuant to the *Yukon Environmental
and Socio-economic Assessment Act*



NOVEMBER 2023

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Appendix A Engagement What We Heard Summary

YESAA Project Description

Whitehorse Rapids Generating Station Relicensing Project

November 2023

1.0 EXECUTIVE SUMMARY

Yukon Energy Corporation (YEC) is proposing to renew the existing authorizations for the Whitehorse Rapids Thermal Generating Station (the Project) prior to their expiry at the end of 2024. The Project is located adjacent the Yukon River, at the Whitehorse Rapids Hydroelectric Generating Station and has been in operation since 1968. The Project Site is in an area of previous and current commercial and utility development. Historically this Project has been subject to assessment at the Designated Office level. A need to renew the project air emission permit to include a provision for up to 12 MW of emergency diesel capacity exceeds the 5-megawatt (MW) threshold of the *Assessable Activities, Exceptions, and Executive Committee Projects Regulations* under the *Yukon Environment and Socio-economic Assessment Act*. As such, the Project requires a Screening by the Executive Committee of the Yukon Environmental and Socio-economic Assessment Board (YESAB). This Project Description was developed to meet the YESAA Pre-Submission Engagement requirements for such an assessment.

The facility is not expected to run continuously and is only intended to provide electricity quickly during the loss of hydro generation, peak hours of consumption (e.g., cold winter days), periods of low water, periods of planned and unplanned transmission outages, and emergencies.

The Project includes the operation and maintenance of the following infrastructure:

- 3 x 4.4 MW natural gas generators
- 1 x 3.50 MW diesel generator (Pre-Tier)
- 1 x 2.7 MW diesel generator (Pre-Tier)
- 2 x 2.5 MW diesel generators (Pre-Tier)
- 2 x 2.5 MW diesel generators (EPA Tier 4)
- 7 x 1.8 MW rental diesel emergency backup generators (EPA Tier 2)
- 160,000 liter permanent diesel fuel storage tank (to be modified or replaced to address new connection requirements and recent code changes)
- 3 x 75,000 liter portable diesel fuel storage tanks (for mobile/rental diesels)

The Project is effectively a renewal of existing thermal electricity generating activities. As such, its key phase is Operations and Maintenance, and does not include construction or decommissioning. The exception to this is the modification or replacement of the existing permanent fuel storage tank system that is required to address connections to replacement units and recent code/standard changes. This work is planned for 2024, once this assessment is complete and a permit to modify the existing fuel storage tank system can be secured.

Engagement and consultation for this Project was initiated in November 2022. The main takeaways from the Project engagement are that the Project is located near a residential area and noise and air pollution are the primary concerns. The engagement and communications methods were comprehensive and included door knocking, written outreach to nearby homeowners, and public meetings as examples. Of the feedback received, the key themes that emerged were i) noise, ii) emissions and air pollution, and iii) the role of thermal electricity in the Yukon.

A detailed breakdown of the comments can be found in Appendix A of the appended *What We Heard Report*. Engagement efforts have and will encourage people to get involved in YESAB's Pre-Submission Engagement Process and subsequent project assessment should they wish to provide input.

2.0 GENERAL INFORMATION AND CONTACTS

2.1 PROJECT NAME

Whitehorse Rapids Thermal Generating Station Relicensing Project

2.2 PROPONENT NAME & CONTACT INFORMATION

The Project proponent is the **Yukon Energy Corporation**.

Assessment Contact:

Travis Ritchie
Director – Risk & Compliance

#2 Miles Canyon Road, Box 5920
Whitehorse, Yukon Y1A 6S7
867-393-5350
travis.ritchie@yec.yk.ca

3.0 PROJECT OVERVIEW

3.1 PROJECT ACTIVITIES AND COMPONENTS

3.1.1 Description of the Project

Yukon Energy Corporation (YEC) is proposing to renew the authorizations it maintains for its diesel and natural gas generating capacity at its Whitehorse Rapids Thermal Generating Station in Whitehorse, Yukon (the Project). The existing generating station is located on YEC land at the site of the Whitehorse Rapids Hydroelectric Generating Station on the Yukon River and has been operating since 1968. The Project Site is heavily developed and now surrounded by residential, commercial, and other industrial development, including significant ground and air transportation infrastructure.

Yukon Energy's thermal generating stations are installed and operated to ensure continuity of the overall Yukon Integrated System, and so all customers on the system can receive reliable power consistent with Yukon Energy's corporate and regulatory obligations. Given the current generation mix (hydro, wind, solar, thermal) and system design, Yukon Energy's ability to operate the installed thermal plants, particularly during conditions where demand for electricity cannot be adequately met by hydro (e.g., planned maintenance, emergency repair, demand during cold winter temperatures), is essential to avoid scenarios where there would be a requirement to impose blackout conditions to various customers. This is particularly relevant during times where the lack of such ability would at best be very inconvenient, and at worst dangerous to infrastructure and human health and safety, such as would be the case during cold winter temperatures.

The Project is not new and thermal generating activities have been undertaken at Whitehorse Rapids since 1968. The operation of the Project does, however, require periodic authorization renewals (every 10 years) under the *Environment Act* for air emissions and fuel storage, triggering an assessment under the *Yukon Environmental and Socio-economic Assessment Act*. The Project has been assessed under YESAA three times in the past (2008, 2010, and 2013), with the last assessment being completed as part of the addition of natural gas generation to the station. YEC has completed further environmental and socio-economic baseline studies of existing conditions and has undertaken a preliminary effects assessment of the proposed project activities to develop this project description and to support the pending assessment process.

The Project will include modifications or replacement of the existing permanent fuel storage system to bring it up to applicable and recent code changes. Those changes are in the design phase at this time and will be subject to non-discretionary legislation that will be used to verify compliance at the permitting stage. The remaining mobile fuel storage activities at the Project Site will remain unchanged. As the Project is not new, the activities associated with the Project include those associated with operations and maintenance/repair only.

The natural gas portion of the WRGS is subject to the requirement for renewal of the air emission permit like the diesel component, but the other aspects of the natural gas facility are regulated under the *Yukon Oil and Gas Act* and the authorization under that legislation (Facility Licence No. 1140) does not expire until July 2054. As such, only the air emissions from the natural gas facility are expected to be subject to assessment for this Project at this time.

YESAA Project Description
Whitehorse Rapids Generating Station Relicensing Project

November 2023

Table 3-1 Project Site Characteristics

Project Site Characteristic	Description
Project Location	UTM Zone 8 Northing: 6729200.0 Easting: 497522.99
Site Type	Brownfield Industrial/Public Utility
Landowner	Yukon Energy Corporation
Residential Proximity	Approximately 250 m to the nearest residential dwelling
Access	Site access exists via the Alaska Hwy., Robert Service Way, and Miles Canyon Road
Fuel	Diesel and Natural Gas
Build Type	Permanent and Mobile Rental Generators
Proposed Unit Configuration	3 x 4.4 MW natural gas 1 x 3.50 MW diesel (Pre-Tier) 1 x 2.7 MW diesel (Pre-Tier) 2 x 2.5 MW diesel (Pre-Tier) 2 x 2.5 MW diesel (Tier 4) 7 x 1.8 MW rental diesel emergency backup (Tier 2)
Total Capacity	Normal Operations up to 29.4 MW Emergency Operations up to 42 MW
Point of Interconnection and Voltage	WRGS Substation S150 at 6.9 kV and 41.6 kV

3.1.2 Project Activities

The Project is generally characterized as Power Generation managed by a public utility.

The Project includes fossil fuel fired electrical generating activities and the storage and handling of diesel and natural gas. The fuel storage will be operated and maintained pursuant to applicable codes and

YESAA Project Description

Whitehorse Rapids Generating Station Relicensing Project

November 2023

standards with spill contingency measures, including secondary, and in some cases tertiary containment, leak detection, and fuel recovery systems.

