

Technical Memorandum

27 April 2022

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From	Toby Cooper	Ref. No.	12559567
Subject	EES referral for the Geelong Hydrogen Hub - traffic and transport assessment		

1. Background

GHD Pty Ltd (GHD) is engaged by GeelongPort Pty Ltd (GeelongPort) to support the preparation of environmental referral documents in relation to the proposed development of the Geelong Hydrogen Hub at the Port of Geelong. GeelongPort is seeking to undertake the following referrals to the relevant agencies:

- Environmental Effects Statement (EES) referral to the Victorian Minister for Planning and the Department of Environment, Land, Water and Planning (DELWP) under the *Environment Effects Act 1978*
- *Environment Biodiversity and Conservation Act 1999* (EPBC) self-assessment, and potentially a referral under the same Act to the Commonwealth Department of Agriculture Water and Environment (DAWE)

1.1 Purpose of this memo

This memorandum has been prepared to support and inform the environmental referral documents through an initial assessment of the potential traffic impacts of the facility associated with construction traffic and from traffic generated once the facility is operational.

This technical memorandum presents the findings from the following activities:

- Desktop assessment of existing conditions
- Review of background traffic volumes and transport materials from publicly available data
- High level summary of relevant legislation
- Assessment of changes in vehicle movements and potential impacts proposed development on the existing transport network

2. Project overview

GeelongPort propose to develop a facility at Port of Geelong to import liquid ammonia, produce hydrogen and nitrogen by ammonia decomposition (or cracking over a catalyst), and distribute hydrogen to potential offtake users within the Port of Geelong as well as in wider Victoria. Use of hydrogen for these industrial processes will present a strong offset for gas production and consumption needs. The site layout highlights the key process buildings, pipeline routes and structures, and allows for future expansion or alternative applications for the ammonia/hydrogen (Figure 1). The proposed site for the facility comprises approximately 7.5 hectares of land that is wholly owned by GeelongPort, off St Georges Road. The key project components comprise:

- New ammonia import berth as an extension of Refinery Pier in Corio Bay
- Transfer pipeline to an onshore storage facility
- Onshore storage facility for liquid ammonia (60m diameter storage tank(s))
- Catalytic cracking plant(s) to decompose ammonia into hydrogen and nitrogen
- Onshore distribution pipelines to potential industrial users either within the Port of Geelong or in adjacent industrial zones
- Vehicle refuelling facility (hydrogen)

An options assessment was undertaken for alternative berth layouts to accommodate future imports of ammonia. The preferred berth layout is located within the existing dredge pocket and therefore no capital dredging is required.

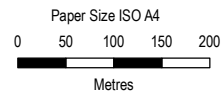
Project design and site layout remain conceptual. This traffic and transport memorandum assumes the roads in the vicinity of the facility and that the general location would not change with minor changes in site layout (i.e., the affected roads would remain the same).

It is understood that the facility would be built over 12 months and the new berthing facility would be built using materials shipped by marine transport.

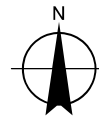


LEGEND

- Hydrogen Off Take Route Options
- Ammonia Import Pipeline
- Road and Power Utilities
- Building/area
- Ammonia Ship
- Fence
- Concept layout footprint



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



GeelongPort
 GeelongPort Hydrogen Facility EES Referral

Conceptual site layout

Project No. 31-1259567
 Revision No. 0
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FIGURE 2

3. Relevant transport legislation and strategies

Table 1 presents an overview of the key legislation and policy that forms the regulatory framework for traffic management in Victoria.

