

Title:	Project Halogen - MTSC Precinct
Client:	Grenof Water Technologies
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Background

Grenof’s proposed Project Halogen facility is to be located within the Materials Transportation and Services Corridor (MTSC) Precinct adjacent to Fishermans Road at Yarwun as shown in Figure 1

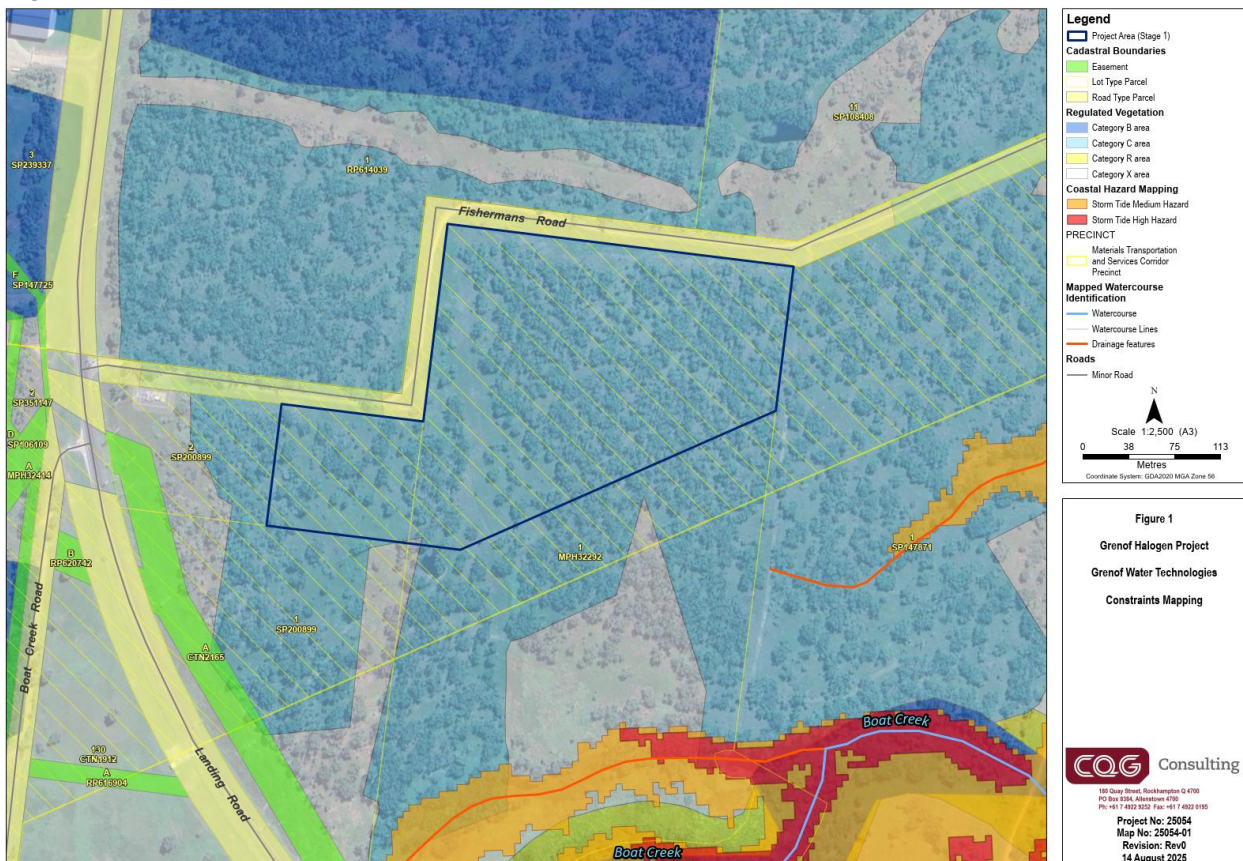


Figure 1 Grenof Halogen Project - Constraints Mapping

The application for the siting of the facility needs to address the suitability of the corridor to the south of the proposed facility for any future underground pipelines to transport hazardous substances such as ammonia and gas, given these are both uses present in the Gladstone State Development Area.

This Technical Note has been prepared to outline potential issues and provide a response to suitably address any concerns.

Pipeline Corridor

The Grenof Project Halogen facility's proposed site footprint will encroach on the MTSC reducing the effective corridor width to approximately 60m at the southern boundary of the site.

Issue: The construction of new pipelines requires a significant right-of-way (ROW) width to undertake new pipeline construction activities as illustrated in Figure 2.

