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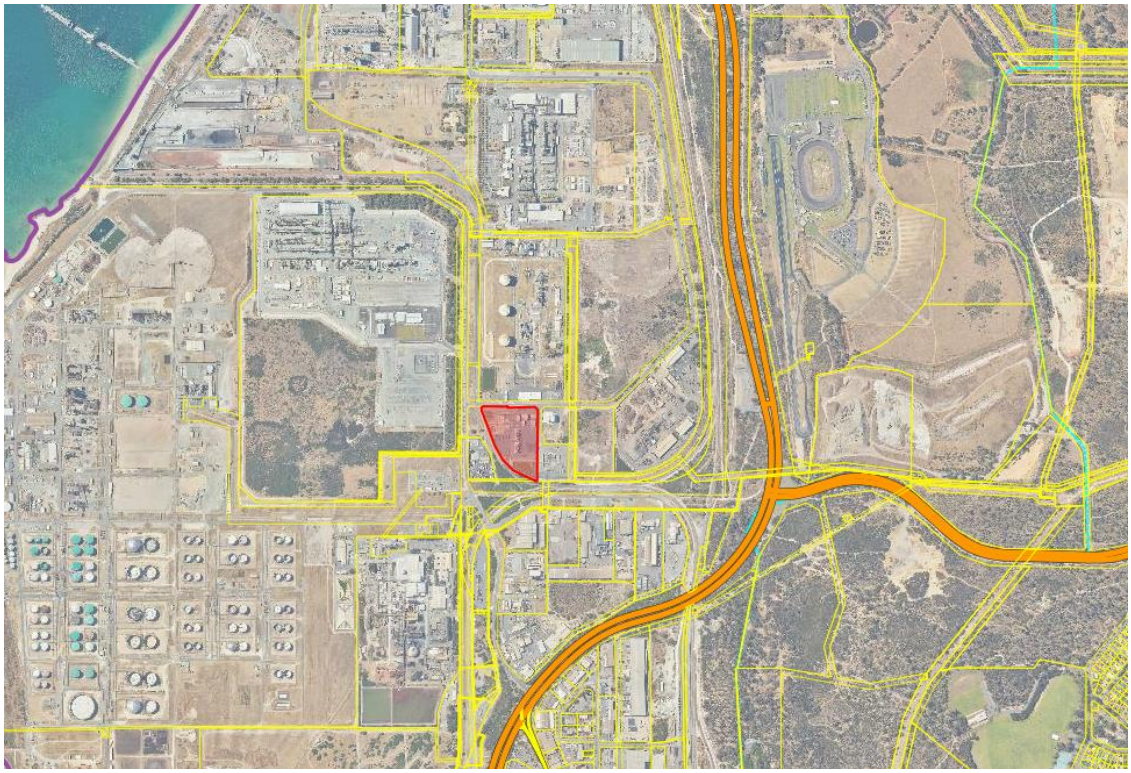
Kwinana Swift Power Station Expansion – K2 Project



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Kwinana Swift Power Station Expansion – K2 Project

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Executive Summary

Western Energy Pty Ltd (**Perth Energy**), a subsidiary of AGL Energy Limited (**AGL**) proposes to construct and operate an expansion (**K2 Project**) of the existing functional dual-fuel Kwinana Swift Power Station (**KSPS**) at 1 Burton Place, Kwinana Breach, Western Australia 6167 (Lot 13 DP39572) (**the Site**), in the City of Kwinana, Western Australia.

The K2 Project is to build and operate up to four new gas-powered turbine units and associated infrastructure, which would allow for additional generation capacity of up to 250 MW from the Site. Together with the existing operational units, the proposed turbine units would increase the total generation capacity of the Site to up to 370 MW.

Amongst other things, and for the reasons considered further in this document, the Proposal:

- is consistent with, and capable of authorisation under State legislative frameworks and as an expansion of an existing industrial land use which has operated since 2010 from the Site without incident;
- will provide the firming capacity necessary to support the roll out of renewables, and to achieve AGL's strategy to deliver a portfolio of flexible, low emissions generation;
- is aligned with State objectives for energy security in the transition from retiring coal powered electricity generation; and
- has the support of Energy Policy WA (a sub-department within the WA Department of Energy, Mines, Industry Regulation and Safety) as the most prospective of proposed gas projects that will be necessary to provide critical flexible firming capacity to the Wholesale Energy Market (WEM) and ensure reliability standards continue to be met.

This document has been prepared to provide supporting information for referral of the Proposal to the Environmental Protection Authority (**EPA**) under s. 38 of the *Environmental Protection Act 1986* (WA) (**EP Act**). It evaluates the feasibility and environmental implications of the Proposal, and emphasises the need for its progression to support Western Australia's emission reduction targets. The Proposal's environmental impacts have been assessed against the Environmental Protection Authority's (**EPA**) environmental factors and determined that only greenhouse gas emissions should be considered as a key environmental factor.

The Proposal has been designed and assessed to meet the requirements set forth by the EPA's updated Environmental Factor Guideline – Greenhouse Gas Emissions (2024) and the Safeguard Mechanism under the National Greenhouse and Energy Reporting (NGER) Scheme. By adhering to these guidelines, the project will systematically reduce greenhouse gas emissions, contributing to state and national targets of net-zero emissions by 2050.

Studies and assessments commissioned by Perth Energy demonstrate that the environmental impact of the project, particularly on greenhouse gas emissions, is projected to be insignificant at the state, national, and global levels. The project includes comprehensive mitigation measures and emission reduction targets, ensuring compliance with the EPA's objective to minimize environmental harm associated with climate change by reducing emissions as far as practicable.

Despite the specific gas turbine type not being confirmed at this stage of the Project's development, the assessments for greenhouse gas emissions, air quality, and noise have been conducted on a highly conservative basis. This implies that the modelling results consider a worst-case scenario by incorporating conservative assumptions, thus ensuring that the work undertaken remains robust and reliable for different potential turbine units. Such an approach guarantees that

any variance in the actual turbine units selected would still fall within the acceptable impact ranges defined in the assessments.

The Proposal serves as a crucial stepping stone towards transitioning away from coal-fired power generation to a renewable energy future. This transition aligns with the objectives of the State Emissions Reduction Strategy (**SERS**), promoting an overall reduction in cumulative greenhouse gas emissions over time and facilitating the integration of renewable energy sources.

The Proposal's alignment with environmental guidelines, its role in facilitating the transition to renewable energy, and its negligible impacts on the environment (supported by assessment against the EPA's environmental factors) support an Assessment on Referral Information (**ARI**).

Abbreviations, Definitions and Acronyms

Abbreviations	Definition
ACCU	Australian Carbon Credit Unit
ACMC	Aboriginal Cultural Materials Committee
AHD	Australian Height Datum
AEMO	Australian Energy Market Operator
AER	Annual Environmental Report
ARI	Assessment on Referral Information
CCGT	Combined Cycle Gas Turbine
CER	Clean Energy Regulator
CTAP	Climate Transition Action Plan
DCCEEW	Department of Climate Change, Energy, Environment and Water
DER	Department of Environment Regulation (currently known as DWER)
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EP Act	Environmental Protection Act 1986 (WA)
EPA	Environmental Protection Authority (WA)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
ESOO	Electricity Statement of Opportunities
GHG	Greenhouse Gas
GHGMP	Greenhouse Gas Management Plan
GKBAC	Gnaala Karla Booja Aboriginal Corporation
GLC	Ground Level Concentrations
ICROA	International Carbon Reduction and Offsetting Accreditation
IPCC	Intergovernmental Panel on Climate Change
JTSI	Department of Jobs, Tourism, Science and Innovation
KIA	Kwinana Industrial Area
KIC	Kwinana Industrial Council
KWRP	Kwinana Water Recycling Plant
LPS2	Town of Kwinana Local Planning Scheme no. 2
MNES	Matters of National Environmental Significance
MRS	Metropolitan Region Scheme
NDC	nationally determined contribution (in relation to the Paris Agreement)
NEPC	National Environmental Protection Council
NEPM	National Environment Protection Measure
OCGT	Open Cycle Gas Turbine
OEM	Original Equipment Manufacturer
OHP	Other Heritage Place.
The Paris agreement	A legally binding international treaty on climate change, which was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.
PMST	Protected Matters Search Tool
SDOOL	Sepia Depression Ocean Outlet Line
SERS	Sectoral Emissions Reduction Strategy (for Western Australia)
SWIS	South West Interconnected System

WEM	Wholesale Energy Market

1. Proposal

1.1 Overview

Western Energy Pty Ltd (**Perth Energy**), a subsidiary of AGL Energy Limited (**AGL**) proposes to construct and operate an expansion (**K2 Project**) of the existing functional dual-fuel Kwinana Swift Power Station (**KSPS**) at 1 Burton Place, Kwinana Breach, Western Australia 6167 (Lot 13 DP39572) (the **Site**), in the City of Kwinana, Western Australia.

As described below, the existing KSPS has a nameplate generation capacity of 120 MW. The K2 Project is to build and operate up to four new gas-powered turbine units and associated infrastructure, which would allow for additional generation capacity of up to 250 MW from the Site. Together with the existing operational units, the proposed turbine units would increase the total generation capacity of the Site to up to 370 MW. The Proposal referred does not include the existing KSPS units and operations, as further noted in sections 1.3.3 and 2.6.

Amongst other things, and for the reasons considered further in this document, the Proposal:

- is consistent with, and capable of authorisation under State legislative frameworks and as an expansion of an existing industrial land use which has operated since 2010 from the Site without incident;
- will provide the firming capacity necessary to support the roll out of renewables, and to achieve AGL's strategy to deliver a portfolio of flexible, low emissions generation;
- is aligned with State objectives for energy security in the transition from retiring coal powered electricity generation; and
- has the support of Energy Policy WA (a sub-department within the WA Department of Energy, Mines, Industry Regulation and Safety) as the most prospective of proposed gas projects that will be necessary to provide critical flexible firming capacity to the Wholesale Energy Market (**WEM**) and ensure reliability standards continue to be met.

1.2 Purpose and Scope

This document has been prepared to provide supporting information for referral of the Proposal to the Environmental Protection Authority (**EPA**) under s. 38 of the *Environmental Protection Act 1986* (**EP Act**), to enable the EPA to determine if environmental impact assessment is required under Part IV of the EP Act and if so, the level of assessment. This document provides the EPA with the following information:

- Definition of the Proposal and associated activities
- Simplified, technical project description
- Identification of key environmental factors and their potential impacts to the environment
- Identification of other environmental factors and their potential impacts to the environment
- Stakeholder engagement conducted
- Description of corporate and Proposal specific offsets possibilities
- Matters of National Environmental Significance (**MNES**) related to the Proposal
- Information about possible cumulative environmental impacts.

1.3 Proposal Content

Table 1-1 and Table 1-2 summarises the Proposal content and elements in accordance with EPA's *Instructions and template: How to identify the content of a proposal* (EPA, 2024a).

Table 1-1 General proposal content description.

Proposal title	K2 Project
Proponent name	Western Energy Pty Ltd
Short description	This Proposal is to expand the existing Kwinana Swift Power Station by up to 250 MW. Up to four new gas-powered turbine units and associated infrastructure is proposed to be built, which could be operational on natural gas, diesel, distillate, ethane, liquified natural gas (LNG), liquified petroleum gas, (LPG) and/or hydrogen. The total plant capacity, including the existing units (which are not part of this Proposal), will be up to 370 MW.

Table 1-2 Proposal content elements.

Proposal element	Location/description	Maximum extent, capacity or range
Physical elements		
Gas-powered turbine units and associated infrastructure	Figure 1-2	The development envelope is 3.55 ha. This area contains the four existing gas turbines and the footprint for the proposed gas turbines and associated infrastructure, being the subject of this application. The associated infrastructure includes an overflow evaporation pond and infrastructure linking the turbines to the substation area.
Substation area		Existing and proposed switchyards and power supply infrastructure required to convert the power supply to a form that can be accepted by the Western Power substation.
Balance of Plant		Area in the northern portion of the Site contains the existing support infrastructure including fuel storage, water treatment, offices, workshops, warehousing and auxiliary equipment.
Construction elements		
Laydown areas, workshops, car parks and worker amenities	N/A	A laydown area is required however the location has not yet been confirmed. We anticipate this will be within or near the Kwinana Industrial Area (**KIA**). The remaining construction requirements can be serviced by existing site facilities. Clearing of native vegetation will not occur as a result of this activity.

Proposal element	Location/description	Maximum extent, capacity or range
Wastewater discharge pipeline		Augmentation of existing pipeline infrastructure to meet the expansion requirements.
Operational elements		
Gas-powered turbine units	Figure 1-2	Gas-powered turbine units with a capacity up to 250 MW.
Fuel supply (natural gas, diesel)	N/A	Dependent on the actual operating hours. Upper estimates range from 50 TJ/day (natural gas or diesel)
Water supply		Scheme water will be supplied from the Water Corporation at rate of 100m3 per hour
Wastewater effluent		Maximum of 720 kl/day expected during operations to be discharged Water Corporation's Kwinana Water Recycling Plant (**KWRP**) which includes a licenced discharged via the Sepia Depression Ocean Outlet Line (**SDOOL**).
Greenhouse gas emissions		
Construction elements:		
Scope 1	Not expected to be material.	
Scope 2		
Scope 3		
Operation elements (total for this Proposal only)		
Scope 1	191,763 t CO_2-e per annum (/a) on average 8,629,357 t CO_2e Gross GHG Emissions[1] over the life of the Proposal 3,886,834 t CO_2e Nett GHG Emissions[2] over the life of the Proposal	
Scope 2	530 t CO_2-e/a on average 23,850 t CO_2e total over the life of the Proposal	
Scope 3	22,462 t CO_2-e /a on average 1,010,793 t CO_2e over the life of the Proposal	
Rehabilitation		
Once the operations cease, the site will be remediated and rehabilitated to ensure the premises are left in an environmentally acceptable, non-polluting, and safe condition.		
Commissioning		
Commissioning of the new gas-turbines is planned to start 18 months after construction commences and expected to take 9 months to complete. Commissioning will be executed according to the environmental commissioning plan. This plan will be submitted to Department of Water and Environmental Regulation (**DWER**) as part of the DWER Works Approvals application and assessment process under Part V of the EP Act.		
Decommissioning		

[1] Gross GHG emissions are the total potential emissions from the Proposal based on the projected demand over the life of the Proposal.
[2] Nett GHG emissions are the Gross GHG Emissions minus offsets predicted to implemented over the life of the Proposal.

Proposal element	Location/description	Maximum extent, capacity or range
Once the operations cease, the site will be remediated and rehabilitated to ensure the premises are left in an environmentally acceptable, non-polluting and safe condition. A final decommissioning plan will be prepared and provided for EPA's consideration prior to the anticipated date of decommissioning.		
Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life (i.e. Construction phase + Operations phase)	Expected life of 48 years[3]
	Construction phase	24-36 months
	Operations phase	45 years
	Decommissioning phase	12 months

1.3.1 Location Context

The Site is located approximately 40km south of Perth in the KIA, from which Perth Energy has operated the KSPS since August 2010 and pursuant to a lease agreement with Western Australian Land Authority (**Development WA**), and related approvals. The existing and authorised KSPS functions as a 120 MW open cycle aeroderivative gas turbine peaking plant.

The Site context is shown in **Figure 1-1**.

[3] This combines the maximum construction period of 36 months and the operational period of 45 years.

