

Port of Newcastle

September 2023

Confidential

# Scoping Report

## Infrastructure and Ammonia Storage (within proposed future Clean Energy Precinct)

wsp



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## Scoping Report

### Infrastructure and Ammonia Storage (within proposed future Clean Energy Precinct)

#### Port of Newcastle

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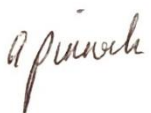
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|              | Name                             | Date       | Signature                                                                                                                                                                  |
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WSP acknowledges that every project we work on takes place on First Peoples lands.

We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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| Appendix D Initial Social Impact Assessment Scoping Report<br>(WSP, 2023)           |

# Abbreviations

|                                    |                                                                               |
|------------------------------------|-------------------------------------------------------------------------------|
| ABS                                | Australian Bureau of Statistics                                               |
| AEMO                               | Australian Energy Market Operator                                             |
| AHIMS                              | Aboriginal Heritage Information Management System                             |
| ASC                                | Australian Soil Classification                                                |
| BAM                                | Biodiversity Assessment Method                                                |
| BC Act                             | <i>Biodiversity Conservation Act 2016</i>                                     |
| BDAR                               | Biodiversity development assessment report                                    |
| BIA                                | Biologically important area                                                   |
| Biodiversity and Conservation SEPP | State Environmental Planning Policy (Biodiversity and Conservation SEPP) 2021 |
| Biosecurity Act                    | <i>Biosecurity Act 2015</i>                                                   |
| BOM                                | Bureau of Meteorology                                                         |
| BOS                                | Basic oxygen slag                                                             |
| BSAL                               | Biophysical Strategic Agricultural Land                                       |
| CBD                                | Central business district                                                     |
| CLM Act                            | <i>Contaminated Land Management Act 1997</i>                                  |
| CO <sub>2</sub>                    | Carbon dioxide                                                                |
| COP                                | Convention on Climate Change Conference of Parties                            |
| COP26                              | 26 <sup>th</sup> annual Convention on Climate Change Conference of Parties    |
| CSIRO                              | Commonwealth Scientific and Industrial Research Organisation                  |
| DCCEEW                             | Department of Climate Change, Environment, Energy and Water (Cth)             |
| DISER                              | Department of Industry, Science, Energy and Resources                         |
| DPE                                | Department of Planning and Environment (formerly DPIE)                        |
| DPIE                               | Department of Planning, Industry and Environment (now DPE)                    |
| EIS                                | Environmental Impact Statement                                                |
| EPA                                | Environment Protection Authority                                              |
| EPL                                | Environmental Protection Licence                                              |
| EnergyCo                           | Energy Corporation of NSW                                                     |
| 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>          |

|         |                                                |
|---------|------------------------------------------------|
| ESD     | Ecologically sustainable development           |
| ESOO    | Electricity Statement of Opportunities         |
| EU      | European Union                                 |
| EV      | Electric vehicle                               |
| FM Act  | <i>Fisheries Management Act 1994</i>           |
| GDE     | Groundwater dependent ecosystem                |
| GHG     | Greenhouse gas                                 |
| GW      | Gigawatts                                      |
| GWh     | Gigawatt hours                                 |
| IPC     | Independent Planning Commission                |
| ISP     | Integrated System Plan                         |
| KFH     | Key Fish Habitat                               |
| KIWEF   | Kooragang Island Waste Emplacement Facility    |
| kg      | Kilograms                                      |
| km      | Kilometres                                     |
| kV      | Kilovolt                                       |
| LUSS    | Land Use Safety Study                          |
| LCGs    | Large-scale Generation Certificates            |
| LEP     | Local Environmental Plan                       |
| LGA     | Local government area                          |
| LRET    | Large-scale Renewable Energy Target            |
| MHF     | Major hazard facility                          |
| MCA     | Multi-criteria analysis                        |
| MNES    | Matters of National Environmental Significance |
| MW      | Megawatts                                      |
| NCIG    | National Coal Infrastructure Group             |
| NEM     | National Electricity Market                    |
| NML     | Noise management level                         |
| NPI     | National Pollutant Inventory                   |
| NPW Act | <i>National Parks and Wildlife Act 1974</i>    |
| NSW     | New South Wales                                |
| ODP     | Optimal development path                       |

|                                   |                                                                         |
|-----------------------------------|-------------------------------------------------------------------------|
| OEH                               | Office of Environment and Heritage (now Heritage NSW)                   |
| PCT                               | Plant Community Type                                                    |
| PHA                               | Preliminary hazard analysis                                             |
| PM                                | Particulate matter                                                      |
| PMST                              | Protected Matter Search Tool                                            |
| POEO Act                          | <i>Protection of the Environment Operations Act 1997</i>                |
| PON                               | Port of Newcastle                                                       |
| PV                                | Photovoltaic                                                            |
| REAP                              | Registered Environmental Assessment Practitioner                        |
| Resilience and Hazards SEPP       | State Environmental Planning Policy (Resilience and Hazards) 2021       |
| RET                               | Renewable Energy Target                                                 |
| REZ                               | Renewable Energy Zone                                                   |
| SEARs                             | Secretary's Environmental Assessment Requirements                       |
| SEPP                              | State Environmental Planning Policy                                     |
| SIA                               | Social impact assessment                                                |
| SSD                               | State Significant Development                                           |
| SSI                               | State Significant Infrastructure                                        |
| STEM                              | Science, Technology, Engineering and Mathematics                        |
| SALs                              | Suburbs and localities                                                  |
| TECs                              | Threatened ecological communities                                       |
| TfNSW                             | Transport for NSW                                                       |
| Transport and Infrastructure SEPP | State Environmental Planning Policy (Transport and Infrastructure) 2021 |
| UCLs                              | Urban centres and localities                                            |
| VRE                               | Variable renewable energy                                               |
| WARR Act                          | <i>Waste Avoidance and Resource Recovery Act 2001</i>                   |
| WHS                               | Work Health and Safety                                                  |

# Glossary

|                         |                                                                                                                                                                                                                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant               | The applicant for this State Significant Development (SSD) project is Port of Newcastle.                                                                                                                                                                                                                           |
| Construction footprint  | Area (ha) that would be impacted during construction including temporary development that would be removed once operational.                                                                                                                                                                                       |
| Concept Plan            | Plan that sets out concept proposals for development of the site, subject to future development applications. The Concept Plan presents the proposed Clean Energy Precinct and associated infrastructure that would allow energy generation and storage and connection into the National Electricity Market (NEM). |
| Development application | A development application seeking consent for SSD under Division 4.7 of the EP&A Act.                                                                                                                                                                                                                              |
| Development footprint   | The development footprint is comprised areas of both the permanent and temporary footprint that represent the total area physically disturbed by development of the project.                                                                                                                                       |
| Disturbance footprint   | Disturbance area of up to 32.5 hectares. The disturbance footprint is the same area as the development footprint.                                                                                                                                                                                                  |
| Operational footprint   | Area with permanent development to be used during operation including buildings, hard stand and roads.                                                                                                                                                                                                             |
| Permanent footprint     | The permanent footprint comprises the land that would be permanently altered for the operation of the project.                                                                                                                                                                                                     |
| Project                 | Lead-in infrastructure, buildings and ammonia storage proposed to be constructed as part of this Development Application.                                                                                                                                                                                          |
| Project site            | The project site including all land within the proposed Concept Plan boundary.                                                                                                                                                                                                                                     |
| Project study area      | Includes the project site and a 10 kilometre (km) buffer around the site for database searches to inform the environmental assessment.                                                                                                                                                                             |
| Proponent               | Port of Newcastle (PON)                                                                                                                                                                                                                                                                                            |
| REZ                     | Renewable Energy Zone – area of high energy resource potential where strategic transmission infrastructure upgrades can connect multiple projects at lower cost.                                                                                                                                                   |
| Strategy                | Diversity and Inclusion Strategy prepared by PON.                                                                                                                                                                                                                                                                  |
| Temporary footprint     | The temporary footprint comprises the land that would be temporarily disturbed during construction. These areas would then be rehabilitated following construction.                                                                                                                                                |

# Executive summary

Port of Newcastle (PON) propose to construct and operate infrastructure and ammonia storage (the project), within the proposed new Clean Energy Precinct (subject to a separate development application) for clean energy in Newcastle, New South Wales (NSW). The project would provide the opportunity for heavy industry that would contribute to the NSW and Commonwealth clean energy targets and help achieve affordable, clean and reliable energy.

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## Project site

The proposed site for the project is located at the former Kooragang Island Waste Emplacement Facility (KIWEF) site on Kooragang Island within the City of Newcastle local government area and Awabakal Local Aboriginal Land Council. Existing land uses of the project site and surrounds are predominantly industrial, shipping and port operations, with environmental conservation land comprising of wetlands, including Ramsar wetlands, to the north of the port.

The project site is approximately 170 kilometres (km) by road north of Sydney and approximately 760 km south of Brisbane.

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## Project description

The project involves State Significant Development (SSD) approval and the construction and operation of infrastructure and ammonia storage in Newcastle, NSW. Fully constructed, the project would help facilitate the Clean Energy Precinct (subject to a separate development application) that would provide clean energy production, storage, transmission, domestic distribution and international export.

The proposed Clean Energy Precinct (subject to a separate development application) is uniquely placed to produce the clean energy required to help satisfy emerging domestic and export markets by leveraging existing capacity across the electricity, water and port infrastructure. PON envisage the Clean Energy Precinct would activate new investment in renewable electricity zones across NSW and the newly announced offshore wind zones off the coast of the port. Many of Australia's largest users of energy and gas are located proximate to the Clean Energy Precinct and clean energy offtake cases have been identified by PON including mobility (trucks, buses, cars, trains, aeroplanes and boats), agriculture, power generation, gas blending, export and bunkering. The project is consistent with the Concept Plan for the Clean Energy Precinct and would be PON's first step at securing Newcastle's clean energy future.

The project would allow establishment of electrical infrastructure, water infrastructure and ancillary works, construction vehicle and workforce vehicle parking, construction laydown and stockpiles and construction of an ammonia storage facility while PON undertakes further detailed environmental impact assessment, detailed design and community consultation and stakeholder engagement for the Clean Energy Precinct. As such, the project would facilitate potential future development of clean energy infrastructure and projects such as green hydrogen and green ammonia production facilities and infrastructure, research and innovation hub, parking for operational staff and permanent site offices and amenities.

PON has advised that the project workforce would contribute to the Clean Energy Precinct's estimated 5,800 jobs (5,261 construction jobs and 539 ongoing jobs) and the precincts expected \$4.2 billion in gross regional production.

It is expected that the project would be operational in late 2026 or early 2027.

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## Statutory planning

Environmental planning approval for the project is required in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act), *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and other relevant statutory requirements. Approval for the project is sought under Part 4, Division 4.7 (SSD) of the EP&A Act.

Other relevant statutory matters are addressed in the Scoping Report, including potential impact of the project on Matters of National Environmental Significance (MNES) under the EPBC Act.

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## Consultation

Engagement relating to this project has been an iterative process over the last two years that has sought to involve stakeholders and the community as the PON diversifies to grow its export base and a clean energy future locally and internationally.

PON has identified an extensive list of relevant key stakeholders who are affected by or have an interest or influence on the Clean Energy Precinct, including the project. PON is maintaining a comprehensive Stakeholder List that currently contains 604 engaged stakeholders. This would be a primary database that would grow as the project develops and would be used as a central database for communications across future stages.

Engagement to date has focused on the economic, social and environmental opportunity the project represents. Key areas of interest from industry and government include:

- potential for new industries in the Hunter region
- job creation and leveraging the current workforce into new industries and capabilities
- opportunities for existing industry to provide services locally and expand their capability into new technology
- the relationship between the Clean Energy Precinct and the roll-out of NSW Renewable Energy Zones (REZs)
- opportunities for research and development and to showcase Hunter businesses as leaders in this field
- business and investment opportunities.

PON engaged with internal and external stakeholders to develop a *Diversity and Inclusion Strategy* (the Strategy). The Strategy identified opportunities to further support and engage with local First Nations communities that has informed the PON's Reconciliation Action Plan.

This project provides an opportunity for the PON to put commitments in the *2023 Reconciliation Action Plan* into action. As part of this project, the team have engaged an Indigenous Advisor from the Institute for Regional Futures that would be available to advise on this project.

A comprehensive Communications and Stakeholder Engagement Strategy is currently being drafted that would outline the messages, activities and channels for future phases of the planning process including exhibition of the Environmental Impact Statement (EIS), construction and operation.

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# Preliminary environmental assessment

## *Biodiversity*

The project study area contains Saline Wetlands vegetation formations from the Saltmarsh and Mangrove Swamps vegetation classes.

Desktop assessment identified seven Threatened Ecological Communities (TECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) with potential to occur within the project study area. Database searches identified 21 threatened flora species listed under the EPBC Act that are predicted or known to occur within 10 km of the project site. Desktop searches identified 50 threatened fauna species, and two conservation dependent fauna species, listed under the EPBC Act, that are predicted or known to occur within 10 km of the project site.

Of most concern is the Green and Golden Bell Frog, listed as vulnerable under the EPBC Act, that has a high likelihood of occurrence as records for this species occur in the project site and the site is part of key local habitat for this species.

One Ramsar wetland or Wetland of International Importance was identified by the Protected Matters Search Tool in the buffer zone of the project study area, which is the Hunter Estuary Wetlands. The project study area contains mapped Key Fish Habitat along the Hunter River and associated wetlands.

## *Heritage*

### *Aboriginal heritage*

The project site is within the Awabakal Local Aboriginal Land Council Area. Aboriginal occupation and use of the island occurred for many years prior to European settlers, and the area was used for hunting, fishing and gathering activities by the Awabakal and the Worimi people.

The Aboriginal Heritage Information Management Search (AHIMS) found 52 sites within the surrounding area, most of which are located south of the project site. The area comprises mainly surface artefacts (isolated finds or artefact scatters) that are generally distributed along water courses, or beside wetlands, with a few also associated with middens.

There are no AHIMS sites within the project site.

### *Non-Aboriginal heritage*

The project site is known historically as Ash Island that was surrounded by a number of other islands before they were all joined to create Kooragang Island. Being estuary islands, Ash Island, along with the others, were a rich hunting area and food resources included shellfish and fish.

Heritage registers including the World Heritage List, National Heritage List, State Heritage Register and the Newcastle Local Environmental Plan 2012 were searched, and no non-Aboriginal heritage items were found to occur within the project site.

## *Landscape character and visual amenity*

The project would be developed within an existing port environment that contains port and industrial activities including existing rail lines, local roads and port related infrastructure. Construction of the project would alter the visual environment during various activities including earthworks, movement of plant and material and construction of buildings and infrastructure.

Buildings would be designed to consider the existing visual environment through both practicality as a heavy industrial activity and principles that consider the location near wetlands and Green and Golden Bell Frog habitat. Infrastructure, including electrical, water and roads, would be designed to appropriate standards with consideration of the role and function of the project. At this early stage of design, it is considered that the ammonia storage and electrical infrastructure would have a visual impact on the local environment.

A detailed Landscape Character and Visual Impact Assessment would be prepared as part of the EIS to identify potential visibility of the project from different viewpoints along the corridor.

### *Hazard and risk*

There is currently no ammonia storage or production at the project site. For the project, ammonia has been identified as a potentially hazardous material. The project exceeds the screening threshold for storage of ammonia and is therefore classed as potentially hazardous. A Preliminary Hazard Analysis would be prepared as part of the EIS to further consider the risks and identify measures to reduce potential impact of the development. The project would also be considered a major hazard facility under the *Work Health and Safety Regulation 2017*.

### *Noise and vibration*

The project site is adjoined by multiple heavy industrial land uses and large areas of unused land that acts as a buffer zone to any nearby noise sensitive receivers. The site is generally surrounded by a highly urban and industrialised environment, influenced primarily by noise from road and rail traffic, and industrial sources, in addition to operations within the existing port and harbour areas. Ground vibration associated with road traffic is generally low, and large separation distances between the project site and residential receivers mean that risk of existing vibration impacts at sensitive receivers is considered extremely low.

Due to the large separation distances between the site and nearest vibration sensitive receivers, vibration impacts during construction and operation of the project are considered highly unlikely. Due to existing high traffic volumes, including heavy vehicles on the surrounding road network, road traffic noise impacts during construction and operation of the project are considered highly unlikely.

Preliminary assessment of potential construction noise impacts found that noise levels are likely to comply with Noise Management Levels during all work stages and during operation at all surrounding noise sensitive receivers.

### *Traffic and access*

The road network within the project study area includes several roads used for operations of PON including Cormorant Road, Southbank Road and Delta Road. Two main intersections in the area surrounding the project site are the Industrial Drive/George Street intersection and the Industrial Drive/Ingall Street intersection. Main road access to the proposal site is from Tourle Street, Delta Road and Minyan Way, all via Industrial Drive.

Rail infrastructure is available to service the project site. The project site is also accessible to cargo ships via the shipping channel in the South Arm of the Hunter River.

There may be some temporary disruptions to traffic movements along roads during the construction stages. Construction may require temporary traffic management or lane closures for safety; however, this would be scheduled to minimise impacts during peak traffic periods.

During operation of the project, traffic and transport impacts are expected to be minimal.

### *Soils, topography and contamination*

Hunter and Central Coast Development Corporation (HCCDC) are in the final stages of closing the KIWEF site landfill in accordance with the Surrender Notice and handing control over to PON. The closure works carried out by HCCDC comprise of an interim capping layer that may need to be upgraded to accommodate development of the project.

Significantly contaminated materials encountered during remediation works were processed according to a materials management plan. It is understood that a thinner capping layer may be present across much of the remainder of the site (outside of the capped audited areas) where there exists potential for significantly contaminated materials to be encountered during shallow excavations.

Based on the review of available information, the key contaminants of concern at the site are understood to be generally associated with waste placed as fill materials. Contamination across the site has generally been identified as being a low to moderate risk to human health or environment; however, a number of areas were identified as containing significantly contaminated material that may pose a higher level of risk to human health or the environment.

It is understood that HCCDC are currently working with the NSW Environment Protection Authority (EPA) on developing a plan of management for the site. This plan of management would address the ongoing management and monitoring for the existing (undeveloped) site. PON would develop its own plan of management in consultation with the NSW Treasury (the Landowner) and the EPA to take into account development of the infrastructure associated with the project. PON's plan of management would be developed in accordance to the requirements of the Remediation Deed, the Surrender Notice and any future environmental licencing requirements,

### *Air quality and greenhouse gas*

Primary industrial sources of air emissions within and surrounding the project site include the OneSteel and Smorgen facility at Mayfield, Orica and Incitec plants on Kooragang Island and the Tomago Aluminium smelter to the north, emissions from coal and grain and three fuel storage facilities in Newcastle, as well as Stolthaven bulk liquids Mayfield No. 7 berth. The Lower Hunter map for air quality at the Mayfield station on 10 March 2023 showed PM<sub>10</sub> was fair, and all other levels listed for air quality were good.

During construction, local air quality within the project study area may be temporarily affected by particulate (dust) and greenhouse gas emissions. Air quality impacts from construction are expected to be short-term and minor due to the existing industrial operations in the area. During operation, the project is not anticipated to significantly impact local air quality or GHG.

### *Waste and resource use*

Potential waste streams for current activities at the port include putrescible and non-putrescible solid waste and municipal waste. Waste management and waste transfer facilities within and near the project site include the Summerhill Waste Management Centre and Solo Resource Recovery Centre.

Construction of the project would result in a range of typical waste materials including but not limited to vegetation waste, spoil from excavations, surplus construction materials, and general domestic waste. During operation, the main source of waste material is expected to be from putrescible and non-putrescible general solid waste from operation and maintenance personnel.

While the project would result in some increased demand on local and regional resources, it would be unlikely that the project alone would result in any resource becoming scarce or in short supply.

### *Cumulative impacts*

Cumulative impact assessments focus on various environmental issues from within the project and their combined effect, the project's interaction with other projects (and proposed projects) and where construction and/or operational timeframes are likely to be concurrent.

Future environmental assessment for issues such as biodiversity, hazards and risk, noise and vibration, visual, and traffic for the project would involve identifying a baseline condition, including impacts of other potential projects, and determining cumulative impacts of the project.

### *EPBC Act*

The project would impact on known habitat for Green and Golden Bell Frog. A referral to the Commonwealth Minister for the Environment would occur to determine if the project is a controlled action.

# 1 Introduction

This chapter gives an overview and background to the proposed infrastructure and ammonia storage (the project) within the proposed future Clean Energy Precinct (subject to a separate development application). This chapter provides a summary of the project details, and the purpose and structure of this Scoping Report.

---

## 1.1 Clean Energy Precinct

Port of Newcastle (PON) (the proponent) propose to construct and operate infrastructure and ammonia storage (the project), within the proposed future Clean Energy Precinct (subject to a separate development application) in Newcastle, New South Wales (NSW) (see Figure 1.1 for the regional context of the project).

The proponent is seeking approval for the project under Part 4, Division 4.7 (State significant development) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project would incorporate infrastructure, buildings and ammonia storage, within the proposed future Clean Energy Precinct (subject to a separate development application).

The project would allow establishment of electrical infrastructure, water infrastructure and ancillary works, construction vehicle and workforce vehicle parking, construction laydown and stockpiles and construction of an ammonia storage facility while PON undertakes further detailed environmental impact assessment, detailed design and community consultation and stakeholder engagement for the Clean Energy Precinct. As such, the project would facilitate potential future development of clean energy infrastructure and projects such as green hydrogen and green ammonia production facilities and infrastructure, research and innovation hub, parking for operational staff and permanent site offices and amenities.

The National Electricity Market (NEM) is transitioning towards renewable energy production, as evidenced by the proposed Hunter-Central Coast Renewable Energy Zone (REZ) being identified as one of NSW's priority energy zones. To assist this transition the project would enable production, storage and transmission of clean energy at the precinct. This would assist the NSW and Commonwealth achieve their zero emission targets, as discussed in Section 2.1.

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## 1.2 Purpose of this report

This Scoping Report has been prepared on behalf of PON. The purpose of this report is to describe the project and present the preliminary environmental assessment of potential environmental issues that would be covered as part of an Environmental Impact Statement (EIS) for the project.

This report is intended to provide sufficient information to allow preparation of Secretary's Environmental Assessment Requirements (SEARs) to guide preparation of an EIS for the project in accordance with Part 4, Division 4.7 of the EP&A Act and the requirements of Part 8 Division 5 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation), that apply to applications seeking approval of the NSW Minister for Planning and Public Spaces or their delegate to carry out State Significant Development (SSD).

The information and recommendations in this Scoping Report would be used to further inform the options investigations and ongoing design process for the project with an aim to avoid or minimise environmental, economic and social impacts wherever practicable.

---

## 1.3 The proponent

PON is a Newcastle-based company that provides trade and port development. The PON currently handles around 4,697 ship movements and 166 million tonnes of cargo annually (PON, 2022). PON's vision is to diversify its trade and strive to create a safe, sustainable and environmentally and socially responsible future.

Table 1.1 Proponent details

| Proponent details |                                                                                          |
|-------------------|------------------------------------------------------------------------------------------|
| <b>Name</b>       | Port of Newcastle Operations Pty Limited as Trustee for The Port of Newcastle Unit Trust |
| <b>Address</b>    | Level 4, 251 Wharf Road Newcastle NSW 2300                                               |
| <b>ABN</b>        | 97 539 122 070                                                                           |

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## 1.4 Report terminology

The following terms are used throughout this Scoping Report:

- Clean Energy: Energy produced from renewable, zero emission sources which when used, releases low or zero emissions greenhouse gases (GHG) to the atmosphere.
- Clean Energy Precinct: Proposed precinct for clean energy infrastructure and projects (subject to a separate development application).
- Green hydrogen: Hydrogen produced by splitting water into hydrogen and oxygen using renewable electricity through a process such as electrolysis, that results in low or zero carbon emissions.
- Green ammonia: Ammonia that is renewable and carbon-free. Various technologies are available, one way it is produced is by using hydrogen from water electrolysis and nitrogen separated from the air, both hydrogen and nitrogen are reacted together at high temperatures and pressures to produce ammonia.
- Renewable Energy Zone (REZ): Areas of high energy resource potential where strategic transmission infrastructure upgrades can connect multiple projects at lower cost (Australian Energy Market Operator [AEMO], 2020).
- The project: proposed infrastructure and ammonia storage facility within the proposed future Clean Energy Precinct (subject to a separate development application) including:
  - electrical infrastructure (electrical connections, transmission and distribution corridors, substation and switchyard)
  - water infrastructure (water supply connections, wastewater disposal connections and water infrastructure corridors)
  - ancillary works including (but not limited to) site buildings, administration buildings, internal roads, car parking facilities, laydown areas, warehousing, trailer storage yards and associated works
  - storage facility – Construction and operation of an ammonia storage facility with an approximate volume of 30,000 tonnes double-walled ammonia tank.
- Disturbance footprint: Area of land that would be disturbed by the project. The estimated disturbance footprint is approximately 32.5 hectares.
- Construction footprint: Area of land that would be disturbed during construction of the project. It is estimated that the full area of capped land would be used at some point during the staged development and would be of similar size to the disturbance footprint at 32.5 hectares.

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## 1.5 Project overview

PON propose to construct and operate the infrastructure and ammonia storage (the project), within the proposed future Clean Energy Precinct (subject to a separate development application), in Newcastle, NSW. The project is located approximately 170 km (by road) north of Sydney and approximately 760 km south of Brisbane. The project is located within the City of Newcastle local government area (LGA) and Awabakal Local Aboriginal Land Council at the former Kooragang Island Waste Emplacement Facility (KIWEF) site on Kooragang Island (see Figure 1.1). Existing land uses of the project site and surrounds are predominately industrial, shipping and port operations, with environmental conservation land comprising of wetlands, including Ramsar wetlands, to the north of the port.

Fully constructed, the project would comprise establishment of infrastructure including electrical infrastructure, water infrastructure and ancillary works, construction vehicle and workforce vehicle parking, construction laydown and stockpiles and an ammonia storage facility (see Section 3.3 for more detail). The project is consistent with the proposed Concept Plan for the proposed future Clean Energy Precinct (subject to a separate development application).

It is expected that construction of the project would commence in early 2025 and take around two years to complete. It is anticipated that the project would be operational in late 2026 or early 2027.

**Figure 1-1**  
Regional Context of the Project



### Legend

- Road
- - - Railway
- Watercourse
- Project Site
- Disturbance Footprint
- National Park



0 1 2 Kilometers

Coordinate system: GDA 1994 MGA Zone 56  
Scale ratio correct when printed at A3  
1:40,000 Date: 28/07/2023

Data sources: - NSWIS, EPI, PON, Nearmap, Geoscience Australia

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## 1.6 Project objectives

The project supports the NSW Governments objectives to accelerate decarbonisation and clean energy opportunities by provide infrastructure and ammonia storage within the proposed future Clean Energy Precinct (subject to a separate development application) that would support renewable energy generation, storage and investment under the Electricity Infrastructure Roadmap (Department of Primary Industries and Environment [DPIE], 2020).

The project aims to:

- enhance the Hunter’s existing infrastructure, and skilled workforce to activate 32.5 hectares of the proposed future Clean Energy Precinct (subject to a separate development application) that would be the first step to enabling large-scale production, storage, transport and export of clean energy across multiple vectors, such as hydrogen and ammonia
- support the build out of REZs across the region and state by creating a large electrical load demand at PON
- assist Australia to meet its emissions reduction targets of reducing gas emissions to 43 per cent below 2005 levels by 2030 (Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2022a).

PON has advised that the project would contribute to the proposed future Clean Energy Precinct’s (subject to a separate development application) expected provision of \$4.2 billion in additional gross regional product and approximately 5,800 new jobs in the Hunter Region by 2040, while decreasing domestic carbon emissions by approximately 660 kilotons per annum and decreasing export carbon emissions by approximately 1 megaton per annum whilst underpinning 3 GW in renewable electricity generation.

The objectives of the project include:

- establish infrastructure to enable development of the proposed future Clean Energy Precinct (subject to a separate development application) and other clean energy developments in the region
- support the build out of REZs within regional and state context
- provide energy security and a decarbonisation pathway for key local industry
- enhance existing infrastructure providing an efficient and lowest cost path of the energy transition and development of the clean energy industry
- diversify trade of commodities at the PON
- support the Hunter’s workforce transition to clean energy
- provide facilities for the storage, domestic distribution and local industry use of clean energy
- provide facilities and a pathway to scale to enable the export of clean energy to international markets
- help achieve economies of scale for low-cost, clean and reliable electricity
- minimise potential adverse impacts on the environment.

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## 1.7 Related development

Within the Hunter region, there are a number of clean energy related development proposals at various stages that may interact with the project in the future. These include proposals from the following proponents:

- Origin and Orica
- AGL and Fortescue Future Industries (FFI)
- Energy Estate.

There are also a number of renewable energy projects proposed to be developed within the Hunter-Central Coast REZ. These projects would be subject to separate assessment and approval; however, may interact with the project and the proposed future Clean Energy Precinct (subject to a separate development application) through the common user, shared infrastructure, export facilities or outcomes of research and development. For example, the Liddell and Bayswater power stations provide a regionally significant opportunity in the transition to renewable energy. The Upper Hunter’s power transmission lines allow ready access to the grid for energy projects (Department of Planning and Environment [DPE], 2023).

Other potential renewable energy projects within the Hunter-Central Coast REZ include (DPE, 2023):

- 24 solar energy projects
- 13 onshore and seven offshore wind energy projects
- 35 large-scale batteries
- Eight pumped hydro projects.

Infrastructure upgrades would occur to support the project that would interact with clean energy developments (subject to separate approval). These would be considered and approved by the relevant agency including EnergyCo, Transgrid, Ausgrid and Hunter Water.

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## 1.8 Structure of this report

The structure and content of this report is as follows:

- Chapter 1 – Introduction: Outlines the background and need for the project and purpose of this report.
- Chapter 2 – Strategic context and alternatives: Provides an overview of the strategic and regulatory context and anticipated benefits of the project. An overview of the options assessment that led to the preferred option is also presented.
- Chapter 3 – Project description: Provides an outline of the key features of the project.
- Chapter 4 – Statutory context: Provides an overview of the relevant statutory approvals framework for the project, including applicable legislation and planning policies.
- Chapter 5 – Stakeholder and community engagement: Provides an overview of stakeholder engagement activities that have been undertaken to date with regards to the project. An overview of the proposed future engagement activities is also provided.
- Chapter 6 – Preliminary environmental assessment: Provides a preliminary description of the existing environment and an initial consideration of potential direct and indirect impacts that may result from this proposal.
- Chapter 7 – Preliminary scoping: Provides a preliminary environmental risk analysis for the project, taking into account current scope and the existing environment.
- Chapter 8 – Conclusion: Outlines justification for the project and conclusion of this report.
- Chapter 9 – References: Identifies the key reports and documents used to generate this report.
- Appendices to this report includes:
  - Appendix A – Preliminary Biodiversity Assessment (WSP, 2023)
  - Appendix B – Preliminary Desktop Cultural Heritage Assessment (Heritage Now, 2023)
  - Appendix C – Preliminary Noise Impact Assessment for Operation (WSP, 2023)
  - Appendix D – Initial Social Impact Assessment Scoping Report (WSP, 2023).

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## 1.9 Limitations

The information presented in this Scoping Report has been based on preliminary desktop studies (Appendices A to D) and preliminary desktop review and assessment of published data including relevant databases, reports and other available literature. More detailed investigations of potential environmental issues, including field inspections, would occur during preparation of the EIS for the project.

## 2 Strategic context and alternatives

This chapter considers the need for the infrastructure and ammonia storage (the project) within the proposed future Clean Energy Precinct (subject to a separate development application). This chapter presents the strategic options that were considered and the benefits of the project. The project is also presented in the context of key government strategies and policies.

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### 2.1 Need for emissions reduction

Climate change, which is linked to an increased level of GHG emissions in the atmosphere, is having worldwide impacts on society, the economy and the environment. In the 2015 Paris Agreement and the 2021 Glasgow Climate Pact (Convention on Climate Change Conference of Parties (COP26)), the European Union (EU) and 198 countries committed to try and limit global warming to 1.5°C to minimise impacts of climate change (United Nations (UN), 2022). A global commitment to achieve net zero GHG emissions by 2050 was agreed through strong policies, measures and actions. In view of this commitment, the Australian Government has set interim emission reduction targets, including a commitment to reduce emissions by 43 per cent below 2005 levels by 2030 (DCCEEW, 2022a). Independently, every state and territory in Australia has set a goal or target to achieve net zero emissions by the second half of this century (Climate Change Authority, 2020). NSW is set to halve emissions by 2030 under updated projections and objectives released as part of the Net Zero: Stage 1 Implementation Update (Department of Planning, Industry and Science, 2021).

The Renewable Energy Target (RET) Scheme reflects current efforts to achieve this goal. The scheme was implemented in 2009 with an initial target of 44,000 gigawatt hours (GWh) of renewable energy generation by 2020. The RET has driven more than 50 per cent reduction in the cost of large-scale wind and solar projects over the last 10 years (Clean Energy Council, 2022).

