

Attachment 10

Avalon CT Comprehensive Risk Register



Strategic Risk Register

Project Avalon Combustion Turbine (ACT) - Tactical Risks
Project No. 12972390
Updated: Friday, May 16, 2025

Risk Ranking Table	
Low	1-4
Medium	5-10
High	12-16
Very High	20-25

Date Issued: 9/11/2024
Rev: 01
Workshop Date: 11-Sep-24
Participants: Major Projects
NL Hydro

No.	Topic	Issue / Risk Description	Risk Rating PRE-TREATMENT (Likelihood X Consequence)			Mitigating Actions	Risk rating POST-TREATMENT (Likelihood X Consequence)			Target completion date	Status
			Likelihood	Consequence	Rating		Likelihood	Consequence	Rating		
1	Communications	Stakeholder Management failure to inform key stakeholders	4	3	12	A slide deck is being prepared to present key project information to employees during Town Hall sessions. A similar format will be shared with town councils to ensure community engagement.	2	3	6	18 Oct 24	Ongoing
2	Environment	EA requirements and/or release conditions	4	3	12	The site is comprehensively monitored, minimizing operational risk. There are no design concerns. Project teams recognize the complexity of the RRA process, especially as it relates to fossil fuel generation policy.	2	3	6	Q1 25	Ongoing
3	Regulatory	PUB Application process delays or legal liabilities	4	4	16	A Regulatory Compliance Plan and Roadmap are in development, with active engagement underway with both the NSLO and PUB. Government and PUB are aligned on the combustion turbine strategy.	3	4	12	Q4 25	Ongoing
4	Project Management	Corporate Support Services	5	5	25	Project resources are in place with active engineering support and firm CEO backing. Additional staffing for ACT has been approved. Project documentation is underway to support upcoming phases.	3	5	15		Ongoing
5	Project Management	Competing Projects	5	5	25	A formal HR strategy is in development and an organizational chart has been developed. Early hiring is a key priority to avoid future project delays.	3	5	15	Q4 25	Ongoing

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6	Project Scope of Work	Marine Jetty - Fuel Delivery	5	5	25	The project scope for Phase 2 includes essential groundwork and a marine jetty upgrade, which is critical to long-term viability. Evaluation criteria are being defined, with a conservative Level 3 estimate planned until detailed assessments are complete.	4	5	20	Q4 24	Closed
7	Construction	Work Force Availability	0	0	0		0	0	0		Closed
8	Access/Site	Safety associated with site congestion control	4	5	20	A separate entrance early along the shared access road is under evaluation to streamline site access and increase operational efficiency during peak construction.	3	4	12	Q4 25	Ongoing
9	Operations	Failure to properly engage with Operations leads to late design changes and increase cost	3	4	12	Operations personnel are engaged in key project phases, including design reviews and risk assessments. They will be embedded in the completions team through to startup and operational handoff.	2	3	6	Q4 29	Ongoing
10	Project Management	Poor or lack of comprehensive Planning	5	5	25	A dedicated planner has been identified for the execution phase. Planning is aligned with the Major Projects Project Controls Manager and application documentation requirements.	3	3	9	Q1 25	Ongoing
11	Project Management	Financial Uncertainty/Lack of project cost control	5	5	25	A cost control resource is in the hiring process and will support the next phase. Finance, contracting, and procurement plans are being finalized, along with the implementation of a cost control system.	1	4	4	Q1 25	Ongoing

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12	Constructability (Item to be transferred to Tactical Risk Register)	Optimizing Geotechnical (Hatch Item 1 and 9) Move to tactical register.	5	5	25	Initial design guidance is based on test pits. Further geotechnical investigation is required to confirm piling needs. A full site survey is pending and critical to construction certainty.	4	5	20	Q4 25	Closed
13	Project Management	Inadequate Project Controls	5	5	25	An estimator has been assigned. Expectations were clarified through workshops with the FEED contractor. Formal use of the CDR process is now in place for estimate transparency and approval.	4	4	16	Q4 24	Closed
14	Project Management	Interface Management	5	5	25	An interface management plan is included in MDR deliverables. All interfaces will be formally identified and assigned. A Corporate Interface Manager position has been posted to support this. SIMOPS evaluations at Holyrood are also planned.	3	3	9	Q4 24	Closed
15	Quality	Quality Management system	5	5	25	A temporary quality resource is assigned, with plans to hire a permanent Quality Manager. A Quality Management Framework will be rolled out across all phases, and all contractors will be required to submit quality plans and systems.	4	4	16	Q4 25	Ongoing
16	Cost Estimate Equipment and Materials	Rebar, concrete, steel, critical path Long lead major items, turbines, transformers, switchgear, etc.	5	5	25	Cost estimates will be closely monitored during Level 3 development. Escalation will be incorporated into QRA using Monte Carlo simulation tools to enhance estimate reliability.	4	5	20	Q4 25	Ongoing

