



Illawarra Hydrogen Hub

Scoping Report

BOC Limited

30 January 2024

→ The Power of Commitment



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Abbreviations

Term/ acronym	Definition
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
AE	Alkaline Electrolysis
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASS	Acid sulphate soils
AWS	Automatic Weather Station
Bar	A pressure of 1 bar is slightly less than the current average atmospheric pressure on Earth at sea level (approximately 1.013 bar).
BC Act	Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	Biosecurity Act 2015
BoM	Bureau of Meteorology
°C	Degrees Celsius
CLM Act	<i>Contaminated Land Management Act 1997</i>
Council	Wollongong City Council
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DECC	Department of the Environment, Climate and Communications
DP	Deposited plan
DPE	Department of Planning and Environment
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental planning instrument
EPL	Environment Protection Licence
FEED	Front-end engineering design
FTE	Full-time equivalent
FCEV	Fuel Cell Electric Vehicles
GDE	Groundwater Dependent Ecosystem
GHD	GHD Pty Ltd
GHG	Greenhouse Gas
ha	Hectares
Heritage Act	<i>Heritage Act 1977</i>
HRS	Hydrogen Refuelling Stations
kg	kilograms

Term/ acronym	Definition
kg/day	kilograms per day
km	kilometres
km/h	kilometres per hour
kV	kilovolt
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LSPS	Local Strategic Planning Statement
m	metres
mm	millimetres
m3	cubic metres
mbgl	metres below ground level
ML	megalitres
ML/d	megalitres per day
MNES	Matters of National Environmental Significance
mm	millimetres
MVA	megavolt amperes
MW	megawatts
Native Title Act	<i>Native Title Act 1993</i>
NEM	National Electricity Market
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
OEM	Original equipment manufacturers
PEM	Polymer electrolyte membrane
PHA	Preliminary hazard analysis
Planning Systems SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
PMST	Protected Matters Search Tool
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Resilience and Hazards SEPP	<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>
Roads Act	<i>Roads Act 1993</i>
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SIA	Social impact assessment
tpa	Tonnes per annum
SSD	State Significant Development
POEO	<i>Protection of the Environment Operations Act 1997</i>
t	Tonnes
TfNSW	Transport for NSW
tpd	Tonnes per day

1. Introduction

BOC Limited (BOC) proposes to construct and operate the Illawarra Hydrogen Technology Hub (IHTH) located in the suburb of Cringila, Wollongong, NSW. The IHTH (the project) would produce renewable hydrogen through electrolysis of water using grid connected renewable electricity. The project would include a number of electrolysis modules, tube trailer filling bays and a heavy vehicle refuelling station (HRS) to enable the filling of hydrogen fuelled vehicles on site.

Two project mobility partners, one in the Illawarra and one in Western Sydney, are proposed to be the initial users for the hydrogen hub. The mobility partners would receive bulk hydrogen supplies from BOC, by tube trailer delivered to their respective bus depots. Each bus depot would then supply their hydrogen powered fleets by a dedicated onsite heavy vehicle refuelling station (HRS), to be assessed under separate approval processes as related development.

The project is one of several hydrogen hubs which has received funding from the NSW Government under the hydrogen hub initiative which aims to:

- Unlock a renewable hydrogen industry and workforce to transform the NSW economy and prepare NSW for the future as global markets decarbonise.
- Reduce the cost of hydrogen infrastructure development and supply chain costs to make hydrogen commercially competitive with existing fuels.
- Reduce our carbon emissions in hard-to-abate sectors.
- Create new jobs, encourage innovation, improve energy security and provide businesses with more choices to increase revenue while reducing emissions.

The project represents an opportunity to establish a hydrogen hub within the footprint of BOC's existing industrial operation in the Illawarra to service mobility customers both in the Illawarra and across the Sydney metropolitan area. BOC has been producing hydrogen in Australia for over 80 years. With its experience coupled with expertise across the entire hydrogen supply chain, BOC is well placed to deliver the project for the benefit of the energy transition underway in NSW.

1.1 Purpose of this report

This scoping report has been prepared by GHD Pty Ltd (GHD) on behalf of BOC to support the application for Secretary's environmental assessment requirements (SEARs). The SEARs will be issued by the NSW Department of Planning and Environment (DPE). The SEARs will form the basis of an environmental impact statement (EIS) prepared in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). The report has been prepared in accordance with the SSD guidelines – preparing a scoping report (DPIE, 2022).

The document provides a brief description of the project; its statutory and strategic context; stakeholder and community engagement undertaken to date; and a preliminary assessment of environmental impacts and how they will be appropriately assessed, proportionate to their scale and impact, within the EIS.

1.2 Proponent details

BOC as the proponent will undertake and deliver the project. The proponent details are as follows:

BOC Limited
ABN 95 000 029 729
Company address: 10 Julius Ave, North Ryde NSW 2113
Site address: 147 Five Islands Rd, Cringila NSW 2526.

1.3 Structure of this report

The structure and content of this report is as follows:

- **Chapter 1 – Introduction:** outlines the key elements of the project, identifies the proponent and the purpose of this report.
- **Chapter 2 – Strategic context:** provides an outline of the justification of the project and alternatives that were considered.
- **Chapter 3 – Project description:** provides an outline of the project.
- **Chapter 4 – Statutory context:** provides an outline of the statutory approvals framework, including applicable legislation and planning policies.
- **Chapter 5 – Stakeholder engagement:** outlines the consultation which has been undertaken to date and the consultation strategy that is proposed during the preparation of the EIS.
- **Chapter 6 – Proposed assessment of impacts:** provides a preliminary assessment of the potential impacts of the project on the environment and outlines the proposed scope of the EIS for each of the identified key and other environmental issues.
- **Chapter 7 – Conclusion:** outlines the key conclusions of this report.
- **Chapter 8 – References:** lists references used in preparation of this report.

1.4 Scope and limitations

This report has been prepared by GHD for BOC Limited and may only be used and relied on by BOC Limited for the purpose agreed between GHD and BOC Limited as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than BOC Limited arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

2. Strategic context

2.1 Project need and objectives

The objectives of the project are to:

- Deliver a safe, reliable and commercial-scale hydrogen plant to support hydrogen mobility through refuelling of vehicle fleets for the project mobility partners
- Meet customer decarbonisation needs
- Provide sustainable jobs
- Support the transition of the transport industry through production and distribution of hydrogen
- Support grid stability
- Reduce Australia's greenhouse gas emissions

The need to reduce greenhouse gas emissions has been identified as a high priority by governments at all levels. As detailed in Section 2.2, the project objectives align to various strategic policies.

2.2 Strategic policies

The project contributes to meeting the objectives of international, national, NSW and local government strategic policies. Rather than just contributing to the objectives in one plan, the project contributes to objectives in all of the following strategic policies, many of these plans are integrated, often underpinning each other.

The ability for the economy to transition to renewable hydrogen requires early market investment and support of both government and industry. This project brings an experienced operator to the ongoing development of the renewable hydrogen market for mobility in NSW and Australia.

2.2.1 Australia's long term emissions reduction plan

Australia's long term emissions reduction plan (Australian Government 2021) sets out how Australia will achieve net zero emissions by 2050 in a practical, responsible way that will take advantage of new economic opportunities while continuing to serve our traditional markets. The plan focuses on prioritising technologies that will help Australia cut emissions while creating jobs and growing the economy.

The plan outlines how we will:

- Drive down the cost of low emissions technologies
- Enable deployment at scale
- Help our regional industries and communities seize opportunities in new and traditional markets
- Foster global collaboration to decarbonise the world's economy

The plan focuses on prioritising technologies that will help Australia cut emissions while creating jobs and growing the economy. This project contributes to the plan through the generation of hydrogen that will be used to offset the use of more carbon intensive mobility fuel sources, notably diesel. This will contribute to Australia's net zero emissions goal without jeopardising the economy, jobs, prosperity or lifestyle.

2.2.2 Australia's National Hydrogen Strategy

As decarbonisation objectives continue to grow, hydrogen is seen as one of the levers for low carbon energy, particularly in hard to abate sectors. Australia is positioned well to take advantage of increasing global momentum for clean hydrogen and make it our next energy export. This is recognised in the Australian Government's *National Hydrogen Strategy* (COAG, 2019), which states:

"The Council of Australian Governments Energy Council set a vision for a clean, innovative, safe and competitive hydrogen industry that benefits all Australians. It aims to position our industry as a major global player by 2030."

The strategy discusses the best way for industry to start the journey down the cost curve is for governments and industry to work together on enabling activities and scale-up support. This project delivers a government-industry collaboration for hydrogen mobility through the NSW Government's hydrogen hub initiative. This project contributes to Australia's national hydrogen strategy through the development of renewable hydrogen production for the transport sector.

2.2.3 NSW 2040 Economic Blueprint

The NSW 2040 Economic Blueprint (NSW Government 2019) (Blueprint) aims to inform views on what the NSW economy can achieve over the next two decades. The Blueprint has been informed by research on economic, employment and productivity trends, and through broad consultation with various stakeholders. The Blueprint identifies a range of recommendations to enhance the performance of the NSW economy guided by the following aspirations:

- A two-trillion-dollar economy after 2040
- Healthy, productive people
- Vibrant, well-connected cities
- Productive, vibrant regions
- Innovative, world-class businesses
- Sustainable environmental and resources management
- Better government performance

A key aspect of the 2040 Economic Blueprint in achieving the above aspirations is a focus on economic growth, advanced manufacturing and new industries. The project will contribute to these areas through the expansion of a new industry for a renewable energy generation, which would support the decarbonisation of the transport sector who have historically heavily relied on liquid hydrocarbon fuels.

2.2.4 NSW State Infrastructure Strategy 2022-2042: Staying Ahead

The recently updated State Infrastructure Strategy (NSW Government 2022) is a 20-year infrastructure investment plan for the NSW Government that aims to place strategic fit and economic merit at the centre of investment decisions. The strategy assesses infrastructure problems and solutions, and provides recommendations to best grow the State's economy, enhance productivity and improve living standards for the NSW community.

The strategy looks beyond current infrastructure projects and outlines the importance of diversifying the infrastructure investment pipeline, maintaining service reliability in NSW's existing asset base, embedding resilience, harnessing digital technology and growing partnerships with the private sector. Importantly, the strategy discusses the need to support the emergence of green hydrogen production to augment renewable sources through the delivery of a dispatchable clean energy.

The project will support the aims of the strategy through:

- Helping NSW scale up the emerging renewable hydrogen industry
- Collaborating of government and industry to support innovation and minimise the cost of infrastructure

This project has the potential to unlock the following benefits:

- Demonstrating options for NSW industries to progress with decarbonisation, invigorating future off taker interest in the project
- Enabling NSW to meet strategy and policy outcomes, including, but not limited to, increasing electrolyser capacity, reducing supply chain costs, reducing carbon emissions, building foundational knowledge, and diversifying the economy and jobs
- Encouraging investment and expansion of hydrogen projects in NSW and Australia more widely

2.2.5 NSW's Future Transport Strategy

the NSW Government's Future Transport Strategy, outlines how the NSW government is focused on moving the people of NSW through delivery of new infrastructure, new fleets and boosting public transport services to lead the transition to a new economy. Specifically key responses of the Strategy include:

- P3.1 – Achieve net zero emission from our operations and fleet by 2035
- P3.2 – Help the transport sector achieve net zero emissions by 2050

This strategy supports the NSW Government's target of net zero emissions by 2050. A relevant focus of the strategy is the continuation to drive down emissions of the transport sector. The project will contribute to this plan through the production of renewable hydrogen for mobility purposes with a focus on supporting Transport for NSW move towards a zero emissions bus fleet. How Transport for NSW plans to do this with in partnership with industry, including through projects such as the one described in this Scoping Report is detailed in their [Zero Emission Buses Fact Sheet](#).

2.2.6 NSW Climate Change Policy Framework

The NSW Government has released the NSW Climate Change Policy Framework (OEH 2016), which commits NSW to the aspirational objectives of achieving net zero emissions by 2050 and helping NSW to become more resilient to a changing climate.

The policy framework defines the NSW Government's role in reducing carbon emissions and adapting to the impacts of climate change. The Net Zero Plan outlines how the NSW Governments climate change objectives will be achieved and is released in stages to enable evolving technologies to be incorporated into future stages and to allow for continual improvement over time with the aim of achieving net zero emissions by 2050. The NSW Climate Change Adaptation Strategy focuses on making NSW more resilient and adapted to the impacts of climate change.

As outlined in BOC's Climate Transition Plan (Linde, 2023), BOC is also committed to achieving climate neutrality by 2050 and has set interim milestone targets for 2028 and 2035 for achieving goals and tracking progress. BOC's Climate Transition Plan is consistent with the NSW Climate Change Policy Framework (OEH 2016), and underlying strategies and plans, and is discussed further in Section 2.2.10.

The project will assist BOC in working towards achieving climate neutrality through the operation of hydrogen technology.

Net Zero Plan Stage 1: 2020–2030

The Department of Planning, Industry and Environment's Net Zero Plan Stage 1: 2020–2030 (The Plan) (DPIE 2021c) lays the foundation for NSW's action on climate change in this decade. The Plan outlines four key priorities in regard to emission reductions to 2030. These are:

- Drive uptake of proven emission reduction technologies
- Empower consumers and businesses to make sustainable choices
- Invest in the next wave of emissions reduction innovation
- Ensure the NSW leads by example

The Plan sets out a range of initiatives under these priorities that will grow the economy, create employment opportunities and reduce greenhouse gas emissions to 2030. These will lead to NSW meeting its 2050 net zero emissions objective.

The project directly contributes to the Net Zero Plan, Stage 1 by investing in emerging renewable hydrogen technologies based in NSW, demonstrating renewable hydrogen refuelling networks for mobility, providing government and business in NSW with an alternative zero emission fuel for transport.

2.2.7 NSW Hydrogen Strategy

The NSW Hydrogen Strategy (DPIE, 2021a) brings together the NSW Government's existing and new policies into a framework to support the development of a commercial hydrogen industry in NSW. The strategy aims to develop low emissions industries that sell clean fuels and products to the world by supporting industries to rapidly achieve scale and increase the competitiveness of hydrogen against existing emissions intensive fuels and technologies.