Electricity generation is currently Australia's largest source of emissions, accounting for 33 per cent of Australia's total annual emissions in 2020 (Climate Change Authority, 2020). Fossil fuels contributed 71 per cent of total electricity generation in 2021, including coal, gas and oil. Renewables contributed 29 per cent of total electricity generation in 2021, including solar, wind and hydro (DCCEEW, 2022b). The project would contribute to meeting Australia's commitments through enabling the first step towards establishing the proposed future Clean Energy Precinct (subject to a separate development application) that would provide production, storage, domestic distribution and international export of clean energy and resultant annual reduction in greenhouse gas emissions. The project along with the proposed future Clean Energy Precinct (subject to a separate development application) would also contribute to domestic decarbonisation, clean energy production at scale, and aim to drive down electricity costs for consumers. As such, the project would contribute to achieving NSW's objective to deliver a 50 per cent cut in emissions by 2030 compared to 2005 levels.

---

### 2.2 Existing transmission network

The NEM incorporates around 40,000 kilometres of transmission lines and cables across Queensland, NSW, Australian Capital Territory, Victoria, South Australian and Tasmania. The NEM connects the southern and eastern states and territories in Australia and delivers around 80 per cent of Australia's electricity consumption. To meet Australia's emission reduction targets, the NEM needs to significantly transition from traditional energy sources to lower emission alternatives including renewable energy (DCCEEW, 2022c).

The existing transmission network was established to transport electricity primarily from generators in fossil fuel rich areas to local centres. As the supply mix changes and evolves, transmission networks need to be reconfigured to connect regions with high-quality renewable energy resources to load centres. The project is located within the Hunter-Central Coast Renewable Energy Zone (REZ). The Hunter-Central Coast regions have unique features which make them ideal for locations for a REZ, and have excellent renewable energy resources, existing power stations, rehabilitated mining land, electricity network infrastructure, port and transport infrastructure and a skilled workforce (EnergyCo, 2022). The project would support the broader objectives of the Hunter-Central Coast REZ through providing investor certainty and underpinning renewable developments (see Figure 2.1).

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## 2.3 Shift towards renewable energy

The shift to renewables is accelerating and the energy sector is undergoing rapid transformation; over the past five years the share of wind and solar in the NSW electricity generation mix has tripled (DCCEEW, 2022a).

The 2022 *Integrated System Plan* (ISP) (AEMO, 2022) forecasts the need for over 125 GW of additional Variable Renewable Energy (VRE) by 2050, to meet demand as coal-fired generation withdraws. To replace coal-fired generation, the renewable share of total annual generation would rise from approximately 28 per cent in 2020–2021 to 83 per cent in 2030–2031, to 96 per cent by 2040, and 98 per cent by 2050 (AEMO, 2022).

Retirement of coal generation is expected to be most rapid in NSW, with Mount Piper expected to be the sole remaining coal-fired generator in NSW after the expected closure of the Eraring and Bayswater power stations by 2035. This has potential to put pressure on future supply of energy, particularly when considering that electricity consumption in NSW is forecast to increase over the next ten years (Transgrid, 2022).

The project represents an initial investment in infrastructure that would support new large scale clean energy. Fully completed the Clean Energy Precinct would provide up to approximately 1.5 GW of green hydrogen and ammonia production for use in domestic decarbonisation with further potential for export of green energy to international markets as well as research and innovation opportunities to advance emerging technologies (subject to a separate development application).

### 2.3.1 Decarbonising the Hunter Region

Decarbonisation presents significant economic opportunities for NSW to develop and advance decarbonised technologies, services and skills. The economic opportunities for Australia include:

- leveraging its competitive advantages to fulfil increasing local and international demand for innovative technologies and services that enable decarbonisation and climate change resilience
- deploying new decarbonised products and services, including technologies to reduce or capture emissions, that can service the domestic economy and be exported
- attracting private and sovereign investment, for decarbonised and climate change resilient infrastructure, technology and businesses
- growing climate change resilient industries, communities and ecosystems that support the efficient transition of the NSW economy while adapting to a changing climate.

The Hunter Region has a mature and thriving industrial economy and contributes significantly to the gross regional product through a variety of heavy industries in combination with the PON. Decarbonisation is required to enable NSW to reach net zero, and to continue the Hunter's 16,000-strong workforce in the energy and resources sector.

In 2019–2020, the Hunter Region's CO<sub>2</sub> emissions were approximately 4.9 million tCO<sub>2</sub>-e. Industry contributes significantly to these emissions through electricity and gas used to power the manufacturing and transport of minerals and resources that the region produces. The region has potential to become a clean energy powerhouse, leveraging existing energy markets, skills and capabilities.

Based on the indicative demand, there is potential for the Hunter Region to supply sufficient clean hydrogen to reduce carbon emissions and PON has advised:

- in NSW, 660k tCO<sub>2</sub>-e potential emissions could be avoided domestically each year through clean hydrogen production
- 4.1 million tCO<sub>2</sub>-e potential emissions could be avoided each year as a result of clean product export.

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## 2.4 Contribution to the National Electricity Market

The AEMO 2022 *Electricity Statement of Opportunities* (AEMO, 2023) provides updates of forecasts for demand and supply of electricity. The 2022 report noted the following:

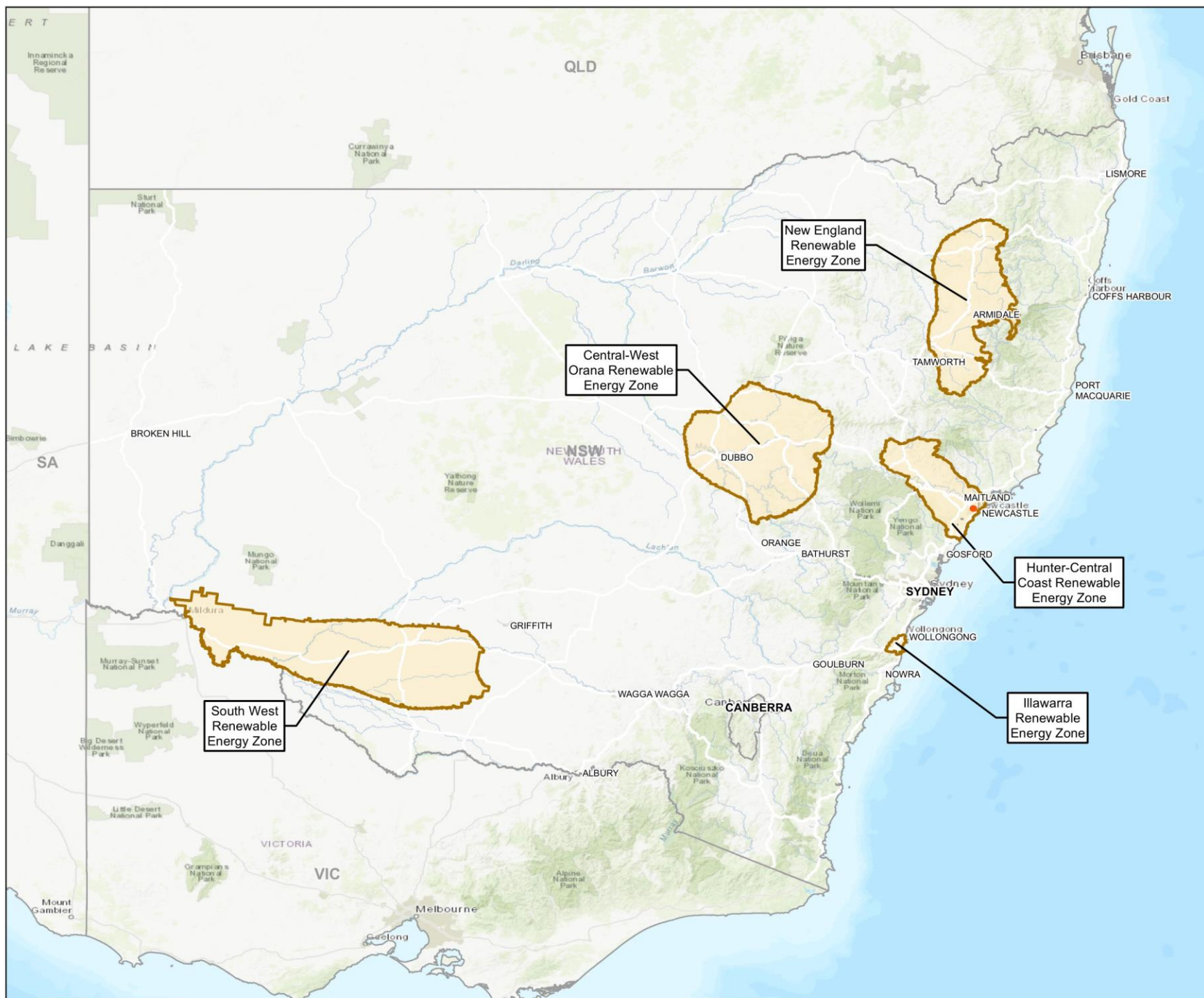
- expanded production from large industrial customers in Victoria and South Australia contributes to a forecast growth in electricity consumption from 2022–23 in these regions, compared to the 2021 *Electricity Statement of Opportunities* (ESOO) and the Update to the 2021 ESOO
- electrification, particularly of businesses and take-up of electric vehicles (Evs) are the primary drivers of operational consumption being forecast to grow by approximately 15 per cent over the next 10 years
- operation of distributed photovoltaics (PV), battery storages, Evs and demand side response is projected to partially offset the growth in underlying consumption, potentially lessening the relative impact on forecast reliability
- with the projected sustained uptake of distributed PV, minimum demand forecasts continue to show a rapid decline
- pace, scale and location of electrification and other emerging opportunities, such as hydrogen production, remain an uncertain influence on the growth of NEM electricity consumption, particularly as the economy evolves to target net zero emissions. The uncertainty is increased by domestic and international challenges such as social licence and supply chain considerations. The spread of forecast outcomes is therefore wide across scenarios to reflect this uncertainty.

The project would help facilitate NSW in meeting forecast increasing demand for energy in the NEM as forecast demand increases from 2025–2026 onwards through clean energy production, storage and transmission.

**Figure 2-1**  
Renewable Energy Zones  
within NSW (indicative)

### Legend

-  Project Site  
 Renewable Energy Zones



Coordinate system: GCS GDA 1994

Scale ratio correct when printed at A3

1:5 000 000 Date: 27/07/2023

Data sources: - NSWSS, EPI, PON, Geoscience Australia

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## 2.5 Consistency with strategic planning and policy

### 2.5.1 Australian government policy context

#### 2.5.1.1 Climate change policy

On 10 November 2016, Australia ratified the United Nations Paris Agreement and the Doha Amendment to the Kyoto Protocol, representing the Australian Government's commitment to provide action on climate change, setting interim emission reduction targets. Since then, the Australian Government has committed to reduce emissions by 43 per cent below 2005 levels by 2030. In 2017, the Australian Government reviewed its climate change policies to ensure they remain effective in achieving Australia's 2030 target and Paris Agreement commitments.

The Australian government adopted the *Long-Term Emissions Reduction Plan* (Department of Industry, Science, Energy and Resources [DISER], 2021) to drive down cost of low emission technologies and help regional industries and communities move into new energy markets. COP26 was the 26<sup>th</sup> annual United Nations climate change Convention on Climate Change Conference of Parties (COP) held in Glasgow 2021 and Australia joined the Glasgow Breakthroughs Initiative, that sets global goals to make clean technologies the most affordable and accessible option before 2030.

The project would contribute to meeting Australia's commitments through supporting the proposed future Clean Energy Precinct (subject to a separate development application) that would provide production, storage, domestic distribution and international export of clean energy and the associated resultant annual reduction in GHG emissions. The project would also support other renewable energy projects in the region.

#### 2.5.1.2 Integrated System Plan 2022

The ISP provides an integrated roadmap for development of the NEM over the next 20 years. The 2022 ISP outlines an optimal development path (ODP) to support the power system's transformation from oil and gas to renewables, batteries and other forms of firming capacity to 2050 (AEMO, 2022).

The project is located in proximity to three of the proposed renewable energy zones; the Central-West Orana REZ, New England REZ and Hunter-Central Coast REZ. Connecting the project to one or more of these REZs would support the build out of the REZ and facilitate renewable generation development to replace energy provided by retiring coal fired generators. Supporting the build out of the REZs complements the energy transition and assists with energy security and a pathway to decarbonisation of industry in the Hunter region.

#### 2.5.1.3 Large-scale Renewable Energy Target

The Large-scale Renewable Energy Target (LRET) incentivises development of renewable energy in Australia, through a market involving creation and sale of certificates known as Large-scale Generation Certificates (LGCs). Power stations accredited under the LRET can create LGCs for the electricity generated from renewable energy sources, that can then be sold to liable entities that must meet compliance obligations under the LRET.

The project would contribute to the facilitation of the LRET target of additional renewable energy to be generated annually.

#### 2.5.1.4 Commonwealth Hydrogen Strategy

*Australia's National Hydrogen Strategy* (Council of Australian Governments Energy Council, 2019) sets a vision for a clean, innovative, safe and competitive hydrogen industry that benefits all Australians. The Strategy aims to:

- explore Australia's clean hydrogen potential
- consider future scenarios with wide ranging growth possibilities
- outline an adaptive approach that equips Australia to scale up quickly
- include nationally coordinated actions involving governments, industry and communities.

The project would support the development of clean, innovative, safe and competitive hydrogen and ammonia production for multiple potential uses within the proposed future Clean Energy Precinct (subject to a separate development application). The project would utilise existing and develop, common user shared infrastructure providing an efficient path for development of the hydrogen industry and other renewable energy projects in the region.

## 2.5.2 NSW government policy context

### 2.5.2.1 Net Zero Plan Stage 1: 2020–2030

The *Net Zero Plan Stage 1: 2020–2030* (Department of Planning, Industry and Science, 2021) sets the foundation for NSW's action on climate change and how the NSW Government would deliver on its objective to achieve net zero emissions by 2050. The Plan outlines the NSW Government's plan to grow the economy and create jobs and is an overarching strategy to reduce emissions and mitigate the impacts of climate change.

The project would contribute to the NSW Government's Net Zero Plan by providing infrastructure and ammonia storage that would contribute to reducing NSW's GHG emissions and enabling clean, renewable energy development. The project would seek to deliver on the NSW Government's Plan to strengthen the prosperity and quality of life of people and would contribute to achieving NSW's objectives to deliver a 50 per cent reduction in emissions by 2030 compared to 2005 levels.

### 2.5.2.2 NSW Electricity Infrastructure Roadmap

The *NSW Electricity Infrastructure Roadmap* (EnergyCo, 2020) provides a coordinated framework for transition of the existing electricity sectors move to renewable energy sources. The roadmap builds on the 2019 *NSW Electricity Strategy* (DPIE, 2019) and the 2018 *NSW Transmission Infrastructure Strategy* (DPE, 2018) to streamline delivery of a low-cost, clean and more reliable energy system. There are three proximate REZs to the project, including the Central-West Orana REZ, the New England REZ and the Hunter-Central Coast REZ.

The project would support the build-out of these REZs with infrastructure and ammonia storage that would underpin the proposed future Clean Energy Precinct (subject to a separate development application) that would provide around 1.5 GW green electricity connection at PON. The project would assist in meeting the NSW Government's emissions reductions targets, NSW's energy generation and storage requirements and NSW's transition from coal-fired power generation to renewable energy.

### 2.5.2.3 NSW Electricity Strategy

The NSW Government released its *NSW Electricity Strategy in 2019* (DPIE, 2019), that outlines a plan for a reliable, affordable and sustainable electricity system. The Strategy identifies challenges such as the existing fleet of power stations reaching the end of their technical lives, congestion in the transmission system and the location of areas with the strongest renewable resource potential being located away from the existing network.

Consistent with the Strategy, the project would support the build out of renewable energy storage capacity that, together with other renewable generation projects, would provide energy security and a decarbonisation pathway for the state.

### 2.5.2.4 NSW Transmission Infrastructure Strategy

The *NSW Transmission Infrastructure Strategy* (DPE, 2018) is the NSW Government's plan to unlock private sector investment in priority transmission infrastructure projects, which can deliver lower cost energy to customers through to 2040 and beyond. The Strategy aims to:

- increase NSW's energy capacity by prioritising Energy Zones in the Central-West, South-West and New England regions of NSW, which would become a driving force to deliver affordable energy into the future
- boost interconnection between Victoria, South Australia and Queensland, and unlock more power from the existing Snowy Hydro Scheme

- work with other states and regulators to streamline regulation and improve conditions for investment. By increasing transmission capacity and low-cost generation, NSW would support an orderly transition of the energy sector over the next two decades.

The project would support the broader build out of the proximate REZs, resulting in an increase to NSW's renewable energy capacity. Further, it would provide renewable energy electrical infrastructure and long-term storage for ammonia.

#### 2.5.2.5 State Infrastructure Strategy 2022–2042

The *State Infrastructure Strategy 2022–2042* (Infrastructure NSW, 2022) establishes the strategic directions, projects and initiatives to meet the infrastructure needs of a growing population and a growing economy. Key strategic objectives for the energy sector within the Strategy include:

- to achieve an orderly and efficient transition to net zero
- to successfully transitioning the energy and water sectors.

The project is aligned with this objective as it accelerates the build out of the REZs within NSW.

#### 2.5.2.6 NSW Climate Change Policy Framework

The *NSW Climate Change Policy Framework* (Office of Environment & Heritage [OEH], 2016) outlines NSW's long-term objectives to achieve net zero emissions by 2050 and to make NSW more resilient to a changing climate. The framework states that NSW would be part of the global transformation of the world's energy system and that boosting energy and resource productivity can reduce the impact of rising energy prices and the cost of transition to a net zero emissions economy.

The project is aligned with this framework, as it would provide a key piece of strategic infrastructure that would enable the transition to a lower emissions economy.

#### 2.5.2.7 Renewable Energy Zone Access Schemes

REZ access schemes are a key part of the NSW Government's work to coordinate and encourage investment in REZs, and to realise objectives of the Electricity Infrastructure Roadmap and its enabling legislation.

REZ access schemes would:

- govern the volume of projects that may be granted access rights to connect to REZ scheme infrastructure
- enable investment in new, low-cost generation and storage projects by providing increased certainty
- create a streamlined connection process for projects (EnergyCo, 2022a).

The project would connect to one or more of the proximate REZs and would support broader objectives of the REZ.

#### 2.5.2.8 Electricity Infrastructure Investment Act (2020)

Section 23 of the *Electricity Infrastructure Investment Act 2020* identifies REZs in NSW. The project site is located proximate to the Central-West Orana REZ, the New England REZ and the Hunter-Central Coast REZ.

#### 2.5.2.9 Hunter-Central Coast Renewable Energy Zone

EnergyCo is in the early stages of planning a REZ in the Hunter and Central Coast regions on the lands of the Awabakal, Bahtabah, Biraban, Darkinjung, Mindaribba, Wanaruah and Worimi people.

The proposed location of the Hunter-Central Coast REZ (shown in Figure 2.1) has been identified as a NSW priority energy zone. The Hunter-Central Coast REZ region has unique features that make it an ideal location, including excellent renewable energy resources that can utilise existing power stations, rehabilitated mining land, electricity network infrastructure, port and transport infrastructure and a skilled workforce (EnergyCo, 2022).

The project would be located within the Hunter-Central Coast REZ, with potential connection into the REZ providing additional renewable, low-cost energy to NSW.

#### 2.5.2.10 NSW Hydrogen Strategy

The *NSW Hydrogen Strategy* (DPIE, 2021) is a framework that brings together the NSW Government's existing and new policies to support the development of a commercial hydrogen industry in NSW. The NSW Hydrogen Strategy sets out NSW's vision and path for developing a thriving green hydrogen industry. The policies set out in the strategy aim to:

- reduce the cost of green hydrogen by \$5.80 per kg in the next decade
- provide up to \$3 billion of incentives to support industry development
- deliver NSW 2030 targets of 110,000 tonnes of annual green hydrogen production and 700 MW of electrolyser capacity
- drive decarbonisation in transport, industrial and energy sectors to help achieve net zero by 2050.

The Strategy outlines the Hunter as having potential to be one of Australia's largest hydrogen hubs, due to its access to existing high voltage transmission infrastructure and the proximity to the REZs.

The project is aligned with the NSW hydrogen strategy as it would:

- develop infrastructure providing an efficient path for the energy transition and development of the hydrogen industry
- provide common user shared infrastructure for renewable energy projects
- provide jobs and new skills for the existing, highly trained Hunter workforce
- support the proposed future Clean Energy Precinct (subject to a separate development application).

#### 2.5.2.11 Hunter Regional Plan 2041

The *Hunter Regional Plan 2041* aims to ensure continued prosperity and wellbeing of the Hunter's vibrant and connected communities (DPE, 2022). The Plan builds on previous efforts and responds to this era of rapid change to promote sustainable growth, connections and resilience.

The Plan outlines the importance of PON acting as a global gateway, providing NSW the opportunity to access new markets. The Plan also outlines the importance of green hydrogen production to reposition the Hunter as a global leader in clean, zero-emission energy. Hydrogen hubs would decarbonise heavy transport fleets, support economic diversification and capture longer term opportunities for hydrogen in the export, steel electricity and synthetic fuel markets (DPE, 2022).

The project would provide vital infrastructure and ammonia storage to support the development of the proposed future Clean Energy Precinct (subject to a separate development application) that would assist NSW diversify and decarbonise existing industries and allow NSW to lead the hydrogen economy. The establishment of hydrogen production infrastructure is considered a critical component of the Hunter and NSW's transition to renewable energy and would be supported by this project.

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## 2.6 Project need

PON has advised the port is the world's largest and most efficient energy export port with a reputation developed over decades. In 2018, trade through the port relied on a single commodity, coal, for 98 per cent of its volume and 71 per cent of port revenue. With the acceleration toward decarbonisation and away from fossil fuels, PON is now embarking on a transformation journey to remain a world leading energy export powerhouse with the goal to diversify its revenue streams to more than 50 per cent from trade other than coal by 2030.

The project is within the proposed future Clean Energy Precinct (subject to a separate development application) that involves enabling the production, storage, distribution and export of clean energy using common user shared infrastructure. Fully constructed, the project would support the development of the proposed future Clean Energy Precinct (subject to a separate development application) that is expected to connect approximately 1.5 GW of green electricity, that has potential to be connected into the NEM and support the broader build out of the NSW REZs, support domestic decarbonisation and continue to deliver energy security to our key markets in Asia.

The project provides another critical step in Australia's transition to renewable energy. Investment in new renewable energy infrastructure would provide NSW with affordable, reliable, secure and clean energy for the future. The project is consistent with the NSW Government and Federal Government's targets for the reduction of GHG emissions and investment in clean energy technology and supports regional investment and development.

The NSW REZs are a critical step in the process to provide infrastructure that gives certainty to developers that there would be sufficient transmission capacity to distribute and sell their energy. The project would contribute to development of the REZ resulting in an increase to NSW's renewable energy capacity.

PON has identified the Hunter region as being perfectly placed to become Australia's clean energy powerhouse, as it provides strategic advantages that could be leveraged for clean emerging including:

- existing infrastructure, with PON that there is excellent existing infrastructure adjacent to the port and could supply up to 1.5 GW of green electricity for clean energy production
- existing supply chains
- the region's skilled workforce who would possess relevant skills to become the backbone of the clean energy industry.

PON has identified the project is needed to provide critical infrastructure to support the proposed future Clean Energy Precinct (subject to a separate development application) and other renewable projects in the region.

---

## 2.7 Key benefits of the project

The project would support the build out of renewable energy infrastructure that would help deliver low-cost, renewable energy to the NEM and would contribute to the Commonwealth and NSW Government's emission reduction targets by:

- providing key infrastructure and ammonia storage to support the proposed future Clean Energy Precinct (subject to a separate development application) enabling the production, storage, distribution and export of clean energy to supplement NSW and national energy requirements, supporting transition away from coal-fired energy to renewable energy production and assisting in reducing GHG emissions
- providing jobs and new skills for transitioning the existing Hunter workforce
- utilising existing infrastructure providing an efficient path for the energy transition and development of the clean energy industry
- complementing the energy transition accelerating the build out of renewable energy
- allowing for ongoing investment into clean energy.

The project would deliver benefits to the local region and communities including:

- direct investment in the Newcastle region
- job opportunities throughout development of the project would contribute to the estimated 5,261 construction jobs and 539 ongoing jobs of the proposed future Clean Energy Precinct (subject to a separate development application)
- providing re-deployment opportunities for the workforce away from GHG intensive heavy industries within the Hunter Valley
- re-using historical waste lands located at the port for production of clean energy
- enabling development of infrastructure to support the clean energy supply chain in the region
- re-using and re-purposing existing infrastructure and assets
- providing open access, common user, shared infrastructure at lowest cost practicable
- development of new skilled labour in the region within the growing renewable energy industry.

---

## 2.8 Project development and feasible alternatives

As part of the development of the Clean Energy Precinct, feasible alternative options have been assessed, including:

- 1 Do nothing option
- 2 Alternate energy option
- 3 Alternate siting of the Clean Energy Precinct option
- 4 Proposed Clean Energy Precinct option.

The key attributes of the project site outweigh each of the alternatives that have been evaluated.

### 2.8.1 *Do nothing option*

The ‘do nothing’ approach that comprise of no change to the land use at KIWEF i.e. the project would not be developed. Without the project going ahead, the local and wider region would not realise the benefits of the project including providing jobs and new skills, new pathways to scale as the export opportunity emerges and contribution to renewable energy including more efficient energy and lower electricity costs.

The ‘do nothing’ option does not meet NSW renewable energy objectives and would lead to a missed opportunity to produce, store and export clean energy vectors. This option would also not provide opportunities to contribute to the NEM and the NSW REZs.

From a local port perspective, lands remediated by the NSW Government and handed back to PON would not be used to drive economic growth and prosperity within the region. The remediated lands would need to be managed with ongoing costs for the maintenance.

The ‘do nothing’ option does not contribute to reducing GHG emissions and therefore does not contribute to limiting the impacts of climate change.

### 2.8.2 *Alternate energy option*

Both the NSW Government and the Commonwealth Government have committed to reducing GHG emissions to limit the impact of climate change. The Clean Energy Precinct (subject to separate development application) would enable development of REZs within the state by underpinning up to 3 GW of renewable energy.

The former KIWEF is the optimum site for the project due to the following:

- proximity to approximately 70 per cent of NSW electricity generation
- proximity to three proposed NSW REZs
- access to multiple sustainable water solutions (including recycled water and desalination)
- vacant land with adequate separation distance from sensitive receptors and good access to power, water, utilities and berths
- deep water port operating at 50 per cent capacity
- a highly skilled, local workforce
- a community proud of its industrial heritage and desire to develop the clean energy economy.

The alternative energy option to using clean energy would be to continue to use fossil fuels (such as coal and natural gas). The reliance on these forms of energy would result in continued release of GHG emissions into the atmosphere. The continued use of fossil fuels for energy would not aid in Australia’s commitment to limit the impact of climate change.

### 2.8.3 *Alternate siting of the Clean Energy Precinct option*

As part of initial feasibility studies on the siting of green hydrogen and ammonia facilities at PON, a multi criteria analysis (MCA) was carried out on three precincts within the port. Of the three precincts evaluated, two of the precincts were discounted for being established as a Clean Energy Precinct due to either insufficient separation distance to residential areas and/or constrained access to utilities (such as power, water and gas).

KIWEF, the proposed site for the project was identified as the most suitable site due to:

- large area of available land seeking development
- ability to scale (due to land availability) as international demand for clean energy evolves
- proximity to existing or proposed transmission networks (such as electricity transmission lines)
- proximity to port and shipping operations
- proximity to transport infrastructure
- appropriate separation distance to sensitive receptors including residential areas.

Following identification of KIWEF as the preferred precinct, an overall preliminary concept plan layout has been developed considering site specific constraints that includes the infrastructure and ammonia storage project. The key constraints identified at the site included:

- maximising separation distances between major hazards storage facilities (for example, ammonia and hydrogen storage tanks) from sensitive receptors (for example residential areas, other port users and public transport corridors)
- locating new electrical infrastructure near existing electrical network transmission infrastructure
- locating the Clean Energy Precinct near existing water and wastewater infrastructure
- avoiding areas and minimising impact to biodiversity including threatened ecological communities (particularly Green and Golden Bell Frog and Ramsar wetlands)
- avoiding areas of high contamination or areas that are required to vent to the atmosphere due to contaminants contained within those areas.

The EIS and associated technical assessments would further assess identified constraints to facilitate detailed design refinements in response to the identified values and constraints, as well as strategies to mitigate potential impacts.

Based on the above, alternate siting of the project would not be viable and therefore would not contribute to the reduction in GHG emissions and minimise the impact of climate change.

#### 2.8.4 Proposed Clean Energy Precinct (preferred option)

The project would contribute to Australia's transition to clean energy and would contribute to NSW objectives to achieve net zero emissions by 2050 and to make NSW more resilient to a changing climate. The project would also deliver potential financial and social benefits to a regional NSW community. The project site is suitable for the proposed Clean Energy Precinct due to its close proximity to shipping and port operations, utilities and services, transport, accessibility and existing compatible land uses of the site and surrounding areas of Kooragang Island and location within the Hunter-Central Coast REZ and proximity to the New England and Central-West Orana REZs.

The project would utilise existing infrastructure with capacity, local skilled labour force and local manufacturing opportunities to provide efficient and lower cost and cleaner energy to the region and to NSW.

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## 2.9 Potential cumulative impacts

The purpose of a cumulative impact assessment is to assess project specific impacts from an existing baseline condition as well as combined impacts of the project with other known or foreseeable future developments. The cumulative impacts of the project would be assessed in the EIS in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2022). The guidelines provide a framework for assessing and managing project-level cumulative impacts.

A search on DPEs online major projects database was carried out in March 2023 to identify SSD and State Significant Infrastructure (SSI) projects in the locality. Development within 20 km of the project site is discussed in Section 6.18 and Table 6.14.

## 3 Project description

This chapter describes the infrastructure and ammonia storage (the project) including construction and operation and associated activities such as enabling works and property identification.

The design and layout of the project is provided, including development of design criteria and principles. The current design for the project is described in this chapter; however, further design refinement is required and would occur following the lodgement of the Scoping Report.

---

### 3.1 Project overview

PON is seeking development approval for construction and operation of infrastructure and ammonia storage (the project) within the proposed future Clean Energy Precinct (subject to a separate development application).

The main components of the project are outlined in Table 3.2 and Figure 3.1, and include the following:

- disturbance area, workforce, ancillary works, temporary facilities, access and dewatering (if required) during construction
- operational footprint, road crossings and ancillary features during operation
- electrical infrastructure, including grid connection, substation and switchyard
- water and wastewater infrastructure including network connection
- utilities and infrastructure corridors for utility connections.

**Figure 3-1**  
Project Layout



### Legend

- Project Site
- Clean Energy Precinct
- Project Components
- Electrical Transmission Corridor
- Road and Utilities Corridor
- Road
- Watercourse



0 250 500  
Meters

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:10,000

Date: 6/09/2023

Data sources: - NSWIS, EPI, PON, Neamap, Geoscience Australia

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## 3.2 Project context and location

### 3.2.1 Study area

The project site is comprised of an area approximately 228 hectares with a disturbance footprint of 32.5 hectares. The project site is approximately 170 km (by road) north of Sydney and approximately 760 km south of Brisbane. The project site is within the City of Newcastle LGA and Awabakal Local Aboriginal Land Council at the former KIWEF. The site is currently zoned SP1 – Special Activities under the State Environmental Planning Policy (Transport and Infrastructure) 2021 (see Section 4.1.1 for further detail).

The project site includes the sites listed in Table 3.1, surrounding areas of port infrastructure, residential, commercial and industrial land uses as well as conservation and aquatic environments within 5 km of the project site. There are some occasions where desktop searches would extend further including 10 km for EPBC and 100 km for developments that may result in cumulative impact on the project.

### 3.2.2 Site

The project site is relatively flat with low relief, at an elevation of approximately 12 metres above sea level. Existing land uses of the project site and surrounds are predominately industrial, shipping and port operations. The site was previously used by BHP Newcastle Steelworks as a landfill site from the late 1960's up to 1999 when BHP ceased operations. Some areas of KIWEF have been remediated with capping and related environmental improvement works to close the landfill.

The site is located adjacent to the Hunter Wetlands National Park within the lower estuarine reaches of the Hunter River, and within proximity to habitat of the Green and Golden Bell Frog (discussed further in Section 6.2). The wetland system in the National Park is of international importance and listed under the Ramsar Convention on Wetlands (DPE, 2023a).

A number of residential suburbs surround the site including Stockton approximately 5 km east of the project site (and across the Hunter River), and Tighes Hill, Carrington, Mayfield and Mayfield East situated approximately 1.5–2 km south of the site across the Hunter River South Channel.

The lots within the project site are detailed in Table 3.1.

Table 3.1 Project site Lot and DP details

| Deposited Plan (DP) | Lot(s) | Concept plan (subject to separate application) |
|---------------------|--------|------------------------------------------------|
| DP1207051           | 3      | 7                                              |
| DP1155723           | 22     |                                                |
| DP119752            | 8      |                                                |
| DP262783            | 16     |                                                |
| DP1184229           |        | 29, 30, 31, 32, 33                             |

### 3.2.3 Key features of the site

#### 3.2.3.1 Local and regional community

The project would be located in the City of Newcastle LGA. An overview of the project's regional context is provided in Figure 1.1.

The project site is approximately 6 km from the Newcastle Central Business District (CBD). Health Care and Social Assistance are the most common industries worked in by residents in Newcastle, followed by education and training, retail trade, construction and accommodation and food services (Australian Bureau of Statistics [ABS], 2021). The mining industry accounted for just two per cent of employed persons aged over 15 years old in Newcastle (ABS, 2021).