Table 1 Relevant transport legislation and strategies

Legislation and strategies	Brief description
Commonwealth	
There is no Commonwealth legislation or policies that are specifically relevant to this project.	
State legislation, policies, and guidelines	
<i>Road Management Act 2004 (Vic)</i>	The <i>Road Management Act 2004 (Vic)</i> provides 'practical guidance to any person conducting, or proposing to conduct, any works on a road in Victoria', promotes safe and efficient road networks and a coordinated approach for the management of public roads.
<i>Transport Integration Act 2010</i>	The <i>Transport Integration Act 2010</i> creates charters for Victoria's transport agencies and aligns them with the Act's vision, objectives, and principles for the transport system.
<i>Planning and Environment Act 1987</i>	The <i>Planning and Environment Act 1987</i> establishes a framework for planning the use, development and protection of land in the present and long-term interests of Victorians.
State Planning Policy Framework (SPPF)	The SPPF provides directives to help guide responsible authorities regarding those matters of State significance to be considered when administering the planning scheme in their respective municipalities
Victorian Road Safety Strategy 2021-2030 and Road Safety Action Plan 2021-2023	The Victorian Road Safety Strategy 2013-2022 takes a collaborative approach in line with the Safe System philosophy and sets out to reduce deaths by half in 2030, and ultimately to eliminate all road deaths by 2050, while also reducing serious injuries on roads. The state's first Road Safety Action Plan is first in the series of action plans that will implement the Victorian Road Safety Strategy 2021- 2030.
Victoria – the Freight State	Victoria – the Freight State is the Victorian Government's Plan to retain Victoria's status as Australia's freight and logistics capital.
Victorian Cycling Strategy 2019-2028	The Victorian Cycling Strategy 2018-2028 serves as a guide in planning and investment to encourage more people to cycle for transport (to work, school, public transport, and shops) by setting out the strategic basis for funding commitments to develop the state's strategic cycling corridors.
Local government guidelines and strategies	
Greater Geelong – A Clever and Creative Future	The community vision document serves as a guide to the development of the city for the next 30 years with the aim that by 2047, the City of Greater Geelong will be 'internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive, and cares for its people and environment'.
City of Greater Geelong Integrated Comprehensive Transport Plan (ICTP)	The ICTP serves as a guide in the investment decisions for the transport system within the City of Greater Geelong region, provides a cohesive transport and land use planning framework, and sets out short to long-term strategic actions that aims to meet the region's need to plan for growth and development.

Legislation and strategies	Brief description
Local Planning Policy Framework (LPP)	The LPP sets out the Municipal Strategic Statement for the City of Greater Geelong and the Local Planning Policies (LPP) that apply to the area covered by the planning scheme.
Port of Geelong – Port Development Strategy (PDS)	The PDS addresses the infrastructure and development needs of the Port of Geelong to meet its potential trade demands, and presents recommendations concerned with capacity planning for trade throughput within the port.
GeelongPort Structure Plan 2007	The GeelongPort Structure Plan sets out the strategic framework for the future development of the GeelongPort and its surrounding port related land uses.
Geelong Port-City 2050 – Geelong Port and Land Freight Infrastructure Plan	The Geelong Port and Land Freight Infrastructure Plan sets out the process to develop Geelong’s port to achieve global benchmarks of an optimised ‘Port-City’, and provides data as well as key infrastructure investment and planning issues that should be considered in future projects.
Municipal Road Management Plan	The Road Management Plan was developed to establish a system for management functions for roads that are the responsibility of the City of Greater Geelong Council to meet the needs of the community.
G21 Region Roads Transport Plan 2017-2027	This document was developed on behalf of the G21 Geelong Region Alliance to determine and recognise opportunities and challenges of the transport system, as well as provide advocacy for improvements to develop regional road transport infrastructure.

4. Existing transport network

The key roads that may be impacted by the proposed facility include the following:

- **Lowe Street:** two-lane, two-way arterial road with a 60 km/h posted speed limit. This road is part of the primary corridor connecting Princes Freeway in the north to Mackey Street in the south. This road is also part of the Higher Productivity Freight Vehicles (HPFV) A Double Network and Strategic Cycling Corridor. This road connects to the Geelong Ring Road to the north.
- **St. Georges Road:** two-lane, two-way road with a 60 km/h posted speed limit. The section east of Lowe Street, connecting directly to the proposed facility, is classified as a local road and the section west of Lowe Street is a DoT declared arterial road.
- **Station Street:** two-lane, two-way arterial road with a 60 km/h posted speed limit
- **Princes Highway:** six-lane, two-way arterial road with a 50 km/h posted speed limit. The section south of St. Georges Road is also part of the Strategic Cycling Corridor.
- **Cox Road:** four-lane, two-way arterial road with a 60 km/h posted speed limit

The two-way traffic volumes and heavy vehicle percentages (HV%) of the key roads are shown in Table 2 and the location of each road section are illustrated in Figure 2.

Table 2 Volumes and heavy vehicle percentages in key roads

ID	Road Name	Section	Road type	Two-way traffic volumes	HV (%)
1	Lowe Street (Wharf Road)	Between St Georges Rd and Rennie Street	DoT declared road	3,600	20%
2	Lowe Street (Seabeach Parade)	Between St Georges Rd and The Esplanade	DoT declared road	4,600	19%
3	St Georges Road	East of Lowe St	Local road	No data	
4	St Georges Road	Between Station St and Lowe St	DoT declared road	6,400	11%
5	St Georges Road	Between Station St and Princes Hwy West	DoT declared road	6,400	11%
6	Station Street	Between Princes Hwy West & St Georges Rd	DoT declared road	2,900	11%
7	Station Street	Between St Georges Rd & North Shore Rd	DoT declared road	5,800	11%
8	Princes Highway	Between Purnell Rd & Plantation Rd	DoT declared road	43,000	13%
9	Princes Highway	Between St Georges Rd & Purnell Rd	DoT declared road	43,000	13%
10	Princes Highway	Between St Georges Rd & the Boulevard	DoT declared road	54,000	11%
11	Cox Road	Between Belmont-Corio Rd and Moa St	DoT declared road	14,000	6%