Yukon Energy's diesel electric generating plants are installed and operated to ensure the overall Yukon Integrated System, and so all customers on these systems can receive reliable power consistent with Yukon Energy's corporate and regulatory obligations. Hydro generation stations on the Yukon grid typically provide over 90% of Yukon's annual electricity demand supplemented as necessary by thermal generation (natural gas and diesel) for peaking or maintenance purposes.

The current need for diesel generation is related to several factors including:

- The need to meet demand for electricity during those times when hydro-electric units/facilities are taken offline for routine maintenance;
- The need to meet demand for electricity during those times when hydro-electric units/facilities are offline as a result of an emergency condition;
- The need to meet demand for electricity during those times when hydro-electric facilities are otherwise unable to meet current demand for energy;
- The need to meet demand when portions of the Yukon Energy Transmission Line System are isolated and local thermal generation is required to meet current demand;
- The need to 'exercise' a particular diesel unit as a part of routine maintenance and confirm operational readiness.

3.1.3 Project Phases

Other than the planned fuel system upgrades, the Project includes operations and maintenance only.

As a multidecadal asset, there is currently no timetable or plan for final disposition or decommissioning of the Whitehorse Rapids Thermal Generating Station. Potential decommissioning is far enough into the future that it is not feasible today, based on available information, to provide meaningful assessment of likely plans, or their effects, for decommissioning the operational components and related infrastructure of the generating station at the end of its operational life. When proposed, decommissioning of a project of this nature is assessable under YESAA at the Executive Committee Screening level pursuant to Schedule 3, Item 24(b) of the *Assessable Activities, Exceptions and Executive Committee Projects Regulations*. As such, when such plans need to be developed, Yukon Energy will work with key stakeholders and submit these plans, as then required, for applicable YESAA assessment and regulatory review and approval prior to implementation. Accordingly, this Project Description/Proposal does not provide further detail or assessment of the Project's final disposition.

3.1.3.1 Design and Study

As part of replacing the capacity represented by WD3, now decommissioned, changes to the diesel fuel storage system at the Project Site are being designed. This may include minor changes to the existing permanent fuel tank or replacement. Designs for the improvements or replacement are in progress and will be provided to the Fire Marshall at the Permitting stage of the Project. In any case, the system will follow applicable codes and standards and otherwise be subject to non-discretionary legislation.

Yukon Energy is also required to obtain approval from the Yukon Government prior to any addition, modification, removal, or replacement of any equipment related to the release, abatement, control, or treatment of air emissions, but these activities can be authorized under an existing decision document if

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Whitehorse Rapids Generating Station Relicensing Project

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they are of a similar nature to what has previously been assessed. In the case of the replacement of the capacity of WD3 (5.15 MW with Pre-Tier emissions) with two new EPA Tier 4 generators at 2.5 MW each no new decision document is required, nor does it trigger the requirement for an assessment under YESAA as the planned facility modification does not increase its production capacity.

3.1.3.2 Construction and Installation

The project is already constructed, except for the replacement of the capacity of the previously retired Mirrlees engine designated WD3 and de-rated capacity of several existing permanent units on site, which will be replaced by 2 x 2.5 MW EPA Tier 4 diesel units. This replacement was previously scheduled for 2023, but supply chain constraints have delayed their receipt at the Project Site so that they can be installed. As described in the previous section, the replacement activity is not assessable, but does require authorization from the Air Emissions Regulator. Some fuel system modifications are also required, which will require approval of the Fire Marshalls Office. The former activity can be authorized under the existing YESAA decision document for the Project (Project Assessment 2013.0115) and existing air emissions permit, but the fuel system modifications will require a new decision document in order to be authorized so will be included in the Project Proposal.

Notwithstanding the fact the replacement capacity planned for installation in 2024 can proceed without assessment, its ongoing operation is subject to assessment and, as such, is part of this Project Description.

3.1.3.3 Commissioning

There is no commissioning phase for the Project. The facility already exists and has been in operation for 55 years (first units in 1968).

3.1.4 Project Scale

The Project (thermal operations) footprint is roughly 3 hectares of an overall approximately 25 hectare site constituting Yukon Energy's Whitehorse Rapids Generating Station. See site drawing in Appendix A.

3.1.5 Project Components

Project components include the following:

- Multiple permanent and mobile natural gas and diesel electricity generators (see Table 3-1)
- 1 x 160,00 L permanent fuel tank – replacement or modification of existing storage system is expected to be required to meet applicable and recent code/standard changes
- 3 x up to 75,000 L mobile fuel tanks for rental diesels
- Support buildings, workforce, and other infrastructure

3.1.6 Access and Transportation

Site access is via an existing public paved access road – Miles Canyon Road – located off Robert Service Way. No new road access is required for the Project. Robert Service Way is connected to the Alaska Highway, a paved, transport-grade, multi-lane highway.

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The WRGS sees numerous passenger and large vehicle visits per day (>100) and includes frequent fuel tanker visits, particularly in winter (approximately 1 to 2 per day) when active thermal generation is occurring.

3.1.7 Project Workforce

The Project operations require a workforce of about a dozen (12) mechanics, technicians, electricians, engineers, operators, and other skilled personnel.

YEC employs the bulk of the required workforce and contractors are hired periodically to support operations and maintenance/repair/replacement.

During idle times the facility includes approximate one operator and one mechanic. During operating periods up to three (3) operators and two (2) mechanics may be required. Other operational and maintenance activities may include up to a dozen (12) employees and contractors.

3.1.8 Project Resource Requirements

The main non-human resource requirements for the project include the following:

- Diesel fuel and natural gas
- Various lubricant, solvents, and coolants
- Maintenance materials including filters, sorbants, metal parts, wire, piping, etc.
- Station service electricity

3.1.9 Project Emissions, Discharge of Wastes and Disturbances

3.1.9.1 Air Emissions

The primary air emissions associated with the Project are from diesel fuel and natural gas combustion associated with the generators. YEC is investing in EPA Tier 4 diesel generators for all permanent capacity replacements going forward, which represents the best available technology in controlling air emissions. This technology will result in up to a 90% reduction in emissions of oxides of nitrogen, with similar reductions of particulate matter. As older units reach their end of life, the Corporation will seek to replace them with units that have the best available emissions technology. In the meantime, the facility maintains a variety of generators with vintages ranging from the 1970s to present. The 5.15 MW capacity represented by the decommissioned WD3 will be replaced by two new 2.5 MW EPA Tier 4 units in 2024 (as outlined in Section 3.1.3.2)

A detailed air quality impact assessment has been completed for the generators at the Project Site and will be provided in the project proposal.

3.1.9.2 Noise

Thermal operations are intermittent and mostly occur in the winter. During operations temporary increases in localized site noise occur. This noise can affect other land users, particularly residents in the adjacent Riverdale residential subdivision, which was developed after the generating station was established. In response to noise complaints from Riverdale residents in 2020 the Corporation has

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Whitehorse Rapids Generating Station Relicensing Project

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conducted sound monitoring and assessments to determine the principal causes of the noise (i.e., which specific units) and to determine what sound mitigation options might be appropriate to install. The monitoring and assessment results along with proposed noise mitigation measures will be detailed in the Project Proposal.

3.1.9.3 Water Discharge

The facility uses closed circuit cooling typical of reciprocating combustion engines. As such, there is no wastewater discharge other than periodic waste coolant production and domestic wastewater generation associated with the site workforce. Both wastewater streams are collected, treated, and disposed of by authorized service providers.

Common open and parking areas see stormwater runoff directed to vegetated swales and/or sand/gravel drains on site. The main diesel plant includes a fluid collection system for any spills, complete with oil water separators and leak detection systems.