Employment in Newcastle includes 29 per cent of people employed as Professionals, 13.4 per cent are Community and Personal Service Workers, 12.1 per cent are Technicians and Trades Workers and 11.6 per cent are Clerical and Administrative Workers. Other occupations include Managers, Sales Workers, Labourers and Machinery Operators and Drivers (ABS, 2021).

#### 3.2.3.2 Features of the natural and built environment

The project is located within the regional city of Newcastle NSW. The site is located on the former KIWEF, located on Kooragang Island, that extends from Stockton in the southeast to the north-eastern bridge at Hexham and is predominantly flat with a slight slope towards the Hunter River South Channel. Majority of the project site is heavily disturbed, with some existing vegetation on the southern borders. Portions of the site contain habitat for the Green and Golden Bell Frog that is listed as vulnerable under the EPBC Act and endangered under the *Biodiversity Conservation Act 2016* (BC Act). Refer to Section 6.2 for further discussion on biodiversity.

The site is bounded by wetlands, including Ramsar wetlands, to the north and west, Hunter River South Channel to the south and the Newcastle Coal Infrastructure Group (NCIG) terminal is directly east of the site. This NCIG terminal receives inbound coal, that is stacked in the stockyard prior to exportation.

On the opposite bank of the Hunter River South Channel, approximately 340 metres south of the site, the land is primarily zoned IN1 – Industrial and comprises local industrial businesses such as Benedict Recycling Plant and multiple warehouses. The nearest residential receiver is approximately 870 metres southwest of the site on Maitland Road.

The project would be developed within the PON Lease Area.

#### 3.2.3.3 Current port activities

PON operates within an industrial precinct surrounded by predominantly other businesses complementary to port operations.

Current activities at the Port include the following:

- trade and port development
- management of 792 hectares of port land
- wharf and berth services including channel capacity for more than 2,500 vessels per year
- maintenance of major port assets
- vessel scheduling
- dredging and survey services
- cruise shipping
- legal, planning and environmental management
- finance
- community and stakeholder relations.

PON currently operates 20 berths and has total land holdings of 792 hectares, including 200 hectares of vacant PON land. The port currently handles 4,697 ship movements and 166 million tonnes of cargo annually, and with a Deepwater shipping channel operating at 50 per cent of its capacity, significant port land available and access to national rail and road infrastructure. PON is positioned to further underpin the future of the Hunter, NSW and Australia (PON, 2022).

#### 3.2.3.4 Existing major infrastructure

Existing major infrastructure within the project study area includes:

- Cormorant Road (adjacent to existing site) and other internal roads
- KIWEF site which is a former BHP landfill site that received waste from the Newcastle Steelworks
- NCIG and PWCS rail balloon loops
- Transgrid and Ausgrid 330 kV and 132 kV networks
- Hunter Water, water supply and sewerage networks
- Conexa recycled water network
- Jemena gas network.

Other major infrastructure near the project study area include:

- Newcastle Coal Infrastructure Group (NCIG) coal stockpiles
- coal export berths from Kooragang Berth 4 (K4) through to K10
- navigation channel and turning circle
- mixed use Kooragang Berths K2 and K3
- Mayfield Bulk Liquids Berth 7 (M7) and associated storage facilities
- Mayfield Berth 4 (M4) and associated hardstand and laydown areas
- road and rail infrastructure
- Kooragang Island Coal Terminal
- Orica site including ammonia plant, nitric acid plants, two ammonium nitrate plants and a product dispatch facility
- BOC
- Cargill
- Ameropa
- Incitec Pivot Limited.

#### 3.2.3.5 Risks and hazards

Key risks and hazards within the existing environment include:

- storage and transport of dangerous goods and hazardous materials
- biosecurity risks
- traffic and transport on existing roads and rail
- port and shipping operations.

A preliminary risks and hazards assessment has been undertaken and is provided in Section 6.1.

### 3.3 Key components of the project

Key components of the project are summarised in Table 3.2 and presented in Figure 3.1.

Table 3.2 Summary of key components of the project

| Component                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Infrastructure           | <p>The project would involve establishment of infrastructure to enable chemical storage and infrastructure within the port. The proposed infrastructure would include:</p> <ul style="list-style-type: none"> <li>— electrical infrastructure, including grid connection, transmission infrastructure and associated easements and corridors, substation and switchyard</li> <li>— water infrastructure, including pipeline connection, pipeline infrastructure and associated easements and corridors for water and sewer</li> <li>— buildings including site buildings, administration buildings and warehousing</li> <li>— roads and paved areas including internal roads, car parking facilities, trailer storage yards and laydown areas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Ammonia storage          | <p>The project would include construction and operation of an ammonia storage facility and associated pipeline to support existing ammonia production facilities within the area. The ammonia storage facility is proposed to support development within the Clean Energy Precinct, other developments and operations in the port and as well as to facilitate clean energy developments within the broader Hunter region. It would provide shared common user storage facility that would be connected by a pipeline that is subject to design refinement and consultation during the EIS phase.</p> <p>The storage facility is expected to be an approximately 30,000 tonnes double-walled ammonia storage tank.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Roads and car park       | <p>Internal roads: internal roads would be required to access the various process areas and the trailer staging area. The roads would be designed to accommodate prime movers coupled to a single semi-trailer and possibly B-doubles (prime mover coupled to two semi-trailers). A one-way road system would be implemented where practicable.</p> <p>Car park: a surfaced parking area would be required and would be approximately 945 m<sup>2</sup> (subject to design refinement).</p> <p>Trailer staging area: a trailer staging area (approximately 120 metres x 126 metres) for trailers would be required. The trailer staging area would be sized for approximately 55 trailers with additional area provided to allow for manoeuvring the prime movers across the site.</p> <p>Laydown area: a general laydown area would be provided with a minimum size of 500 metres by 100 metres. The laydown area would be gravel surfaced with some areas featuring a concrete pavement and would be fenced and gated. The laydown area would be available during the construction period, in addition to other areas used during construction for the purpose of laying down goods and materials.</p> |
| Administration buildings | <p>A common administration building, including a control room, would be provided. The building would feature the following areas:</p> <ul style="list-style-type: none"> <li>— control room</li> <li>— laboratory</li> <li>— reception area</li> <li>— first aid room</li> <li>— open plan offices</li> <li>— secure offices</li> <li>— information technology and server room</li> <li>— meeting room</li> <li>— tour hosting room</li> <li>— storage room</li> <li>— crib room</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Component | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | <ul style="list-style-type: none"> <li>— locker rooms</li> <li>— male and female facilities</li> <li>— disabled facilities.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Workshop  | <p>The project would provide dedicated workshop facilities to carry out welding, grinding, lubrication, sheet metal working, and electrical testing.</p> <p>The workshop would feature a 10 tonne gantry crane to lift heavy goods and equipment and would provide access for a forklift truck. A small tool store would be incorporated into the workshop space.</p> <p>External to the workshop, there would be a dedicated lubricant storage bay, gas cylinder storage and air compressor. Adjacent to the workshop would also be a component wash bay.</p> <p>The workshop would have direct access to the laydown area by means of a roller door.</p> |
| Warehouse | <p>A dedicated warehouse/store would be provided for spares and stores that cannot be stored in the laydown area. The warehouse would feature racking and access by forklift truck and forklift battery charging bays.</p> <p>A fenced and secured storage area would be required within the warehouse for the storage of high value spares.</p>                                                                                                                                                                                                                                                                                                           |

## 3.4 Physical layout and design

The project comprises approximately 32.5 hectares and is expected to comprise the following infrastructure:

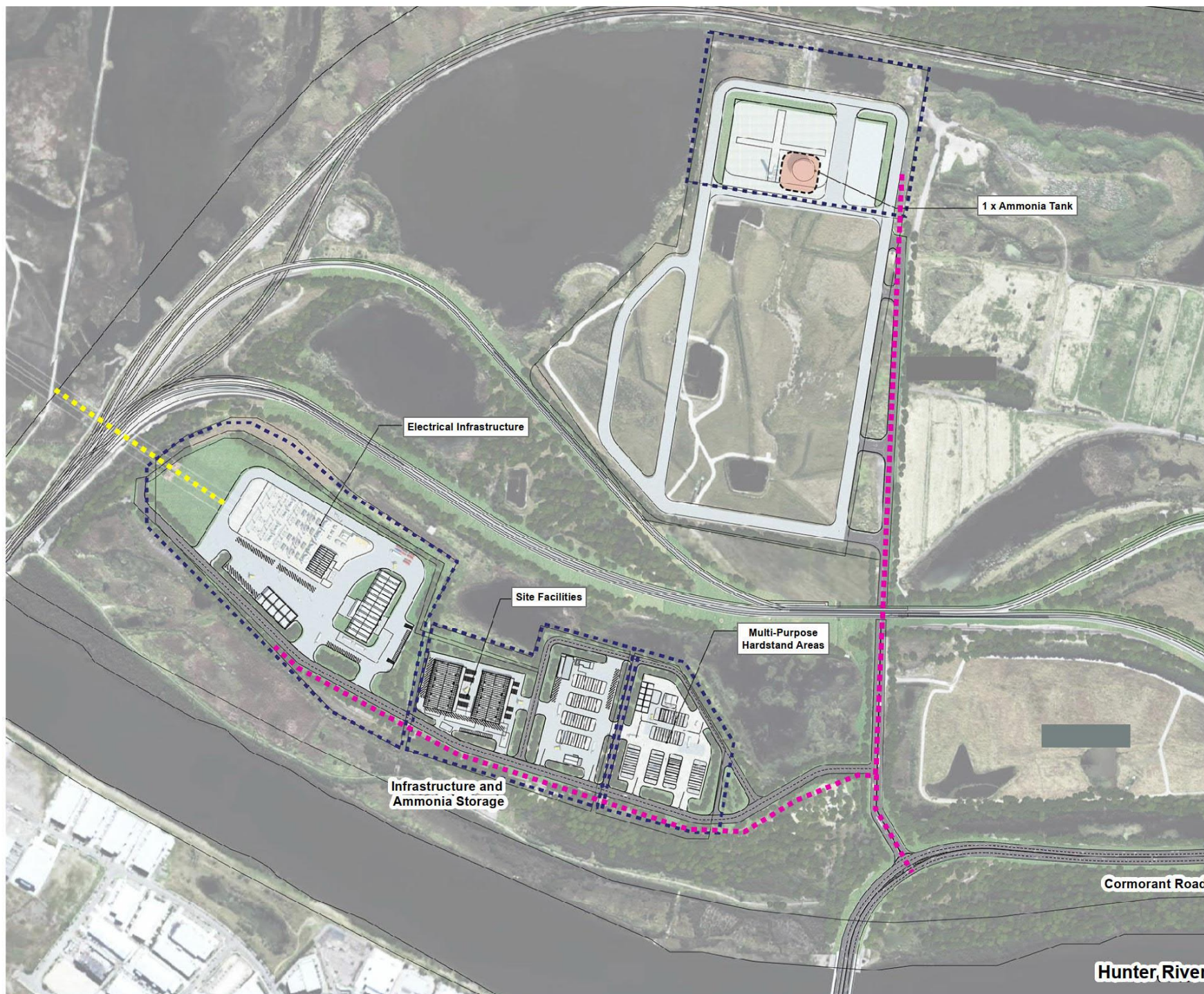
- electrical infrastructure including electrical connections, transmission and distribution corridors, substation and switchyard
- water infrastructure including water supply connections, wastewater disposal connections and water infrastructure corridors
- ancillary works that would be required including site buildings, administration buildings, internal roads, car parking facilities, laydown areas, warehousing, trailer storage yards etc
- ammonia storage tanks with associated pipeline infrastructure to enable loading of the tank and export of ammonia from the tank (subject to design refinement during the EIS).

The project would enable production, storage, distribution and export of clean energy types within the proposed future Clean Energy Precinct, including green hydrogen and green ammonia (subject to a separate development application). The operational footprint is shown in Figure 3.2 and buildings are summarised in Table 3.3.

Table 3.3 Infrastructure and storage buildings

| Building         | Dimensions      | Area                 | Approximate building height |
|------------------|-----------------|----------------------|-----------------------------|
| Storage          | 30 x 68 metres  | 2,000 m <sup>2</sup> | 10 metres                   |
| Substation       | 50 x 30 metres  | 1,500 m <sup>2</sup> | 10 metres                   |
| Warehouse        | 120 x 40 metres | 4,800 m <sup>2</sup> | 10 metres                   |
| Workshop         | 63 x 80 metres  | 5,000 m <sup>2</sup> | 10 metres                   |
| Warehouse stores | 63 x 80 metres  | 5,000 m <sup>2</sup> | 10 metres                   |
| Storage          | 20 x 36 metres  | 700 m <sup>2</sup>   | 10 metres                   |
| Warehouse        | 22 x 50 metres  | 1,100 m <sup>2</sup> | 10 metres                   |
| Site office      | 23 x 12 metres  | 275 m <sup>2</sup>   | 10 metres                   |
| Ammonia tank     | 30,000 tonnes   |                      | 40 metres                   |

**Figure 3-2**  
Infrastructure and Ammonia Layout



**Legend**

- ■ ■ ■ ■ Electrical Transmission Corridor
- ■ ■ ■ ■ Road and Utilities Corridor



Image is not to scale

Data sources: - PON, aifano-studio 2023, Geoscience Australia

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## 3.5 Construction of the project

### 3.5.1 Project timeframes

Construction of the project would commence in early 2025, subject to relevant planning approvals. The project is estimated to take about two years to construct. The project is expected to commence energy production (become operational) in later stages, in early- to mid-2028 (see Figure 3.3). The program for the project is indicative and is based on the current design and preliminary construction staging.

PON has advised the project construction workforce would contribute to the expected 5,261 construction jobs for the development of the proposed future Clean Energy Precinct (subject to a separate development application).

The program would continue to be refined and would be further considered as part of the EIS.

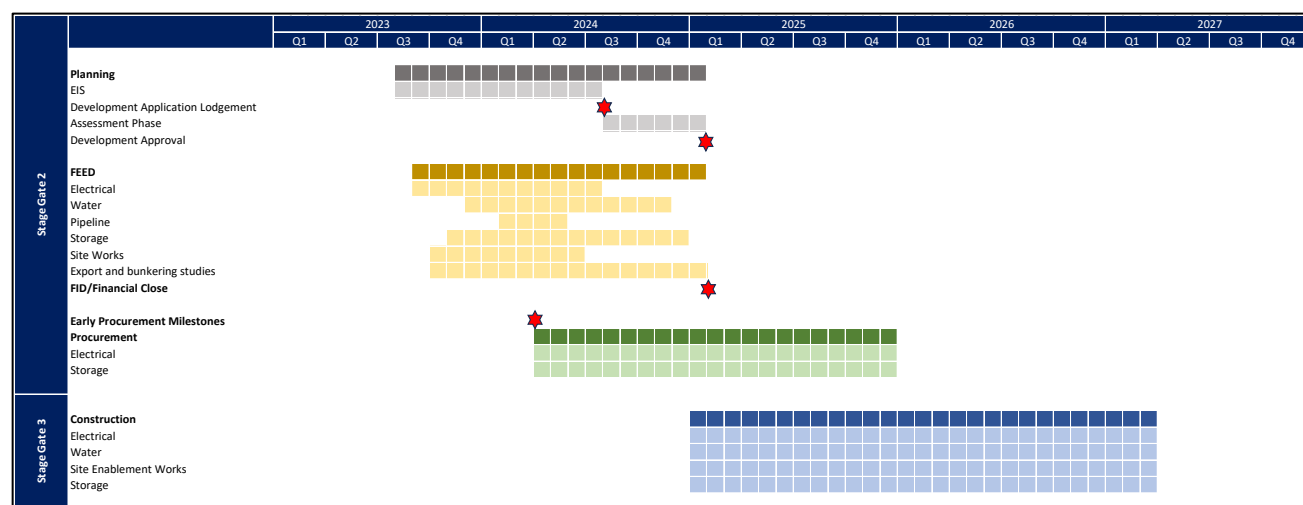


Figure 3.3 Indicative program for Stage 1

### 3.5.2 Construction methodology

Construction activities would be generally undertaken within the identified project site (see Figure 3.1). Ancillary sites, in particular large centralised staging and accommodation facilities, may be located outside this project site. Construction works for the project would typically include the following components of work:

- Site establishment works, that may include (but not be limited to):
  - establishment of construction site(s), access tracks and service relocations
  - vegetation clearance
  - site leveling and earthworks.

- Civil works associated with the proposed infrastructure would include (but not be limited to):
  - modification of existing stormwater infrastructure and construction of new stormwater infrastructure
  - construction of new road infrastructure
  - installation of conduits and communications cabling
  - installation of conduits and electrical cabling
  - construction and installation of potable water supply lines
  - construction and installation of sewer water supply lines
  - line marking on new access roads
  - construction of concrete pavements and laydown areas
  - construction of temporary gravel laydown areas
  - construction of foundation works for new building structures
  - erection of new buildings using cranes
  - installation of utilities infrastructure (such as communications, power, water, sewer etc).
- Civil works associated with the proposed ammonia storage facilities would include (but not be limited to):
  - capping of un-remediated waste emplacement cells
  - construction of new stormwater infrastructure over new capping
  - construction of ammonia storage tank foundations, which may either be piled structures or a concrete raft slab
  - erection of double-walled ammonia storage tank
  - associated infrastructure to the ammonia storage tank (flares, vents etc)
  - installation and commissioning of emergency response equipment.
- Civil works associated with the proposed transmission lines would include (but not be limited to):
  - construction of access tracks to accommodate safe access of construction machinery and materials to each transmission line structure site
  - earthworks and establishment of construction pads for each transmission line structure
  - construction of footings and foundation works for the new transmission line structures including boring and/or excavation, steel fabrication works and concrete pours
  - erection of the new transmission line structure using crane(s) and or helicopter(s)
  - stringing of the conductors and overhead earth wires and optical ground wire
  - installation of earthing conductors.
- Civil and building works associated with the substation works would generally include (but not be limited to):
  - earthworks and slab construction
  - electrical fit out with new substation equipment
  - testing and commissioning of the new substation equipment.

This would be subject to further ground condition investigations and identified as part of the EIS.

### 3.5.3 *Construction plant and equipment*

An indicative list of construction plant and equipment likely to be required for the key construction elements is provided below. Not all the equipment identified below would be required for all phases of project construction:

- Air compressors
- Backhoes
- Bob cats
- Bulldozers
- Concrete batch plants
- Concrete agitator
- Concrete pump
- Cranes (various sizes)
- Dumper trucks
- Elevated work platform
- Excavators (various sizes)
- Flatbed hiab trucks
- Fuel trucks
- Generators
- Graders
- Helicopter and associated support plant/equipment
- Piling rigs
- Pneumatic jackhammers
- Rigid tippers
- Rollers
- Semi-trailers
- Tilt tray trucks
- Trenchers
- Transport trucks
- Watercarts.

### 3.5.4 *Construction hours*

It is proposed that the works would generally be undertaken across a six-day work week between 7 am and 7 pm, during both standard and non-standard construction hours. As details of construction methodology and project needs are refined, these hours would be refined for certain activities and considered in the EIS.

### 3.5.5 *Construction traffic*

Construction vehicle movements would comprise vehicles transporting equipment, waste, materials and spoil, as well as worker's vehicles. Larger volumes of heavy vehicles would occur during the main civil construction works associated with the construction of the precinct. Primary access to the project site would be from Industrial Drive and Cormorant Road, with potential secondary access from Nelson Bay Road from the north.

The haulage (transit) routes for project related vehicle trips would use much of the surrounding road network between the project study area from the main port area. Indicative haulage routes are provided in Figure 3.4. Haulage routes and traffic, transport and access would be assessed and confirmed as part of the EIS process.

**Figure 3-3**  
Surrounding Road Network  
and Potential Haulage Routes

### Legend

-  Port
-  Williamstown Airport
-  Waterway
-  Railway
-  Arterial Road
-  Sub-Arterial Road
-  Disturbance Footprint
-  Project Site



0 2.0 4.0  
Kilometers

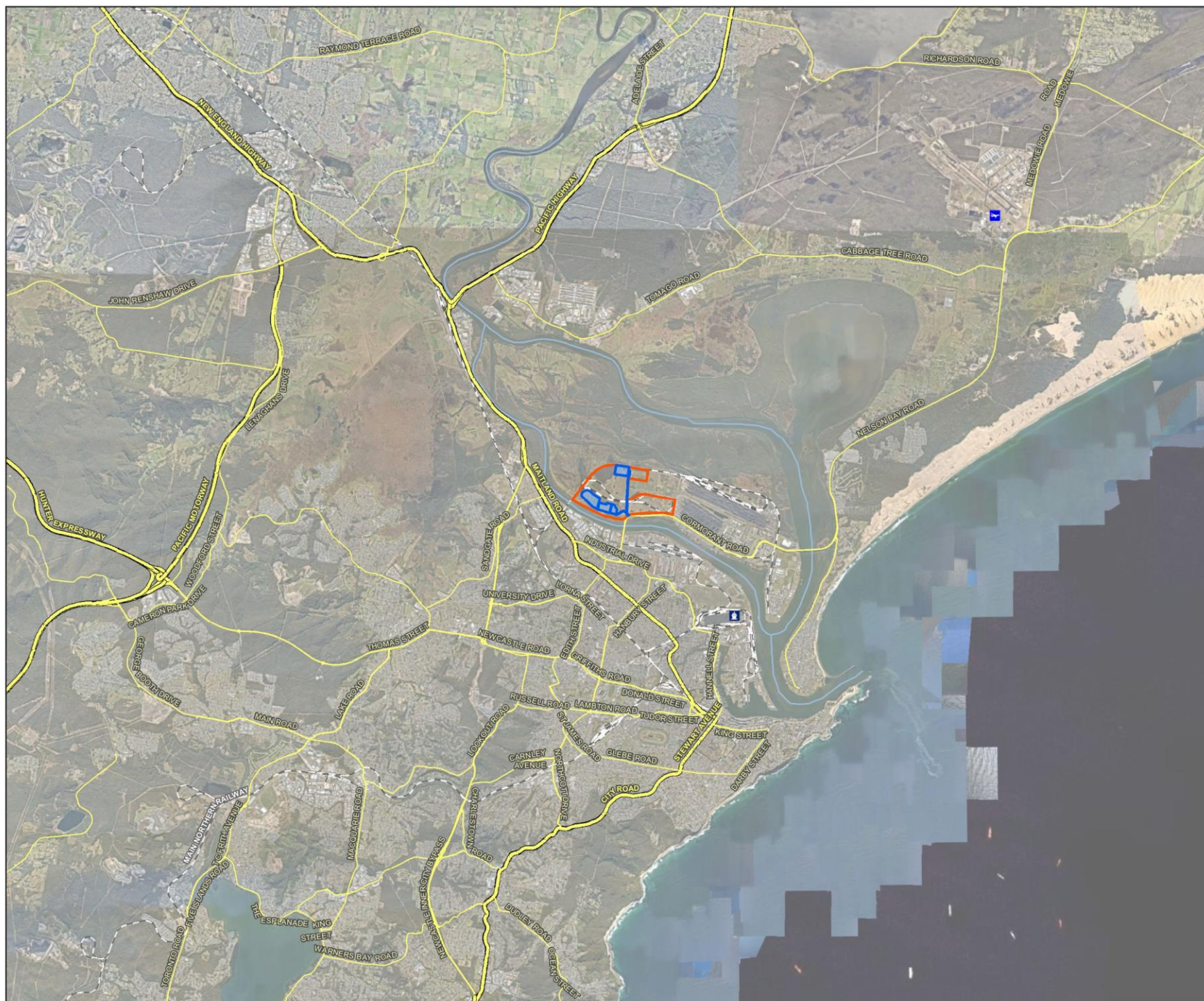
Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:100,000 Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Nearmap, Geoscience Australia

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## 3.6 Pre-commissioning, commissioning and operation

### 3.6.1 *Pre-commissioning and commissioning phases*

Prior to operation of the project, a series of pre-commissioning activities would be conducted. Pre-commissioning would include testing the new transmission line and expanded substation components. Key activities that would be undertaken during the pre-commissioning phase would include:

- point to point testing of energy hubs and transmission line equipment
- earthing testing
- high voltage testing
- high voltage equipment operational checks
- protection, control, and metering system testing
- water and wastewater, storage tank and pipeline infrastructure (subject to design refinement during the EIS).

### 3.6.2 *Operation and maintenance*

Operation of the project would contribute to the expected core permanent workforce of 539 workers for the proposed future Clean Energy Precinct (subject to a separate development application). The majority of maintenance activities would be for preventative maintenance, and activities would include:

- regular inspection of electrical infrastructure
- regular inspection of water and sewer infrastructure
- regular inspection of buildings and amenities
- regular inspection of roads, laydown areas and other areas as appropriate
- regular inspection of storage tanks
- regular inspection of pipelines
- regular inspection of emergency response systems
- regular inspection of stormwater management systems.

#### 3.6.2.1 Water supply requirements

Where possible, it is the PON's preference to utilise sustainable recycled water sources that are currently discharged by ocean outfall. Design refinement during the EIS would include refinement of the water supply for operation of the project.

### 3.6.3 *Decommissioning and rehabilitation or repowering*

If the site were to be decommissioned at the end of life, the process would be undertaken in accordance with all relevant legislation, regulations and requirements including any conditions of approval.

## 4 Statutory context

Environmental planning approval for the project is required in accordance with the EP&A Act, EPBC Act and other relevant statutory requirements.

Relevant statutory requirements for the project would be outlined in the EIS.

This chapter presents planning approvals and relevant legislation and guidelines that would need to be applied for by PON to gain approval for the project.

---

### 4.1 Power to grant approval

Approval for the project is sought under Part 4, Division 4.7 (SSD) of the EP&A Act. Section 4.36(2) of the EP&A Act states:

*(2) A State environmental planning policy may declare any development, or any class or description of development, to be State significant development.*

Chapter 5 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) addresses development at the Port of Newcastle. Under Clause 5.27 (1) of the Transport and Infrastructure SEPP, a development is classified SSD if:

- (a) it is carried out on land within the Lease Area or on unzoned land under this Chapter, and*
- (b) it is, by operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and*
- (c) it has a capital investment value of more than \$100 million or it is designated development (other than development specified in clause 28(c) or 30 (shipping facilities) of Schedule 3 to the Environmental Planning and Assessment Regulation 2000).*

The project would have a capital investment value of approximately \$775 million and would be carried out in the Lease Area.

The consent authority for the project is the Minister for Planning and Public Spaces, their delegate or the Independent Planning Commission (IPC).

#### 4.1.1 Permissibility

The project site is zoned SP1 Special Activities under the Transport and Infrastructure SEPP. A number of land uses are permitted in the zone or permitted by not being prohibited. Hazardous storage establishment and public utility undertakings are a type of development not specified in item 2 'Permitted without consent' or 4 'Prohibited of the Land Use Table' in the SP1 zone and as such are permitted with consent.

According to the Standard Instrument – Principal Local Environmental Plan:

***hazardous storage establishment*** means a building or place that is used for the storage of goods, materials or products and that would, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the building or place from existing or likely future development on other land in the locality), pose a significant risk in the locality—

- (a) to human health, life or property, or*
- (b) to the biophysical environment.*

**public utility undertaking** means any of the following undertakings carried on or permitted to be carried on by or by authority of any Public Service agency or under the authority of or in pursuance of any Commonwealth or State Act—

(a) railway, road transport, water transport, air transport, wharf or river undertakings,

(b) undertakings for the supply of water, hydraulic power, electricity or gas or the provision of sewerage or drainage services,

and a reference to a person carrying on a public utility undertaking includes a reference to a council, electricity supply authority, Public Service agency, corporation, firm or authority carrying on the undertaking.

The objectives of the SP1 zone include to:

- provide for special land uses that are not provided for in other zones
- provide for sites with special natural characteristics that are not provided for in other zones
- facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land
- maximise the use of waterfront areas to accommodate port facilities and industrial, maritime industrial, freight and bulk storage premises that benefit from being located close to port facilities
- enable the efficient movement and operation of commercial shipping and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure
- provide for port related facilities and development that support the operations of Port Botany, Port Kembla and the Port of Newcastle
- facilitate development that by its nature or scale requires separation from residential areas and other sensitive land uses
- encourage employment opportunities.

The project is consistent with each of the objectives of the SP1 zone stated above.

#### 4.1.1.1 Electricity Infrastructure Investment Act (2020)

Section 23 of the *Electricity Infrastructure Investment Act 2020* identifies REZs in NSW. The project site is proximate to three of the REZs, including the Central-West Orana REZ, the New England REZ and the Hunter-Central Coast REZ.

#### 4.1.2 NSW Environmental Planning Legislation and Approvals

Division 4.7 of the EP&A Act provide for the approval pathway for SSD. Environmental assessment in the form of an EIS with specialist assessments and consultation would be required for the project in accordance with Part 4, Division 4.7 of the EP&A Act and Part 8 Division 5 of the EP&A Regulation.

Prior to determination, the project would be subject to a comprehensive environmental impact assessment (the EIS) with extensive community engagement. Determination of the project would involve assessing the economic, environmental and social impacts, objects of the EP&A Act and the principles of ecologically sustainable development.

An EIS would be prepared and submitted in accordance with the SEARs (when issued). A referral under the Commonwealth EPBC Act would be submitted to the DCCEEW. If the project is determined to be a controlled action, the approval of the Commonwealth Minister for the Environment would be required in addition to the SSD consent. It is considered likely that if the project is considered a controlled action under the EPBC Act, the project would be assessed in accordance with the NSW Assessment Bilateral Agreement.

The EIS would be publicly exhibited for a minimum of 28 days and comments would likely be addressed through preparation of a Submissions Report.

### 4.1.3 Planning approval pathway

The proposed infrastructure and ammonia storage would include hazardous storage establishment and public utility undertakings. Part 4 Division 4.7 of the EP&A Act provides for assessment and approval of SSD. An EIS would be prepared for the project in accordance with Section 4.39 of the EP&A Act and Part 8 Division 5 of the EP&A Regulation.

Section 4.41 of the EP&A Act lists legislation that is not required to be considered for SSD that is authorised by a development consent (refer Table 4.1).

Section 4.42 of the EP&A Act lists legislation that must be consistently applied to SSD projects (refer Table 4.1). For the project, Section 4.42 approvals would be confirmed in the EIS however are likely to require:

- Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997*
- work in or over a public road approval under the *Roads Act 1993*.

Table 4.1 identifies NSW approvals that may be required for the project.

Table 4.1 Other NSW approvals that may or may not be required for the project

| Requirement of provision                      | Application of provision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approvals that are not required               | <ul style="list-style-type: none"><li>— a permit under Sections 201, 205 or 219 of the <i>Fisheries Management Act 1994</i> (FM Act)</li><li>— an approval under Part 4, or an excavation permit under Section 139 of the <i>Heritage Act 1977</i></li><li>— an Aboriginal heritage impact permit under Section 90 of the <i>National Parks and Wildlife Act 1974</i> (NPW Act)</li><li>— a bush fire safety authority under Section 100B of the <i>Rural Fires Act 1997</i></li><li>— various approvals under the <i>Water Management Act 2000</i>, namely a water use approval under Section 89, a water management work approval under Section 90, and an activity approval (other than aquifer interference approvals) under Section 91.</li></ul> |
| Approvals that should be applied consistently | <ul style="list-style-type: none"><li>— an environment protection licence under Chapter 3 of the <i>Protection of the Environment Operations Act 1997</i></li><li>— a consent under Section 138 of the <i>Roads Act 1993</i></li><li>— a licence under the <i>Pipelines Act 1967</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

---

## 4.2 Mandatory matters for consideration

### 4.2.1 *Applicable NSW Environmental Planning Instruments*

The consent authority is required to consider a range of matters when deciding whether to grant consent for the project. These are referred to as mandatory considerations, which are detailed in Table 4.2.

Table 4.2 Environmental Planning Instruments relevant to the project

| Environmental planning instrument                                                                             | Relationship to project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)               | <p>Chapter 2 of the Resilience and Hazards SEPP includes provisions that relate to coastal management. The study area contains and is adjacent to land mapped as ‘Coastal Wetland’ and ‘Coastal Wetland Proximity Area’.</p> <p>Potential impact on wetlands would be considered through design refinements and within the EIS.</p> <p>Chapter 3 of the Resilience and Hazards SEPP includes provisions that define and regulate the assessment and approval of potentially hazardous or offensive development.</p> <p>A preliminary hazard analysis (PHA) would be required for the project as it is classified as ‘potentially hazardous industry.’ The PHA would determine the risks to people, property, and the environment and need for further assessment.</p> |
| State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) | <p>The Biodiversity and Conservation SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for <i>Phascolarctos cinereus</i> (Koala). The City of Newcastle LGA is listed in Schedule 2 of the Biodiversity and Conservation SEPP as being within the Central Coast Koala Management Area. There is a low likelihood of occurrence of Koala’s within the site due to the former extensive disturbance and minimal habitat; however, a Preliminary Biodiversity Assessment has been prepared and is summarised in Section 6.2 and provided in Appendix A.</p>                                                                                                                                                     |

### 4.2.2 *Local Environmental Plans*

The project would be located in the City of Newcastle LGA. However, the project would fall under the Transport and Infrastructure SEPP and would not need to consider provisions of the Newcastle Local Environmental Plan (LEP) 2012.