Notes:

1. Two-way traffic volumes were taken from DoT Open Data
2. Heavy vehicle percentage (HV%) values were derived by comparing the two-way truck AADT and the two-way traffic volumes from DoT Open Data



Figure 2 Key roads

Other considerations in the existing transport network are:

- **Public transport:** Several Public Transport Victoria (PTV) bus routes pass through the key roads previously identified. Several bus stops are located along Station Street, St. Georges Road (west of Station Street intersection), and Princes Highway (south of Station Street intersection).
- **Active transport:** There are off-road shared paths along Lowe Street (Wharf Road) as the road is part of the Strategic Cycling Corridor. Along Station Street, on-road shared paths are present at the section north of St. Georges intersection while off-road shared paths are present at the section south of the same intersection.
- **Rail:** In terms of rail transport, the Geelong rail service intersects St. Georges Road. However, the rail line will not directly link to the proposed facility. The Port of Geelong – Port Development Strategy (PDS) states that rail development for freight will focus only on bulk commodities.

5. Potential traffic impacts

5.1 During construction

In general, the traffic generated from construction would be limited in terms of its duration. The construction period for the proposed facility would last up to a year. Access to the proposed onshore facilities would be via St. Georges Road, which will require an extension. The construction materials for the new berth would likely be shipped by marine transport and would therefore not impact the key roads identified.

Construction of the onshore infrastructure, such as the storage facility for liquid ammonia and the catalytic cracking plant, would utilise the existing access along Lowe Street and St. Georges Road, both of which are DoT declared roads. Construction vehicles may come from Princes Highway and Station Street, which are also DoT declared roads. Heavy vehicles may also come from Geelong Ring Road and access the site via Lowe Street. Lowe Street is identified as part of the HPFV A Double Network and is expected to have ample capacity to carry additional heavy vehicles associated with this site along its corridors.

Traffic generated due to the construction of the pipelines would be associated with the delivery of materials to the specific locations where they are laid out for construction. The impacts are expected to be highly localised and would be limited in duration. Contractors would make use of the arterial road network for the haulage of equipment and materials.

The proposed site is located adjacent to industrial zones and therefore construction would not impact areas such as residential premises or school zones.

Prior to the construction activities, a construction traffic management plan would be developed to meet the requirements of the relevant road authorities and to ensure the efficient and safe operation of the road network. There are likely to be short term traffic management measures that would be required and the contractor would need to engage with a suitably qualified traffic management company to ensure safe work zones.

5.2 During operations

During the operations stage of the facility, a small number of staff would be based on site and their office would be located near the hydrogen truck loading facilities. The number of daily trips generated by staff are expected to be small and well within the expected day to day fluctuations of traffic experienced on the roads in the local area.

Truck movements generated by the development are expected to be associated with the truck loading facility and hydrogen refuelling facility. The number of truck movements per day is expected to be low and it should be noted that the surrounding road network is likely to be able to adequately accommodate the anticipated truck movements from this development.

A traffic management plan would likely be developed before the operational stage of the facility in order to meet the requirements of the relevant road authorities and to ensure the efficient and safe operation of the road network.

6. Investigation program

The following investigations and studies are recommended before proceeding with the construction and development of the new facility:

- Obtain new traffic volume counts within the vicinity of the development, particularly the identified key roads in Table 2 to provide a clear picture of baseline traffic volumes on key roads in the local area
- Undertake a detailed traffic impact assessment (TIA) to have a broader understanding of the impacts of the facility on the existing road network. The new traffic volume counts should be considered in the TIA.
- Prepare a traffic management plan for both construction and operation stages of the facility to ensure the efficient and safe operation of the road network

7. Conclusions

7.1 Summary of findings

The surrounding road network and key roads identified are DoT declared roads and would likely be sufficient to accommodate the additional traffic generated by construction and operation of the facilities.

- The traffic generated by the construction activities would likely be temporary, limited in duration, and highly localised
- Traffic generated by operational phase would be associated with a small number of staff employed on site as well as small number of truck trips to the hydrogen refuelling facility and deliveries
- The roads leading to the site are well connected to major thoroughfares, such as the Princes Highway and the Geelong Ring Road, and thus, trucks and heavy vehicles would have excellent access to the site via roads suitable for heavy vehicles
- The proposed facility is located adjacent to industrial zones and therefore, construction and operation would not impact areas such as residential premises or school zones

Regards

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