3.1.9.4 Erosion and Sediment

The Project Site is mostly paved and no significant sources erosion or sediment transport direct to surface water are present.

3.1.9.5 Waste Management

Wastes from the Project include operating materials such as waste wood, metal, material packaging, and oily wastes such as used sorbants. Special and Hazardous Wastes, such as oil and coolants, and site worker generated domestic wastes are all handled pursuant to non-discretionary legislation (e.g., Environment Act and application regulations) and industry best practices (e.g., segregated, reused, recycled where possible). Special wastes (e.g., used/waste oil) are stored and disposed of pursuant to Yukon Energy's special waste permit.

Domestic wastewater produced on site is collected in holding tanks and collected by a local education truck service provider.

3.1.10 Third Party Project Activities

Yukon Energy routinely contracts third parties to support operations, maintenance, and equipment replacement at the Project Site.

3.2 PROJECT LOCATION

3.2.1 Project Location & Maps

The Project Site is located along side the Corporation's Whitehorse Rapids Hydroelectric Generating Station and adjacent the Yukon River. The legal description of the property is as follows:

Lot 1022, Quad 105 D/11, Plan 73440 LTO, DCT No. 93Y377 - registered to Yukon Energy Corporation.

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Approximate geodetic coordinates of the facility:

UTM Zone 8

Northing: 6729200.0 Easting: 497522.99

The Project Site is within the traditional territory of the Ta'an Kwäch'än Council and the Kwanlin Dün First Nation, on non-settlement lands. The Project Site is located within the municipal boundaries of the City of Whitehorse.

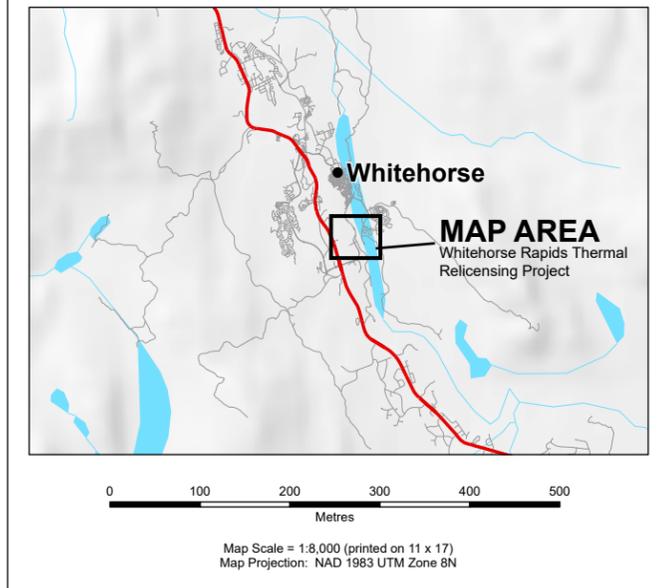
The nearest waterbody to the Project Site is the Yukon River, located approximately 60 m to the east.

The following Figures 3.2-1 and 3.2-2 provide some visual overview information respecting the Project Site and nearby areas. Associated shapefiles for these figures have been transmitted electronically to YESAB with this document.

Figure 3.2-1 Overview of the Whitehorse Rapids Thermal Relicensing Project

Legend

- Whitehorse Rapids Thermal Facilities
- First Nations Settlement Lands



Data Sources
 Imagery Source: World Imagery (Clarity): Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

Disclaimer
 EDI Environmental Dynamics Inc. has made every effort to verify this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

Drawn: MP/OL	Checked: PT	Date: 2023-10-18
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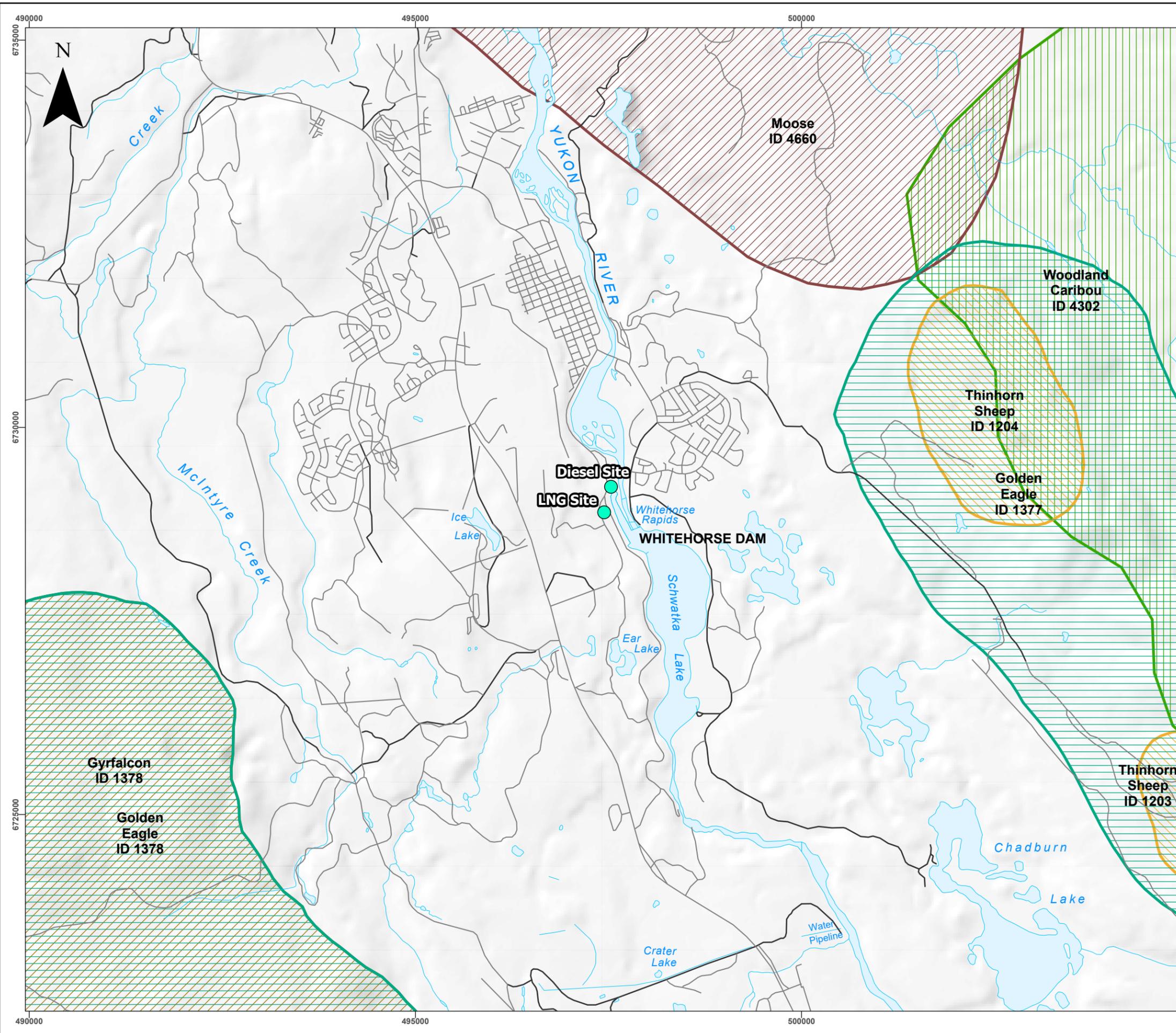


Figure 3.2-2 Key Wildlife areas in the Whitehorse region

Legend

- Whitehorse Rapids Thermal Facilities
- Wildlife Key Areas**
- Golden Eagle Summer Breeding
- Gyrfalcon Summer Breeding
- Moose Late Winter Range
- Thinhorn Sheep Summer Breeding
- Woodland Caribou Winter Range

MAP AREA

Whitehorse
 Whitehorse Rapids Thermal Relicensing Project

0 500 1,000 1,500 2,000 2,500
 Metres

Map Scale = 1:50,000 (printed on 11 x 17)
 Map Projection: NAD 1983 UTM Zone 8N

Data Sources

Imagery Source:
 Wildlife Key Areas (WKA) are compiled by the Yukon Department of Environment WKA Inventory Program and were (accessed March 2021).