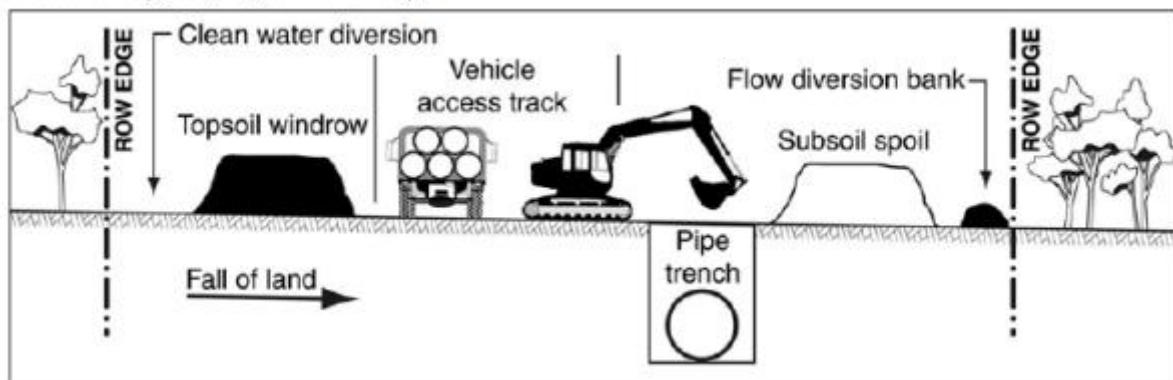


Figure 2 Typical ROW Illustration (IECA 2008 Appendix P: Land-based Pipeline Construction)

Response: Typical requirements for ROW widths for buried pipelines range from 6 to 40m.(ref IECA 2008 Appendix P: Land-based Pipeline Construction). The proposed reduction in MTSC easement width to 60m adjacent to the Grenof facility will meet this requirement.

Accidental Chlorine Releases

Chlorine is classified as a hazardous chemical under Globally Harmonized System (GHS) and as a Toxic Gas (Class 2.3) as well as a Corrosive Hazard (sub Class 8) and an Oxidizer (sub Class 5.1) under the Australian Dangerous Goods (ADG) Code. The proposed Grenof Project Halogen facility will produce chlorine gas for supply to the Australian market.

Issue: An accidental major incident chlorine releases can impact the health of people within the vicinity of such a release. Ongoing inspection and maintenance activities can occur on the buried services within the MTSC.

Response: The Grenof process design limits the possibility of a significant chlorine release. The proposed facility will be classified as a Major Hazard Facility (MHF). Being classified as a MHF ensures a rigorous, legally enforced framework for identifying, controlling, and continuously improving safety measures to prevent catastrophic incidents.

In the very unlikely event of a major chlorine release, there would be a temporary restriction to activities such as corridor inspections and pipeline maintenance on the MTSC services. Such

activities are infrequent and can be rescheduled. The Grenof facility will have in place comprehensive emergency response plans which will focus on the safety of people on and off site, with appropriate early notification. All MTSC operators would be notified.

There would be little if any impact on a buried pipeline asset, or any above ground associated equipment in the event of a major chlorine release.

Chlorine and Ammonia

The Grenof's Project Halogen facility will produce chlorine gas, and it is noted that a potential use for the MTSC may be to transport anhydrous ammonia by buried pipeline adjacent to the facility.

Issue: Specifically, chlorine gas and anhydrous ammonia are incompatible. Excessive mixing of pure chlorine gas and anhydrous ammonia in air can create nitrogen trichloride, which is explosive, and can release chloramine, a toxic gas that is harmful to the respiratory system.

Response: The Grenof facility's process design and containment systems will maintain minimal, if any chlorine atmospheric releases during normal operation. A significant accidental release of chlorine from the Grenof facility, as discussed earlier, is very unlikely.

Any proposed anhydrous ammonia pipeline will be fully contained (with ongoing integrity validation as a requirement) with any releases also being very unlikely.

Simultaneous failures of the anhydrous ammonia pipeline with a significant ammonia release, and the Grenof facility with a significant chlorine release could be considered not credible.

Acidic / Alkaline run off

The Grenof Project Halogen facility will store and handle corrosive liquids both acid and alkaline materials.

Issue: Any acidic or alkaline contamination of stormwater runoff from the site may impact the pH of the soil and potentially increase the rate of corrosion of buried assets in the MTSC. Any impact on the pipeline integrity would occur over an extended timeframe, with opportunity for early detection by pipeline operator.

Response: The Grenof facility is considering a fully contained water management system with no potentially contaminated discharge to environment. Comprehensive bunding in accordance with AS3780 *The storage and handling of corrosive substances*, will contain corrosive materials in the event of any spill scenario, with subsequent clean up and offsite treatment/disposal. No impact on surrounding soil pH is anticipated.