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17	Cost Estimate Resources	Labor Conditions/Owners Plan	5	5	Buildforce data will be used to improve labor forecasting. An Owner's Staffing Plan and labor register are being developed. Early operations engagement is being prioritized, with labor market conditions monitored as part of risk evaluation.	3	5	15 Q4 2025	Accepted Risk
18	Project Management	Primary Contractor availability selection and performance	4	5	An overarching contracting strategy is being developed based on lessons learned and early contractor engagement. EPCM onboarding will be prioritized to streamline procurement and construction.	3	5	15 Q4 25	Ongoing
19	Safety / Operations	Care, Custody and Control of Site and Facilities	5	5	The NLH Safety Credo will be central to site activities. A health and safety plan is in development. Safety standards and permit-to-work processes will be integrated through commissioning into operations. Security planning is underway.	3	4	12 Q4 2025	Ongoing
20	Human Resources	Assignment of Owner Project resources, engagement, turnover and retention (Hatch Item 4 and 14)	5	5	A workforce organization plan is being developed, including HR strategy and labor market analysis. Staffing plans are being fed into the cost estimate. Contractor availability remains a risk, mitigated by SOAs.	3	4	12 Q4 2025	Ongoing

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21	Supply / Construction/ Schedule (Tactical)	Turbines or HV Transformer not in separate specification for Supply Construction. Move to tactical register. (Hatch Item 12)	5	5	25	3	4	12	Closed
22	Regulatory / Political	External pressures dictating our procurement strategies	5	5	25	2	5	10	Ongoing
23	Contracts	Contract Requirements in terms of Scope of Work , Contractor Team and overall contract and subcontract strategy	5	5	25	2	5	10	Ongoing
24	Project Team	Project Team not co located . Organization not clearly defined or communicated.	5	5	25	2	4	8	Closed

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25	Engineering (Tactical)	Technology selection . Main CT selected and alignment with BACT. (Hatch Item 5)	4	3		3	3	Q4 24	Closed
26	Environment (Tactical)	Risks Associated with Fuel Supply (Hatch Item 11)	5	5	Plans include full bunding of the tank farm and truck offloading areas. All spill areas will be routed to an oil-water separator. Piping systems will include high-integrity isolation features to mitigate environmental risk.	2	3	Q4 24	Closed
27	Governance	Failure to roll out or adhere to Governance Framework	5	5	A Governance Charter and Framework have been developed. A Risk and Interface Management Plan is included in the MDR and will be tracked throughout the project lifecycle to ensure accountability and oversight.	3	3	Q4 24	Ongoing
28	Scope	Clarity of Scope in regards to Phase 2 (300 MW solution) requirements	4	5	The Phase 2 scope of work will focus solely on groundworks. All additional scope items will be clarified and controlled through project governance.	2	5	Q4 24	Ongoing
29	Contractor	Contractor financial capacity and health	3	5	RFPs will require performance bonds, letters of credit, and include a structured bid clarification process to ensure financial and delivery accountability.	2	4	Q4 2025	Ongoing
30	Insurance	Requirements around Insurance not known and/or cascaded into contracts and RFPs ,etc	4	5	Follow-up is underway to confirm insurance requirements in the final RFP documentation.	2	4	Q2 2025	Ongoing
31	Regulatory	Early Execution not approved	3	5	If necessary approvals are not received, escalation to the Government will occur. Project plans have contingencies in place for such outcomes.	2	5	Q3 2025	Closed

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1	Constructability	Optimizing Geotechnical (Hatch Item 1 and 9)	5	5	25	4	5	20	Ongoing
2	Supply / Construction/ Schedule	Turbines or HV Transformer not in separate specification for Supply Construction. (Hatch Item 12)	5	5	25	1	4	4	Closed
3	Engineering	Technology selection . Main CT selected and alignment with BACT. (Hatch Item 5)	4	3	12	3	3	9	Ongoing
4	Environment	Risks Associated with Fuel Supply (Hatch Item 11)	3	3	9	2	2	4	Ongoing
5	Safety associated with site congestion (ACTION 8 - S.R)	Safety associated with site congestion control	4	5	20	3	4	12	Ongoing

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6	Failure to properly engage Operations (ACTION 9 - S.R.)	Failure to properly engage with Operations leads to late design changes and increase cost	3	4	Operations personnel are integrated into design reviews and will continue to participate in hazard reviews and commissioning, supporting a smooth transition to operations.	2	3	Q4 2029	Ongoing
7	Interface Management (ACTION 14 - S.R.)	Interface Management	5	5	All interfaces will be identified and resourced early in the next phase. A corporate interface manager will oversee this, supported by PMO framework documentation and SIMOPS assessments.	3	3	Q3 2025	Ongoing
8	Care, custody and control of site and facilities (ACTION 19 - S.R.)	Care, Custody and Control of Site and Facilities	5	5	NLH's Safety Credo will be enforced across all sites. A Major Projects Health and Safety Plan is in development. Access to completions areas will be coordinated to ensure alignment with startup and permit-to-work systems.	4	4	Q4 2025	Ongoing
10	TL218 Tie- in confirmation (HATCH 002)	inaquate FEED detail to ensure estimate and schedule	4	3	Tie-in requirements are being evaluated early in the project. SIMOPS and constructability reviews will assess steel versus wood pole selection.	4	2	Q2 25	Open