Disclaimer
 EDI Environmental Dynamics Inc. has made every effort to verify this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

Drawn: MP/OL	Checked: PT	Date: 2023-10-18
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Path: L:\PROJECTS\2023\WH23Y0056_YEC_Misc\Task\23Y0056_mapping.aprx

3.2.2 Site Conditions

The Project Site is located within an existing environmental and socio-economic setting that has seen considerable development and activity over a sustained period. The presence and influence of the existing Whitehorse Rapids Hydroelectric Generating Station, Dam, Fish Ladder, the Whitehorse Rapids Thermal Generating Station, and the Yukon Energy administration offices, are dominant features of the immediate Project Site.

The Project Site is in the Yukon Southern Lakes Ecoregion, within the Boreal Cordillera Ecozone. The Boreal Cordillera eco-region is characterized by tablelands and rolling uplands separated by wide and U-shaped valleys and occupies the southern Yukon and northern half of British Columbia.

The Project is in the City of Whitehorse, within an anthropogenic ecosystem impacted by human activity and developments, including the existing generating stations, road building, gravel pits and other activities. The Project Site is adjacent to Robert Service Way, one of the main road accesses to downtown Whitehorse and in the valley below the Eric Neilson Whitehorse International Airport. Descriptions of the general physiography, surficial geology, soil conditions and climate of the Whitehorse region, as well as vegetation, fish and wildlife and water resources of the area will be included in the Project Proposal.

3.2.3 Proximity to Other Projects

There are no other projects listed in the YESAB Online Registry in proximity to this existing Project.

3.2.4 Proximity to First Nations Interests and Lands

This Project is within the traditional territory of the Ta'an Kwäch'än Council and Kwänlin Dün First Nation. Figure 3.2-1 shows nearby settlement land parcels. The nearest settlement land parcel is TKC C-28B, which is approximately 100 m from the Project Site.

3.2.5 Land Requirements

The Project requires no new land.

3.2.6 Past Uses of Project Site

The Project site has been operated as an electricity generating station since the late 1950s, beginning with hydroelectricity in 1958 and thermal electricity generation added in 1968. From the late 19th century to the 1950s, the land adjacent the Yukon River at Whitehorse Rapids saw a variety of commercial, subsistence, and recreational uses. Land and water uses and caretaking activities were undertaken by local First Nations for millennia prior to that.

4.0 PROJECT STAGES & SCHEDULE

4.1 PROJECT STAGES AND SCHEDULE

As outlined in Section 3.1.3, the Project is effectively a renewal of existing thermal electricity generating activities. As such, its key phase is Operations and Maintenance, and does not include construction or decommissioning currently. The exception to this is the modification or replacement of the existing permanent fuel storage tank system that is required to address recent code/standard changes. This work is planned for 2024, once this assessment is complete and a permit to modify the existing system can be secured. More detailed information on the fuel storage tank system modifications/replacement will be included in the Project Proposal.

The Project activities schedule is presented in Table 4-1, below.

Table 4-1 Project Stages and Schedule

STAGE	Timing	Description
Planning and Engagement	2022-2023	Environmental and Socio-economic Baseline and Effects Assessment
	2022-2023	Government and Community Engagement
Assessment/Permitting	November 2023	Submit Project Description to initiate YESAB Pre-Submission Engagement
	January – June 2024	YESAA Assessment Process
	July 2024	Air Emission and Fuel Tank Permits
Construction and Installation	July 2024 – October 2024	Fuel Storage Tank Improvements
Commissioning & Operations	November 2024	Fuel Storage Tank Commissioning and Continue Generation Operations

4.2 PROJECT DESIGN STAGE

The Project is currently in operation and the YESAA assessment is required for air emissions and fuel storage tank authorization renewal (with some modifications). Upgrades or replacement of the existing fuel storage tank system is required. Design work is underway now in preparation for permitting and construction in 2024.

4.3 PROPOSED CONCURRENT ACTIVITIES

Proposed activities during the PSE process to inform the development of the proposal will include ongoing engagement with the local community and the Ta'an Kwäch'än Council and Kwanlin Dün First Nation. This engagement will build on the past several years of engaging with these communities to understand interests related to the existing project (see Section 6 for further details).

5.0 REGULATORY CONTEXT

5.1 REGULATORY REQUIREMENTS

As outlined in the table below, the Project requires two principal authorization renewals: an Air Emissions Permit and a Fuel Storage Tank Permit. The existing Air Emissions Permit expires on December 31, 2024 and the Fuel Storage Tank permits expire December 31, 2026.

Because the Project includes a request to renew a previous authorization for up to 12 MW of emergency diesel generation it is assessable under YESAA at the Executive Committee Screening level pursuant to Schedule 3, Item 25 of the *Assessable Activities, Exceptions and Executive Committee Projects Regulations*. When this previous emergency capacity was authorized by the Regulator (in 2017) YESAA allowed for approval of the modification using the pre-existing decision document (2013-0125) on the basis that there was not a significant change in the nature of the proposed activities. Legislative changes since that time require that any renewal of this previously authorized emergency capacity to be assessed. The trigger includes the construction, decommissioning or abandonment of a fossil fuel-fired electrical generating station with a production capacity of 5 MW or more. Future renewals will return to having assessments conducted at the Designated Office level if no changes are proposed that would otherwise prompt a higher level of assessment (i.e., expansion of production capacity).

Following the completion of the YESAA assessment and issuance of a Decision Document by the Yukon Government, YEC will apply for the renewal of the two project authorizations to continue operations of the fuel storage system and the generators at the Project Site.

Table 5-1 Required Project Authorizations

Agency	Agency (Department)	Authorization
Yukon Government	Environment	<i>Environment Act</i> , Air Emissions Regulation <ul style="list-style-type: none"> Air Emissions Permit
Yukon Government	Community Services Fire Marshal's Office	<i>Environment Act</i> , Storage Tank Regulation <ul style="list-style-type: none"> Tanks Regulation, Storage Tank Systems Permit

6.0 ENGAGEMENT & CONSULTATION

Engagement and consultation for this Project was initiated in November 2022. The main takeaways from the Project engagement are that the Project is located near a residential area and noise and air pollution are the primary concerns. The engagement and communications methods were comprehensive and were intended to inform residents and property owners respecting the project and its objectives and to seek feedback.

6.1 AFFECTED FIRST NATIONS AND COMMUNITIES

- Kwänlin Dün First Nation
- Ta'an Kwäch'än Council
- City of Whitehorse

6.2 SUMMARY OF ENGAGEMENT WITH KWÄNLIN DÜN FIRST NATION AND TA'AN KWÄCH'ÄN COUNCIL GOVERNMENTS

Yukon Energy reached out to the Lands departments at the Kwänlin Dün First Nation and Ta'an Kwäch'än Council in November of 2022 as well as January and March of 2023 to see if either Nation had interest in meeting to discuss the project in more detail. Meetings were not requested.

Yukon Energy most recently reached out to both Nations on November 2, 2023 to let them know the Corporation was preparing to submit this Project Description.

6.3 SUMMARY OF ENGAGEMENT WITH GOVERNMENT OF YUKON

Yukon Energy worked directly with the Government of Yukon to provide information and gather feedback about this project. This included hosting one-on-one meetings with the Department of Environment, YG's interdepartmental YESAA Working Group, as well as sharing information with the Minister of Energy, Mines and Resources and MLAs in Whitehorse.