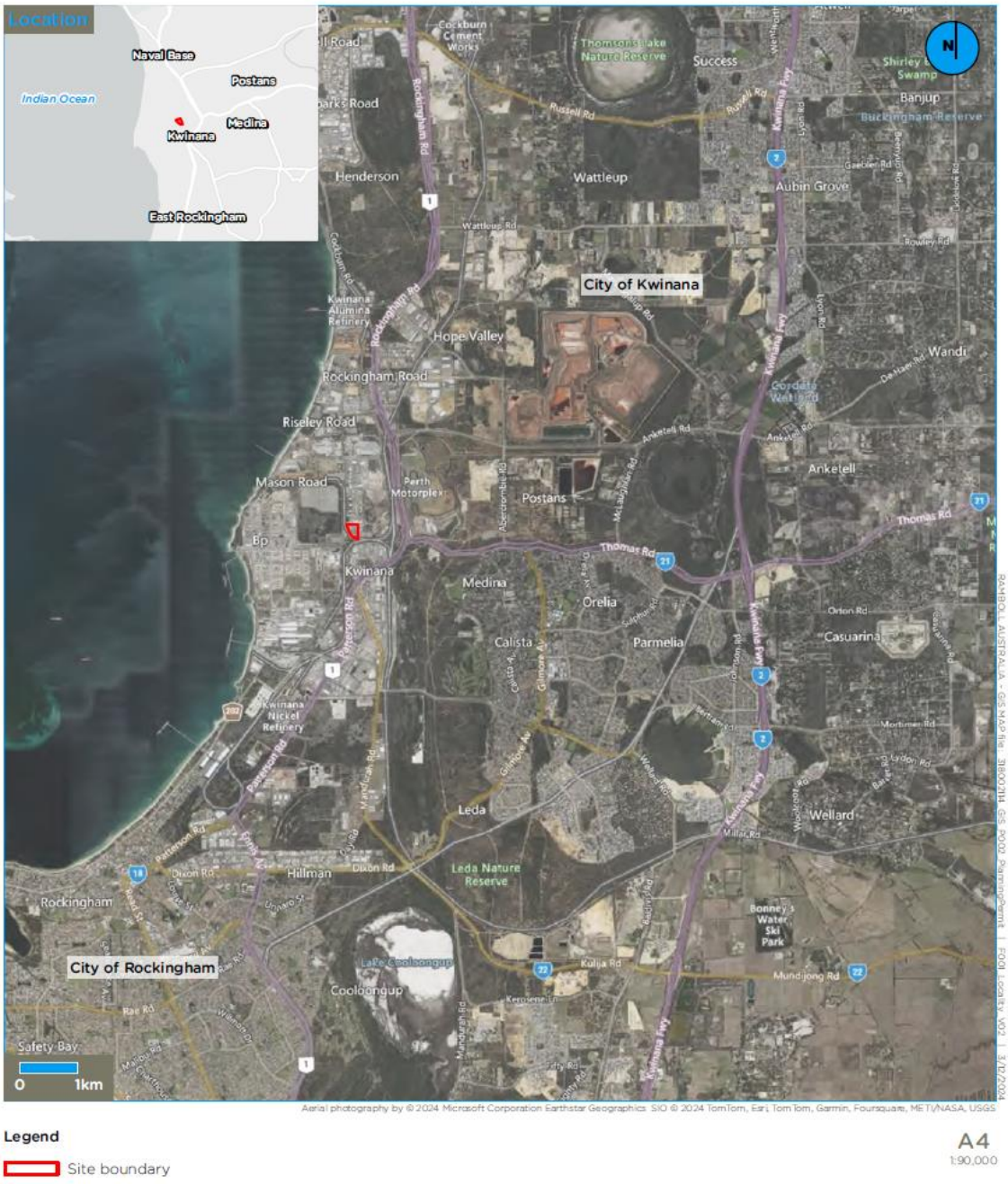

Figure 1-1: Site Context

1.3.2 Project Description

Perth Energy is proposing to expand the current KSPS with an additional 250 MW of generation capacity. The project forms part of Perth Energy's strategy to deliver a portfolio of flexible, low-emissions generation to the energy market.

The Site is defined by three broad areas, as shown on **Figure 1-2**, and described further below.

- Gas turbines and auxiliary equipment area – this area contains the four existing gas turbines and the footprint for the proposed gas turbines subject of this application. The auxiliary infrastructure includes the overflow evaporation pond in the south of the Site and the infrastructure linking the turbines to the substation area.
- Substation area – this area is to the west of the gas turbines and contains the existing and proposed switchyards and power supply infrastructure required to convert the power supply to a form that can be accepted by the Western Power substation.
- The Balance of Plant area in the northern portion of the Site containing the existing support infrastructure including fuel storage, water treatment, offices, workshops, warehousing and auxiliary equipment.

A retention basin is in the southeast corner of the Site which receives stormwater runoff from across the Site. The water treatment plant on Site disposes wastewater from the operations into the KWRP, after which treated water discharges to the local Point Peron SDOOL, under a licence held by Water Corporation. Perth Energy would maintain the current agreement or enter a new agreement with the Water Corporation to meet water quality discharge requirements of the KWRP operating licence to allow it to be utilised for the Proposal's wastewater disposal.

To achieve the additional expected 250 MW, one or more (but no greater than four) new gas-powered turbine units and associated infrastructure are proposed to be built on the Site. These new gas-powered turbine units could be operational on natural gas, diesel, distillate, ethane, liquefied natural gas (**LNG**), liquefied petroleum gas (**LPG**) and/or hydrogen. Gas-powered turbines may to be able to operate as synchronous condensers. Each gas-powered turbine has one stack and thus, the total number of emission points depends on the number of turbine units built.

An indicative turbine unit is presented below in **Figure 1-3**. Several stack height configurations (from 18m – 30m) were modelled in the air quality assessment in order to inform preliminary design considerations. Currently, this Proposal is considering a stack height of 26.4m. The stack height that has been presented in the air quality assessment (**Appendix 4**) is 18m and the diameter is 3m. This configuration resulted in the 'worst case' scenario for impacts to air quality for the chosen turbine units and has been presented accordingly throughout this Proposal. It is anticipated that the chosen turbine units will not exceed these parameters. Accordingly, related impact studies have been undertaken on a highly conservative basis, and all potential environmental impacts have been considered for up to 4 units.

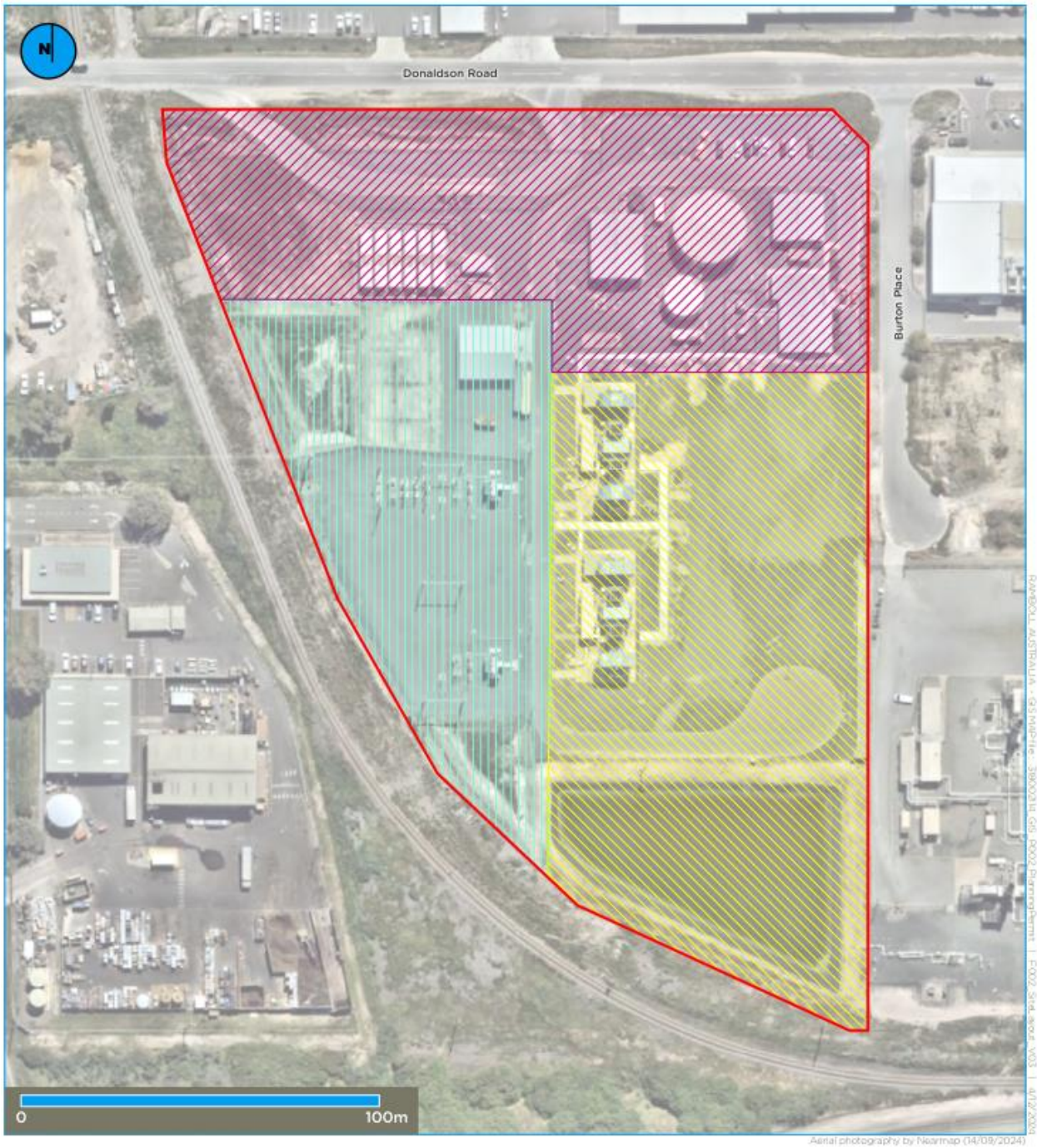

Figure 1-2 Indicative Site Plan.

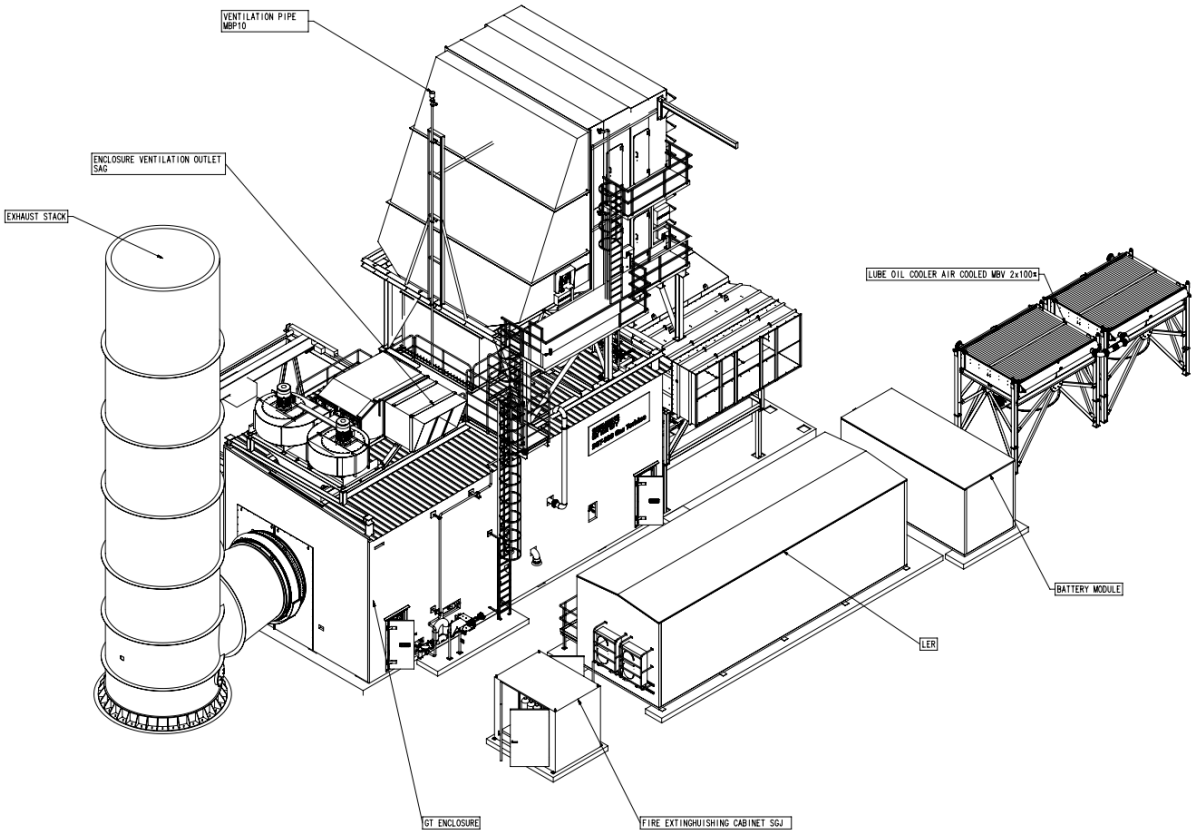

Figure 1-3 Typical gas-turbine unit.

In addition to the turbine units and associated Original Equipment Manufacturer (**OEM**) supplied skids on which they will be constructed, the following additional components are likely to be developed for the K2 expansion, and form part of this Proposal:

- Demolish, modify, reconfigure and/or augment any, or all, existing plant facilities.
- Demolish, modify, reconfigure and/or augment any, or all, existing high voltage (**HV**) connection assets or construct new HV connection to adjacent/nearby substation or to other existing or future substation as required by Western Power.
- Temporary site offices and laydown areas.
- Storage of equipment, chemicals, and machinery.
- New control room and buildings or augmentation of existing control room and office building, maintenance building and warehousing.
- All related and required site investigations, geotechnical studies, and preliminary site works.
- Fuel gas compression and fuel pre-treatment systems (including compression, regulation, heating, filtering, and pre-treatment) as required.
- Installation of required infrastructure to ensure that the plant is capable of combustion of hydrogen and future fuels.
- Power augmentation systems, evaporative cooling, chillers and/or wet compression systems and associated equipment.
- Electrical switch rooms, cabling, and associated infrastructure.
- High-voltage electrical substation equipment including Gas Insulated Switchgear (**GIS**) or Air Insulated Switchgear (**AIS**).
- Site access, internal roads and external roads, and car parking.

- Drainage and stormwater management – including evaporation pond/s considerations/requirements if required.
- Modify, augment, upgrade, reconfigure or replace existing security fencing, lighting, CCTV and associated infrastructure.
- Gas supply infrastructure new or modification/upgrade to existing infrastructure to increase gas delivery capacity.
- Connection into Western Power substation.
- Modify, augment, upgrade, reconfigure or replace existing water supply pipeline.
- Modify, augment, upgrade, reconfigure or replace existing water treatment, desalination and associated storage and reject water system augmentation.
- Modify, augment, upgrade, reconfigure or replace existing wastewater storage tanks and existing evaporation pond.
- Modify, augment, upgrade, reconfigure or replace existing KWRP wastewater pipeline.

1.3.3 Elements not forming part of Proposal

For clarity, the existing KSPS is not part of this Proposal. It is already subject to appropriate approvals and management with regulatory oversight.
The existing KSPS is currently operating at Lot 13 Burton Place. KSPS is a licenced Category 52 - Electric Power Generation facility in accordance with Part V of the EP Act. KSPS currently operates under licence L8471/2010/2 with an approved production capacity of 120 MWe per annual period. The EPA determined that KSPS did not require assessment under Part IV of the EP Act (see section 2.6). The licence includes requirements for six monthly groundwater quality monitoring at six monitoring bores and the preparation of Annual Environmental Reports (**AER**). The premises have been operating under this licence since 2010.

Current KSPS operations will not be reassessed as they are not proposed to be changed as an outcome of this Proposal.

1.4 Proposal Alternatives

1.4.1 Need for the Proposal

In the 2024 WEM Electricity Statement of Opportunities (**ESOO**), published on 18 June 2024, the Australian Energy Market Operator (**AEMO**) has signalled a capacity investment shortfall starting from the 2027-28 capacity year, largely driven by planned retirement of most of the existing coal fired generation fleet.

To respond to the urgency of this situation, the Proposal will contribute additional electricity supply to address forecast electricity capacity deficits resulting from increased demand and the retirement of thermal coal fire generation of State-owned Collie, Muja C and Muja D power stations. The Proposal would provide critical flexible firming capacity to the WEM.

In addition, the Proposal will be designed to meet AEMO's new Flexible Capacity criteria, which is designed to play a crucial role in flexible fast response generation to complement batteries and intermittent renewable generation.

1.4.2 K2 Technology Selection Criteria

The decision pathway for the K2 project has selected Open Cycle Gas Turbines (OCGT) as the appropriate technology given the system context and operational requirements. While Combined Cycle Gas Turbines (CCGT) offer lower carbon intensity, they do not meet the ramp rate and

flexible minimum generation thresholds outlined in AEMO's Flexible Capacity criteria. As such, CCGTs are not suitable for the rapid response needed to manage renewable intermittency in the SWIS.

Flexible Capacity is a specific category of Capacity Credits introduced by AEMO to ensure the grid can respond to increasing renewable penetration and variability. K2's OCGT configuration is designed to meet these criteria, whereas CCGT technology would not qualify due to slower ramping and less operational flexibility.

Baseload CCGT capacity continues to be served by Synergy's existing fleet. For K2, AGL has selected Siemens SGT-800 turbines equipped with Dry Low Emissions (DLE) technology. This configuration minimizes water usage while keeping NOx emissions within allowable environmental limits, aligning with both operational and sustainability objectives.

Reasoning for choosing OCGT is presented in the GHG MP as follows:

Although gas-fired power generation in combined cycle configuration (CCGT) is the most efficient from an emissions intensity perspective, it is not necessarily considered best practice design for this application. The primary objective of the Proposal is to provide intermittent firming power to support the increased penetration of renewable generation in WA. In this context, the Proposal must be able to be deployed rapidly and provide reliable, flexible power supply to the SWIS. Gas turbines in an open-cycle (OCGT) configuration are better suited to this purpose as they have a quicker start-up procedure and are able to ramp their power output up and down. OCGT are less complex meaning a smaller footprint, greater reliability and reduced maintenance. Furthermore, the OCGTs can be deployed rapidly, which is particularly urgent due to the announced retirement of the majority of baseload coal-fired power stations in the State by 2030.

1.4.3 Proposal siting

The development envelope was chosen based on several operational and environmental benefits that the area provides:

- The Proposal Site is an existing brownfield location and the environmental impacts will be significantly lessened in comparison to a greenfields site.
- Location within KIA:
  - An appropriately zoned area with an existing buffer zone to sensitive receptors.
  - Surrounding environment and its sensitive receptors are well-known.
- Utilisation of existing operational infrastructure (Western Power connections, wastewater treatment and disposal, Dampier to Bunbury Gas Pipeline connection and other Site amenities).
- Existing stakeholder relationships which will help any required mitigation measures to be delivered in a timely manner during all project phases.