### 4.2.3 Other NSW planning legislation

Table 4.3 presents other NSW legislation that may be applicable regardless of the project being declared SSD.

Table 4.3 Other NSW planning legislation of potential relevance to the project

| Legislation                                            | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Aboriginal Land Rights Act 1983</i>                 | This Act establishes the NSW Aboriginal Land Council and Local Aboriginal Land Councils.<br><br>Aboriginal heritage is discussed in Section 6.3.                                                                                                                                                                                                                                                                                                 |
| <i>Biodiversity Conservation Act 2016 (BC Act)</i>     | The BC Act aims to maintain a healthy, productive and resilient environment for the well-being of the community.<br><br>A Preliminary Biodiversity Assessment has been prepared and is summarised in Section 6.2 and provided in Appendix A.                                                                                                                                                                                                     |
| <i>Biosecurity Act 2015 (Biosecurity Act)</i>          | The <i>Biosecurity Act 2015</i> provides for risk-based management of biosecurity in NSW through prevention, elimination and minimisation of biosecurity risks.<br><br>The project falls under the <i>Hunter Regional Strategic Weed Management Plan 2017-2022</i> and the <i>Hunter Regional Strategic Pest Animal Management Plan 2018-2023</i> .<br><br>Ongoing weed management would be considered in the EIS.                               |
| <i>Coastal Management Act 2016</i>                     | The Act seeks to manage the coastal environment of NSW. The project is located in the coastal area and potential impact on the coastal environment would be considered through design refinements and within the EIS.                                                                                                                                                                                                                            |
| <i>Contaminated Land Management Act 1997 (CLM Act)</i> | The CLM Act outlines the circumstances in which notification to the EPA is required in relation to the contamination of land. This may be relevant for this project during construction and/or operation and would be discussed in the EIS.<br><br>There is known contamination at the site as summarised in Section 6.14. Approval from the site auditor would be required prior to any foundations or works associated with breaching the cap. |
| <i>Crown Land Management Act 2016</i>                  | This Act sets out the requirements for the management of Crown land in NSW. Crown land is mapped for the Hunter River South Channel that is directly south of the project. There are no known areas of Crown land within the project site.                                                                                                                                                                                                       |
| <i>Fisheries Management Act 1994 (FM Act)</i>          | The FM Act provides for the protection, conservation, and recovery of threatened aquatic species defined under the Act.<br><br>The project would need to consider the FM Act, with Key Fish Habitat (KFH) mapped in the Hunter River and surrounding estuaries.                                                                                                                                                                                  |
| <i>National Parks and Wildlife Act 1974 (NPW Act)</i>  | The NPW Act aims to conserve nature and objects, places or features of cultural value. The site is located adjacent to the Hunter Wetlands National Park and potential impact on this park would be considered in the EIS.<br><br>Aboriginal heritage is discussed in Section 6.3.                                                                                                                                                               |
| <i>Native Title (NSW) Act 1994 (Native Title Act)</i>  | The <i>Native Title Act 1993</i> provides a legislative framework for the recognition and protection of common law native title rights.<br><br>Aboriginal heritage is discussed in Section 6.3.                                                                                                                                                                                                                                                  |

| Legislation                                                         | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Protection of the Environment Operations Act 1997</i> (POEO Act) | <p>The POEO Act establishes, among other things, pollution management, pollution incident reporting and environment protection licences on aspects such as waste, air, water and noise pollution control.</p> <p>Licensing requirements for the project (such as an EPL) would be considered in consultation with the EPA and confirmed in the EIS. Construction activities would comply with the requirements of the POEO Act and appropriate management and mitigation would be identified in the EIS.</p> |
| <i>Waste Avoidance and Resource Recovery Act 2001</i> (WARR Act)    | <p>The WARR Act aims to ensure that waste management options are considered under the following waste management hierarchy:</p> <ol style="list-style-type: none"> <li>1 avoidance of unnecessary resource consumption</li> <li>2 resource recovery (including reuse, reprocessing, recycling and energy recovery)</li> <li>3 disposal.</li> </ol> <p>Waste avoidance and resource recovery would be considered in the EIS.</p>                                                                              |

#### 4.2.4 Ecologically sustainable development

Part 8, Division 5 (Clause 193) of the EP&A Regulation and Section 6(2) of the *Protection of the Environment Administration Act 1991* outlines the four principles of ecologically sustainable development (ESD). The four ESD principles comprise the precautionary principle; intergenerational equity; conservation of biological diversity and ecological integrity; and improved valuation, pricing, and incentive mechanisms.

PON would consider the principles of ESD in design development and refinement of the project. A discussion of how the project has considered ESD principles and how these are incorporated into the project would be included in the EIS.

#### 4.2.5 Commonwealth legislation

##### 4.2.5.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides a national framework for environmental protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places (including internationally recognised Ramsar wetlands). Under the EPBC Act, proposed actions with the potential to significantly impact Matters of National Environmental Significance (MNES) must be referred to the DCCEEW to determine whether they are controlled actions and require approval from the Commonwealth Minister for the Environment. Under Part 3 of the EPBC Act, approval from the Minister is required for:

- an action that is likely to have a significant impact on MNES
- an action taken by any person on Commonwealth land (including Commonwealth leased land) that is likely to have a significant impact on the environment
- an action taken by any person outside of Commonwealth land (including Commonwealth leased land) that is likely to have a significant impact on the environment on Commonwealth land
- an action taken by a Commonwealth agency anywhere in the world that is likely to have a significant impact on the environment.

PON is not a Commonwealth agency, and a preliminary assessment of the project indicates no Commonwealth land would be affected.

There is potential for the project to have an impact on MNES due to the presence of the Green and Golden Bell Frog and the project's proximity to Ramsar Wetlands (see Section 6.2). A referral under the Commonwealth EPBC Act would be submitted to the DCCEEW. If determined to be a controlled action, then a bilateral assessment process would be requested for the project.

### *Matters of National Environmental Significance*

A search of the EPBC Act Protected Matters Search Tool (PMST) for the project study area was conducted in July 2023 to identify potential MNES that may trigger the need for referral of the action to the DCCEE. This has been supplemented by the results of a Preliminary Biodiversity Assessment (see Appendix A). A summary of the potential MNES within the project study area is presented in Table 4.4.

Table 4.4 MNES under the EPBC Act

| MNES                                                                               | Matters within the project study area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| World heritage properties                                                          | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| National heritage places                                                           | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Wetlands of international importance                                               | Ramsar wetlands (Hunter Estuary Wetlands) adjacent to the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Commonwealth listed threatened species and ecological communities                  | <p>Known population of the Green and Golden Bell Frog in the site and surrounds (using a 1 km buffer of the project site).</p> <p>The PMST EPBC Act Report identified seven listed threatened ecological communities with potential to occur within the project study area, 21 listed threatened flora species, 50 listed threatened fauna species, and 35 listed migratory species likely to be present within the project study area (10 km buffer).</p> <p>A Preliminary Biodiversity Assessment has been prepared and is summarised in Section 6.2 and provided in Appendix A.</p> |
| Commonwealth listed migratory species                                              | <p>There are 101 listed marine species within 10 km of the project site.</p> <p>Species such as whales and migratory marine species may be affected by dredging and sea dumping activities as a result of future stages of the project (if required).</p>                                                                                                                                                                                                                                                                                                                              |
| Nuclear action                                                                     | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Commonwealth marine area                                                           | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Great Barrier Reef Marine Park                                                     | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Protection of water resources from coal seam gas development and large coal mining | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### 4.2.5.2 Native Title Act 1993

The Australian Government *Native Title Act 1993* provides for the recognition of native title and establishes ways in which future dealings affecting native title may proceed, sets the standards for those dealings and establishes a mechanism for determining claims to native title.

Searches of the registers maintained by the National Native Title Tribunal in March 2023 indicate there are no native title claims or any indigenous land use agreements that apply to land within the area covered by this project.

# 5 Stakeholder and community engagement

This chapter outlines engagement carried out for the project and provides a summary of views of the community and other stakeholders. This chapter also outlines engagement that is proposed to be carried out for the project.

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## 5.1 Introduction and context

PON is committed to building and maintaining trust with the community and stakeholders and recognises that these relationships are vital to its success as a business and the port as a valued asset. As such, engagement relating to this project has been an iterative process over the last two years that has sought to involve stakeholders and the community as PON diversifies to grow its export base and a clean energy future locally and internationally. In addition to engagement related to the project, regular engagement is also underway on the five-year review of the ‘PON 2040 Masterplan’, which would reference this project and PON acting as an enabler for the new energy economy.

This Chapter outlines the strategies and actions taken since 2020 to involve and inform stakeholders and the community in PON clean energy initiatives which has shifted and changed from the Green Hydrogen Hub to a Clean Energy Precinct (subject to a separate development application), with the project providing vital infrastructure and ammonia storage within the Clean Energy Precinct, and how PON would build on this into the future. It provides an outline of the stakeholders, as well as the channels and activities that have and would continue to be used to communicate key milestones and development stages. Finally, it outlines some of the immediate and confirmed actions that are planned to continue engaging at the time of writing this report.

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## 5.2 Engagement strategy

### 5.2.1 *Engagement considerations, principles and strategy to date*

In developing the Community and Stakeholder Engagement Strategy for this project, PON has been informed by the NSW DPE’s *Undertaking Engagement Guidelines for State Significant Projects* (last updated October 2022), particularly the concept of engaging at the earliest possible opportunity and providing clear and concise information that allows people to provide informed feedback.

The engagement approach also aligns with the *PON Stakeholder Engagement Framework* (November 2020). PON recognises the important role that stakeholders and the community play in achieving its vision to be a leading global trade gateway and a key driver for regional, state and national economies. By undertaking meaningful engagement with stakeholders and the community, PON can drive innovation, use feedback to inform decision-making, solve problems and enhance its social license to operate.

#### 5.2.1.1 Strategy to date

Recognising that the Hunter region has a strong history and collective knowledge of the energy resources sector, a key component to PON engagement on this project has been to engage with stakeholders and the community at the early stages of development. The initial Green Hydrogen Hub concept provided opportunity for industry and community input at the feasibility stage. This engagement has been critical to informing the concept of the Clean Energy Precinct (subject to a separate development application), and the project would support the early phase development of the Clean Energy Precinct. This has also allowed PON to start an ongoing dialogue that:

- increases general awareness of energy diversification in the Newcastle and Hunter region, nationally and internationally
- increases awareness of the public and economic benefits and opportunities that can be realised across the project lifecycle
- begins to position stakeholders and the community with background knowledge that would ensure well-informed feedback is received in future phases, especially the formal exhibition period.

There have been three key phases to the Communications and Engagement Strategy to-date:

- 1 extensive local, regional, state and national coverage of the announcement of the concept of a Green Hydrogen Hub and subsequent feasibility study as it relates to commonwealth and state net zero policies and clean energy plans
- 2 reporting back to stakeholders on the outcomes of the feasibility study for the Green Hydrogen Hub and its impact on the advancement of a common user Clean Energy Precinct (subject to a separate development application) for all forms of energy and future fuel beyond hydrogen
- 3 undertaking engagement with new stakeholders for the project (currently underway).

PON has led an additional 24 consultation sessions to inform stakeholders of lodgement of the Scoping Reports to the NSW DPE for the project and the Clean Energy Precinct.

Stakeholders were informed that once fully constructed, the Precinct would facilitate clean energy production, storage, transmission, domestic distribution and international export using common user shared infrastructure. This project is located within the Precinct and would comprise the establishment of electrical infrastructure, water infrastructure and ancillary works, construction and workforce vehicle parking, construction laydown and stockpiles and construction of an ammonia storage facility.

Stakeholders were presented with the concept plans for the site and were taken through elements of the scoping report as it relates to Government agencies, departments, local councils and key neighbouring organisations proximate to the Kooragang Island Clean Energy Precinct were identified and a number of briefings held. These included:

- NCIG
- ARTC
- Transport for NSW
- SafeWork NSW
- EPA
- Port Waratah Coal Service
- National Parks and Wildlife
- Hunter Joint Organisation of Councils
- Port Stephens Council
- Newcastle City Council
- Lake Macquarie Council
- Port of Newcastle Community Liaison Group
- Port Authority of NSW.

In addition to those listed, two major media announcements and a dedicated industry briefing were held in May and July 2023 to inform industry and government stakeholders and the community of the Clean Energy Precinct concept plans and progress towards lodgement of the scoping report for development approval.

On 3 May 2023, PON hosted a Clean Energy Industry Briefing reaching an audience of 150 stakeholders. The briefing launched the Precinct concept plans including a significant media and Public Relations (PR) campaign to soft launch publicly the Clean Energy Precinct. This was made up of ten identified media opportunities across the month, which included the Stage 1 Concept Render media event at the Port of Newcastle with deputy speaker and member for Newcastle, international event at the World Hydrogen Summit and Platform Zero Rotterdam Memorandum of Understanding signing, Chief Executive Officer and Clean Energy Precinct Project lead partnership trips to Korea and Japan. This media campaign secured 322 media articles or an average of 32 per media opportunity. Total reach of audience was 13.8 million people, with PON achieving an 86 per cent share of media voice across the market.

Media reach extended across all states and territories, to the United Kingdom (UK), Greece, Japan, Singapore, USA, Netherlands, Russia and India.

On July 12 2023, PON hosted a Federal Ministerial media announcement with domestic and international parties. The Media event reached 439 million people. Port of Newcastle was mentioned 698 times with 82.5 per cent of news Australian based publications, and 17.5 per cent of news international.

Additional briefings were provided to the following stakeholders:

- Regional NSW
- Hunter Expert Panel, Royalties for Rejuvenation
- Training Services NSW
- Keolis Downer
- BP
- Snowy Hydro
- Jemena.

## 5.3 Stakeholders

PON has identified an extensive list of relevant key stakeholders who are affected by or have an interest or influence on the project. Table 5.1 provides an initial list of stakeholders who have been engaged to date. PON is maintaining a comprehensive Stakeholder List which currently contains 604 engaged stakeholders (as at 3 March 2023). This would be a primary database that would grow as the project develops and would be used as a central database for communications across future stages.

Table 5.1 Key stakeholder groups for the project

| Stakeholder group                      | Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government – Political representatives | <p><b>Federal</b></p> <ul style="list-style-type: none"> <li>— Relevant Federal Members of Parliament</li> <li>— Ministers for Energy and Climate Change, Environment and Water</li> <li>— Relevant Assistant Ministers for Energy and Climate Change, Environment and Water</li> <li>— Relevant Shadow Ministers, and Shadow Assistant Ministers for Climate Change and Energy.</li> </ul> <p><b>State</b></p> <ul style="list-style-type: none"> <li>— NSW Minister for Energy</li> <li>— State Member for Newcastle</li> <li>— Parliamentary Secretary for the Hunter</li> <li>— Previous Shadow Treasurer.</li> </ul> <p><b>Local</b></p> <ul style="list-style-type: none"> <li>— Lord Mayor of Newcastle</li> <li>— Ward 1 Councillors of Newcastle City Council</li> <li>— Ward 4 Councillors of Newcastle City Council.</li> </ul> |
| Government – Federal                   | <ul style="list-style-type: none"> <li>— Australian Renewable Energy Agency</li> <li>— Department of Climate Change, Energy, the Environment and Water</li> <li>— Department of Foreign Affairs and Trade</li> <li>— Australian Rail Track Corporation</li> <li>— CSIRO.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Stakeholder group                                                                                                                                                                                                                                                                             | Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government – State                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>— Department of Planning and Environment</li> <li>— NSW Office of Energy and Climate Change</li> <li>— NSW Treasury (every 6 weeks relating to the handback of KIWEF)</li> <li>— Department of Regional NSW</li> <li>— Port Authority NSW</li> <li>— Hunter and Central Coast Development Corporation (HCCDC) (every 6 weeks relating to the handback of KIWEF)</li> <li>— NSW Energy Corporation</li> <li>— NSW Environment Protection Authority</li> <li>— Australian Maritime Safety Authority</li> <li>— NSW Chief Scientist and Engineer</li> <li>— Investment NSW</li> <li>— Transport for NSW.</li> </ul> |
| Government – Local                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>— Newcastle City Council</li> <li>— Lake Macquarie Council</li> <li>— Hunter Region Joint Organisation of Councils (underway).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Government and business – International                                                                                                                                                                                                                                                       | <p>Regular high-level representatives of various international government departments and agencies, visit PON alongside peak bodies and business associations relevant to future trade opportunity, investment attraction and existing bilateral arrangements. Recent examples include:</p> <ul style="list-style-type: none"> <li>— British High Commission</li> <li>— Singapore High Commission</li> <li>— Korea Gas Safety Corporation</li> <li>— Netherlands Innovation Network.</li> </ul>                                                                                                                                                         |
| Industry organisations that can leverage industry and cluster networks to reduce overlaps, identify gaps to the development, deployment, and commercialisation of clean energy technologies                                                                                                   | <ul style="list-style-type: none"> <li>— Investment NSW North Asia</li> <li>— Regional Development Australia</li> <li>— Committee for the Hunter</li> <li>— Business Hunter Regional Infrastructure Committee</li> <li>— HunterNet</li> <li>— National Energy Resources Australia</li> <li>— NewH2</li> <li>— HunteriF.</li> </ul>                                                                                                                                                                                                                                                                                                                      |
| Education, skills and workforce organisations which represent a catalyst for partnerships and programmes that focus on building the critical skills for the hydrogen industry in the Hunter region through trainings including enhanced work integrated learning and postdoctoral programmes. | <ul style="list-style-type: none"> <li>— University of Newcastle <ul style="list-style-type: none"> <li>— Newcastle Institute for Energy and Resources</li> </ul> </li> <li>— University of NSW (UNSW)</li> <li>— University of Technology Sydney (UTS)</li> <li>— CSIRO</li> <li>— TAFE NSW.</li> </ul>                                                                                                                                                                                                                                                                                                                                                |

| Stakeholder group                                                                                                      | Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Investment and capital providers that attract business and drive commercial aspects of innovation in the Hunter region | <ul style="list-style-type: none"> <li>— 41 current and potential future PON partners across manufacturing, energy resources, education, innovation, infrastructure, transport, investment (comprehensive list currently Commercial-in-confidence)</li> </ul> <p><b>Utilities</b></p> <ul style="list-style-type: none"> <li>— Ausgrid</li> <li>— Hunter Water</li> <li>— Transgrid.</li> </ul> <p><b>Advocacy and networking groups</b></p> <ul style="list-style-type: none"> <li>— Investment NSW North Asia</li> <li>— Regional Development Australia</li> <li>— Committee for the Hunter</li> <li>— Business Hunter Regional Infrastructure Committee</li> <li>— HunterNet</li> <li>— National Energy Resources Australia</li> <li>— NewH2</li> <li>— HunteriF.</li> </ul> <p><b>Other Ports</b></p> <ul style="list-style-type: none"> <li>— Port of Rotterdam</li> <li>— Port of Antwerp</li> <li>— MAM Ports</li> <li>— Gladstone Port</li> <li>— Port of Jurong.</li> </ul> |
| Community                                                                                                              | <ul style="list-style-type: none"> <li>— Neighbouring community</li> <li>— PON Community Liaison Group</li> <li>— Wider Newcastle and Hunter Region Community.</li> </ul> <p><b>Traditional owners and Aboriginal groups</b></p> <ul style="list-style-type: none"> <li>— Awabakal Local Aboriginal Land Council</li> <li>— Worimi Local Aboriginal Land Council</li> <li>— Guraki Aboriginal Advisory Committee (underway).</li> </ul> <p><b>Local Interest Groups</b></p> <ul style="list-style-type: none"> <li>— Stockton Community Action Group</li> <li>— Correct Planning and Consultation for Mayfield</li> <li>— Throsby Alliance</li> <li>— Pro-coal and anti-coal groups.</li> </ul>                                                                                                                                                                                                                                                                                      |

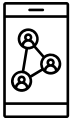
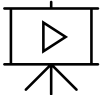
| Stakeholder group | Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Media             | <p><b>Local</b></p> <ul style="list-style-type: none"> <li>— The Newcastle Herald</li> <li>— Newcastle Weekly</li> <li>— ABC Newcastle</li> <li>— Radio- Triple M Newcastle, Hit106.9 Newcastle, 2HD, 2UE.</li> </ul> <p><b>Regional</b></p> <ul style="list-style-type: none"> <li>— Publications in the Lower and Upper Hunter, Mid North Coast, New England.</li> </ul> <p><b>Industry</b></p> <ul style="list-style-type: none"> <li>— Freight Tarde Alliance</li> <li>— Daily Cargo News.</li> </ul> <p><b>Metro</b></p> <ul style="list-style-type: none"> <li>— Australian Financial Review</li> <li>— Daily Telegraph</li> <li>— The Australian</li> <li>— Courier Mail</li> <li>— News.com</li> <li>— Sydney Morning Herald.</li> </ul> <p><b>International</b></p> <ul style="list-style-type: none"> <li>— AAP.</li> </ul> |

## 5.4 Communications materials, engagement channels and current reach

The following communications materials and engagement channels have been used to build knowledge about the project and allow an opportunity for consistent dialogue, should that be desired by stakeholders and the community. Early engagement has focussed on increasing awareness of the opportunities and benefits that energy diversification can bring to Newcastle and the Hunter region through PON, including its unique characteristics and benefits for Australia's diversified trade. Appropriate communication channels have been used to inform stakeholders of the shifts in the nature of the project.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Project webpage</b></p> <p>A dedicated page on the PON website would continue to be updated regularly to provide new information, as well as refined based on feedback from stakeholders. Visitors to the website are invited to join a mailing list for future updates. This website has been promoted through media releases, letters and briefings.</p> <p><b>Number of visits to the Hydrogen Hub web page since publication (as at 4 November 2022 when it was transitioned to Clean Energy Precinct webpage): 7,238 page views with average time spent on page 4 minutes and 53 seconds</b></p> <p><b>Number of visits to the Clean Energy Precinct web page (from 5 November 2022, statistics taken as at 28 March 2023): 2,619 page views with average time spent on page 3 minutes and 42 seconds</b></p> <p><b>Number of subscribers to mailing list (as at 28 March 2023): 1706</b></p> |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Project email</b></p> <p>A dedicated project inbox where stakeholders and the community can contact the Project Team with any questions.</p> <p><b>Number of emails received to <a href="mailto:hydrogen@portofnewcastle.com.au">hydrogen@portofnewcastle.com.au</a> (no longer project email now transition to Clean Energy Precinct has occurred, stats current as at 31 March 2023): 213</b></p> <p><b>Number of emails received to <a href="mailto:energy@portofnewcastle.com.au">energy@portofnewcastle.com.au</a> (as at 31 March 2023): 97</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|    | <p><b>Briefings</b></p> <p>Regular briefings are provided to stakeholders in the table above including Government agencies and the PON Community Liaison Group, as well as follow-up presentation packs and materials.</p> <p><b>Number of briefings conducted (as at 27 March 2023): 79</b></p> <p>Note included in this number are regular 6-weekly meetings with NSW Treasury and the Hunter and Central Coast Development Corporation relating to the handback of KIWEF.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|    | <p><b>Letters and Emails</b></p> <p>Personalised letters and emails were used to report back to stakeholders on the shift from Green Hydrogen Hub to Clean Energy Precinct. They would continue to be used in future stages to invite stakeholders to briefings and events, and to provide updates at key project milestones.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <p><b>Networking events and presentations</b></p> <p>Between October 2022 – February 2023, the PON have used industry networking events to provide visibility of and information about the project. This includes:</p> <ul style="list-style-type: none"> <li>— Australian Hydrogen Forum – 100 attendees from national energy and gas companies, as well as State Ministerial representation from across Australia.</li> <li>— H2 Knowledge Exchange – 70 supply chain representatives from the Hunter Region</li> <li>— Presentation to the NSW Government Net Zero Industry Innovation Board</li> <li>— NSW Government Net Zero Update and HunterNet meeting – 200 industry stakeholders</li> <li>— PoN Industry Briefing – 160 representatives from national, state and regional Government, proponents and suppliers.</li> <li>— NewH2 Hunter Hydrogen and Energy Symposium</li> <li>— Invitees to the Port Industry Briefing were taken from PON’s comprehensive stakeholder list which currently has 604 contacts on it (as at 3 March 2023). Where there were multiple representatives from one organisation on the list, invites were sent to just one representative.</li> </ul> |
|  | <p><b>Letterbox drop</b></p> <p>A letterbox drop was used to communicate with residents in Carrington, Mayfield, Mayfield West and Tighes Hill regarding the Green Hydrogen Hub. Letterbox drops would be used in the future to invite the community to drop-in sessions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Social media</b></p> <p>PON currently utilise Facebook, Twitter, Instagram and LinkedIn to connect with stakeholders and the community through social media and to promote information about clean energy and the project.</p> <p>As at 29 March 2023:</p> <p><b>Facebook followers: 826 Twitter followers: 353</b></p> <p><b>Instagram followers: 692</b></p> <p><b>LinkedIn Followers: 13,359</b></p>                                                                                                                                                                                                                       |
|    | <p><b>Video</b></p> <p>A short video introducing PON's intention to create opportunity for investment in clean energy and the potential benefits to stakeholders and the community. Note: this video would be updated in the next stage.</p> <p><b>Number of views: 770</b></p> <p><b>Number of YouTube Subscribers: 381</b></p>                                                                                                                                                                                                                                                                                                    |
|    | <p><b>Media and paid advertising and editorials</b></p> <p>Across major project milestones media releases and paid advertising have been used to secure reach of messaging to the broader community.</p> <p>Following the Clean Energy Precinct partnership announcement, the following media was achieved (12-28 July 2023) domestically and internationally:</p> <ul style="list-style-type: none"> <li>— PON achieving a total potential news reach of 515 million people</li> <li>— PON being mentioned 1003 times</li> <li>— 84.1 per cent of publications were Australian based, with 15.9 per cent international.</li> </ul> |
|  | <p><b>Site tours</b></p> <p>Between 2021 and 2023 site tours have occurred at the Port. Site tours of note included the Prime Minister of the time, Scott Morrison MP and previous NSW Minister for Energy Matt Kean MP.</p> <p><b>On average the Port has hosted 1-2 site tours per week.</b></p>                                                                                                                                                                                                                                                                                                                                  |

## 5.5 Feedback received from engagement

During the early feasibility project stages, engagement activities have largely focussed on industry and government stakeholders. Engagement to date has focused on the economic, social and environmental opportunity the project represents. Key areas of interest from industry and government include:

- potential for new industries in the Hunter region, particularly around the clean hydrogen and the potential for offshore windfarms
- job creation and leveraging the current workforce into new industries and capabilities
- opportunities for existing industry to provide services locally and expand their capability into new technology
- the relationship between the Clean Energy Precinct (subject to a separate development application) and the roll-out of NSW REZs
- opportunities for research and development and to showcase Hunter businesses as leaders in this field
- business and investment opportunities.

Nearby residents and the general community have been engaged through direct letters, social media, traditional media and briefings to the Community Liaison Group members (who are then expected to cascade information to their community).

Additionally, comments on public newspaper articles and social posts have been minimal with only one comment received at the time of writing which questioned the Government's investment and social shift towards clean energy sources, rather than the PON project specifically.

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## 5.6 Engagement with Aboriginal representatives

PON exists within the traditional countries of the Awabakal and Worimi peoples. PON is committed to building strong ongoing relationships with the local First Nations communities. These relationships have been foundational to the development of PON's 'Reconciliation Action Plan', establishing a clear vision of what true reconciliation looks like for PON. In 2021, PON engaged with internal and external stakeholders to develop a Diversity and Inclusion Strategy (the Strategy). The Strategy identified opportunities for the port to further support and engage with local First Nations communities which has informed PON's Reconciliation Action Plan.

This project provides an opportunity for PON to put commitments in the *2023 Reconciliation Action Plan* into action including:

- establishing and strengthen mutually beneficial relationships with Aboriginal and Torres Strait Islander stakeholders and organisations
- promoting reconciliation through PON's sphere of influence
- increasing understanding, value and recognition of Aboriginal and Torres Strait Islander cultures, histories, knowledge and rights through cultural learning.

As part of this project, the team have engaged an Indigenous Advisor from the Institute for Regional Futures that would be available to advise on this project. PON would leverage relevant networks through the Local Aboriginal Land Councils, the City of Newcastle's Guraki Aboriginal Advisory Committee and the University of Newcastle to engage further with local Aboriginal representatives.

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## 5.7 Future engagement

PON recognises the importance of continued engagement with stakeholders and the community and are committed to providing opportunities for all parties to provide feedback throughout the planning and operation phases. PON acknowledges that, it is through this feedback, better outcomes can be realised.

Prior to lodging, PON is engaging regularly in key stakeholder briefings with an identified list of critical industry stakeholders. These include:

- port tenants and rail, transport and logistics providers (e.g. Australian Rail and Track Corporation, Port Waratah Coal Services, Newcastle Coal Infrastructure Group)
- regional hydrogen hub proponents (e.g. Orica, Energy Estate)
- key government departments and agencies (e.g. HCCDC, Safework NSW, NSW Port Authority, Transport for NSW)
- utility providers (e.g. Ausgrid, Transgrid, Hunter Water)
- vocational and tertiary education providers (e.g. University of Newcastle, TAFE NSW, Training Services NSW)

At the time of lodging this Scoping Report, PON also has the following future engagement activities confirmed, but not yet undertaken:

- a project briefing for members of the Hunter Region Joint Organisation of Councils
- a briefing for new members to PON's Community Liaison Group, noting current members who are reappointed and have previously received information would also be present

- a briefing to the EPA (as the Lead agency of the Environment Services Functional Area under the State Emergency Management Plan) and the Energy and Utility Management Unit in DPE (as the Coordinating Authority for the Energy and Utility Services Functional Area under the State Emergency Management Plan), noting the important role that these agencies play in preventing, preparing, responding and recovering from environmental hazards.

A comprehensive Communications and Stakeholder Engagement Strategy is currently being drafted that would outline the messages, activities and channels for future phases of the planning process including exhibition of the EIS, construction and operation. It is PON's intention to keep this Strategy live and to update it at regular milestones based on how stakeholders and the community indicate they would like to be consulted in the future and where future opportunities to provide information are identified.

As a first step towards this, PON is planning to incorporate an interactive component in the upcoming briefing of PON's Community Liaison Group to seek their input on future engagement channels and activities before the next iteration of the Communications and Stakeholder Engagement Strategy is finalised.

All feedback would be captured formally in a project Stakeholder Database.

# 6 Preliminary environmental assessment

This section considers key economic, environmental and social issues for the project requiring further assessment in the EIS and the level of assessment that should be undertaken for each issue.

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## 6.1 Overview

A preliminary desktop environmental assessment has been carried out to identify potential economic, environmental and social issues associated with the proposed construction and operation of the project. Environmental issues are described in terms of sensitivity of the project study area and surrounds, scale and nature of likely impacts of the project and ability to avoid, minimise and/or offset these impacts. The significance of each issue and need for specialist assessment has been based on the potential environmental impact and likely level of community and stakeholder interest.

For each issue, the proposed scope and required level of assessment (detailed or standard) to be carried out as part of the EIS is identified, as well as the data requirements, investigations required, methodology for assessing impacts, applicable criteria and relevant government plans, policies and guidelines. The methods of assessment proposed in this report would be reviewed and confirmed upon receipt of the SEARs for the project. A summary of key issues and their proposed scope and level of assessment in the EIS is provided in the Scoping Summary Table (see Table 7.2).

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## 6.2 Biodiversity

This section provides a summary of a preliminary desktop biodiversity assessment that has been prepared based on background database searches (provided in Appendix A). The report further identifies potential data gaps and seasonal survey requirements that would likely need to be addressed as part of the Biodiversity Development Assessment Report (BDAR) to inform the EIS.

The project site and a 10 km buffer around the project site (the study area) has been used for threatened flora and fauna searches consistent with the BioNet Atlas user manual (OEH, 2019) and standard practice for the Commonwealth PMST (DCCEEW, 2023d).