Within the NSW Hydrogen Strategy, the Government has committed \$28.5 million to the IHTH initiative to accelerate the development of hydrogen hubs, starting with the Hunter and Illawarra. This investment is supporting the establishment and growth of hydrogen industries in NSW. These hubs will:

- Reduce our carbon emissions in hard-to-abate sectors
- Reduce the cost of green hydrogen
- Improve air quality and associated reduction to public health costs
- Grow and diversify our economy
- Create new jobs
- Improve our energy security
- Provide businesses with more choices to increase revenue and reduce emissions

This project directly addresses the overall aims of the NSW hydrogen strategy through developing the hydrogen hub in the Illawarra. The project will also assist in creating a hydrogen refuelling network in NSW for heavy vehicles with an onsite refueller.

The development of the project will help NSW drive development of the emerging renewable hydrogen industry. It will also directly contribute to the NSW government's objectives of achieving net zero by 2050.

2.2.8 Illawarra Shoalhaven Regional Plan 2041

The Illawarra Shoalhaven Regional Plan 2041 (NSW Government 2021) sets the strategic framework over the next 20 years for the region. It applies to the local government areas of Kiama, Shellharbour, Shoalhaven, and Wollongong. The plan aims to protect and enhance the region's assets and plan for a sustainable future through identifying the following four key planning themes:

- Productive and innovative region
- Sustainable and resilient region
- Region that values its people and places
- Smart and connected region

The plan outlines 30 objectives and related strategies to deliver the vision for the Illawarra-Shoalhaven.

Developing a hydrogen hub at Port Kembla is discussed in detail in objective 3 to 'Grow the Port of Port Kembla as an international trade hub', identifying Port Kembla's strategic advantages to host the region's first hydrogen hub. The project will help realise this objective and the positive benefits identified in the plan that will flow to the growth of Port Kembla and the greater Illawarra-Shoalhaven region.

Positioning the region as a hub for clean energy forms part of objective 15 to 'plan for net zero emissions by 2050'. A strategy to achieve this objective is to 'promote opportunities for clean energy in the region including pumped hydro, hydrogen and biogenic gas'. The project will directly contribute to delivering a renewable hydrogen production hub in Port Kembla.

2.2.9 Wollongong Local Strategic Planning Statement 2020

The Wollongong Local Strategic Planning Statement 2000 (Planning Statement) was prepared by Wollongong City Council (Council) to provide a 20-year land use planning vision for the city. It has drawn on many existing local and regional strategies and plans developed, exhibited, and adopted by Council.

The project site falls within the footprint of the Planning Statement and aligns with the following relevant objectives:

- *Jobs and economic growth*: The project will contribute to the local, regional and NSW economy through employment opportunities for local and regional businesses and workforce during both construction and operation stages.
- *Protect the natural environment / Climate change and resilience*: Hydrogen production provides an alternative to emission-intensive fuels by providing a reliable, clean and safe fuel that can be used across various sectors. In doing so the project will provide a carbon free source of energy for a hard-to-abate section including public transport bus fleets.
- *Enabling transport and infrastructure*: Hydrogen production is an emerging technology that is unlocking future transport capabilities and infrastructure. The production of hydrogen will assist in decarbonising both the industrial and mobility sectors.

2.2.10 Linde Group Climate Transition Plan

BOC Limited is part of the leading global industrial gases and engineering company, Linde plc (Linde). Linde's Climate Transition Plan (CTP) (Linde 2023) forms part of their commitment to tackling the global challenge of climate change.

Linde's CTP outlines how the company intends to set and meet its long-term strategy to achieve climate neutrality by 2050, stating that "climate change is no longer a future environmental crisis. It is a socio-economic crisis impacting the lives and livelihoods of millions of people, and it's happening now." The plan lays the foundation for achieving this commitment, with three key milestones for 2028, 2035 and 2050 that align with the Paris Accords. The CTP supports both Australia's long term emissions reduction plan and NSW Climate Change Policy Framework.

Climate Change Commitment

"Linde is committed to reaching climate neutrality by 2050. The world is at the beginning of an energy transformation, and Linde's climate neutrality ambition demonstrates its long-term commitment to be an active contributor to the transformation. Linde's climate strategy is aligned with the Paris Climate Agreement."

Linde Climate Transition Plan, July 2023.

Due to its versatility, hydrogen is a key enabler of the transition to low and zero carbon energy. The project directly contributes to the 2028 milestone as it continues to progress development of renewable hydrogen projects as a way of achieving the commitment to a 35% reduction of GHG intensity.

Linde has been harnessing the power of hydrogen for over 100 years and continues to invest in effective and economic ways to deliver grey, blue and, ultimately, green hydrogen. Hydrogen is among Linde's biggest growth opportunities, and leveraging its capacity to enable the clean energy transition is a key platform in Linde's commitment to mitigate climate change. Linde is actively working on nearly 300 clean energy-related projects around the world, mostly involving clean hydrogen. Linde's experience in hydrogen and commitment to the BOC IHTH will help NSW's transition to a zero carbon economy.

2.3 Regional context

The project site is located within the suburb of Cringila, within the Illawarra region, about four kilometres south of Wollongong and about 80 kilometres south of Sydney. The suburb of Cringila has a mix of land uses including heavy industrial, infrastructure, general industrial, private and public recreation, environmental management and low density residential.

The Illawarra region is a coastal region in the NSW as shown on Figure 2.1. It is situated immediately south of Sydney and north of the South Coast region. It extends from Helensburgh in the north to Gerroa in the south. It includes the three LGAs of Wollongong, Shellharbour and Kiama, with a mix of coastal, rural and urban environments and industrial precincts. It encompasses the city of Wollongong, which is the third largest city in NSW.

The project site is directly adjacent to Port Kembla which is mainly characterised by the existing import and export terminal and multiple other business, cargo, logistics, bulk goods and heavy industrial facilities in the vicinity. The IHTH's designed to service two offsite HRS's located on project mobility partners located at:

- Unanderra, approximately two kilometres west of BOCs site
- Western Sydney, approximately 60 kilometres north of BOCs site

Major infrastructure in the region of the site includes the Princes Motorway, which is part of the M1 network and is a major state and regional highway connecting Sydney and Wollongong and regional areas further south. Other major roads which service the site include as Five Islands Road and Springhill Road.

Princes Highway provides access to Port Kembla through turnoffs at Masters Road, Five Islands Road and Northcliffe Drive and is broadly utilised including by heavy vehicles from the port.

The South Coast railway line runs along the periphery of Port Kembla including the stations Port Kembla, Port Kembla North, Cringila and Lysaghts. The rail line services commuters and is also used to transport bulk solid goods like coal, grain, copper and steel from Port Kembla and the surrounding industrial areas.

The environmental features of Cringila and the surrounding region are limited given the extensive industrial, commercial and residential development. The site sits within the Allans Creek catchment.

2.4 Site context

2.4.1 Existing environment

The project site is located within the suburb of Cringila, NSW in an existing industrial and port precinct of Port Kembla. Cringila is located in the southern proportion of Wollongong LGA. Refer Figure 2.2. The existing site frontage is shown in Figure 2.3.

The project is located along Five Islands Road and within the BOC Port Kembla site. The site is bounded by industrial uses to the north, residential properties to the south, Five Islands Road to the east and bushland to the west. Centenary Park is located across Five Islands Road to the east.

2.4.2 Site details

The proposed site is located within an existing established industrial site owned and operated by BOC. The facility operates 24 hours a day, 7 days a week. BOC holds Environmental Protection Authority (EPA) Environmental Protection Licence (EPL) 10095. The Scheduled Activities in the EPL include Chemical Production and Chemical Storage under the Protection of the Environment Operations Act 1997.

The site is used by BOC to produce, store and supply a range of gases including inert gases, flammable and oxidising gases including oxygen (O₂), nitrogen (N₂) and Liquid Petroleum Gas (LPG). LPG gas is distributed to end users from the Elgas component of the business located at the southern end of the Cringila site.

The site has direct vehicle access to Five Island Road. A weighbridge located near the northern access and nearby gas loading gantries provides for the bulk export of gas products by truck. Truck access to the site is managed via a secure gate controlling access. The access at the southern end of the site provides access to light vehicle parking for customers looking to purchase smaller amounts of gas products, typically in cylinders ranging in sizes of 45, 90 and 210 kilograms. Light vehicle access to the remainder of the site from this publicly accessible carpark is restricted by secure gate.

In addition to the main elements of the site there is a range of ancillary infrastructure including:

- Administration and site offices
- Control building
- Operational and redundant air separation unit (ASU)
- Electrical, mechanical and installations workshops and store rooms
- Electrical substations and switch yard
- Portable amenities building
- Truck wash and parking area
- Truck LPG filling station
- Cooling towers
- Gas agent (selling cylinders of gas products)
- Various pipe racks and utilities connections across the site.

The existing layout of the site is shown in Figure 2.4.

2.5 Land ownership

The BOC site comprises those lots listed in Table 2.1.

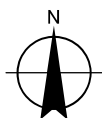
Table 2.1 Land ownership

Land Parcel	Site element	Ownership
Lot 1 DP 1088411	Main BOC site	BOC Ltd
Lot 2 DP 706704	Northern site access from Five Islands Road	BOC Ltd



Paper Size ISO A4
0 2.5 5 7.5 10
Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



BOC
Illawarra Hydrogen Hub
Scoping Report

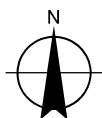
Regional locality

Project No. 12618185
Revision No. 0
Date 30/01/2024

FIGURE 2.1



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0 100 200 300 400
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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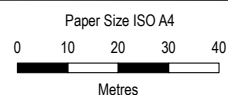
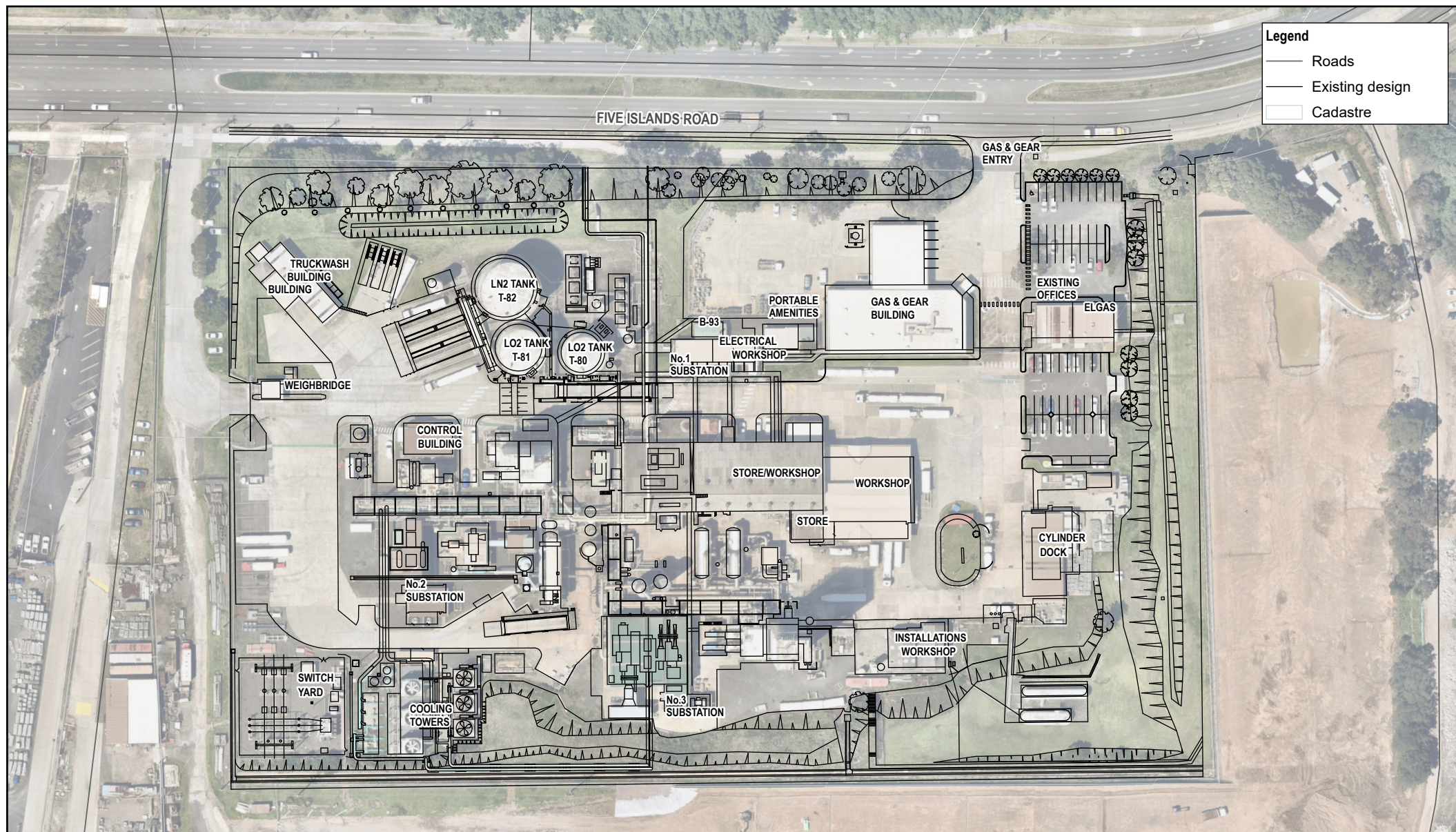
Project No. 12618185
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Site location

FIGURE 2.2



Figure 2.3 **BOC site frontage and main site access**



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



BOC
Illawarra Hydrogen Hub
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Existing site operations

FIGURE 2.4

3. Project description

3.1 Overview

BOC plan to establish a safe, reliable renewable hydrogen generation project within the boundaries of the existing BOC facility on Five Island Road, Cringila. The facility will be developed to supply renewable hydrogen to mobility users in the Illawarra and greater Sydney Metropolitan region.

Two project mobility partners would be the initial users for the hydrogen hub. The mobility partners would receive bulk hydrogen supplies from BOC by tube trailer delivered to their respective bus depots at Western Sydney and the Illawarra. Each bus depot would then supply their hydrogen powered fleets by a dedicated onsite heavy vehicle refuelling station (HRS). In addition, the BOC site will also feature a HRS which will allow for the filling of hydrogen fuelled vehicles. This will provide opportunities for other mobility partners to fill hydrogen fuels vehicles directly from the BOC facility.

As a long-time producer and supplier of a range of gases, including flammable and explosive gases, BOC is well placed to safely deliver the project. Additionally, the BOC site on Five Island Road has excellent road access to Five Islands Road and the Princes Motorway which align with the project goals of supplying the growth in hydrogen mobility users into the future.