6.4 SUMMARY OF PUBLIC ENGAGEMENT

Yukon Energy undertook public/community engagement activities as part of the project planning in Whitehorse. In November 2022, Yukon Energy hired a consulting firm to help with an engagement process related to this project. The objectives of this public and stakeholder engagement process were as follows:

- Enhance understanding about thermal energy.
- Educate people about the role of thermal energy in Yukon's electrical makeup.
- Help people understand when and why thermal energy sources are used.
- Collect feedback from affected rightsholders and governments.
- Collect feedback from residents and stakeholders, identifying potential concerns.

The following sections provide a summary of the public engagement activities and outcomes. A detailed community engagement and consultation report is contained in Appendix A.

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6.5 ENGAGEMENT METHODS

Between November 2022 and April 2023, there were five engagement initiatives as part of this project: community meetings, stakeholder meetings, written comments, property owner outreach and general outreach to the Whitehorse community.

6.5.1 Community Meetings

Two public meetings were planned, one virtually on Microsoft Teams, and one in-person at the Grey Mountain Primary School. Both meetings used a presentation-style format. Eight people attended the online meeting and 20 people attended the in-person meeting.

A note that the community meetings were originally scheduled for January 2023, but were rescheduled to March to allow Yukon Energy more time to complete noise and air quality studies. This information helped Yukon Energy to have more informed conversations at the community meetings.

Notes from the community meetings are contained in the What We Heard Report, in Appendix A.

Table 6-1 Community Meetings

Date	Location	No. of Attendees
March 27, 2023	Virtual Meeting on MS Teams	8
March 29, 2023	Grey Mountain Primary School, Whitehorse	20
Total		28

6.5.2 Stakeholder Engagement

Stantec and Yukon Energy reached out to several stakeholder groups to offer them the opportunity to participate in a one-on-one meeting and to provide feedback. The stakeholder groups listed below were contacted and provided with information about the project.

Table 6-2 Stakeholder Engagement

Stakeholder	Engagement	Date
Elected Official - YG	Notifications	November 24, 2022 January 10, 2023
Elected Official - City of Whitehorse	Notifications	November 24, 2022 January 10, 2023

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Stakeholder	Engagement	Date
City of Whitehorse Administrative departments	Notifications	November 25, 2022 January 13, 2023
	In-person meeting	March 22, 2023
Government of Yukon Administrative departments	Notifications	November 25, 2022 December 6, 2023
	Meetings	Ongoing throughout 2023
Yukon Conservation Society	Notifications	November 25, 2022 January 13, 2023
	Online meeting	March 29, 2023
Riverdale Community Association	Notifications only	November 25, 2022 January 13, 2023

6.5.3 Door Knocking

Representatives from Stantec or YEC visited every occupied building within 800 m of the Project Site. The purpose of these visits was to provide information, make sure that property owners were aware of the engagement process, answer questions, and gather feedback.

As shown in **Table 6-3 – Door Knocking Summary**, 85 residents were spoken with during the door-knocking process with 25 comments gathered. All comments were recorded and have been included in the What We Heard Report, in Appendix A.

Table 6-3 Door Knocking Summary

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November 2023

Date	Properties Visited	Outcome		
		No Response, Left a Flyer	Spoke Briefly	Longer Conversation
March 13, 2023	40	17	15	8
March 15, 2023	67	34	29	4
March 23, 2023	74	45	28	1
Total	181 (100%)	96 (53%)	72 (40%)	13 (7%)

6.5.4 Property Owner Outreach

To ensure all property owners surrounding the generators were adequately notified of the project and upcoming opportunities to provide feedback, an introduction letter was mailed to all properties within 2 km of the Whitehorse Rapids Generating Station, located on Robert Service Way. As shown in **Table 6-4 Surrounding Property Notifications**, two different notifications were sent to advise people of the date change of the open houses. The number of properties also changed between Notification 1 and Notification 2 to reflect duplicated or missed properties, and incorrect addresses.

Table 6-4 Surrounding Property Notifications

Distance from Project Area	Properties Notified	
	Notification 1	Notification 2
2 km	1,679	1,617

Notification 1

The purposed of Notification 1, sent on December 9, 2022, was to introduce the project, answer some anticipated high-level questions, share information about the upcoming public meetings, and direct questions to the online comment form on the YEC website, or the project email address (YECWhitehorseThermalPermit@stantec.com).

Notification 2

The purpose of Notification 2, sent January 13, 2023, was to notify recipients of the change in open house dates and direct questions to the online comment form on the YEC project website, or the project email address.

6.5.5 Written Comments

During engagement, all interested parties were encouraged to submit comments and questions using the online comment form on the Yukon Energy project website, or the project email address

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(YECWhitehorseThermalPermit@stantec.com). In total, 11 comments were submitted through these methods; a redacted version of the comments has been included in Appendix A.

6.5.6 General Community Outreach

Aside from targeted stakeholder and property owner outreach, efforts were made to make the entire Whitehorse community aware of the project and to provide opportunities to get involved. An informational mailer was sent by Yukon Energy to residents in Whitehorse in November 2022. A copy of this mailer and the Canada Post Statement of Mailing (SOM) has been included in the What We Heard Report, in Appendix A. Posters providing information about the project and promoting community meetings were posted at various businesses and on community boards around town. Print advertisements, radio public service announcements and Facebook were used to promote the events. People could also find information on the project and leave a comment by visiting the project page on Yukon Energy's website.

6.5.7 What We Heard – Comment Summary

Of the feedback received, the key themes that emerged were:

- Noise
- Emissions and air pollution
- The role of thermal electricity in the Yukon

A detailed breakdown of the comments can be found in Appendix A of the appended *What We Heard Report*.

6.6 FUTURE ENGAGEMENT AND CONSULTATION ACTIVITIES

Once this Project Description is available on the YESAB registry website, Yukon Energy will:

- Update the project page on its website; and
- Post organically on its Facebook page.

These engagement efforts will encourage people to get involved in YESAB's Pre-Submission Engagement Process should they wish to provide feedback at this stage.

7.0 PRELIMINARY VALUED COMPONENTS & DATA

7.1 DESCRIPTION

A comprehensive background review of available data was completed for the Project. Relevant reports, literature, and government databases (e.g., GeoYukon) were reviewed in addition to Project-specific observations and assessments conducted in the Project Study Area as part of previous assessments for this existing project. Environmental and socio-economic components that had potential to interact with the Project were identified and baseline studies and preliminary effects assessments have been completed.

Valued Environmental and Socio-economic Components (VSECs) identified and considered include:

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- Aquatic Species and Habitats
- Terrestrial Species and Habitats
- Surficial Geology and Geomorphology
- Hydrology and Hydrogeology
- Aesthetics – Noise
- Air Quality
- Land Use and Land Tenure, including First Nations Traditional and Current Land Use
- Local and Regional Economy
- Heritage Resources

The existing site is heavily disturbed from its pre-development condition, the land is managed and owned by YEC, all aspects of the Project are expected to occur within the existing disturbed area with no public access permitted on the site due to the existing hazards related to the electrical hazards of the WRGS. Therefore, in consideration of the baseline conditions and the potential project effects, Terrestrial Species and Habitats, Surficial Geology and Geomorphology, Land Use and Land Tenure, Local and Regional Economy, and Heritage Resources are not expected to be materially affected by the Project because of the existing condition and duration of existence of the site. As a result, those components have not been carried forward in YEC’s preliminary effects assessment work that will be presented in the Project Proposal.

Yukon Energy does not believe the project is likely to affect listed wildlife species or critical habitat identified in Species At Risk Act (S.C. 2002, c. 29).

