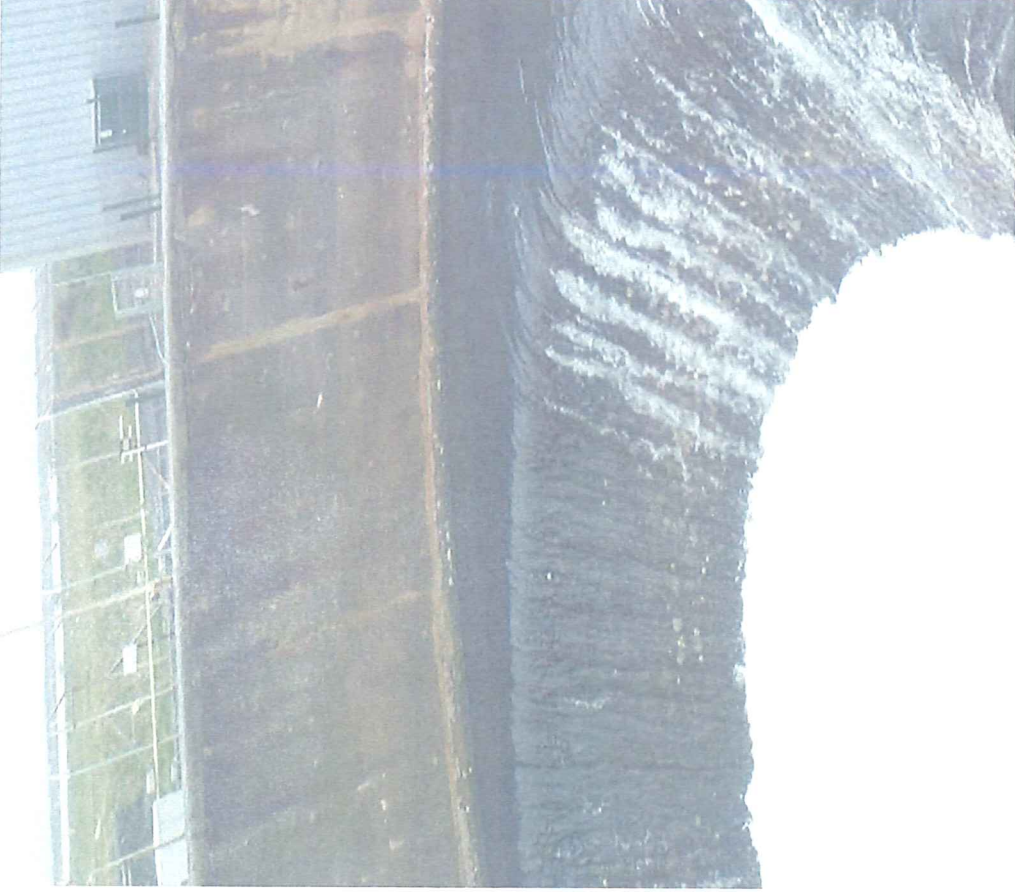




HNB Active Effluent Discharge Line

Alternative Discharge Line to Sea

Optioneering Phase



Optioneering

- Credible Options Report Produced.
- Cross Functional Meetings held from July 2022 – November 2022
- 13 initial options screened including pump variations, use of RCW and extension of the line into sea.

Dispersion Modelling

Eden Environmental modelled the effect of discharge location, timing relative to the tide and flow rate of 5 different scenarios as determined by the options screening. All results contained in report ENE-0328A/R1.

Key Conclusions

- ✓ Discharge timing relative to the tide and CW dilution flow rate have an insignificant effect on dispersion in the fifth of Clyde.
- ✓ Discharging in the current CW location is acceptable. Extension further into the channel is not required.
- ✓ An Alternative Active Effluent Line is required along with an associated permit variation.

Feasibility Assessment

Two Options for Alternative Line

- Horizontal Drill a new line alongside existing.
- Thread a new pipeline through existing outlet culvert.

OPEX and Technical Reviews

Engagement with Magnox provided OPEX from multiple defueling/decommissioning sites and concluded that, where there is no requirement to extend the line further to sea, threading a new pipe was the preferred option.

- Oldbury - Threaded a new line through existing.
- Sizewell A - Threaded a new line through existing.
- Bradwell - Threaded a new line through existing
- Wylfa - Horizontal Drilled and extended further into sea

A session was held with marine specialists Red7Marine to review the expected HNB technical challenges. Discussions focussed on HNB line geometry, access and tie in points for HNA. Red7Marine stated that there were no issues which they hadn't already experienced and resolved in the previous sites and were able to describe a high level methodology of how the install would be achieved. REDS Divers were then brought to site to verify the proposed access routes and method based on their knowledge of the system from previous outage work and agreed that the install would be achievable.



Horizontal Drilling vs Pipe Threading

	Drilling	Threading
Cost	£5M +	£2-3M
Programme	<p>Total 3.7 years</p> <ul style="list-style-type: none"> • 4 months CETs Production • 18-24 months of Tender Process • 12 months design. • 4 months installation. • 2 weeks commissioning. 	<p>Total 1.9 years</p> <ul style="list-style-type: none"> • 4 months CETs Production • 8-12 weeks Tender Process • 12 months design. • 12- 16 weeks installation. • 2 weeks commissioning.
Procurement	Public Consultation Regulations (PCR) would apply due to cost and high level of civil scope.	Competitive Tender Process Approx 12 weeks. Strategy of one design and build contract (Turnkey) or 2 separate contracts TBC.
Installation	<ol style="list-style-type: none"> 1. Independent of CW system, minimal interaction with existing plant. 2. High impact/disturbance to surrounding land. 3. Legal and Environmental implications required to drill under farmland in area of SSI. 	<ol style="list-style-type: none"> 1. Requires short window of CW isolations for installation. 2. Significant risk permits required for WAH/Confined space and use of divers. 3. Early surveys/enabling works possible using ROVs + Divers. 4. Installation best carried out in Oct/Nov time based on OPEX. 5. Temporary structures required for diver entry and exit.
Sustainability/Net Zero	Not ALARP with regards to sustainability and carbon footprint.	Re-uses existing infrastructure. Does not generate new waste.
Environmental	Involves digging through SSI land. Potential impact on wildlife including farmland and marine life.	Minimal impact on environment.
OPEX	Drilling method was used at Wylifa only because an extension to the existing line was required out to sea (this is not required at HNB) Their system has operated successfully since 2015.	The threading method has always been the BPM where the existing culvert location was suitable. This has been successfully implemented and proven in multiple Magnox sites.
Interdependencies with HNA	Second line or tie in point to be confirmed. HNA inclusion on this design future proofs against any implications at time when CW flow stops (R4 defueled).	

Conclusions

Threading a new pipeline through the existing culvert is the preferred option at HNB.

Request to the board

To endorse the preferred option and allow the project to move forward with scope development and mobilisation of next steps.

Next Steps

- Present decision to August NDERB
- Deploy initial survey work (Q3/4 2023)
- Author CET's (Q3/4 2023)



Thank You