3.2 Key features

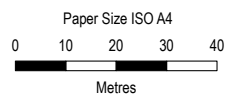
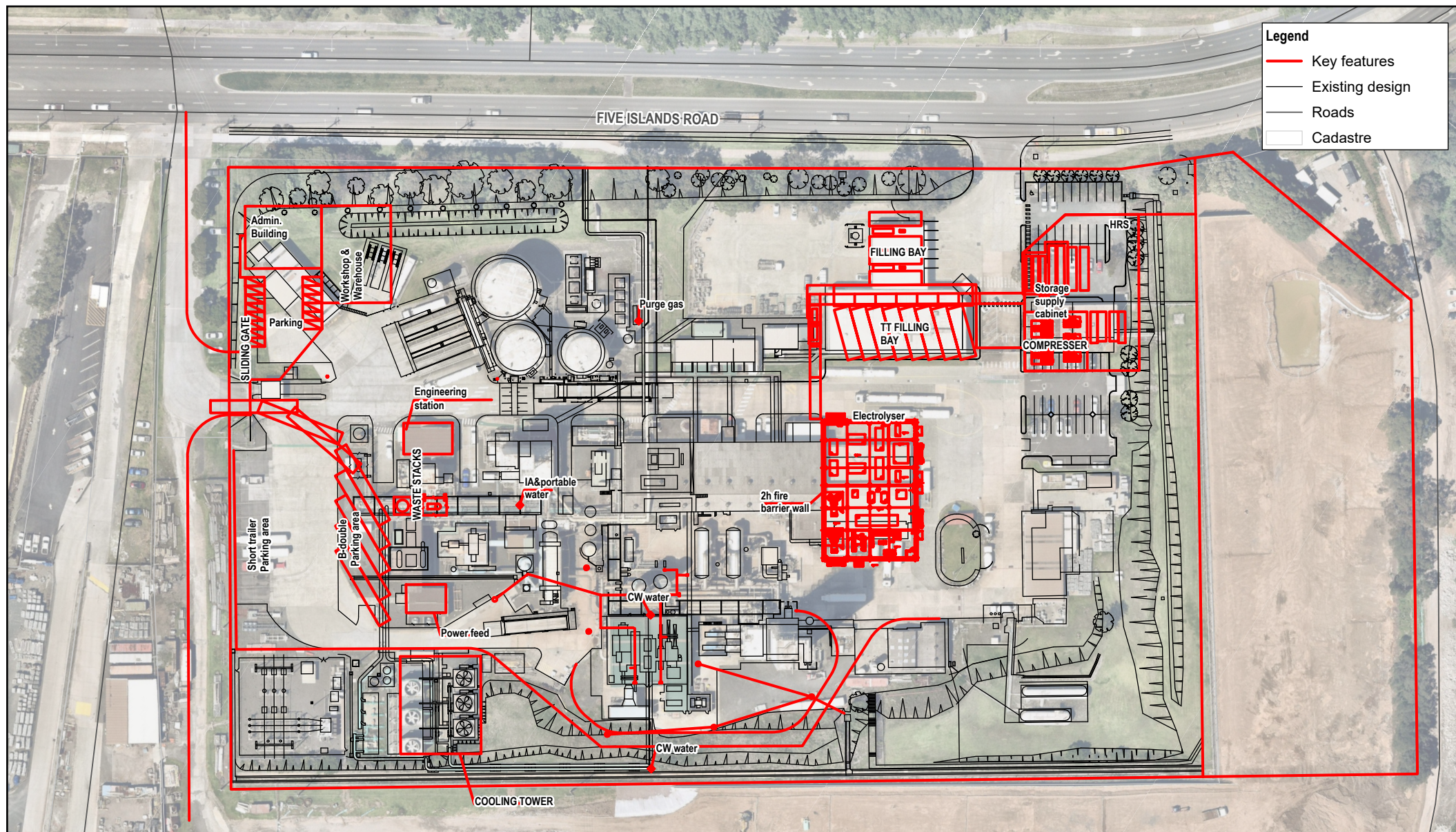
The key components of the project include:

- Site preparation, installation of environmental controls and make safe utility connections
- Demolition of existing buildings and structure from project footprint
- Construction of electrolyser modules and associated plant infrastructure
- Water treatment and cooling system
- Construction of an onsite hydrogen vehicle refuelling station
- Construction of tube trailer filling bays to supply hydrogen to satellite hydrogen refuelling stations
- Heavy vehicle parking for tube trailers
- Reconnection of utilities to the project
- Workshop, storeroom, switch rooms, communications and safety control and site office
- Internal roads, car park for employees and truck parking and external road connections to Five Island Road
- Fencing, landscaping and business identification signage

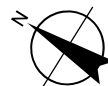
Figure 3.1 shows the key features of the site in an indicative layout and the key characteristics of the project are detailed in Table 3.1.

Table 3.1 *Indicative project properties*

Project details	Amounts
Production rate	1450 tpa
Installed Electrolyser Capacity	– Approximately 10 megawatt (MW) alkaline electrolyser producing 20 bar – Compression to 200-400 bar
Hydrogen storage	4,900 kg (Static storage in total 1700 kg and Tube trailer 400 kg each x 8 = 3200 kg in total)
Power demand	50 - 75 MWh
Water use	0.5 – 0.8 ML/d
Trailer loading capacity	Up to 8 trailer bays dispensing at approximately 200 bar
Hydrogen refuelling station	Two bays



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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Key features of the project

FIGURE 3.1

3.3 Construction

3.3.1 Construction methodology and schedule

Table 3.2 provides a summary of the main components of the construction program and their expected timing.

Table 3.2 Construction methodology and schedule

Element	Indicative schedule
Mobilisation Site compound setup, fence of work area and establish environmental controls	Month 1 - 2
Site preparation - Isolation of the project area within BOC from ongoing BOC operations - Removal of redundant buildings and structures - Civil work in preparation of main construction phase	Month 3 – 5
Construction - Construction of all project elements: electrolyser, HRS, truck filling bay, compressor house and admin building - Construction of driveway and parking areas - Connection of power, water, communication other utilities	Month 6 – 18
Testing and commissioning Establish utility connections and safely bringing plant and equipment online	Month 19 – 21
Demobilisation - Removal of site fencing and temporary compounds and site shed - Removal of redundant environmental controls	Month 22 - 24

During site preparation works the movement or removal of some site elements will be required. The exact details of site elements to be modified or removed to facilitate the project are currently being confirmed during the design process. Further details regarding required demolition work and construction of specific elements are subject to ongoing design and will be provided in the EIS.

3.3.2 Construction equipment

Table 3.3 provides a list of the major pieces of plant and equipment expected to be required during the construction phase. The type and quantity of plant and equipment may vary depending on the construction staging and construction methods and would be determined by the construction contractor(s).

Table 3.3 Construction equipment

Construction equipment		
Excavators	Concrete Trucks	Concrete pumps
Trucks	Vacuum Trucks	Concrete agitators
Dozers	Front end loaders	Generators
Mobile Cranes- various sizes	Welding machines	Graders
Rollers	Semi-Trailers	Contractor service vehicles

3.3.3 Construction workforce

It is anticipated that labour requirements for the duration of the project, a workforce of up to 60 FTE workers will be required.

3.3.4 Construction traffic

Traffic generation during construction is expected to comprise:

- 10 heavy vehicles per day
- 60 light vehicles per day

Some oversized vehicles carrying large equipment and structural components would also be expected during construction. These deliveries would require escorts and would be scheduled to avoid peak times.

All construction traffic will access the existing site access points from Five Islands Road.

3.3.5 Construction hours

Proposed standard construction hours

It is currently envisaged that the majority of construction would be undertaken within the recommended standard construction hours in accordance with the *Interim Construction Noise Guideline* (DECC, 2009) as follows:

- Monday to Friday: 7:00 am to 6:00 pm
- Saturday: 8:00 am to 1:00 pm
- No work on Sundays or public holidays

Work outside the standard construction hours

Some construction activities will be undertaken outside the recommended standard construction hours, which may include safety critical works when the site contains minimal staff, deliveries of oversized loads to avoid peak traffic times and emergency works. It is noted that the site currently operates 24 hours per day.

3.4 Operation

3.4.1 Hydrogen production

Power supply

The project would draw 43,000 MVAh under typical operations (50% capacity in the first three years). Power for the project would be provided by BOCs existing site connection to the external power supply to the site. The hydrogen electrolyser would be typically operated using renewable electricity sourced from the National Electricity Market (NEM). The mechanisms for securing the renewable electricity, for example through Large-scale Generation Certificated (LGC's), would be described in the EIS.

Water supply and treatment

The project would typically draw approximately 264 kilolitres (kl) per day when operating at full capacity. Water for the project would be drawn from the Sydney Water potable water network that exists within the vicinity and already connects to the BOC site.

Prior to entering the electrolyser water must undergo a pretreatment and polishing process to remove impurities and remove the ionic load or reduce the waters overall conductivity. This treatment process improves the efficiency of the electrolyser and reduces maintenance issued such as scaling. The specific water treatment process for the project would be confirmed during the front-end engineering design (FEED) and detailed in the EIS.

Electrolyser and plant infrastructure

The project would also involve the installation of electrolyser modules, cooling system and associated plant infrastructure. The electrolyser would have a capacity of up to 10 MW. Associated infrastructure includes:

- A rectifier transformer and panel (to bridge external power supply)
- Gas and liquid separation system
- Hydrogen purification system
- Feed water tank and system
- Demineralised water plant
- Cooling systems

Electrolyser technology for the scale proposed by the project is typically found in two forms being:

- Alkaline
- Polymer electrolyte membrane (PEM)

The project is currently most likely to utilise an alkaline electrolyser. This will be confirmed during the FEED process.

Storage and compression

The total amount of hydrogen expected to be stored at the BOC site as a result of the project is a 4,900 kg made up of a combination of:

- 1,700 kg static storage in total
- Up to eight Tube trailers on site at any given time each capable of storing 400 kg for a total of 3,200 kg

In different elements of the project this will be stored at different pressures:

- Buffering storage at compression system at 200 bar
- HRS:
 - Medium pressure storage at 450 bar
 - High pressure storage at 900 bar
- Eight tube trailers parking in filling bays at 20 0bar

Wastewater

Wastewater will be generated as a result of the following processes required as part of the project:

- Discharge from water polishing plant
- Backwash from the electrolyser membrane
- Backwash from the cooling tower

The project would have a wastewater discharge of 48 kL per day. In the case of an incident. Some initial waste water would also be generated as a result of system flushing during commissioning. Flushing waste water would also be generated if poor quality water contaminates the electrolyzers. Quantities would be variable subject to the input water quality and resulting contamination levels experienced.

BOC would apply for an industrial trade waste agreement with Sydney Water and the wastewater would discharge into the Sydney Water sewerage system.

3.4.2 Hydrogen transport and distribution

Tube trailer gantry and distribution

The tube trailer gantry will provide up to eight bays for tube trailers to be parked in whilst being filled. The tube trailers would be delivered to site via truck and parked in individual bays for filling. Each trailer can hold approximately 350-400 kg per tube trailer. Once the project matures during operation, the daily number of tube trailers filling per day is expected to be approximately 15.

When a tube trailer is delivered to one of the two offsite HRS facilities (described below), it has the potential to then supply hydrogen to approximately 20 hydrogen fuel cell powered buses. Each hydrogen fuelled bus can then achieve similar endurance (total kilometres travelled) to a typical diesel fuel equivalent vehicle.

Hydrogen refuelling station

The project to which the SSD application applies includes a single HRS located within the BOC facility as shown on Figure 3.1. The BOC site HRS is expected to service up to 30 hydrogen fuels vehicles per day. Depending on the size of vehicle and therefore the size of its tank, along with the filling pressure, the filling of truck or bus's onboard hydrogen tank may take between 10 and 30 minutes.

The BOC HRS will be designed to operate at the following pressures:

- Bus dispenses at 350 bar
- Trucks take 700 bar

The project is designed to service two offsite HRS's located on project mobility partners own sites at:

- Unanderra, approximately two kilometres west of BOCs site
- Western Sydney, approximately 60 kilometres north of BOCs site

The two HRSs will be subject to separate development approvals and do not form part of the SSD application.

Total operational vehicle movements

Collectively the onsite HRS, tube trailer gantry and operational staff would all generate separate traffic streams. Table 3.4 summarises total project light and heavy operational traffic quantities.

Table 3.4 Total expected vehicle movement

Vehicle type	Vehicle number			Total
	Operational Staff	HRS	Tube trailers	
Light	6	-	-	6
Heavy	-	30	15	45

Additional light vehicle movements would occur from time to time as contractors are engaged for various tasks such as regular maintenance activities. These movements would be in addition to the existing BOC site daily traffic movements of approximately:

- 30-40 light vehicle movements per day on average
- 30 heavy vehicles per day on average

3.4.3 Operational workforce

During operation, it is anticipated that less than 10 full-time equivalent (FTE) workforce will be required during standard operation. Additional staff would be required as needed for maintenance activities. The project will be designed to allow unmanned operation.

3.4.4 Operational hours

Operation of the project will be 24 hours per day, seven days a week.

3.5 CAPEX

Costs estimates for the capital expenditure (CAPEX) required to deliver the project:

- Offsite HRS locations approximately \$4.2M each
- BOC site electrolyser, truck gantry, HRS and ancillary works approximately \$50M
- Total CAPEX estimate \$58.3M

4. Statutory context

Table 4.1 provides a review of the legislation and environmental planning instruments that are relevant to the environmental assessment and approval process for the project.

Table 4.1 Statutory requirements of the project

Matter	Guidance
Power to grant consent	The EP&A Act is the principal legislation regulating development in NSW. It establishes a regime for the making of development applications, assessment of their environmental impacts, and the determination of those applications. Section 4.36(2) of the EP&A Act provides that a State environmental planning policy may declare any development, or any class or description of development, to be State Significant Development (SSD). <i>State Environmental Planning Policy (Planning Systems) 2021</i> (Planning Systems SEPP) provides for the declaration of state significant development and state significant infrastructure. Section 2.6 of the Planning Systems SEPP provides that development specified in Schedule 1 of the policy is SSD. The project is defined as a 'chemical manufacturing and related industries' and has a capital investment value of more than \$30 Million and is therefore declared SSD under Clause 10, Schedule 1 of the Planning Systems SEPP 2021. Under Division 4.2 of the EP&A Act, the approval authority for SSD is the Minister for Planning (or delegate).
Permissibility	The project is located on land zoned E5 Heavy Industry under the Wollongong Local Environmental Plan 2009. The primary purpose of the project is the manufacture or production of hydrogen to support local industrial manufacturing, heavy vehicle transport and public transportation sectors. The development is best characterised as a heavy industry in accordance with the definitions in the Standard Instrument (Principal Local Environmental Plan) 2006 (Standard Instrument). The project is a type defined as a heavy industry due to its potentially hazardous nature. The project is considered permissible with consent within E5 Heavy Industry land zone.
Other approvals – Consistent approvals <i>Approvals required and that should be consistent with approved SSD</i>	Under section 4.42 of the EP&A Act, certain other approvals are still required for SSD, but must be substantially consistent with SSD approvals. The following approvals may be required as part of the project: – An environment protection licence under Chapter 3 of the <i>Protection of the Environment Operations Act 1997</i> (for any purposes referred to in section 43 of that Act). The project is likely to trigger a need for a licence under Clause 8 of Schedule 1 – Chemical Production. This clause applies to the following activities – '<i>dangerous goods production, meaning the commercial production, blending, recovering or using of, or research into, dangerous goods (other than toxic substances, explosives or radioactive substance)</i>'. BOC currently operates the site under EPL 10095 for the scheduled activities of <i>chemical production and chemical storage</i>. Variations to the EPL will be required to include the projects elements. The project will not be introducing and new scheduled activities to the site. A consent under the <i>Roads Act 1993</i> maybe required for work at the site connection to Five Island Road is physical work if necessary to improve the driveway connection for project traffic. This is subject to further engineering design and environmental assessment and would be confirmed in the EIS.