For reference, Table 7-1 lists the VESECs with the potential for interaction with the Project that were carried further into YEC’s effects assessment and have been part of previous YESAA assessments for projects of this nature.

Table 7-1 Valued Components with Likelihood of Interaction with the Project

Environmental or Socio-economic Component	Valued Component	Potential Effect
Environmental Quality (Aquatic Species and Habitats, Hydrology and Hydrogeology)	<ul style="list-style-type: none"> • Fish and Fish Habitat • Groundwater Quality 	<ul style="list-style-type: none"> • Contamination from hazardous material spills or sediment laden runoff
Air and Emissions	<ul style="list-style-type: none"> • Air Quality 	<ul style="list-style-type: none"> • Reduced air quality during operation
Noise	<ul style="list-style-type: none"> • Ambient Noise 	<ul style="list-style-type: none"> • Changes in noise levels for human receptors

7.2 VESEC DATA COLLECTION

Existing and socio-economic conditions have already been summarized in the baseline reports prepared for previous assessments to secure and renew the past authorizations for the Project.

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November 2023

Updated air quality, human health, and noise impact assessments have been completed for the Project. The baseline studies and results of Yukon Energy's effects assessment are expected to be included in the Project Proposal once the Executive Committee issues those instructions at the conclusion of the PSE process.

8.0 REFERENCES

Yukon Environmental and Socio-economic Act (YESAA) - Assessable Activities, Exceptions and Executive Committee Projects Regulations (SOR/2005-379).

Species at Risk Act (S.C. 2002, c. 29)

December 12, 2023

File: 2515.03.01

Elizabeth Barker, Environmental Protection Analyst
Yukon Government, Department of Environment, Standards & Approvals Section
Box 2703
Whitehorse, Yukon Y1A 2C6

(via email to: elizabeth.barker@yukon.ca)

Dear Ms. Barker,

RE: AIR EMISSIONS PERMIT NO. 60-010-04 WHITEHORSE RAPIDS GENERATING STATION – PART 2, CLAUSE 5 – REQUEST FOR APPROVAL OF CAPACITY REPLACEMENT

Pursuant to Part 2, Clause 5 of the above referenced permit Yukon Energy is requesting approval to complete a capacity replacement at the Whitehorse Rapids Generating Station. As part of Yukon Energy's Thermal Replacement Project, the Corporation is replacing end of life diesel generators with new diesel capacity. In this case, Whitehorse Diesel No. 3 or WD3 (nameplate capacity 5.15MW) reached end of life after nearly 50 years of service and was retired. Yukon Energy is working to complete a replacement of the generating capacity represented by this unit with two new 2.5 MW generators.

The new generators will meet the EPA's Tier 4 emission standards for non-road diesel engines, replacing WD3's Pre-Tier emissions. As part of its Thermal Replacement Project, Yukon Energy is making this investment in all *new permanent* diesel generation it installs across the grid, which will result in a decrease in emissions of particulate matter (PM) and oxides of nitrogen (NOx) of approximately 90% from EPA Tier 2 levels. The emissions controls on the units will also reduce noise emissions as compared to the unit being replaced. The new generators will be enclosed in modular containers and, as such, will not require a building to house them. Specifications for the replacement generators and the selective catalytic reduction (SCR) exhaust aftertreatment system are attached to this request for approval.

Yukon Energy expects to complete the installation in Q3 2024, after which it will begin commissioning and load testing units, thereby initiating emissions from the units.

Please contact me by telephone at 867.393.5350 or by email: travis.ritchie@yec.yk.ca if you have any questions, comments, or concerns with this request.

Thank you for your time and consideration in this matter.

Yours Sincerely,



Travis Ritchie
Director – Risk & Compliance

Attachment: Specifications Caterpillar C175-16 Engine/Generator and ECOCUBE SCR Exhaust Aftertreatment

- c. Jeff O'Farrell, City Manager – City of Whitehorse (via email)
- David Irvine, Manager of Lands and Resources, Ta'an Kwäch'än Council (via email)
- David Beaudoin, A/Director of Heritage, Lands, and Resources, Kwanlin Dün First Nation (via email)

December 12, 2023

File: 2515.03.01

Elizabeth Barker, Environmental Protection Analyst
Yukon Government, Department of Environment, Standards & Approvals Section
Box 2703
Whitehorse, Yukon Y1A 2C6

(via email to: elizabeth.barker@yukon.ca)

Dear Ms. Barker,

RE: AIR EMISSIONS PERMIT NO. 60-010-01 FARO GENERATING STATION – PART 2, CLAUSE 5 – REQUEST FOR APPROVAL OF CAPACITY REPLACEMENT

Pursuant to Part 2, Clause 5 of the above referenced permit Yukon Energy is requesting approval to complete a capacity replacement at the Faro Generating Station. As part of Yukon Energy's Thermal Replacement Project, the Corporation is replacing end of life diesel generators with new diesel capacity. In this case, Faro Diesel No. 1 or FD1 (nameplate capacity 5.15MW) reached end of life after nearly 50 years of service and was retired. Yukon Energy is working to complete a replacement of the generating capacity represented by this unit with two new 2.5 MW generators.

The new generators will meet the EPA's Tier 4 emission standards for non-road diesel engines, replacing the FD1's Pre-Tier emissions. As part of its Thermal Replacement Project, Yukon Energy is making this investment in all *new permanent* diesel generation it installs across the grid, which will result in a decrease in emissions of particulate matter (PM) and oxides of nitrogen (NOx) of approximately 90% from EPA Tier 2 levels. The emissions controls on the units will also reduce noise emissions as compared to the unit being replaced. The new generators will be enclosed in modular containers and, as such, will not require a building to house them. Specifications for the replacement generators and the selective catalytic reduction (SCR) exhaust aftertreatment system are attached to this request for approval.

Yukon Energy expects to complete the installation in Q3 2024, after which it will begin commissioning and load testing units, thereby initiating emissions from the units.

Please contact me by telephone at 867.393.5350 or by email: travis.ritchie@yec.yk.ca if you have any questions, comments, or concerns with this request.

Thank you for your time and consideration in this matter.

Yours Sincerely,



Travis Ritchie
Manager – Environment, Assessment, & Licensing

Attachment: Specifications Caterpillar C175-16 Engine/Generator and ECOCUBE SCR Exhaust Aftertreatment

- c. Larry Baran, Chief Administrative Officer – Town of Faro, Yukon Territory (via email)
Lorraine Sterriah, Manager – Heritage, Lands, and Resources – Ross River Dena Council (via email)

From: [Travis Ritchie](#)
To: [Elizabeth.Barker](#)
Subject: RE: [EXT] Request for Approval Under Air Emissions Permit 60-010-04 Whitehorse Rapids Generating Station
Date: December 20, 2023 12:11:00 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)

Thanks Liz.

Will you be sending the approval for the same work at the FGS per the other request I sent on December 12th?

No rush at all, just curious.

Thanks.

Regards,

Travis

From: Elizabeth.Barker <Elizabeth.Barker@yukon.ca>
Sent: December 13, 2023 4:16 PM
To: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Cc: Jeff.O'Farrell@whitehorse.ca; lrhmanager <lrhmanager@taan.ca>; Daniel.Beaudoin@kdfn.net; Lisa Wiklund <Lisa.Wiklund@yec.yk.ca>
Subject: RE: [EXT] Request for Approval Under Air Emissions Permit 60-010-04 Whitehorse Rapids Generating Station

Hi Travis,

As per the attached request and our discussion on December 11, the capacity replacement request for the Whitehorse Rapids Generating Station is approved.