In consideration of the above and the stakeholder engagement undertaken, Perth Energy has not investigated other potential locations for the Proposal.

1.5 Regional Context

As previously described, the existing KSPS is a 120 MW open cycle aeroderivative gas turbine peaking plant and is located 40 km south of Perth in the KIA.

The Site is generally bounded by Donaldson Road to the north, (being the Primary Street to the Site), Burton Place to the east, and a 'railway' reserve to the west and south.

The surrounding land is established as an intensive industry area with various operational industrial sites.

Surrounding land uses are shown on (**Figure 1-4)** as follows:

- Dampier Bunbury Gas Pipeline Compression Station
- Cleanaway waste management facility
- Kleenheat Production facility
- Metal recycling facility
- Battery re-cycling facility
- Railway reserve

In summary, the Site is densely surrounded by heavy industrial land use, which continues to the west meeting the coastline. Nearest sensitive land uses (residential areas) are located approximately 2 km southeast of the Site.

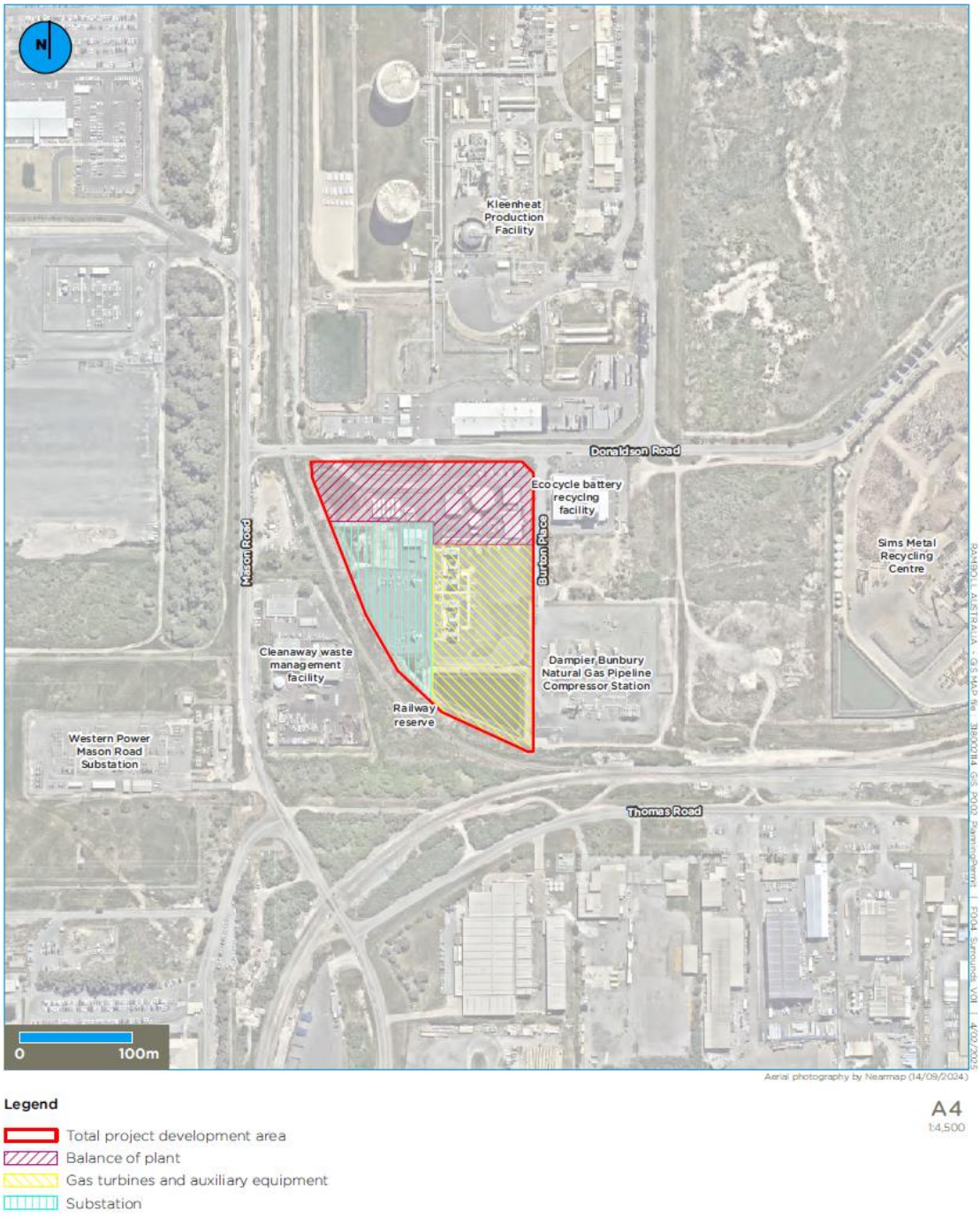

Figure 1.4: Surrounding uses
Kwinana Swift Power Station Expansion Approvals

Figure 1-4 Site boundary and surrounding land uses.

1.5.1 Land use and industry groups

The Project will be located at Lot 13 (Deposited Plan 39572), which is broadly bound by Donaldson Road to the north, Burton Place to the east and a railway reserve to the west and south. The zoning of the land under the Kwinana Town Planning Scheme No. 2 is 'General Industry'.

The Site is zoned 'Industrial' under the Metropolitan Region Scheme (**MRS**). A narrow strip in the southwest of the Site is reserved under the MRS for 'Railways'.

These zonings are applicable to the intended use of the land and as such no change will be required. Planning approvals will be required from the City of Kwinana and the Western Australian Planning Commission.

The Certificate of Title relevant to the Site is subject to registered Lease K655398 to the Proponent (Perth Energy), which includes the grant of two easement benefits – being K794662 (for pipeline and carriageway purposes) and K795726 (for water and wastewater pipeline and telecommunication cable easement purposes).

Kwinana Industrial Area (KIA)
The KIA has existed for over 60 years and has been a major contributor to Western Australia's economy throughout the years. The heavy and supporting industries in KIA provide a large amount of employment opportunities directly and indirectly. KIA employs directly around 4,800 people of which roughly 64% live locally and indirectly around another 26,000 people. (City of Kwinana, 2024b).

Different types of heavy industries and their supporting functions operate in the KIA. These industries include, among others:

- Petroleum and mineral refineries
- Power stations
- Chemical plants
- Port functions

Kwinana Industries Council (KIC)
Kwinana Industries Council (**KIC**) is a non-profit incorporated business association with its membership drawn from the major industries and businesses in the KIA (KIC, 2024). The KIC was incorporated in 1991 with the original purpose of organising air and water monitoring within the buffer zone for the industries in KIA. Since then, the KIC has expanded its responsibilities so that its goals include:

- Promoting a positive image of Kwinana industries.
- Working towards the long-term viability of Kwinana industry.
- Coordinating and delivering a range of essential industry services including water quality, air quality monitoring and emergency management.
- Highlighting the contribution Kwinana industry makes to the community.
- Representing members with key stakeholders and decision makers including state and federal governments.
- Delivering education and training programs to grow the pipeline of local workers employed with member companies.

Western Trade Coast (WTC) Strategic Industrial Area

WTC Strategic Industrial Area (**SIA**) is located 30 minutes south of the Perth CBD. It is well-connected by major transport links, including deep-water bulk port facilities, high-wide and dangerous goods freight routes, and heavy rail. The strategic importance of the WTC SIA has been recognised by the Western Australian Government. The Department of Jobs, Tourism, Science, and Innovation (**JTSI**) is the lead agency for the area's development and Development WA is the estate manager of land owned by Development WA. WTC consists of four primary industrial areas, which are the KIA, Rockingham Industry Zone (**RIZ**), The Australian Marine Complex (**AMC**), and Latitude 32. The industrial areas collectively forming WTC are presented in Figure 1-5. The proposed project area is within KIA.

Figure 1-5 Industrial areas that form the Western Trade Coast (WTC) (KIC, 2019).

1.5.2 Climate

The closest Bureau of Meteorology (BoM) station is Garden Island HSF (BoM site no 009256; latitude: 32.24°S, longitude: 115.68°E) 8 km to the west of the Site and the second closest station is Jandakot Aero (BoM site no 009172; latitude: 32.10°S, longitude: 115.88°E). A summary of both station's major climate statistics are presented below (Table 1-3). Garden Island HSF station is located on an island, whereas Jandakot Aero station is located approximately 11 km inland, which explains the differences in the stations' climate statistics. (BoM, 2024a; BoM 2024b)

Table 1-3 Major climate statistics from the closest BoM stations. Orange indicates the highest value and blue the lowest value in the row.

Statistics	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
Garden Island HSF													
Mean max temperature (°C)	27.5	28.4	27.1	24.0	21.5	19.0	17.9	18.2	19.1	21.0	23.9	25.8	22.8
Mean min temperature (°C)	19.0	19.4	18.4	16.0	13.9	12.1	11.4	11.3	12.0	13.7	15.7	17.4	15.0
Mean rainfall (mm)	12.3	15.0	16.4	36.8	74.6	116.6	127.3	95.6	60.5	27.9	20.0	9.2	603.5
Jandakot Aero													
Mean max temperature (°C)	31.5	31.7	29.7	25.8	22.1	19.1	18.1	18.7	20.3	23.0	26.5	29.4	24.7
Mean min temperature (°C)	16.9	17.2	15.7	12.6	9.5	7.6	7.2	7.4	8.4	10.0	12.8	15.0	11.7
Mean rainfall (mm)	14.9	17.1	16.8	40.9	103.9	151.1	174.0	128.4	82.1	46.1	27.3	9.9	810.1

1.5.3 Landform, geology and soils

The surface geology of the Site is characterised by Safety Bay Sands which are part of the Quindalup Dune System and are mostly unconsolidated Aeolian calcareous dune sands high in lime, but low in soluble salts.

The Safety Bay Sands overlie the Tamala Limestone which is generally a calcareous cemented sand of varying degrees of cementation, often with a surface canker and is generally of Aeolian origin.

A shallow layer of imported fill such as cement clinker, red pea gravel and blast furnace slag covered most of the Site when it was surveyed in 2001 (Environ, 2008).

The Site is subject to Memorial K718986 made under s 58 of the *Contaminated Sites Act 2003* (WA) (**CS Act**). The function of the memorial on title is to identify that the Site has been classified as 'Possibly Contaminated – Investigation Required' under the CS Act.

A DWER Basic Summary of Records search result identifies that the reasons for the Site's classification relate to broader-scale and historical operations, which predate Perth Energy's construction and commencement of operation of the KSPS (circa 2010), and are in no way in connection with the current land use and development for which this application seeks to expand.

This classification was not imposed to reflect concerns arising from the KSPS (which post-dates the classification) and does not function to prohibit any form of development on the Site or impose any additional approvals or remediation obligation under the CS Act.

A desktop contamination assessment has been completed which confirms the suitability of the Site for the development of the Proposal. This is because:

- despite the historical classification of the Site under the CS Act and for reasons which pre-date, and are unrelated to the KSPS, the current land use and development on the Site (KSPS) has been authorised to proceed, is subject to conditions under Licence No. L8471/2010.2 (issued under Part V of the EP Act) which requires routine monitoring for contamination and reporting, and has operated without incident since 2010; and
- the Proposal subject of this application merely seeks to expand the existing land use and development, which is not of a sensitive nature, and is located within a purposely designated industrial precinct which has historically and continues to accommodate for State significant industrial assets.

Management of this process is occurring through assessment by DWER (Contaminated Sites branch) under the Part V of the EP Act and the City of Kwinana through local planning schemes.

1.5.4 Topography

The project area is predominantly flat and is largely paved due to the existing operations. A very slight upwards gradient exists from the north west corner towards the centre.

1.5.5 Hydrogeology and groundwater

Depth to groundwater at the Site is between 2.7 m to 5.4 m, decreasing in depth towards the western side of the Site and flowing westwards towards the ocean. The Site is within the Jandakot Mound Area and the groundwater in the area typically ranges in salinity from 500 mg/L to 1,000 mg/L Total Dissolved Solids (**TDS**) (Environ, 2010). Existing investigations identified pH of groundwater to be between 7.34 and 7.53 pH units, which is outside the marine ecosystem protection criteria range (Golder, 2007)[4].

There are no natural surface water features in the vicinity of the Site and there is little surface runoff as rainfall generally percolates through the sandy soils to the underlying Safety Bay aquifer (Environ, 2010).

Sampling undertaken in 2007 indicated that there is not widespread contamination at the Site that would pose a significant risk to human health.

Perth Energy has undertaken routine bi-annual groundwater monitoring in accordance with the Site's Licence issued under Part V of the EP Act. The annual Environmental Report prepared in 2020 concluded the Site was well maintained and groundwater quality had little changes from historical (pre-KSPS) levels.

[4] Golder Associates Pty Ltd, 2007. *Baseline Environmental Site Investigation*.

Recent bi-annual ground water monitoring at the Site conducted in February 2024 concluded groundwater quality had remained consistent with historical monitoring, with some minor increases (likely attributable to surrounding land uses within the KIP) and that groundwater did not represent risk to current or future Site users. Noting also that the nature of the land uses associated with the KSPS (which have operated without incidence since 2010), and proposed for expansion as part of the Proposal do not and will not involve any interaction with groundwater sources or other potential contamination sources or pathways within the KIP (if any).

1.5.6 Surface water and wetlands

There are no significant surface freshwater waterbodies in the surroundings of the project area.

The closest wetlands of international importance are Forrestdale and Thomson Lakes. Forrestdale Lake and Thomson Lake are located approximately 16.5 km northeast and 8.5 km northeast, respectively.

1.5.7 Marine environment

The project area is not within immediate vicinity of a marine environment. The Indian Ocean is the closest marine environment and is approximately 1.9 km west from the Proposal area.

Cockburn Sound is a sheltered marine embayment located south of the Swan-Canning river mouth at Fremantle and approximately 1.9 km west from the Proposal area. The marine embayment is 22 km long and its width ranges from 9 km to 15 km.

In 2005, the first State Environmental Policy for the protection of environmental quality in Cockburn was released. Since 2005, the policy has been updated and the most recent version was released in 2015. The policy identifies five environmental values, which are as follows:

1. Ecosystem health
2. Fishing and aquaculture
3. Recreation and aesthetics
4. Cultural and spiritual values
5. Industrial water supply

(Cockburn Sound Management Council, 2022)

Seagrass meadows are an important seafloor habitat providing habitat for fish and other aquatic organisms, contribute to improving water quality through nutrient recycling and sediment retention, and represent an important source of organic matter. Seagrasses respond rapidly to changes in surrounding environmental conditions, which makes them good environmental indicators of the state of the marine environment. (Cockburn Sound Management Council, 2022).

Annual monitoring of seagrass shoot density has been undertaken in Cockburn Sound since 1998. The monitoring has found no significant increasing trends in shoot densities that would indicate broad recovery of seagrass meadows at the ecosystem level. Historical declines in seagrass shoot densities continue at sites at Jervoise Bay, Woodman Point and northern Garden Island. The remainder of the seagrass sites in Cockburn Sound show no trends, potentially indicating that seagrass shoot densities have become more stable at these sites. (Cockburn Sound Management Council, 2022).

Monitoring of contaminants (e.g. metals, organometallics, non-metallic inorganics, organics and pesticides) in marine waters is not routinely undertaken in Cockburn Sound. Concentrations of potential contaminants were last comprehensively assessed in 2008; some site-specific targeted surveys have been undertaken since that time. Based on the available information, the marine waters of Cockburn Sound are generally of good quality. Contaminant concentrations were below the guidelines, below their respective detection limits or the Limits of Reporting where no guidelines were available, or present in low concentrations. Contaminants at concentrations above the Limits of Reporting but with no guidelines were within accepted international standards where these are available. (Cockburn Sound Management Council, 2022).

1.5.8 Heritage

No world or national heritages properties were identified in the project area or its immediate proximity during searches undertaken as part of an *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) self-assessment utilising the Protected Matters Search Tool (**PMST**) (refer chapter 9).

An Indigenous heritage due diligence desktop assessment was conducted by Terra Rosa Consulting. The desktop study concluded no registered sites or other heritage places (**OHP**s) (lodged sites or historic data) were found in the Proposal area. There are several OHPs and registered places within 2km of the proposed project area, as listed in Table 1-4 below.

Table 1-4 Identified OHPs and registered places within 2 km radius from the Proposal site (Terra Rosa Consulting, 2024).

Name	Distance from the Proposal area	Description
NATGAS127	1.1 km east-southeast	Site comprised calcrete artefacts situated in a quarry area, but due to the Site's historic status it is unclear whether those features have been impacted or are still in situ.
Thomas Oval	1.6 km southeast	A camping ground utilised by local Aboriginal people in the 1920s.
Chalk Hills Camp	1.8 km southeast	A camping ground during 1950s and 1960s, which was used during the relocation from farms to urban environments. It is also one of the last places that a local council bulldozed an Aboriginal family's accommodation and property. Chalk Hill Camp is also associated with a string of freshwater lakes.
Indian Ocean	1.9 km west	Section of the Indian Ocean is represented by historic site Indian Ocean.