Matter	Guidance
Other approvals <i>Not required for an approved SSD</i>	Under section 4.41 of the EP&A, certain other approvals are integrated into the SSD approval process and are not required to be separately obtained by the project. Such approvals include: – A permit under section 201, 205 or 219 of the <i>Fisheries Management Act 1994</i>. – An approval under Part 4, or an excavation permit under section 139 of the <i>Heritage Act 1977</i>. – An Aboriginal heritage impact permit under section 90 of the <i>National Parks and Wildlife Act 1974</i>. – A bush fire safety authority under section 100B of the <i>Rural Fires Act 1997</i>. – A water use approval under section 89, a water management approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the <i>Water Management Act 2000</i>. Based on an assessment against the current high-level design, none of these are considered to apply to the project. This will be further discussed in the EIS.
Pre-conditions to exercising the power to grant approval <i>EP&A Act Objects</i>	The objects of the EP&A Act are guiding principles that need to be considered by planning authorities when making decisions under the EP&A Act.
<i>EP&A Act Division 4.15</i>	Under Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration: – The provisions of: • Any environmental planning instruments: – State Environmental Planning Policy (Biodiversity and Conservation) 2021. – State Environmental Planning Policy (Resilience and Hazards) 2021. – State Environmental Planning Policy (Planning Systems) 2021. – Wollongong LEP 2009 • Any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority. • Relevant development control plans – not applicable for SSD. • Any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4. • The regulations. – The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality. – The suitability of the site for the development any submissions made in accordance with this Act or the regulations. – The public interest. The above will be considered in the EIS and addressed based on the outcomes of environmental assessments to be undertaken, as described in Chapter 6.
Mandatory matters for consideration	The objects of the EP&A Act are guiding principles that need to be considered by planning authorities when making decisions under the Act. In accordance with Section 4.5(a) of the EP&A Act, the consent authority for an SSD is the Minister for Planning or the Independent Planning Commission (pursuant to Part 2.2 of the Planning Systems SEPP).
<i>EP&A Act Division 4.5</i>	In accordance with Section 4.5(a) of the EP&A Act, the consent authority for an SSD is the Minister for Planning or the Independent Planning Commission (pursuant to Part 2.2 of the Planning Systems SEPP).
Mandatory matters for consideration	The objects of the EP&A Act are guiding principles that need to be considered by planning authorities when making decisions under the Act. In accordance with Section 4.5(a) of the EP&A Act, the consent authority for an SSD is the Minister for Planning or the Independent Planning Commission (pursuant to Part 2.2 of the Planning Systems SEPP).

Matter	Guidance
Other applicable legislation	<u><i>Work Health and Safety Regulation 2017</i></u> The <i>Work Health and Safety Regulation 2017</i> (WHS Regulation) governs the specific requirements of major hazard facilities (MHF). MHF are industrial sites where hazardous materials are stored, handled or process, and have to conform to specific work health and safety duties. The trigger for a MHF is where chemicals listed under Schedule 15 of the WHS Regulation are present or likely to be present in a quantity that exceeds their threshold quantity or that is determined by the regulator to be an MHF. The storage of 50 tonnes of more of hydrogen is a stand along trigger for an MHF. BOC only proposes to store less than 5 tonnes which is below the MHF trigger and also below the WorkSafe notification quantity. Regardless BOC's Cringila site is an established MHF due to quantities of existing gases produced or stored onsite. The addition of the proposed hydrogen production and storage will change the risk profile of the site. BOC will liaise with SafeWork during the development of the FEED and the project specific hazard assessment to ensure obligations under the WHS Regulation are met. <u><i>Biodiversity Conservation Act 2016</i></u> The purpose of the <i>Biodiversity Conservation Act 2016</i> (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future. The BC Act lists threatened species, populations and ecological communities as well as critical habitat and key threatening processes to be considered when assessing an activity. Under Section 7.9 of the BC Act an application to carry out SSD is to be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. The project will be unlikely to have a significant impact on any biodiversity values, or threatened species, populations or ecological communities, or their habitats, listed under the BC Act and a BDAR waiver request has been prepared as part of this Scoping Report. Impact to biodiversity will be assessed in the EIS as described in Section 6.3.3. <u><i>Contaminated Lands Act 1997</i></u> The <i>Contaminated Land Management Act 1997</i> (CLM Act) outlines the circumstances under which notification to the NSW EPA is required in relation to the contamination of land. Under Clause 60 of the CLM Act, the owner of land that has been contaminated must notify the EPA in writing that the land has been contaminated. The project site is not listed as a contaminated site under the EPA Contaminated land record. However, there is the potential for contaminated materials due to previous land uses. the EIS will review the suitability of the proposed land use against residual contamination. Further discussion is in Section 6.2.3.
Other environmental planning instruments	<u><i>State Environmental Planning Policy (Resilience and Hazards) 2021</i></u> <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> (Resilience and Hazards SEPP) sets the regulatory framework for hazard and offensive development, and remediation of land within NSW. Under Resilience and Hazards SEPP– the project is defined as a hazardous industry and the matters listed in Clause 3.21 must be considered. These include: (a) current circulars or guidelines published by DPE relating to hazardous or offensive development, and (b) whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply, and (c) in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and (d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application), and (e) any likely future use of the land surrounding the development A Preliminary Hazard Analysis will be prepared for the EIS in accordance with Section 6.2.1.

Matter	Guidance
	<u><i>Chapter 2 – Coastal Management</i></u> Chapter 2 aims to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the <i>Coastal Management Act 2016</i>. The objectives of Chapter 2 are to manage development in the coastal zone and establish a framework for land use planning and decision making in the coastal zone. The project is mapped within a coastal environment area. Section 2.10 of the Resilience and Hazards SEPP outlines requirements for a development consent to be granted which will be addressed in the EIS. Biodiversity impacts are discussed in Section 6.3.3.
	<u><i>Chapter 3 – Hazardous and offensive development</i></u> Chapter 3 aims to regulate, amongst other matters, the determination of development applications to carry out development for the purposes of a potentially hazardous industry or potentially offensive industry. Hazard and risk are discussed in Section 6.2.1, as well as how it would be addressed in the EIS.
	<u><i>Chapter 4 – Remediation of land</i></u> Chapter 4 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment and provide a statewide planning approach to the remediation of contaminated land. Contamination is discussed in Section 6.2.3, as well as how it would be addressed in the EIS.
Other approvals - Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act</i>	The Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) and provides a legal framework to protect and manage nationally important flora, fauna, ecological communities and heritage places defined as matters of national environmental significance (MNES). Part 9 of the EPBC Act provides that an action that has, will have or is likely to have a significant impact on MNES may not be undertaken without prior approval from the Commonwealth Environment Minister. Approval under the EPBC Act may also be required for actions carried out by Commonwealth agencies or impacting on Commonwealth land. A search using the Protected Matters Search Tool (PMST) with a 10-kilometre buffer from the project was undertaken on 12 September 2023. A summary of these results are provided in Appendix A. An assessment of whether the project will have a significant impact on these MNES will be undertaken as part of the environmental assessment process, however, based on the preliminary assessment, a referral to DCCEEW under the EPBC Act is not considered necessary or proposed to be undertaken.
<i>Native Title Act 1993</i>	The <i>Native Title Act 1993</i> provides a legislative framework for the recognition and protection of common law native title rights. Native title is the recognition by Australian law that Indigenous people had a system of law and ownership of their lands before European settlement. Where that traditional connection to land and waters has been maintained and where government acts have not removed it, the law recognises this as native title. A search of the Native Title Tribunal Native Title Vision website was undertaken on 27 September 2023, with no Native Title holders/claimants identified.

4.1 Confirmation of statutory requirements

The project is considered permissible with consent within the E5 Heavy Industrial land zoning pursuant to the Wollongong Local Environmental Plan 2009 as described in Table 4.1. The project is deemed SSD in accordance with clause 10 in Schedule 1 of the Planning Systems SEPP. In accordance with Section 4.5(a) of the EP&A Act, the consent authority for an SSD is the Minister for Planning or the Independent Planning Commission (pursuant to Part 2.2 of the Planning Systems SEPP).

Section 4.12(8) of the EP&A Act provides that a development application for SSD needs to be accompanied by an EIS prepared by or on behalf of the applicant in the form prescribed by Regulation. Section 173 of the Regulation provides that, before preparing an EIS, an applicant must make a written application to the Planning Secretary for the environmental assessment requirements for the EIS (the SEARs). This report has been prepared to support this application for the SEARs. An EIS would be prepared to support the development application in accordance with the requirements of Division 4.3 of the EP&A Act, Section 173 of the EP&A Regulation, and the SEARs.

The Minister of Planning (or delegate) is the determining authority for SSD projects in NSW. The process for environmental assessment and approval of SSD is set out as follows:

- Application for determination of the Minister to carry out development
- Development of project specific SEARs
- Preparation of an EIS
- Public exhibition of the EIS
- Response to submission(s) received during public exhibition of the EIS
- Preparation of Planning Secretary's Assessment Report
- Determination regarding the development by the Minister

5. Stakeholder engagement

5.1 Consultation approach and strategy

BOC has prepared a detailed and project specific Stakeholder Engagement Plan (SEP) (GHD, 2023) for the project. The specific stakeholder and communications objective of the SEP are:

- Build trust and stakeholder support for the project by:
 - Engaging early so that any concerns are understood up front and provide transparency about how any issues will be captured, considered and addressed in the scoping report and project development.
 - Informing communities and stakeholders about the project, the EIS process and opportunities to provide feedback or seek further information on the IHTH project.
 - Helping people understand how they can participate in the approvals process, by ensuring communication materials are clear and accessible.
- Minimise potential reputational issues to BOC and its project customers from negative coverage by the media.
- Develop awareness of the benefits of the hydrogen hub (lower emissions, economic development, jobs within the immediate local community and more broadly.)

As outlined below, consultation has been initiated with key stakeholders and will continue during the scoping, EIS and subsequent project phases.

5.2 Engagement undertaken to date

Early engagement during the scoping phase has included briefing meetings with the following organisations:

- DPE Industry assessment team – Project briefing provided. Approval pathway discussed.
- DPE hazard branch - Project briefing provided. Hazard and risk assessment requirements discussed.
- Transport for NSW – Project update provided as TfNSW will investigate mobility offtake opportunities.
- Illawarra bus depot operator – Project briefing provided. Details of HRS site requirements discussed and potential impacts to operations.
- Western Sydney bus depot operator - Project briefing provided. Details of HRS site requirements discussed and potential impacts to operations.

5.3 Stakeholder engagement during EIS preparation

Community engagement during the EIS process will be aimed at keeping key stakeholders informed of the assessment process, the project and its anticipated impacts such that concerns can be effectively raised and addressed through the design process. This will be achieved through a number of channels including:

- Direct consultation with key stakeholders via one-to-one or one-to-few briefings. This affords the opportunity to discuss the project in detail and provide feedback input into the process.
- Community drop-in sessions within the Cringila and Unanderra communities to allow community members to find out more, ask any questions and advise us of any concerns.
- Advertising will promote the above drop-in sessions, and provide the web address and email address and 1800 number for direct contact with the project team.
- Media stories about the project (where appropriate).
- Regular posts on BOC social media about the project (LinkedIn, Twitter and Facebook).
- Project details/updates to be displayed on a dedicated project website.

5.4 Public exhibition of the EIS

Public exhibition of the EIS would be for a minimum of 28 days. During the exhibition period, government agencies, stakeholders and the community would be able to review the EIS and would have the opportunity to make a written submission to DPE for consideration in its assessment of the project.

To ensure a high level of awareness of the EIS and provide ample opportunities for feedback, BOC will provide information through a range of channels, including but not limited to:

- DPE website
- Briefings with key stakeholders
- Notifications to community
- Face-to-face discussions with community members
- Social media posts targeted to the project area
- Information to local media

5.5 Stakeholder engagement during future project stages

Opportunities for members of the community and other stakeholders to engage with BOC during project delivery and beyond will be provided through a range of mechanisms, as outlined in Table 5.1.

Table 5.1 Stakeholder engagement mechanisms

Mechanism	Description
Key Stakeholder Briefings	Direct consultation with key stakeholders via one-to-one or one-to-few briefings affords the opportunity to discuss the project in detail and provide feedback input into the process.
Existing Forums	Existing site community and regulatory relationships and established site communications practises will be used during future operations as the project is integrated into the establish site operations.
News and Social Media	Updates about the project will be regularly posted on BOC's social media, and local and national media will be engaged to broadcast stories about the project.
Website	Project updates will be made available for members of the public via BOC website.
Phone number	1800 066 243 number will be available for comments, enquiries or feedback from stakeholders.

6. Proposed assessment of impacts

6.1 Overview

The identification of issues to be addressed in the EIS has been undertaken through a risk-based approach in accordance with the *State significant development guidelines – preparing a scoping report* (DPIE, 2022). Key potential issues are those environmental aspects that will require project specific assessments to assess the potential impacts and develop measures to avoid, mitigate and/or offset those impacts, where necessary. The key assessment issues were identified with consideration of a range of factors including:

- The existing environmental context of the project and its surrounding locality
- The proposed project activities
- The regulatory framework applicable to the project
- The outcomes of consultation undertaken to date
- The project team’s experience with developing and delivering freight rail projects and managing potential environmental impacts
- The project team’s experience from previous environmental approvals for projects in NSW

Key issues and the proposed level and scope of assessments were documented using DPE’s Scoping Worksheet, a copy of which is provided in Appendix B. In accordance with the Scoping Worksheet, each issue has been categorised as either a ‘Key’ issue, ‘Other’ issue, or ‘Scoping only’ issue. Further details regarding the identified issues and the proposed level and scope of assessment are presented in the following sections.