Regards,



Elizabeth Barker
Environmental Protection Analyst
Environment | Standards & Approvals
T 867-667-5456 | Yukon.ca

From: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Sent: December 12, 2023 12:15 PM
To: Elizabeth.Barker <Elizabeth.Barker@yukon.ca>
Cc: Jeff.O'Farrell@whitehorse.ca; lrhmanager <lrhmanager@taan.ca>; Daniel.Beaudoin@kdfn.net; Lisa Wiklund <lisa.wiklund@yec.yk.ca>
Subject: [EXT] Request for Approval Under Air Emissions Permit 60-010-04 Whitehorse Rapids Generating Station

Hello Liz,

Please see the attached request for approval. If you have any difficulties with the file please let me know.

Thank you.

Regards,

Travis



Travis Ritchie
Director, Risk & Compliance
Telephone: 867-393-5350 | Mobile: 867-333-0300



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SM-YEC-20141008

From: [Travis Ritchie](#)
To: ["Elizabeth.Barker"](#)
Subject: RE: [EXT] Request for Approval Under Air Emissions Permit 60-010-01 Faro Rapids Generating Station
Date: January 10, 2024 8:27:05 AM
Attachments: [image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)
[image011.png](#)

Hi Liz,

Thanks for your email.

We are not asking for more capacity. Recall that we meet our site capacity threshold of 15.5 MW how ever we can with the units we have outlined will be on site. In this case, replacement of the FD1 capacity with the new Tier 4 units will supplant the 2.4 MW of FD1 rated capacity before retirement, plus the balance of the 5.15 MW that is currently being met by the YMs (i.e., FD1 is decommissioned and we will need fewer YMs after the replacement units are installed). As such 5.15 MW of pre-Tier and Tier 2 capacity will now be met mostly with the new Tier 4 units. We are not asking to increase the assessed site capacity of 15.5 MW, just swapping capacity around to meet operational needs.

Hope this helps with your review process.

Regards,

Travis

From: Elizabeth.Barker <Elizabeth.Barker@yukon.ca>
Sent: January 8, 2024 4:37 PM
To: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Subject: RE: [EXT] Request for Approval Under Air Emissions Permit 60-010-01 Faro Rapids Generating Station

Good Afternoon Travis,

I've reviewed the attached request and have a couple thoughts. In the 2021-0115 Faro YESAA assessment, FD1 was assessed using the de-rated capacity of 2.4MW and the air emissions permit was issued on that basis. As a result, the 5.15MW capacity you have listed for FD1 in the attached request is not representative of the assessed project scope. You are technically asking for a "replacement" that would add an extra 2.5MW of capacity that was not included in the 2021 assessment.

That being said, I recognize the new generators have a US EPA Tier 4 rating, which is higher than any other generator installed onsite. From an air emissions point of view, this replacement is beneficial and addresses concerns that were raised in the YESAA assessment regarding air quality.

I need to dig deeper on this one but I'll be in touch once I have more information.



From: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Sent: December 12, 2023 12:16 PM
To: Elizabeth.Barker <Elizabeth.Barker@yukon.ca>
Cc: admin-faro@faroyukon.ca; lorraine.sterriah@rrdc.ca; Lisa Wiklund <lisa.wiklund@yec.yk.ca>
Subject: [EXT] Request for Approval Under Air Emissions Permit 60-010-01 Faro Rapids Generating Station

Hello Liz,

Please see the attached request for approval. If you have any difficulties with the file please let me know.

Thank you.

Regards,

Travis

Travis Ritchie



Director, Risk & Compliance
Telephone: 867-393-5350 | Mobile: 867-333-0300



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SM-YEC-20141008

From: [Travis Ritchie](#)
To: ["CalebW.Light"](#)
Subject: RE: Executive Committee Decision - Whitehorse Rapids Thermal Generating Station Relicensing Project Description
Date: January 12, 2024 3:52:01 PM
Attachments: [image001.png](#)

Hi Caleb,

Thanks for your email and voicemail.

We will review the decision and follow up next week if we have any questions or would like to discuss further.

Have a great weekend!

Regards,

Travis

From: CalebW.Light <caleb.light@yesab.ca>
Sent: January 12, 2024 2:16 PM
To: Travis Ritchie <Travis.Ritchie@yec.yk.ca>
Cc: Bryony.McIntyre <Bryony.McIntyre@yesab.ca>; Dennis.Nicloux <Dennis.Nicloux@yesab.ca>; Laura.Melvin <Laura.Melvin@yesab.ca>; Cristi.Frittaion <Cristi.Frittaion@yesab.ca>; Don.McPhee <Don.McPhee@yesab.ca>
Subject: Executive Committee Decision - Whitehorse Rapids Thermal Generating Station Relicensing Project Description

Hi Travis,

The Executive Committee has concluded their compliance check of the project description for your Whitehorse Rapids Thermal Generating Station Relicensing Project.

In brief, the project does not, as described, trigger the requirements for a screening under Schedule 3 of the *Assessable Activities, Exceptions, and Executive Committee Projects Regulations*.

The attached letter provides more details regarding the conclusion. The compliance check of the project description has now ended, and your project will require a project proposal submission to the Whitehorse Designated Office for a designated office level assessment.

If you have any questions about the attached or would like to discuss the findings and next steps, please do not hesitate to call.

Regards,



Caleb Light

Executive Committee Manager
Suite 200-309 Strickland Street
Whitehorse, YT Y1A 2J9
1.867.456.3241

We acknowledge, recognize, and respect that we live, work, and play within the Traditional Territory of the Kwanlin Dün First Nation and Ta'an Kwäch'än Council. However, our work also takes place in the Traditional Territories of all Yukon First Nations.

NOTICE: Please be advised that this email communication may be made public through its addition to the YESAB Online Registry (YOR) and the corresponding document registry. In accordance with sections 118 and 119 of YESAA, YESAB must maintain a register containing all documents that are produced, collected or received by Designated Offices, the Executive Committee or panels of the Board in relation to assessments. In addition, this email communication may be disclosed pursuant to YESAB's obligations under the Federal Access to Information Act and Privacy Act.



File No: <none>
Via Email

January 12, 2024

Yukon Energy Corporation
2 Miles Canyon Rd.
Whitehorse, YT Y1A 6L4

Dear Travis Richie,

Re: Whitehorse Rapids Thermal Generating Station Relicensing project – Executive Committee Decision for Level of Assessment

You submitted a project description for the Whitehorse Rapids Thermal Generating Station Re-licensing (the “Project”) on November 6, 2023. We began a review of the project description as part of the pre-submission engagement process for project screenings by the Executive Committee. We thank you for your participation and clarification to questions that we had concerning your proposed activities for the Project. The pre-submission engagement process allows us to identify early whether the activities for your proposed Project require an Executive Committee level screening.

We have now ended our review of your project description. We have concluded that the Project does not trigger the requirement for a screening under Schedule 3 of the *Assessable Activities, Exceptions, and Executive Committee Projects Regulations* (the “Regulations”). As a result, to initiate an assessment of your Project, your Project requires the submission of a project proposal to the Whitehorse Designated Office for a designed office level assessment.

Reasons

Schedule 3 of the Regulations set out the assessable activities for Executive Committee projects. These are the projects that are subject to an Executive Committee level screening. The two sections of Schedule 3 which could, potentially, be said to apply to the Project are s.25(b) and section 26.

Section 25 (b) of Schedule 3 requires us to assess projects that include the “Construction, decommissioning or abandonment of [...] (b) a fossil fuel-fired electrical generating station with a production capacity of 5 MW or more.” Your Project contemplates modifications and replacement activities for certain components of the

Whitehorse Rapids Thermal Generating Station (the “Station”) as opposed to the construction of a fossil fuel-fired electrical generating station. Individual diesel generators do not constitute a fossil fuel-fired electrical generating station, nor does the fuel storage tank system. Rather, these pieces of infrastructure are components of the existing Station. Your Project’s activities do not detail the construction of a generating station with a production capacity of 5 MW or more. As a result, the Project does not trigger s.25(b) of Schedule 3.

