

Ms. Leisa Dowling
Chief Executive Officer
Gladstone Regional Council
PO Box 29
Gladstone 4680
3 December, 2021

Dear Ms. Dowling,

Proposed Hydrogen Production and Blending Facility – Derby Street – DA/25/2021

Summary

A significant number of Gladstone residents have grave concerns over the safety of the hydrogen production facility proposed to be built in Derby Street, adjacent to residences, school, TAFE campus and Council depot. The proposed facility should be moved to one of the alternative locations proposed, to reduce risk level. Gladstone needs the safest option, not the lowest cost option.

Background

AGIG operates a gas gate station on Breslin Street, which reduces the pressure of gas taken from the high-pressure pipeline for distribution through the low-pressure gas network servicing houses and industry in Gladstone. AGIG proposes to relocate the gas gate station to Derby Street, and to build a hydrogen production facility to supplement the natural gas supply in the low-pressure system. AGIG also wishes to expand capacity in the future, and to include vehicle hydrogen fuelling facilities. The proposal is addressed in DA/25/2021.

We believe that the proposed hydrogen plant at Derby Street contains credible risk to human life, albeit at a very low probability. Viable alternative locations for the proposed facility exist, possibly at higher project cost to AGIG. In the interests of reducing or eliminating the fatality risk the facility should be located elsewhere, in an appropriately managed, designated industrial area well away from populated areas.

To proceed with installation of the proposed facility at the Derby Street location on the basis of information presently to hand has the potential to damage the reputation of Gladstone as a well-managed industrial city and could adversely affect the acceptance of a strong hydrogen economy in this region.

The proponent in its submissions and responses has failed to demonstrate that the proposed installation at Derby Street meets acceptable safety standards, and consequently this Development Application should be rejected.

Hazards

The proposed facility is adjacent to a significant number of private residences, as well as South Gladstone School, the TAFE campus and the Council depot. Fire and explosion risks are inherent in hydrogen production. A Quantitative Risk Assessment (QRA) was not conducted by AGIG, until requested by residents of Gladstone. AGIG has subsequently delivered a QRA to Council. In our view this QRA is deficient in the range of risks covered, contains errors, and is misleading. It has deliberately excluded major hazards outlined in our public submissions.

Notes on the Quantitative Risk Assessment

- Vessel overpressure leading to catastrophic failure is a credible event. This should have been assessed by a different risk assessment method like Layer of Protection Analysis (LOPA) or similar where it has been demonstrated that this risk is managed to similar levels as shown in the QRA (e.g. less than 1×10^{-5} fatalities per year). There is no evidence that this or other safety management requirements have been satisfied.
- Projectile risk is not mentioned. Explosion modelling should provide an indicative projectile risk contour which is a different issue to the jet fire / thermal radiation /

overpressure contours. This is important as projectile contours are typically much larger than the jet fire / thermal radiation / overpressure contours.

- No controls have been demonstrated for the mitigation of lightning strike, including earthing systems, to prevent equipment and control system damage.
- The summary in the QRA is misleading - it says that the most onerous jet fire of 46.9m will last for less than 1 second (hydrogen) which is correct, however it doesn't mention the next most onerous jet fire of 42.7m lasts for almost 60 minutes (natural gas).

Alternative Locations

- AGIG have used the requirement to upgrade the city gate valve as a reason for a move to the Derby street location. Claims are made that the current location floods due to a major stormwater system adjacent to the current location. The valve could simply be elevated at the current location to avoid any potential of water ingress.
- CEO of AGIG explained to a group of concerned residents that the Derby Street location was chosen based on lowest cost option to accommodate the Hydrogen Production facility. While this is a good project for Gladstone, a more suitable location is required.
- A map of the Gladstone low pressure gas network is contained in the AGIG response, showing viable and lower risk alternative locations for the proposed facility.
- Due consideration to alternative locations is required by council to ensure public risk is kept as low as reasonably practical.

Other Issues

- This will be an unmanned facility, operated remotely from a control room in Perth. There will be no personnel immediately available to deal with equipment failure as AGIG plan to use operations / maintenance contractors based in Rockhampton. Response times will be measured in hours not minutes.
- The proposed location is land Zoned for "Community Use" in the Gladstone plan. There are only 800 residents connected to existing domestic gas infrastructure. Qualifying as a community project is very questionable.
- Locating this facility in Derby street will limit future use of this large block of land for future community projects.

We are happy to discuss these matters in more detail.

Would you please acknowledge receipt of this correspondence, and provide feedback to us by 10 December, 2021.

Yours faithfully,

Gerard Graham	Malcolm Leinster	Mark Veach
BE (Chem Eng)	BTech (Mech Eng), Grad. Dip. Applied Computing	B App Sc (Chem, Physics)
MIE Aust.	FIE Aust, CPEng, RPEQ.	
40+ years in Technical Engineering and Management Roles.	45+ years in Heavy Industry, including management of pressure equipment. GRC nominee to the Board and Independent Director of GAWB (2011 to 2019).	30+ years in heavy industry /Gas. Risk, Technical and Operational Leadership roles.
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