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11	Removal of powerhouse enclosures (Hatch 07)	Removal of powerhouse from scope of work	3	4	A formal risk assessment meeting is being scheduled to plan safe enclosure removal.	3	3	Q1 25	Ongoing
12	Fuel Management (Hatch 17)	Tank Availability	2	5	A study is underway to assess fuel storage capacity and intertie requirements to support the combustion turbine.	1	3	Q2 25	Ongoing
13	Fuel Supply (Hatch 19)	Fuel suppliers may be unable to provide sufficient supply	1	5	An RFP has been issued for fuel supply. Additional studies will determine tie-in options to existing tank infrastructure and future tank requirements. The contracting strategy includes marine supply considerations.	1	4	Q3 2025	Ongoing
14	Assumptions	Assumptions made are determined to be incorrect	4	4	All project assumptions from FEED will be validated in the pre-execution phase. Design changes during EPCM will address any outstanding assumptions.	2	2	Q4 2025	Ongoing
15	Final Plot Plan (Hatch 015)	Plot plan is not frozen during FEED.	4	4	The final site layout will be confirmed prior to execution and will incorporate lessons learned from earlier design stages.	2	2	Q1 2025	Ongoing

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16	Fuel Trucks (Hatch A16/40)	Availability of B-Train fuel delivery trucks	4	5	Supplier feedback is being integrated into planning; one vendor has committed to acquiring additional trucks to meet project demand.	2	3	Q4 2025	Closed
17	Geotechnical (21/A74)	Geotechnical assessments completed of date is not accurate representation of surface conditions Powerhouse building will be built on existing fill so piling is not required.	3	5	Further geotechnical studies are planned for the pre-execution phase to refine foundation design.	2	3	Q3 2025	Ongoing
18	Crane requirements (Hatch A30)	Const Crane requirements not identified in FEED.	4	4	Maximum equipment sizes will be defined, and a constructability review will inform crane planning and laydown area requirements.	2	3	Q3 2026	Ongoing
19	Marine Offload Capacity (Hatch A41/46)	Marine jetty offload capacity not available or insufficient to meet assumed offload rate of 13500 tpm	5	4	Studies are ongoing to determine whether to refurbish or fully replace the jetty infrastructure required for marine diesel offload.	3	3	Q3 2025	Ongoing

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20	PUB Delay	Delay in getting approval from PUB on ACT submission	5	5	Primary contracts will include off-ramps tied to PUB approval timelines. Engagement with PUB and government bodies is ongoing to support timely decision-making.	4	5	20 Q4 2025	Closed
21	Procurement	Additional packages and long lead items	4	5	Long lead equipment has been identified and will be bundled into early procurement packages to protect the schedule.	4	5	20 Q1 2026	Ongoing
22	TL218 Constructability (HATCH 002)	Constructability configuration of TL218 outage concerns	5	5	Pre-execution studies are being conducted on construction methods for TL218. Steel versus wood options are being coordinated with ECC and system planning.	3	5	15 Q1 2027	Open
23	DCC	DCC System not up and running	1	3	Document workflows will be centralized through SharePoint.	1	3	3 Q3 2025	Ongoing
24	DCC	DCC Resources	3	4	Additional resources will be hired to manage the document load.	1	3	3 Q3 2025	Ongoing
25	Engineering	Engineering resources	5	5	Dedicated engineering resources are assigned to Major Projects to ensure design continuity and technical oversight.	2	4	8 Q3 2025	Ongoing
26	Procurement	Traiffs on materials and equipment	5	4	Alternate material suppliers are being sourced to de-risk procurement delays.	3	3	9 Q1 2026	Ongoing

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27	Contractors	Major Projects competing for external dedicated resources	5	4	20	EPCM partners have identified project personnel and discipline leads. Organizational charts are in place to support team coordination.	2	2	4	Q3 2025	Ongoing
28	Contracts	Impact to Contract Lifecycle	3	4	12	Dedicated resources within the MP commercial team are tracking outstanding items in an action log, with escalation processes defined.	2	3	6	Q1 2025	Ongoing
29	Environment	EA Approval Timeline	5	5	25	Enhanced EA documentation will be submitted on time. Open communication with regulators has been established early in the project.	3	2	6	Q3 2025	Ongoing
30	Utilities	Water supply for FW	5	5	25	An options study will evaluate preferred approaches to utility service for the site.	3	5	15	Q3 2025	Ongoing