In turn, section 26 of Schedule 3 requires the “Expansion of [...] a fossil fuel-fired electrical generating station, that increases production capacity by 5 MW or more” be assessed by the Executive Committee. As applied to the Project: to trigger s.26, the Station must be physically expanded *and* this expansion must increase the production capacity of the Station by more than 5 MW. The project description does not detail activities that physically expand the Station. Rather, and as detailed below, the Project will ultimately result in one less diesel generator at the Station, and the replacement or modification of the fuel-tank system will not expand the Station either. As a result, the Project does not trigger s.26 of Schedule 3.

The Project

The Executive Committee’s conclusion as to whether the Project triggers a screening or not is based upon our understanding that the Project consists of the three activities outlined below. This scope was developed through a careful consideration of the project description, subsequent correspondence with you, and the requirements of s.51 of the *Yukon Environmental and Socio-economic Assessment Act*:

1. **Operation and maintenance of the Thermal Generating Station.** You propose to generate up to 42 MW of electricity at the Station. Of this, 13.2 MW will be generated from natural gas and the remaining 28.8 MW from diesel fuel.
2. **Replacement or modification of the fuel-tank system.** You propose to either modify or replace the fuel-tank system to meet newer code requirements. While the decision to replace or modify the fuel-tank system has yet to be made, you have confirmed that the changes will not result in an expansion of the Station and will not increase the facility’s production capacity.
3. **Generator replacement.** You will be installing two new 2.5 MW diesel generators, namely WD 8 and WD 9, which have a total combined nameplate capacity of 5.0 MW. In turn, you will also be removing three of the rented generators with a total combined nameplate capacity of 4.8 MW. This activity will decrease the total number of fossil fuel-fired generators from 17 to 16. The current and planned future configuration of generators at the Station is set out in Attachment 1 to this letter.

For reference, pertinent details about the Station are as follows:

- The current configuration consists of 17 generators. Three of these use natural gas, and the remaining fourteen use diesel fuel. Some of the diesel generators are rented. The rented generators are contained in portable trailers, seasonally

installed, connected to local transformation and fuel supply equipment. Functionally there is no difference between permanently installed and rented generators.

- The sum nameplate capacity of the 17 generators on site is 42.2 MW, and the sum rated capacity of the generators is 41.7 MW. The current air emissions permit for the Thermal Generating Station authorizes 16.15 MW capacity from diesel generators and 13.13 MW capacity from natural gas for a total of 29.28 MW. For clarity, the number and capacity of the diesel generators currently on-site exceed that which is authorized under YEC's current permit. The regulator has allowed you to install more generators at the Station than is provided for under your permit.

Next Steps

To initiate an assessment of the Project, you must submit a project proposal to the Whitehorse Designated Office. For clarity, the above summary of the Executive Committee's understanding of the Project activities is not binding on the Whitehorse Designated Office. Rather, the Whitehorse Designated Office will consider the project proposal and requirements of s.51 to determine the scope of the project assessed by their office. Please contact the Manager of the Whitehorse Designated Office, Cristi Frittaion (Cristi.Frittaion@yesab.ca) if you have questions about the Designated Office assessment process.

Regards,



Bryony McIntyre
Executive Committee
Member



Dennis Nicloux
Executive Committee
Member

Cc:

Cristi Fritton, Manager, Whitehorse Designated Office
Don McPhee, Regional Office Manager

Attachment 1: Current and proposed configuration of the Whitehorse Rapids Thermal Generating Station

Table 1. Current generating unit configuration at the Whitehorse Rapids Thermal Generating Station.

#	Generator Name	Nameplate Capacity (MW)	Current Rated Capacity (MW)	Fuel Type
1	WG1	4.4	4.4	Natural Gas
2	WG2	4.4	4.4	Natural Gas
3	WG3	4.4	4.4	Natural Gas
4	WD4	2.5	2.5	Diesel
5	WD5	2.5	2.5	Diesel
6	WD6	2.7	2.5	Diesel
7	WD7	3.3	3	Diesel
8	YM10	1.8	1.8	Diesel
9	YM11	1.8	1.8	Diesel
10	YM12	1.8	1.8	Diesel
11	YM13	1.8	1.8	Diesel
12	YM14	1.8	1.8	Diesel
13	YM15	1.8	1.8	Diesel
14	YM16	1.8	1.8	Diesel
15	YM17	1.8	1.8	Diesel
16	YM18	1.8	1.8	Diesel
17	YM19	1.8	1.8	Diesel
Total (MW)		42.2	41.7	

Table 2. Proposed generating unit configuration of the Whitehorse Rapids Thermal Generating Station.

#	Generator Name	Nameplate Capacity (MW)	Current Rated Capacity (MW)	Fuel Type
1	WG1	4.4	4.4	Natural Gas
2	WG2	4.4	4.4	Natural Gas
3	WG3	4.4	4.4	Natural Gas
4	WD4	2.5	2.5	Diesel
5	WD5	2.5	2.5	Diesel
6	WD6	2.7	2.5	Diesel
7	WD7	3.3	3	Diesel
8	YM10	1.8	1.8	Diesel
9	YM11	1.8	1.8	Diesel
10	YM12	1.8	1.8	Diesel
11	YM13	1.8	1.8	Diesel
12	YM14	1.8	1.8	Diesel
13	YM15	1.8	1.8	Diesel

#	Generator Name	Nameplate Capacity (MW)	Current Rated Capacity (MW)	Fuel Type
14	YM16	1.8	1.8	Diesel
15	WD8	2.5	2.5	Diesel
16	WD9	2.5	2.5	Diesel
	Total (MW)	41.8	41.3	

Notice



YESAB and its Designated Offices are currently experiencing organizational challenges, which are driven by a record number of active assessments, many of which present a new level of complexity.

As a result, and for the time being, YESAB may not always be able to complete Designated Office Evaluation stages within the timelines outlined in YESAB's [Rules for Evaluations Conducted by Designated Offices](#). Extensions at all stages of assessment should be expected and project proposals may be unassigned until staff are able to commence assessment work on that project.

YESAB understands the widespread impacts if YESAB's mandate is not achieved in a timely and predicted fashion. YESAB's multi-faceted obligations require assessors to conduct assessments in a timely manner while fulfilling the legislative duty to assess the likely effects of projects. As an organization, YESAB is currently reviewing its organizational structure and process with the aim of balancing our obligations and implementing timely change to ensure a predictable YESAB process.

This message will be reviewed and if applicable, updated by May 31, 2024. For inquiries on this matter, please contact YESAB's Senior Communication Officer at lavina.mulchandani@yesab.ca.

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North

Yukon environmental assessor warns of delays over record number of assessments

Operators concerned about impact of delays on approvals

[Gabrielle Plonka](#) · CBC News · Posted: Apr 20, 2024 1:00 AM PDT | Last Updated: April 20, 2024



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The Yukon Environmental and Socio-economic Assessment Board (YESAB) is warning about delays as it faces staff shortages and a record-breaking number of assessments. (Alexandra Byers/CBC)

The Yukon Environmental and Socio-economic Assessment Board (YESAB) is warning about delays in service.

The board is responsible for doing environmental assessments of development projects in the Yukon and recommending to the territorial government whether projects should proceed, and under what conditions. In a notice published to its website late last week, it said it's experiencing "organizational challenges" because of a record number of active assessments, many of which are extremely complex.

Delays should be expected at all stages of assessment, the board said, and not all projects will be assessed within the timelines required [under the assessment act](#). Some proposals won't be assigned to an assessor until staff are available.