The desktop study concluded the proposed project area as 'low risk' of containing Aboriginal cultural material or sites based on previous surveys of the area and high ground disturbance levels which leaves little likelihood of Aboriginal cultural heritage being present.

The study recommended to design and implement a comprehensive stop-works procedure in case any cultural heritage material is encountered while conducting the proposed works, and to liaise with Gnaala Karla Booja Aboriginal Corporation (**GKBAC**) prior to commencing the works on the proposed project area. No further investigations or actions are recommended. Perth Energy will progress the recommended actions prior to commencement of construction.

No other heritage values (i.e. European) are present on Site. The completed desktop heritage assessment is presented as Appendix 1. Based on this assessment, the Proposal is not expected to have any impact on heritage matters.

1.5.9 Flora and fauna

As a result of historical vegetation clearing and disturbance from previous land uses (which pre-date the construction and operation of KSPS at the Site), no significant native fauna habitats exist on Site (Environ, 2010).

Subsequent and continued use of the Site for the KSPS since 2010 for electricity generation has not resulted in any additional vegetation clearance. No further vegetation clearance will occur as part of the Proposal.

In any event, the Site is considered to have a low likelihood of supporting any threatened fauna and flora for the following reasons:

- The property and surrounding area's land use is industrial and has been of an industrial nature for the last 70 years.
- The land and surrounding areas have been cleared of most vegetation.
- There is a significant distance between the proposed Site and watercourses.
- There will be no direct discharge from the operations into the marine environment.
- The likelihood of threatened species to occur in this area under the above conditions is limited.

1.5.10 Sensitive receptors

The closest sensitive receptors are detailed in Table 1-5 and their locations demonstrated in Figure 1-6. Of the listed sensitive receptors, the nearest is a recreational oval (approximately 1.5 km northeast). The nearest residential receptors are 2.3 km to the southeast.

Table 1-5 The nearest sensitive receptors to the proposed project site.

Receptor		Distance from the proposed project area
Name	Type	
Wells Park	Recreation & heritage	3.0 km to southwest
Kwinana Golf Course	Recreation	2.6 km to southeast
Thomas Oval	Recreation & heritage	1.6 km southeast
Oval	Recreation	1.5 km northeast
North Rockingham	Recreation	4.9 km to southwest
Residence	Residential	2.3 km to southeast
Hope Valley	Suburb	3.0 km northeast
Calista Primary School	School	3.6 km to southeast
Wombat Wallow Childcare Centre	Childcare	2.6 km southeast
South Lake AQMS	Air Quality Monitoring Station	13.6 km to northeast

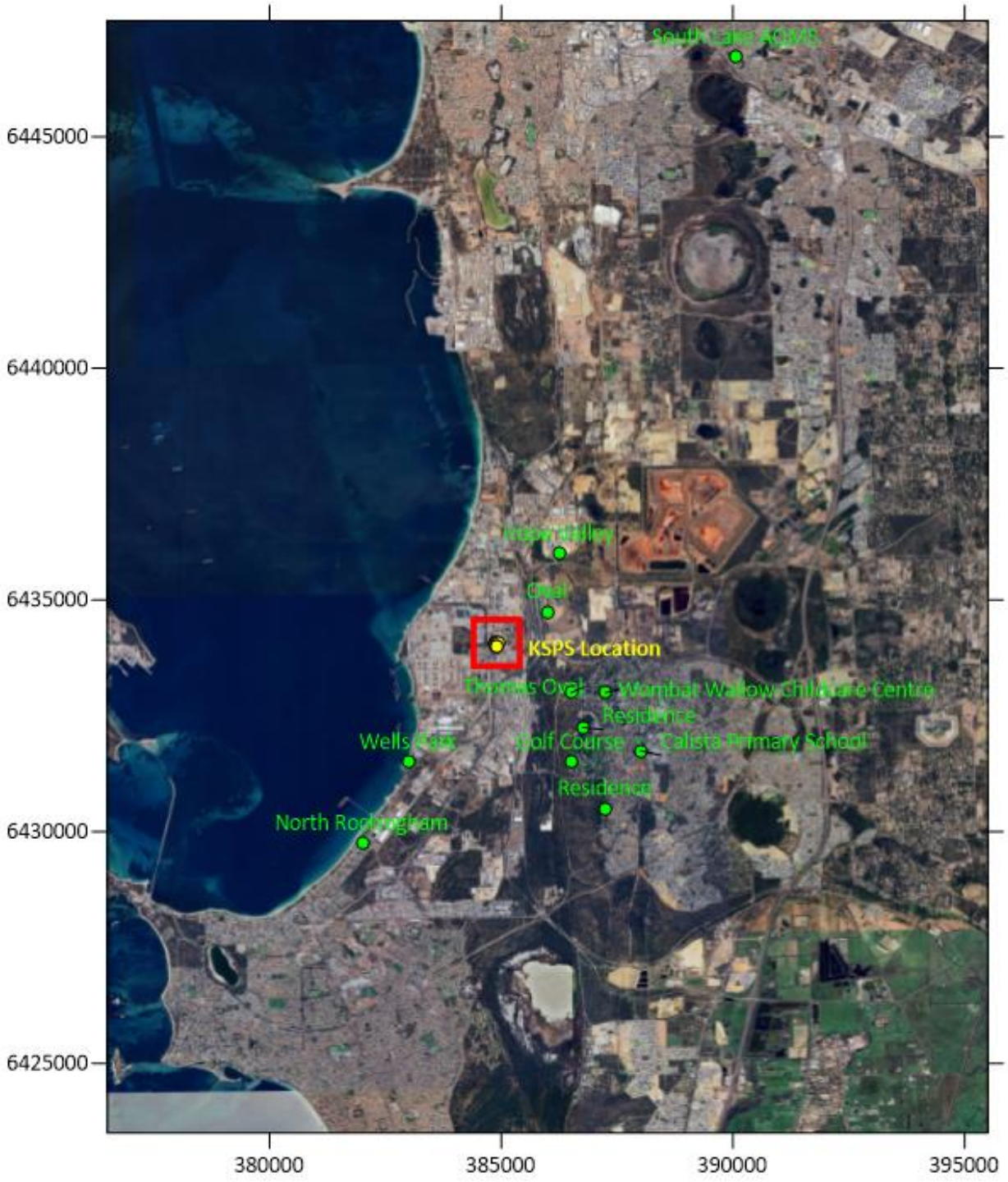

Figure 1-6 The nearest sensitive receptors to the proposed project site.

2. Legislative Context

2.1 Environmental Impact Assessment Processes

Environmental impact assessment (**EIA**) in WA is conducted under the EP Act for matters within the WA jurisdiction and under the EPBC Act for 'matters of national environmental significance' (**MNES**) at the Commonwealth level.

2.1.1 Environmental Protection Act 1986

The EP Act is the primary environmental legislation that governs environmental protection and EIA in Western Australia. Part IV, Division 1 of the EP Act, provides for the referral and assessment of proposals likely, if implemented, to have a significant effect on the environment.

This supporting document has been prepared in accordance with the relevant EPA instructions and guidelines, including:

- *Instructions and template: How to identify the content of a proposal, March 2024*
- *Instructions: How to prepare an environmental review document, March 2024*
- *Environmental impact Assessment (Part IV Divisions 1 and 2) Procedures Manual, October 2021*
- *Environmental Factor Guideline: Greenhouse Gas Emissions, November 2024*
- *Environmental Factor Guideline: Air Quality, April 2020.*

This supporting document demonstrates that potential impacts of the proposal can be managed in accordance with the measures outlined in this document and Appendices and within the framework of the other approvals and regulation noted below.

2.2 Environmental Protection and Biodiversity Conservation Act 1999

The Environmental Protection and Biodiversity Conservation (EPBC) Act and regulations are Australia's main national environmental legislation. They provide for the protection and management of nationally and internationally important plants, animals, habitats, and places that need protecting as 'matters of national environmental significance (MNES)'. Currently there are nine MNES:

1. World Heritage Areas
2. Commonwealth Heritage Places
3. wetlands of international importance (listed under the Ramsar Convention)
4. listed threatened species and listed ecological communities
5. listed migratory species (protected under international agreements)
6. Commonwealth marine areas
7. Great Barrier Reef Marine Park
8. nuclear actions (including uranium mines)
9. water resources (relating to coal seam gas development and large coal mining development)

The EPBC Act also applies when actions are taken on commonwealth land likely to have a significant impact on the environment by the Commonwealth or a Commonwealth agency.

Any proposal that may be likely to have a significant impact on MNES must be referred to the Minister for the Environment and Water for decision whether assessment under the EPBC Act is required.

The Proposal will not likely have a significant impact on any MNES or Commonwealth land and thus, has not been referred under the EPBC Act (refer to Section 9).

2.3 National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting* (**NGER**) Scheme was established under the NGER Act. Under the NGER Scheme the GHG emissions, energy production and consumption of facilities/companies exceeding GHG emission thresholds must be reported to the Clean Energy Regulator (**CER**) on an annual basis.

The methods and criteria for calculating GHG emissions are described in the *National Greenhouse and Energy Reporting (Measurement)* Determination.

The KSPS currently meets the NGER threshold and AGL reports on the KSPS annually under the NGER Scheme. This Proposal will also be reported on under the NGER Scheme.

2.4 Safeguard Mechanism

The Safeguard Mechanism is the Australian Government's program for reducing emissions within its framework, a sectoral baseline applies to grid-connected electricity generators. The KSPS and the Proposal come under this sectoral baseline.

The NGER Act and Safeguard Mechanism provide a contemporary, robust, transparent and enforceable legislative regime to deliver GHG emissions reductions which align with Australia's international obligations. These regulatory measures will appropriately manage GHG emissions associated with the proposal alongside Perth Energy's internal Greenhouse Gas Management Plan (**GHGMP**).

2.5 Other Approvals and Regulation

Other approvals relevant to this proposal are outlined below:

Table 2-1 Other Approvals relevant to this Proposal.

Authority	Legislation	Approval	Details
City of Kwinana and Western Australian Planning Commission (**WAPC**)	Planning and Development Act 2005, the City of Kwinana Local Planning Scheme No. 2 and the Metropolitan Region Scheme	Development Approval	Development Approval is required to conduct activities specified in the Development Approval application on a particular piece of land. Development Approval Application has been prepared and submitted in parallel to this Proposal.

DWER	Environmental Protection Act, Part V	Works Approval	Part V Works Approval required for Category 52 Electric power generation for the construction and commissioning of the proposed activities. Works Approval Application has been prepared and submitted in parallel to this Proposal.
DWER	Environmental Protection Act, Part V	Environmental Licence	Environmental Licence is required to operate proposed industrial activities which classifies the premises as a 'prescribed premises' under the *Environmental Protection Regulations 1987.* The Site has an Operating Licence (L8471/2010/2) for its current operations and it applies to the whole of the Site. When the Proposal moves from construction to operation an amendment to the existing Licence will be sought to cover the industrial activities included in this Proposal.
DEMIRS	Dangerous Goods Safety (Storage and Handling of non-explosives) Regulations 2007	Dangerous Goods Site Licence	Dangerous Goods Site Licence is required if the quantity of dangerous goods stored and handled at the premises exceed the thresholds defined in the Schedule 1 of the *Dangerous Goods Safety (Storage and Handling of non-explosives) Regulations 2007.* The Site has a Dangerous Goods Site Licence for its existing operations, which will be amended to include the storing and handling of dangerous goods under this Proposal.

As previously discussed, Perth Energy will maintain their current agreement with Water Corporation, or enter a new agreement, to meet water quality discharge requirements of the

KWRP operating licence to allow it to be utilised for the Proposal's wastewater disposal. Accordingly, approval to discharge wastewater from the Project is not required.

The Site's treatment systems establish and operate in accordance with the Health Department and City of Kwinana requirements.

2.6 Existing Approvals

The Proposal does not have any existing approvals or licences. As noted above, a Works Approval Application for the K2 Project under Part V of EP Act has been submitted to DWER concurrently with this Proposal. Applications for development approval have also been submitted to the City of Kwinana and the WAPC.

A summary of approvals for the KSPS operations is contained below.

A referral for a 120 MW CCGT Base Load Plant was submitted to the EPA under Section 38(1) of the EP Act in November 2002 by Perth Energy. The EPA assessment report determined that the project could be assessed as an Assessment on referral Information (ARI) and released its advice as Bulletin 1080 in December 2002. Ministerial Statement (no 625) was granted on 23 May 2003. This project was not progressed, and Ministerial Statement 625 was rescinded in 2008.

The Kwinana 120 MW OCGT Peaking Plant (the current KSPS operation) was referred to the EPA in March 2008. However, the Proponent received a formal notice from the EPA that the proposal was 'Not Assessed' and that the project could be managed under Part V of the EP Act.

On 2 September 2010, the premises received its Operating Licence (L8471/2010/1), which was amended (L8471/2010/2) and reissued on 3 September 2015, for category 52 premises: '*Electric power generation: premises (other than premises within category 53 or an emergency or standby power generating plant) on which electrical power is generated using a fuel.'*

2.7 Electricity Regulation Context

2.7.1 K2 Project Peaking Power Station: Strategic Context and Cumulative Impact Assessment

The K2 Project peaking power station, proposed by Perth Energy (a subsidiary of AGL), is a 250 MW open-cycle gas turbine (OCGT) project designed to provide critical firming and system stability services to the Southwest Interconnected System (SWIS) in Western Australia. It is being developed in direct response to the State's energy transition strategy and the anticipated retirement of significant coal and gas-fired generation capacity by 2030.

2.7.2 System Context and Urgency

The State of Western Australia has committed to retiring all State-owned coal-fired power stations by 2030, including Collie, Muja C, and Muja D. These facilities currently contribute a substantial share of the SWIS's MWh generation, system inertia, and peak capacity. The June 2025 AEMO WEM Electricity Statement of Opportunities (ESOO) flags further uncertainty around the privately owned Bluewaters Power Station and the retirement of Synergy's gas-fired units at Pinjar.

This confluence of retirements represents a significant loss of long-duration, fast-response firming capacity and essential system services. While a wave of four-hour battery projects has been announced, these assets are limited in both energy duration and system strength capabilities.

2.7.3 K2 Project's Role in Grid Stability and Decarbonisation

The K2 Project is being fast-tracked to align with the expected retirement of Collie and Bluewaters from peak capacity provision. The project is designed to:

- Provide firming support during extended periods of low renewable output, especially after batteries are depleted.
- Deliver fast-response flexible capacity to address renewable intermittency (e.g., cloud cover, wind volatility).
- Support the SWIS during "dunkelflaute" events or major unplanned outages of coal or gas generators.

K2 will participate in the Reserve Capacity Mechanism (RCM), meaning it must be available when called upon by AEMO. It can only bid into the market at its short-run marginal cost (SRMC), ensuring it operates only when cheaper sources (coal or renewables) are unavailable. This market structure ensures that K2's utilisation will inherently reduce the grid's carbon intensity, as it displaces higher-emission or unavailable generation only when necessary. Perth Energy will not decide when to increase or decrease K2's dispatch rather it will be dictated by the demand set by AEMO.

In this context, if K2 is dispatched, it reflects a shortage of lower-SRMC generation. Based on modelling in the 2025 WEM ESOO, AEMO highlights that:

"In 2027-28, following the closure of more coal-fired generation, more capacity will need to be procured under the RCM to avert energy shortfalls that are otherwise forecast to become more prevalent. While there is substantial continued interest in battery storage to help maintain reliable supply, investment in storage alone will not suffice. At least 110 MW of new generation sources such as gas, wind and solar generation will be required. Consequently, new energy-producing investment will be prioritised in this year's Network Access Quantity process as part of the Capacity Cycle."

Further, in section 7 of the WEM ESOO, AEMO confirms that "As ageing coal-fired and gas-fired fired generation exits the SWIS, material investment in new energy-producing generating capacity and storage is required, along with investments in system strength services and the transmission network."

Relevantly for the K2 Project, AEMO states in section 7.2.2 that "To address energy shortfalls identified in Chapter 5, additional capacity brought online should feature generation capacity, *including firm non-energy limited capacity (such as gas-fired Facilities meeting the 14-hour fuel requirement*) and renewable generation such as wind or solar Facilities."

The AEMO statements reflect the need for sufficient thermal firming capacity to complement storage and renewable energy capacity, and that the inclusion of K2 in the SWIS generation mix (gas, coal, wind, battery) results in a lower cumulative carbon intensity. For example, in years with insufficient wind, K2's dispatch displaces coal rather than renewables, helping avoid system stability risks or load shedding. Without K2, coal would need to remain online longer to fill these gaps.

3. Stakeholder Engagement

3.1 Key Stakeholders

Key stakeholders have been identified in the early stages of the project to ensure they are engaged and informed properly as the project develops. Stakeholders have been identified based on interest, proximity to the Proposal, surrounding land use and the potential impacts and risks.

Table 3-1 Key stakeholders.