### 6.2.1 Existing environment

#### 6.2.1.1 Native vegetation and threatened ecological communities

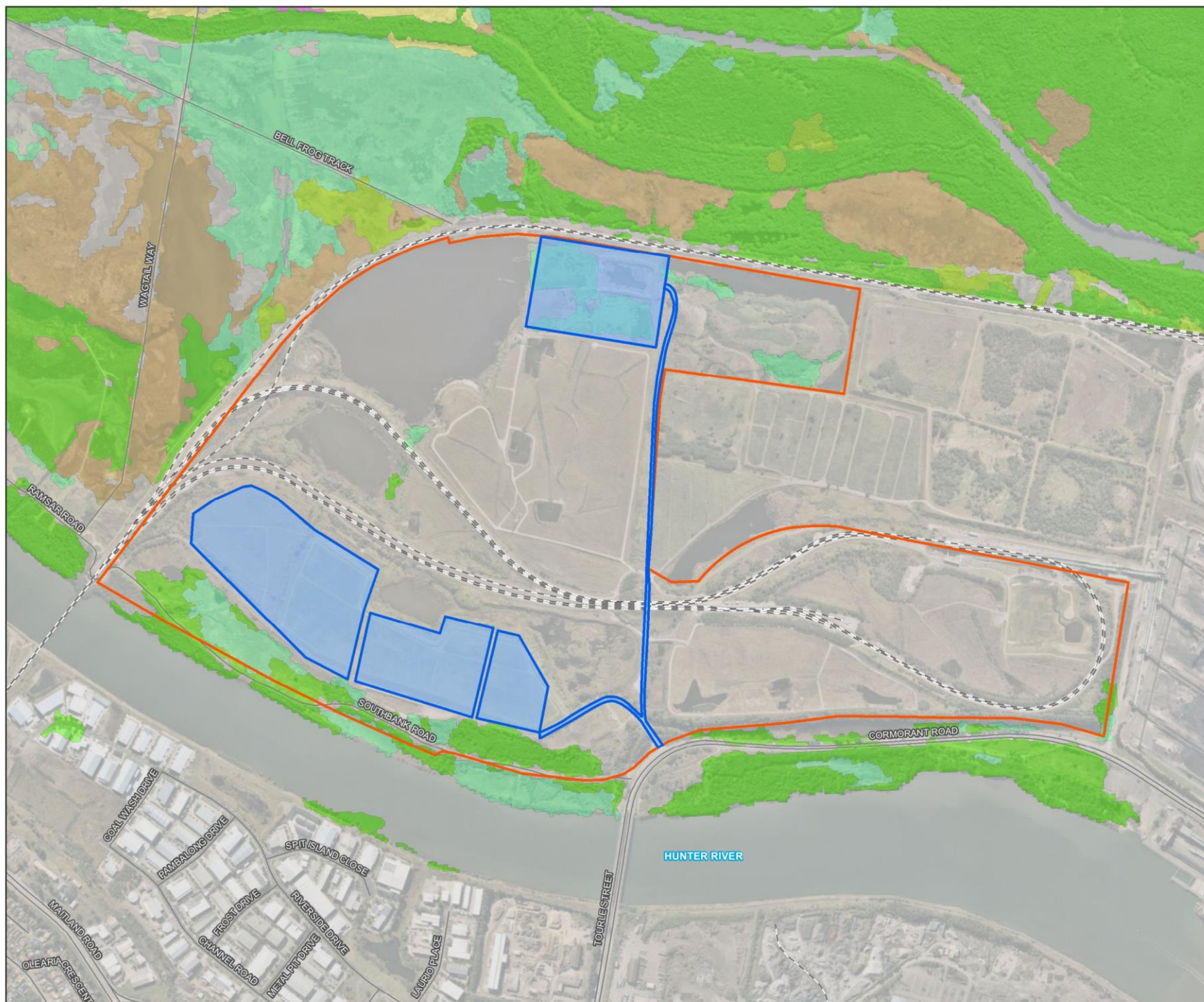
##### *Native vegetation*

The study area has been identified to contain Saline Wetlands vegetation formations from the Saltmarsh and Mangrove Swamps vegetation classes.

##### *Threatened ecological communities – BC Act*

The desktop assessment identified that the Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions Threatened Ecological Communities (TECs) listed under the BC Act is likely to be present in the study area. This TEC corresponds directly to PCT 4097: Samphire Saltbush. The extent of PCT 4097: Samphire Saltbush and therefore the extent of Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC is illustrated in Figure 6.1, although the occurrence may be more extensive than this. Other TEC's may also be present, and presence would be confirmed through future field validation.

**Figure 6.1**  
Plant Community Types



### Legend

Waterbody

— Road

- - - Railway

Project Site

Disturbance Footprint

### PCT (State Vegetation Mapping)

PCT : 0, Not native vegetation

PCT : 3083, Lower Hunter Tuckeroo Riparian Rainforest

PCT : 4020, Coastal Creekflat Layered Grass-Sedge Swamp Forest

PCT : 4028, Estuarine Swamp Oak Twig-rush Forest

PCT : 4091, Grey Mangrove-River Mangrove Forest

PCT : 4095, Paspalum vaginatum-Samphire Saltmarsh

PCT : 4097, Samphire Saltmarsh

PCT : 4103, Sporobolus virginicus Saltmarsh



Coordinate system: GDA 1994 MGA Zone 56



Scale ratio correct when printed at A3

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Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Neemap, Geoscience Australia

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### 6.2.1.2 Habitat suitability for threatened species – BC Act

#### *Identification of threatened species for assessment*

In the Biodiversity Assessment Method (BAM), threatened species are assessed as either ecosystem credit species, species credit species or a combination of the two (referred to as ‘dual credit species’). The BAM defines these threatened species categories as follows:

- **ecosystem credit species** (predicted): are those threatened species where the likelihood of occurrence and/or elements of its habitat can be confidently predicted by vegetation surrogates and landscape features
- **species credit species** (candidate): are those threatened species that cannot be reliably predicted by habitat surrogates
- **dual credit species** are those threatened species where part of the habitat is assessed as an ecosystem credit (e.g. foraging habitat) and part as a species credit (e.g. breeding habitat). In this report, dual credit species would be included in both ecosystem and species credit assessment.

#### *Ecosystem credit species*

The results of likelihood of occurrence assessments identified 27 threatened ecosystem credit fauna species (including those that occur as dual credit species) that have a moderate or higher likelihood of occurrence within the study area. A summary of ecosystem fauna species likely to occur within the project study area is provided in Table 3.1 of Appendix A.

#### *Species credit species*

##### *Candidate threatened flora species credit species generated from BAM-C and database searches*

The results of likelihood of occurrence assessments identified that one threatened flora species has a moderate or higher likelihood of occurrence within the study area (see Appendix A for further detail). This species is *Zannichellia palustris* has a high likelihood of occurrence as records for this species occur in the study area and the study area is part of key local habitat for this species.

##### *Candidate threatened fauna species credit species generated from BAM-C and database searches*

The likelihood of occurrence assessments identified 15 threatened fauna species credit species (including dual credit species) that have a moderate or higher likelihood of occurrence within the study area (see Appendix A for further detail). Of most concern is the Green and Golden Bell Frog that has a high likelihood of occurrence as records for this species occur in the study area and the study area is part of key local habitat for this species. Potential habitat for Green and Golden Bell Frog is illustrated in Figure 6.2.

**Figure 6.2**  
Potential Green and Golden Bell  
Frog Habitat

**Legend**

- Project Site
- Disturbance Footprint
- Road
- Railway
- Golden Bell Frog Habitat Areas



0 200 400 Meters

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:10,000 Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Nearmap, Geoscience Australia

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### 6.2.1.3 Matters of National Environmental Significance

#### *Threatened ecological communities*

Desktop assessment identified seven TECs listed under the EPBC Act with potential to occur within the study area. The PMST search results are provided in Appendix A. Of these TECs, Subtropical and Temperate Coastal Saltmarsh (listed as a Vulnerable ecological community under the EPBC Act), is likely to be present in the study area.

This TEC is likely to correspond directly to PCT 4097: Samphire Saltbush. The extent of PCT 4097: Samphire Saltbush and therefore the extent of this EPBC Act listed TEC is illustrated in Figure 6.1.

#### *Threatened flora species*

Database searches identified 21 threatened flora species listed under the EPBC Act that are predicted or known to occur within the study area (see Appendix A). The results of likelihood of occurrence assessments identified that one threatened flora species has a moderate or higher likelihood of occurrence within the study area, *Zannichellia palustris*. A summary of EPBC Act listed threatened flora species likely to occur within the study area is provided in Table 6.1. *Zannichellia palustris* has a high likelihood of occurrence as records for this species occur in the study area and the study area is part of key local habitat for this species.

Threatened flora species records from BioNet are illustrated in Figure 6.3.

Table 6.1 Summary of EPBC listed threatened flora species with a moderate or higher likelihood of occurrence

| Scientific name               | Common name            | EPBC Act <sup>1</sup> | Likelihood of occurrence                                                                              |
|-------------------------------|------------------------|-----------------------|-------------------------------------------------------------------------------------------------------|
| <i>Zannichellia palustris</i> | Zannichellia palustris | E                     | High – records for this species in the study area, surveyable when habitat conditions are favourable. |

(1) Listed under the *Environmental Protection and Biodiversity Conservation Act 1999*: E = Endangered.

#### *Threatened fauna species*

The PMST search identified 50 threatened fauna species, and two conservation dependent fauna species, listed under the EPBC Act, that are predicted or known to occur within the study area. The results of likelihood of occurrence assessments have identified 10 threatened fauna species to have a moderate or higher likelihood of occurrence within the study area. A summary of threatened fauna species likely to occur within the project study area is provided in Table 6.2.

As stated above, of most concern is the Green and Golden Bell Frog which has a high likelihood of occurrence as records for this species occur in the study area and the study area is part of key local habitat for this species.

A map of threatened fauna species records from BioNet is illustrated in Figure 6.4.

Table 6.2 Summary of EPBC listed threatened fauna species with a moderate or higher likelihood of occurrence

| Scientific name                  | Common name                | EPBC Act <sup>1</sup> | Likelihood of occurrence                                                                                                      |
|----------------------------------|----------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Amphibians</b>                |                            |                       |                                                                                                                               |
| <i>Litoria aurea</i>             | Green and Golden Bell Frog | V                     | High – records for this species occur in the study area, the study area is part of key local habitat for this species.        |
| <b>Birds</b>                     |                            |                       |                                                                                                                               |
| <i>Botaurus poiciloptilus</i>    | Australasian Bittern       | V                     | High – records for this species occur in the study area, the study area is part of key local habitat for this species.        |
| <i>Calidris canutus</i>          | Red Knot                   | E                     | High – records for this species in the study area, may occur when habitat conditions are favourable.                          |
| <i>Calidris ferruginea</i>       | Curlew Sandpiper           | E                     | High – records for this species in the study area, may occur when habitat conditions are favourable.                          |
| <i>Calidris tenuirostris</i>     | Great Knot                 | CE; M                 | High – records for this species in the study area, may occur when habitat conditions are favourable.                          |
| <i>Charadrius leschenaultii</i>  | Greater Sand Plover        | CE, M                 | Moderate – records for this species in the study area, may occur when habitat conditions are favourable.                      |
| <i>Charadrius mongolus</i>       | Lesser Sand Plover         | V, M                  | Moderate – records for this species in habitats adjacent to the study area, may occur when habitat conditions are favourable. |
| <i>Limosa lapponica baueri</i>   | Nunivak Bar-tailed Godwit  | E, M                  | Moderate – records for this species in habitats adjacent to the study area, may occur when habitat conditions are favourable. |
| <i>Numenius madagascariensis</i> | Eastern Curlew             | V                     | High – records for this species in the study area, may occur when habitat conditions are favourable.                          |
| <i>Rostratula australis</i>      | Australian Painted Snipe   | CE; M                 | High – records for this species in the study area, may occur when habitat conditions are favourable.                          |

(1) Listed under the *Environmental Protection and Biodiversity Conservation Act 1999*: E = Endangered; V = Vulnerable, M = Migratory

**Figure 6.3**  
Threatened Flora Species Mapping



**Legend**

- Road
- Railway
- Project Site
- Disturbance Footprint

**Threatened Flora (BioNet Records)**

- *Zannichellia palustris*



0 200 400 Meters

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:10,000 Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Neemap, Geoscience Australia

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#### Legend

- Road
- - - Railway
- Project Site
- Disturbance Footprint

#### Threatened Species

- Eastern Coastal Free-tailed Bat
- Eastern False Pipistrelle
- Greater Broad-nosed Bat
- Green and Golden Bell Frog
- Grey-headed Flying-fox
- Large Bent-winged Bat
- Little Bent-winged Bat
- Southern Myotis
- Yellow-bellied Sheath-tail-bat
- Australasian Bittern
- Black-necked Stork
- Black-tailed Godwit
- Curlew Sandpiper
- Eastern Osprey
- Little Eagle
- Magpie Goose
- Masked Owl
- Powerful Owl
- Spotted Harrier
- White-bellied Sea-Eagle
- White-fronted Chat



Coordinate system: GDA 1994 MGA Zone 56



Scale ratio correct when printed at A3

1:10,000 Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Nearmap, Geoscience Australia

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### *Migratory species*

The PMST search results identified 77 listed migratory species from the 10 km search area. Habitats for 35 of these listed migratory species are likely to be present in the study area.

### *Listed marine species*

The PMST returned 101 listed marine species from the 10 km search area. The study area is upstream from the marine environment and is connected to the Hunter River so impacts to listed marine species would be considered in the EIS.

### *Whales and other cetaceans*

The PMST returned 12 whales and cetaceans from the 10 km search area. The study area is upstream from the marine environment and is connected to the Hunter River so impacts to whales and cetaceans would be considered in the EIS at a high level, although substantial impacts are unlikely.

### *Biologically important areas*

Biologically important areas (BIA) of Regionally Significant Marine Species are spatially defined areas where aggregations of individuals of a species are known to display biologically important behaviour such as breeding, foraging, resting or migration.

The PMST returned a list of seven biologically important areas within the study area. These include:

- *Ardenna grisea* (Sooty Shearwater) foraging behaviour likely to occur. Study area is upstream from the mapped BIA.
- *Ardenna pacifica* (Wedge-tailed Shearwater) foraging behaviour likely to occur. Study area is upstream from the mapped BIA.
- *Ardenna tenuirostris* (Short-tailed Shearwater) foraging behaviour likely to occur. Study area is upstream from the mapped BIA.
- *Tursiops aduncus* (Indo-Pacific/Spotted Bottlenose Dolphin) Breeding behaviour likely to occur. Study area is upstream from the mapped BIA.
- *Tursiops aduncus* (Indo-Pacific/Spotted Bottlenose Dolphin) foraging behaviour known to occur. Study area is within the mapped BIA.
- *Carcharias taurus* (Grey Nurse Shark) foraging behaviour known to occur. Study area is upstream from the mapped BIA.
- *Megaptera novaeangliae* (Humpback Whale) foraging behaviour known to occur. Study area is upstream from the mapped BIA.

The study area is upstream from the marine environment and is connected to the Hunter River so impacts to these BIA would be considered in the EIS.

### *Wetlands of national and international importance*

One Ramsar wetland or Wetland of International Importance was identified by the PMST which is the Hunter Estuary Wetlands. The study area is in the buffer zone of this Ramsar wetland.

Three Nationally Important Wetlands were identified by the PMST:

- Shortlands Wetland Centre – upstream from the study area
- Hexham Swamp – upstream from the study area
- Kooragang Nature Reserve – mapped within some areas of the study area.

#### 6.2.1.4 Protected marine vegetation

The Saline Wetlands PCT 4097: Samphire Saltbush and PCT 4091: Grey Mangrove – River Mangrove Forest are classified as marine vegetation and have been identified within the study area.

#### 6.2.1.5 Key fish habitat

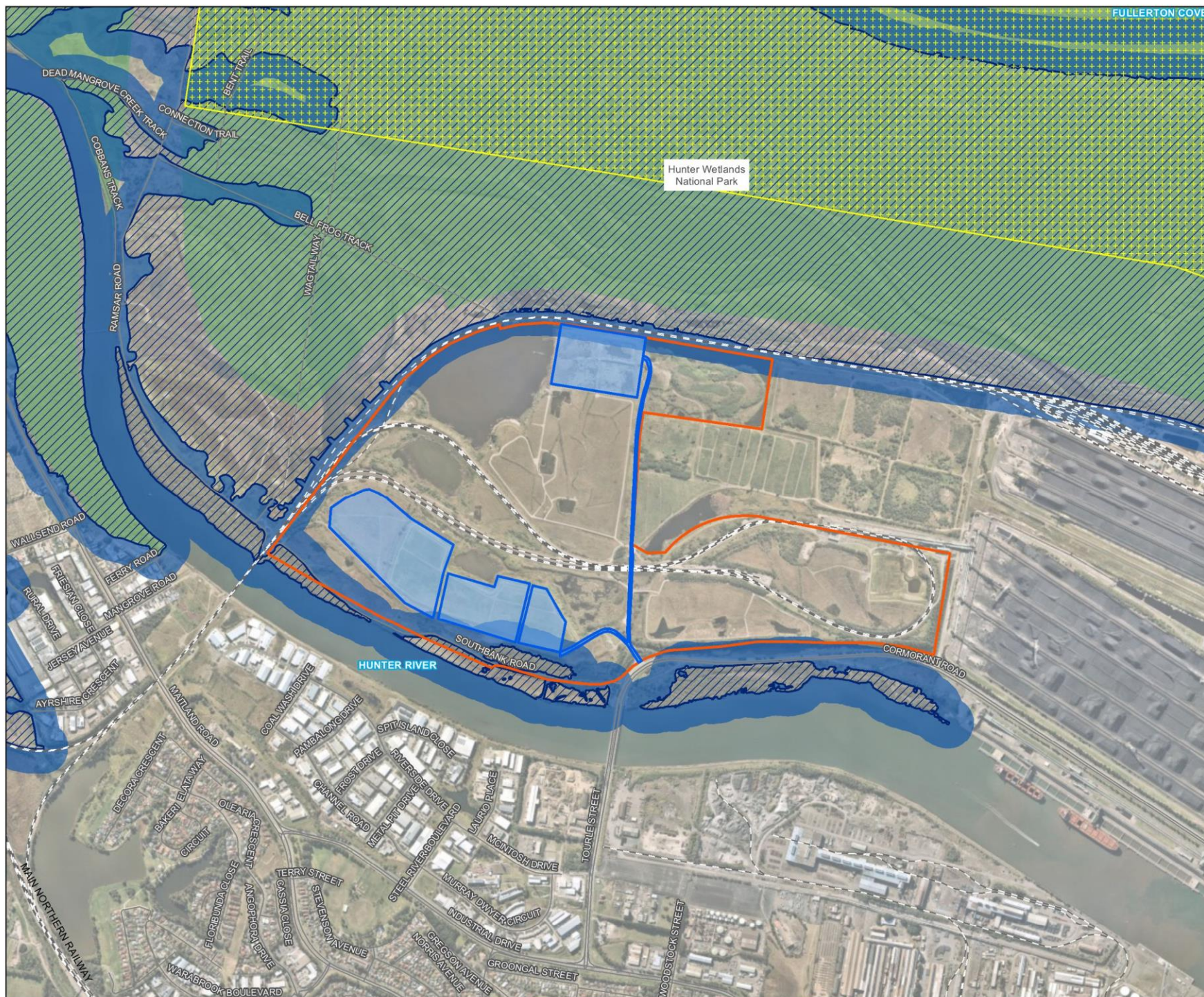
The study area contains mapped KFH along the Hunter River and associated wetlands.

#### 6.2.1.6 Coastal wetlands

SEPP (Resilience and Hazards) 2021 provides an integrated policy for coastal assets. Under Chapter 2 of SEPP (Resilience and Hazards) 2021, areas of ‘Coastal Wetlands’ and ‘Proximity Coastal Wetlands (100 metre buffer)’ have been mapped across the state.

The study area contains areas of mapped ‘Coastal Wetland’ and ‘Coastal Wetland Proximity Area’ (Figure 6.5).

**Figure 6.5**  
Location of Proposal and Surrounding  
National Parks and Wetlands



**Legend**

- Road
- - - Railway
- Project Site
- Disturbance Footprint
- Coastal Wetland
- Coastal Wetland Proximity Area
- Ramsar Wetland
- National Park



Coordinate system: GDA 1994 MGA Zone 56

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### 6.2.2 Potential impacts

As summarised above and detailed in Appendix A, a number of threatened native flora and fauna species, TECs, important habitat values and sensitive environments could potentially be impacted by the project.

Biodiversity values identified as known, predicted or considered likely to occur within the study area have been assigned to a three-tier biodiversity constraint hierarchy. The biodiversity constraints are shown in Figure 6.6.

This hierarchy has been developed to assist with addressing the principle of avoid and minimise as required under Section 7 of the BAM. The biodiversity constraints ranking has been based on the following criteria:

#### 6.2.2.1 Tier 1 high biodiversity constraint – areas to avoid

Tier 1 biodiversity constraints are areas of very high environmental sensitivity. These areas should be avoided to display good stewardship of a sensitive area. Environmental approvals may be considered unlikely, unachievable, or would add complexity and delay to approvals. Tier 1 constraints are:

- mapped Coastal Wetlands
- mapped Nationally Important Wetland Kooragang Nature Reserve
- Key Fish Habitat
- Protected Marine vegetation including Saltmarsh and Mangroves
- habitat for the BC Act and EPBC Act listed Green and Golden Bell Frog.

The Tier 1 high biodiversity constraint areas should be identified for retention and the various components of the project designed around these features.

#### 6.2.2.2 Tier 2 moderate biodiversity constraint – areas where impacts should be minimised

Tier 2 biodiversity constraints are areas of moderate environmental sensitivity. Impact to these areas should be minimised. Environmental approvals are still considered complex and would result in triggers for biodiversity offsets and demonstration of avoid and minimising impacts on such biodiversity values. Tier 2 biodiversity constraints include:

- BC Act listed Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions TEC
- EPBC Act listed Subtropical and Temperate Coastal Saltmarsh TEC
- known habitat for the BC Act and EPBC Act listed threatened wetland plant *Zannichellia palustris*
- habitat for the BC Act and EPBC Act listed wetland bird species
- habitat for EPBC Act listed migratory species
- biologically important areas of Regionally Significant Marine Species
- habitat for whales and cetaceans.

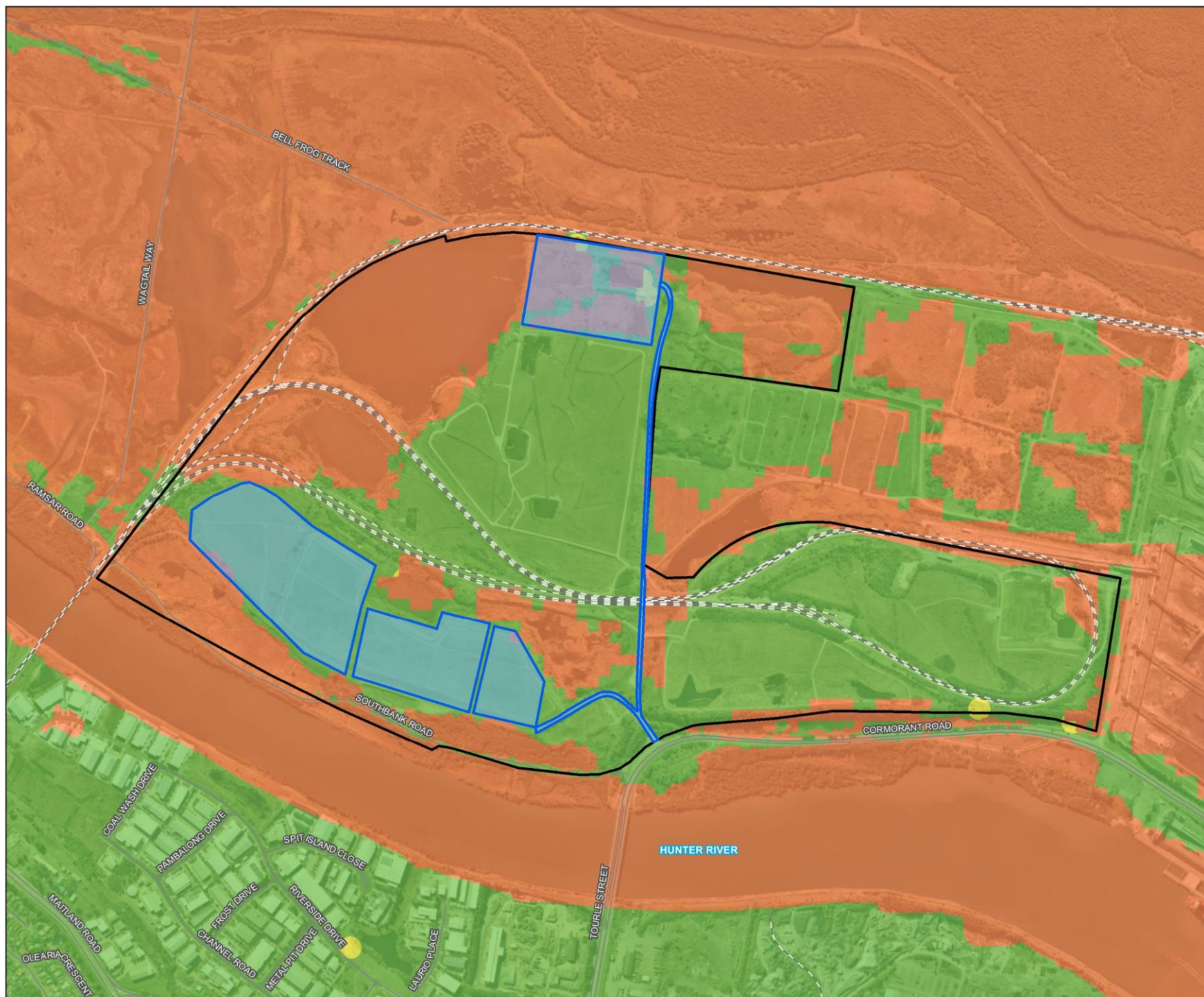
The Tier 2 Moderate biodiversity constraint areas should be considered for retention where possible.

#### 6.2.2.3 Tier 3 low biodiversity constraint – areas to target development

Tier 3 low biodiversity constraints are the disturbed parts of the study area that generally lack native vegetation or habitats. Tier 3 biodiversity constraints are:

- disturbed areas with none or minimal native vegetation or habitats for threatened species.

**Figure 6.6**  
Biodiversity Constraints in the Study Area



**Legend**

- Road
- - - Railway
- ▬ Project Site
- Disturbance Footprint

**Biodiversity Constraint Rating**

- Tier 1
- Tier 2
- Tier 3



0 200 400  
Meters

Coordinate system: GDA 1994 MGA Zone 56

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## 6.2.3 Proposed investigations and assessment

### 6.2.3.1 Native vegetation assessment

Detailed native vegetation survey and mapping would be required in accordance with Section 5 of the BAM and Commonwealth requirements. This would include stratifying vegetation types and broad condition states to define vegetation zones, that would be sampled using vegetation integrity survey plots in accordance with Section 4 of the BAM. These native vegetation surveys would determine the vegetation integrity scores for each vegetation zone that would be utilised in the BAM Credit Calculator and inform impacts and potential biodiversity offset requirements.

The native vegetation survey and mapping would identify and refine presence and extent of the BC Act listed Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions TEC and the EPBC Act listed Subtropical and Temperate Coastal Saltmarsh TEC.

The extent of protected marine vegetation in the form of saltmarsh and mangroves would also be determined.

### 6.2.3.2 Targeted threatened species surveys

Threatened flora and fauna surveys would be required for species credit species listed under the BAM within the study area. Targeted surveys would also occur with due consideration of state and Commonwealth survey requirements.

Targeted threatened species surveys are recommended for the following species:

- threatened wetland plant *Zannichellia palustris*
- Green and Golden Bell Frog
- wetland bird species including Australasian Bittern, Australian Painted Snipe, Eastern Curlew, Red Knot, Curlew Sandpiper, Great Knot, Greater Sand Plover, Lesser Sand Plover, Pied Oystercatcher, Broad-billed Sandpiper, Bar-tailed Godwit (including Nunivak Bar-tailed Godwit), Black-tailed Godwit, and Terek Sandpiper
- raptors including White-bellied Sea Eagle, Little Eagle and Eastern Osprey
- Southern Myotis.

A BDAR would be prepared as part of the EIS, that would further identify and clarify potential significance of biodiversity impacts associated with the project. The BDAR would be prepared in accordance with the BC Act and BAM. Targeted detailed threatened species seasonal survey would occur to ensure compliance with the BAM along with vegetation integrity plot based native vegetation surveys. The biodiversity constraints identified in this report provide a starting point to consider avoidance and minimisation of biodiversity impacts.

A referral under the EPBC Act to the Commonwealth would be required.

---

## 6.3 Aboriginal heritage

This section presents a summary of the preliminary Aboriginal heritage assessment that has been prepared for the Scoping Report (Appendix B).

### 6.3.1 *Existing environment*

The study area is within the Awabakal Local Aboriginal Land Council. Aboriginal occupation and use of the Island occurred for many years prior to European settlers, and was used for hunting, fishing and gathering activities by the Awabakal and the Worimi people (Dorey n.d.). While today it is within the Awabakal Local Aboriginal Land Council boundary and is south of the Worimi Local Aboriginal Land Council, its shared status as a meeting point between Awabakal and Worimi peoples is acknowledged by both Local Aboriginal Land Councils and City of Newcastle (City of Newcastle, 2018).

The study area is within the Hunter subregion of the Sydney Basin bioregion. The subregion is generally comprised of rolling hills and wide valleys with a meandering river system on a wide flood plain. Typical soils comprise a variety of harsh texture contrast soils and deep sandy loam alluvium.

Aboriginal sites recorded in NSW are registered with geographic co-ordinates in the Aboriginal Heritage Information Management System (AHIMS) and are protected under the *National Parks and Wildlife Act 1974*. Information in AHIMS can provide information on Aboriginal site patterning as well as showing if Aboriginal sites occur in the study area.

The AHIMS was searched on 1 March 2023 from 376328.0 – 386328.0 (Eastings) to 6357381.0 (Northings). The search produced a result of 52 sites (see Appendix B) most of which are located south of the project site. The sites comprise mainly surface artefacts (isolated finds or artefacts scatters) that are generally distributed along water courses, or beside wetlands, with a few also associated with middens. Some have been subject to an Aboriginal Heritage Impact Permit (AHIP) and thus have been removed, but the majority remain valid.

### 6.3.2 *Potential impacts*

There are no AHIMS sites within the project site, with the closest site AHIM 38-4-0041 located 20 metres southeast of the project site and comprising surface artefacts. There is likely more examples of tangible Aboriginal heritage in the area, although much has been disturbed or covered over during land reclamation activities. The historical evidence as well as oral histories identify that there are many other values associated with the study area including camping, hunting, gathering, links to ceremonial areas, shared territory as well as a darker post-contact history including massacres of Aboriginal people.

### 6.3.3 *Proposed investigations and assessment*

An assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) and the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010) would be prepared as part of the EIS. Consultation would occur with Aboriginal communities, having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010a).

---

## 6.4 Non-Aboriginal heritage

This section presents a summary of the preliminary non-Aboriginal heritage assessment that has been prepared for the Scoping Report (Appendix B).

### 6.4.1 *Existing environment*

Exploration and settlement of Newcastle and surrounds by early Europeans occurred during the early 1800s. With an initial focus on exploiting resources, early Europeans brought forestry and mining activities to the region, such as cedar and coal (City of Newcastle, 2018). These early activities, in particular coal mining, were inefficient until installation of railways in the 1850s. From this time, Newcastle's coalfield became the "powerhouse of the Australian colonies". In 1915, World War I hampered coal exports; however, the opening of BHP Steelworks transformed Newcastle and shaped the industrial nature of Newcastle today, as Australia's industrial capital (City of Newcastle, 2018).

The study area is known historically as Ash Island that was surrounded by a number of other islands (Upper Mosheto Island, Mosheto Island, and Dempsey Island) before they were all joined to create Kooragang Island. Being estuary islands, Ash Island, along with the others, were a rich hunting area and food resources included shell fish and fish (particularly mullet and a fish resembling herring) (Grant, 1803). The Island is rich in birdlife including Wonga Wonga pigeons and other fauna included kangaroos, possums, flying foxes, snakes and goannas (Newcastle Morning Herald, 1993). It was also home to extremely lofty fig trees.

The local landscape has also been substantially modified by the joining of Ash Island, Upper Mosheto Island, Mosheto Island, and Dempsey Island to become Kooragang Island.

#### 6.4.1.1 Historic heritage

Heritage registers including the World Heritage List, National Heritage List, State Heritage Register and the Newcastle LEP were searched, and no heritage items were found to occur within the project site.

The closest heritage item is the Former Migrant Camp (I-291) 690 metres to southwest of the project site, followed by the Remnant Garden (I-692) 750 metres south of the project site, both are of local significance and are listed on the Newcastle LEP (Table 6.3, Figure 6.7). Items relating to the Sandgate Cemetery are located 900 metres to 1,385 metres to the west of the project site and are also locally listed. State Heritage Register listings are over 2.5 km from the project site and the closest Commonwealth heritage listings are 4.5 km and 12 km away (Table 6.3, Figure 6.7).

In addition, the Coal River Precinct at Nobbys Rd, Newcastle East (ID 106231) located approximately 6.5 km southeast of the project site has been nominated as a national heritage place, however is not registered. As such, it is not regarded as a heritage item, but may be registered in future and thus may be relevant for future assessments.

Table 6.3 Heritage listings within or near the project site

| Listing type            | Item                                   | Significance | Spatial relation to project site |
|-------------------------|----------------------------------------|--------------|----------------------------------|
| Newcastle LEP           | Former Migrant Camp (I-291)            | Local        | 690 metres southwest             |
| Newcastle LEP           | Remnant Garden (I-692)                 | Local        | 750 metres south                 |
| Newcastle LEP           | Sandgate Cemetery (I-516)              | Local        | 900 metres west                  |
| Newcastle LEP           | Sandgate Cemetery Railway Spur (I-517) | Local        | 1385 metres west                 |
| State Heritage Register | 131 Radar Station (former) (01815)     | State        | 2.5 km northwest                 |
| State Heritage Register | Tomago House & Tomago Chapel (00207)   | State        | 3.5 km north                     |
| Commonwealth            | Fort Wallace (105335)                  | National     | 4.5 km east                      |
| Commonwealth            | Williamstown RAAF Base Group (105639)  | National     | 12 km northeast                  |

#### 6.4.2 Potential impacts

With respect to non-Indigenous heritage, there are no Commonwealth heritage places in the project site with the closest being over 4 km east of the project site (Fort Wallace – 105335). There are no state significant or locally significant heritage items in the project site, with the closest State Heritage Register item being approximately 2.5 km northwest of the site (131 Radar Station [former] 01815) and the closest local heritage item 690 metres southwest of the site (Former Migrant Camp I-291).