Table 6.1 Issues scoping

Key issues		Other issues		Scoping only issues	
Aspect	Section	Aspect	Section	Aspect	Section
Hazard and risk	6.2.1	Soils, geology and contamination	6.3.1	Historic heritage	6.4.1
Noise and vibration	6.2.2	Air quality	6.3.2	Land use and property	6.4.2
Traffic and transport	6.2.3	Biodiversity	6.3.3		
Water quality	6.2.4	Waste	6.3.4		
Socio-economic	6.2.5	Landscape character and visual amenity	6.3.5		
		Aboriginal heritage	6.3.6		
		Utilities and services	6.3.7		
		Greenhouse Gas	6.3.8		

6.2 Key issues

6.2.1 Hazard and risk

Existing environment

BOC Illawarra is an established industrial facility and is a classified Major Hazard Facility (MHF). The trigger for a MHF is where chemicals listed under Schedule 15 of the WHS Regulation are present or likely to be present in a quantity that exceeds their threshold quantity or that is determined by the regulator to be an MHF. Hazards and potentially hazardous activities have the potential to impact the environment, damage property and cause harm in terms of human injury, illness or death. The operation at the current BOC facility includes the following hazardous activities:

- Vehicle movements

- Accidental spills and leaks from materials handling, transport, transfer, use and the disposal of waste materials
- Encountering contaminated land

The BOC facility is an operational industry facility which produces and stores a range of gases, including flammable and explosive gases for commercial use. Table 6.2 lists dangerous goods currently stored onsite as part of existing operations.

Table 6.2 Existing site dangerous goods register

ID	Storage Type	UN number	Product Name	Class/ Division	Max. storage (kg/L)	Typical Quantity
1	Above ground tank	2187	Carbon Dioxide, Refrigerated liquid	2.2	12000 L	12000 L
2	Above ground tank	1951	Argon, Refrigerated liquid	2.2	40000 L	40000 L
3	Above ground tank	1073	Oxygen, Refrigerated liquid	2.2	800000 L	800000 L
4	Above ground tank	1073	Oxygen, Refrigerated liquid	2.2	30000 L	30000 L
5	Above ground tank	1073	Oxygen, Refrigerated liquid	2.2	1400000 L	1400000 L
6	Above ground tank	1073	Oxygen, Refrigerated liquid	2.2	30000 L	30000 L
7	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	1909600 L	1909600 L
8	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	100000 L	100000 L
9	Above ground tank	1951	Argon, Refrigerated liquid	2.2	200000 L	200000 L
10	Above ground tank	1951	Argon, Refrigerated liquid	2.2	200000 L	200000 L
11	Above ground tank	1951	Argon, Refrigerated liquid	2.2	40000 L	40000 L
12	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	20000 L	20000 L
13	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	15000 L	15000 L
14	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	7000 L	7000 L
15	Above ground tank	1977	Nitrogen, Refrigerated liquid	2.2	3000 L	3000 L
16	IBC	1791	Hypochlorite solution	8	3000 L	3000 LI
17	IBC	3264	Corrosive liquid, Acidic, Inorganic, N.O.S.	8	1500 L	1500 L
18	IBC	1830	Sulfuric Acid	8	1500 L	1500 L
19	Portable tanks/Isotainer	1049	Hydrogen, Compressed	2.1	90000 L	0
20	Above ground tank	1075	Petroleum gases, Liquefied	2.1	140000 L	140000 L
21	Above ground tank	1075	Petroleum gases, Liquefied	2.1	100000 L	100000 L
22	Above ground tank	1075	Petroleum gases, Liquefied	2.1	3000 L	3000 L
23	Above ground tank	1075	Petroleum gases, Liquefied	2.1	10000 L	10000 L
24	Cylinder Store	1049	Hydrogen, Compressed	2.1	1000 L	1000 L
25	Cylinder Store	1066	Nitrogen, Compressed	2.2	4000 L	4000 L
26	Cylinder Store	3156	Compressed gas, Oxidizing, N.O.S	2.2	1000 L	1000 L
27	Cylinders in use	1956	Compressed gas, N.O.S.	2.2	1500 L	1500 L
28	Cylinders in use	1956	Compressed gas, N.O.S.	2.2	1700 L	1700 L
29	Cylinders in use	3156	Compressed gas, Oxidizing, N.O.S	2.2	800 L	800 L
31	Cylinder Store	1075	Petroleum gases, Liquefied	2.1	125000 L	125000 L
32	Cylinder Store	1075	Petroleum gases, Liquefied	2.1	50000 L	50000 L

The project site is located within the industrial setting of Cringila, surrounded by a number of other industrial operations that have their own associated hazards and risks. Boral Asphalt, BlueScope Steel Springhill Works, Australian Steel Mill Services and BlueScope Port Kembla Steelworks are industries within 1.5 kilometres radius of the project site. The closest residential area to the project is within Cringila, with the closest property approximately 150 metres southeast of the project site.

Potential impacts

Construction

Hazards and risks as a result of standard civil construction activities have the potential to cause health and environmental risks.

Potential impacts include:

- Accidental spills and leaks from materials handling, transport, transfer, use and the disposal of construction materials
- General construction hazards resulting from excavations, working at heights, confined spaces, mobile equipment and temporary services
- Failure of equipment during pressure testing and commissioning
- Encountering contaminated land
- Damaging or rupturing buried or overhead services and utilities
- Collision of plant and equipment from adjoining operational areas and roadways
- Ignition of flammable materials

Injuries to construction personnel have the potential to arise as a result of working on an active construction site associated with the use of equipment and machinery and working at height or near open excavations. Natural events such as flooding and adverse weather may also have the potential to cause injuries and environmental risks.

Operation

Health and environmental impacts have the potential to arise during operation as a result of the following:

- Spills associated with chemicals used within electrolyser
- Fires within the facility infrastructure
- Incidents related to the transportation of hydrogen (tube trucks)
- Ignition of hydrogen gas leaks from storage tanks and pipelines
- Equipment failure
- Hydrogen refueller station user accidents
- Onsite storage of dangerous goods

The production, storage and transportation of hydrogen has the potential for several major accident events to occur including jet fire, vapor cloud explosion (VCE) and escalation events such as loss of contaminant or major pipe ruptures. During operation the project will also generate additional truck movements to transport hydrogen. These additional truck movements have the potential to generate hazards and risks such as vehicle collisions that could result in injury to personnel and potential explosions.

Proposed assessment approach

An initial risk screening will be undertaken using criteria and guidance in DPE's Applying SEPP 33 (DPIE 2011), to confirm whether the project is classified as potentially hazardous, requiring a preliminary hazard analysis (PHA) and if so, the level of assessment required. The screening criteria relate to factors such as the types and quantities of hazardous materials to be stored on-site, how and where they will be stored, and the anticipated frequency of road movements of this material to and from the site.

Given the presence of hydrogen, it is expected a level 3 PHA (quantified risk assessment) will be required. The PHA will be conducted in accordance with the Resilience and Hazard SEPP requirements, following relevant DPE guidance, and will assess potential hazards within the project site, excluding transport movements on public roads. The PHA will identify potential hazards associated with the project and estimate the likelihood and consequences of them occurring, taking into account BOC's proposed controls. This information will be reviewed to assess the level of off-site risk to people, property and the environment. The major hazards and risks contributors will be reviewed, and management measures outlined, which will be incorporated into the project design, as required.

6.2.2 Noise and vibration

Existing environment

The project is located along Five Islands Road and within BOC Cringila. The existing noise environment within the site is dominated by road traffic and industrial noise sources from within the existing BOC facility and surrounding industrial premises. Sensitive receivers within proximity to the project site include residential dwellings of Cringila, recreational areas (Centenary Park and Cringila Football Club), commercial businesses and heavy industries. The nearest residential receiver is approximately 200 metres southwest of the project site along Merrett Avenue. The recreation areas of Centenary Park and Cringila Football Club are approximately 150 metres northeast and 150 metres southeast of the project site, respectively.

The identified receivers are predominantly impacted by existing traffic noise from nearby roads, rail operations and industrial activities.

Potential impacts

Construction

During construction, the project has the potential to generate noise emissions from a variety of sources, including:

- Site establishment and earthworks
- Activities associated with installation of equipment
- Loading and storage of materials on site
- Movement of heavy vehicles to and from the site
- Noise and vibration from piling of foundations

The nature of noise and vibration impacts would be short term and temporary during construction. Construction noise impacts would include potential for traffic noise associated with delivery of materials to site and offsite transport of finished products, which would typically occur from 7:00 am to 6:00 pm Monday to Friday with the possibility of out of hours delivery depending on the nature of the load.

Operation

The project would operate 24 hours a day 7 days a week. Operational noise would be generated as a result of the operation of plant and equipment including compressors, pumps and generators. Road noise traffic would also be generated from tube trailer trucks accessing the truck loading gantry or fuel cell powered trucks accessing the HRS.

Operational noise generated by the project would be in addition to existing noise generating plant and activities occurring within the site. Potential vibration impacts from operational equipment are anticipated to be minor as there is only a low number of powered mechanical equipment. The nature of noise generated by the project however would be consistent with that of the surrounding environment.

Proposed assessment approach

A noise and vibration impact assessment will be prepared for the EIS with regard to the Noise Policy for Industry (EPA, 2017), Interim Construction Noise Guideline (DECC, 2009) and Road Noise Policy (DECCW, 2011), including the following tasks:

- Review of background information to inform the assessment including meteorological data
- Establish background noise levels
- Development of a noise model including identification of additional noise sources
- Identification of noise trigger levels and criteria for assessment
- Identification of the likely noise and vibration impacts from construction and operational activities
- Undertake an assessment of traffic noise impacts with consideration to the relevant guidelines
- Identification of noise management strategies and mitigation measures, as required

6.2.3 Traffic and transport

Existing environment

The existing BOC facility is located on Five Islands Road in Cringila. Five Islands Road (typical carriageway shown in Figure 6.1 and Figure 6.2) is a state road, which forms part of the B65 between Wollongong and Port Kembla. It forms a signal-controlled intersection with Springhill Road to the southeast of the site and provides a connection between the Princes Motorway to the north.



Figure 6.1 Five Islands Road, viewed eastwards towards Springhill Road

Image Source: Google Street View



Figure 6.2 Five Islands Road, viewed northwest towards Princes Motorway Road

Image Source: Google Street View

Table 6.3 summaries Five Islands Road key features.

Table 6.3 Five Islands Road key features

Feature	Description
Carriageway	Sealed dual carriageway with a raised centre median, with three traffic lanes in each direction
Parking	Parking and stopping are restricted throughout the alignment
Speed Limit	80 km/h
Pedestrian Facilities	Footpaths are provided on both sides of the road along the BOC frontage
Bicycle Facilities	A shared path is provided along the northern side of the road between Springhill Road and Flinders Street.
Public Transport	Cringila Station is located on the northern side of Five Islands Road approximately 805 metres to the southeast of the site. Two bus stops are located approximately 45 metres to the south of Cringila Railway Station, with bus routes 27SC, 51 and 53 operating from these bus stops.

The site is currently accessed from two points both of which directly connect to Five Island Road:

- Northern driveway (Gate 1) – Left and right in and left and right out. This is the primary access for heavy vehicle accessing the site and is serviced by a gated weight bridge at the site entrance.
- Southern driveway (Gate 2) – Left and right in and left and right out. This is the primary light vehicle access to the site with light vehicle parking available immediate after the site entry. Access to the reminder of the site beyond is available through a security gate.

An internal loop road provides access throughout the existing facility for both light and heavy vehicles. As detailed in Section 3.4.2 the existing site currently generates the following vehicle movements:

- 30-40 light vehicle movements per day on average
- 30 heavy vehicles per day on average

The roads surrounding the project site primarily serve industrial and port-related land uses. The Princes Motorway, Five Islands Road, Masters Road and Springhill Road are all designated 25/26 m B-double routes as per restricted access vehicle (RAV) map (Transport for NSW, 2023) and are approved NSW Oversize Overmass Load (OSOM) approved roads.

Potential impacts

Construction

Construction of the project will require traffic movements for materials and equipment to be transported to the site by road in combination with construction workers this is expected to generate the following:

- 60 light vehicles
- 10 heavy vehicles

It is anticipated that all construction vehicles would access and egress the site via the southern entry gate on Five Islands Road. Traffic traveling from the north or south of the project site are expected to travel along the Princes Motorway. Construction activities would typically be occurring six days a week, typically between 7:00 am - 6:00 pm weekdays and 8:00 am - 1:00 pm Saturdays.

It is likely during construction certain specialist plant, equipment or materials may require the use of OSOM vehicles. Where required, OSOM permits would be obtained from TfNSW and licenced haulage contractors would be engaged to manage OSOM movements.

Internal vehicle movements and parking arrangements on site may be potentially impacted and may require adjustments. Temporary parking areas for construction workforce may be required on site to accommodate the increase in construction vehicles.

The traffic generated during construction activities will be concentrated to the southern entry gate from Five Islands Road. Internal vehicle movements and parking arrangements on site may be potentially adjusted during construction. All construction vehicles will be required to park onsite. As such, temporary parking areas for construction workforce may be required to be established to accommodate increase in vehicles.

Construction traffic would not have any direct or indirect impact on the ongoing rail operations surrounding the project site.

Operation

Once the project matures during operation, the daily number of light and heavy vehicles associated with the project will be approximately:

- 45 heavy vehicles (exporting hydrogen from the project site via tube trailer and accessing the HRS)
- 6 light vehicles for operational workforce

Table 6.4 details total site traffic once the project is operational.

Table 6.4 Total vehicle movements – existing site + project

Vehicle type	Vehicle number		Total
	Existing operation	Project	
Light	40	6	46
Heavy	30	45	75

During operation additional permanent onsite parking areas will be provided to accommodate operational personnel. Adjustments to existing access arrangement and internal movements on site would be considered and assessed during the design stage, as required. Internal roads would be designed to provide accessibility for emergency service and to accommodate a fully laden fire truck.

The operational impacts on the surrounding traffic network are anticipated to be negligible when comparing to construction due to the reduction in vehicle movements.