Stakeholder	Area of interest
Environmental Protection Authority (EPA)	• Administration of the EP Act Part IV Impact Assessment
Department of Water and Environmental Regulation (DWER)	• Administration of the EP Act Part V Works Approval and Licence application • Existing licence
Department of Planning, Lands and Heritage (DPLH)	• Administration of the Planning and Development Act
Kwinana City Council	• Development Approval for the Proposal • Use of local infrastructure
Kwinana Industries Council	• Promotion and support of industries in the KIA • Long-term viability of KIA • Coordination and delivery of several essential industry services, including versatile monitoring services • Delivery of education and training programs to increase the involvement of local workers at KIA
Energy Policy WA	• WA Government's Energy Transformation Strategy
Western Power	• Infrastructure connections and grid requirements

Engagement with the broader community and stakeholders will be reviewed based on regulators' advice and feedback received during the public advertising period of this Proposal.

3.2 Stakeholder Engagement Process

Perth Energy has maintained an open dialogue with stakeholders while preparing the Proposal for the EPA, to understand and consider their expectations, concerns, and interests. Perth Energy will remain available for stakeholder engagement during and post the Proposal assessment.

3.3 Stakeholder Consultation Outcomes

Perth Energy has had broad discussions to engage with key stakeholders of the Proposal. The stakeholder consultation conducted to date is presented below (Table 3-2).

Table 3-2 Stakeholder consultation to date.

Stakeholder	Date	Issues/topics raised	Proponent response/outcome
Australian Gas Infrastructure Group (AGIG)	26 Jul 24	Project introduction and next steps/requirements to progress the project and gas connection.	To keep AGIG informed, no further actions at this stage.
Western Power (WP)	23 Aug 24	Project introduction and next steps/requirements to progress the project and high voltage electrical connection.	To keep WP informed, no further actions at this stage.
State Development Assessment Unit (SDAU) – Land Use Planning	27 Aug 24	Overview of project focusing on the criteria of state significance (SS).	Linked AGL with State Referral Co-ordination unit (SCRU).
State Referral Coordination Unit (SCRU)	3 Sept 24	Overview of project focusing on planning approval pathways.	SCRU is happy to assist when/as required. Provided suggestions of Agencies to meet with.
Kwinana City Council	9 Sept 24	Overview of project focusing on planning approval pathways.	Ongoing engagement regarding lodgement of planning approval.
EPA/DWER (Part IV)	16 Sept 24	Overview of project focussing on Part IV.	DWER advised a Scoping meeting with Part V team should occur.
Kwinana Council Mayor AGL - CEO	19 Sept 24	Overview of project focusing on planning approval pathways.	Council should be kept updated with DA timing.
EPA/DWER (Part V)	20 Sept 24	Overview of project focusing on Part V.	Further discussions as needed.
Westport	14 October 2024	AGL/Ramboll presented the project to Westport.	Project is of interest but no significant impacts or concerns to Westport.
Contaminated Sites Branch (CSB)	02 October 24	Telephone conversation with CSB team member	Confirmed an assessment of land contamination issues would occur through the EP Act Part V process.

4. Object and Principles of the EP Act

The object of the EP Act is to protect the environment of the State having regard to the following five principles:

1. The precautionary principle.
2. The principle of intergenerational equity.
3. The principle of the conservation of biological diversity and ecological integrity.
4. Principles relating to improved valuation, pricing and incentive mechanisms.
5. The principle of waste minimisation.

An assessment of the Proposal against these principles according to the EPA's *Statement of environmental principles, factors, objectives and aims of EIA* (**Statement of Principles**) is provided in Table 4-1.

Table 4-1 Principles of the EP Act.

Principle	Consideration
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In the application of the precautionary principle, decisions should be guided by:* *(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *(b) an assessment of the risk-weighted consequences of various options.*	The precautionary principle was considered during the planning for the Proposal. There is uncertainty around specific threats and impacts to WA's environment from GHG emissions, which Perth Energy acknowledges. To minimise the environmental risks arising from the GHG emissions, the GHGMP was prepared. The GHGMP provides guidance to control and manage the Proposal's GHG emissions in a manner that is aligned with WA's current climate targets.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.*	Perth Energy recognises that climate change poses a risk to future generations. Perth Energy is committed to execute all the mitigation measures listed in Section 6.5, and to offset remaining GHG emissions to achieve required reductions in GHG emissions.
3. The principle of the conservation of biological diversity and ecological integrity *Conservation of biological diversity and ecological integrity should be a fundamental consideration.*	The proposed activities do not require clearing of native vegetation. The proposed Project area is a brownfields site within an existing industrial area, where the direct adverse impacts on biological diversity and ecological integrity are considered minimal. Perth Energy acknowledges that climate change can affect biological diversity and ecological integrity, and therefore the GHG and other air emissions may indirectly have adverse

	impacts on the biological diversity and ecological integrity. Therefore, Perth Energy is committed to implement all mitigation measures outlined in this Proposal and the GHGMP to minimise the risk of environmental harm and impacts on the conservation of biological diversity and ecological integrity.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(a) Environmental factors should be included in the valuation of assets and services.* *(b) The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement.* *(c) The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.* *(d) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.*	Valuation of the alternatives for assets and services to be purchased is a mandatory part of Perth Energy's procurement procedure. Valuation process includes technical, economic, social, and environmental aspects of the purchased goods and services. Where structural abatement techniques are insufficient to meet the proposed emission reduction targets, additional actions will be taken in the form of offsetting to ensure the set targets are met. Corporate and proposal level offset policies and commitments are described more in detailed in Section 8. Perth Energy is committed to review the GHGMP at set intervals to ensure it is up-to-date, corresponds with the current operating environment and is aligned with the applicable guidelines and legislative requirements that may change from time to time.
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	It is a standard practice at Perth Energy to apply the waste management hierarchy (avoidance, reuse, recycling, recovery of energy, treatment, containment, and disposal) to all their activities and consequently it will be applied for this Proposal as well.

5. Environmental Factors and Objectives

The EPA's Statement of Principles outlines the EPA's environmental factors and objectives, which are presented in Table 5-1. The EPA will have regard to these objectives when determining whether the environmental impact of a proposal or scheme may be significant, and at most other stages of EIA.

Perth Energy has considered all 14 environmental factors and their significance to the proposal, using the following classifications:

- **Key environmental factor** – the Proposal may cause a significant impact to the environmental factor
- **Other environmental factor** – the Proposal has the potential to interact with the environmental factor but is not anticipated to result in significant impacts
- **Not relevant** - the Proposal is not anticipated to result in any impacts to the environmental factor

The summary of considered environmental factors and reasoning for their classification is presented in the below table (Table 5-1). Only greenhouse gas emissions were considered as a key environmental factor and is discussed further in Section 6. All other relevant environmental factors are discussed in Section 7 and MNES in Section 9. Cumulative impacts are addressed in Section 11.

Table 5-1 EPA Environmental Factors and Objectives.

Theme	Factor	Objectives	Classification	Consideration
Sea	Benthic communities and habitats	To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained.	Not relevant	The project area is not in immediate vicinity of a marine environment. The nearest coastline is approximately 1.9 km west from the project area.
	Coastal processes	To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected.	Not relevant	The project area is not in immediate vicinity of a marine environment. The nearest coastline is approximately 1.9 km west from the project area.
	Marine environmental quality	To maintain the quality of water, sediment and biota so that environmental values are protected.	Not relevant	The project area is not in immediate vicinity of a marine environment. The nearest coastline is approximately 1.9 km west from the project area.
	Marine fauna	To protect marine fauna so that biological diversity and ecological integrity are maintained.	Not relevant	The project area is not in immediate vicinity of a marine environment. The nearest coastline is approximately 1.9 km west from the project area.
Land	Flora and vegetation	To protect flora and vegetation so that biological diversity and	Not relevant	Expansion project on a brownfields site – No clearing to occur, capacity will be

Theme	Factor	Objectives	Classification	Consideration
		ecological integrity are maintained.		increased by constructing within an already cleared area in the existing industrial precinct.
	Landforms	To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected.	Not relevant	Expansion project on a brownfields site – No clearing to occur, capacity will be increased by constructing within an already cleared area in the existing industrial precinct.
	Subterranean fauna	To protect subterranean fauna so that biological diversity and ecological integrity are maintained.	Not relevant	Expansion project on a brownfields site – No clearing to occur, capacity will be increased by constructing within an already cleared area in the existing industrial precinct.
	Terrestrial environmental quality	To maintain the quality of land and soils so that environmental values are protected.	Not relevant	Expansion project on a brownfields site – No clearing to occur, capacity will be increased by constructing within an already cleared area in the existing industrial precinct.
	Terrestrial fauna	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.	Not relevant	Expansion project on a brownfields site – No clearing to occur, capacity will be increased by constructing within an already cleared area in the existing industrial precinct.
Water	Inland waters	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.	Not relevant	Expansion project on a brownfields site –Surface water and groundwater related environmental risks are addressed through the Part V process.
Air	Air quality	To maintain air quality and minimise emissions so that environmental values are protected.	Other environmental factor	Air emissions are formed in electricity generation, and they may impact the surrounding environment and human health. Air emissions are not considered to be a key environmental factor, but as another environmental factor and are assessed in Section 7.1.

Theme	Factor	Objectives	Classification	Consideration
	Greenhouse gas emissions	To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable.	Key environmental factor	Greenhouse gas emissions are a key environmental factor for the Proposal and are assessed in Section 6.
People	Social surroundings	To protect social surroundings from significant harm.	Other environmental factor	The Proposal has potential impacts on amenity through air emissions and noise. Also, heritage matters were considered as part of the social surroundings. This environmental factor is not considered to be a key environmental factor, because the Proposal is located within an existing industrial area within a buffer zone.
	Human health	To protect human health from significant harm.	Other environmental factor	The Proposal has potential impacts on human health through air emissions. These potential impacts would not be material and able to be managed under Part V of the EP Act. This environmental factor is not considered to be a key environmental factor, because the Proposal is located within an existing industrial area with a buffer zone.

6. Key Environmental Factor: Greenhouse Gas

6.1 EPA Objective

The EPA's *Environmental Factor Guideline: Greenhouse Gas Emissions* (GHG Factor Guideline) provides the environmental objective of the GHG emissions factor is (EPA, 2024b):

'To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable'

6.2 Relevant Policy and Guidance

GHG Factor Guideline
In accordance with EPA's *Environmental Factor Guideline: Greenhouse Gas Emissions,* GHG emissions from a proposal will be considered where they are reasonably likely to exceed:

- 100,000 tonnes CO2e of scope 1 emissions in any year; or
- 100,000 tonnes CO2e of scope 2 emissions in any year.

Scope 1 GHG emissions are defined in the EPA's Guideline as '*those released to the atmosphere as a direct result of an activity, or a series of activities, which are part of a proposal being considered by the EPA'.* Whereas scope 2 GHG emissions are defined as '*those from the independent consumption of an energy product by the proposal*.' It is acknowledged that scope 2 emissions from a proposal are also the scope 1 emissions from an independent energy proposal, but they are considered relevant where the proponent has control over its choice of independent energy quantity and source.

The Sectoral Emissions Reduction Strategy for Western Australia (**SERS**)
SERS was released in December 2023. SERS outlines the key priorities, benchmarks and milestones for WA's transition to net zero emissions while supporting the decarbonisation of our region. SERS notes that by 2050, 96% of energy consumed is projected to come from renewable generation, compared with 34% currently in the South West Interconnected System (**SWIS**).

This transition to renewable generation will include the need for additional back-up supply from plants such as this Proposal. This will ensure the SWIS receives reliable power supply and the reliance on coal and diesel power will be reduced. The Proposal is centred around providing the aforementioned stepping stone to emissions reduction until renewables have been fully integrated and therefore aligns with the SERS (Preston Consulting, 2024).

Western Australian Climate Policy: A plan to position Western Australia for a prosperous and resilient low-carbon future (WA Climate Policy)
The WA Climate Policy highlights the most significant, high-impact actions which are taken in preparation for climate change and to achieve the aspiration of net zero emissions by 2050. Action is outlined in the following themes:

- Clean manufacturing and future industries
- Transforming energy generation and use
- Storing carbon and caring for our landscapes
- Lower-carbon transport
- Resilient cities and regions
- Government leadership

(DWER, 2020)

The Proposal will contribute to the transition towards a less emission intensive economy by providing additional electricity supply to compensate the predicted electricity capacity deficits resulting from shutting down of the thermal coal fire generation power stations in Collie, WA.

Greenhouse Gas Emissions Policy for Major Project (GHG Major Projects Policy)
The GHG Major Projects Policy was updated on 15 October 2024. The updated policy reforms the Safeguard Mechanism and established a nationally consistent approach to reducing greenhouse gas emissions for Australia's largest emitters. The focus is on removing duplication and it does not change Western Australia's target of achieving net zero GHG emissions by 2050.

6.3 Receiving Environment

Australia is committed to reduce emissions to 43% below 2005 levels by 2030 and to net zero by 2050, as reflected in Australia's nationally determined contribution (NDC) under the *Paris Agreement* (DCCEEW, 2024a). The next NDCs are to be submitted in 2025 including post 2030 emission reduction targets and reflection of parties' highest possible ambition.

Below is presented state and territory specific GHG inventories for financial years 2004/2005 and 2021/2022 and the corresponding percentual change in the GHG emission levels. The GHG estimates are calculated on a United Nations Framework Convention on Climate Change (UNFCCC) accounting basis using the global warming potentials from the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report.

Table 6-1 State and territory specific GHG emission estimates (DCCEEW, 2024b).

State/Territory	FY 2004/-05 (Mt CO_2e)	FY 2021/-22 (Mt CO_2e)*	Change (%) between FY 2004/-05 and FY 2021/-22
New South Wales	152.74	111.00	-27.3 %
Queensland	191.94	124.10	-35.3 %
Victoria	123.23	84.72	-31.3 %
Western Australia	76.23	82.54	8.3 %
South Australia	36.53	15.82	-56.7 %
Northern Territory	11.21	16.73	49.2 %
Tasmania	15.50	-4.34	-128.0 %
Australian Capital Territory	1.42	1.28	-9.9 %
Total	**608.8**	**431.85**	**-29.1 %**

*Most recent GHG emission estimates available for Australia calculated on a UNFCCC accounting basis.

6.4 Potential Environmental Impacts

The potential impact of the Proposal is dependent on Perth Energy's customers electricity demand, as the proposed expansion project is a peaking power station.

The demand for electricity from the Proposal is based on a number of factors, such as consumers, environmental conditions and the rate at which coal and diesel based power generation is retired

and build-out of new solar and wind generation. There is therefore uncertainty about the Proposal's operational throughput and resulting emissions trajectory.

The emissions trajectory presented here and in the GHGMP has been calculated based on consumer demand projections and grid demand, factoring in the retirement of old technology. Demand for power from the Proposal will fluctuate but will be enduring and persist beyond 2050.

6.4.1 Estimated GHG emissions

The Proposal emissions estimates (operational) and the background calculations used to assess the GHG emissions estimates are provided in more detail in Appendix 2 *Greenhouse Gas Management Plan (GHGMP)* prepared by Preston Consulting Pty Ltd. The major GHG emissions from the Proposal are carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4).

The GHG Protocol Corporate Accounting and Reporting Standard (**GHG Protocol**) was applied to estimate the Proposal's GHG emissions. In the GHG Protocol GHG emissions are classified as Scope 1, Scope 2, and Scope 3. The global warming potentials (GWPs) from the IPCC's Fifth Assessment report were used in this assessment (Table 6-2).

Table 6-2 100 year global warming potential of GHGs.

Greenhouse gas (GHG)	Global warming potential (GWP)
CO_2	1
CH_4	28
N_2O	265

The following key assumptions (Table 6-3) were applied to the calculation and modelling of GHG emissions for the Proposal.

Table 6-3 Key assumptions applied to estimate the Proposal's GHG emissions.

General assumptions
• The Proposal will operate below the maximum operating scenario; and • The Proposal demand will be subject to grid requirements and will fluctuate over the life of the Proposal.
Scope 1

• No vegetation clearing is required;
• Aero-derivative or light industrial dual-fuel turbine units will be used;
• Turbines are installed and operated in an open cycle configuration;
• Projected power generation and emissions estimates consider site specific operating conditions, including:
  ○ Evaporative cooling;
  ○ Wet compression and fogging;
  ○ NO_x control and injection;
  ○ An average temperature of 41°C and relative humidity of 15%; and
  ○ Operations are at sea level.

Scope 2
• It is assumed that the Proposal will purchase 1 MWh of electricity per annum to maintain connection during maintenance and shutdowns. No other Scope 2 emissions will be generated during the operating phase.

Scope 3
• Natural gas and diesel will be sourced from a provider that complies with the required standards; • NGER emissions factors are suitable for the calculation of scope 3 emissions from the supply of natural gas, diesel and the transmission of electrical energy via the SWIS; and • Supply of natural gas and diesel will be direct to the Proposal Site.
Exclusions

The following sources of emissions are excluded from the Proposal emissions estimate:
• Other projects that Perth Energy has planned or proposed are not considered;
• Perth Energy planned or proposed future development of the Proposal, including future stages;
• Perth Energy's other facilities outside of the Proposal (e.g. offices in Perth, etc.) are not included in this assessment;
• Specific Scope 3 emissions including:
  ○ Business Travel;
  ○ Franchises and investments; and
• Fugitive emissions – e.g. equipment leaks from joints, seals, packing, and gaskets; hydrofluorocarbon emissions during the use of refrigeration and air conditioning equipment; and CH_4 leakages from gas transport have also been excluded.