#### 6.4.3 Proposed investigations and assessment

As outlined in Section 6.4.1, the preliminary desktop assessment of non-Aboriginal heritage has shown that there are no non-Aboriginal heritage items or places within the project site listed on the statutory and non-statutory heritage registers. The nearest registered non-Aboriginal heritage item were the Former migrant camp and the Remnant Garden, that are listed as having local significance and located approximately 690 metres and 750 metres respectively from the project site.

Due to the extensive ground disturbance from the former land use and remediation of the site, it is considered that non-Aboriginal heritage items are unlikely to be recovered. A desktop due diligence assessment for non-Aboriginal heritage would occur as part of the EIS.

**Figure 6-7**  
Non-Aboriginal Heritage Surrounding the Project Area



**Legend**

- Road
- - Railway
- Watercourse
- Project Site
- Disturbance Footprint
- Commonwealth Heritage Listings
- Newcastle LEP 2012
- State Heritage Listings
- State Heritage Listings (National Heritage nom)



0 1 2 Kilometers

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:50,000 Date: 28/07/2023

Data sources: - NSWSS, EPI, PON, Nearmap, Geoscience Australia

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## 6.5 Land use and property

### 6.5.1 Existing environment

The project site and surrounds are zoned SP1 Special Activities and is the former KIWEF site, that forms part of PON. The area is predominantly used for industrial and port-related activities. The project site was a former waste emplacement facility operated by BHP. The site has been capped and remediated by the NSW Government and would be returned to the management of PON during 2023.

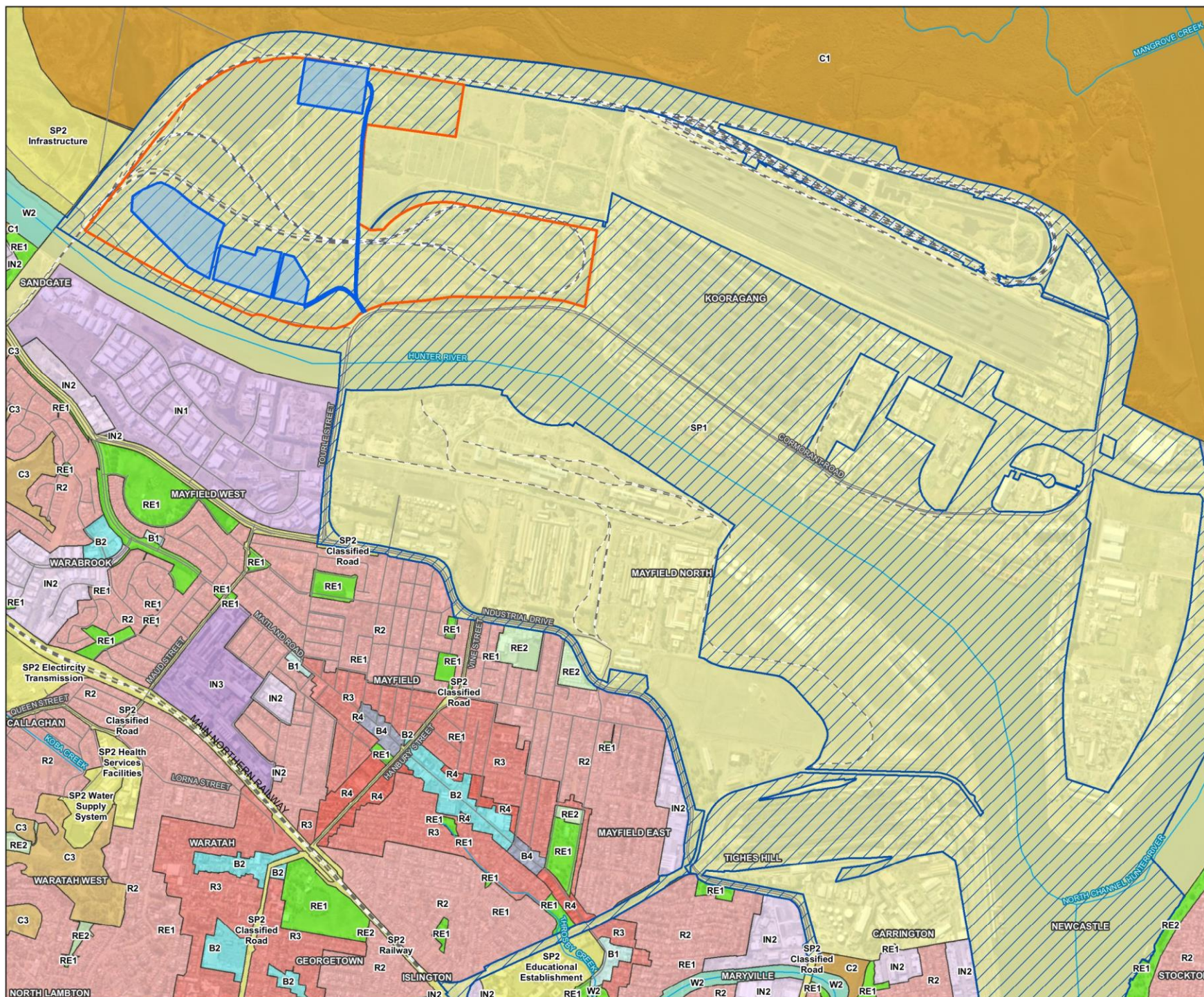
A preliminary review of the Soil and Land Capability Mapping data for the project site found that the soils on the site are not assessed. Likewise, a review of Biophysical Strategic Agricultural Land (BSAL) data showed that there are no areas of BSAL mapped within or in the vicinity of the project site.

PON currently manages the port under a 98 year lease from the NSW Government that commenced on May 2014 (PON, 2022). Crown land is mapped for the Hunter River South Channel that is directly south of the project site. Table 6.4 and Figure 6.8 outlines key land uses and land zoning within and surrounding the project study area.

Table 6.4 Key land uses within and surrounding the project study area

| Key land uses             | Relevance to project study area                                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port of Newcastle         | The project site and surrounds predominantly comprise shipping and port operations.                                                                                                                                                                                  |
| Transport infrastructure  | The project site is located on the KIWEF site at the Port of Newcastle and is accessed via Industrial Drive, Tourle Street and Cormorant Road.                                                                                                                       |
| Electrical infrastructure | The project site would be located within the Hunter Central-Coast REZ. The project would involve construction of electrical infrastructure including grid connection, transmission infrastructure and associated easements and corridors, substation and switchyard. |
| Energy generation         | The project would involve the storage of ammonia.                                                                                                                                                                                                                    |
| Protected environments    | The Hunter Wetlands National Park (Ramsar Wetlands) are located to the north of the project site. Green and Golden Bell Frog habitat is located within and surrounding the project site.                                                                             |
| Rivers and waterways      | The study area is upstream from the marine environment and is connected to the Hunter River that is mapped as KFH.                                                                                                                                                   |

Figure 6-8  
Land Zoning



### Legend

- Road
- - - Railway
- Watercourse
- Project Site
- Disturbance Footprint
- Port of Newcastle Lease Area

### Land Zoning

- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- C1 National Parks and Nature Reserves
- C2 Environmental Conservation
- C3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- IN3 Heavy Industrial
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- SP1 Special Activities
- SP2 Infrastructure
- W2 Recreational Waterways



Coordinate system: GDA 1994 MGA Zone 56



Scale ratio correct when printed at A3

1:20,000

Date: 28/07/2023

Data sources: - NSWIS, EPI, PON, Neamap, Geoscience Australia

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## 6.5.2 *Potential impacts*

### 6.5.2.1 Construction

The project has been refined through input from specialists and ongoing consultation with stakeholders. The proposed final footprint of the project would be confirmed and assessed as part of the EIS.

During construction, the project has potential for temporary land use and property impacts including:

- delays or interruptions to surrounding roads and traffic
- potential temporary lease of land for construction compounds, parking etc.
- temporary potential disruption to nearby properties
- potential amenity impacts including noise, vibration and air quality
- soil and water management, including potential disturbance of the cap.

### 6.5.2.2 Operation

Operation of the project would result in a permanent change in land use from former waste landfill/emplacement to heavy industry. The project would support storage of clean energy as ammonia.

## 6.5.3 *Proposed investigations and assessment*

A property and land use impact assessment would be undertaken for the EIS that would:

- describe the existing environment, including existing land use and zoning, land capability, Crown land presence, infrastructure easements and ownership patterns
- consider property details, including land zoning and current use
- assess potential construction and operational impacts and recommend relevant mitigation measures.

PON would continue to consult with neighbouring landowners during further planning and design development to avoid or minimise impacts on adjacent land uses and property.

---

## 6.6 Landscape character and visual amenity

### 6.6.1 *Existing environment*

The project would be developed within an existing port environment that contains port and industrial activities. Existing rail lines, local roads and port related infrastructure are located on the site. Furthermore, the site has been heavily disturbed by its former land uses. Numerous activities are located east of the project site with environmental zoned land to the north and west and residential land uses to the south across the Hunter River. However, views to the site are generally obstructed by existing vegetation.

## 6.6.2 *Potential impacts*

### 6.6.2.1 Construction

Construction of the project would temporarily alter the visual environment during various activities including earthworks, movement of plant and material and construction of buildings and infrastructure. Temporary construction buildings, stockpile and laydown and parking areas would temporarily affect the visual environment. Where practicable, construction would be staged to limit areas of exposed soil, and this would also reduce the extent of construction activity.

### 6.6.2.2 Operation

Operation of the project would have a long-term impact on the landscape character and visual amenity.

Buildings would be designed to consider the existing visual environment through both practicality as a heavy industrial activity and principles that consider the location near wetlands and Green and Golden Bell Frog habitat. Infrastructure, including electrical, water and roads, would be designed to appropriate standards with appropriate consideration of the role and function of the proposed future Clean Energy Precinct (subject to a separate development application). At this early stage of design, it is considered that the ammonia storage and electrical infrastructure would have a visual impact on the local environment.

### 6.6.3 *Proposed investigations and assessment*

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A detailed Landscape Character and Visual Impact Assessment would be prepared as part of the EIS to identify potential visibility of the project from different viewpoints along the corridor. This assessment would identify and describe potential sensitive receivers and landscape character areas and unique qualities, consider heritage and other social values, and consider the impacts on the landscape character and views during construction and operation during the day and night.

The assessment of landscape character and visual amenity impacts would include:

- prepare viewpoint inventory, assess representative viewpoints (private and public domain) including visual influence zone, impacts during the day, night, construction and operation
  - identify visual performance objectives and assessment of the project against each objective
  - assess broader landscape impacts
  - identify mitigation and management options.
- 

## 6.7 Social

This section presents a summary of the Social Impact Assessment that has been prepared for the Scoping Report (Appendix D).

The social locality is the geographical area in which direct and indirect impacts (positive and negative) are likely to occur. The social locality has been determined by considering stakeholders most likely to experience direct and indirect socio-economic impacts, and their geographic location.

The social locality considers Australian Bureau of Statistics (ABS) statistical geography boundaries, including ABS Suburbs and Localities (SALs), and Urban Centres and Localities (UCLs) that intercept and surround the project.

### 6.7.1 *Existing environment*

Several residential suburbs surround the project site including Tighes Hill, Carrington, Mayfield and Mayfield East situated approximately 1.5–2 km south of the project site across the Hunter River. The suburb of Stockton is approximately 5 km east of the project site. The social locality consists of:

- Newcastle Statistical Area Level 3 (SAL3) (referred in this report as Newcastle), which includes the following suburbs within approximately 5 km of the project site: Warabrook, Sandgate, Mayfield West, Mayfield North, Mayfield East, Mayfield, Tighes Hill, Maryville, Islington, Hamilton North, Carrington, Georgetown, Waratah, Waratah West, Callaghan and North Lambton.
- Tomago Urban Centre and Localities (UCL) (referred in this report as Tomago), which includes a section of the Hunter Wetlands to the north of the project.

#### 6.7.1.1 Demographic overview

The demographics for the sparsely populated Tomago differ greatly from Newcastle across several indicators. Given the small resident population of Tomago (269 people), the suburb represents around 0.1 per cent of the social locality's population, and consequently has minor impact on the overall demographic breakdown of the region.

The social locality has a total resident population of 179,269 people. The median weekly household income of \$1,740 is similar to the state median of \$1,746, while the unemployment rate of 4.9 per cent is slightly lower than the state rate.

Although the social locality has a relatively greater proportion of Aboriginal and Torres Strait Islander residents (4.6 per cent in Newcastle and 8.9 per cent in Tomago, as against 3.4 per cent in New South Wales), it is generally less culturally and linguistically diverse than both New South Wales and Australia. Only 12.1 per cent of households in Newcastle and 4.7 per cent in Tomago speak a language other than English at home. This contrasts with 29.5 per cent of households at state level speaking a language other than English at home. Mandarin and Macedonian are the top languages other than English spoken in Newcastle, whilst in Tomago, 1.9 per cent of households speak Thai.

#### 6.7.1.2 Education

Educational attainment in Newcastle is proportional with the attainment rates for NSW more generally and is marginally lower in relation to the proportion of people with a Bachelor degree level and above (27.7 per cent as against the state rate of 27.8 per cent), as well as for those with a Certificate Level IV and III. Tomago however has a significantly lower rate of residents with a Bachelor degree level and above, at 3.20 per cent.

#### 6.7.1.3 Health

People in the social locality suffer from higher rates of long-term health conditions than those in NSW more generally. Only 55.90 per cent of people in the Newcastle SAL and 36.10 per cent of people in Tomago report having no long-term health conditions, compared to 61 per cent across the state. Mental health conditions are particularly prevalent, with 12.4 per cent of people suffering from a mental health condition in Newcastle. In Tomago, asthma is one of the most prevalent conditions.

#### 6.7.1.4 Economy

##### *Key employment industries and occupations*

Newcastle is famous for its coal and steel industries, and PON is the largest coal exporting port in the world, exporting 159.9 million tonnes of coal in 2017 (PON, 2022).

However, the top occupations in the social locality highlight its reputation as an economy based on heavy industries including coal and steel. With the closure of the BHP steelworks in 1999, after 84 years of operation, Newcastle experienced a significant amount of economic diversification that has strengthened the local economy. Professionals make up 28.7 per cent of the workforce in Newcastle, followed by community and personal service workers at 13.4 per cent. The proportion of professionals and community service workers is higher than both the state and national rates.

Neither the coal industry nor any of the industries associated with its production and transport appear in the list of top industries for Newcastle. Tomago has a high proportion of residents (9.9 per cent) working in the road transport industry.

##### *Port of Newcastle activities*

While PON activities are not reflected in the top industries and occupations for Newcastle SA3, its operation is nevertheless integral to the economic life and future of the region. PON operates within an industrial precinct surrounded predominantly by other businesses complementary to port operations.

PON currently operates 20 berths and has total land holdings of 792 hectares, including 200 hectares of vacant Port of Newcastle land (PON, 2022). The port currently handles 4,697 ship movements and 166 million tonnes of cargo annually, and with a deep-water shipping channel operating at 50 per cent of its capacity, significant port land available and access to national rail and road infrastructure.

## 6.7.2 Potential impacts

Table 6.5 identifies the project activities that would likely result in socio-economic benefits during construction and operation, the extent of the benefit and level of assessment required.

Table 6.5 Scoping of potential social benefits

| Primary impact category | Project activity                                                 | Potential impacts on people                                                           | Who is likely to benefit                  | Phase                      | Level of assessment |
|-------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------|----------------------------|---------------------|
| Livelihoods             | Construction and operation of infrastructure and ammonia storage | Enhanced livelihoods resulting from employment opportunities                          | Newcastle and Hunter Valley workforce     | Construction and operation | Detailed            |
| Livelihoods             | Construction and operation of infrastructure and ammonia storage | Positive direct and indirect economic opportunities for local and regional businesses | Businesses in Newcastle and Hunter Valley | Construction and operation | Detailed            |

Table 6.6 identifies the project activities that would likely result in socio-economic impacts during construction and operation, their extent and level of assessment required.

Table 6.6 Scoping of potential social impacts

| Primary impact category | Project activity                                                                                                     | Potential impacts on people                                                                                              | Who is likely to benefit                                                | Phase                      | Level of assessment |
|-------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------|---------------------|
| Way of life             | Transport of workers and materials to and from the project site                                                      | Increased traffic impacting how people experience their daily routines, travel and sense of road safety                  | Commuters and other road users                                          | Construction and operation | Standard            |
| Health and wellbeing    | Storage of ammonia                                                                                                   | Anxiety and stress due to risks associated with ammonia storage, such as exposure to gas, odour and respiratory injuries | People who work and live within an exposure radius                      | Operation                  | Detailed            |
| Health and wellbeing    | Storage of ammonia                                                                                                   | Cumulative exposure risks causing hazards for workers and nearby residents                                               | People who work and live within an exposure radius                      | Operation                  | Detailed            |
| Culture                 | Construction and operation activities which occur on or close proximity to wetlands and/or impact threatened species | Diminished environmental values                                                                                          | Local residents who value the wetlands and their unique flora and fauna | Construction and operation | Detailed            |

| Primary impact category | Project activity                                                                                                     | Potential impacts on people                                               | Who is likely to benefit                                         | Phase                      | Level of assessment |
|-------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------|---------------------|
| Culture                 | Construction and operation activities which occur on or close proximity to wetlands and/or impact threatened species | Diminished Aboriginal cultural values                                     | Worimi and Awabakal Aboriginal communities                       | Construction and operation | Detailed            |
| Surroundings            | Construction and operation of infrastructure and ammonia storage                                                     | Diminished aesthetic values due to the construction of new infrastructure | Local residents and visitors within eyesight of the project      | Construction and operation | Detailed            |
| Decision Making         | Project approvals                                                                                                    | Diminished sense of control over aspects that may impact people's lives   | Local residents and Aboriginal groups within the social locality | Pre-construction           | Detailed            |

### 6.7.3 Proposed investigations and assessment

To further understand magnitude and likelihood of impacts and benefits identified in the preliminary SIA assessment, a complex Phase 2 SIA would be required in accordance with the *Social Impact Assessment Guideline* (DPE, 2023b).

The key objectives of the SIA Phase 2 report would be to:

- predict and analyse the extent and nature of likely social impacts against baseline conditions using accepted social science methods
- evaluate, draw attention to and prioritise the social impacts that are important to people
- develop appropriate and justified responses (e.g., avoidance, mitigation and enhancement measures) to social impacts, and identify and explain residual social impacts
- propose arrangements to monitor and manage residual social impacts, including unanticipated impacts, over the life of the project (DPE, 2023b).

## 6.8 Economic

### 6.8.1 Existing environment

The project site is within the Newcastle and Lake Macquarie region. The main industries of employment at the 2021 Census for the region included (ABS, 2021):

- professionals (24.9 per cent)
- technicians and trades workers (14.1 per cent)
- community and personal service workers (13.3 per cent)
- clerical and administrative workers (12.4 per cent)
- managers (11.1 per cent)
- labourers (8.6 per cent)
- sales workers (8.4 per cent)
- machinery operators and drivers (5.8 per cent).

## 6.8.2 *Potential impacts*

### 6.8.2.1 Construction

As a result of the project, PON has advised significant expenditure (approximately \$850 million capital investment value) would be spent within the local, regional and NSW economies during the construction phase of the Clean Energy Precinct (subject to a separate development application) over a relatively short period of time. The construction phase for the project would also contribute to and generate opportunities for local employment and suppliers, that would benefit the economy. PON has also advise that the project would contribute to the expected generation of over 5,261 jobs during construction of all stages of the Clean Energy Precinct (subject to a separate development application).

Substantive negative impacts to local businesses are unlikely as a result of the project, given the isolated location of the project. Availability of short-term accommodation to support the required workforce could be limited and would be considered during preparation of the EIS.

### 6.8.2.2 Operation

When fully completed, the project would facilitate a source of reliable renewable energy supply with associated economic benefits to consumers across the NEM including:

- contribute to growing clean energy demand in NSW
- reduce GHG emissions and reliance on coal powered energy
- contribute to NSW and Commonwealth renewable energy targets
- construction and operation employment opportunities in regional areas
- help achieve economies of scale for low-cost, clean and reliable electricity
- community and stakeholder engagement
- sustainable renewable energy development
- minimise potential adverse impacts on the environment
- support investment in the Hunter-Central Coast REZ.

Other economic activities close to the project, such as tourism and recreational activities, may be affected from changes to amenity, such as visual presence of energy transmission infrastructure and increase in export vessels.

## 6.8.3 *Proposed investigations and assessment*

A detailed economic impact assessment would be undertaken for the project to identify and quantify potential economic impacts of the project including:

- employment and value added to the state economy during both construction phase and on an ongoing operation basis
- spending of workers directed to local businesses
- council rates revenue
- electricity supply benefits
- environmental benefits of GHG emission reduction.

---

## 6.9 Hydrology, flooding and water quality

### 6.9.1 Existing environment

#### 6.9.1.1 Surface water, hydrology and water quality

The project study area is located within the Hunter River surface water catchment (see Figure 6.9) and the Hunter Estuary, that comprises over 100 km of waterways, including the South Arm of the Hunter River (DPE, 2022). The *Hunter unregulated and alluvial water sharing plan 2022* (draft) is in place for this catchment.

The project site is bounded by the Hunter River South Channel (to the south), coastal wetlands (to the north) and Ramsar wetlands (to the north and west), as shown in Figure 6.9. Although adjacent to the Hunter River, the project site does not intersect the river. There is one lake in the western edge of the project site (see Figure 6.9).

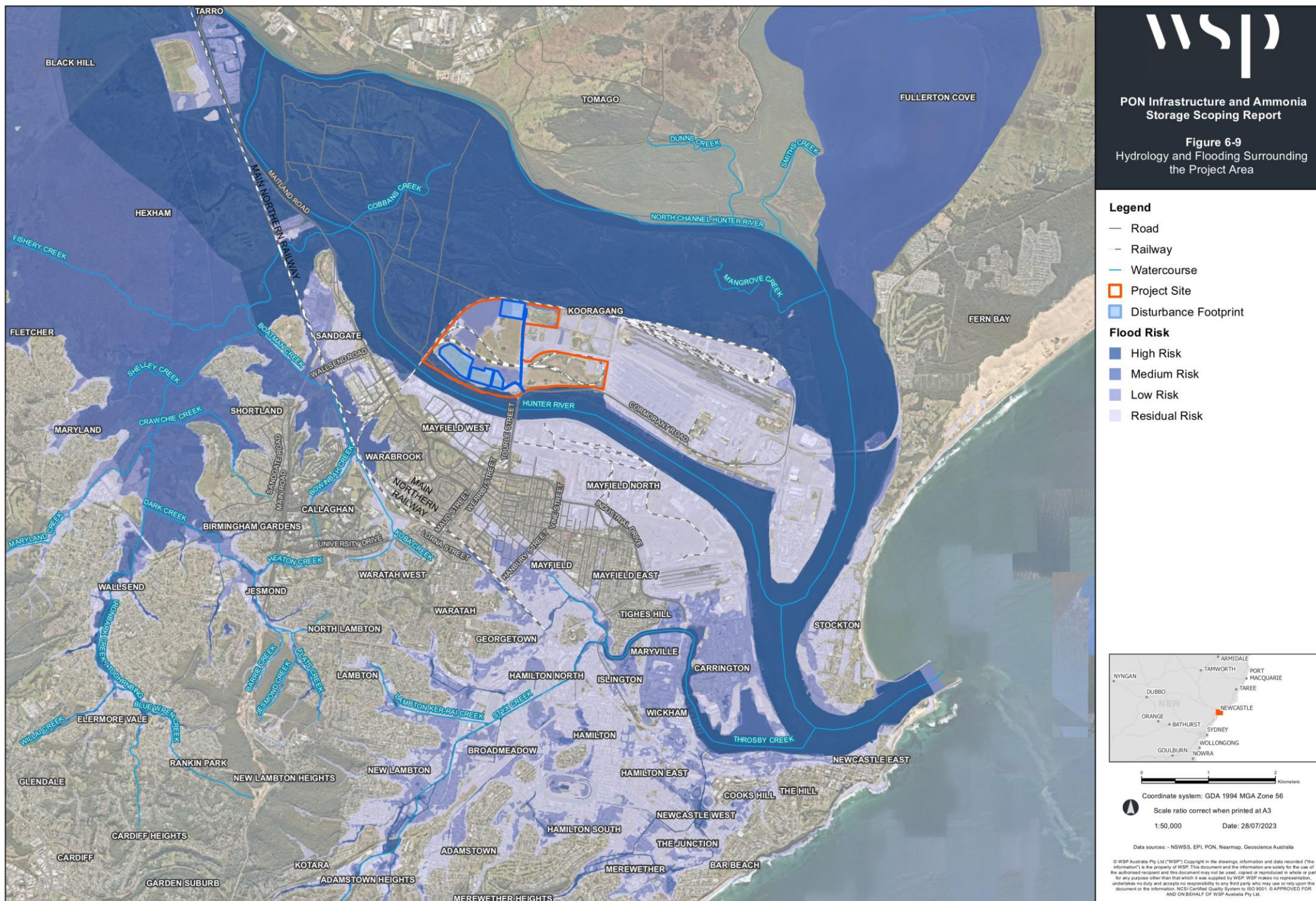
Existing water quality within the project site is expected to be influenced by surrounding land uses, such as existing port operations that may have resulted in increased pollutants (from coal exports) and sedimentation within nearby waterways. The Hunter Estuary has been substantially modified by industrial activity and land use changes with resulting impacts on water quality and habitat integrity.

As discussed in Section 6.2.1.5, KFH is present near the project site.

#### 6.9.1.2 Flooding

Flood risk mapping was provided by the NSW ePlanning Spatial Viewer. A small portion of the project site adjacent to the Hunter River is mapped as high flood risk (DPE, 2023c).

**Figure 6-9**  
Hydrology and Flooding Surrounding  
the Project Area



## 6.9.2 *Potential impacts*

### 6.9.2.1 Construction

There is potential for erosion and sedimentation resulting from construction works such as earthworks and excavations for foundations, road infrastructure and stormwater drainage.

Potential impacts on water quality could occur during construction due to:

- sedimentation of soil material eroded during ground disturbance, vegetation removal and storm events
- leaks and spills of fuels, chemicals or wastewater impacting surface water or groundwater quality
- changes to surface water flow patterns due to the location of earthworks, flow diversions, bunding, material stockpiles and temporary drainage infrastructure
- temporary dewatering of excavations.

Sedimentation, if uncontrolled, would have potential to increase turbidity and result in a decline in water quality of the Hunter River and adjoining wetlands. If not managed appropriately, introduction of pollutants during leaks and spills could result in changes to the pH, electrical conductivity, dissolved oxygen and temperature of water; reduced light penetration due to increased turbidity; increased sediment load, organic matter and turbidity of water, increase in gross pollutants and introduction of toxic pollutants such as construction fuels, oils and grease and chemicals.

### 6.9.2.2 Operation

Potential impacts related to surface water and hydrology during operation are most likely to be associated with:

- changes to local hydrology, including the quality, quantity and patterns of surface water runoff and drainage, associated with an increase in non-permeable surfaces due to site establishment works
- transport and deposition of sediment from ground disturbance as well as vehicle and equipment movements during maintenance activities
- potential accidental loss of ammonia during storage and transfer
- potential leaks and spills of chemicals and fuels during maintenance activities or as result of fire water overflowing from substation bunds during an emergency.

Potential impacts on flooding relate to structures and infrastructure creating obstructions and changes to natural surface water flows.

There is potential for ammonia contamination into surrounding waterways if not managed appropriately. In 2000, the Australian and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand established trigger levels of 320-500 micrograms of ammonia per litre of water (DCCEEW, 2023a).

## 6.9.3 *Proposed investigations and assessment*

A detailed hydrology, flooding and water quality assessment would be included in the EIS. The assessment would address potential impacts, including:

- alignment of the proposed ammonia pipeline would consider flooding
- impacts on quantity and quality of surface water resources and flooding
- water demand, water sources and any required licensing requirements
- impacts on waterfront land where the project infrastructure is located within 40 metres of the Hunter River or wetlands
- erosion and sedimentation risks and management measures during construction and operation.

---

## 6.10 Groundwater

### 6.10.1 *Existing environment*

The project study area is within the Hawkesbury to Hunter Coastal Sands groundwater source. Historically, groundwater at the project site has been very poor as a result of contamination from industrial activity.

The 2012 Douglas Partners *Report on Contamination Assessment* provides a conceptual cross section through the waste emplacement facility that appears to be generally consistent with the description in a 2006 RCA risk assessment (GHD, 2009) that reported a clay aquitard is present in parts of the site and provides some separation of the fill and underlying estuarine aquifer.

Groundwater at Kooragang Island is generally present within three aquifers (GHD, 2017):

- fill aquifer
- shallow estuarine aquifer
- deep estuarine aquifer.

Groundwater within the fill and shallow estuarine aquifers is expected to flow towards the Hunter River and surrounding wetlands. Groundwater flow within the deep estuarine aquifer is towards the ocean. Hydraulic connections have been noted between the fill aquifer and the underlying estuarine aquifer.

Groundwater was encountered during previous investigations (GHD, 2017) at depths between 0.8 and 1.9 metres below ground level (mbgl).

### 6.10.2 *Potential impacts*

#### 6.10.2.1 Construction

Potential impacts during construction of the project related to groundwater include:

- groundwater levels, flows and connectivity: these include changes to groundwater connectivity, groundwater flow direction, groundwater levels and recharge rates. During excavations for the project, groundwater could be intercepted, and temporary minor dewatering may be required. The preliminary desktop review of groundwater depths of the project study area indicates that foundation excavations may intercept groundwater
- groundwater chemistry: these include pollution of groundwater and changes to groundwater quality. There is some potential for spills or leaks to allow oil and grease contamination to enter shallow aquifers
- groundwater users: interference to aquifers resulting in a decrease or change in groundwater levels that subsequently affect groundwater users and/or groundwater dependent ecosystems and riparian areas.

#### 6.10.2.2 Operation

The project is not expected to interact with groundwater during operation. As such, there are no expected material impacts on groundwater levels, flow or connectivity. Installation of impervious surfaces would result in minor reduced local recharge of groundwater at these locations, as precipitation that would normally fall on the recharge surface would be drained away. However, impacts are expected to be minimal as the surface water runoff is expected to infiltrate into the regional groundwater system regardless of the increased impervious area.

Potential impacts during operation of the project could relate to accidental spills in the workshop or warehouse, loss of oils and coolant from the substation and loss of ammonia. This could result in impacts to groundwater and as a consequence impact to local surface water and land.

Changes to groundwater may occur if groundwater is extracted during construction. Extraction of groundwater has potential to impact levels in adjacent wetlands; however, this would be a short-term impact and considered in the biodiversity investigation for the EIS.

### 6.10.3 Proposed investigations and assessment

A detailed groundwater assessment would be included in the EIS. The assessment would involve a desktop review of existing and available geological and hydrogeological information and features, including groundwater levels, hydraulic conductivity, groundwater flow directions, groundwater quality, groundwater dependent ecosystems (GDE's), and registered groundwater bores. The review would include geological maps, the Bureau of Meteorology (BOM) Australian Groundwater Explorer, the BOM GDE Atlas, and data/reports from studies in the study area.

The assessment would identify potential risks to groundwater, GDE's and other groundwater users during construction and operation of the project as well as preliminary potential groundwater risks resulting from the project. Avoidance, mitigation and management measures would be identified to minimise potential inflows and their impacts to the groundwater regime and users.

---

## 6.11 Hazard and risk

This section provides a preliminary hazard and risk analysis from a review against the Resilience and Hazards SEPP and to establish the context for future studies that would be required to demonstrate that offsite risk is reduced to a tolerable level to permit development.

To determine whether a development is considered potentially hazardous, the first step in the process is to compile the complete inventory of hazardous goods that are expected to be present on site, including transport activities. This includes the chemical name, Dangerous Goods class, and maximum expected quantity. After compiling the complete list of hazardous goods, the stored quantities/transport quantities are assessed against threshold quantities.

The screening method used to determine whether a development is potentially hazardous is dependent on the class of DG being assessed. Tables and figures provided in *Applying SEPP 33* (Department of Planning, 2011) have been reviewed for the respective screening method for each dangerous good. Ammonia, which is a class 2.3 (subsidiary class 8) dangerous good, has a screening quantity of 5 tonnes.

### 6.11.1 Existing environment

There is currently no ammonia storage or production at the project site. The site is relatively flat, with existing uses of the site and surrounds being predominantly industrial, shipping and port operations.

### 6.11.2 Potential impacts

#### 6.11.2.1 Preliminary screening

For the project, ammonia has been identified as a potentially hazardous material. Its relevant Dangerous Goods Classes, SEPP 33 screening method and threshold quantities have been summarised in Table 6.7 for materials stored on site, and Table 6.8 for transport screening.