Proposed assessment methodology

A traffic, transport and access impact assessment will be undertaken as part of the EIS. This assessment will be prepared with reference to the Guide to Traffic Generating Development (RMS, 2002) and Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020) and will include:

- A review of baseline information and a description of the existing environment
- A site inspection of the existing infrastructure
- A determination of the existing operational performance of the surrounding road network
- A quantitative assessment of traffic generation during construction and operation of the project, including traffic modelling to identify operational performance of key intersections
- An assessment of the traffic implications from construction and operation of the project on road network capacity and amenity
- Provide management and mitigation measures to reduce the impact of the project on local traffic and transport as required
- Consideration of the project impacts on light and heavy vehicle parking requirements of the project
- Assessment of potential impacts on active and public transport

6.2.4 Water quality and hydrology

Existing environment

Water quality

The project site is located primarily within the Allans Creek catchment. The catchment drains from the Illawarra Escarpment to the Port Kembla Harbour, covering approximately 45 square kilometres. Allans Creek is located approximately 450 metres northeast of the project site. The project site drains into a localised drainage system which then eventually drains into Allans Creek. Industrial and residential stormwater runoff and discharges contribute to water quality within Allans Creek.

Groundwater

A review of Bureau of Meteorology groundwater mapping shows a number of groundwater bores in the vicinity of the project site which indicate the approximate groundwater level is relatively shallow (6.7 metres below ground level).

Flooding

The project site is relatively flat and consist of areas of impervious surfaces (e.g. roads, buildings, concrete slabs etc) which may experience minor localised flooding during rainfall events. Allans Creek catchment has a history of flooding, with extensive damage cause to private and public property located near the creeks and major drainage channels during floods in August 1998 and October 1999 (Advisian, 2019). The Allans Creek Flood Study indicates that the project site would experience partial inundation during the 1 per cent Annual Exceedance Probability (AEP) event with flood depths of between 0.15-0.5 metres and peak flood velocities of less than 0.25 m/s. Noting that the Allans Creek Flood Study has been undertaken at a very coarse resolution and cannot produce accurate results at a site level to take into account site specific drainage management and currently site level, this flood level is considered conservative and there is minimal risk to the site.

Potential impacts

Construction

Soils surfaces may be exposed during construction activities, particularly from the removal of vegetation, demolition work, site grading, construction of new internal roads, installation of infrastructure and movement of construction traffic through the project site. These ground disturbing activities may potentially mobilise sediments and soils, causing water quality impacts to receiving waterways (Allans Creek).

Accidental spillages or leakage of hydrocarbons may potentially occur from the operation and fuelling of construction plant and machinery, which may adversely impact water quality to receiving water bodies. Activities such as a piling and foundation work will be required during construction. However, due to the recorded groundwater levels it is unlikely that groundwater would be intercepted. Management measures will be implemented during construction in the unlikely event that groundwater is intercepted.

Coastal Risk mapping developed by NGIS illustrate the severity of rising seas based on the latest modelling. By 2100 global sea levels could have an increased by 0.84 metres. Based on this, the coastal risk mapping indicated that Allans Creek would result in minor inundation. This inundation of Allans Creek would not impact the project site. As such, the risk of sea level rise to the project is negligible.

Operation

The project site will potentially change the localised hydrology of the site through a change in the impervious area, particularly at the electrolyzers and HRS location. This has the potential to impact existing surface water flows, change flood patterns and increase surface water runoff.

Operational water for the electrolyser will be sourced from Sydney Water's potable water network. No water will be drawn from the environment for the project. Operation of the electrolyser plant may produce brackish water during the hydrogen production process. Water will also be using in the cooling system for occasional discharge from the electrolyser modules, blowdown from the cooling water system and domestic sewerage/ grey water from amenities. This will be collected and disposed of to Sydney Waters sewer network in accordance with a trade waste agreement.

Proposed assessment methodology

A water technical report will be prepared as part of the EIS to assess potential impacts on water quality and hydrology. It is proposed that baseline information and existing water, hydrodynamic modelling and groundwater monitoring data will be used for the assessment. The report will be based on a hydrology assessment entailing the following elements:

- Desktop review of baseline conditions and summary of existing hydrologic site conditions:
 - Review of relevant flood studies
 - Review of site meteorological data
 - Review of baseline information and existing water monitoring and groundwater data for the site
 - Review of available plans or details of existing drainage systems
 - Description of existing hydrology and catchment boundaries
 - Identification of key discharge points and drainage lines
- Assessment of potential impacts during both the construction and operation of the project on water quality and hydrology (including groundwater)
- Details of consultation with Sydney Water regarding access to potable water supplies and future connections to their sewer network

6.2.5 Socio-economic

The initial scoping of social impacts has been prepared in accordance with DPE's Social Impact Assessment Guidelines for State significant projects (DPIE, 2021b).

Existing environment

The project site is located within the suburb of Cringila, NSW in an existing industrial and port precinct of Port Kembla. Cringila is located in the southern proportion of Wollongong LGA. The population of Cringila was recorded as 2,156 in the 2021 Australian Bureau of Statistics (ABS) census (ABS, 2021), residing in 822 households. 2.7 per cent of the population identified as Aboriginal and/or Torres Strait Island, which is lower than NSW total percentage (3.4 per cent).

The surrounding urban areas provide small and large-scale retail outlets, some employment lands and various community services and sporting fields. The areas surrounding the project site has increased with heavy industries, particularly steel industries which are a major contributor to the local economy, through direct employment, export of goods and services. The project site is located in the Wollongong LGA and Table 6.5 details key statistic as per the ABS 2021 Census.

Table 6.5 *Key Wollongong community statistics*

Key statistics	Value
Population	214,564
Aboriginal and/or Torres Strait Islander	3.2%
Employed residents	103,044
Unemployment rate	4.9%
Largest industry by employment	Health care

Potential impacts

The potential social impacts and benefits that may result from construction and operation of the project have been identified through a review of the information presented in this Scoping Report, the understanding of the social locality, and based on previous professional experience undertaking social impact assessments for state significant projects in NSW. The project may potentially result in minor social impacts and benefits. The surrounding local communities may be concerned about both perceived and actual potential hazard and risk of the facility during the construction and operation phase. The concerns will be generally focused on gas leaks, and hydrogen storage and transportation.

There is the potential for local and regional skilled and unskilled residents to benefit from construction and operation employment opportunities. Local and regional business will benefit from procurement opportunities and increase in revenue from construction workers spending wages on food, accommodation and goods/services.

During operation, there may be minor social impacts resulting from changes to local amenity. While the facility would emit noise, this is not expected to affect most community members given the existing environment is already noisy industrial operations. Some community members may be concerned about emissions from the facility. Community concerns about emissions could have perceived or actual impacts on local amenity and health and wellbeing.

Proposed assessment methodology

A basic level of assessment would be required for the project and be prepared in accordance with DPE's Social Impact Assessment Guideline (DPIE, 2023). The basic assessment would be supplemented with a tailored assessment approach as outlined in the SIA Guidelines commensurate with the actual and perceived level of social-economic impacts the project may have. This would include:

- A desktop review of relevant secondary data sources including population and economic data
- Consultation with relevant local stakeholders, such as Council and Aboriginal stakeholders
- Categorising impacts with reference to the result of the other technical assessments prepared in support of the EIS
- Identification of negative, positive and cumulative social and economic impacts
- Development of mitigation measures to appropriately manage identified impacts

EIS communication and engagement activities would also be a key input to the assessment.

6.3 Other issues

6.3.1 Soils, geology and contamination

Existing environment

Soils and geology

The project site is located on an existing industrial premises. A search of the DPE eSpade soil and land information database was undertaken on 6 September 2023 (DPE, 2023a). The site is predominantly mapped as Disturbed Terrain soil landscape (9029xx) occurring within other landscapes. This soil landscape is comprised by artificial fill comprised of natural and anthropocentric sources. Key limitations of the disturbed soils are mass movement hazards, subsidence and impermeable soils.

The southwestern corner of the site is mapped within the Berkely soil landscape (9029bk). This soil landscape is comprised of loamy soils mixed with clays. Key soil limitations include mass movement hazard, extreme erosion hazard, reactive subsoils and locally impeded drainage.

Reference to the New South Wales 1:1 500 000 Geology Map produced by Geological Survey of NSW (2009) indicates that the site is underlain by silicic to intermediate volcanic rock of Permian age.

Acid sulphate soils

Acid sulphate soil risk mapping presented on the DPE eSpade soil and land information database does not identify the site to be within area mapped for acid sulphate soil occurrence or probability. Allans Creek, located 380 metres northeast of the site, mapped as having a high probability for acid sulphate soil occurrence (class 2), is the closest area of ASS to the site.

Contamination

A search of contaminated land record and record of sites notified to the Environment Protection Authority was conducted on 8 September 2023. The site is not on either list. Given the existing industrial use, there may be potential for contamination at the site.

Potential impacts

During construction activities, in particular excavation, soils impacted by previous land use may be encountered. The site is generally sealed, reducing the risk of erosion and sediment impacts. Works occurring outside sealed areas may lead to erosion and compaction of soils within the area. Any soil stockpiled or exposed would also be prone to wind and water erosion.

There is potential for further contamination of soils during construction due to spills of hydrocarbons and other chemicals. Ground disturbance and excavation works will be required for the project. Although these activities would be minor, given the past industrial use there is potential to encounter contaminated materials during construction activities. The disturbance of potentially contaminated materials without appropriate management measures may negatively affect human and environmental health. The proposed operational activities are not expected to increase the risk of potential spills of hydrocarbons significantly as vehicle movements occur currently and will continue to occur onsite.

Proposed assessment methodology

Assessment of impacts to soils and contamination will be included as part of the EIS and will include:

- Assessment of the existing soils by utilising available regional mapping and any available records of fill brought to the site
- Contamination assessment in a Preliminary Site Investigation (PSI)
- Assessment of potential erosion and sedimentation impacts from the project
- Identification of proposed sediment and erosion controls for the project
- Identification of any other necessary mitigation measures

6.3.2 Air quality

Existing environment

The existing air quality environment is dominated by industrial emissions from surrounding industrial activities including asphalt manufacture, coal stockpiling and steel making. Windblown dust is also expected to be present from on-site and off-site sources. Traffic along Five Islands Road also contributes to the existing air quality environment. Natural attenuators of air quality include the sea breeze which is prevalent in the afternoons.

Local meteorological data was obtained from the Bellambi Automatic Weather Station (AWS) (BoM, 2023). Mean monthly maximum temperatures range between 17.2 °C in July to 25.0 °C in January. Mean monthly minimum temperatures range between 10.5 °C in July to 19.1 °C in January and February. Autumn and spring are generally mild with sporadic temperature fluctuations.

Mean monthly rainfall in the area ranges between 59.7 millimetres (mm) in September to 155.8 mm in February, with most of the mean annual 1137.7 mm of rainfall occurring between February and June.

Mean 9 am wind speeds in the area ranges between 15.0 kilometres per hour (km/h) in March to 18.7 km/h in November, and 3 pm wind speeds between 20.7 km/h in July to 25.4 km/h in December.

The nearest residential receiver is approximately 200 metres southeast of the site along Merrett Avenue.

Potential impacts

Construction

During construction, the local air quality could potentially be impacted as a result of dust generation from materials handling, and machinery and truck movements. Additionally, construction traffic and machinery will generate exhaust emissions.

Operation

During operation, truck movements transporting hydrogen will generate exhaust emissions which could potentially impact on the local air quality. Operational air quality impacts from the operation of electrolyzers are limited to small amounts of fugitive hydrogen and oxygen. These will be minimised to the extent possible to maintain the efficiency of hydrogen production. Oxygen produced by electrolysis may be captured for incorporation into BOC's existing oxygen systems.

Proposed assessment approach

Construction and operational air quality impacts will be assessed qualitatively in the EIS and will largely be limited to dust generated from machinery movement, ground disturbance and vehicle emissions.

An air quality impact assessment in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2016) will be undertaken as part of the EIS to assess potential impacts on nearby sensitive receptors. The assessment will include:

- Review of project information related to sources of air emissions accounting for construction and operation
- Defining the existing air quality environment at the site, including the identification of sensitive receivers
- Identification of all likely sources of air pollution
- Quantification of potential impacts
- Recommendations on mitigation and management strategies

6.3.3 Biodiversity

Existing environment

The site is a disturbed industrial environment with minimal vegetation with limited biodiversity value. Vegetation present around the site is dominated by planted species along the road corridor or opportunistic weeds. Uncleared areas approximately 150 metres southwest of the project site are heavily vegetated that potentially provide habitat to local fauna and are mapped as Swift Parrot important areas. The project site is within a heavily modified area which has been disturbed for industrial infrastructure. As such, the availability of suitable fauna habitat within the project site is limited to scattered stands of vegetation, maintained grass, and cleared land. No hollow-bearing trees are anticipated to be on the project site.

A search of the EPBC Protected Matters Search for records of threatened species listed under the BC Act and EPBC Act was undertaken on 1 September 2023. The search identified eight threatened ecological communities within a 10 kilometres buffer of the project site. The search also identified 111 threatened species and 78 migratory species listed under the EPBC Act that were known or were determined likely to occur within this buffer. There are no plant community types (PCTs) mapped within the project site.

A search of the DPE BioNet Atlas for records of threatened species listed under the BC Act and EPBC Act (DPE, 2023b) was undertaken on 1 September 2023. Threatened species previously recorded within 10 kilometres of the project site are listed in Appendix A.

A review of the Atlas of Groundwater Dependent Ecosystems (BOM, 2023b) indicated that no known groundwater dependant ecosystems (GDEs) have been identified within the project site.

The BOC site predominantly contains sealed concrete hardstand areas with a range of buildings and infrastructure. Some mown and maintained grassed area existing along the east, west and southern boundaries of the site. There is no significant vegetation, threatened populations or communities. Similarly there is negligible habitat for and fauna species.