Construction activities are expected to be limited and include the assembly of infrastructure (turbines and generators) on cleared/prepared land and, the movement of vehicles and equipment to Site. Construction emissions are not expected to be material (i.e., well below the EPA's 100,000 t CO_2-e/a) and any estimate provided at this stage would be highly speculative. On this basis, construction GHG emissions estimates have not been calculated.

It is also noted again that the Proposal, and the GHGMP, does not include the existing KSPS.

A summary of the Proposal Scope 1, 2 and 3 GHG emissions estimates for the operational phase is provided in Table 6-4.

Table 6-4 Emissions estimates (t CO_2e) for the Proposal.

	Emissions (t CO_2e)			
	Construction	**Operation**	**Annual average**	**Peak Emissions (Year)**
Scope 1	Not estimated, refer above.	8,629,357	191,763	281,871 (2036)
Scope 2		23,850	530	530 (any year)
Scope 3		1,010,793	22,462	32,822 (2036)

The Proposal's annual GHG emissions estimates over the life of the Proposal are visualised below (

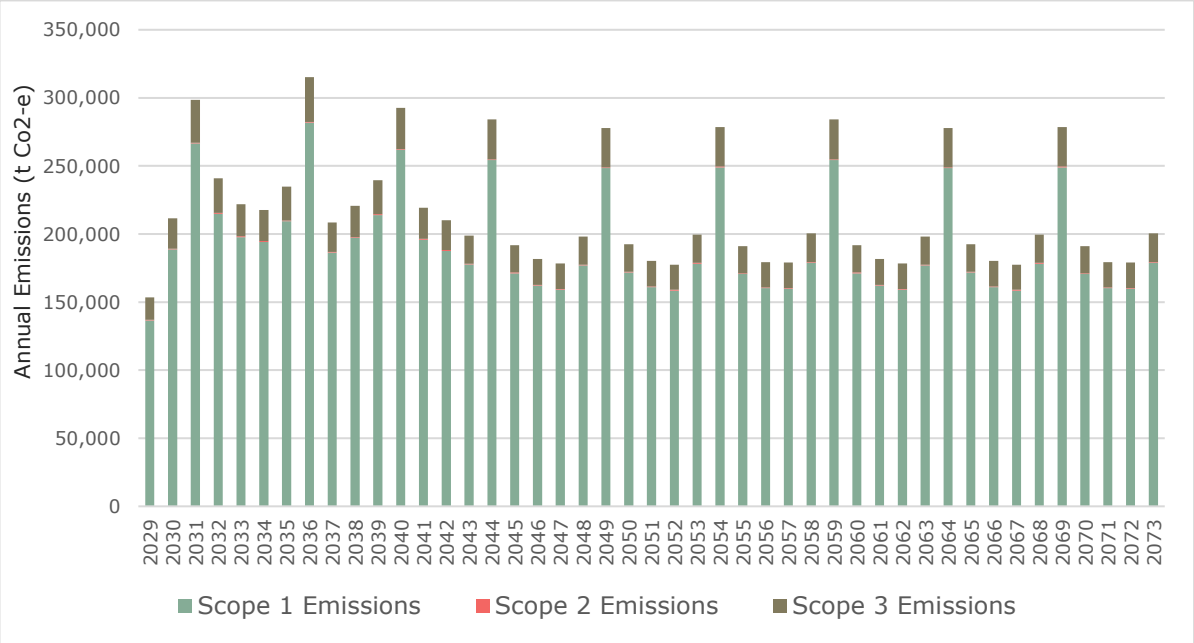

Figure 6-1). Scope 1 and 3 emissions will be produced from 2029 onwards once construction is complete. The quantitative annual GHG estimates (t CO_2e/a) are presented in Section 2.1.1 of the GHGMP.

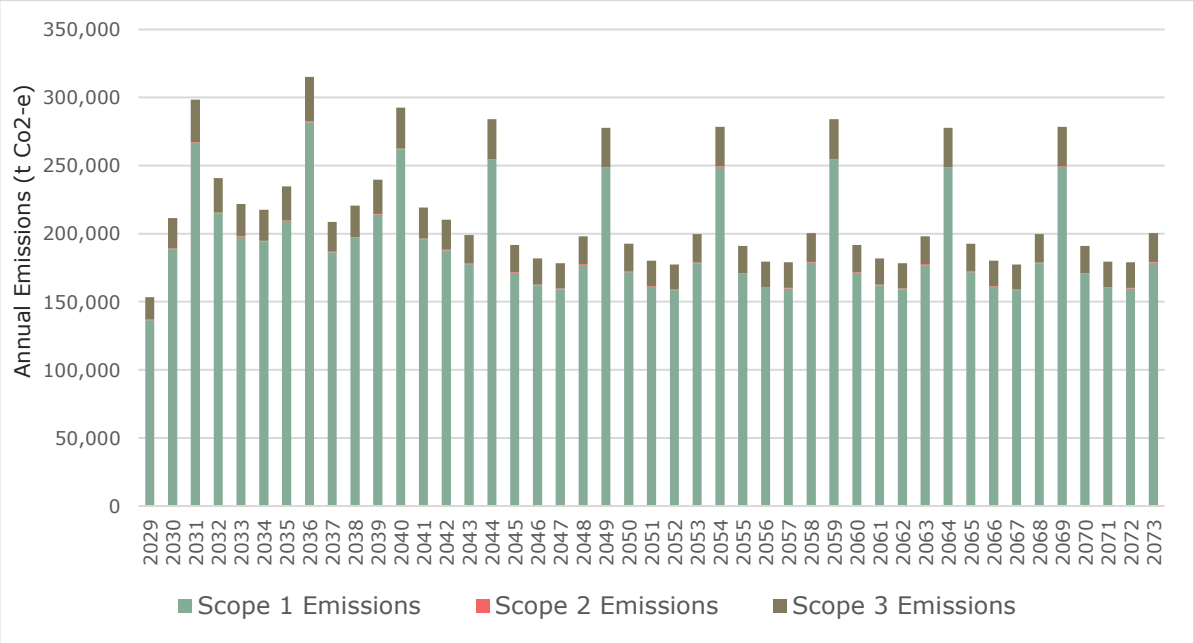

Figure 6-1 GHG emissions over the operational life of the Proposal (Preston Consulting, 2024).

6.5 Mitigation

Perth Energy has prepared a GHGMP that demonstrates how the Proposal related GHG emissions will be decreased over time to meet the EPA's and State Government's net-zero targets by 2050.

The EPA's mitigation hierarchy for the greenhouse gas emissions factor has been reflected in the planned mitigation measures in the following order of priority:

- Avoidance: Emissions will be avoided where possible through best-practice design. A benchmarking exercise was undertaken showing that emissions from the Proposal compare favourably with other similar operations.
- Reduce: Perth Energy will implement the GHGMP for the Proposal which describes how emissions will be reduced such that net zero carbon emissions are achieved by 2050 (summarised below).
- Offset: Where avoidance and reduction is not possible, Perth Energy will develop and implement an offset strategy to offset residual emissions in accordance with required emissions reductions.

The following mitigation measures will be implemented over the life of the Proposal to avoid or reduce this Proposal's Scope 1 emissions.

Best-practice Design

During the design phase, Perth Energy investigated several gas turbine generator technology options to identify the best practice technology suitable for the Proposal. Parameters that were considered include but not limited to:

- High energy density MW/m^2;
- Low nitrogen oxide (NOx) emissions;
- High efficiency;
- Flexible and reliable operation;
- Fast-start;
- Very-low minimal-generation;
- Sync-con functionality and contribution to system stability;
- Dual fuel (natural gas and diesel);
- Low cost against generation ($/MW);
- Low maintenance and operational requirements;
- High availability;
- Firm generation (when renewables not generating);
- Proven technology in WA (for construction and operation);
- Ability to operate on hydrogen in the future; and
- Ability to operate on bio-diesel fuel in the future.

Additionally, the Proposal commits to consider the following parameters over its' life:

- Use of new high-efficiency aero-derivative or light industrial gas turbine technology;
- Select world-leading original equipment manufacturer (OEM) for gas turbine supply and commissioning;
- Through-life emissions/efficiency part of technology selection process; and
- Performance Guarantees in construction and operation.

Perth Energy is determined to utilise the best-practice technology that is suitable for the Proposal application. The choice of technology is limited by site-specific factors including climate, availability, packaging and compliance with other environmental constraints such as air quality. The chosen technology may therefore not represent best-practice in a global context of power generation; however, the Proposal will use the latest models of the chosen technology where possible which is expected to be competitive with other power generation technology and is considered best-practice in the context of the Proposal.

Site Selection

Perth Energy has decided to co-locate the Proposal with the existing power station. This approach has several emissions avoidance benefits including:

- Avoiding the need to clear native vegetation;
- Maximising the use of limited existing network transmission capacity;
- Efficiencies in commuting and supply of equipment for maintenance that is required for both plants; and
- Avoiding the need to develop and clear vegetation for additional supply and transmission infrastructure.

Low Carbon Fuel Alternatives

Perth Energy has not yet identified the specific turbines to be installed at the Proposal. A decarbonisation opportunity exists to utilise low carbon fuel such as biodiesel or hydrogen in place of natural gas however a reliable, cost competitive source of either has not been identified.

Despite the above, the ability to utilise biodiesel and or hydrogen for power generation is a key consideration in the selection of turbine technology. Perth Energy will continue to explore the opportunity to use low carbon fuel sources over the life of the Proposal.

In addition to the mitigation measures of Scope 1, Scope 2 and 3 emissions have their own mitigation measures.

The Proposal will generate minor Scope 2 emissions during the operations. A minor amount of electricity will be purchased from the SWIS to maintain connection to the grid while the plant is not operating during the maintenance and shutdowns. Perth Energy will investigate electricity supply options and factor in the carbon footprint of supply. Preference will be given to those suppliers with a lower carbon intensity product and clear commitments and pathways to decarbonisation.

Scope 3 emissions for the Proposal include those associated with the purchased goods and services (natural gas and diesel), and downstream distribution of electricity. Perth Energy has limited control over the emissions associated with these sources. However, it is committed to exploring opportunities for decarbonisation. The Proponent will consider options to reduce the quantity and Scope 3 emissions relating to the delivery of natural gas and diesel by using:

- New high-efficiency aero-derivative or light industrial gas turbine technology;
- Selected world-leading OEM for gas turbine supply and commissioning;
- Through-life emissions/efficiency part of technology selection process; and
- Performance Guarantees in construction and operation.

Perth Energy will investigate third party supply options for gas and diesel supply and factor in the carbon footprint of supply. Similarly with Scope 2 mitigation measures, preference will be given to those suppliers with a lower carbon intensity product and clear commitments and pathways to decarbonisation.

Perth Energy's offsetting strategy for the Proposal has been described in Section 8.

Statutory decision-making processes

Table 6-5 below summarises other statutory decision-making processes that can mitigate the potential environmental impacts arising from the GHG emissions of this Proposal.

Table 6-5 Statutory decision-making processes that can mitigate potential environmental impacts.

Potential impact	Statutory decision-making process that can mitigate the potential impact	Reasoning
Generation of GHG emissions	NGER Act	Annual emissions reporting, which will require the Proponent to track their emissions and take actions to keep them below set thresholds.
	Safeguard Mechanism	The NGER Act regulates the emissions of grid-connected electricity generators, such as K2. Specifically, for the purpose of the NGER Act, the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth) requires the Clean Energy Regulator to monitor scope 1 emissions for all grid-connected electricity generators each financial year, and should those emissions exceed the 'sectoral' baseline of 198,000,000 t CO2-e: • this is to be published at least 4 months prior to the start of the next financial year; and • site-specific (rather than sectoral) baselines will then apply for the following financial year, which decline at a set rate.

6.5.1 Assessment and significance of residual impact

The average annual GHG emissions estimate (Scope 1) for the Proposal is 191,763 t CO_2e, which corresponds to approximately 0.2% of Western Australia's annual GHG emissions and 0.04% of Australia's GHG emissions (based on the latest available reporting year, FY 2021/-22). This contribution is not significant.

Since the publication of the EPA's updated *Environmental Factor Guideline – Greenhouse Gas Emissions (2024)*, the EPA no longer requires a GHG environmental management plan but will still accept GHG related information in the format of a GHGMP.

A GHGMP was prepared for this Proposal to provide more detailed information of the GHG emissions estimates' calculation method and Perth Energy's commitments to reduce operational GHG emissions. The GHGMP outlines how Proposal emissions will be mitigated to minimise the risk of environmental harm from emissions. Perth Energy considered that the residual impacts of

the Proposal are not significant and will be appropriately managed through the GHGMP to achieve the EPA objective for GHG emissions.

6.5.2 Predicted environmental outcome

The Proposal will produce on average 191,763 t CO_2e of Scope 1, 530 t CO_2e of Scope 2 and 22,462 t CO2e of Scope 3 emissions per annum. Total Gross Scope 1 GHG emissions over the life of the Proposal will be 8,629,357 t CO_2e.

To manage and reduce the predicted environmental outcome, the proposed activities will comply with several legislative requirements, such annual reporting requirements under NGER Scheme and within the Safeguard Mechanism sectoral baseline.

Annual GHG emissions will be monitored under the NGER Scheme. GHG emission will be calculated in accordance with the *National Greenhouse and Energy Reporting (Measurement) Determination*, which specifies the calculation methods and criteria to be used.

The GHGMP will be implemented and used as an additional monitoring tool to track the Proposal's GHG emissions and reductions.

The Proposal is a necessary interim step that facilitates decarbonisation of the SWIS. As the proportion of renewable power generation and storage connected to the SWIS increases, reliance on the Proposal for power generation will reduce and so will the GHG emissions (Preston Consulting, 2024). Hence, the environmental outcome will reduce further over time.

Considering all the proposed mitigation measures and proposed GHG emission reduction targets, the Proposal is expected to meet EPA's objective for the GHG emissions.

7. Other Environmental Factors or Matters

Environmental factors considered relevant to the Proposal but unlikely to experience a significant impact include:

- Air quality; and
- Social surroundings.

A summary of the environmental factor assessment is presented below (Table 7-1). The factors under the themes 'Sea', 'Land' or 'Water' were not considered relevant for this Proposal and are not part of the environmental factor assessment presented below.

Table 7-1 Assessment of other environmental factors.

Factor	EPA Objective and Guidance	Receiving environment	Assessment of potential impact	Proposed mitigation
Theme: Air				
Air Quality	For air quality, refer to Section 7.1.			
Theme: People				
Social surroundings	Objective: *To protect social surroundings from significant harm.* Guidance: *Environmental Factor Guideline: Social Surroundings (EPA, 2023)*	Sensitive receptors are presented in Section 1.5.10. The closest sensitive noise receptors are residential buildings 2.3 km to southeast. The *Environmental Protection (Noise) Regulations 1997* defines the allowed noise levels in the surroundings of the premises, which were reflected in the noise modelling and assessment.	**Noise** assessment was completed, which indicates that noise received at the residences, when the power station is operating on its full capacity, could comply with the regulatory requirements during the day and evening periods, but could exceed these requirements during the night period by +2 dB(A). However, it is understood, that the noise levels are lower during the nights due to the lower demand and the lower ambient temperature resulting in less air required for cooling. The noise assessment is presented in Appendix 3. For **air quality**, refer to Section 7.1. An Indigenous heritage due diligence desktop assessment was conducted by Terra Rosa Consulting to identify and address potential impacts on cultural heritage sites, which could have further impacts on social surroundings. For the conducted **heritage assessment**, refer to Section 1.5.8 and Appendix 1	**Noise** Necessary noise mitigations measures will be assessed in the detailed design phase with the chosen technology provider. Noise mitigation measures, such as directing noise sources away from the sensitive receptors and/or installing noise protection structures (such as baffles), will be implemented if needed based on the final plant design, in order to meet regulatory requirements. **Air Quality** For air quality, refer to Section 7.1. **Heritage** For heritage matters, refer to Appendix 1.

Human health	Objective: *To protect human health from significant harm.* Guidance: *Environmental Factor Guideline: Human Health (EPA, 2016)*		Human health impacts from this Proposal may result from air emissions and noise but would not be material. Air emissions are assessed in detail in Section 7.1 and noise impacts discussed under Social Surroundings above. The impacts from air emissions and noise will be further managed under Part V of the EP Act.	Refer to discussion on proposed mitigation measures above.

7.1 Air Quality

According to EPA's *Environmental Factor Guideline: Air Quality* the environmental objective of the air quality factor is:

'To maintain air quality and minimise emissions so that environmental values are protected'

7.1.1 Relevant Policy and Guidance

Air Quality factor Guideline
The focus and objective of EPA's *Environmental Factor Guideline: Air quality* is:

- the impacts of emissions on air quality and other environmental values
- how discharges of waste into the air is avoided and managed
- how any discharge of waste will significantly impact on air quality and the environmental values that air quality supports.

There are inherent links between the *Air Quality* factor and other environmental factors. For example, changes to the air quality can affect human health and social surroundings, which has been considered in this referral document, too.