Table 6.7 Screening thresholds per Applying SEPP 33 for Hazardous Materials that are expected/may be expected to be present at the facility

| Hazardous material  | UN No | DG class (subsidiary class) | SEPP 33 screening method | SEPP 33 screening threshold quantity | Proposed quantity |
|---------------------|-------|-----------------------------|--------------------------|--------------------------------------|-------------------|
| Ammonia (Anhydrous) | 1005  | 2.3 (8)                     | Table                    | 5 tonnes                             | 30,000 tonnes     |

Table 6.8 Screening Thresholds per *Applying SEPP 33* for Hazardous Materials that are expected/may be expected to be transported to/from the facility

| Hazardous material class | Vehicle movements |             | Minimum quantity per load (tonne) |          |
|--------------------------|-------------------|-------------|-----------------------------------|----------|
|                          | Cumulative annual | Peak weekly | Bulk                              | Packages |
| 2.3                      | >100              | >6          | 1                                 | 2        |
| 8                        | >500              | >30         | 2                                 | 5        |

The proposed facility exceeds the screening threshold for storage and is therefore classed as potentially hazardous, therefore a PHA would be required to be completed for the facility. At present, it is assumed that there would not be transport of ammonia to/from the facility via vehicles, therefore transport effects are excluded from the initial screening process.

Further design refinements may involve shipping of ammonia by export, and the PHA during the EIS would assess transport of materials once further information is available.

### 6.11.3 Potential impacts

#### 6.11.3.1 Major hazard facility considerations

Any facility that has certain chemicals in excess of the threshold quantity as per Schedule 15 of Work Health and Safety Regulation 2017 (WHS Regulations) is a major hazard facility (MHF).

##### *Chemical threshold assessment*

The MHF determination process requires an assessment of the total quantity of hazardous chemicals stored on the site against the Schedule 15 chemicals threshold value from WHS Regulation. The results of the assessment for the proposed facility are shown in Table 6.9.

Table 6.9 MHF Screening Thresholds per WHS Regulation for Hazardous Materials that are expected/may be expected to be present at the facility

| Hazardous chemical | UN numbers | Threshold quantity (tonnes) | 10% threshold (tonnes) | Proposed quantities (tonnes) | Notifiable? | In excess of threshold? |
|--------------------|------------|-----------------------------|------------------------|------------------------------|-------------|-------------------------|
| Ammonia            | 1005       | 200                         | 20                     | 30,000                       | Yes         | Yes                     |

The proposed storage volume of ammonia exceeds the threshold quantity in Schedule 15 chemicals of SafeWork Australia WHS Regulation (200 tonnes). Therefore, the facility would be classified as a MHF. A notification would be required to NSW SafeWork.

#### 6.11.3.2 Bushfire risk

The project site is not mapped as bushfire prone land (DPE, 2023c). The closest bushfire prone land is approximately 2 km east of the site, and 2 km west of the site. However, this is mapped as vegetation category 3 – medium bushfire risk, therefore, bushfire risk across the project site would be minimal.

Subsurface and near surface coal waste fires were triggered by bushfires in January 2019 within the project site. The fires were extinguished by flooding cells with water pumped from the Hunter River. While remediation of the area has been carried out since 2019, further reducing the risk of subsurface fires through the capping and containment of the combustible materials, in dry and hot conditions with nearby brush fires, therefore remains a risk. This would be further evaluated during the EIS and would be assessed as part of the project specific risk assessment.

#### 6.11.4 Proposed investigations and assessment

Risk prioritisation described in *Multi-level risk assessment* (Department of Planning and Infrastructure, 2011) has been applied to determine the level of risk assessment that would be required as part of PHA to support the development application. Preliminary indication from this prioritisation process indicates that a Level 2 semi-quantitative risk assessment would be required for the project to demonstrate that offsite risk has been reduced to a tolerable level. It is understood that PON are revising the Land Use Safety Study (LUSS) for the port. Results of future risk assessment and the PHA would need to be incorporated into the LUSS to determine cumulative level of risk from the entire port (including current and proposed future port operations).

Additionally, consideration must be made for the presence of other MHFs currently in the area or proposed, as there may be cumulative impacts from offsite events.

## 6.12 Traffic and access

### 6.12.1 Existing environment

The road network within the project study area includes several secondary roads used for operations of PON, including (see Figure 3.4):

- Cormorant Road (B63), a two-lane dual-carriageway running along the southern bank of PON, connecting Kooragang to the suburbs of Mayfield West and Stockton
- Southbank Road, an unsealed road connecting Cormorant Road to Ramsar Road on the southern boundary of the site
- Delta Road, a two-lane single-carriageway providing internal access to the project site from Cormorant Road.

Two main intersections in the area surrounding the project site are the Industrial Drive/George Street intersection and the Industrial Drive/Ingall Street intersection. Main road access to the proposal site is from Tourle Street, Delta Road and Minyan Way, all via Industrial Drive, that joins the Pacific Highway and New England Highway to the northwest. Industrial Drive is managed by Transport for NSW while Tourle Street and Delta Road and Minyan Way are managed by City of Newcastle.

The strategic routes and their key features are summarised below in Table 6.10.

Table 6.10 Strategic routes

|                       | <b>Pacific Highway (North)</b>                                                                                                         | <b>Pacific Highway (South)</b>                                                                                    | <b>Hunter Expressway</b>                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Road standard         | Primary route for trucks travelling to northern NSW                                                                                    | Primary route for trucks travelling to southern NSW, Sydney and the Central Coast                                 | Primary route for trucks travelling to north-western NSW and western NSW      |
| Function              | High standard highway with two lanes per direction in a separated carriageway                                                          | High standard highway with two lanes per direction in a separated carriageway                                     | High standard highway with two lanes per direction in a separated carriageway |
| Intersection controls | A number of signalised and priority-controlled intersections to Heatherbrae roundabout and grade-separated interchanges north of there | Grade-separated interchanges                                                                                      | Grade-separated interchanges                                                  |
| Posted speed          | 80 km/h between Industrial Drive and the Heatherbrae roundabout then 100 km/h                                                          | 80 km/h for approximately 1 km after John Renshaw Drive/Pacific Motorway intersection then increasing to 110 km/h | 110 km/h                                                                      |

#### 6.12.1.1 Rail network

Rail infrastructure is available to service the project site (Figure 3.4). PON is currently serviced by North South Rail Corridor (called Main North between Sydney and Newcastle) and Hunter Valley rail Network.

#### 6.12.1.2 Shipping

The project site is accessible to cargo ships via the shipping channel in the South Arm of the Hunter River.

#### 6.12.1.3 Airports

The project site is located about 11.5 km southwest of Newcastle Airport. Consideration of potential aviation safety impacts and potential impacts on navigation instruments would be assessed in the EIS.

### 6.12.2 Potential impacts

#### *Construction*

Construction traffic associated with the project would include heavy and light vehicles related to:

- delivery of construction equipment and materials such as concrete, wires, cables and gravel
- delivery of construction equipment as well as the delivery of large equipment to be installed at the substation, buildings and storage tanks, etc.
- movement and/or removal of excavated soil and waste materials
- construction workers driving to and from the construction site
- delivery of construction equipment associated with water infrastructure.

Construction traffic is likely to use the surrounding major road network that is approved for use by heavy vehicles for transportation of key elements of construction plant and equipment and bulk material haulage. Light vehicles would typically be used to transport construction workers.

Some construction equipment and materials may be transported to the project site by shipping, railways or airports. This may be required for transportation of prefabricated items or materials that are not readily available locally within NSW.

Volumes of heavy and light vehicles generated during construction of the project may result in a noticeable increase in traffic using the surrounding road network, particularly along local roads where existing traffic volumes are typically lower. Estimates of truck and vehicle movements would depend on the adopted construction methodology and staging plans and would be described in the EIS.

There may be some temporary disruptions to traffic movements along roads within PON during construction.

Construction may require temporary traffic management or lane closures for safety; however, this would be scheduled to minimise impacts during peak traffic periods. Any impacts associated with this are expected to be short in duration and unlikely to cause considerable disruptions to road or rail users.

Existing internal roads would provide access for provision of material, plant and equipment.

#### *Operation*

During operation of the project, traffic and transport impacts are expected to be minimal and would typically be limited to vehicle travel by staff on internal access roads and the surrounding road network. There would be potential increases in both rail and shipping operations once the Clean Energy Precinct (subject to a separate development application) is fully constructed and operational; however, these impacts would be assessed as part of future applications.

### 6.12.3 *Proposed investigations and assessment*

Construction and operational traffic and transport impacts would be assessed in the EIS by reviewing expected construction and operation activities, generated traffic volumes, haulage routes and distribution of construction traffic and impact of activities on road network performance, road access and safety, public and active transport.

The existing road network would be characterised, including the existing road widths and condition of the road surface, existing road capacity, daily and peak traffic volumes including consideration of peak holiday traffic and proportion of light and heavy vehicles. Current performance of key intersections would be reviewed on designated construction access routes along with accident history and safety requirements.

The assessment would consider requirements for maintaining access to properties, roads and active and passive recreation areas near the project site. Site access management strategies to minimise conflict and improve safety would be developed, along with management and mitigation measures to reduce impact of traffic during construction and operation.

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## 6.13 Noise and vibration

This section provides a summary of the preliminary noise impact assessment that has been prepared for the Scoping Report (see Appendix C).

### 6.13.1 *Existing environment*

#### 6.13.1.1 Local noise sensitive receivers

The project site is adjoined by multiple heavy industrial land uses and large areas of unused land that acts as a buffer zone to any nearby noise sensitive receivers. The site has been described through definition of Noise Catchment Areas (NCA) that are used to classify areas that are likely to have a similar existing noise environment and experience similar noise impacts from the project.

#### 6.13.1.2 Existing noise environment

The project site is generally surrounded by a highly urban and industrialised environment, influenced primarily by noise from road and rail traffic, and industrial sources, in addition to operations within the existing port and harbour areas.

#### 6.13.1.3 Existing vibration environment

Ground vibration impacts are generally limited to a small area surrounding the vibration source and rarely extend beyond approximately 100 metres. Existing ground vibration sources within the study area would include industrial activities and heavy vehicle movements on local roads, in addition to construction activities at development sites.

Ground vibration associated with road traffic is generally low, and large separation distances between the project site and residential receivers mean that the risk of existing vibration impacts at sensitive receivers is considered extremely low. The primary routes for heavy vehicles to access the site are existing designated heavy vehicle routes and as such project traffic is not expected to impact the existing vibration environment.

Vibration sensitive developments, such as micro-electronics, medical and imaging laboratories have not been identified within the project site.

Major, critical infrastructure exists within, and adjacent to the site, such as coal loading facilities, and gas pipelines. These items are not considered to be highly vibration sensitive.

Given the large separation distances to any vibration sensitive receivers, no vibration impacts are considered likely to be associated with the project and ground vibration has not been discussed further in this document (see Appendix C).

#### 6.13.1.4 Meteorological influences

Meteorological conditions can influence or reduce transmission of noise. In particular, weather conditions including atmospheric temperature inversions and wind conditions can have a substantial impact on noise levels. These impacts are most noticeable at distances of more than 500 metres.

Typical meteorological conditions in the area are summarised below.

##### *Local meteorological conditions*

Local wind patterns have been obtained from the BOM weather station at Williamstown (station number 061078), that is considered indicative of weather conditions at the site.

Inversion conditions are unlikely to form a part of the meteorological environment at the site. Wind directions are predominately from the west and northwest throughout much of the year. Seasonal wind patterns are described in Table 2.3 of Appendix C.

##### *Meteorological noise impacts*

Given the typical strength and varying direction of wind at the site, and absence of temperature inversions, weather conditions are not considered to generally impact the transmission of noise from this site.

#### 6.13.2 Potential impacts

##### *Construction*

The following discussion of predicted noise levels is based on predicted noise contours contained in Appendix C that have been assessed against the estimated construction Noise Management Levels (NML) presented in Section 3.1 of Appendix C.

##### *Construction Stage 1 – Site establishment*

Noise during the site establishment stage of construction is predicted to comply with NMLs at all noise sensitive locations. Noise impacts of at least 45 dBA are predicted to be reached as far as Maitland Road and industrial buildings along the Southern bank of the South Channel Hunter River are predicted to receive noise levels of up to 55 to 60 dBA, that does not exceed amenity criteria for Industrial premises.

##### *Construction Stage 2 – Vegetation removal*

Noise during vegetation removal stage of the construction works is predicted to comply with NMLs at all noise sensitive locations. Residential properties in Sandgate (NCA 4), Warabrook (NCA 5) and Mayfield West (NCA 3) are predicted to experience noise impacts from vegetation removal works of up to 50 to 55 dBA. Noise levels are predicted to be highest around Mayfield West Industrial estate, where noise levels may reach 55 to 60 dBA.

##### *Construction Stage 3 – Earthworks*

Noise during the earthworks stage of construction is predicted to comply with NMLs at all noise sensitive locations. Residential properties in Sandgate (NCA 4), Warabrook (NCA 5) and Mayfield West (NCA 3) are predicted to experience noise impacts from earthworks of up to 50 to 55 dBA. Noise levels are predicted to be highest around Mayfield West Industrial estate, where noise levels may reach 55 to 60 dBA.

##### *Construction Stage 4 – Paving activities*

Construction noise during paving activities may approach NMLs at the eastern most properties within Warabrook; however, in consideration of existing road traffic noise levels at these sites, NMLs are unlikely to be exceeded. Noise during this construction phase is predicted to comply with NMLs at all other locations.

#### *Construction Stage 5 – Concrete works*

Construction noise during concreting works activities may approach NMLs at the eastern most properties within Warabrook; however, in consideration of existing road traffic noise levels at these sites, NMLs are unlikely to be exceeded. Noise during this construction phase is predicted to comply with NMLs at all other locations.

#### *Construction Stage 6 – Construction works*

Noise during the construction stage is predicted to comply with NMLs at all noise sensitive locations.

#### *Construction Stage 7 – Site compound*

Noise from the construction of the site compound is predicted to comply with NMLs at all noise sensitive locations.

#### *Operation*

No operational noise impacts have been predicted during day or night-time operation. Operation of the circuit breaker is not anticipated to result in any sleep disturbance impacts.

### **6.13.3 Proposed investigations and assessment**

The noise and vibration assessment considered indicative background noise levels and noise criteria for the region surrounding the project.

Due to the large separation distances between the site and the nearest vibration sensitive receivers, vibration impacts during construction and operation of the project are considered highly unlikely. Due to existing high traffic volumes, including heavy vehicles on the surrounding road network, road traffic noise impacts during construction and operation of the project are considered highly unlikely.

Preliminary assessment of potential construction noise impacts found that noise levels are likely to comply with NMLs during all work stages and during operation at all surrounding noise sensitive receivers.

A detailed construction and operational noise and vibration assessment would be included in the EIS. Background noise level monitoring would also be conducted as part of the EIS process.

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## **6.14 Soils, topography and contamination**

### **6.14.1 Site history and filling operations**

Review of preliminary background reporting (GHD, 2017) indicates that Kooragang Island originally comprised of around 10 individual islands and mudflats separated by narrow intertidal river channels and covered in swampy intertidal habitats. The larger islands were composed of floodplain woodland and littoral rainforest, later cleared for agricultural applications in the 1880s. From the 1800s until the mid-1900s, the larger islands were utilised for grazing and dairy farming. In the late 1850s, reclamation of channels between the islands began, and continued until the 1930s, when the islands became amalgamated into a landmass similar to the present Kooragang Island west. The land was reclaimed using material from the dredging of Newcastle Harbour in the late 1880s.

It is understood that most cells/ponds across the precinct do not comprise engineered landfill liners or leachate collection systems. Various types of wastes were landfilled including inert solids such as coal washery rejects, general refuse, building and demolition wastes, concrete and refractory brick dust generated during crushing and more hazardous substances such as various forms of slag, ash residues and coke ovens gas main residue, asbestos, leaded dust, hydrocarbons, waste oils and semi-liquid tarry wastes, basic oxygen slag (BOS) flue dust and lime sludges. A number of areas are known to have been used for the controlled disposal of particular hazardous wastes including tar/oil/sludges, asbestos waste and BOS Flue Dust. Despite controlled filling, uncertainties do exist about where and at what depths certain wastes have been landfilled.

Filling of the site ended in late 1999 when KIWEF ceased operation at the time of closure of the BHP Newcastle Steelworks. The state government became owner and licence holder (EPL 6437) for KIWEF in 2001. The management of the site was then passed to Regional Land Management Corporation in 2002 and later to Hunter Development Corporation in 2008.

### 6.14.2 Existing environment

#### 6.14.2.1 Soils

A search of the Australian Soil Classification (ASC) Soil Type Map of NSW on 10 March 2023 identified two soil classifications within the project site that are consistent with the common soils of the landscape:

- hydrosols – commonly referred to as “wet soils”
- not assessed – soils that have not been assessed with a soil classification.

#### 6.14.2.2 Remediation works

It is understood that HCCDC have completed the closure of the KIWEF site landfill in accordance with the Surrender Notice and are in the process of handing control over to PON.

Capping operations commenced circa 2001 with key stages outlined below:

- partial capping of Pond 5 (central eastern portion of KNWPON1) completed circa 2001
- partial capping of the BOS Flue Dust area (southeastern corner of KSEPON1) completed circa 2009
- substantial ground improvement works were completed circa 2010 to support construction of the NCIG rail loop and fly over (the rail loop sits outside of the specified investigation boundaries)
- HCCDC commissioned various contractors and consultants to undertake staged capping of various areas (Area 1, 2 and 3) of the KIWEF site over an extended period
- it is understood, based on information provided by PON (HCCDC, 2022) that remediation works for the Eastern Ponds area are nearing final stages of completion
- the eastern portion of the K2 area, known as Kooragang Island Emplacement Cell (eastern portion of KSWPON1 with additional areas appearing to extend beyond the specified investigation boundaries) was used by BHP Billiton for disposal of cement stabilised contaminated sediments dredged as part of the Hunter River Remediation Project. It is understood that capping works were completed in 2012 with the site scheduled for handover to PON at a future date.

The capping works carried out by HCCDC at the KIWEF landfill site have been developed and implemented for the purpose of closing the landfill site. It is expected that future remediation and capping works to the site would be required in order to accommodate the project.

Significantly contaminated materials encountered during remediation works were processed according to a materials management plan (RCA, 2012). It is understood that a thinner and more variable interim capping layer may be present across much of the remainder of the site (outside of the capped audited areas) where there exists potential for significantly contaminated materials to be encountered during shallow excavations.

#### 6.14.2.3 Contamination risk

Based on the review of available information (GHD, 2009 and Douglas Partners, 2012) the key contaminants of concern at the site are understood to be generally associated with wastes placed as fill materials across the various sites, and may include:

- pH
- asbestos
- various heavy metals (aluminium, cadmium, copper, iron, manganese, mercury, molybdenum, nickel, zinc)
- ammonia
- cyanide
- sulfur
- potassium
- hydrocarbons (volatile to heavy end)
- benzene, toluene, ethylbenzene and xylene
- polycyclic aromatic hydrocarbons
- phenols.

Contamination across the site has generally been identified as being a low to moderate risk to human health or environment; however, a number of areas were identified as containing significantly contaminated material that may pose a higher level of risk to human health or the environment (GHD, 2009).

#### 6.14.3 Potential impacts

It is understood that HCCDC are currently working with the EPA on developing a plan of management for the site. This plan of management would address the ongoing management and monitoring for the existing (undeveloped) site. PON would develop its own plan of management in consultation with NSW Treasury (Landowner) and EPA to take into account development of the project. PON's plan of management would be developed in accordance with the requirements of the Remediation Deed, the Surrender Notice and any future environmental licencing requirements..

##### *Construction*

Construction works within capped areas should be undertaken to avoid disturbance of capping integrity. Where works are required to penetrate cap, stringent controls would be required to:

- manage human health and environmental impacts from exposure to underlying contaminated materials
- reinstate capping materials and validate.

Construction works within uncapped areas would likely require significant remediation works and associated management. Additionally, capping of un-remediated areas may involve disturbance of established Green and Golden Bell Frog habitat.

Interaction with underlying impacted materials would need to be managed under a materials management plan that would include consideration of worker health and safety controls, high level and detailed material characterisation, material tracking, waste classification, stockpile management and validation.

Additionally, there is potential for construction phase activities to alter or exacerbate surface water and/or groundwater risks that may impact sensitive on-site and off-site receptors.

##### *Operation*

During operation, the project is not anticipated to have a substantial impact on contamination risks under normal operation. Risks related to leaks and spills would be minimised through adoption of best practice design principals and suitable operation environmental management plan(s) developed in accordance with the PON's plan of management for the site. All maintenance works would need to be managed in accordance with construction phase controls outlined above as well as PON's plan of management and any future environmental licencing requirements.

#### 6.14.4 *Proposed investigations and assessment*

Consultation is required with all stakeholders for proposed investigations and assessment, particularly the Site Auditor.

Prior to further intrusive investigation, a preliminary site investigation would be prepared that includes tabulation of all available historic data for assessment against current applicable screening criteria indicative of potential human health and environmental risk. The preliminary site investigation would inform a data gap assessment and subsequently preparation of a sampling, analysis and quality plan.

A detailed site investigation would likely include extensive intrusive investigations to assess soil, groundwater, surface water and soil vapour risk from potential impacts of all the construction and operational activities associated with the project. Pending outcomes of a detailed site investigation, available pathway for remediation of uncapped areas, a remediation action plan and subsequent validation works (likely requiring a Site Audit Statement) would be assessed.

Further, detailed geotechnical investigations would also need to be carried out to inform the design of the project.

All works to be undertaken in general accordance with guidelines published or approved by the EPA under Section 105 of the CLM Act and any other relevant guidelines.

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## 6.15 Air quality and greenhouse gases

### 6.15.1 *Existing environment*

Ambient air quality within the project site would be affected by a number of factors including topography, prevailing meteorological conditions and local and regional sources of potential air pollution. Primary industrial sources of air emissions include the OneSteel and Smorgen facility at Mayfield, Orica and Incitec plants on Kooragang Island and the Tomago Aluminium smelter to the north, emissions from coal and grain and three fuel storage facilities in Newcastle, as well as Stolthaven bulk liquids Mayfield No. 7 berth.

The Newcastle Local Air Quality Monitoring Network is a network of three monitoring stations located at Stockton, Carrington and Mayfield that monitors the impacts of industrial activity in and around the Port of Newcastle (EPA, 2023). The stations continuously monitor levels of:

- sulfur dioxide
- oxides of nitrogen
- particulate matter smaller than 10 micrometres in diameter (PM<sub>10</sub>)
- particulate matter smaller than 2.5 micrometres in diameter (PM<sub>2.5</sub>).

The Lower Hunter map for air quality at the Mayfield station (approximately 1 km south of the project site) on 10 March 2023 showed PM<sub>10</sub> was fair, and all other levels listed above were good (DCCEEW, 2023b). The overall current air quality in Newcastle on 10 March 2023 was good, based on the PM<sub>2.5</sub>, PM<sub>10</sub>, ozone, carbon monoxide, nitrogen dioxide and sulfur dioxide at Newcastle monitoring stations in the Lower Hunter Region (DCCEEW, 2023b).

Other air pollution sources within the area would include vehicle and dust emissions from roads and agricultural activities.

### 6.15.2 Potential impacts

#### Construction

During construction, local air quality within the project site may be temporarily affected by particulate (dust) and GHG emissions from activities such as:

- earthworks
- stockpile management
- access track and/or road construction (if required)
- construction of water infrastructure, pavements and buildings
- use of vehicles, plant and equipment
- increases in road, rail and shipping movements.

The main sensitive receivers for air quality impacts during construction would be workers at the port and nearby residents in surrounding suburbs such as Stockton and Mayfield. Air quality impacts from construction are expected to be short-term and minor due to the existing industrial operations in the area.

Gaseous emissions associated with combustion of fuel and combustion-related pollutants from construction plant and machinery would be manageable through maintenance and correct operation of equipment. GHG emissions are likely to be generated due to combustion of fuel for transport, consumption of electricity and waste. Use of construction equipment and manufacture of materials for use in the project would also consume resources associated with GHG emissions.

#### Operation

During operation, the project is not anticipated to significantly impact local air quality or GHG emissions. A minor amount of GHGs would be anticipated due to operation of machinery; however, these impacts are anticipated to be minimal. Operational air quality and GHG impacts would be manageable through the application of standard environmental management measures.

#### Ammonia

The National Pollutant Inventory (NPI) holds data for all sources of ammonia emissions in Australia. Human exposure to typical environmental concentrations of ammonia would not affect humans. Exposure to high levels of ammonia can cause irritation and serious burns on the skin and mouth, throat, lungs and eyes (DCCEEW, 2023c). Exposure to higher levels of ammonia could result from inhaling fumes, splashing onto the skin, consuming ammonia, or by leaks and spills at production plants and storage facilities, tank trucks, rail cars, and ships and vehicles that transport ammonia.

Safe Work Australia sets the workplace exposure standard for ammonia through the workplace exposure standards for airborne contaminants:

- maximum eight hour time weighted average: 25 parts per million (17 mg/m<sup>3</sup>)
- maximum short term exposure limit: 35 parts per million (24 mg/m<sup>3</sup>).

### 6.15.3 Proposed investigations and assessment

An Air Quality and Odour assessment would be included in the EIS. Air quality impacts associated with dust and emissions generated by construction activities would be assessed qualitatively based on the *Approved methods for the sampling and analysis of air quality pollutants in NSW* (EPA, 2022), relevant guidelines and the POEO Act.

The assessment would consider risk of dust and GHG emissions from construction and operation activities based on the scale and nature of the works and sensitivity of the area. Data requirements would include areas of soil disturbance, materials and equipment, vehicle movements, scheduling and likely location or distance to receivers of emission sources such as substations, laydown and stockpile areas and concrete batching plants. Site-specific mitigation measures would be identified to manage and minimise adverse impacts in the EIS.

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## 6.16 Waste management and resource use

### 6.16.1 Existing environment

Port-related activities currently generate a range of wastes. Likely and expected waste streams for current activities at the port include putrescible and non-putrescible solid waste and municipal waste. PON is currently utilised for activities such as a General Cargo Handling Facility that generates industrial waste. Small volumes of general waste are currently generated from administration and other activities within the demountable buildings as well as maintenance activities across the site (PON, 2022).

Waste management and waste transfer facilities within and near the project site include the Summerhill Waste Management Centre and Solo Resource Recovery Centre.

### 6.16.2 Potential impacts

Construction of the project would result in a range of typical waste materials including:

- vegetation waste from clearing for enablement works and hardstand areas for installation and maintenance of future clean energy projects and internal access roads
- spoil from excavations
- surplus construction materials such as steel, concrete, construction off-cuts and packaging
- general domestic waste from construction and maintenance personnel
- waste and wastewater produced at construction compounds
- small quantities of waste oils, greases, chemicals and lubricants from operation of construction plant and equipment.

During operation, the main source of waste material is expected to be from putrescible and non-putrescible general solid waste from operation and maintenance personnel. Disposal of waste generated during construction and operation of the project is not anticipated to result in significant adverse environmental impacts as removal of waste generated would be managed through application of standard environmental management measures.

Resources used during construction and operation of the project would include:

- water (construction and operational phases)
- electricity (construction and operational phases)
- fuel (construction and operational phases)
- concrete (primarily construction phase)
- steel (primarily construction phase).

While the project would result in some increased demand on local and regional resources, it would be unlikely that the project alone would result in any resource becoming scarce or in short supply.

### 6.16.3 Proposed investigations and assessment

Preliminary identification of waste streams and volumes associated with construction and operation of the project would be included in the EIS. Management of waste would likely include standard management practices compliant with the *Waste Avoidance and Resource Recovery Act 2001* and other relevant policies and guidelines to avoid or minimise waste from the project.

Waste would need to be managed in accordance with the *Waste Classification Guidelines* (EPA, 2014). Construction waste would be segregated and stockpiled on site, with materials such as clean excavated soil, concrete, timber, plastic and metals separated for reuse or recycling. Any potentially contaminated or hazardous materials would need to be handled carefully and segregated to minimise the risk of cross-contamination. Waste requiring disposal would be directed to a waste management facility that is lawfully permitted to accept that type of waste.

## 6.17 Climate change

### 6.17.1 Existing environment

Climate is described in terms of long-term weather statistics for a particular location comprising averages, variations and extremes. AdaptNSW regional climate change snapshots provide an indicative view of climate change risks that are current influence on assets and operations across the project study area (AdaptNSW, 2023). Climate parameters considered in the snapshots include temperature, temperature extremes, rainfall, frost and fire weather.

The project site is located within the Hunter region. The region is characterised by rolling hills and wide valleys with a meandering river system on a wide flood plain. The Hunter region currently experiences variation in rainfall across the region, seasons and year to year. Temperatures in the Hunter region have been increasing since the 1960s (AdaptNSW, 2023).

Climate change is affecting the region, particularly through increasing temperatures, with projections showing temperatures are expected to rise, rainfall patterns would change and there would be an increased risk of severe weather events such as bushfire, rainfall and droughts. The AdaptNSW climate change snapshots present likely changes in climate in the near future (by 2039) and far future (2079). Near future changes could impact construction of the project, while far future changes are relevant to operational assets. These are summarised in Table 6.11.

Table 6.11 Likely changes in climate of the Hunter region by 2039 and 2079 (AdaptNSW, 2014)

| Climate parameter                                | Near future (by 2039)                                                                                                      | Far future (by 2079)                                                                                                       |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Temperature                                      | Maximum temperatures are projected to increase by 0.4–1.0°C<br>Minimum temperatures are projected to increase by 0.5–0.9°C | Maximum temperatures are projected to increase by 1.6–2.6°C<br>Minimum temperatures are projected to increase by 1.5–2.5°C |
| Temperature extremes – hot days (reaching >35°C) | Number of hot days would increase                                                                                          | Number of cold nights would decrease                                                                                       |
| Rainfall                                         | Spring and winter rainfall would decrease                                                                                  | Autumn rainfall would increase                                                                                             |
| Fire weather                                     | Summer, spring, and winter average fire weather would increase                                                             | Summer and spring severe fire weather would increase                                                                       |

Based on a review of the CSIRO Climate Change in Australia Projections, Newcastle sits within the Eastern Australian super-cluster and East Coast cluster, with key climate projections for the cluster including (CSIRO, 2022):

- further increase in temperatures, with more hot days and warm spells, and fewer frosts
- a decrease in average winter and spring rainfall, however an increased intensity of extreme rainfall events
- a harsher fire-weather climate.

Australia is signatory to the United Nations Paris Agreement on Climate Change (Paris Agreement). Australia's emissions target is to reduce CO<sub>2</sub> emissions by 43 per cent below 2005 levels by 2030 under the Paris Agreement (DCCEEW, 2022a). The NSW Climate Change Policy Framework sets an aspirational long-term objective of achieving net zero emissions by 2050 (DCCEEW, 2022a). The NSW Government's *Net Zero Plan Stage 1: 2020–2030* sets out how the NSW Government would deliver on moving toward net zero over the next decade (DPIE, 2021).

### 6.17.2 Potential impacts

During construction, climate change risks would be associated with severe weather events, such as extreme temperatures, flooding, changes in rainfall patterns and fire risk, placing increased pressure on control measures to prevent flooding, erosion and sedimentation and bushfire ignition. Extreme weather could delay construction of the project, damage materials and cause adverse health impacts for workers.

Operational vulnerability to climate change could include:

- an increase in the number and severity of weather-related electricity outages
- flooding of substation/project site causing damage to equipment with effort and time required to clean up and repair equipment
- damage from bushfires, often coinciding with the increased demand for electricity from high temperatures.

The project involves construction of infrastructure and ammonia storage within the proposed future Clean Energy Precinct (subject to a separate development application), that would support the build out of renewable, low-emission, reliable and affordable energy to the NEM. The project would contribute to reducing NSW's GHG emissions and would help achieve Australia's net zero goals.

### 6.17.3 Proposed investigations and assessment

Resilience of the operational assets to extreme weather would be considered in the detailed design of assets, such as allowance for wind loading, sag and appropriate clearances for transmission lines, cooling systems for substations and transformers, and other buildings and associated infrastructure. Assessment and development of mitigation measures for climate-related impacts would be carried out in the EIS for related issues such as surface water, flooding and hydrology.

Ongoing monitoring would be undertaken during operation of the project to assess potential impacts to GHG emissions and other pollutants as a result of the project. The NPI database collects information about emissions and transfers of 93 substances across Australia (DCCEEW, 2023c). Facilities that exceed thresholds for a substance are legally required to report emissions of that substance to the NPI, in NSW the requirements to report emissions through the NPI is enforced through the POEO Regulation 2022.

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## 6.18 Cumulative impacts

Cumulative impacts of the project would be assessed in the EIS in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2022). The guidelines provide a framework for assessing and managing project-level cumulative impacts.

Assessment of cumulative impacts focuses on environmental issues within the project and the project's interaction with other projects in the vicinity, and where construction and/or operational timeframes are likely to be concurrent.

A preliminary cumulative impact assessment was undertaken for the project and is provided below.

### 6.18.1 Proposed assessment

There are six key steps to the cumulative impact assessment as outlined in the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2022). The purpose of a cumulative impact assessment is to assess project specific impacts from an existing baseline condition as well as combined impacts of the project with other known or foreseeable future developments.

To evaluate potential impacts in the EIS, two broad types of assessment would be undertaken: incremental and cumulative. Incremental types are standard practice for all project-level environmental impact assessment, whereas cumulative types are effective where there is potential for material cumulative impacts with other relevant future projects.

At this early stage of the project, the cumulative impact assessment identifies key questions that would inform the SEARs and future EIS (see Table 6.12).