Potential impacts

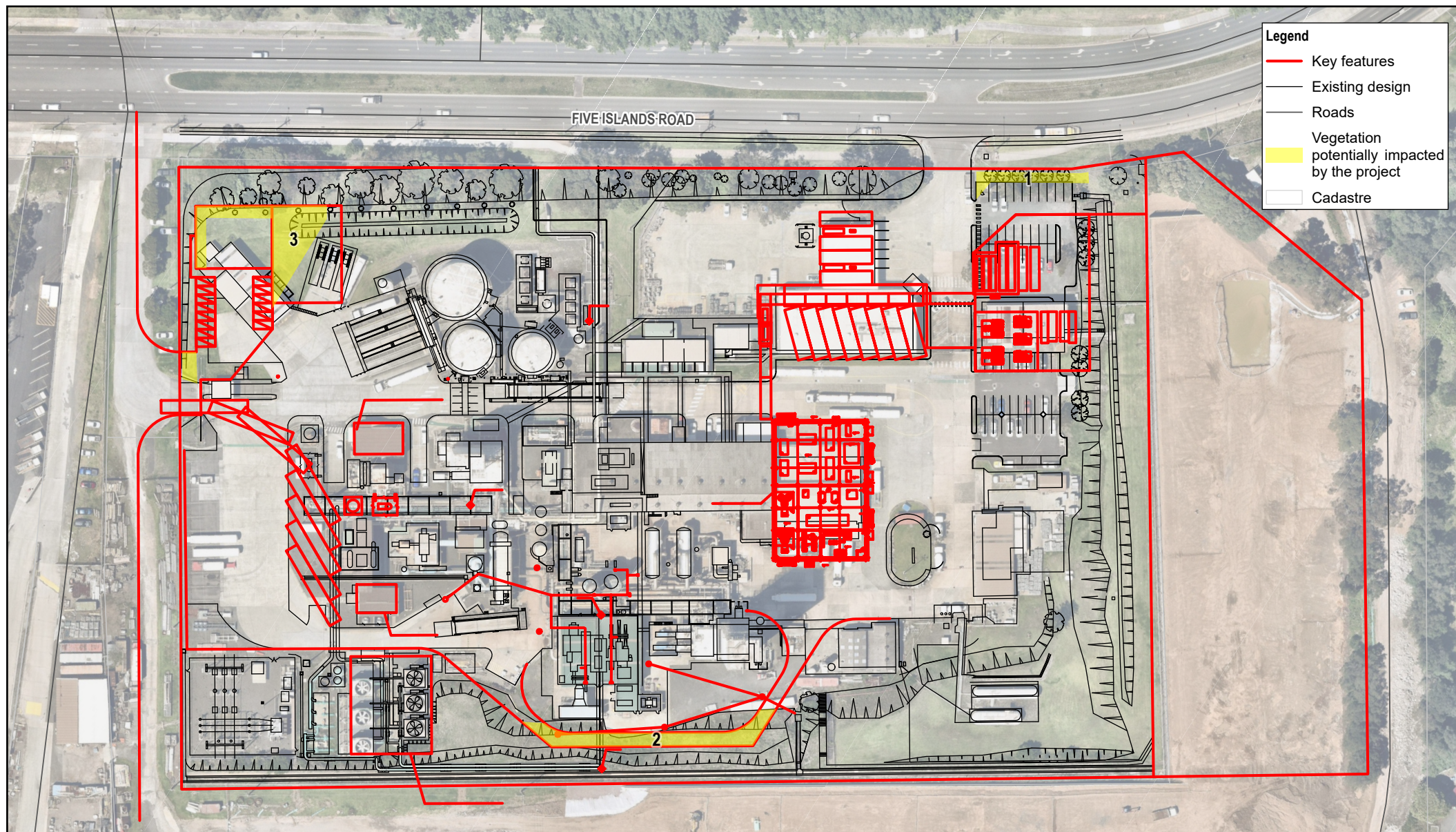
The project is located within a high disturbed area which has been modified for industrial purposes, as such hold limited biodiversity values. The project may require some potential groundcover vegetation (maintained lawn) clearing for new hardstand areas, roads and access points. The potential impacts to vegetation are expected to be minor due to the minimal amount of clearing required and as these areas hold negligible potential fauna habitat. Vegetation impacts are shown on Figure 6.3.

Three areas within the existing BOC site have been identified for impacts which includes:

- Area 1 – Narrow landscaped strip between the light vehicle carpark between the project site and Five Island Road area in the southeastern corner of the site. Contains primarily planted landscaping species such as Coastal Rosemary (*Westringia fruticosa*) and several small isolated Eucalyptus ironbark's with negligible biodiversity value.
- Area 2 – Grassed embankment on the western boundary of the site adjacent to substation no. 3. Area is regularly mowed and maintained as grassed area.
- Area 3 – Grassed area in the northeastern corner of the site next to the weighbridge, truck wash and track parking. Area is regularly mowed and maintained as grassed area.

Photos of these areas are shown on Figure 6.4 to Figure 6.6.

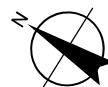
Listed threatened or migratory bird species have also been recorded in the vicinity of the project site and may visit the site temporarily. Given the disturbed nature of the project site and lack of suitable habitat, any such species are unlikely to be permanently present and are not expected to be impacted by the project. Given the project is not located near a waterway, aquatic ecology impacts unlikely.



- Legend**
- Key features
 - Existing design
 - Roads
 - Vegetation potentially impacted by the project
 - Cadastre

Paper Size ISO A4
 0 10 20 30 40
 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 56



BOC
 Illawarra Hydrogen Hub
 Scoping Report

**Vegetation potentially impacted
 by the project**

Project No. 12618185
 Revision No. 0
 Date 30/01/2024

FIGURE 6.3



Figure 6.4 **Vegetation to be cleared – Area 1**



Figure 6.5 *Vegetation to be cleared – Area 2*



Figure 6.6 *Vegetation to be cleared – Area 3*

Proposed assessment methodology

Under Section 7.9 of the BC Act, an application to carry out SSD is to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. It is considered that the project is unlikely to have a significant impact on biodiversity values and BOC seeks confirmation that preparation of a BDAR is not required. This Scoping Report will be accompanied by a BDAR waiver request.

The EIS will include an assessment of biodiversity impacts based on review of existing literature and databases, including:

- Identification of the flora and fauna likely to be located within the project application area
- Assessment of potential impacts on State and Commonwealth listed terrestrial and aquatic species, populations, ecological communities or their habitats
- Identify measures that will be implemented to mitigate the impacts of the project on species, populations, ecological communities and their habitats if applicable

6.3.4 Waste

Existing environment

The project site is currently used for operations associated with BOC Port Kembla facility. Existing waste streams from BOCs operation include:

- Putrescible waste from office and staff areas separated for recycling or disposed of to landfill.
- Wastewater from staff amenities and from process water streams disposed of to sewer.
- Waste parts and packaging from ongoing maintenance of equipment across the site and from workshops. Reconditioned for reuse where possible or separates for recycling or disposal to landfill.

Potential impacts

Construction

During the construction phase there is the potential for waste to be generated from undertaking demolition and construction activities. Majority of waste generated would be during site preparation which may include unsuitable or contaminated spoil, building materials and general rubbish. All construction will be classified in accordance with the NSW Waste Classification Guidelines (EPA, 2014). Where practicable, waste materials generated through the project will be recovered and recycled.

Site compounds would be established that would include office facilities, laydown areas and temporary amenities. The site compounds would generate some construction material waste such as metals, woods and concrete. The greywater and sewage that is generated from construction staff would be temporarily stored onsite and transported for offsite disposal by an appropriately licenced contractor or construction staff will have access to existing site amenities.

Excavation may potentially be required for the project. All excess spoil will be classified in accordance with the NSW Waste Classification Guidelines (EPA, 2014) and disposed of accordingly at a licenced waste facility.

Operation

The generation of wastes during operation would likely include general office waste as well as from maintenance activities such as the removal of redundant equipment and general waste from maintenance personal. Other waste streams that may be generated by all operation related activities include the following:

- Sewage from ablutions facilities
- Fuels, lubricants and chemical used for maintenance and plant
- Process water
- Site consumables
- Food waste and package

All operational wastes would be managed in accordance with the Waste Classification Guidelines (EPA, 2014).

Proposed assessment methodology

Waste would be managed through the waste hierarchy established under the *Waste Avoidance and Recovery Act 2001* (i.e. avoidance of waste, resource recovery, disposal of waste). The EIS will assess the predicted waste generation impact of the project, including:

- Classification of wastes and an estimate of the quantity of each waste classification
- Identification of waste handling procedures, management measures and waste minimisation and reuse opportunities

6.3.5 Landscape character and visual amenity

Existing environment

The project site is situated within the industrial setting of Port Kembla. The landscape character of the area immediately surrounding the site is defined by large industries. The closest sensitive receptors are a residential area approximately 200 metres southeast of the project site. The main viewpoint of the BOC site is from Five Islands Road, mainly from road users. Vegetation has been planted around the perimeter of the project site, particularly focusing along the section adjacent to the road, restricting the visibility of the project site.

Potential impacts

The construction activities may potentially impact the visual amenity through the increase in construction equipment, site compound and amenities during the works. The potential impacts during construction are considered minor as works will be temporary and consistent with the surrounding industrial landscape. All construction activities will be contained within the existing BOC site reducing potential visual impacts.

Additional buildings and infrastructure that is constructed as part of the project would be considered consistent with the existing industrial setting. As the works will be confined within the existing industrial lands of the BOC facility and the surrounding land use is predominately industrial, the project is consistent with the current visual landscape.

Proposed assessment methodology

Any potential visual and landscape character impacts are assessed as low. The EIS would include a high-level assessment of landscape and visual impacts to identify the potential visual impacts of the project on the nearest sensitive receptors such as public roads, places of residence, work and recreation and provide mitigation measures as required.

6.3.6 Aboriginal heritage

Existing environment

The project site is located within the administrative boundaries of the Illawarra Local Aboriginal Land Council (LALC). The site is an existing facility and is highly disturbed. A preliminary search of the DPIE Aboriginal Heritage Information System (AHIMS) for the project site was undertaken on 1 September 2023. No Aboriginal Heritage items or places were located within the site or within a 200 metre buffer of the BOC site.

The existing BOC site has been heavily disturbed from significant earthworks and filling to establish a level site for construction of the existing facility.

Potential impacts

During construction, earthworks will be required for the construction of footings for new buildings and structures. These earthworks would take place following the removal of existing buildings or sealed areas and would be into previously disturbed areas a fill. The project site is highly disturbed and therefore the likelihood of occurrence of Aboriginal items is considered negligible.

Proposed assessment methodology

As part of this Scoping Report an assessment of the projects potential to impact on Aboriginal heritage has been undertaken generally in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW). This approach has been taken to determine whether the preparation of a project specific Aboriginal Cultural Heritage Assessment Report (ACHAR) would be applicable to the project. As detailed above the AHIMS search (Appendix C) has identified there are no known Aboriginal heritage items on, in within close proximity to the site.

The project site is a disturbed brownfields site that has been used for industrial purposes for over 60 years. The project would be undertaken wholly within land that has been previously disturbed. The potential for the project to impact Aboriginal heritage items is therefore considered negligible and an ACHAR is unnecessary. Whilst an ACHAR is not deemed necessary for the project the EIS would contain a detailed assessment of the site history, review of the AHIMS register an analysis of Aboriginal heritage in proximity to the site. In additional project specific consultation would be undertaken with both the Local Aboriginal Land Council (LALC). Details of this consultation would be outlined in the EIS.

6.3.7 Utilities and services

Existing environment

The project site is currently used for industrial purposes to produce and distribute industrial gases. The site is connected to the main utility distribution networks and water schemes. The site would continue to utilise these connections for the project. Table 6.6 summaries the main existing infrastructure in the vicinity of the project.

Table 6.6 Existing infrastructure in the vicinity of the project

Asset / infrastructure / service	Owner	Description
Potable water	Sydney Water	Along the road verge/road reserve adjacent to the project site and Five Islands Road is a DN300 DICL water main which extends to the north and south of the project site.
Wastewater (sewer)	Sydney Water	Along the road verge/road reserve adjacent to the project site and Five Islands Road is a DN300 VC sewer main which extends to the north and south of the project site.
Recycled water	Sydney water	There is an existing recycled water main approximately 100 metres west of the site.
Optic Fibre	Aarnet	An optic fibre extends along the western project site boundary in the road reserve/verge along Five Islands Road.
Optic Fibre	Telstra	Existing optic fibre are located with Five Islands Road and the project site.
Natural gas pipeline	Jemena	Not within or adjacent to the project site. The closest asset is located within the Parkland approximately 150 metres northwest of the site.

Potential impacts

The project will require various utility connections. BOC intends to supply the project with renewable energy and water from established utility connections to the site. Similarly wastewater would be removed through the existing connection to the Sydney Water sewer network.

Proposed assessment methodology

The EIS will consider any impacts to utilities and services as a result of the project and outline mitigation measures to minimise the potential impacts.

6.3.8 Greenhouse Gas

Existing environment

The project site is currently used by BOC for the production and storage of oxygen and nitrogen and the distribution of important LPG. Energy in the form of electricity and natural gas used in relation to these processes has the potential to release Scope 1 and 2 greenhouse gases.

Potential impacts

Construction

During construction, the project has the potential to generate Scope 1 and 2 greenhouse emissions by the use of fuels (use of equipment and machinery), the materials used. The volume of greenhouse gas emissions would largely depend on the type and quantity of construction materials used, construction methodologies and equipment used, and the overall design.

Operation

Operation of the project would require power, which would be sourced from a green energy provider. The transport of hydrogen during operation would contribute to emissions, although the contribution would be minor. The production of green hydrogen produced would have a positive effect on the environment by reducing emissions through its use in transportation or mobility applications that typically have full reliance on carbon intensive fuels. The reduction in greenhouse gas emissions through the use of hydrogen technologies aligns with the federal and state energy strategies and policies.

Proposed assessment methodology

The EIS will include a quantitative assessment of the potential GHG emissions of the project in relation to:

- Construction: a calculation of the Scope 1 and Scope 2 emissions associated with construction activities.
- Operation:
 - A calculation of the Scope 1 and Scope 2 emissions generated from the operation of the project.
 - Consideration of the Scope 3 and indirect emissions that the project will offset through the provision of an energy source to end users that displaces energy that would otherwise be provided by more carbon intensive sources.

6.4 Scoping only issues

A number of project matters have been classified as 'scoping only' issues during the development of this report. These matters were considered during scoping, but it was concluded, for various reasons, that the proposed project activities are unlikely to have any significant impacts. BOC does not propose to investigate these matters further in the EIS. A brief summary of each of the identified 'scoping only' issues, and a justification as to why further investigation is not warranted, is presented below.

6.4.1 Historic heritage

A desktop search was undertaken in September 2023 of the following relevant databases:

- NSW State Heritage Register
- LEP 2009
- National Heritage List
- Commonwealth Heritage List
- World Heritage List

No items of historic heritage were identified within the project site. The nearest heritage site, which is listed under the LEP 2009, is the Site of the Former 'Berkeley House' (item number 6519) located approximately 800 metres northwest of the project site. The project site has been heavily disturbed and modified for industrial purposes. As such, there is no potential for any items on site that will potentially have historic significance.

The identified historic heritage item that is identified at approximately 800 metres northwest of the project site will not be impacted by the works. As there are no historic heritage identified on the project site and the works are unlikely to impact any heritage within the vicinity, no further assessment is required to support the EIS.