National Environment Protection (Ambient Air Quality) Measure 2021 (NEPM)
The air quality criteria of the NEPM was applied when assessing the Proposal's potential environmental impact on air quality. The desired environmental outcome of NEPM is '*ambient air quality that allows for the adequate protection of human health and well-being*' (NEPC, 2022).

7.1.2 Receiving environment

The proposed Project is in the KIA, which has been operational for over 60 years being the main contributor to area's ambient air quality. The DWER conduct ongoing ambient air quality monitoring within the Kwinana region for NO_2. The closest air quality monitoring station (**AQMS**) to the KIA is at the North Rockingham AQMS. Another nearby AQMS is South Lake, which is located to the northeast from the proposed project Site.

Data from the North Rockingham station was obtained for the modelled period (1st July 2023 and 30th June 2024). A summary of the monitored data is presented in Table 7-2 below, representing ambient air quality concentrations.

Table 7-2: Monitored Concentrations at North Rockingham AQMS (1st July 2023 and 30th June 2024)

Data Availability	Concentration µg/m³						
	Max 1-hour[2]	99th percentile 1- hour	98th percentile 1-hour	95th percentile 1-hour	90th percentile 1-hour	70th percentile 1-hour	Annual Average[3]
95.8%	59.8	40.2	35.4	28.1	20.3	8.3	8.1

Notes
1. Referenced to 25ºC, and 101.3 kPa.
2. 1-hour average NO_2 criteria – 151 µg/m³
3. Annual average NO_2 criteria – 28 µg/m³

The DWER published the Guidance Statement for Risk Assessments in February 2017 (DER, 2017) and the draft Guideline: Air Emissions in October 2019 (DWER, 2019), which refer to air quality criteria that may be considered in determining public health and environment impacts. The publication containing air quality criteria relevant to this Proposal is the National Environment Protection (Ambient Air Quality) Measure (NEPM) (NEPC, 2015 & 2021)

A summary of the current applicable air quality criteria for NO_2 is presented in Table 7-3. When comparing the North Rockingham AQMS results to the ambient air quality criteria, the results show that the monitored concentrations at this AQMS were well below the ambient air quality guideline values.

Table 7-3 Ambient Air Quality Criteria.

Compound	Averaging Period	Concentration (µg/m³)[1]	Reference
NO_2	1-hr	151	NEPC (2021)
	Annual	28	

Notes
1. Referenced to 25ºC, and 101.3 kPa.

The nearest sensitive receptors and AQMSs are presented in Table 1-5 and their locations on the map in Figure 1-6.

7.1.3 Potential environmental impacts and proposed mitigation

An air quality assessment has been undertaken for the Proposal and is presented in the report titled Kwinana Swift Power Station Expansion: Air Quality Assessment (Ramboll, 2024), provided as **Appendix 4**.

The potential air quality impacts were assessed by the CALPUFF modelling system. The assessment included modelling potential air quality impacts arising from emissions of concern which in this instance is oxides of nitrogen (NOx) (expressed as nitrogen dioxide (NO_2)). Emissions of carbon monoxide and particulates are also expected to be emitted from the turbines. However, the concentrations of these emissions are negligible in the context of ambient air quality guidelines and have not been assessed further as part of this assessment. Five (5) scenarios were modelled to consider all project stages. These scenarios were:

Scenario 1 – Existing
Scenario 1 included all known significant existing operations in the KIA excluding current and proposed Perth Energy sources that were operating during the modelled period between 1st July 2023 and 30th June 2024.

The sources that were included in the existing scenario included the following sources:

- AGR's sodium cyanide plant;
- CSBP's nitric acid plant;
- CSBP's ammonia plant;
- Synergy's HEGT facility;
- Alcoa's refinery including the powerhouse, calciner and liquor burner;
- Newgen power station;
- Cockburn 2 power station;
- The Kleenheat gas processing facility; and

- Nickel West's refinery.

Scenario 2 – Future Sources
Scenario 2 included the emissions and background concentrations as outlined in Scenario 1 but with the addition of future approved (yet to operate) and expected operational sources in the KIA. This included the addition of the following sources:

- CSBP's ammonia plant expansion;
- The Kwinana waste to energy facility;
- The East Rockingham waste to energy facility;
- The Covalent lithium plant;
- The Tianqui lithium plant; and
- The BP renewable energy project.

Scenario 3a – Normal Operations in Isolation
The normal operations in isolation scenario included emissions estimates and stack parameters from this Proposal in isolation. Emissions of NOx from four proposed turbines operating on natural gas/diesel were included under the normal operations scenario.

Scenario 3b – Normal Operations, Cumulative
The proposed normal operations scenario included emissions from all emissions sources and background concentrations as outlined in Scenario 2. It included emissions estimates and stack parameters from the existing KSPS that were based on conservative results from stack testing data undertaken at the facility. Emissions of NOx from the four proposed turbines (from this Proposal) were as described in Scenario 3a.

Scenario 4 – Startup Operations
Emissions from the proposed turbines under a startup scenario were assessed using the emissions provided by the manufacturers. Like the normal operations scenario (Scenario 3b), emissions under this scenario were considered cumulatively with emissions and background concentrations as described in Scenario 2 as well as with emissions from the existing KSPS operating in a normal mode. Startup emissions are expected to occur over a 10-minute period. It was conservatively assumed that normal operations were occurring for the other 50 minutes in an hour.

Scenario 5 – Shut Down Operations
Emissions from the proposed turbines under a shutdown scenario were assessed using the emissions information provided by the manufacturers with other sources as described in Scenario 4. Like the startup emissions, shutdown emissions are expected to occur over a 10-minute period. It was conservatively assumed that normal operations were occurring for the other 50 minutes in an hour.

Emission estimates and stack parameters are described more in detail in the Air Quality Assessment (Appendix 4).

Predicted maximum 1-hour average and annual average concentrations at the nominated receptor locations are presented in Table 7-4 below. The results presented at the nominated receptor locations are all below the relevant NO_2 criteria. Contour plots of the predicted ground level concentrations (GLCs) were made for each of the scenarios and relevant averaging periods are presented in the Air Quality Assessment (Appendix 4). For clarity, contour plots of the predicted GLCs for Scenario 3b demonstrating predicted maximum 1-hour and annual averages are presented in Figure 7-1 and Figure 7-2, respectively.

The contour plots show that in general all the predicted concentrations are below the relevant criteria except for some isolated exceedances of the 1-hour average NO_2 criteria predicted to occur in close vicinity to various sources including the KSPS. No exceedances were predicted of the annual average NO_2 criteria at any location in the modelled domain.

An exceedance of the 1-hour average NO_2 criteria was predicted for the normal operations, shutdown, and startup scenarios to the east of the KSPS facility at approximately 3 km although the exceedance was predicted to occur in an industrial area and not over sensitive receptor locations. The maximum predicted cumulative 1-hour average concentrations at this location for normal operations, shutdown operations and startup operations were 158 µg/m^3, 164 µg/m^3 and 168 µg/m^3 respectively. Analysis of the number of exceedances predicted at this location indicated that only a single hour of exceedance was predicted at this location.

Table 7-4 Summary of Predicted Cumulative Maximum 1-hour Average and Annual Average Predicted GLCs at Sensitive Receptor Locations

Maximum 1-hour Average Ground Level Concentrations												
Receptor	Criteria	Sc 1 - Existing		Sc 2 - Future Approved		Sc 3a - Normal Ops Isolation		Sc 3b - Normal Ops Cumulative		Sc 4 - Shutdown		Sc 5 - Startup	
		µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria
Wells Park	151	83	55%	83	55%	21	14%	84	55%	84	56%	84	56%
Golf Course		70	47%	78	52%	83	55%	131	86%	132	88%	133	88%
Thomas Oval		83	55%	88	58%	52	34%	109	72%	110	73%	110	73%
Oval		99	66%	99	66%	65	43%	128	85%	130	86%	130	86%
Residence		81	54%	85	57%	49	32%	107	71%	114	75%	115	76%
North Rockingham AQMS		75	49%	70	47%	26	18%	72	47%	72	48%	72	48%
Residence		69	46%	69	46%	55	36%	110	73%	120	80%	123	82%
Hope Valley		96	64%	94	63%	47	31%	101	67%	102	68%	102	68%
Calista Primary School		78	52%	80	53%	25	17%	101	67%	101	67%	101	67%
Wombat Wallow Childcare Centre		95	63%	95	63%	43	28%	100	66%	100	66%	100	66%
South Lake AQMS		61	41%	55	37%	6	4%	61	41%	62	41%	62	41%
Annual Average Ground Level Concentrations													
Receptor	Criteria	Sc 1 - Existing		Sc 2 - Future Approved		Sc 3a - Normal Ops Isolation		Sc 3b - Normal Ops Cumulative		Sc 4 - Shutdown		Sc 5 - Startup	
		µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria	µg/m^3	% Criteria
Wells Park	28	14.6	52%	14.7	52%	0.2	1%	15.0	54%	15.1	54%	15.1	54%
Golf Course		14.0	50%	14.2	51%	0.2	1%	14.6	52%	14.6	52%	14.6	52%
Thomas Oval		14.2	51%	14.6	52%	0.3	1%	15.2	54%	15.2	54%	15.2	54%
Oval		15.0	54%	15.6	56%	1.1	4%	17.3	62%	17.5	62%	17.5	62%
Residence		14.0	50%	14.3	51%	0.2	1%	14.7	53%	14.7	53%	14.8	53%
North Rockingham AQMS		13.9	50%	14.1	50%	0.2	1%	14.3	51%	14.3	51%	14.4	51%
Residence		13.7	49%	13.9	50%	0.2	1%	14.2	51%	14.2	51%	14.2	51%
Hope Valley		15.0	54%	15.5	55%	0.6	2%	16.6	59%	16.7	60%	16.7	60%
Calista Primary School		13.8	49%	13.9	50%	0.2	1%	14.3	51%	14.3	51%	14.3	51%
Wombat Wallow Childcare Centre		14.1	50%	14.3	51%	0.3	1%	14.7	53%	14.8	53%	14.8	53%
South Lake AQMS		13.8	49%	13.7	49%	0.1	0%	13.9	50%	13.9	50%	14.0	50%

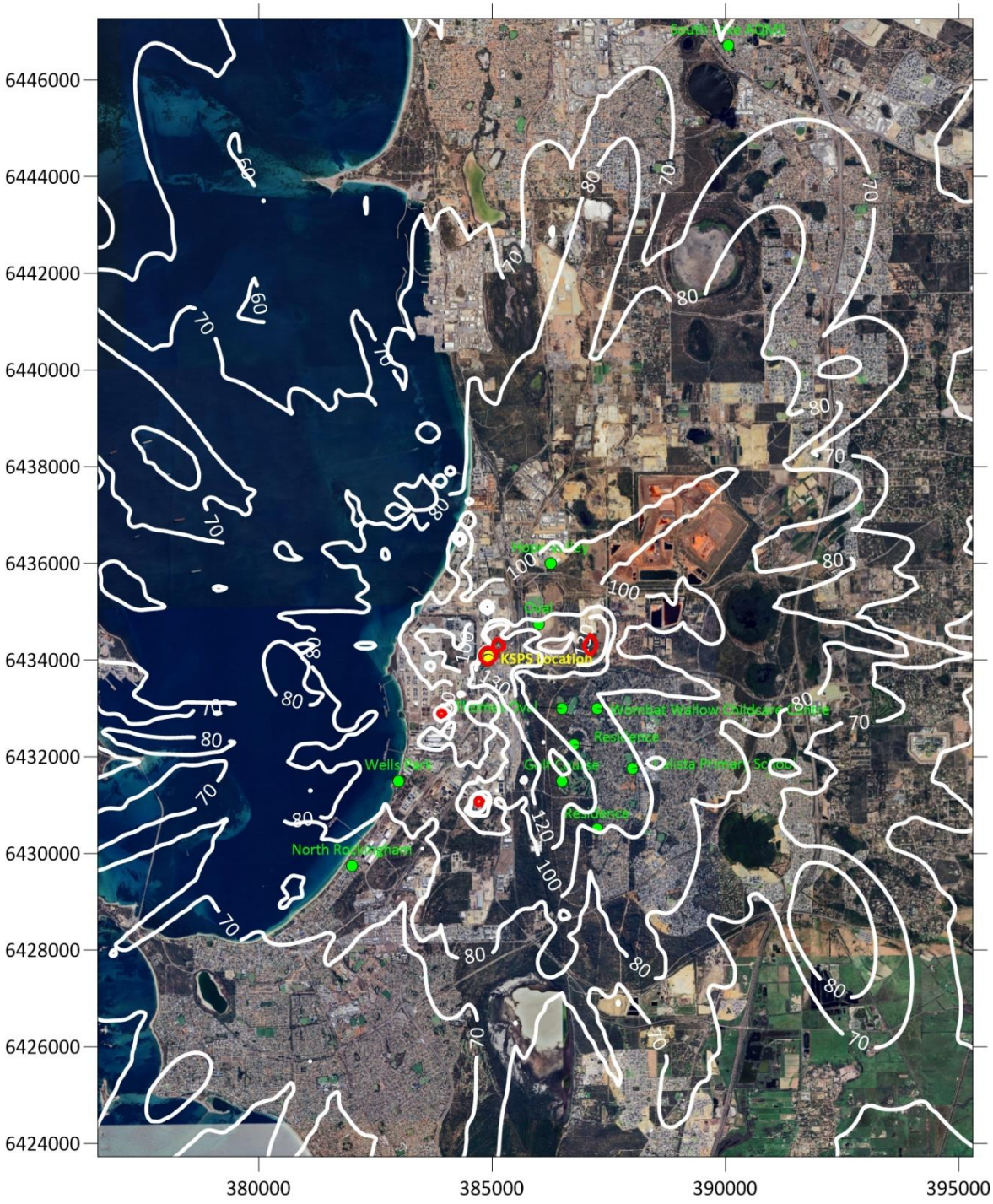

Figure 7-1 Predicted Maximum 1-hour Average GLCs of NO2 (Across Modelled Domain) – Scenario 3b: Normal Operations - Cumulative

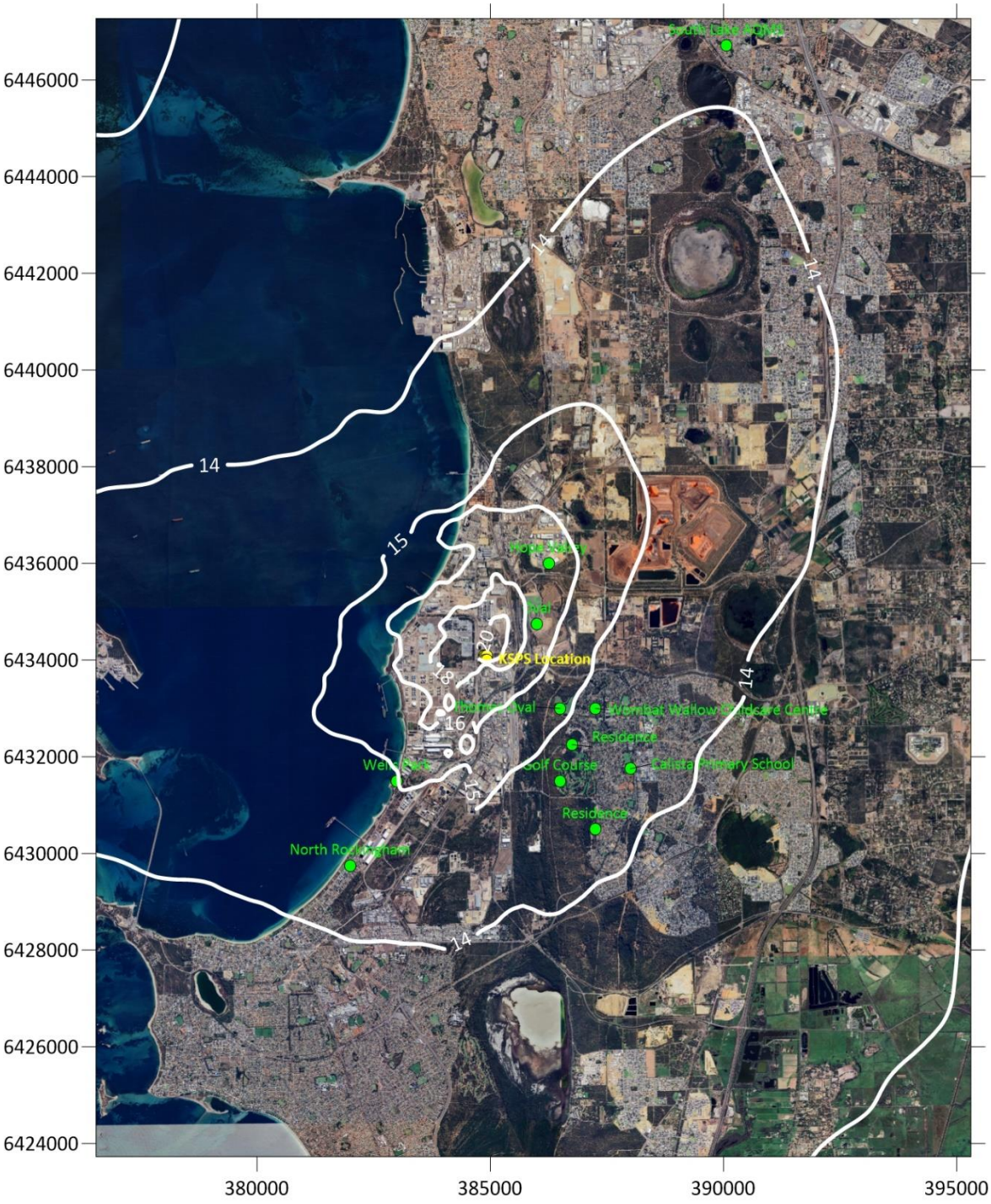

Figure 7-2 Predicted Annual Average GLCs of NO2 (Across Modelled Domain) – Scenario 3b: Normal Operations – Cumulative

7.1.4 Mitigation measures

At this stage of the Project design, detailed mitigation measures for management of air quality emissions have not been considered in detail. Perth Energy will consider minimisation of air quality emissions through the following measures:

- Start-up and shut-down procedures;
- Turbines chosen will utilise low NOx technology;
- Conduct of maintenance in line with OEM requirements; and
- Development of appropriate operating procedures for plant operation.