Table 6.12 Scoping cumulative impacts – key questions

| Scoping questions     | Considerations                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Commentary                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What to assess        | Government strategic planning framework for the area having regard to relevant legislation, plans, policies or guidelines.                                                                                                                                                                                                                                                                                                                                                  | Consideration of key legislation, plans, policies or guidelines is provided in Chapter 4.                                                                                                                                                                                                                                                                                                                                        |
|                       | The project and other potentially relevant future projects that may be developed over the same time period or similar timeframes as the project.                                                                                                                                                                                                                                                                                                                            | Site setting and features from a regional and local context are discussed in Section 6.5, 6.7 and 6.8 which notes:                                                                                                                                                                                                                                                                                                               |
|                       | Potential material impacts on features including National Parks and other protected areas, environmentally sensitive areas, threatened species and ecological communities, important natural resources, culturally significant resources, key infrastructure and industries, sensitive land use zones, population centres, settlements and residential areas.                                                                                                               | <ul style="list-style-type: none"> <li>— key land uses and economic activities within the region</li> <li>— closest population centre is the City of Newcastle</li> <li>— nearest major waterway is the Hunter River</li> <li>— Hunter Estuary Wetlands and Ramsar wetlands are adjacent</li> </ul>                                                                                                                              |
|                       | The likely scale and nature of the cumulative impact of these projects.                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>— there are a number of proposed clean energy projects and existing heavy industry located in proximity to the project</li> <li>— there is potential for impacts of these proposed projects to combine with potential visual, hazards and other environmental impacts of the project, generating cumulative impacts that are greater than impact of each project individually.</li> </ul> |
| What study area       | The study area selected for the cumulative impact assessment of each matter would vary depending on the specific characteristics of the assessment matter and the scale and nature of the potential impacts on the matter resulting from the project with other relevant future projects.                                                                                                                                                                                   | The study area for matters subject to cumulative assessment would be guided by relevant technical assessments and locality features.                                                                                                                                                                                                                                                                                             |
| Over what time period | <p>Like the study area, the time period selected for the cumulative impact assessment on each matter would vary depending on the characteristics of the matter and the scale and nature of the potential impacts on the matter.</p> <p>In most cases, the period selected is likely to match the life of the project (e.g. 50 years). However, in some cases the period selected may be much shorter than this and cover a single phase of the project, or much longer.</p> | <p>The proposed timeframe for the development of the project is:</p> <ul style="list-style-type: none"> <li>— Planning and Approvals: completion late 2024</li> <li>— Construction: 2025</li> <li>— Operation: from 2026/27.</li> </ul>                                                                                                                                                                                          |

| Scoping questions        | Considerations                                                                                                                                                                                             | Commentary          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| What projects to include | Build upon past and current operating project assessments by considering the cumulative impacts of the proposed project on key matters when other future proposed projects are included in the assessment. | See Section 6.18.2. |

The issues subject to cumulative assessment for the project, including the study area extent and time period are described in Table 6.13.

Table 6.13 Issues to be assessed in the cumulative impact assessment

| Issue                        | Rationale                                                                                                                                                                                                       | Study area extent                                                                                                                                                                                                                                                                           | Time period                |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Terrestrial ecology          | Due to some vegetation removal required, possibility of other future projects removing the same PCTs and habitat for threatened species that may be impacted by the project.                                    | The cumulative biodiversity impact area would be based on the range and distribution of potential listed threatened species and would focus on those species that are at risk of serious or irreversible harm due to cumulative impacts of the project with other relevant future projects. | Construction and operation |
| Aquatic ecology              | Potential cumulative impacts to the Hunter River Estuary and Ramsar Wetlands due to their proximity to the project site and other projects in the area.                                                         | Locations where the project could impact on aquatic ecology including the Hunter River as well as other relevant future projects.                                                                                                                                                           | Construction and operation |
| Aboriginal cultural heritage | Combined effects of ground disturbance could impact on Aboriginal archaeological items.                                                                                                                         | Locations where the project could impact on sensitive items as well as other relevant future projects.                                                                                                                                                                                      | Construction and operation |
| Non-Aboriginal heritage      | Potential combined impacts to nearby non-Aboriginal heritage items.                                                                                                                                             | Locations where the project could impact on sensitive items as well as other relevant future projects.                                                                                                                                                                                      | Construction               |
| Social                       | Positive and negative impacts are anticipated in combination with other future projects and short-term cumulative impacts such as community benefits and impacts during construction.                           | Regional social and economic impacts for the project and other relevant future projects.                                                                                                                                                                                                    | Construction and operation |
| Economic                     | Positive impacts are anticipated in combination with other projects, with construction and operational stages generating opportunities for local employment and suppliers that would benefit the local economy. | Regional social and economic impacts for the project and other relevant future projects.                                                                                                                                                                                                    | Construction and operation |

| Issue                                  | Rationale                                                                                                                                                                                                                | Study area extent                                                                                                                                                                             | Time period                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Land use                               | Changes to availability of future or planned land uses, when combined with construction or operation of other future projects, especially on land that is currently used or zoned for agricultural or forestry purposes. | No changes are proposed to the current land zoning and land use requirements of the project site.                                                                                             | Construction and operation |
| Property                               | Temporary leasing, permanent acquisition, and new easements on land titles.                                                                                                                                              | No changes are proposed to the current tenure arrangements of the project site.                                                                                                               | Construction and operation |
| Landscape character and visual amenity | Proximity to proposed future projects.                                                                                                                                                                                   | Specific viewpoints or landscapes impacted by more than one project.                                                                                                                          | Construction and operation |
| Hydrology, flooding and water quality  | Construction activities with potential to impact surface water, and near other relevant future projects.                                                                                                                 | Downstream impacts where other relevant future projects are in the same catchment as the project.<br><br>Potential for contaminants and/or sedimentation and erosion to impact surface water. | Construction               |
| Groundwater                            | Potential impacts to groundwater levels, chemistry and uses with combined effects from other projects.                                                                                                                   | Locations where other relevant future projects are in the same catchment as the project.                                                                                                      | Construction               |
| Hazard and risk                        | Potential cumulative impacts with other similar projects in the area. Impacts relating to ammonia storage and exceeding threshold quantities.                                                                            | Locations where other relevant projects exist within proximity to the project site.                                                                                                           | Construction and operation |
| Soils, topography and contamination    | Potential cumulative impacts relating to contamination, soils, erosion and sedimentation.                                                                                                                                | Areas where there may be an overlap with contamination areas or other projects within close proximity to the project site undertaking excavation works.                                       | Construction               |
| Bushfire                               | An increase to fire risk during construction and operation in bushfire prone areas.                                                                                                                                      | No areas of bushfire prone land have been identified within the project site.<br><br>Potential risk of subsurface fires at the project site. This would be assessed further in the EIS.       | Construction and operation |
| Traffic and access                     | Where construction of the project occurs at the same time and area as future potential major projects that generate large volumes of traffic.                                                                            | Specific main transport routes where there is an overlap of potential traffic impacts.                                                                                                        | Construction               |
| Noise and vibration                    | Where construction and operational noise impacts of the project overlap with the noise impacts of other relevant future projects and result in material noise impacts on certain sensitive receivers.                    | Areas at the specific locations where there is an overlap of noise impacts resulting in impacts on certain sensitive receivers.                                                               | Construction and operation |

| Issue                             | Rationale                                                                                                                                          | Study area extent                                                                                  | Time period                |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------|
| Air quality and GHG               | Cumulative air quality impacts with nearby projects and potential to accumulate GHG emissions.                                                     | Other projects within proximity to the project site that have potential to generate GHG emissions. | Construction and operation |
| Climate change                    | Other future relevant projects impacted by changing climate such as severe weather events, extreme temperatures, flooding and changes in rainfall. | Areas at specific locations where climate change impacts have been identified.                     | Construction and operation |
| Waste management and resource use | Where other future relevant projects use the same waste management facility/facilities.                                                            | Waste management facilities that may need to service several projects.                             | Construction               |

### 6.18.2 Future projects

Relevant future projects to consider in the cumulative impact assessment would be identified through a search of:

- DPE's online major projects database
- NSW Government's list of Special Activation Precincts
- projects declared to be controlled actions under the Commonwealth EPBC Act
- local Council websites
- major greenfield and urban renewal development scheduled for the area
- consultation with PON stakeholders.

A search of DPE's online major projects database was carried out in July 2023 to identify SSD and State Significant Infrastructure (SSI) projects within 20 km of the project site. There are no major greenfield and urban renewal developments scheduled in the area. The nearest greenfield housing development is located at Fern Bay, approximately 5 km east of the project site.

A cumulative impact assessment scoping summary table for the project is provided in Table 6.14.

Table 6.14 Cumulative impact assessment scoping summary table

| Project                                                                      | Distance to project (approx.)       | Project status/ indicative timing/ overlap                                                                                 | Potential overlap between impacts of Project and impact of other projects                                      |                                                                                                                                                             |                                                                                                                 |                                                                                                             |                                                                                       |                                                                                                                                   |                                                                                                                            |
|------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                                                              |                                     |                                                                                                                            | Access (traffic)                                                                                               | Biodiversity                                                                                                                                                | Hazards and risk                                                                                                | Amenity – noise                                                                                             | Amenity – visual                                                                      | Social (workforce, workers, health and wellbeing, goods and services)                                                             | Air quality                                                                                                                |
| SSD-31940756<br>Beresfield Battery Energy Storage System                     | 10 km northwest of the project site | Response to submissions. Construction expected to take 10 months. Potential for construction overlap. Operational overlap. | Potential overlap in access, traffic and transport impacts during construction and operation between projects. | Low risk of overlap in biodiversity impacts due to distances between projects. Potential overlap in impacts to Green and Golden Bell Frog.                  | Low risk of overlap in hazards and risk impacts due to distances between projects.                              | Low risk of overlap in noise impacts due to distances between projects.                                     | Low risk of overlap in visual impacts due to distances between projects.              | Low risk to cumulative social impacts, given the distance of this project from the proposed project. Further assessment required. | Low risk to cumulative air quality impacts given distance between projects.                                                |
| SSD-45565471<br>Kooragang Island Liquid Waste Facility Expansion             | 2 km east of the project site.      | Prepare EIS. Potential construction overlap, operational overlap with the project.                                         | Likely overlap in access, traffic and transport impacts due to proximity of project and proposed project.      | Potential and likely cumulative biodiversity impacts during construction and operation, particularly to the Green and Golden Bell Frog and Ramsar Wetlands. | Likely cumulative hazards and risk impact due to proximity of projects to each other and nature of the project. | Likely cumulative noise impacts if construction overlaps, due to proximity of project and proposed project. | Potential overlap in visual impact due to projects being located on Kooragang Island. | Potential risk of cumulative social impacts due to proximity of projects and timing of construction and/or operation.             | Potential risk of overlap in air quality impacts during construction. Operational air quality impacts would be negligible. |
| MP07-0031-MOD 1<br>Tomago Asphalt Facility<br>Increase utilisation threshold | 6 km northwest of the project site  | Determination. No construction overlap expected.                                                                           | Low risk to access, traffic and transport impacts due to timing of projects and distances between projects.    | Low risk of cumulative biodiversity impacts.                                                                                                                | Potential cumulative hazards and risk impacts.                                                                  | Low risk of cumulative noise impacts.                                                                       | Low risk to cumulative visual impact due to distances between projects.               | Low risk of cumulative social impacts.                                                                                            | Low risk of cumulative air quality impacts.                                                                                |

| Project                                                             | Distance to project (approx.)       | Project status/ indicative timing/ overlap                                                                                             | Potential overlap between impacts of Project and impact of other projects |                                                                                              |                                                                                    |                                                                                                                     |                                                                         |                                                                       |                                                                                                         |
|---------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                     |                                     |                                                                                                                                        | Access (traffic)                                                          | Biodiversity                                                                                 | Hazards and risk                                                                   | Amenity – noise                                                                                                     | Amenity – visual                                                        | Social (workforce, workers, health and wellbeing, goods and services) | Air quality                                                                                             |
| MP08-0129-MOD 7<br>Orica AN1 ANSOL Supply System Upgrade            | 4 km east of the project site       | Prepare Mod Report. Potential overlap during construction. Operational overlap.                                                        | Low risk to access, traffic and transport impacts.                        | Potential risk of cumulative biodiversity impacts.                                           | Potential cumulative hazards and risk impacts.                                     | Potential for some cumulative noise impacts if construction overlap.                                                | Low risk to cumulative visual impact due to distances between projects. | Low risk of cumulative social impacts.                                | Low risk of cumulative air quality impacts.                                                             |
| SSD-41814831<br>Newcastle Education Campus                          | 5 km southeast of the project site  | Exhibition. Potential construction overlap. Operational overlap.                                                                       | Potential risk in access, traffic and transport impacts.                  | Potential risk of cumulative biodiversity impacts.                                           | Low risk of overlap in hazards and risk impacts.                                   | Low risk for cumulative noise impacts.                                                                              | Low risk to cumulative visual impact due to distances between projects. | Low risk of cumulative social impacts.                                | Low risk of cumulative air quality impacts.                                                             |
| SSI-10037<br>Newcastle Gas Terminal                                 | 3 km east of the project site       | Prepare EIS. Construction expected to take around 12 months. Potential construction overlap. Operational overlap.                      | Potential risk in access, traffic and transport impacts.                  | Potential risk of cumulative biodiversity impacts, particularly during construction overlap. | Potential cumulative hazards and risk impacts.                                     | Some potential for cumulative noise impacts if construction overlap, due to proximity of projects from one another. | Potential risk to cumulative visual impact.                             | Potential risk to cumulative social impacts.                          | Potential risk to air quality impacts during construction if construction between the projects overlap. |
| SSD-54974974<br>North Hangar Extension at BAE Systems, Williamstown | 13 km northeast of the project site | Prepare EIS. Construction expected to start in Q3 2023 and take around 12 months. Potential construction overlap. Operational overlap. | Low risk in access, traffic and transport impacts.                        | Low risk of cumulative biodiversity impacts.                                                 | Low risk of overlap in hazards and risk impacts due to distances between projects. | Low risk for cumulative noise impacts due to distances between projects.                                            | Low/minimal risk to cumulative visual impact.                           | Low risk to cumulative social impacts.                                | Low risk to cumulative air quality impacts.                                                             |

| Project                                                                      | Distance to project (approx.)        | Project status/ indicative timing/ overlap                                                   | Potential overlap between impacts of Project and impact of other projects               |                                                                                                                           |                                                                                    |                                                                          |                                               |                                                                       |                                                                       |
|------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|
|                                                                              |                                      |                                                                                              | Access (traffic)                                                                        | Biodiversity                                                                                                              | Hazards and risk                                                                   | Amenity – noise                                                          | Amenity – visual                              | Social (workforce, workers, health and wellbeing, goods and services) | Air quality                                                           |
| SSD-10447<br>Remondis Resource Recovery Facility Tomago                      | 6 km northwest of the project site   | Determination 2021. No construction overlap. Operational overlap.                            | Low risk in access, traffic and transport impacts.                                      | Potential risk of cumulative biodiversity impacts, particularly to nearby Ramsar Wetlands and Green and Golden Bell Frog. | Potential cumulative hazards and risk impacts.                                     | Low risk for cumulative noise impacts due to no construction overlap.    | Low/minimal risk to cumulative visual impact. | Low risk to cumulative social impacts.                                | Potential risk to cumulative air quality impacts during construction. |
| DA140-6-2005-MOD 3<br>Stockton Sand Quarry (Mod3) – Expanded extraction area | 10 km northeast of the project site. | Assessment (more information required). Potential construction overlap. Operational overlap. | Low risk in access, traffic and transport impacts due to distances between projects.    | Low risk of cumulative biodiversity impacts due to distance between projects.                                             | Low risk of overlap in hazards and risk impacts due to distances between projects. | Low risk for cumulative noise impacts due to distances between projects. | Low/minimal risk to cumulative visual impact. | Low risk to cumulative social impacts.                                | Low risk to cumulative air quality impacts.                           |
| SSD-52984213<br>Stockton dry sand extraction project                         | 10 km northeast of the project site. | Prepare EIS. Potential construction overlap. Operational overlap.                            | Potential risk of cumulative impacts relating to access, traffic and transport impacts. | Low risk of cumulative biodiversity impacts due to distance between projects.                                             | Low risk of overlap in hazards and risk impacts due to distances between projects. | Low risk for cumulative noise impacts due to distances between projects. | Low/minimal risk to cumulative visual impact. | Low risk to cumulative social impacts.                                | Low risk to cumulative air quality impacts.                           |
| SSD-9490<br>Stockton sand quarry dredging                                    | 10 km northeast of the project site. | Assessment (more information required). Potential construction overlap. Operational overlap. | Potential risk of cumulative impacts relating to access, traffic and transport impacts. | Low risk of cumulative biodiversity impacts due to distance between projects.                                             | Low risk of overlap in hazards and risk impacts due to distances between projects. | Low risk for cumulative noise impacts due to distances between projects. | Low/minimal risk to cumulative visual impact. | Low risk to cumulative social impacts.                                | Low risk to cumulative air quality impacts.                           |

| Project                                                                                           | Distance to project (approx.)       | Project status/ indicative timing/ overlap                                                                         | Potential overlap between impacts of Project and impact of other projects                                         |                                                                                                                                             |                                                                                                                                                             |                                                                                                             |                                                                           |                                                                       |                                                                                                         |
|---------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                                   |                                     |                                                                                                                    | Access (traffic)                                                                                                  | Biodiversity                                                                                                                                | Hazards and risk                                                                                                                                            | Amenity – noise                                                                                             | Amenity – visual                                                          | Social (workforce, workers, health and wellbeing, goods and services) | Air quality                                                                                             |
| Williamstown SAP                                                                                  | 12 km northeast of the project site | On exhibition. Construction expected to occur between mid-2023 and mid-2028. Construction and operational overlap. | Potential risk of cumulative impacts relating to access, traffic and transport impacts.                           | Low risk of cumulative biodiversity impacts due to distance between projects.                                                               | Low risk of overlap in hazards and risk impacts due to distances between projects.                                                                          | Low risk for cumulative noise impacts due to distances between projects.                                    | Low/minimal risk to cumulative visual impact.                             | Potential risk to cumulative social impacts.                          | Low risk to cumulative air quality impacts.                                                             |
| MP08-0129-MOD 6<br>Orica Ammonium Nitrate Facility – Upgrade – MOD6 – Ammonia Storage Improvement | 1 km south of the project site      | Prepare Mod Report.                                                                                                | Potential risk of cumulative impacts during construction and operation relating to access, traffic and transport. | Likely cumulative impacts to biodiversity and Green and Golden Bell Frog and Ramsar Wetland due to close proximity and overlap of projects. | Likely risk in overlap and cumulative impacts relating to hazards and risks due to proximity between projects and projects both containing ammonia storage. | Likely cumulative noise and vibration impacts if overlap between construction and operation of the project. | Potential visual impact risks due to proximity of projects to each other. | Potential risk to cumulative social impacts.                          | Potential risk to air quality impacts during construction if construction between the projects overlap. |
| SSI-46360740-MOD 1<br>Lenaghan Lateral Pipeline                                                   | 8 km west of the project site       | Assessment (more information required).                                                                            | Low risk of cumulative impacts during construction and operation relating to access, traffic and transport.       | Low risk of cumulative biodiversity impacts due to distance between projects.                                                               | Low risk of overlap in hazards and risk impacts due to distances between projects.                                                                          | Low risk for cumulative noise and vibration impacts.                                                        | Low visual impact risks due to proximity of projects to each other.       | Potential risk to cumulative social impacts.                          | Potential risk to cumulative air quality impacts.                                                       |

| Project                                                                 | Distance to project (approx.)      | Project status/ indicative timing/ overlap | Potential overlap between impacts of Project and impact of other projects                                                    |                                                                                                                                               |                                                        |                                                                                                             |                                                                           |                                                                       |                                                                                                                       |
|-------------------------------------------------------------------------|------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                                         |                                    |                                            | Access (traffic)                                                                                                             | Biodiversity                                                                                                                                  | Hazards and risk                                       | Amenity – noise                                                                                             | Amenity – visual                                                          | Social (workforce, workers, health and wellbeing, goods and services) | Air quality                                                                                                           |
| DA18/95-MOD 4<br>Production Increase, New Load Out Shed and Solar Array | 5 km southeast of the project site | Prepare Mod Report.                        | Potential and likely risk of cumulative impacts during construction and operation relating to access, traffic and transport. | Potential risk of cumulative biodiversity impacts due to distance between projects, particularly to aquatic biodiversity in the Hunter River. | Potential risk of overlap in hazards and risk impacts. | Likely cumulative noise and vibration impacts if overlap between construction and operation of the project. | Potential visual impact risks due to proximity of projects to each other. | Potential risk to cumulative social impacts.                          | Potential risk to cumulative air quality impacts during construction of the project, if overlap between the projects. |

The EIS would include discussion on cumulative environmental impacts of the project. This would involve external and internal developments that may be proposed and may interact with the port and related activities that in combination may have a more significant impact than in isolation.

# 7 Preliminary scoping

## 7.1 Overview

An environmental risk analysis was undertaken as part of the Scoping Report to identify:

- potential impacts and issues to be considered as part of future impact assessments
- residual environmental impacts after implementation of mitigation measures.

This section outlines the context and method for the preliminary scoping of environmental matters.

## 7.2 Categorising assessment matters

Table 7.1 defines the risk rating for assessment of potential impacts used in this Scoping Report.

Table 7.1 Risk rating descriptions

| Risk grade | Risk   | Description                                                                                                                                                                                                                                                                                               |
|------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Low    | <ul style="list-style-type: none"><li>— not likely to impact on siting, design, construction or operation stages and can be managed through generic environmental controls</li><li>— specialist studies not likely to be required</li><li>— mitigation is likely to show positive results.</li></ul>      |
| 2          | Medium | <ul style="list-style-type: none"><li>— will need consideration during either siting, design, construction, or operation stages</li><li>— specialist studies likely to be required to minimise potential environmental impact</li><li>— external approval potentially required and is standard.</li></ul> |
| 3          | High   | <ul style="list-style-type: none"><li>— critical issue that may have significant impact on siting or be a significant time and cost constraint</li><li>— extensive specialist studies likely to be required</li><li>— external approval likely to be required and may be onerous.</li></ul>               |

## 7.3 Approach to assessment

To evaluate the potential impacts, two broad types of assessment would be undertaken in the EIS: incremental and cumulative.

The project would present its own unique risks that require assessment. Assessment of the project would take a risk-based approach to assessment of impacts such as hazards and risks, contamination, water quality and landscape character and visual impact. There are a broad range of social, environmental and economic considerations to be considered, including:

- Biodiversity
- Aboriginal heritage
- Non-Aboriginal heritage
- Soils and contamination
- Transport and traffic
- Surface and ground water
- Hazards and risk
- Waste and resource use
- Socio-economic
- Land use and property
- Contamination
- Cumulative.

## 7.4 Impact scoping

Results of impact scoping are presented in Table 7.2.

Table 7.2 Summary scoping table

| Risk category              | Potential constraints                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Preliminary risk-rating | Comments/recommendations                                                                                                                                                                                                           |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPBC Act Protected Matters | <p>TECs, threatened flora and threatened fauna have been identified within the project site and surrounds (within 10 km).</p> <p>Of most concern is the Green and Golden Bell Frog that has a high likelihood of occurrence within the project study area.</p> <p>One Ramsar wetland is located within 5 km of the project site. This has potential to be impacted during construction and/or operation of the project.</p>                                                                                                  | High                    | A referral under the EPBC Act to the DCCEEW would be required for the project.                                                                                                                                                     |
| Biodiversity               | <p>The project study area contains mapped threatened species and threatened ecological communities.</p> <p>Key Fish Habitat is mapped within the Hunter River, which is adjacent to the project site.</p> <p>Coastal wetlands are mapped within some parts of the project study area.</p> <p>Potential to impact threatened biodiversity during construction and operation of the project due to activities such as excavation, impacts to surface water quality, removal of habitat, contamination and chemical spills.</p> | High                    | A BDAR would be prepared as part of the EIS, that would further identify and clarify potential significance of biodiversity impacts associated with the project. The BDAR would be prepared in accordance with the BC Act and BAM. |
| Hazards and risk           | <p>For the project, ammonia has been identified as a potentially hazardous material. The project exceeds the screening threshold for storage and is therefore classed as potentially hazardous.</p> <p>Proposed storage volume of ammonia exceeds the threshold and the facility would be classified as a major hazard facility under the Work Health and Safety Regulation 2017.</p>                                                                                                                                        | High                    | A Level 2 semi-quantitative risk assessment would be prepared as part of the EIS to demonstrate that the offsite risk has been reduced to a tolerable level.                                                                       |
| Social                     | <p>Potential impacts during construction and operation of the project on the local community include increases in traffic resulting in longer commute times, and awareness of potential risks associated with ammonia storage, cumulative exposure risks and altered visual environment.</p>                                                                                                                                                                                                                                 | Medium                  | A complex Phase 2 SIA would be prepared as part of the EIS.                                                                                                                                                                        |

| Risk category                          | Potential constraints                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Preliminary risk-rating | Comments/recommendations                                                                                         |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|
| Economic                               | The project would create significant expenditure within the local, regional and NSW economies during the construction phase. Operation of the project would facilitate a source of reliable, low-cost renewable energy with associated economic benefits to consumers across the NEM.                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Medium                  | A detailed economic impact assessment would be prepared as part of the EIS.                                      |
| Landscape character and visual amenity | The project would be consistent with the location within an operating port; however, the infrastructure and ammonia storage would change how the site is seen from various viewpoints.<br><br>Moderate changes would likely occur to the visual environment during construction and operation.                                                                                                                                                                                                                                                                                                                                                                                                                                           | Medium                  | A detailed Landscape Character and Visual Impact Assessment report would be prepared as part of the EIS.         |
| Soils, topography and contamination    | The project site is the former KIWEF site which was used as a waste emplacement facility. Contamination across the site has generally been identified as being a low to moderate risk to human health or environment; however, a number of areas were identified as containing significantly contaminated material that may pose a higher level of risk to human health or the environment.<br><br>Operation of the project is not anticipated to have a substantial impact on contamination risks under normal operation.                                                                                                                                                                                                               | Medium                  | Further, detailed geotechnical investigations would also need to be carried out to inform design of the project. |
| Hydrology, flooding and water quality  | The project is located within the Hunter River surface water catchment and the Hunter Estuary and is bounded by the Hunter River South Channel (to the south), coastal wetlands (to the north) and Ramsar wetlands (to the north and west).<br><br>There is potential for erosion and sedimentation impacts resulting from construction works such as earthworks and excavations for foundations, rail and road infrastructure (if required) and stormwater drainage.<br><br>Potential impacts related to surface water and hydrology during operation due to changes in local hydrology, transport and deposition of sediment from ground disturbance, potential leaks and spills of chemicals and fuels during maintenance activities. | Medium                  | A detailed hydrology, flooding and water quality assessment would be prepared as part of the EIS.                |

| Risk category                  | Potential constraints                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Preliminary risk-rating | Comments/recommendations                                                                                                                                                                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Groundwater                    | <p>Historically, groundwater at the project site has been very poor as a result of contamination from industrial activity.</p> <p>During construction, there is potential for the project to impact groundwater levels, flows and connectivity, groundwater chemistry and groundwater uses.</p> <p>Potential impacts during operation of the project could relate to loss of oils and coolant from the substation and loss of ammonia. This could result in impacts to groundwater and as a consequence impacts to local surface water and land.</p> | Medium                  | A detailed groundwater assessment would be prepared as part of the EIS.                                                                                                                            |
| Traffic and access             | <p>Construction of the project would generate increases in traffic on the surrounding road network, increases in trucks and heavy vehicles, and increases in construction workers.</p> <p>Traffic and access impacts during operation are expected to be minimal and would be limited to vehicle travel by staff on internal access roads and the surrounding road network.</p>                                                                                                                                                                      | Medium                  | Construction and operational traffic and transport impacts would be assessed in the EIS.                                                                                                           |
| Noise and vibration            | <p>Potential noise and vibration impacts during construction would occur during site establishment, vegetation removal, earthworks, paving activities, concrete works and construction of the site compound. Nearby residents in surrounding suburbs such as Mayfield and Stockton would be most affected by noise and vibration during construction. However, impacts are not expected to be significant.</p> <p>Operational noise impacts are not expected to be significant.</p>                                                                  | Medium                  | A detailed construction and operational noise and vibration assessment would be prepared as part of the EIS. Background noise level monitoring would also be conducted as part of the EIS process. |
| Air quality and greenhouse gas | <p>During construction, local air quality within the project site may be temporarily affected by particulate (dust) and GHG emissions from activities such as earthworks, stockpile management, access track construction, use of vehicles, plant and equipment, and increases in road, rail and shipping movements.</p> <p>Impacts to air quality and GHG emissions during operation are expected to be minimal.</p>                                                                                                                                | Medium                  | An Air Quality and Odour assessment would be prepared as part of the EIS.                                                                                                                          |
| Cumulative impacts             | Cumulative impacts may arise during construction with other nearby known or foreseeable future developments. Potential overlap in impacts include noise and vibration, traffic and access, air quality and GHG emissions, social and economic, and biodiversity.                                                                                                                                                                                                                                                                                     | Medium                  | Two broad types of assessment would be undertaken: incremental and cumulative.                                                                                                                     |

| Risk category                     | Potential constraints                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Preliminary risk-rating | Comments/recommendations                                                                                                                                      |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aboriginal heritage               | <p>Surface disturbances such as excavation activities and vegetation removal could have adverse impacts on surface and subsurface features that could result in loss of heritage value. AHIMS search did not show any Aboriginal heritage items within the project site, with the closest site being approximately 20 metres southeast of the project site.</p> <p>There are a few waterways within close proximity to the site that would be considered in any future Aboriginal heritage assessment as these are more likely to present with Aboriginal heritage items.</p> | Low                     | An assessment of potential impact to Aboriginal cultural heritage would be prepared as part of the EIS. Consultation would occur with Aboriginal communities. |
| Non-Aboriginal heritage           | <p>There are no known non-Aboriginal heritage items or places within the project site. The closest heritage item is the Former Migrant Camp, 690 metres to southwest of the project site, followed by the Remnant Garden 750 metres south of the project site. Both are listed as local heritage on the Newcastle LEP.</p> <p>Potential to impact nearby heritage listed items during construction of the project, however, impacts are unlikely.</p>                                                                                                                         | Low                     | A desktop due diligence assessment for non-Aboriginal heritage would be prepared as part of the EIS.                                                          |
| Land use and property             | <p>The project site and surrounds are zoned SP1 Special Activities, with the area predominantly used for industrial and port-related activities. Operation of the project would result in a permanent change in land use from former waste emplacement to heavy industry.</p> <p>There would be no land zoning changes as a result of the development.</p>                                                                                                                                                                                                                    | Low                     | A desktop property and land use impact assessment would be prepared as part of the EIS.                                                                       |
| Waste management and resource use | <p>Construction waste from the project would include vegetation waste from clearing (if required), general domestic waste, wastewater, and small quantities of waste oils, greases, chemicals and lubricants. It is unlikely that the project alone would result in any resource becoming scarce or short in supply.</p> <p>Operation of the project is not expected to result in a significant amount of waste.</p>                                                                                                                                                          | Low                     | Preliminary identification of waste streams and volumes associated with construction and operation of the project would be prepared as part of the EIS.       |

| Risk category  | Potential constraints                                                                                                                                                                                                                                                                                                                                                             | Preliminary risk-rating | Comments/recommendations                                                                                                                                                                                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Climate change | <p>Potential impacts including increases in GHG emissions and air quality impacts may arise during construction of the project. However, these are not expected to be significant.</p> <p>Operational vulnerability to climate change could include an increase in the number and severity of extreme weather events, flooding of the project site and damage from bushfires.</p> | Low                     | Resilience of the operational assets to extreme weather would be considered in the detailed design of assets. Assessment and development of mitigation measures for climate-related impacts would be prepared as part of the EIS for related issues such as surface water, flooding and hydrology. |

## 8 Conclusion

The project is subject to assessment under Part 4, Division 4.7 (SSD) of the EP&A Act and as such, this document supports an application seeking the Secretary's Environmental Assessment Requirements for the EIS. The preliminary assessment considered potential impacts during construction and operation of the project and considered the existing environment, scale and nature of the project, ability to avoid, minimise or mitigate impacts (for the scoping stage), cumulative impacts and the technical assessment of the project.

Key environmental assessment issues identified for the project, that would undergo a more detailed technical assessment during the preparation of the EIS include:

- Aboriginal heritage
- Air quality and greenhouse gas
- Biodiversity
- Hazards and risk
- Landscape character and visual amenity
- Land use and property
- Noise and vibration
- Socio-economic
- Soils, topography and contamination
- Surface water, groundwater and hydrology
- Traffic and access
- Cumulative impacts.

Other issues that would not require detailed technical assessment (including cumulative impacts), either based on lower likelihood of occurrence or absence of likely receptors, are as follows:

- Bushfire risk (Hazards and Risks)
- Climate change
- Non-Aboriginal heritage
- Waste management and resource use.

As part of preparation of the EIS, further assessment would be carried out in conjunction with the further refinement of the project design. In assessing potential environmental impacts of the project, the key focus would be avoidance and minimisation of impacts on the environment and local communities, where reasonable and feasible, when taking into consideration engineering constraints and cost implications. The assessment would identify mitigation and management measures to minimise impacts on the environment. Consultation with stakeholders and the local community would continue throughout the EIS assessment, design and construction phases.

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