6.4.2 Land use and property

The project site and associated utility is located within an existing industrial site. The areas surrounding the project site include:

- Heavy industries to the north
- The Five Islands Road and active and passive recreational areas to the east
- Bushland to the west
- Active and passive recreational areas to the south

The nearest residential area is located in Cringila 200 metres to the southeast of the site.

The project will be consistent with the industrial land use of the area, enabling the production and storage of hydrogen. No change to existing land use is proposed and as the project is consistent with the existing use of the BOC site and of a relatively small scale impacts to adjoining land uses are likely to be minor. As such, the EIS will include discussion of the potential land use impacts as a result of the project.

7. Conclusion

BOC proposes to construct and operate the IHTH located in the suburb of Cringila, Wollongong, NSW. The project would produce renewable hydrogen from a number of electrolysis modules, supplied by grid connected renewable electricity. The project would be collocated at BOCs existing Cringila facility maximising the use of an existing brownfield site with established road and utility connections.

The project would assist in the development of the hydrogen industry in NSW by providing a source of hydrogen for public transport bus fleets. In doing so the project is consistent with the relevant goals of Commonwealth and NSW decarbonisation strategies that seek to provide alternative and carbon free source of energy for hard to abate sectors including transport.

The project is permissible with consent and is considered SSD. An EIS would be prepared to accompany the SSD application for the project. The EIS would be prepared in consultation with key stakeholders and the community and would consider the potential environmental impacts of the project.

The scoping report has been prepared to provide an overview of the project, key features of the existing environment, potential impacts and indicative assessment scopes and to enable DPE to issue SEARs for preparation of the EIS.

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Appendices

Appendix A

**EPBC Protected Matters Search and
BioNet Atlas Search**

Table A.1 EPBC protected matters search results

Protected matter	Matter located within search radius	Comments	Potential impact
Matters of national environmental significance			
World Heritage Property	None	N/A	N/A
National Heritage Places	None	N/A	N/A
Wetlands of International Importance	None	N/A	
Great Barrier Reef Marine Park	None	N/A	N/A
Commonwealth Marine Areas	None	N/A	N/A
Threatened Ecological Communities	8	Discussed further in Section 6.3.3	
Threatened Species	112	Discussed further in Section 6.3.3	
Migratory species	78	Discussed further in Section 6.3.3	
Other matters			
Commonwealth Land	33	None occurring within the project site.	
Commonwealth Heritage Places	None	N/A	N/A
Marine Species	109	Discussed further in Section 6.3.3	
Whales and Other Cetaceans	14	Discussed further in Section 6.3.3	
Critical Habitats	None	N/A	N/A
Commonwealth Reserves Terrestrial	None	N/A	N/A
Australian Marine Parks	None	N/A	N/A



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 12-Sep-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	45
Listed Migratory Species:	17

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	25
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area
Illawarra and south coast lowland forest and woodland ecological community	Critically Endangered	Community may occur within area
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
FISH		
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
FROG		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
PLANT		
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat likely to occur within area
Prasophyllum affine Jervis Bay Leek Orchid, Culburra Leek-orchid, Kinghorn Point Leek-orchid [2210]	Endangered	Species or species habitat may occur within area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat likely to occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area

REPTILE		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]	
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna striata White-fronted Tern [799]		Migration route may occur within area

Scientific Name	Threatened Category	Presence Text
Symposiachrus trivirgatus as Monarcha trivirgatus		
Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Lake Illawarra entrance works, Stage 2	2004/1696	Not Controlled Action	Completed
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Illawarra Entrance Works (stage 2)	2005/1997	Not Controlled Action (Particular Manner)	Post-Approval

Bioregional Assessments		
SubRegion	BioRegion	Website
Sydney	Sydney Basin	BA website

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix B

Scoping worksheets

Environmental Impact Statement (EIS) scoping worksheet for:

BOC Hydrogen Hub

nn

Date:

Jan-24

What matters might be impacted?			What activities might cause an impact?		What are the characteristics of the impact?				How will the impact be managed?	What are the community and other stakeholder views?	What level of assessment and engagement is required in the EIS preparation phase?				
Social and environmental matters I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements Click on the matter for a description, or the link above for full glossary			Without any mitigation, is the proposal likely to impact on the matter? (Select from list)	If there is a 'likely' impact: 1. list the activities expected to cause the impact; and 2. if applicable, list the receptor being impacted and its status. E.g. construction noise will be heard at nearby school If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location? (Manual entry)	Is the impact, without mitigation, expected to cause a material effect with regard to its... (Answer 'Y', 'N' or '?') Click on characteristic for description, or the link above for further detail				Does the impact need assessment in the EIS? (Auto fills)	Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)? (Select from list)	What safeguards and management measures are expected to be required to address the impact? (Select from list)	Are there community or other stakeholder concerns regarding the impact or activity? (Based on engagement with community and other stakeholders) (Select from list)	Expected level of assessment and/or engagement required (Auto fills)	Relevant section in Scoping Report (Manual entry)	
					extent?	duration?	severity?	sensitivity?							
What does the proposal mean for people?	AMENITY	acoustic	Likely	Construction noise will be generated by the proposal, with closest residential receivers approximately 175 m SW. Located within an existing facility, minor addition to existing noise environment.	Y	Y	N	N	Yes	Yes	Project Specific	No	Key Issue + CIA		
		visual	Likely	Temporary visual impacts during construction, though within an existing facility. Unlikely operational impacts due to location within an existing facility. The proposal would be visually consistent with the facility.	N	Y	N	N	No				Scoping Report		
		odour	Likely	Dust and particulate matter generated during construction. Potential for minor emissions during operation.	N	N	N	N	No				Scoping Report		
		microclimate	Unlikely	Ongoing operation consistent with current land use										Scoping Report	
		other - please specify													
	ACCESS	access to property	Likely	Proposal is located along Five Islands Road in an existing industrial facility. A new access is likely to be required into the facility as part of the proposal.	N	N	N	N	No				Scoping Report		
		utilities	Likely	Proposal is located within an existing facility that has existing utility connections. Potential for impact to utilities during construction if not correctly located. Pending design may need upgraded water and power connections. During operation, the proposal is unlikely to cause significant impacts to offsite utilities.	Y	Y	N	N	Yes	No	Standard		Other Issue		
		road and rail network	Likely	Impacts on traffic movements/flows due to generation of construction traffic Impacts on traffic movements/flows due to operational traffic	Y	Y	Y	N	Yes	No	Project Specific		Key Issue		
		offsite parking	Unlikely	Parking will be confined to the project site during construction and operation											
		other - please specify													
	BUILT ENVIRONMENT	public domain	Unlikely	Operational impacts will be confined to project site									Scoping Report		
		public infrastructure	Unlikely	Impacts will be confined to project site									Scoping Report		
		other built assets	Unlikely	Impacts to surrounding built environment during construction of project connection to water and power During operation, impacts confined to project site									Scoping Report		
		other - please specify													
	HERITAGE	natural	Unlikely	Natural heritage encompasses a broad range of listed and potential items and areas, including natural ecosystems, geological sites, water systems, modified landscapes and parks, gardens and significant trees. The site is heavily disturbed, and no listed natural heritage items or places would be affected.									Scoping Report		
		cultural	Unlikely	No listed items in proximity to works.									Scoping Report		
		Aboriginal cultural	Unlikely	Construction impacts on places and items that are of significance to Aboriginal people because of their traditions, observances, lore, customs, beliefs and history. Including impacts on listed and potential items and sites. The site is heavily disturbed, and no items of Aboriginal heritage significance are located within close proximity to the project									Scoping Report		
		built	Unlikely	No listed items in proximity to works.									Scoping Report		
		other - please specify													
	COMMUNITY	health	Likely	Construction activities, work sites and the movement of plant, machinery, contaminated spoil and traffic are unlikely to affect public health and safety. Health issues associated with hazardous materials including production of hydrogen	Y	Y	Y	Y	Yes	No	Project Specific		Key Issue		
		safety	Likely	Issues associated with dangerous goods and materials handling during construction/operation	Y	Y	Y	Y	Yes	No	Project Specific		Key Issue	Human safety risk assessed in hazard and risk report	
		services and facilities	Unlikely	No impacts to community services / facilities									Scoping Report		
		cohesion, capital and resilience	Unlikely	No impact on social cohesion, capital and resilience									Scoping Report		
		housing	Unlikely	No impact to housing									Scoping Report		
		other - please specify													
	ECONOMIC	natural resource use	Unlikely	No impacts on natural resources- proposal is located within an existing industrial site with existing service connections.									Scoping Report		
		livelihood	Unlikely	Security of ongoing direct and indirect employment									Scoping Report		
		opportunity cost	Likely	Project would result in positive feedback from capital costs	Y	Y	N	N	Yes						
		other - please specify													
	What does the proposal mean for the natural environment?	AIR	particulate matter	Likely	Dust and particulate matter generated during construction. Potential for minor emissions during operation.	Y	Y	N	N	Yes	Yes	Standard		Other Issue + CIA	
			gases	Likely	Localised exhaust emissions from construction vehicles and plant.	Y	N	N	N	No				Scoping Report	
			atmospheric emissions	Likely	Emissions from transport of hydrogen from site to source	Y	Y	N	N	Yes	No	Standard		Other Issue	
			other - please specify												
		BIODIVERSITY	native vegetation	Unlikely	Existing disturbed site									Scoping Report	
			native fauna	Unlikely	Existing disturbed site									Scoping Report	
			other - please specify												
LAND		stability and/or structure	Likely	Potential for increased erosion and soil instability for permanent structures	N	Y	N	N	No				Scoping Report		
		soil chemistry	Likely	Potential soil contamination from previous land use which would impact on spoil chemistry and capability	Y	N	Y	Y	Yes	No	Standard		Other Issue		
		capability	Unlikely	The project site is highly modified. The proposal is not expected to affect the capability and/or productive capacity of land.									Scoping Report		
		topography	Unlikely	No changes to topography are expected									Scoping Report		
		other - please specify													
WATER		water quality	Likely	Water quality of cooling water and release needs to be assessed	N	Y	N	Y	Yes	No	Standard		Other Issue		
		water availability	Unlikely	Existing services located within the site									Scoping Report		
		hydrological flows	Unlikely	No impacts to hydrological flows									Scoping Report		
		other - please specify													
What risks does the proposal face?	RISKS	coastal hazards	Unlikely	No changes to the coastal zone								Scoping Report			
		flood waters	Unlikely	Impact to flood duration or severity unlikely								Scoping Report			
		bushfire	n/a	No bushfire prone land								No assessment necessary - Worksheet only			
		undermining	n/a	No undermining present								No assessment necessary - Worksheet only			
		steep slopes	Unlikely	Site has flat topography								Scoping Report			
		Fire and explosion	Likely	Impacts as a result of incident	Y	Y	Y	Y	Yes	Yes	Project Specific		Key Issue + CIA		

Appendix C

AHIMS search

GHD - Newcastle

24 Honeysuckle Drive
Newcastle New South Wales 2300

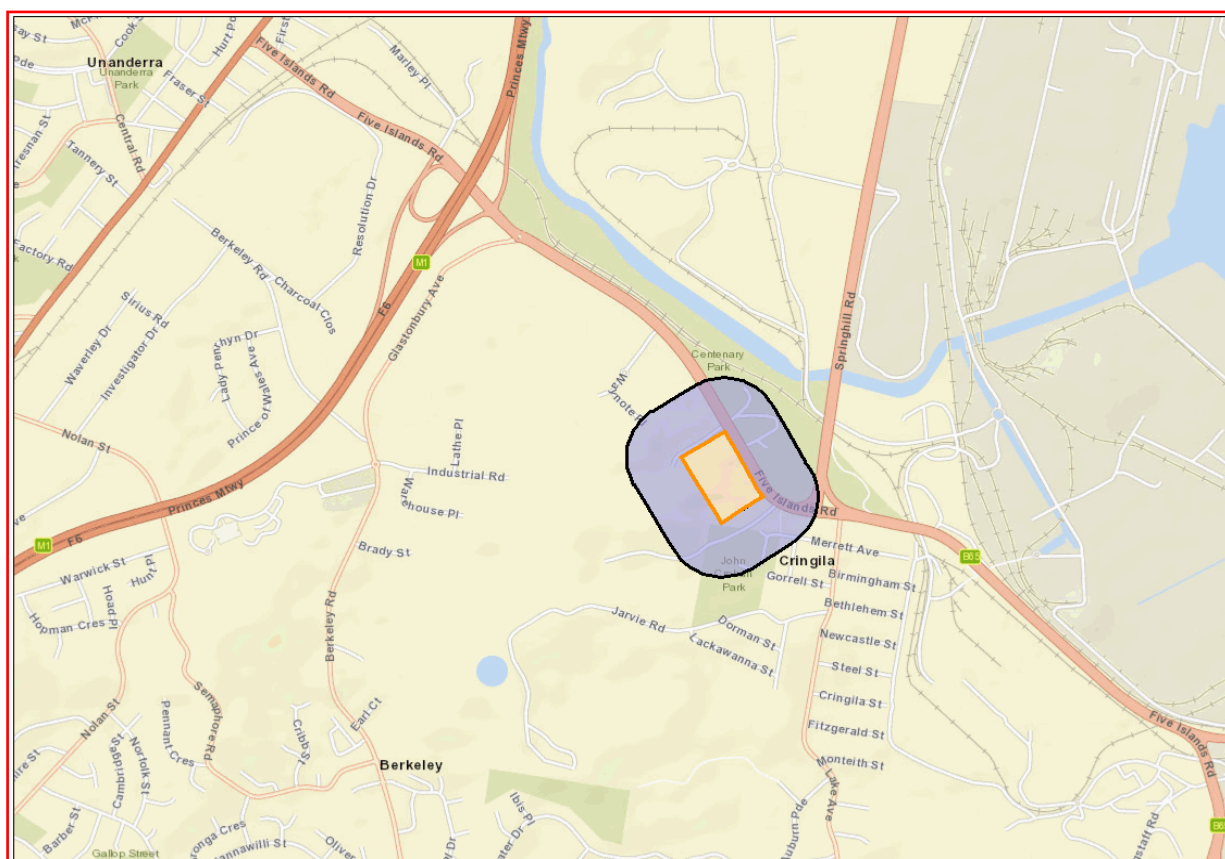
Attention: Lachlan Taylor

Email: lachy.taylor@ghd.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP1088411, Section : - with a Buffer of 200 meters, conducted by Lachlan Taylor on 01 September 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



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