The K2 Project has applied for approval under Part V of the EP Act concurrently with this Proposal. Perth Energy expects management of atmospheric emissions would be managed through this process. Compliance with air quality guidelines will be achieved and managed under this process.

7.1.5 Environmental outcomes

No exceedances of the annual average criteria were predicted at any location within the modelled domain. Exceedances of the 1-hour average criteria were recorded near the Proposal site, and a single 1-hour average exceedance was predicted in an industrial area 3 km to the east of the Proposal site for normal operations as well as the startup and shutdown scenarios.

The assessment has incorporated several conservative assumptions including the following which indicate that the results of the modelling could be considered a conservative estimate of worst case GLCs in the region:

- Emissions from the plant assumed worst case NOx concentrations as guaranteed by vendors. Emissions concentrations of NOx from the proposed turbines are expected to be significantly lower than those that were modelled.
- Modelling was undertaken assuming continuous operation of the KSPS when it is expected to operate for approximately 25% of the year.
- Emissions from shutdown and startup operations are expected to be sporadic and despite these operations only occurring for 10 minutes on each occasion it has been assumed that emissions from the plant continued for the other 50 minutes.
- Background concentrations from non-industrial sources were based on a worst-case year.
- The model validation showed that when using an assumed background concentration of NO_2, the model was slightly overpredicting the highest predicted concentrations of NO_2 when compared to the monitored data at North Rockingham.

Based on the outcomes of the air dispersion modelling and considering the inherent conservativity incorporated into the assessment, the Proposal likely presents a low risk of impacting health at sensitive receptors in the region.

Based on the conducted air quality assessment it is expected that the NO_x emissions will be within the latest NEPM guidelines and conform to the future reduction in NEPM guidelines. The expected emissions from the proposal may be managed with reference to existing controls as regulated under Part V of the EP Act by DWER. It is considered that the EPA's objective for emissions and air quality will be met.

8. Offsets

8.1 Corporate level offsets

Perth Energy, as a subsidiary of AGL Limited, has a corporate level *Carbon Offsets Policy (effective from Aug 2024),* which outlines AGL Energy's planned use of carbon offsets toward achieving the greenhouse gas emissions targets outlined in AGL Energy's Climate Transition Action Plan (**CTAP**) published in September 2022, including their overall role, and approach to sourcing and verifying carbon offsets.

AGL Energy's Scope 1 and 2 greenhouse gas emissions decarbonisation strategy as set out in its CTAP relies predominantly on achieving absolute reductions in its Scope 1 and 2 emissions, through the sequential and responsible closure of AGL Energy's operated coal-fired power stations. These coal-fired power stations accounted for over 95% of AGL Energy's annual operated Scope 1 and 2 emissions in June 2024.

To achieve AGL Energy's net emissions reduction targets, carbon offsets will be used to address residual emissions where necessary, subject to availability and viability.

8.2 Proposal specific offsets

AGL Energy has committed to reach net zero emissions by 2050 for this Proposal, with the intent of only using offsets (i.e., carbon credits) as a temporary solution while the technology or innovation required to completely decarbonise is developed.

Based on the targets and emissions estimates presented in the GHGMP the Proposal will need to offset emissions in 2048 and the years beyond. A total of 430,574 t CO_2e emissions will need to be offset to 2050 and then an average of 176,401 t CO_2e / a will need to be offset thereafter (based on current projections) (Preston Consulting, 2024).

AGL Energy will offset GHG emissions above the target with tangible offsets. Potential tangible offset options include but are not limited to undertaking additional re-vegetation activities on land held by AGL Energy to generate carbon credits, investing in carbon offset projects and purchasing, and surrendering carbon credits that meet the Australian Government's Climate Active Carbon Neutral Standard's offsets integrity principles (Preston Consulting, 2024).

Preference will be given to Australian Carbon Credit Units (ACCUs) and other Nature-Based Solutions carbon credits that aim to protect and enhance natural ecosystems, benefit local communities and improve biodiversity. The exact proportion of ACCUs and other Nature-Based Solution carbon credits within the overall offsets portfolio will be determined each period based on forecast residual emissions and monitoring of offset markets. Offsets will be certified, accredited and registered under Standards within the International Carbon Reduction and Offsetting Accreditation (ICROA) Code of Best Practice. (Preston Consulting, 2024)

9. Matters of National Environmental Significance

An EPBC self-assessment was undertaken in accordance with the *Significant Impact Guidelines 1.1. – Matters of National Environmental Significance* from Australian Government, Department of the Environment, and DCCEEW's self-assessment guide. The primary objective of the EPBC self-assessment is to document whether potential impacts on MNES are likely to be significant and further to identify if an official referral to the DCCEEW under the EPBC Act is required.

DCCEEW's PMST was used to identify potential MNES in the project area and its surroundings. A PMST search was undertaken on 30th October 2024 with a 300 m buffer around the project area (Figure 9-1). A summary of the PMST results is presented in Table 9-1. (Ramboll, 2024)

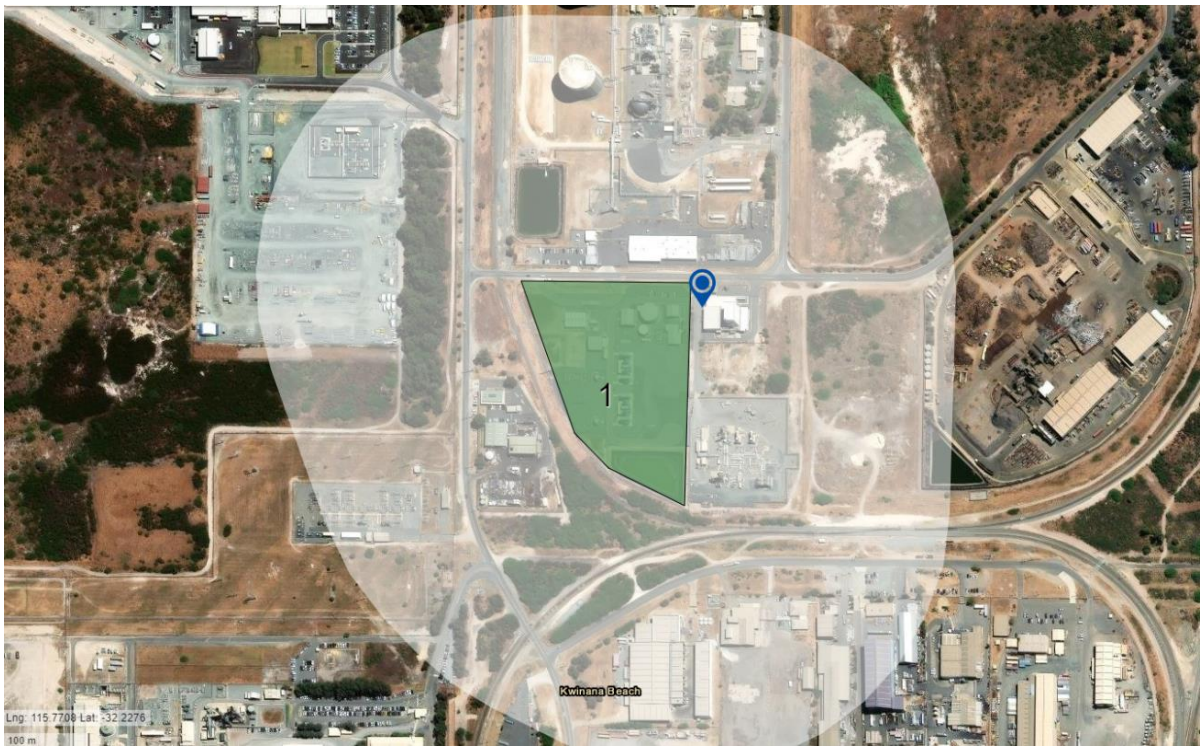

Figure 9-1 Project area and defined buffer zone with radius of 300 m from the premises boundary.

Table 9-1 Assessment of MNES likelihood of occurrence and potential impact of the Proposal.

MNES	Potential presence within project footprint
World heritage properties	None present
National heritage properties	None present
Wetlands of international importance (listed under the Ramsar Convention)	1
Great Barrier Reef Marine Park	None present
Commonwealth marine areas	None present
Listed Threatened Ecological Communities	3
Listed Threatened Species	21
Listed migratory species (protected under international agreements)	14

Nuclear actions (including uranium mining)	Not applicable
Water resources in relation to coal seam gas development and large coal mining development	Not applicable

The EPBC self-assessment concluded that the Proposal is not expected to have a significant impact on:

- The world heritage values of a declared World Heritage property.
- The ecological character of a declared Ramsar wetland.
- The members of a listed threatened species or any threatened ecological community, or their habitat.
- The members of a listed migratory species or their habitat.
- The environment in part of the Commonwealth marine area.
- The environment on Commonwealth land.

The low impact status of this project is due to the following reasons:

- The property and surrounding area's land use is industrial and has been of an industrial nature for the last 60 years.
- The land and surrounding areas have been cleared of most vegetation.
- There is a significant distance between the proposed Site and watercourses.
- There will be no direct discharge from the operations into the marine environment.
- The likelihood of threatened species to occur in this area under the above conditions is limited.

Based on the completed EPBC self-assessment, the Proposal will not have a significant impact on MNES or Commonwealth land and thus, it has not been referred to the DCCEEW under the EPBC Act. This conclusion is supported by the previously conducted referrals in the vicinity of the Site, which were not considered a 'controlled action' under the EPBC Act.

10. Holistic Impact Assessment

According to EPA's *Instructions: How to prepare an environmental review document (2024)* a holistic impact assessment is required where '*the combination of the environmental effect of two or more environmental factors or values has the potential to result in a significant impact'*. GHG emissions have been identified as the only key environmental factor for this Proposal, and therefore AGL Energy considers that there are no such interactions between GHG emissions and any other environmental factors where the combination has the potential to result in a significant impact.

11. Cumulative Environmental Impact Assessment

11.1 Overview

In accordance with EPA's *Instructions: How to prepare an environmental review document* (2024) cumulative environmental impacts are defined as '*successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities'*.

The Proposal Site is located in the KIA, which has a 60-year history of industrial operations. KIA is designed for heavy industry and possible significant impacts originating from the industrial operations have been also considered in the area's zoning, i.e. requirements of implementation of adequate buffer zones. Due to the project area's location, cumulative impacts of most of the environmental factors (factors under the themes 'Sea', 'Land', 'Water' and 'People') are considered unlikely to cause significant impacts.

11.2 Air Quality

This Proposal's potential impact on air quality has been assessed in Section 7.1 but it is not classified as a 'key environmental factor' for this Proposal. When further considering the area's baseline air quality, including several existing and planned industrial operators, this Proposal's contribution (in terms of air quality) to the cumulative impacts is minor and not likely to cause significant impacts.

The modelling framework presented in the Ramboll air quality assessment report included the emissions and background concentrations from the existing airshed at Kwinana as Scenario 1. Also, a Scenario 2 involved the addition of future approved (yet to operate) and expected operational sources in Kwinana.

This included the addition of the following sources:

- CSBP's ammonia plant expansion.
- The Kwinana waste to energy facility.
- The East Rockingham waste to energy facility.
- The Covalent lithium plant.
- The Tianqui lithium plant.
- The BP renewable energy project.

The modeling results for Scenario 2 show that emissions were well below the applicable threshold limits. Therefore, cumulative impacts have been an integral part of the air quality emission assessment.

11.3 Social Surroundings (Noise)

The Herring Storer reports have taken the "significantly contributing" or the cumulative impact, as the criteria for compliance.

Under the Environmental Protection (Noise) Regulations 1997, noise received from a premises is deemed to be NOT significantly contributing when it is at least 5 dB(A) below the assigned noise level. HS have used this as the basis of the noise assessment. This is why the power station (as a whole) criteria for noise compliance is 5 dB(A) below the assigned noise level.

Thus, with regards to noise, noise received at the residences would be deemed to comply with the requirements of the Environmental Protection (Noise) Regulations 1997, including the provision relating to "significantly contributing", which is the criteria for the cumulative impact in relation to noise. Thus, being 5 dB(A) below the assigned noise level, noise is deemed to comply and there is no requirement to determine or state the overall noise level.

The "significantly contributing" requirements are stated in the HS report.

11.4 GHG Emissions

GHG emissions are the only key environmental factor (refer Section 6) for the Proposal and the only environmental factor that is considered likely to have significant cumulative impacts on the environment.

The Proposal will participate in the Reserve Capacity Mechanism (RCM), meaning it must be available when called upon by AEMO. It can only bid into the market at its short-run marginal cost (SRMC), ensuring it operates only when cheaper sources (coal (while still operational) or renewables) are unavailable. This market structure ensures that the Proposal's utilisation will inherently reduce the SWIS GHG emission intensity, as it displaces higher-emission facilities as they are taken offline and can never displace lower cost renewable generation. Perth Energy will not decide when to increase or decrease the Proposal's dispatch rather it will be dictated by the demand set by AEMO.

The EPA, in its Statement of environmental principles, factors, objectives and aims of EIA, indicates that the EPA assesses the cumulative impacts of the Proposal against the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2023).

Given the fluctuations in power sources in the SWIS, it is impossible to accurately quantify the Proposal's contribution to the total cumulative GHG emissions of the SWIS. To provide some context however, Perth Energy has assessed the potential range of cumulative GHG impacts from the Proposal. The lower limit (best-case) is to assess the Proposal's emissions in the context of the equivalent emissions from coal power generation. The upper cumulative limit would be no change, which would occur if the Proposal simply replaces another equivalent gas-fired facility.

Given the Proposal will provide peaking power to support retirement of the Collie and Muja power stations and potentially Bluewater and Pinjar in the future. Apart from Pinjar, which is gas powered, these are the coal-based power production facilities relevant to the Proposal. Perth Energy has compared the emissions intensity of the Proposal against the equivalent aggregate emissions intensity of facilities it could replace. In 2023-24 those relevant facilities had the following Emissions Intensity (EI)'s:

- Collie: 0.951 t CO_2-e / t MWh
- Bluewater 1: 0.891 t CO_2-e / t MWh
- Bluewater 2:0.903 t CO_2-e / t MWh
- Muja: 0.966 t CO_2-e / t MWh
- Pinjar: 1.03 t CO_2-e / t MWh

The average emissions intensity of the above facilities is 0.9482 t CO_2-e / t MWh.

The Proposal is predicted to produce a maximum of 423,230 MWh in 2026 with an EI of 0.507 t CO_2-e / MWh. On this basis, the Proposal represents a maximum predicted emissions reduction of 186,729 t CO_2-e / a.

Australia's emissions and the proposal's maximum cumulative impact (reduction) are summarised in Table 11.1.

Table 11-1 Cumulative impact assessment in the context of state and national emissions.

Emissions	2023 emissions (Mt CO_2-e)	With Proposal (Mt CO_2-e)	Change* (%)
State Public Energy Sector	22.54	22.35	-0.82
State Total	89.37	89.18	-0.21
National Energy Supply Sector	140.57	140.38	-0.13
National Total	453.45	453.26	-0.04

*Direct impacts from energy produced by the Proposal instead of coal-based power generation (maximum reduction). Values presented in this table include rounding, the resulting % change value may appear erroneous.

The Proposal provides necessary and timely peaking power capacity that enables safe and stable transition to renewable energy. Without the Proposal, the Collie power station would need to remain operational for longer to support the renewables transition. The Proposal's impact on the emissions intensity of power generation for the SWIS therefore goes beyond the direct impact resulting from displacement. The Proposal will have a beneficial indirect impact on the SWIS EI (reduction) by providing reliable peaking power capacity which will enable a quicker and greater penetration of renewable capacity to the grid. Given the proportional use of each generation type (and the rate of development) this indirect impact is difficult to quantify but should not be understated.

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Appendix 1

Indigenous Heritage Due Diligence Desktop Assessment

Appendix 2
Greenhouse Gas Management Plan

Appendix 3

Environmental Acoustic Assessment

Appendix 4
Air Quality Assessment